What Is Driving The Metro Vancouver Housing Market And The Effects Of The 15% Foreign Buyer's Tax? Brennan Harder Thompson Rivers University

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## Abstract

In this paper I look at the different factors that are causing the Metro Vancouver home price increases with a concentration on the effects of the Provincial government's new 15% foreign buyer's tax. I split the factors into two categories: Demand and Supply. For each factor I identify and examine the problem and the effects it has on the market. Additionally, I use a series of regression models to illustrate the relationship each variable has with price. Finally, I review the impacts that zoning and density have on price.

### 1. Introduction

Over the past decade the housing market in the Metro Vancouver area has seen a stark increase in prices. This has raised concerns that people in the younger generations will be unable to become homeowners. The Provincial government saw this taking place and implemented a 15% foreign buyer's tax in an attempt to cool the market. In this paper I will look at what factors are causing these steady increases in price and use three different regression models to analyze the impacts. Furthermore I will investigate whether the 15% foreign buyer's tax was successful at reducing prices. I will also discuss the impacts of improving density and zoning by comparing a few different municipalities in the lower mainland.

The next section of the paper consists of a review of the relevant literature to determine which factors theoretically influence house prices. The data used in the econometric analysis is discussed in Section 3. The econometric models are presented in Section 4 and the results are presented and discussed in Section 5. The Foreign Homebuyers tax is discussed in Section 6. Alternative solutions to high house prices are examined in Section 7 and Section 8 concludes the paper.

### 2. Literary Review

One potential driver on the demand side is population increases in the Metro Vancouver area. In "Population migration, urbanization and housing prices: Evidence from the cities in China" Wang et al. find a relationship between increased housing prices and population growth using cities in China. (Wang, Chi-ManHui, & Jiu-XiaSun, 2017). Vancouver's population growth may be driven mainly by people's perceived idea that there are better employment opportunities, and a moderate climate in comparison to the rest of Canada; this will encourage them to migrate to Vancouver from other locations in Canada.

The Metro Vancouver housing market has also seen a dramatic increase in foreign investment mainly from China. (Dorfmann, 2015; Sorensen, 2016). Dorfmann goes on to say that a survey done in one wealthy Vancouver neighbourhood had a quarter of its condominiums vacant. She also points out that this is especially harmful for the affordability of domestic buyers because it inflates price while also decreasing supply. After August 2<sup>nd</sup> when the 15% foreign buyers tax was implemented, the effect of foreign buyers on the Metro Vancouver housing market may be limited as pointed out by Sorenson (Sorensen, Hands off my bubble, 2016; Business News Network, 2016).

Finally in "Measuring the degree of speculation in the residential housing market: A spatial econometric model and its application in China" Yang et al. look at how many factors, including income, can affect housing prices in China (Yang, Wu, Shen, & Dang, 2017). In the paper they found that income can have an effect on home prices.

The Fraser Institute has conducted two studies looking at how municipal regulations on residential land use affect housing markets (Green, Filipowicz, Lafleur, & Herzog, 2016) (Green, Herzog, & Filipowicz, 2015). Their findings suggest a correlation between an increase in prices and cities where residential development experience stronger opposition from city council and community members, as well as long and uncertain approval times. They also suggest a deregulated market would lead to less urban sprawl particularly in Metro Vancouver. This compounded with Vancouver's very limited space to expand due to geographical constraints (e.g., the ocean, the border, and the North Shore Mountains) puts upward pressure on prices. Albert (2010) shows that geography is a major determinant in American housing supply and that cities that are geographically constrained are also highly likely to be stringently regulated. One of the most recent CMHC study finds that there are slight signs of overvaluation in the Metro Vancouver housing market which could lead to a collapse in prices (Canadian Mortgage and Housing Corporation , 2016). There is also anecdotal evidence that economists from Canada's largest banks are concerned about the risks of overvaluation in the Vancouver market (Sorensen, 2016).

## 3. Data

There are many factors that are at play when discussing the Metro Vancouver housing market. I will look at a few factors in this paper: provincial GDP per person, unemployment, net migration, exchange rate, housing starts and completions. Together these will help us understand why housing prices have increased so dramatically over the past fifteen years. These indicators were chosen because of their predicted effects on the market as discussed in Section 2. For the analysis I have chosen to compare Vancouver with five other cities: Montreal, Ottawa, Toronto, Calgary, and Victoria.

Firstly GDP per person (Y) is a good indicator of how much income the average person is earning in each province. As can be seen in Figure 1, all the provinces have seen modest growth in income with Quebec showing the slowest growth of the four largest provinces. A rising income can increase home prices because as people become richer they will undoubtedly want and can afford a nicer and newer house. The data shown in Figure 1 is chained to 2007 dollars and was collected from Statistics Canada (Statistics Canada, 2017)

The unemployment rate (U) was selected as an indicator of the health of the job market. The health of the job market will influence the house purchase decisions of people within Metro Vancouver since it will influence their expectations of future incomes. Also, it will influence the migration decisions of people from outside Vancouver, as it may signal that employment is more easily obtained in the Metro Vancouver area than elsewhere in British Columbia and Canada. Living outside Vancouver for the last 12 years has shown me just how highly people think about the Vancouver job market. Most new graduates today that I have talked to always think Vancouver is one of the few places in Canada to start their career off. Many strongly believe that staying in a smaller town means missed job opportunities and a lower potential for job growth in the future. The preliminary data shown in Figure 2 is the unadjusted monthly unemployment rate averaged out on a yearly basis for each city in the study with the data coming from Statistics Canada (Statistics Canada, 2017). The unadjusted rate does not remove recurring trends in seasonal employment..

Next, total population (*M*) will help us understand the total demand for homes as almost everyone who moves to the area will need a home to live in. I believe, setting aside job prospects, total population increases may be tied to Vancouver's reasonably warm climate in comparison with the rest of Canada. Total population for each city is displayed in Figure 3 and was obtained from Statistics Canada (Statistics Canada, 2017).

The exchange rate (E) between the Canadian dollar (CAD) and the US dollars (USD) will give us an idea of the effect foreign buyers may have on the market and will be used again later when we look at the effect of foreign buyers. For example, a higher exchange rate reflects a lower valued Canadian Dollar which then increases the purchasing power of foreign buyers. The exchange rate data is shown in Figure 4 and was collected from the Bank of Canada (Bank of Canada, 2017).

Switching to the supply side of the housing market, I have chosen to look at housing starts (*S*) and housing completions (*C*) of all forms of housing to best estimate the increasing supply in the area. The data shown in Figure 5 and 6 respectively was collected from the Canadian Mortgage and Housing Corporation website (Canadian Morgage and Housing Corporation , 2017). It should be noted that around 80% of housing starts are pre-sold and therefore are unavailable if you move to the area and need a home right away<sup>1</sup>. However these units are serving the overall demand in the Metro area and therefore should still be included as an indicator of the level of supply in the market.

All of the above factors are being compared against the housing price index (P) from Teranet and the National Bank of Canada with a base date of June 2005 (Teranet and the National Bank of Canada, 2017).

#### 4. Methods

I ran three types of regression equations: Pooled, Fixed-effects, and a Two Way model. The pooled model consists of the following regression specification:

$$P_{it} = \alpha + \beta_1 Y_{it} + \beta_2 U_{it} + \beta_3 M_{it} + \beta_4 E_{it} + \beta_5 S_{it} + \beta_6 C_{it} + e_{it}$$

Where i indicates the city, t indicates the year, and e is the error term. This model only isolates our six variables, it does not account for unexplained variation across time or between cities. The Fixed-effects model will help account for some unknown heterogeneity between the cities. We do this by creating a "dummy" variable for each city that is either equal to one or to zero

<sup>&</sup>lt;sup>1</sup> Personal correspondence with Jeff Fisher, Urban Development Institute

depending on whether the data is for that city or not. The fixed effects model is the following regression specification:

$$P_{it} = \alpha_i + \beta_1 Y_{it} + \beta_2 U_{it} + \beta_3 M_{it} + \beta_4 E_{it} + \beta_5 S_{it} + \beta_6 C_{it} + e_{it}$$

Where the term  $a_i$  is the intercept coefficient estimated on the dummy variable for city *i*.

The Fixed-effects model isolates just the city variable, but the third model isolates unexplained differences at the city and year level. This will allow us to account for some unexplained common time trends over time. In this model each city has a dummy variable and each year has a dummy variable. The specification of the Two Way model is as follows:

$$P_{it} = \alpha_i + \gamma_t + \beta_1 Y_{it} + \beta_2 U_{it} + \beta_3 M_{it} + \beta_4 E_{it} + \beta_5 S_{it} + \beta_6 C_{it} + e_{it}$$

Where  $\gamma_t$  is the coefficient on the dummy variable for year *t*.

All regressions are estimated using data from 2001 to 2016 as a standard date range.

#### 5. Regression Results

After running the Pooled regression model these are the results. A t-test of the estimated coefficient on GDP per person has a p-value of .0006 suggesting that we can reject the null hypothesis that the coefficient is equal to zero. A t-test of the coefficient on the exchange rate showed an extremely low p-value as well. Therefore we can conclude that they are both statistically significant factors in the Metro Vancouver housing market. GDP's coefficient was a small number because we are dealing with large values of GDP per person. The estimated coefficient of .001 suggests that a \$1,000 increase in GDP per capita would result in a one-unit increase in the housing price index. This is likely as you can see in Figure 1 there are large changes in GDP over a few years, especially in Alberta. The exchange rate coefficient is -99.32 suggesting a 1 unit increase in the exchange rate would result in a -99.32 unit decrease in the house price index. This number looks quite large because a one-unit increase in the exchange rate is a very large change (it is like going from 1 CAD = 1 USD to 2 CAD = 1USD). The coefficient is also negative which would suggest that foreign buyers are not having an effect on

our housing market. The t-tests on the coefficients of the other factors come back with high p-values and therefore we can conclude they are not statistically significant using  $\alpha \le .05$  level.

In the Fixed-effects model the results become more promising with four out of the possible six factors coming back as being statistically significantly different than zero. We see that the coefficient for GDP per person comes back as almost the same from the previous test whereas the coefficient on the exchange rate fell significantly compared to the previous model. However it remains negative showing that foreign buyer's are still not having an effect. A change in this model compared to the last one is the addition of population and unemployment as statistically significant. Unemployment has a coefficient of 3.52 but a full unit increase in unemployment is not uncommon and therefore would have a noticeable effect on the Housing Price Index (HPI). Net migration has a very low coefficient which indicates that there would have to be a historically large increase in population to see any change in the HPI. The two insignificant variables are housing starts and completions. All the city dummy variables came back with p-values less than .05 showing there is variation between the cities captured by the city fixed effects.

In the final regression model that allows variation between all the variables, the results are slightly different. We see that the coefficient of GDP per person still holds true as a significant variable, however it has decreased from the previous coefficient in the fixed model, but is still larger than in the pooled model. After GDP, only population remains as another indicator that is statistically significant. However, it remains at almost zero as it did in the last model. This means we would have to see an extremely large increase in population to see any real change in the HPI. The rest we cannot conclude that they are statistically significant at the 5% confidence level as their p-values are all greater than .05. Like the other two variables, unemployment and the exchange rate, we see the rest have an extremely low coefficient compared to the previous test. Unemployment also switched from a negative to a positive. This means that there is some other variation not accounted for in the model that is being picked up by the unemployment rate variable. In continuation we see that none of our yearly dummy variables are significant. This could be because of the small sample size when focusing on each year. Therefore I would conclude that GDP per person, exchange rate, and net migration are all significant in determining home prices in Metro Vancouver as the fixed model suggests.

Unemployment was found to be significant in the fixed model also, but is of concern because it switched from a positive to a negative in the Two Way model. Finally, in no model were housing starts or housing completions found significant and therefore it is supported that they are not significant. The above results are summarized in Figure 7 that shows their coefficient and standard error.

#### 6. Foreign Buyers Tax Results

The 15% foreign buyer's tax was implemented August 2<sup>nd</sup>, 2016 in the Metro Vancouver area according to the BC Government's 2016-2017 fiscal update (Government of British Columbia, 2017). The data collected previously by the Government was very limited. As shown in Figure 8, data on foreign buyers was collected only from June 10<sup>th</sup>, 2016 until August 1<sup>st</sup> of 2016 before the tax was implemented. This gives us very little room to compare the effect of the tax, but according to the graph there was a substantial drop in sales to foreign buyers over the next 10 months. If this drop is as substantial as the BC Government data shows then we should expect to see a large drop in prices. According to Figure 9 showing the MLS real-estate prices, the drop that would correspond with the implementation of the foreign buyer's tax only affected one and two story homes, as well as single family homes (CREA, 2017). There was a small drop in composite style homes, but apartments and town homes showed no decrease in price. The prices were only depressed for a short period of time before they returned to their high growth rate of a few months previous. The drop in prices could be due to uncertainty in the market and not to a lack of foreign buyers from the  $tax^2$ . Also, the home prices that did fall were only the most expensive ones; therefore, even if the foreign buyers were having an effect on the market it might not affect the average home buyer. Instead of foreign buyers, the popularity of Vancouver amongst Canadians to call the city home (reflected by the regression results of income and Net Migration in the previous section) that is driving up the prices at least on the demand side. Therefore the 15% foreign buyer's tax is probably not the most useful way of cooling the housing market and the Government could have found better ways as is discussed in the next section.

<sup>&</sup>lt;sup>2</sup> Personal correspondence with Jeff Fischer, Urban Development Institute

## 7. Solutions

There have been many ideas discussed to fix the problem in Vancouver and one of the strongest arguments is to allow builders to build homes higher and closer together than they currently are. Every year Demographia publishes the International Housing Affordability Survey. It ranks cities on their affordability and focuses on municipal regulations that can lead to inflated prices. Vancouver comes in third out of the entire world on affordability (Cox & Pavletich, 2017). Cities with the least restrictive land use policies are far more affordable than those with very strict regulation. This last finding ties in with what the Fraser Institute has shown amongst cities in the Lower Mainland. They show how in a few different surveys that land use regulation increases home prices (Green, Herzog, & Filipowicz, New Homes and Red Tape: Residential Land-Use Regulation in BC's Lower Mainland, 2015). They show that in terms of building timeline uncertainty and average building approval timeline, West Vancouver, The District of North Vancouver, and Vancouver, are the three worst cities. The average approval time for each city respectively are as follows: 17.7 months, 16.1 months and 15.5 months. This can be made worse if the building requires rezoning. For the District of North Vancouver it can add an additional 13 months to the wait time and another 7.8 for West Vancouver and 6.5 for Vancouver itself. This is troubling because the Fraser Institute shows that 95% of residential development projects require rezoning in the District of North Vancouver and 71% in West Vancouver and 65% in Vancouver. Finally when the Fraser Institute asked developers to rank the council and community on a scale of 1-5 on how encouraging they are when it comes to development, Vancouver and the District of North Vancouver come in as the worst cities. It should be noted that West Vancouver was not included in this survey. The question still remains however, what does this mean for home prices. According to the Real-Estate Board of Greater Vancouver, West Vancouver, North Vancouver and Vancouver have the highest average home price in Metro Vancouver (MLS® Home Price Index, 2017).

Another example of how density can fix home prices is the city of New Westminster. If you look at Figure 10 you can see how New Westminster stands out as being a city close to Vancouver, but relatively low in price. This may be because New Westminster is almost as dense as the city of Vancouver. According to a report done by Metro Vancouver showing that the New Westminster core has 104 people per hectare while Downtown Vancouver only has two more people at 106 people per hectare. (Metro Vancouver, 2011) This may be why New Westminster has an average home price of only \$629,400 while right beside it, less dense south Burnaby has an average home price of \$976,100 and is almost the same distance from Vancouver (MLS® Home Price Index, 2017).

## 8. Conclusion

Overall I believe Metro Vancouver home prices may being influenced by multiple sources. We have shown that GDP per person, net migration, and the exchange rate all have some impact on the market. A caveat for GDP person that was not included in my regression model is interest rates. This is important because a way of increasing people's buying power while holding GDP per person constant is to lower interest rates. Figure 11 shows the relationship between interest rates and the Metro Vancouver housing price index for the last 10 years. I used the monthly data for both variables to plot the data and when applied, the best fit line shows a negative correlation between the two. This means that as interest rates fall we would expect to see home prices increase. We also discovered that the 15% foreign buyer's tax is not the best way to cool off the market. Instead one possible way to fix this problem may be to increase the number of places to live in the Metro Vancouver area. This is a regional issue that needs to be fixed by regional leaders. They should start allowing buildings to be built taller and closer together if the problem is to be solved.

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Figure 1

## Source: Statistics Canada A

Figure 2



Source: Stats Canada B





## Source: Statistics Canada C

## Figure 4



Source: Bank of Canada





## Source: Canadian Mortgage and Housing Corporation





Source: Canadian Mortgage and Housing Corporation

Figure 7	Pooled Model	Fixed Effects Model	Two-way Model
GDP/PP	0.001***	0.008***	0.0036***
	0.0003	0.0013	0.001
Unemployment	-0.99	3.52***	-1.46
	2.91	1.69	1.82
Population	1.01	0.00007***	0.000036***
	6.42	0.000009	0.000009
Exchange Rate	-99.3***	-31.12***	-8.55
	16.72	9.7	288.8
Housing Starts	0.0002	-0.0002	0.0006812*
	0.001	0.0005	0.000467
Housing Completions	0.0014	0.001**	0.000809*
	0.001	0.0006	0.000518
Adjusted R2	0.39	0.84	0.92
City Dummy			
Variables	No	Yes	Yes
Year Dummy			
Variables	No	No	Yes
Total Observations	96	96	96
Blue = Coefficent			
White= Standard			
Error			

Figure 7

\*\*\* = significant at  $\alpha \le 0.05$ , \*\* = significant at  $\alpha \le 0.10$ , \*= significant at  $\le \alpha 0.15$ 



Figure 8



# Figure 9



Source: MLS Housing Price Index



# Figure 10

Source: Google Earth, MLS Home Price Index

# Figure 11



Source: Bank of Canada, Teranet and the National Bank of Canada