

How to Dissect a Housing Bubble

Completed by:

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1.0 Introduction

House prices have increased very rapidly in Canada. During the past 10 years, the Teranet National Bank House Price Index (which covers 11 major urban areas of Canada) has increased at an average rate of 6.3% per year. The rate of price growth has slowed, but at 4.5% over the past year, the rate of house price growth continues to exceed overall inflation or growth of incomes. In consequence of the prolonged strong growth of house prices in Canada, many commentators have asserted that house prices are too high in Canada; there also frequent comments that Canadian housing markets are in a bubble. Other related arguments have been made, including comments that Canada is over-producing housing.

The word “bubble” is used frequently and very freely, and often without being defined. In discussions about bubbles, rapid growth of prices (whether for housing, financial instruments, commodities, or other assets) is often assumed to be sufficient evidence that a bubble exists. But, in the opinion of this author, the concept is more nuanced than that. In order to support a good discussion of whether a housing bubble is a serious issue in Canada, we need a good definition.

A very good definition of bubbles has been provided by American economist Joseph Stiglitz¹:

If the reason that the price is high today is only because investors believe that the selling price will be high tomorrow - when "fundamental" factors do not seem to justify such a price - then a bubble exists.

Reading this definition carefully, one ought to conclude that a rapid rise in house prices is not proof that a bubble exists. There are two further criteria:

- Firstly, price growth has been driven by expectations of future growth in prices.
- Secondly, prices have become divorced from “fundamentals.”

While the definition is clear, it may be very difficult to determine whether these two criteria are satisfied.

- Regarding the first criterion: is there a speculative mindset that causes housing demand to be larger than it should be based on “fundamental factors” (including economic conditions and demographics)? There is always some pressure in the housing market from an “investment motive” – for decisions to be influenced about expectations for future price changes. The question is whether this motive has become excessive (becoming a “speculative motive”) to the point that the expectations about future price growth are actually causing prices to grow more rapidly than they should. This question is rather difficult to address directly. There are a great many factors that affect the housing market and the rate of price growth. Disentangling these drivers to draw a conclusion about the influence of one factor in isolation might be an impossible task.
- But, we can investigate the second criterion, regarding “fundamentals”. Fundamentals exist on both the demand side and the supply side of the market. These include job creation, availability and cost of financing, costs of production, and the availability of inputs that are used in the production process (labour, materials, and development-

¹ “Symposium on Bubbles,” Journal of Economic Perspectives, Volume 4, Number 2, Spring 1990, pages 13-18.

ready land). We can investigate whether there are key factors that provide reasonable explanations for conditions in housing markets, including levels of activity, rates of price growth, and levels of prices.

This report begins (in section 2.0) by looking at one of the key pieces of evidence that is brandished by those who believe a housing bubble exists in Canada: data on the ratio of house prices to rents, which has been created by the Organization for Economic Co-operation and Development (“OECD”). To be blunt, while the OECD has relied on data that it might consider the best available for the purpose, the data in reality is badly flawed and results in wildly inaccurate estimates.

The subsequent section (3.0 A Better Dataset) utilizes an alternative dataset, from the Royal LePage House Price Survey². This analysis finds that the price to rent ratio in Canada has indeed increased, although the rise in the ratio is much less than was estimated by the OECD.

The chart to the right views the data in a different way that allows for a comparison to interest rates. This view shows that there is a large gap between the current ratio of rents versus prices, in comparison to mortgage interest rates. The result is that there is room to accommodate a sizable increase in house prices (as much as 20% to 25% during the next two years) and/or rises in interest rates (as much as one percentage point from current levels). Thus, rather than being over-valued, house prices in Canada are fairly-valued, and they may even be under-valued.



Canadians are well aware that interest rates can rise. As a result of prudent consumer behaviour, housing markets in Canada have left a considerable amount of room to accommodate higher mortgage interest rates.

The body of the report presents and discusses the data for all of Canada. Further detail is provided in two Appendices: Appendix A shows the estimates for the seven house types that are defined by Royal LePage. Appendix B shows the estimates for geographic areas.

Section 4.0 (Housing Affordability Indicators) takes a slightly different approach, looking at evolving mortgage costs in relation to incomes. Several organizations publish housing affordability indexes. These generally indicate that housing affordability has deteriorated in Canada, and this has become an important part of the discussion. In this author’s opinion, these indexes share a major flaw: they rely on a measure of interest rates (“posted rates”) that exists only for administrative purposes and is divorced from the interest rates that can be found in the marketplace. For that reason, the indexes overstate the cost of home ownership in Canada. Moreover, due to the evolutions of actual interest rates versus posted rates, these indexes overstate the extent to which affordability has changed in recent times. When

² More information on the Royal LePage research can be found here: <http://www.royallepage.ca/realestate/info-and-advice/market-reports-and-surveys/>

affordability is measured using the interest rates that exist in the market, it is clear that conditions are much better than is generally believed.

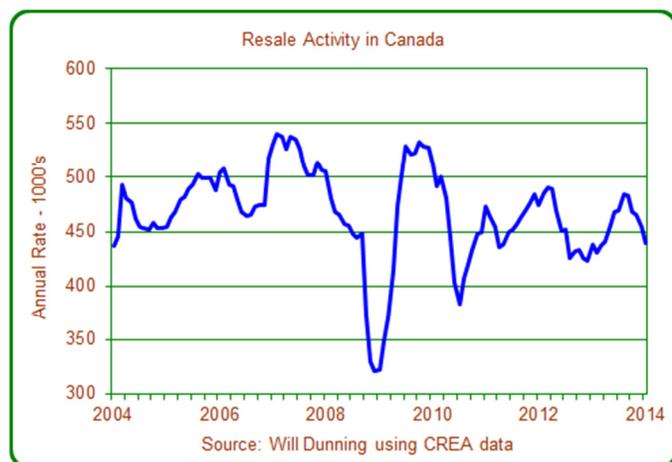
Section 5.0 (Housing Production versus Demographics) addresses an opinion that is frequently expressed by economists, that Canada has been producing too much housing compared to what is needed based on demographics. Therefore, there is an expectation that housing starts should slow in the near future and there is a widespread opinion that a slowdown would healthy.

Housing starts are almost never equal to the demographic requirement. Housing demand results from the economic conditions that exist, especially conditions in the labour market. Stable and relatively low vacancy rates in Canada testify that housing production has been aligned with housing demand. In short, the strong housing demand that has been seen during the past decade has been entirely justified by economic conditions.

Future housing demand will be determined by future economic conditions, rather than by demographics. Therefore, the best guarantor of stable housing markets is a stable economic environment.

To conclude:

- Much of the economics profession, media, and senior government officials have expressed concerns about housing markets in Canada. The concerns have been expressed in various ways but in essence it is believed that housing activity has been too strong and/or that house prices are too high.
- There have been opinions that there is a need to reduce housing activity, and possibly housing prices.
- In particular, the federal government has acted aggressively to reduce housing activity, mainly through four sets of tightening of conditions for mortgage insurance.
- This analyst argues that the various opinions expressed by many analysts, and the actions of government, have been based on a faulty understanding of market conditions (which, to some extent is based on faulty data, as this report has attempted to show).
- To repeat, recent levels of housing activity and the level of house prices in Canada have been consistent with the economic fundamentals - the employment situation and low interest rates. Moreover, Canadian housing prices leave a substantial amount of room to tolerate higher interest rates.
- Government actions to slow the housing market are not only unnecessary. They are also dangerous. In particular, the fourth round of changes, which took effect in July 2012, took demand out of a housing market that was already in a state of balance. The elimination of 30-year amortization periods for insured mortgages had an impact on monthly payments equivalent to a one percentage point rise in interest rates. This significantly reduced home sales. At the time



there were no major factors in the economy that would have caused the sharp (and prolonged) drop of sales that occurred during the year after July 2012.

- Resale market activity recovered quite strongly during the summer of 2013, as a sharp and unexpected rise in interest rates caused a rush of buyers into the market. At the time there was a broad consensus among analysts that the wave of activity would be temporary and would be followed by a setback. Recent data from the resale housing market has indeed shown a setback, as is clear in the chart above. The most recent data point in the chart is for the month of January. Data for February is now available for areas representing more than two-thirds of the country, and that data points to no change from the January sales rate.
- The evolving data from the resale market confirms to this analyst that the suppressing effects of the policy changes are still very much in play.
- Moreover, the trend for housing starts has slowed, which is, in my opinion, mainly the consequence of the policy changes, rather than the result of economic conditions or demographics.
- As is shown in the next chart, the slowing of housing starts during 2013 was concentrated in the low-rise sector (single-detached, semi-detached, and row housing) as well as in rural areas (where new housing is predominantly low-rise). For apartments, there is a longer pre-production process before the definition of “start”³ is satisfied. Therefore, starts of apartments are still reflecting projects that were initiated before the policy change occurred in the summer of 2012. It can be expected that the trend for apartments will erode this year. By year end, the trend for total starts is likely to be in the range of 160,000 to 170,000 units, or 20% to 25% lower than was seen prior to the policy change. This year there will be a fall in the employment that results from housing construction, within the construction industry and in related industries. The adjustment will continue into 2015.
- The deliberate reduction of housing demand, which is now clearly visible in the new and existing arenas, creates a risk that prices could fall, unnecessarily. Once prices start to fall, the outcome is unpredictable.



³ CMHC defines a housing start as follows: ‘a “start” for the purposes of the Starts and Completions Survey, is defined as the beginning of the construction work on a building, usually when the concrete has been poured for the whole of the footing round the structure, or an equivalent stage where a basement will not be part of the structure.’ Thus, a housing start does not get counted when digging commences, but much later.



- Since the recession of 2008/09, interest rates have been pushed to very low levels, in order to stimulate economic recovery and expansion. Housing is one of the most interest rate sensitive sectors of the economy and therefore it has led the way out of the recession and into expansion. Deliberate attempts to slow housing activity are unwarranted and put the broader economy at risk.
- The chart to the right illustrates that there has been a sharp slowing of job creation in Canada. In the year to February, the rate of job creation is estimated at just 0.5%, which is notably slower than the rate at which the adult population is growing (1.3%). Moreover, there has been negligible job growth during the past half-year.
- An estimated 95,000 jobs have been created during the past year. If employment was growing at the same rate as the adult population (which would be a healthy situation), an additional 133,000 jobs would have been created during the past year.
- The data does not prove that the deliberate slowing of housing activity has caused the slowing of job creation. But, weakening housing activity has no doubt contributed to the under-performance of the Canadian economy.



About Will Dunning and Will Dunning Inc.

Will Dunning has been studying housing markets since 1982. For 16 years he worked at Canada Mortgage and Housing Corporation in various market analysis positions, including six years as the manager of the market analysis department at the Toronto Branch, with responsibility for all aspects of economic, demographic, and market analysis for the Greater Toronto Area. In the fall of 2000 he established Will Dunning Inc., which specializes in the economic and demographic analysis of housing markets.

Will has a Bachelor of Arts degree in Economics from McGill University and a Master of Arts degree in Economics from the University of British Columbia.

www.wdunning.com provides a selection of recent reports and presentations, plus “Housing Market Digest”, a (free) monthly summary of economic and housing market conditions in the Greater Toronto Area.

“Canadian Housing Digest” is a monthly subscription report that reviews housing market drivers and conditions in Canada, the provinces, and selected major urban areas.

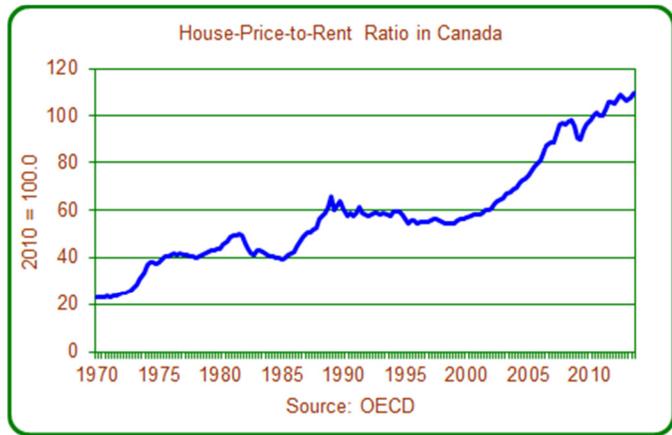
In addition to operating Will Dunning Inc, Will is the Chief Economist of the Canadian Association of Accredited Mortgages Professionals (“CAAMP”).

Clients of Will Dunning Inc. include governments (at all levels in Canada), non-governmental organizations, associations, home builders, financial institutions, and investors.



2.0 “Canada has the Most Over-Valued Housing Prices in the World”

The Organization for Economic Co-operation and Development (“OECD”) has calculated ratios of house prices versus rents for 27 countries (the OECD has also calculated ratios of house prices versus incomes)⁴. The most recent value of the price-to-rent ratio (as of the third quarter of 2013) is 88% higher than the average seen since 1970. Among the countries for which the statistics have been generated by the OECD, Canada has the highest ratio of house prices to rents⁵. From this it has been concluded and widely reported that “Canada has the most over-valued housing market in the world”^{6,7}.



As an analyst, I have to ask two questions:

1. “What data was used to create the estimates, and is that data suited for the purpose?” This is explored below. The conclusion is that the data used for the price-to-rent ratio in Canada is definitely not suited for the purpose and it has resulted in highly inaccurate estimates. Some readers might find the discussion too technical and skip ahead to the subsequent section “A Better Dataset”.
2. “Does a divergence from the past mean that there is over-valuation?” No, that conclusion doesn’t necessarily follow. For example, it could be that houses were under-valued in the past. Another way to express the question is “can changes in the house price to rent ratio be explained as a reasonable outcome, given other conditions that exist?” That question is explored in the section “A Better Dataset”. My answer is that the existing price to rent ratio (and therefore the level of housing prices in Canada) is a reasonable outcome given changes in interest rates. On this basis, house prices in Canada are not over-valued.

⁴ Staff at OECD kindly provided the data to this author. A partial history of the dataset can be found at the OECD website. The following link opens an Excel spreadsheet, which contains several sheets of data:

<http://www.oecd.org/eco/outlook/Other-background-Data.xls>

⁵ The estimated amount of over-valuation depends on which years are included in the calculation of the long-term average. Using data that starts in 1970, the degree of over-valuation in Canada is estimated at 88%. However, not all of the countries’ datasets starts that early – out of 31 countries in the analysis, only 12 have data that far back. All of the 19 remaining countries have their average calculated over shorter periods and in that sense the comparisons are unfair. This issue, however, can be set aside as trivial compared to the bigger issue that is explored in this report – that the data used for Canada is unsuited for the purpose.

⁶ See, for example, these two articles:

<http://business.financialpost.com/2013/11/27/according-to-the-imf-canada-has-the-most-overvalued-housing-market-in-the-world/>

<http://www.theglobeandmail.com/report-on-business/top-business-stories/canadas-housing-market-most-overvalued-in-the-world-deutsche-bank-says/article15878166/#dashboard/follows/>

⁷ According to the price-to-income ratio, Canada has the second highest degree of over-valuation, with the degree of over-valuation estimated at 32% (the estimates start in 1981 - over that same period, the price-to-rent ratio indicates that Canadian house prices are over-valued by 66%).

“Garbage-In/Garbage-Out”

The OECD calculates the Canadian house price to rent ratio using:

- For house prices – the Teranet/National Bank National Composite House Price Index⁸ from 1999Q2. Prior to that date, data are from the Canadian Department of Finance⁹.
- For rents, the rent component of the Consumer Price Index (“CPI”)¹⁰.

The Teranet/National Bank index is calculated using data for “matched pairs” – properties that have sold more than one time. Very elaborate calculations are used to convert the data on individual transactions into a price index. This method eliminates distortions that can be caused by changes in what properties are sold or where they are sold. One possible source of significant distortion remains, which is that the quality of properties may have changed (for example, improving as the result of renovations or because of changes in the surroundings, or being reduced due to inadequate maintenance or some other cause). The methodology makes further complicated calculations to eliminate “out-riders” – properties for which the changes in values are far out of line with the bulk of the dataset. This will eliminate some portion of the distortions: I am not expressing any opinion on whether the distortions resulting from quality change are fully or partially eliminated, but I am pointing out that there is some potential that the estimates do not truly represent price changes for “constant quality” housing. The result might be that renovations of existing housing are causing the Teranet/National Bank index to over-estimate the rate of house price growth in Canada.

There are two further factors that are likely to result in over-estimation of house price growth.

- For the Teranet/National Bank data (covering 1999 to the present): The survey covers 11 major centres¹¹, not the entire country. These centres in general experience above rates of population growth and are therefore likely to have house price growth that is more rapid than in the country as a whole. Data from the Canadian Real Estate Association (“CREA”) supports the suggestion that these areas have above-average growth of house prices: for nine of the 11 centres (excluding Montreal and Quebec City, for which data is not published by CREA) during 2003 to 2013, the average resale price grew by 6.6% per year. For the rest of Canada, the average growth rate was 5.9% per year. This implies that for all of Canada, the average rate of house price increase is about one-quarter of a percentage point lower than is estimated by the Teranet/National Bank index. While this is a small discrepancy on an annual basis, over a long period of time it will result in over-estimation of house price increases for all of Canada.
- For the years prior to 1999 (during which it appears that the CREA average national resale price is used), the rates of price growth have likely been distorted upwards by changes in the quality of the housing inventory.

⁸ Information on the Teranet/National Bank index can be obtained here: <http://www.housepriceindex.ca/>.

⁹ The author’s understanding is that the Department of Finance data relies on CREA data on average prices of resale properties.

¹⁰ Some information on the methodology is provided here: www.statcan.gc.ca/imdb-bmdi/document/2301_D41_T9_V1-eng.pdf data

¹¹ The 11 centres are: Vancouver, Victoria, Calgary, Edmonton, Winnipeg, Hamilton, Toronto, Ottawa, Montreal, Quebec City, and Halifax.

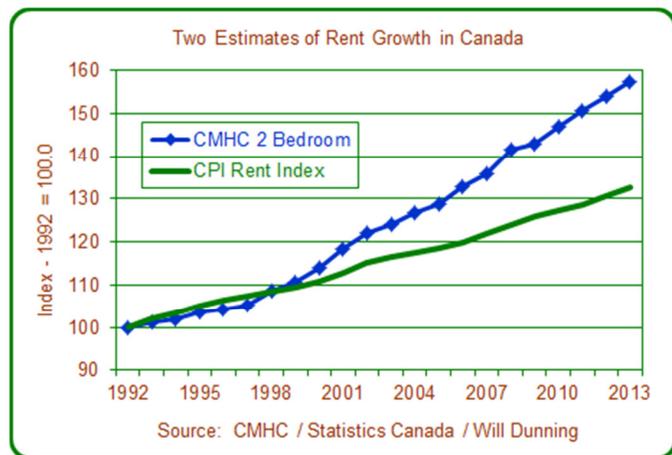
Looking at the rent data used in the calculation (the rent component of Statistics Canada's Consumer Price Index), rates of rent growth are badly under-estimated.

Analysts have been aware of technical flaws in this dataset for many years.

- In July 2009, Statistics Canada made a major methodological adjustment that addressed one of the technical issues (for tenants who moved it had been essentially assumed that rents were unchanged; each year about one-quarter of tenants move; moreover, rent increases often occur when tenants move; therefore this factor alone caused the rate of rent increase to be under-estimated by more than one-quarter. The adjustment was made on a going-forward basis but does not correct prior data.
- A further issue is that adjustments are made to reflect presumed changes in quality. The author is now unable to find a sufficiently complete description of the methodology in publicly-available documents. The author recalls that the issue is as follows: when repairs or improvements are made, this is presumed to result in a change in quality. In consequence, rents are adjusted downwards, and so are the estimated rates of rent increase. However, the reality is that most repairs are made to restore quality more-or-less to prior levels, rather than to improve quality¹².

Data from rental surveys conducted by Canada Mortgage and Housing Corporation ("CMHC") hint at the degree to which rent increases have been under-estimated in the Statistics Canada data that has been used by the OECD. It is clear in this data that the methodology change made in 2009 did not fully cure the data quality issues, and that the CPI rent index remains highly inaccurate.

The chart to the right presents CMHC data on average rents for apartments (units with two bedrooms) in Canada. To permit comparison to the rent component of the Consumer Price Index, the author has converted both datasets to indexes that equal 100 in 1992. Over the entire period covered, the CMHC data shows a total increase of 57.4% (2.2% per year); the CPI data shows a total rise of 32.7% (1.4% per year). Even for the period subsequent to the 2009 methodology revision, the CPI data shows a significantly slower rate of rent growth (1.3% per year) compared to the CMHC data (2.4% per year).



It can be argued that the CMHC data is not "constant quality" (because of additions to the inventory through new construction as well as due to renovations) and therefore the CMHC data might be distorted compared to the CPI (which attempts to measure rent change for constant quality accommodation). However, it should be noted that there are few additions to the inventory that is covered by the CMHC rental market survey – during the time period covered in the chart most growth of rental inventory has been in rented condominiums and other housing

¹² It may be argued (correctly) that a repair results in improved quality compared to the prior month. If that is the justification for the adjustments then there should be another adjustment: every month that repairs are not made, quality is reduced ever-so-slightly. In consequence, the rent and the rent increase should also be adjusted upward ever-so-slightly every month that repairs are not made.



forms that are not included in the survey. Therefore, the degree of distortion from new supply is likely to be very small.

Since 2006, CMHC has estimated rent increases using a “constant sample” approach – this includes structures that are in the database for both years of each calculation. This comes closer to being a constant quality calculation (although there may still be some distortion due to renovations). The data for Canada is summarized in the table below and contrasted with the CPI estimates of rent increases. For the time period covered by this data, the estimates of rent increases from the CPI (averaging 1.4% per year) are only about one-half as large as is estimated by the CMHC data (2.7% per year).

This data suggests that the degree of error may have been reduced following the methodology change that was made in July 2009, but that there is still a substantial discrepancy between the two sets of estimates (since 2009 the average rates of increase have been 1.4% per year for the CPI versus 2.3% for the CMHC data).

<i>Year</i>	<i>CMHC</i>	<i>CPI Rent Index</i>	<i>Differential</i>
2006	3.2%	1.2%	2.0%
2007	3.6%	1.7%	1.9%
2008	3.0%	1.7%	1.3%
2009	2.4%	1.5%	0.9%
2010	2.3%	1.2%	1.1%
2011	2.2%	1.1%	1.1%
2012	2.2%	1.5%	0.7%
2013	2.5%	1.6%	0.9%
Total Increase	23.5%	12.0%	11.5%
Annual average	2.7%	1.4%	1.3%
Sources: CMHC, Statistics Canada, calculations by Will Dunning Inc.			
Note: (1) Constant Sample Rent Increases (2 Bedroom Apartments), in Centres with Populations of 10,000 and over			

To conclude this discussion:

- The data that is used by the OECD in calculating the house price to rent ratio for Canada over-estimates the rates at which house prices have increased and under-estimates the rates of rent increase in Canada.
- In consequence of the flawed data, the calculation of the house price to rent ratio that has been made by the OECD has resulted in significant over-estimation.

3.0 A Better Dataset

In this report, an alternative dataset is used: the Royal LePage House Price Survey. For the past 40 years this report has provided quarterly estimates of values for several different types of dwellings, for several hundred market areas across Canada. Since 1982, the data also includes estimates of rents and realty taxes. That data is used here to calculate price-to-rent ratios¹³.

The price-to-rent ratio in Canada is indeed at an historic high. As of the fourth quarter of 2013, the ratio was 18.2, which is 38% above the average seen since the second quarter of 1982. By contrast, the OECD data shows a much higher figure, with the current ratio 64% above the average for the same period. The ratio climbed very rapidly during 2003 to 2009 but has been relatively stable since the start of 2010.

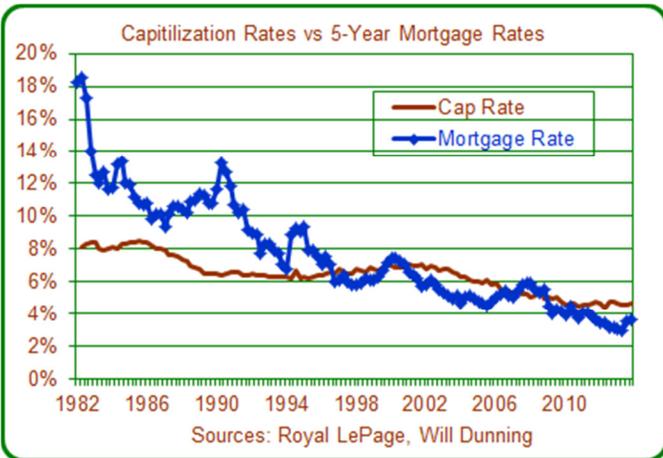


The Royal LePage data can be further explored to estimate “capitalization rates” (or “cap rates”), which are used in analysis of real estate investments: this measure compares “net rents” (after deduction of operating expenses that are paid by the property owner) with the value or price of the property.

The rent data is manipulated to estimate “net rents”. In this case:

- For low-rise housing forms, tenants will normally pay for utilities; landlords will pay for realty taxes. Therefore, for the five forms of low-rise housing included in the dataset, “net rents” receive by the landlord are calculated by subtracting taxes from rents.
- For condominium apartments, the landlord will also be responsible for condominium fees. As an approximation, the cost of condominium fees is assumed to be twice as much as the realty taxes. Combining this proxy estimate for condominium fees plus realty taxes, the deduction from rents is three times the cost of realty tax cost.
- Then, the ratio of “net rent” to price provides estimates of capitalization rates.

The chart to the right contrasts the cap rates (the averages for Canada) with interest rates for five year fixed rate mortgages (after typical discounts, as estimated by the author). During the first half of the period covered there was no clear relationship between the cap rates and mortgage interest rates. However, during the second half there does appear to be a relationship: it appears that



¹³ Given that there are seven dwelling types included in the data, for several hundred market areas, with quarterly data for more than 30 years, this is a large dataset: the estimates are based on 89,000 data points.

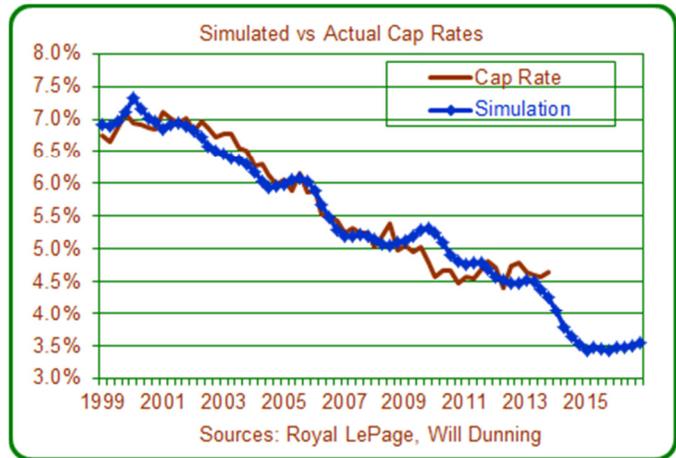
changes in the mortgage interest rate are followed by gradual adjustments of the cap rates. With interest rates having trended downwards, cap rates have also trended downwards (this has been the case most of the time during the past 15 years). With mortgage interest rates having fallen to record lows during 2011 until the spring of 2013, there has been a sizable gap between the cap rates and mortgage interest rates. Even with the rise in interest rates during the spring and summer of 2013, the national average cap rate has remained well above recent mortgage interest rates: during the fourth quarter of 2013, the average cap rate of 4.6% was a full percentage point higher than the mortgage interest rate (3.6%).

Taking data from the last 15 years (the start of 1999 to the end of 2013), a statistical analysis suggests that the gradual adjustment of cap rates indeed occurs over a quite prolonged period – in the range of six to ten years. This prolonged process means that while interest rates can change quite quickly, cap rates adjust much less rapidly. A consequence is that when interest rates are tending to rise, the cap rate can be lower than the interest rate (such as during 2000 and 2007). Conversely, when interest rates are tending to fall, cap rates tend to be higher than mortgage interest rates (this has been the case most of the time during the past 15 years).

The current gap between the cap rate and mortgage interest rate leads to several conclusions:

- Cap rates do not yet reflect the current level of interest rates.
- On this basis, rather than being over-valued (which is the widespread consensus), house prices in Canada are under-valued (relative to interest rates and rents) by as much as 20%.

- The chart to the right compares cap rates to what they “should be” if the adjustment to interest rates is spread out over six years. The results of the statistical analysis are also used to look forward. Assuming that mortgage interest rates are going to rise (by one-tenth of a point each quarter, reaching 4.6% by the end of 2016), the cap rate should fall during the next two years. This further drop in the simulated cap rates would occur because the elevated interest rates that were seen during 2006 until late 2008 would gradually be removed from the calculations: increasingly, the calculations will reflect the drops in interest rates that occurred during 2009 to 2013.



- The simulations imply that during the next two years house prices in Canada could actually rise by as much as 20% (if rents are unchanged) to 25% (if rents increase by about 2% per year). If those increases happened, rather than being over-valued, house prices would be “fairly-valued” (being consistent with mortgage interest rates and rents).
- I am not suggesting that house prices should rise or will rise by those amounts. If they did rise, then farther down the road house prices would need to fall, to reflect changed interest rates.
- What I can conclude is that at current interest rates, and even allowing for rises in rates, this analysis indicates that house prices are not over-valued.



- In fact, the current level of house prices in Canada (again, when rents are taken into the calculations) mean that there is a considerable amount of room to accommodate some combination of rising house prices and/or increased mortgage interest rates. We might actually conclude that at present house prices are under-valued relative to interest rates and rents.
- The final point to make in this part of the discussion is that actual changes in house prices will depend on other important factors. These factors include the rate at which jobs are created (which will be a critical factor in establishing future demand for housing), on the availability of mortgage credit, and on the terms under which mortgage lending occurs.



4.0 Housing Affordability Indicators

While housing affordability does not enter discussions about a housing bubble, it should be seen as a related issue.

The point being made here is that housing affordability indexes in Canada rely on inappropriate data and generate incorrect impressions about this important factor in the housing market.

Housing affordability indexes generally compare monthly mortgage costs to incomes. There are several factors that must be incorporated in a housing affordability index:

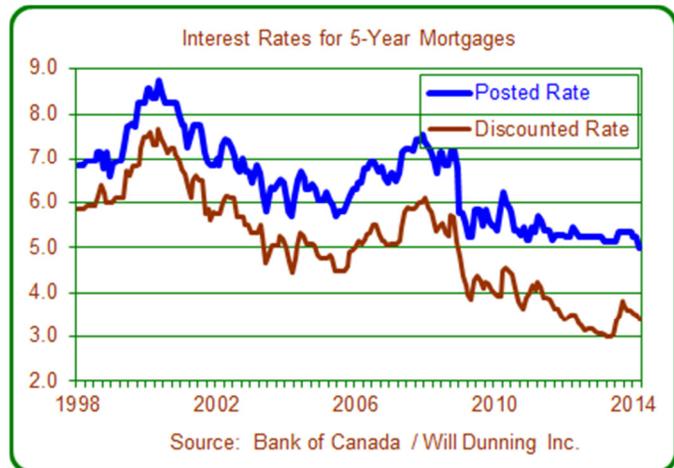
- What type of property is used - is it based on the average resale price, the typical price for a certain type of home, etc.?
- What is assumed about down-payment?
- Are taxes and/or utility costs included in the calculation?
- What is the geography? Eg all of Canada or smaller geographic areas.
- What interest rate is used?

For the first four topics different choices are made, which causes results to vary.

But, on the fifth fact - interest rates – there is uniformity: the indexes use the so-called “posted rate” for five-year fixed rate mortgages, which is reported by the Bank of Canada, and is based on information provided by the major banks.

There are several different interest rates within the mortgage market and the designers have made a highly interesting choice: they have chosen to use an interest rate that virtually nobody actually pays!

Posted rates exist for administrative purposes only: lenders must use them in the calculation of debt service costs for some mortgages that receive federally-guaranteed mortgage insurance. In mortgage contracts, interest rates and options for future interest rates are sometimes expressed as the posted rate minus a discount. In addition, when lenders calculate the penalties that borrowers pay for repaying early, posted rates (minus a pre-determined discount) are often in input into the calculations.



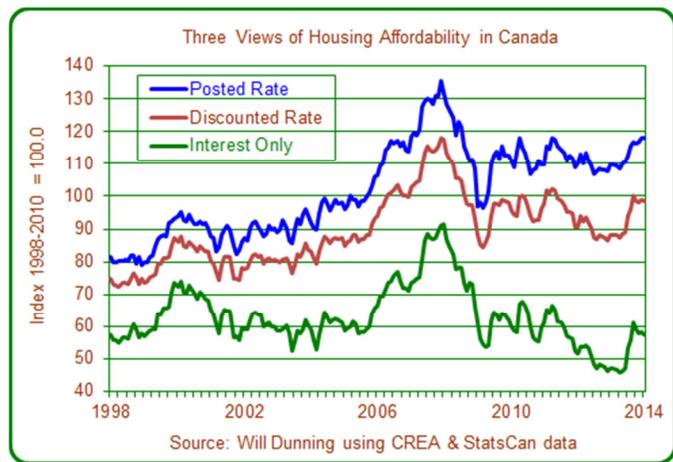
Moreover, there are different mortgage maturities: not all mortgages have five year terms. For mortgages with shorter terms, interest rates are usually lower than the five year rate.

Further, not all mortgages have fixed rates: fixed rate mortgages account for about two-thirds of new mortgages. The remainder have variable rates (which are based on the lenders' prime rates, and can change) or the payments are based on a combination of a fixed rate and a variable rate. At present, variable rate mortgages have interest rates (typically 2.4% to 2.6%)

considerably lower than the market rates for fixed rate mortgages (in the area of 3.4% as to 3.5%). Both of these interest rates are far below the posted rate (which was 5.24% during February and as of early March is reported as 4.99%).

Actual mortgage interest rates are negotiated between lenders and borrowers (or the mortgage brokers that represent them). The author has been tracking “discounted mortgage rates” for a long time (intensively since the late 1990s and more casually before that). The chart to the right contrasts the posted rates reported by the Bank of Canada with the author’s opinions of rates after typical discounts. I see two relevant implications in this data. Firstly, the affordability of home ownership in Canada is surely more favourable than is indicated by the indexes that use posted rates. Secondly, the gap between posted and discounted rates has expanded over time: during the first half of the period shown, the gap was in the range of 1.0 to 1.3 percentage points; during the past year, the gap has averaged 1.85 points. The consequence of the expanding gap is that the affordability indexes have misrepresented actual affordability conditions by increasing amounts.

This chart illustrates the impact of using posted rates rather than the discounted rates that are actually available in the market. (The chart includes a third line, which is discussed in the next paragraph). In this chart, a high value for the index indicates that mortgage costs are high relative to income. Thus, using posted rates, it appears that affordability is now 20% worse compared to a calculation that uses the discounted rates that can easily be negotiated in the marketplace (during the first half of the period, the discrepancy averaged 11%, confirming that using posted rates is resulting in increased distortion). The chart shows that using posted rates, affordability is now 18% worse than it was during 1998 to 2010; using discounted rates, the current level of affordability is 11% worse than that long-term average. Prior to the rise in interest rates that occurred last year, the level of affordability (based on discounted rates) was identical to the average seen during 1998 to 2010.



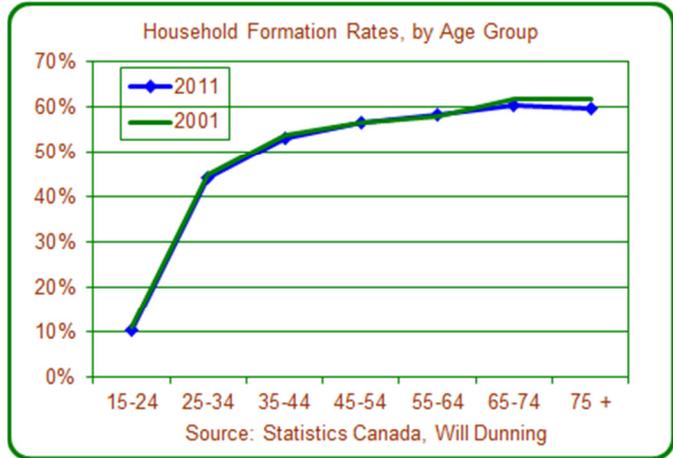
These calculations are based on mortgage payments, which include a blend of interest and repayment of mortgage principal. A further nuance is that the “net” financial impact on a borrower is the interest cost only. While the repayment of principal affects the cash flow of the borrower, it produces an offsetting financial benefit. At current interest rates (3.5% during the first quarter of 2014), 42% of the first payment is for principal. At the average discounted rate seen during 1998 to 2010 (5.62%), the figure is 28%. The third line in the chart shows that on a “net” basis (for a borrower who will consider this factor) the current level of affordability is as good as or better than it was during the prior 15 years. What’s more, before the rise in interest rates last year, “net” affordability was, by far, the best it ever was during the period covered.



5.0 Housing Production versus Demographics

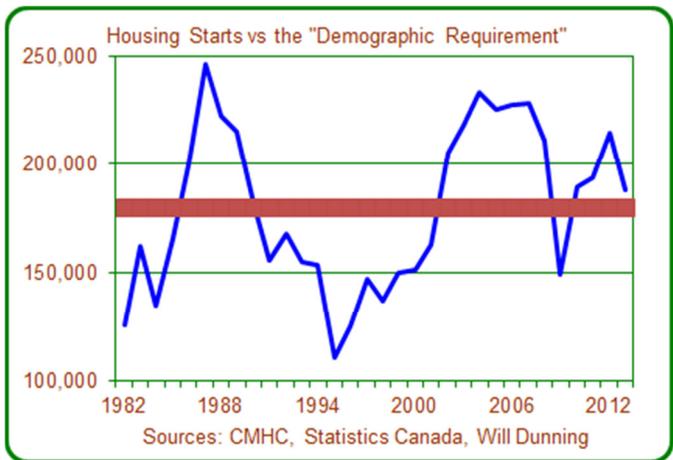
We occasionally hear comments to the effect that housing construction has exceeded demographic requirements and therefore a slowdown is required to reduce the excess of supply.

Demographic requirements are estimated by applying household formation rates (the percentages of adults, by age group who are the heads of households) onto projections of the future population (also by age group). The starting position in the analysis is often to assume that the household formation rates will be stable over the projection period. The chart to the right shows that this would have been a reasonably good assumption for the 2001 to 2011 period – formation rates fell fractionally for age groups under 55 years, and by larger amounts for the older age groups. However, this assumption has been less reliable over other periods, such as the 1990s, when household formation rates fell.



The idea is that over long periods of time, new housing construction should more or less match the demographic projections for that period.

This author started analyzing housing markets in January 1982. Since then, estimated requirements for current periods have always been close to 180,000 units per year¹⁴. Very interestingly, over the period shown, housing starts have been almost identical to that, at an average of about 179,900 units per year. I hope the reader will appreciate that this equality is an accident of history. Averages calculated over different periods could produce very different results. For example, if I had calculated the average when I started my company in 2000, it would have been about 164,000.



Experience shows that annual housing starts almost never match the projected amounts (as is clearly shown in the chart). The deviations between projected and actual levels are often quite large. Moreover, large deviations can be sustained for quite long periods of time.

¹⁴ This stability is an interesting historical outcome - there is no reason why housing requirements should have been stable over this period of more than 30 years.



The reality is that household formation rates are usually not stable over time. Decisions to form households are affected by multiple factors, including the state of the economy, the cost of housing, and personal circumstances.

A key factor is the state of the economy. The chart to the right shows that housing starts are highly related to the percentage of adults who are employed (the “employment rate”, which should not be confused with the “unemployment rate”). When the employment rate rises (or falls) housing starts also rise (or fall).

In other words, when a higher percentage of adults have jobs, a higher percentage of them form households.

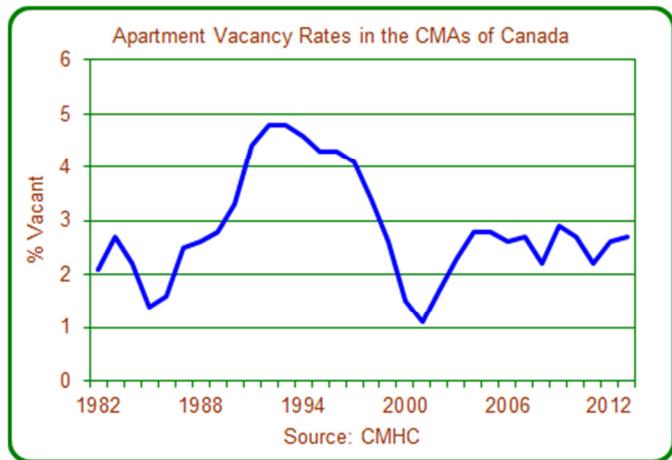


The reason that housing starts were so strong during 2002 to 2007 was that the employment rate in Canada was rising to exceptionally high levels. Canadians were not willfully “over-consuming” housing (and the housing construction industry was not willfully “over-building”). Canadians were consuming more housing because their economic circumstances gave them the opportunity to consume more housing (and a lot of other goods and services).

More recently, the employment rate retreated during the recession of 2008/09 and has not improved materially since then. But, it remains at a relatively high level in historic terms, which has permitted housing starts to be relatively high in historic terms.

If there had been “excessive” production of housing in Canada, meaning that more housing was produced than was really needed, then we would be seeing rising vacancies in the housing market.

We don’t have data on total housing vacancies in Canada, but we do have data on vacancies for rented apartments. This data shows that a lot of the time, the vacancy rate has been in the range of 2% to 3%, including during recent times. Since 1982, there have been three exceptional periods:



- During 1985 and 1986, vacancy rates were low, as a rapid rise in the employment rate resulted in a rapid strengthening of housing demand, and it took time for production to catch up with demand.
- Vacancies became elevated during the early 1990s, remained high until mid-decade, and then began a gradual fall. During the first half of the 1990s, the employment rate was quite low. In other words, a weak economy resulted in a sharp reduction of household formation and housing demand, to the extent that the total amount of housing that was available was far in excess of the total amount that was needed.



- Late in the 1990s and early in the following decade, the national vacancy rate was quite low. This coincided with a rapid upturn of the employment rate. Household formation rates and housing demand were increasing very rapidly, and it took some time for housing production to catch up.

We have now seen relative stability of the national vacancy for almost a decade. This indicates that housing supply and housing demand have been in balance.

The message I take from these events of the past three decades is that most of the time the Canadian housing market produces quantities of housing that are appropriate to the economic circumstances that exist and the legitimate housing demand of the Canadian population. This should not be a surprising conclusion, but in these times it is necessary to make this statement, since so many commentators believe that there has been over-production of housing in Canada.

A further conclusion is that the housing market is best able to match demand with supply in times when the economy is relatively stable. In fact, during the past four years, the economic environment in Canada has been unusually stable (at the national level, although there are local variations) as witnessed by the flat employment-to-population ratio.

In this context, the best guarantor of a healthy future for the housing market is to sustain a healthy economic environment.



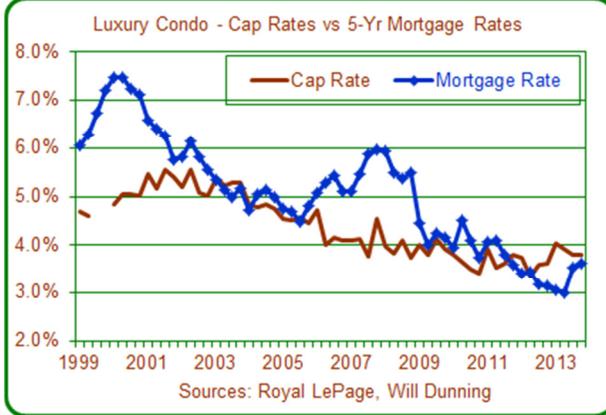
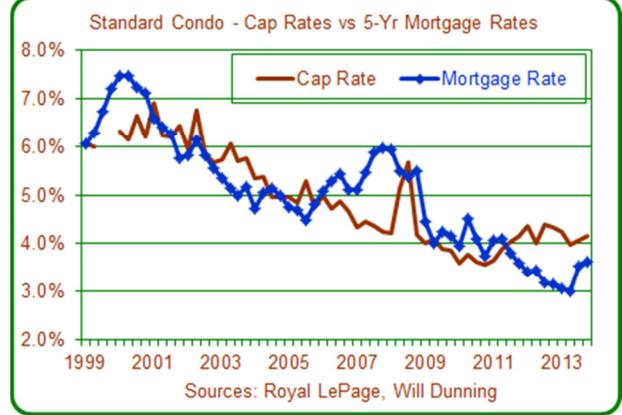
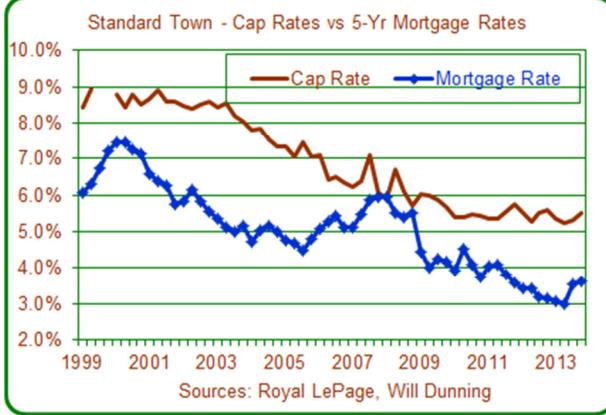
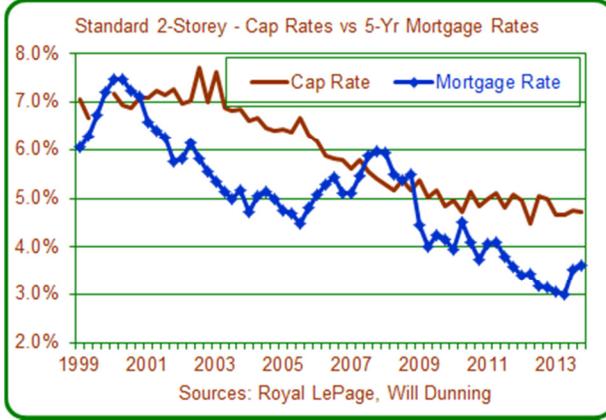
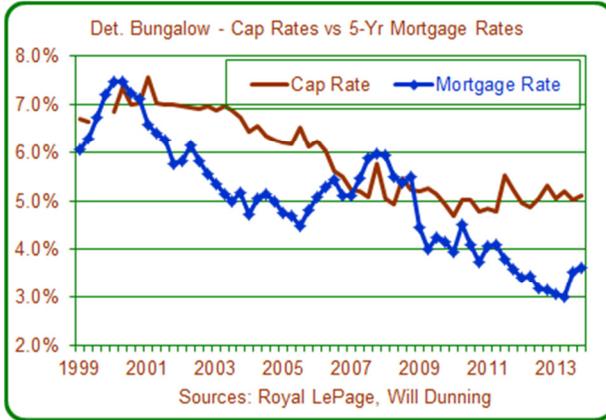
Appendix A - Capitalization Rates by Type of Dwelling

Royal LePage has defined seven types of dwellings. The charts on the next page illustrate the cap rate estimates for each type.

For each of five low-rise housing forms (detached bungalows, standard 2-storey, standard town house, executive detached, and senior executive), cap rates have generally followed the direction of mortgage interest rates (downwards), but the cap rates have been substantially higher than interest rates. In each of these cases, the rise in interest rates that occurred during 2006 to 2008 did not result in corresponding increases in the cap rates: as was noted in the body of the report, cap rates adjust gradually, over quite long periods of time, and these temporarily higher interest rates were not in place for long enough to cause an alteration of the relationships of rents and prices. More recently, the cap rates did not follow the reductions of mortgage interest rates that occurred during 2012 to mid-2013. At present, there are gaps of at least a percentage point between these capitalization rates and mortgage interest rates.

For the two types of condominium apartments (standard and luxury) cap rates have been quite close to mortgage interest rates for much of the time. As for the low-rise forms, the cap rates did not adjust to the temporarily higher mortgage interest rates that were seen during 2006 to 2008; they also did not follow the reductions seen during 2012 until mid-2013. Therefore, late in the period, gaps did emerge between cap rates and mortgage interest rates. With the rise in interest rates that occurred during the spring and summer of 2013, there is now a gap of about one-half of a percentage point for standard condominiums and a negligible gap for luxury condominium apartments.

With rents continuing to rise (at 2% per year or more) and highly likely to continue rising at this rate or more, future cap rates would be unchanged if property values rise at the same pace. Thus, the growth of rents will also provide additional room to accommodate rises of interest rates.



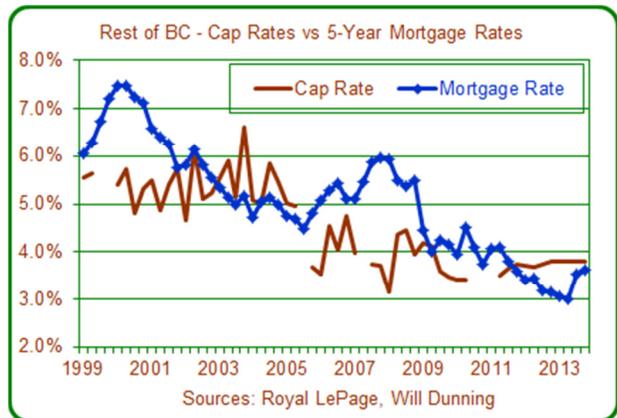
Appendix B - Capitalization Rates by Area

The Royal LePage data has three levels of geography (provinces, “areas” within provinces, and “cities” within “areas”). The charts below show the cap rate estimates for some of the “areas”: not all of the areas have enough of the required data to support the estimates (as the analysts preparing the Royal LePage reports do not always have estimates of rents and/or taxes).

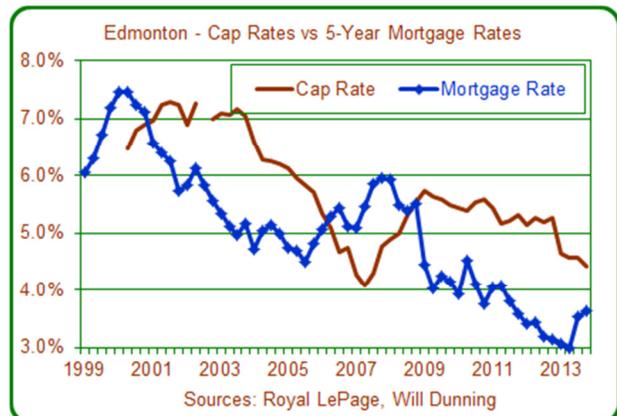
Vancouver: until recently, the estimated cap rates were persistently lower than the contemporaneous levels of mortgage rates. This suggests that valuations depended on purchasers’ expectations that future price growth would provide compensation for a low “yield”. In other words, for most of the period, Vancouver appears to have satisfied the definition of Professor Stiglitz that was cited on page 1: the price is high today because investors believe that the selling price will be high tomorrow. More recently, however, an adjustment of prices and rents during 2012 and 2013 has brought cap rates into line with mortgage interest rates, and therefore the bubble appears to have been deflated as of 2013. At present, there is no room between Vancouver’s cap rate and mortgage interest rates, meaning that any further rise in interest rates should be accompanied by offsetting adjustments of prices and rents. Correspondingly, any further rise in prices should be accompanied by a further rise in rents.



Rest of British Columbia: the remainder of the province also showed characteristics of a bubble, although for a shorter period of time (about 2006 to 2011) and to a lesser extent than in Vancouver. At present the cap rates are slightly higher than the mortgage interest rate, providing a small amount of space for adjustment of the relationship between prices, rents, and interest rates.



Edmonton: for most of the period, cap rates in Edmonton were comfortably above the levels of mortgage interest rates. However, house price inflation accelerated during 2005 and by mid-2006 the data shows the characteristics of a bubble. That bubble began to deflate during 2007. With a realignment of the relationship between prices and rents, there is now a large gap between cap rates and interest rates, showing a very healthy situation during the past four years. There is substantial room to accommodate higher mortgage interest rates.





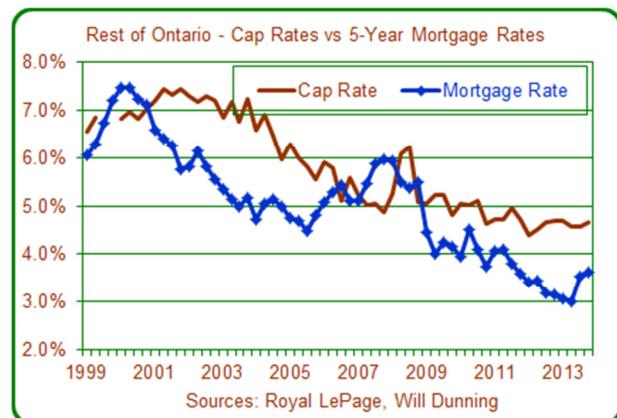
Rest of Alberta (excluding Edmonton and Calgary – insufficient data is available for Calgary): the evolution has been very similar to that described for Edmonton. At this point, cap rates for the rest of Alberta could easily accommodate a substantial rise in prices.

Saskatchewan: insufficient data is available for analysis.

Winnipeg: data is not available for the past five years. During the prior years, there was a large gap between cap rates and mortgage interest rates.

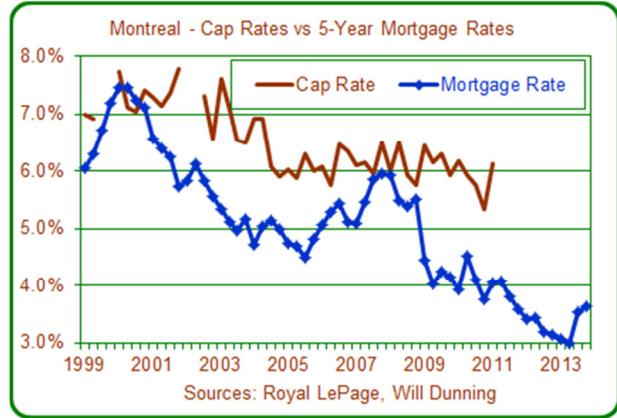
Toronto: cap rates declined steadily in response to falling interest rates. Cap rates were not impacted by the increased interest rates seen during 2006 to 2008. A dip in cap rates during late 2007 and early 2008 shows a brief period of bullishness in the housing market. Since then, however, cap rates have exceeded mortgage interest rates. At the end of the data set in the fourth quarter of 2013, the gap was 0.40 percentage points, providing some space for adjustments of the relationship between prices, rents and interest rates.

Rest of Ontario: cap rates have been healthily higher than mortgage interest rates.

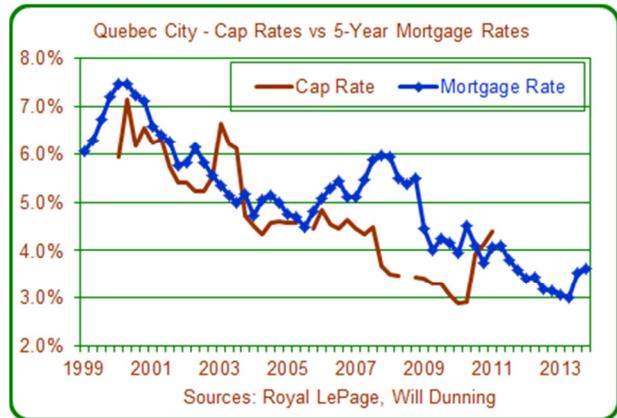




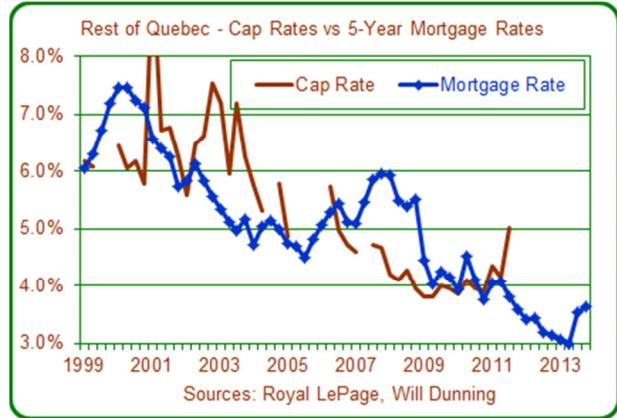
Montreal: data is not available for the past three years. The available data shows large gaps between cap rates and mortgage interest rates. House price growth has been moderate during the past three years, indicating that cap rates will not have changed very much from the high levels seen at the end of the dataset.



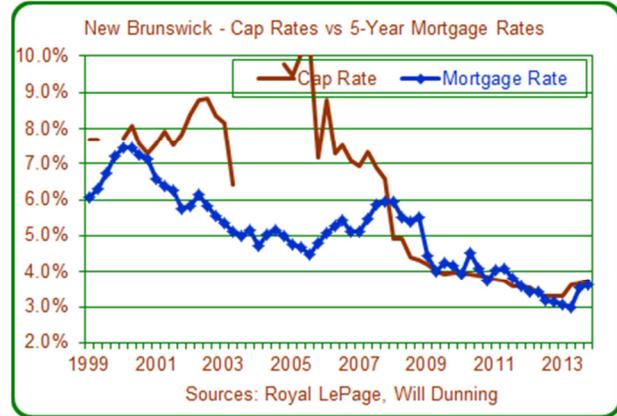
Quebec City: cap rates have been lower than mortgage interest rates for much of the period, satisfying the Stiglitz definition. During the last year of available data (2010), cap rates increased. Unfortunately, this data does not enlighten us on the current situation. Data available from other sources suggests that in the capital area over the past three years house price growth has slightly exceeded rent increases, suggesting that the average cap rate might now be in the range of 4.0%, or a half point higher than the current mortgage rate of 3.5%.



Rest of Quebec: data is spottily available. It appears that movements in cap rates have been reasonably aligned with movements of interest rates.



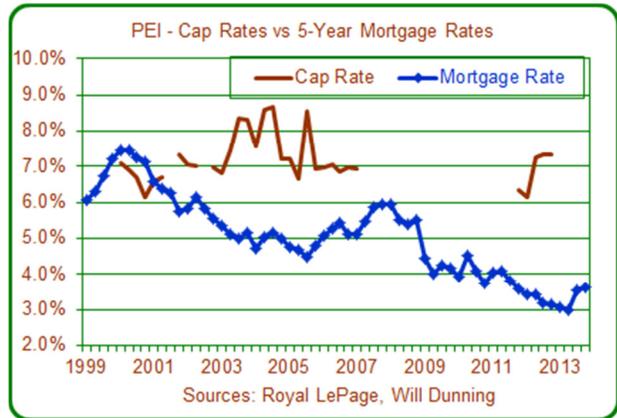
New Brunswick: for the past six years cap rates have been closely aligned with mortgage interest rates.





Nova Scotia: insufficient data is available for analysis.

Prince Edward Island: a scanty dataset shows substantial space between cap rates and mortgage interest rates.



Newfoundland: the estimates show substantial space between cap rates and mortgage interest rates.

