

# ***7 Short Essays***

***On Housing Market Topics***

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## 7 Conclusions

Here are my recent thoughts on seven issues:

- CMHC has estimated that as of 2021 the housing supply in Canada was 3.5 million dwelling units less than it needs to be (this is in addition to the housing that will be required by population growth). That estimate fails a reality check: if we had 3.5 million more dwellings, there would be an extremely high and wasteful vacancy rate in Canada. I conclude that as of 2021 the deficit was about 600,000 units. Subsequent population growth has added to the deficit, which might now be about 1.25-1.3 million. This is still a large number, with expensive implications. But, it can lead to goals that are achievable. Annual housing production targets should have two parts:
  - The amount related to growth of the population.
  - Plus, at least 100,000 units per year, to address accumulated shortages.
- The only short-term solutions to the housing crisis are related to population growth.
- In an important area (“Investment in Residential Construction”) the data from Statistics Canada is unbelievable. This is distorting our understanding of what’s happening in the economy, and not just for construction. The errors are so large that they are creating a distorted narrative about total output (and productivity) in Canada.
- The *Blueprint for More and Better Housing* (by the *Task Force for Housing & Climate*) has started an important discussion, that changes in tax rules related to depreciation could generate a substantial increase in new rental housing construction. The key issue isn’t the depreciation rate to be used. The bigger opportunity is making it possible for investors to use depreciation to reduce taxes on income from other sources. The current tax rules were strongly influenced by concerns about fairness. The federal Department of Finance should give priority to examining the complicated issues.
- Mortgage renewals at increased interest rates are causing discomfort to a lot of Canadian home owners. But, in a macro-economic view, the impacts are tiny (so far). During this year, tiny negative effects will continue to accrue. But, starting about the middle of next year, the rate of accrual could become considerably more rapid, and increasingly painful. (Depending, of course, on what happens to interest rates.)
- As an investor in two Canadian Real Estate Investment Trusts, I am concerned that as they renew debt-financing, they are locking-in current high interest rates for long periods.
- The Bank of Canada has a paradoxical (“Catch-22”) interpretation of its mandate, which will prevent the “total inflation rate” from returning to 2% for a long time (possibly 2028).

### About the Author

I have been analyzing Canadian housing markets since 1982. Until 1997, I was employed at Canada Mortgage and Housing Corporation, in various positions in economic and housing market analysis. For three years, I was second-in-command of a boutique consultancy. Since 2000, I have operated as a one-person consulting company. My clients have included a wide range of interests, including all levels of government within Canada, agencies, non-profit organizations, industry associations, financial institutions, home builders, investors, and asset managers. My research has been cited in the news media and in economic research, including some Bank of Canada studies. No one paid me to write this report.



## ***How Large is the Housing Supply Deficit?***

There have been several reports that calculate the housing supply deficit in Canada. At this time, the most influential is a report issued by CMHC on June 23, 2022. That report concludes that to restore housing affordability in Canada, the housing inventory needs to expand to more than 22 million dwelling units by 2030 (versus about 16.3 million in 2021).

About 5.8 million dwellings must be created during the nine years up to 2030, or almost 650,000 per year. This is about 3.5 million larger than might be expected. During 2017 to 2021, housing starts in Canada averaged about 226,000 units per year. Prior to that, annual production figures were even lower. Over the period shown in this chart, the average was about 209,000 per year.

You can access the CMHC report via the Download button on this page:



<https://www.cmhc-schl.gc.ca/en/professionals/housing-markets-data-and-research/housing-research/research-reports/accelerate-supply/housing-shortages-canada-solving-affordability-crisis>

My comments here are an update of what I wrote in July 2022, in the Canada edition of my Housing Market Digest report<sup>1</sup>. As well, I am creating my own alternative estimates of what the deficit might have been in 2021, and what it might be today.

The CMHC estimate has certainly provoked discussion about what actions are needed. It remains to be seen whether there is any possible program of action that could result in a tripling of housing starts in Canada, and if there is any hope of achieving the target.

I have concluded that CMHC has over-estimated the shortage by a very large amount: we still have a very big challenge that is going to require a vast effort. I am hoping that we can reset the targets, to numbers that are less overwhelming.

In looking at the CMHC report, I ask myself – is the methodology sound and are the assumptions reasonable? The concept is original and creative and I like it: how much housing supply is required as of 2030 so that the level of affordability will be the same as in 2003/04 (the period of the best affordability of the past three decades.) That said, I have not attempted a detailed assessment of the CMHC analysis.

I see two points for discussion. Firstly, I suspect that the CMHC methodology didn't completely incorporate the effects of interest rates. Secondly, and I think this is more revealing than any discussion of the methodology, a reality check tells me that CMHC's bottom-line estimate is too high, by a very large amount.

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<sup>1</sup> The HMD reports are available here: <https://www.wdunning.com/housing-market-digest>



### ***The Methodological Issues***

CMHC assumes that during the analysis period “the 5-year fixed discount mortgage rate will be just over 5% in 2030.” At this time, that assumption does not seem impossible. But, because it is so much higher than has been experienced during the past decade, the methodology needs to take account of the various impacts that would result from those increased interest rates.

- The prolonged increase in interest rates would weigh on the economy, which can be expected to impair employment (and likely wages as well). This economic impact would reduce household formation rates, which would reduce the requirement for new housing construction. (In the household formation data there are relationships, albeit weak, between local economic conditions and housing costs, versus local formation rates.)
- High interest rates will affect housing prices in two ways, and it’s not clear to me that CMHC has adequately considered these.
  - A first-round effect is that the reduction in affordability will lower the prices that people can afford to pay. Reduced sales will lower prices. We are seeing some evidence that this is already happening. Several different measures of prices are available, which give slightly different pictures of the trends.
  - This chart looks at three different measures (calculated from data from the Canadian Real Estate Association on average prices, and on its House Price Index, as well as the Teranet/National Bank index<sup>2</sup>). All three of these measures indicate that prices are lower than in the spring of 2022 (presumably when CMHC was finalizing its research). Within the CMHC methodology this would lower the estimate of the housing shortfall. This effect may result in further price reductions for as long as interest rates remain at the level that CMHC is assuming, therefore further reducing the estimates of the shortfall.
  - The second-round impact on prices would come from economic impacts of the higher rates, on the level of employment and incomes. These would reduce the number of home buyers (plus further reduce the prices that they can afford to pay), and therefore cause further reductions in prices.
  - At this point, interest rates have not yet materially affected the employment situation or wages – it remains to be seen whether the impacts on employment and incomes, and then on housing prices, will be large or small. Therefore, it would be challenging to calculate the impact on the housing requirements. Since the economic impacts are not yet in evidence, the second-round effects on prices have probably not started yet.



<sup>2</sup> The Teranet data lags a few months behind the CREA data, because it is based on closings (entries in the land registries) whereas the CREA data is based on when the offers were accepted.



- I think it's possible there will be a prolonged period of erosion of house prices, but I don't have an opinion on what will be the rate of erosion.

Moreover, the extremely large drop in housing values in the CMHC analysis can be expected to have devastating, prolonged consequences for the Canadian economy, which will further contribute to price reductions, and therefore reduce the requirement for additional housing supplies.

To conclude: it is possible that the assumption of an interest rate “just over 5%” will in itself cause housing prices to be lower than they would otherwise be (although the magnitude is uncertain). This should lower the quantity of additional supply that is required within the CMHC methodology.

Alternatively, if future interest rates are materially lower than the >5% assumption, then within CMHC's methodology, the calculated amount of housing required should be much lower.

The methodological issues are complicated and there is a lot of room for debate. It will probably be impossible to ever reach agreement on this discussion. The reality check is a lot easier, and I think it should be convincing.

### ***The Reality Check***

The average household size in Canada has slowly trended downwards, due to aging of the population, long-term trends for reduced marriage and child-bearing, and economic progress.

There are several ways to calculate household size. For the purpose of this discussion, I'm using the total population divided by the total number of dwellings. This includes occupied and unoccupied dwellings. (Using a different definition would change the level of the estimates, but there wouldn't be much impact on the shape of the trend over time.)

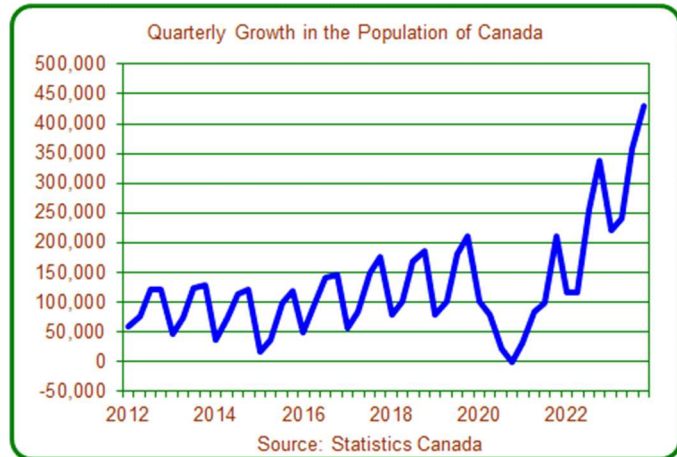
In the CMHC projections, the average number of persons per dwelling in 2030 would be far below the prior figures and the trend. This large drop in household size would move us from a condition of housing shortages to one of extremely large surpluses. This would result in some combination of very large numbers of vacancies and very sharp reductions of rents and prices.

<b><i>Total Persons per Total Dwellings</i></b>			
<i>Period</i>	<i>Total Population</i>	<i>Total Dwellings</i>	<i>Ratio</i>
2001	30,007,094	12,548,588	2.39
2006	31,612,897	13,576,855	2.33
2011	33,476,688	14,569,633	2.30
2016	35,151,728	15,412,443	2.28
2021	36,991,981	16,284,235	2.27
2030 CMHC	41,431,019 (1)	> 22,000,000	< 1.9
Source: Statistics Canada, Census data			
Note: (1) the CMHC report indicates that the 2030 population will be about 12% higher than in 2021.			

Based on history, a reasonable average persons per dwelling for 2030 is 2.2 or higher.



- To get to an average of 2.2 persons per dwelling in 2030 (and using CMHC's assumption about population growth), the total number of dwellings would need to be about 18.8 million (an increase of 2.55 million, or 285,000 per year).
- For an average PPD of 2.15, about 19.3 million dwellings would be required, an increase of 3.0 million, or 330,000 per year.
- These calculations incorporate CMHC's assumption that the population will grow by 12% during 2021 to 2030. If actual population growth is more than 12% (and it will be) the requirement will be larger. (According to Statistics Canada's estimates, during the past 2.5 years, the population has already grown by 6.3%.)



In the past, there was commentary that Canada has over-invested in housing. I argue the contrary: housing prices have increased so much because we have under-invested. The CMHC analysis, to me, is consistent with that view. But, the CMHC scenario would result in an extreme amount of over-investment (I think that the target for 22 million dwellings in 2030 would be 10-15% more housing than is realistically needed). While this would be great on the consumption side, it would be catastrophic to the wealth of Canadians and very stressful for the financial system.

House prices appear to be eroding now, during a period when there is immense pressure from population growth, and the economy remains very strong. This suggests that during the coming years, interest rates at 5% or more would (in themselves) substantially reduce the requirement for additional housing.

### ***Another Opinion***

Three years ago, the economics department at the Bank of Nova Scotia<sup>3</sup> produced a very interesting analysis. They looked at the average household size in Canada, which was higher than the average for 5 of the G-7 countries. On that basis, they estimated a shortfall of about 1.8 million dwellings.

I think that was a great start. But, they missed an important factor: Canada has a younger population (which means that the average number of children in Canadian homes is higher than in the 5 other countries, and there are fewer single elderly people). This has caused the average household size in Canada to be naturally higher than in the other countries, and therefore the housing deficit was over-estimated. That sent me down a highly nerdy rabbit hole.<sup>4</sup> I did a further analysis that considered the age issue (and had a lot more countries, and I also considered

<sup>3</sup> It can be found here: <https://www.scotiabank.com/ca/en/about/economics/economics-publications/post-other-publications.housing.housing-note.housing-note--may-12-2021-.html>

<sup>4</sup> The entrance to that rabbit hole is here: [https://www.wdunning.com/files/ugd/ddda71\\_58e2ddbb75914a1188a6377e71c696c1.pdf](https://www.wdunning.com/files/ugd/ddda71_58e2ddbb75914a1188a6377e71c696c1.pdf)



differences in average incomes). In that report, I concluded that the deficit in Canada was about 500,000 dwelling units, not 1.8 million.

### ***My New Alternative Estimate***

Various methodologies have been used to estimate the size of the shortfall. One of them is to use “household formation rates” (by age groups) to calculate how much housing is needed<sup>5</sup>. The problem is that if there isn’t enough housing, the household formation rates are lower than they should be and therefore the housing requirements are under-calculated.

Here, I have used a modified approach, using data for 152 urban areas in Canada (Census Metropolitan Areas, generally with populations above 100,000, and Census Agglomerations):

- Not all communities in Canada are under-supplied.
- For each age group for each area, the household formation rates were calculated.
- If the age-specific formation rate is above the median for the group, I assumed that they are adequately supplied.
- If the formation rate for a community, for an age group, is below the median, I assumed that there is a shortage, and calculated how many households there would be at the median formation rate.

This methodology resulted in a total calculated shortfall of about 582,000 households (at the time of the 2021 Census). This is equal to 4.0% of the total number of households. By contrast, CMHC’s estimate of a 3.5 million shortfall is equal to 24% of the number of households in 2021.

Out of 152 communities:

- Just over one-half (81) had no shortfall or a small one (equal to less than 2% of the total number of households).
- 71 had a shortage. Of these:
- 33 had a shortage of 2% to 4%, which I deem moderate.
- 38 had shortages greater than 4%.

Numerically, the 10 largest calculated shortages were in:

- Toronto CMA – about 285,000, or 11.2% below the required amount (almost one-half of the total national shortage of 582,000)
- Vancouver CMA – about 74,000, or 6.7% (12.8% of the national total)
- Calgary CMA – about 24,000, or 4.2%
- Hamilton CMA – about 18,000, or 5.7%
- Oshawa CMA – about 16,000, or 9.8%
- Edmonton CMA – about 13,000, or 2.4%
- Abbotsford CMA – about 12,000, or 15.0%
- Kitchener CMA – about 9,800, or 4.3%
- Windsor CMA – about 9,400, or 5.4%

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<sup>5</sup> CMHC has been using that approach since at least the 1970s. I learned about it in the 1980s. I’ve used it hundreds of times, and I still use it.



- Kelowna CMA – about 8,500, or 8.8%.

Since the time of the Census (which has an effective date of May 11, 2021), Canada has experienced a rapid rate of population growth. For the period from May 11, 2021 to October 1, 2023, the population grew by about 2.34 million<sup>6</sup>. That population growth might have generated a requirement for about 1.1 million new dwellings (based on 2.2 persons per dwelling). During that same period, new construction has added about 555,000 dwellings to the housing inventory<sup>7</sup>. This means that the shortfall has grown, possibly by about 540,000, to a total of about 1.125 million as of October 1, 2023. This is still very far below the 3.5 million estimated by CMHC. Since October 1, the deficit has increased further, to perhaps 1.25-1.3 million.

I believe that this lower estimate can help us agree on a production target that is more achievable. Essentially, we need to produce at least 100,000 new dwellings per year in addition to whatever amounts are required by our population growth. My gut feel is that we might be able to increase production to a maximum in the range of 300,000 to 350,000 per year.

In several previous (longer) reports, I have listed factors that inhibit housing supplies.

- Naturally-occurring physical constraints.
- Land-use plans that limit uses of land that has development potential.
- Delayed approvals.
- Delayed installation of infrastructure.
- Costs imposed by governments on new construction (from a large list of fees and charges), which have increased very rapidly over time. Builders have to delay, so that attainable prices can catch-up to their increased costs. ***The federal government should resurrect the model from a half-century ago – funding infrastructure via federally-backed debt, serviced out of municipalities' revenues.***
- Decisions by land owners about whether to take actions – to sell or develop their lands. (This issue gets very little attention, but it ought to be investigated.)
- Mortgage regulations that suppress home buying: these reduce sales of new housing, which impairs future supplies.
- Labour supply: commentary from several communities suggest that housing construction is being constrained by shortages of skilled trades. A related concern is that in places where large increases in construction are needed, the local cost of living makes it difficult to attract labour.
- Looking forward, given the need to increase housing starts by a large amount, supplies of building materials and equipment could emerge as challenges.

A more recent issue is the sharp increase of mortgage interest rates (resulting from policies of the Bank of Canada for its Policy Rate as well as its program of Quantitative Tightening). It appears that there has been a significant reduction of pre-construction sales of new homes (although no official data exists for this). This will result in a downturn in housing starts during this year and into next year, followed by reductions in completions of new housing. This will add to the existing shortages.

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<sup>6</sup> Calculated from Statistics Canada post-Census estimates (these are estimates by Statistics Canada using administrative records, and the data could be revised after the next Census).

<sup>7</sup> Due to a change in CMHC data coverage at the end of 2022, total housing completions for 2023 have been estimated by the author.





## ***Grown-Ups Playing Kids' Games - Musical Chairs and Whack-a-Mole***

Three years ago, an idea popped into my head: Musical Chairs is a good analogy for what's happening in the housing market. Some other people have also used the analogy. I think it's a powerful framework for understanding the supply crisis and for thinking about solutions.

There are two ways to de-intensify the game: increase the number of chairs or reduce the number of people chasing chairs.

Most of the discussion is about increasing housing supply. But, for all of those good ideas,

- It will take quite a lot of time to generate increases in the amount of housing that actually exists and can be occupied,
- They are complicated (technically and often politically), and
- There is uncertainty about how much supply they can actually generate.

In the short-term, the only solution is to reduce the number of people who are playing in the game - certainly to slow the rate at which the population is growing and maybe to reverse some of the recent extreme growth (take another look at the chart on Page 5).

The recent surge in population growth is due to international mobility (mostly, the combination of two categories – “immigration” and “non-permanent residents”). The government's targets are shifting – this includes an announcement (related to the non-permanent category) that happened a few hours ago (on March 21). The implication for the rate of population growth is unclear to me. That admitted, my expectation is that for the moment, the population is going to grow faster than our housing inventory (and other “social infrastructure”) can handle, and the housing supply deficit in Canada will continue to worsen.

Among, the supply-side initiatives, the option with the quickest impact is conversion of existing non-residential buildings to residential use. All levels of government in Canada should act very quickly to optimize use of the real estate that they control - to find buildings that are good candidates for conversion, and get to it.

This is one reason that I believe that decisions on work locations should emphasize remote-first whenever possible. There are other benefits, including reduced carbon emissions and reduced spread of Covid and other diseases. (If the governments are concerned about productivity of remote workers, the solution is to improve the quality of their managers.)

The main point about Musical Chairs is that what matters is the total number of chairs (housing inventory) versus the total number of players (the amount of housing that is required by our growing population). The labels that we put on those chairs isn't important (whether it is occupied by a home owner or a tenant, or who owns rental properties).

One consequence: the arguments that keep popping up about suppressing investment buying are beside the point. If we can divert housing away from investors, that might increase the number of home owners, but the number of renters is reduced by a corresponding amount. The overall pressure within the housing system isn't changed, it just looks different. Suppressing investment will do nothing to improve the overall balance within the housing market. If anything, it will make it worse, by inhibiting new supply. Within the condominium apartment sector, pre-construction commitments by investors make a huge contribution, as they allow builders to get



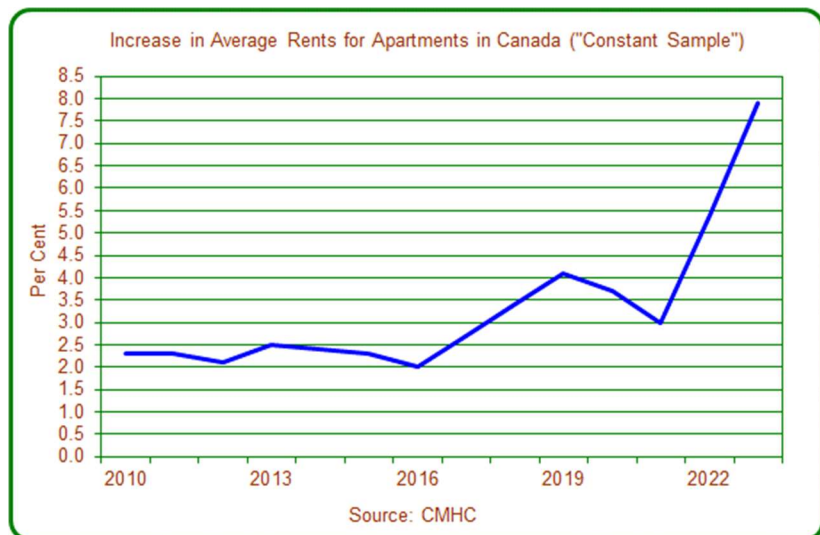
their financing. Also, preventing or discouraging investors from buying existing properties will discourage some of them from buying new product - if they look into the future, to the time when they want to exit from the investment, they might realize that if they can't sell to another investor, it will be harder to make that exit).

The first time I wrote about Musical Chairs was in May 2021, on Twitter, where I do a lot of thinking-out-loud: <https://twitter.com/LooseCannonEcon/status/1395810375434752008>

I have revived the idea on occasion, such as on Page 5 of this report (May 2022): [https://www.wdunning.com/files/ugd/ddda71\\_58e2ddbb75914a1188a6377e71c696c1.pdf](https://www.wdunning.com/files/ugd/ddda71_58e2ddbb75914a1188a6377e71c696c1.pdf)

In that report I commented “Recently, the federal government and some of the provinces have announced initiatives to promote new housing construction. At this time, these are aspirational goals, not achieved results.” To my point about the timing and uncertainty of supply initiatives: two years later, we can see how much new housing is now occupied as the result of those initiatives (actually, we can't see something that doesn't exist).

In my writing, I have also explored an analogy with Whack-A-Mole: some government policies (notably the mortgage stress tests, as well as the idea of suppressing investment buying) reduce purchases of residential properties. These might reduce the pressures within part of the housing system, but the real effect is to cause the pressures to move to another part of the system – the policies don't change the total amount of pressure. We can see an example of this in the rental sector since 2018. The mortgage stress tests, and more recently the high interest rate policies of the Bank of Canada, have reduced home buying but increased pressures in the rental sector, contributing to rapid growth of rents. (Events can have more than one cause: during 2022 and 2023, rent growth was further boosted by the extreme rates of population growth as well as landlords' need to cover actual and anticipated increases in their mortgage interest costs.)





## Some Bad Data

There is a narrative (now quite widespread) that GDP per person in Canada has fallen for six consecutive quarters, and that the total fall is quite large. I joined in for a while, but then I realized that there are problems with one component of the data (residential construction).

During the fall of last year, I concluded that Statistics Canada's data on "investment in residential construction" is unbelievable. Those estimates show an extremely large reduction in housing construction. For all of 2023, the total amount (in inflation-adjusted, or "real" dollars) was 16% lower than in 2019.<sup>8</sup>

The estimates during the Covid period have been sharply at odds with related data, on employment in construction<sup>9</sup> and numbers of dwellings under construction. Both of those datasets indicate quite clearly indicate that construction activity is still very strong (stronger than pre-Covid, whereas the "investment" estimates indicate that construction activity is far lower than pre-Covid).

This chart converts the two datasets (for residential investment as well as employment) into indexes (with bases of 2019 = 100). During the pre-Covid period, there was somewhat of a relationship between the two datasets (although the investment estimates were more volatile than the employment data). During the Covid period, the investment estimates have become even more volatile, and its trends have diverged considerably from the employment data. At the end of the available data (for December 2023) the index for employment in residential



<sup>8</sup> Source: Statistics Canada Table 34-10-0286-01.

<sup>9</sup> These estimates are based on data from Statistics Canada's Survey of Employment, Payrolls and Hours (Table 14-10-0220-01). The estimates combine data on "Residential building construction" plus my estimates of the residential shares for four categories of "Specialty trade contractors".



construction is 32% above the index for investment. (There is room to argue about what is the “true” amount of employment in residential construction, but I see no plausible argument that could support a conclusion that the investment data is correct.)

Another reason to suspect the accuracy of the investment data is its extreme volatility. The very rapid, very large changes that Statistics Canada has estimated are impossible: given the length of construction processes, a downturn (or upturn) in on-site construction activity has to happen much more gradually than the estimates have indicated.

Secondly, if the sharp downturn had really happened, there would have been a lot of job losses in construction (and in other industries that provide goods and services to construction), and there would have been a lot of media coverage of that.

Also, because the data on employment comes directly from employers, I am inclined to trust it. On the other hand, estimates of investment in construction (especially the inflation-adjusted estimates) involve a lot of massaging of data, creating opportunities for errors.

There is, of course, an alternative explanation: perhaps both data sets are correct. In that case, builders and contractors must be paying vastly more labourers than they need to. I see no evidence that this is happening. And, given the nature of the employment (mostly short-term contracts) builders and contractors can reduce their numbers of employees very quickly. In its most recent survey of its membership, the Canadian Home Builders Association<sup>10</sup> found that “about a third of respondents noted labour shortages remain an issue”, but “33% of builders reported laying off workers”. These two observations don’t show us the magnitudes of either the shortages or the lay-offs. Based on the current very high level for the employment data, I suspect that people who are laid-off are still able to find new work<sup>11</sup>.

Or, it might be that productivity of those construction workers has plunged. Statistics Canada estimates that there has been a substantial drop in productivity in construction (as of 2023-Q4 it is 11% lower than in 2019, whereas for the total economy productivity was slightly higher versus 2019, by 0.5%). But, I believe this is also a bad estimate - a further consequence of the bad estimates for output in construction. And, as another consequence, I expect that productivity in the total economy is slightly higher than estimated: there was a small drop in estimated productivity for 2023, this drop was probably due to the mis-estimation of output in residential construction.



<sup>10</sup> <https://www.chba.ca/housing-market-index/>

<sup>11</sup> In Statistics Canada other survey of the employment situation (the Labour Force Survey), the estimates show that the unemployment rate for construction this February (7.8%) was lower than pre-Covid – 11.2% in February 2018 and 10.8% in February 2019. Data on job vacancies is now showing some reduction for construction (3.3% in December versus 4.9% a year earlier), so while employment remains strong, the labour shortages might be easing.



Last October, I wrote a report on the issues in the construction data<sup>12</sup>, in which I suggested two possible causes of data errors (a technical issue related to the “lag structure” that was being used, and errors related to changes for construction costs – the “deflator” that is used to convert actual dollars into “real” activity).

I shared my report with Statistics Canada, and they took the time to respond. Based on that response, I am now satisfied that the main issue is that the deflator data is incorrect, by a very large amount. In consequence, during the past two years “real” (inflation-adjusted) residential construction activity has been under-estimated by a very large amount. (And, during the first year and a half of the Covid period, investment was over-estimated by a large amount.)

Two things have happened since I wrote that report in October:

- As can be seen in the first chart on Page 10 the on-going data releases from Statistics Canada on investment in residential construction have shown a partial rebound (but it is still far lower than pre-Covid).
- Other data (especially on employment in construction, but also including inventories of housing under construction) continue to show very strong construction activity.
- Based on the employment data, the “true” volume of “real” activity in residential construction might be about 30% higher than StatsCan is estimating.

To be a bit more detailed about the issue that is resulting in bad data:

- The StatsCan estimates of investment are based on the dollar amounts that builders show in their applications for building permits. StatsCan makes assumptions about how the activity gets spread out over time (the “lag structure”), to calculate how much activity (in dollars) happens each month. Then, it converts the estimated monthly dollar amounts into estimates of “real” activity, using an index of construction costs.
- That cost index is based on a quarterly survey of contractors, which asks how much prices have changed (in per cent) compared to the prior quarter, for a long list of construction elements<sup>13</sup>. I don’t know how long it takes to complete this questionnaire, or if that affects the quality of the responses. I also don’t know how large the survey sample is, and if that affects the data quality.
- Here is the issue: the data produced by StatsCan on changes in actual construction costs might be different than the assumptions about future costs that were made by builders when they applied for building permits.

Using StatsCan data on building permits<sup>14</sup>, I have calculated the average per unit construction costs and then created indexes – these reflect the assumptions that builders made about cost growth. Then, I compared those to the cost index that is implicit within the StatsCan data on investment. The estimates are created for four different structural types of dwellings.

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<sup>12</sup> Available here: [https://www.wdunning.com/\\_files/ugd/ddda71\\_baf15dc6f27c46c6ad5658dbb9222031.pdf](https://www.wdunning.com/_files/ugd/ddda71_baf15dc6f27c46c6ad5658dbb9222031.pdf)

<sup>13</sup> The survey questionnaire is described here: [https://www.statcan.gc.ca/en/statistical-programs/instrument/2317\\_Q2\\_V1](https://www.statcan.gc.ca/en/statistical-programs/instrument/2317_Q2_V1)

<sup>14</sup> Source: Table 34-10-0285-01





But, first, a reminder that the data on average per unit costs created with the building permit data are not necessarily indicative of what the actual costs will be – **the data are what the applicants have chosen to enter in the building permit applications**. In this analysis, it doesn't matter that their assumptions about future costs might be wrong – **what matters is that Statistics Canada is using two sets of data on growth of construction costs that tell very different stories, in its calculations of “real” investment.**

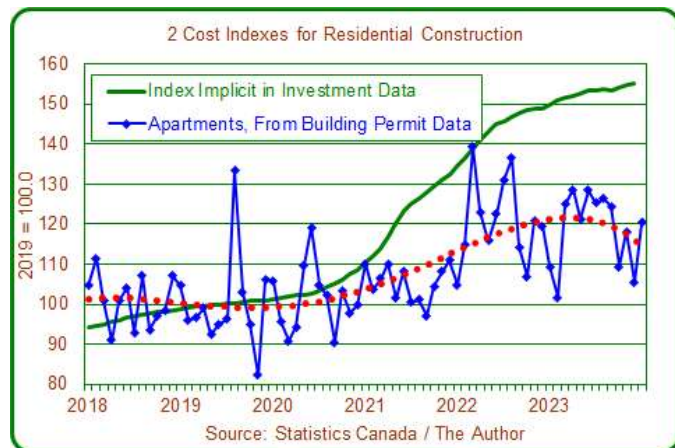
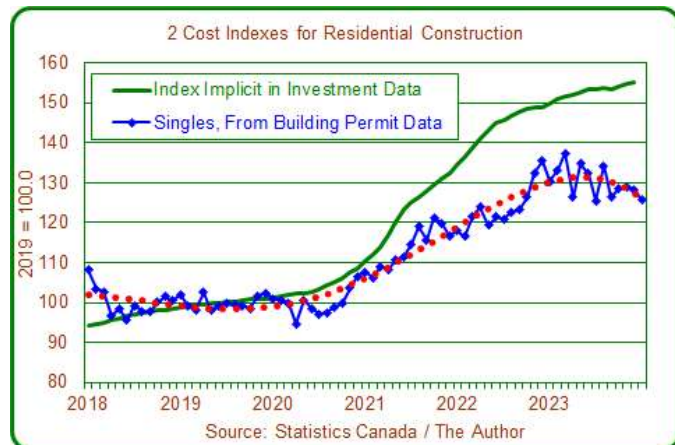
Two of the sets (for the most important housing forms, singles and apartments) are illustrated in these charts.

As of December 2023, the cost index from the building permit data – for single-detached homes – is 17% lower than the index derived from the investment data. For semi-detached homes, the index is now 13% lower. For rows, the indexes are equivalent. For apartments, the index is 32% lower.

The calculations within these charts are much more simplistic than the actual calculations that must be used by Statistics Canada. Therefore, my estimates are only approximations that may be inaccurate to some degree. That said, the very large discrepancies between the estimates confirm that the inflation-adjustment process is generating large errors in Statistics Canada's estimates of “real” investment in residential construction.

Why does this matter?

Because bad data for an important part of the Canadian economy is distorting our understanding of what is happening in the broader economy. As I discussed earlier, the data on productivity in construction has been distorted (downwards) by a large amount, and for the total economy there is a small downward bias in the productivity estimates.







There is a narrative that the Canadian economy has weakened quite significantly, because GDP per person has fallen sharply. This is partly due to distortion created by the construction estimates. In this chart, I show the as-published estimates, and a re-estimate that incorporates my recalculation of the construction estimates. This reduces (but does not eliminate) the fall in GDP per person. As of Q4-2023, in the as-published data, GDP per person was 2.3% lower than in 2019. In the adjusted data, the drop is less, at 1.5%. Most of that drop occurred during the fourth quarter, when there was very large growth in population and little change for GDP. For Q3, the adjusted estimate of per capita GDP is just slightly (0.3%) lower than in 2019.



This brings us to a collateral issue:

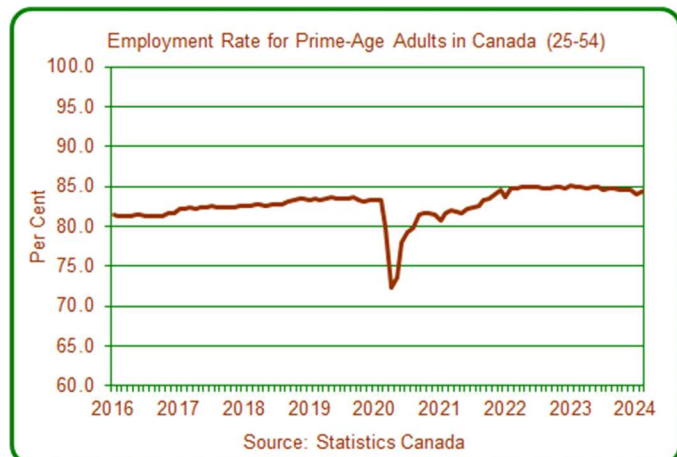
- The ratio has fallen during the past year and a half, because the economy has grown, but not quickly as the population.
- At present, the main driver of population growth is the entry of international students (on temporary visas).
- Some of those students take jobs and add to the size of the economy, but some of them don't. Therefore, the rapid growth in the number of students is tending to reduce the amount of output per person.

In general, I like GDP per person as an indicator of economic performance, but at present, I find it misleading. In this moment, we need an alternative measure.

I prefer either the employment-to-population ratio (the percentage of adults who have jobs) for "prime working age" adults (25 to 54 years old), or labour productivity.

The employment-to-population ratio has been roughly flat at a high level during the past two years, although the very recent data hints that a downturn might now be developing.

As was shown earlier (on Page 11), the estimate for labour productivity is now similar to 2019. Adding an adjustment for the mis-estimation of output in residential construction, labour productivity now might be about 1.25% higher than in 2019.





## ***Tax Incentives to Promote Rental Investment***

The *Blueprint for More and Better Housing*<sup>15</sup> (published in March 2024 by the *Task Force for Housing & Climate*) has provided a comprehensive list of actions that could be taken by the three levels of government in Canada.

The proposals for federal action include (on Page 14):

- i. Increasing the Capital Cost Allowance (CCA) on newly constructed purpose-built rental buildings to 10% and deferring capital gains tax and recaptured depreciation due upon the sale of an existing purpose-built rental housing project, providing that the proceeds are reinvested in the development of new purpose-built rental housing.
- ii. Considering increasing the CCA to 12% for affordable, accessible, and climate-friendly purpose-built rental projects that have an MLI select score at, or above, 100 points or ACLP score above 19.

I know that I am not an expert in this area. As an outsider, here are some issues that I think need to be considered.

Depreciation of residential rental properties (for tax purposes) is an important issue, and has been since the tax reform of 1972. But, the main issue isn't the depreciation rate, it is that the investors must be able to actually utilize the depreciation allowances. Since 1990, I have written a lot about this, including this short Twitter thread:

<https://twitter.com/LooseCannonEcon/status/1702661653773357563>

Under current rules, investors use of depreciation ("Capital Consumption Allowances") is limited to the net income the investments generate - their revenues minus their expenses (but not including the principal repayment part of mortgage payments).

In the early years of an investment, even at the very low interest rates that existed 2 years ago, it was difficult for potential new rentals to generate enough net income to take full advantage of depreciation for tax purposes, even at the 4% depreciation rate. At today's interest rates, the math is even more challenging. On Page 18, a table illustrates this, using hypothetical projects that I consider reasonably representative.

So, raising the depreciation rate might have very little impact on investment decisions.

There were substantial amounts of new rental investment from the mid-1970s until the early-1990s. The essential element was that new investors were allowed to use depreciation allowances to reduce taxes on income from other sources. A lot of that investment was in "syndication" deals, in which the investors bought a share in the deal, not a title to the property.

There was some evolution of how those investments were structured so that they could avoid taxation, in response to changes in the rules – the Multiple Unit Residential Building ("MURB") option was ended in 1982, but other ownership structures were created for tax sheltering. The federal government found the means to finally stomp-out that activity during the 1990s.

There is a further proposal within the Task Force report that might be intended to address this concern about full utilization of depreciation, but the expectation isn't explained.

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<sup>15</sup> Available from this page: <https://housingandclimate.ca/blueprint/>



- iii. Provide exceptions to purpose-built rental developers of principal business corporation, EIFEL, and partnership at-risk rules.

In related documents<sup>16</sup> there is some further discussion about “pooling” of depreciation by rental owners and “carry forward” when properties are sold. But, it’s not clear to me if the proposals can attract new investors, or if they would just further-incentivize current investors (which would limit the supply impact).

Any changes should aim to attract new investors (and especially individuals, not just to rely on principal business corporations).

It might be possible for the federal government to decide to re-open the rule book and allow new investors to fully-utilize depreciation against their incomes from other sources.

But, the details (the legal forms of the investments) will matter: an issue that might deter new investors is that when it’s time to exit the investment, it could be difficult to sell a share in a “syndication” or partnership structure. Potential new investors might balk, unless the form has more “liquidity”, such as having title to an individual dwelling unit. Therefore, consideration should be given to allowing individual investors (in shares of a property or title to an individual unit) to apply the depreciation to income from other sources.

Another issue is about how “soft costs” are accounted for in taxation (these are costs such as municipal fees and charges, interest and financing fees during the development period, land-use planning, design, technical studies, legal, etc.). Should they be included in the cost base and depreciated over time, or should they (some or all of them) be deductible as they are actually incurred)? At this time, most soft costs are supposed to be included in the capital cost base.

During the past half-century there have been multiple changes in the tax rules concerning depreciation (and other deductions) for rental housing. In most cases, the changes were motivated mainly by concerns about reducing tax sheltering and increasing tax fairness: those changes incrementally impeded investment in new housing. On one important occasion (the creation of the MURB tax class in 1974) the decision was based on social necessity: this change stimulated a lot of construction. This might become a second occasion when the motivation for tax policy is to increase housing supply. Federal officials will want to carefully consider the balance between the fairness concerns versus the urgent need for more housing.

There are two further issues that I think are significantly impeding housing supplies, that are within the federal system:

- Mortgage regulations for owner-occupied housing (notably the CMHC and OSFI mortgage stress tests), have been significant factors inhibiting construction of new housing. I have argued elsewhere (including Appendix 4 of my submission to the OSFI consultation in 2023, and a summary on Page 3) that during the past decade, mortgage regulations have worsened pressures within the Canadian housing system, including being responsible for 200,000 units (or more) of the current supply deficit.
- Bank of Canada interest rate policies (including the elevated level for the BoC Policy Rate, which affects variable mortgage rates, as well as its Quantitative Tightening

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<sup>16</sup> For Example: <https://www.theglobeandmail.com/opinion/article-how-canada-can-create-more-rental-housing/>

program, which is causing interest rates for fixed rate mortgages to be higher than they would otherwise be) are going to weigh increasingly heavily on housing construction during the next 2-3 years (possibly longer)<sup>17</sup>. The BoC actions will add to the housing supply deficits, and impede the impacts that might result from other initiatives.

There is an interaction between current BoC policies and mortgage regulations: at current elevated interest rates the supply impairment caused by the mortgage qualification rules is getting worse.

### 3 Case Studies on Depreciation Allowances

Taking information from multiple sources and inserting my own adjustments and interpretations, I have created three scenarios for potential rental developments. The objective is to calculate the extent to which the investors could utilize depreciation allowances in their tax calculations. This table summarizes the key assumptions.

<b>Development Assumptions (per Dwelling Unit)</b>			
	<b>Toronto</b>	<b>Elsewhere in Southern Ontario</b>	<b>Vancouver</b>
<b>Development Costs</b>			
Construction	\$250,000	\$275,000	\$265,000
Land	\$110,000	\$60,000	\$110,000
Soft Costs	\$100,000	\$95,000	\$135,000
Total	\$460,000	\$430,000	\$510,000
Capital Cost Base	\$350,000	\$370,000	\$400,000
Finance at 75% Loan-to-Cost	\$345,000	\$322,500	\$382,500
<b>Operation</b>			
Monthly Revenue	\$2,600	\$2,500	\$2,600
Monthly Operating Costs	\$700	\$700	\$600
Monthly Net Operating Income	\$1,900	\$1,800	\$2,000
Source: Will Dunning Inc.			

These assumptions were used to make calculations of annual performance<sup>18</sup>:

- Revenues, operating expenses (assuming an inflation factor of 3% per year).
- Mortgage interest costs (assuming a 40-year amortization period), at interest rates of either 2.5% (which would have been available prior to the interest rate increases that started about two years ago) or 5.0% (which might be typical today).

<sup>17</sup> While we don't have official data on new home sales, data for the Greater Toronto Area (from the Altus Group and the Building Industry and Land Development Association) show that during the past year new home sales in the GTA have been at least 75% lower than is required.

<sup>18</sup> For the first year, it is assumed that the operational period is six months (related to the "half-year rule" that is used in calculating depreciation for tax purposes).



- The amounts of net income that would be available for depreciation (revenue minus operating expenses and interest expenses).
- Three depreciation schedules were calculated:
  - If depreciation could be equal to the net incomes (it isn't constrained by the 4% depreciation rate),
  - The actual amounts that would be allowed based on the 4% depreciation rate and the actual net incomes, and
  - The amounts if the deduction could exceed the net income (but still at the 4% depreciation rate).

For the purpose of this discussion (about the proposed increase in the depreciation rate to 10%), the relevant calculation is what would be the effective depreciation rates if all of the net income could be used. These "unconstrained" effective rates of depreciation are shown in this table.

This analysis shows that:

- At the 2.5% interest rate, investors might be able to fully utilize the 4% depreciation rate in the early years. In order to take full advantage of an increased depreciation rate, they would have to be able to use depreciation to reduce taxes on other properties or on other income. In subsequent years, they would be more able to utilize higher rates.
- At the current mortgage interest rate of about 5.0%, an investor would not be able to utilize the 4% depreciation rate at the beginning, and it would take a long period of revenue growth to be able to fully use it. The proposed higher depreciation rate is irrelevant unless (again) the deduction can be applied to other income.

The conclusion is that depreciation can be used to encourage production of new rental housing. But, the key factor is not the depreciation rate, but whether depreciation can be used to reduce taxes payable on income from other sources.

<b>Scenarios for "Unconstrained" Effective Rates of Depreciation</b>						
<i>Location</i>	<i>Toronto</i>		<i>Elsewhere in Southern Ontario</i>		<i>Vancouver</i>	
Interest Rate	2.5%	5.0%	2.5%	5.0%	2.5%	5.0%
<b>Calculated Rate</b>						
1st Half Year	2.0%	0.8%	1.8%	0.8%	1.8%	1.0%
Year 2	4.3%	1.8%	3.9%	1.7%	3.8%	2.2%
Year 3	4.7%	2.1%	4.2%	1.9%	4.2%	2.4%
Year 4	5.2%	2.4%	4.7%	2.2%	4.6%	2.7%
Year 5	5.8%	2.7%	5.2%	2.5%	5.1%	3.0%
Year 6	6.5%	3.1%	5.7%	2.8%	5.7%	3.4%
Year 7	7.3%	3.5%	6.4%	3.1%	6.4%	3.8%
Year 8	8.3%	3.9%	7.1%	3.5%	7.1%	4.3%
Year 9	9.5%	4.5%	8.1%	4.0%	8.1%	4.8%
Year 10	10.9%	5.1%	9.2%	4.5%	9.2%	5.4%
Source: calculations by Will Dunning						





## ***Mortgage Renewals by Consumers***

The rate of mortgage arrears in Canada has increased recently, but from an exceptionally low level. For Canada's major banks, the rate is still an exceptionally low number (just 0.18%, or about one out of every 550 mortgages).<sup>19</sup>

Considering how much mortgage interest rates<sup>20</sup> have increased during the past two years, the current arrears rate might be surprising.

Most home buyers take a mortgage that results in a flat payment level for five years, either a fixed rate mortgage with a 5-year term, or a variable rate mortgage that has a fixed payment for five years. A minority of mortgages have fixed rates for terms less than 5 years or a variable rate mortgage with an adjustable payment (it increases or decreases when the interest rate is adjusted).

Most of the people who did their first mortgage renewal during 2023 bought the home in 2018. Typically, their original interest rate was 3.25%. During the five years, through their regular payments they would have paid off some of the mortgage (14% of the mortgage if they had a 25-year amortization period or 11% if they had a 30-year amortization). And, many of them would have further reduced their mortgages through voluntary additional payments.

Based on their amortization schedules, if they renewed during 2023 at a 5.5% interest rate (the average during the year for 5-year fixed rates), the monthly payment would increase by 20.9% (for 25-year amortization periods) or 25.6% (30-year amortization).

During the same period, the average weekly wage in Canada increased by 22.3%.

Consequently, for most people renewing mortgages during 2023, it was possible to adjust their budgets to accommodate their increased mortgage costs. Statistics Canada estimates that the mortgage debt service ratio has increased in Canada. The 2023 average of 8.13% was about 1.2 percentage point higher than in 2018 (when the average was 6.97%).<sup>21</sup>



<sup>19</sup> The data is available from this page: <https://cba.ca/mortgages-in-arrears>

<sup>20</sup> In this discussion, the interest rates are my opinion-estimates of typical "special offer" rates offered by major lenders for uninsured mortgages.

<sup>21</sup> I suspect that the flat data during 2023 is an under-estimate, but that's a separate issue I won't explore here.

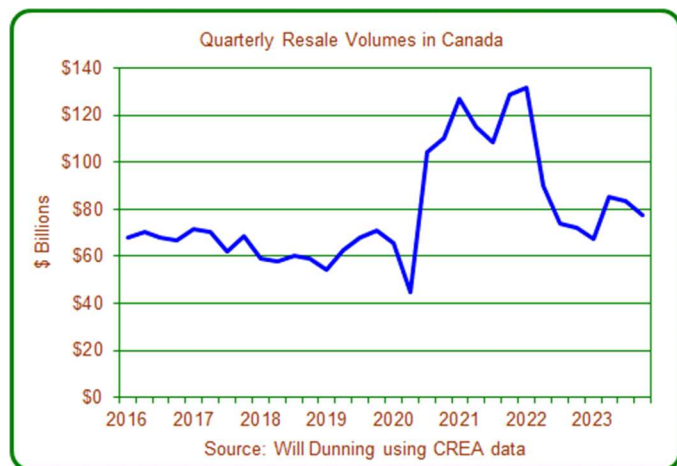




For people who were unable to afford their payment increases, the large increases in home values versus 2018 gave them opportunities to address their issues by refinancing or selling.



A further consideration is that the number of people renewing for the first time was moderate during 2023, because there was a moderate volume of home sales during 2018, as can be seen in data from the Canadian Real Estate Association on the total dollar volume of sales.



Looking forward, at renewals for 2024: mortgage interest rates trended downwards during 2019 (the annual average was about 3%). At the start of the year, a typical rate was 3.5%, by yearend it was 2.75%. So, from the point of view of payment levels, the payment increases experienced by individuals may be slightly larger than in 2023 (depending on what happens to interest rates). That should still be manageable for most people. The volume of sales was still moderate during 2019.

The national mortgage debt service ratio might continue to creep upwards during 2024, but not by enough to directly cause a significant rise in mortgage arrears (but, as I discuss below, there could be an indirect effect that has a more substantial impact).

But, everything changed during 2020. Mortgage renewals might have bigger consequences starting during the second half of 2025 (lasting into early 2027), because:

- Interest rates were much lower during 2020 and 2021. For 5-year fixed rates, my opinion-estimates averaged about 2.25%. For variable rates, there were larger changes: during the first half of 2020, the average was about 2.6%, during the second half it was 1.8%. For 2021, the average variable rate was less than 1.5%. So, for people who currently have variable rates, the impacts of renewals could be increasingly large starting in the second half of 2025 and into 2026. Also, because amortization periods were extended, there will be additional upward adjustments of payments.
- Sales volumes were much larger during that period (the second half of 2020 into early 2022) in unit terms, and in total dollars the volume doubled.



- Average prices increased very sharply.
- Average mortgage amounts no doubt also increased significantly.
- Applying the rising interest rates to larger mortgage amounts, the average increases in mortgage payments could be much larger than in 2023 and 2024, and the total amount of increases could be really big.
- There will still be some offset due to income growth and large amounts of mortgage principal that have been repaid (typically 16% of the original principal for a 25-year amortization period and 13% for 30-year amortization).
- The extreme price growth that was seen starting late in 2020, through 2021, and into early 2022, and the subsequent retreat of values (the first chart on the previous page) also means that people who experience large increases in mortgage payments will have fewer opportunities to solve their financial problems (by refinancing or selling).

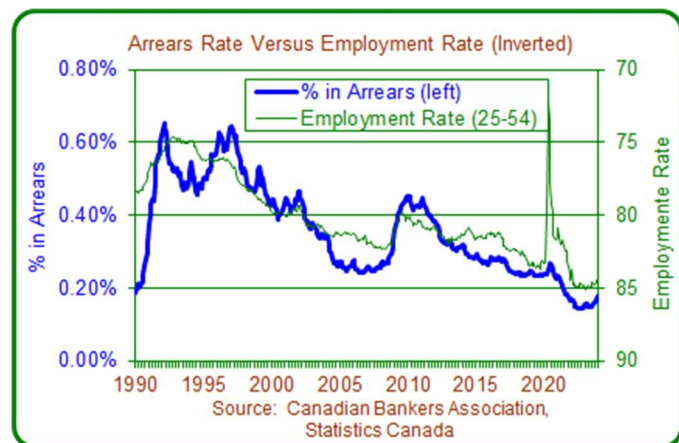
Depending on what happens to interest rates, starting around the middle of next year, mortgage renewals could result in a sharper rise in the mortgage debt service ratio and possibly the arrears rate.

I'm not going to speculate on what will happen to interest rates during the coming three years, but I'm highlighting that risks related to mortgage renewals could escalate sharply, starting about a year and a half from now.

Getting back to the indirect effect I mentioned earlier - history has shown that changes in mortgage interest rates have little impact on the arrears rate. In the first chart on Page 19, it appears that there has been somewhat of a relationship, because both interest rates and the arrears rate have fallen during the past three decades (although the relationship is very far from perfect). But, in fact, that apparent relationship is superficial, because both interest rates and arrears trended downwards – the downtrend for arrears was not caused by the downtrend for interest rates.

There is a much stronger cause for changes in the arrears rate: the employment situation. When it deteriorates, people have less ability to make their payments, when it improves people have people more ability to pay.

Most residential mortgages are held by people in the “prime working ages” (25 to 54 years). This chart contrasts the arrears rate with the percentage of prime age adults who have jobs (to make this easier to read, the employment data is inverted). Over the years, I have occasionally done statistical analysis of the relationship between the arrears rate versus interest rates and the employment situation. That analysis has shown repeatedly, that when these two possible drivers of arears are considered at the same time, the impact of the employment situation is vastly larger than the impact of interest rates.





When people have stable employment situations (and incomes), they can usually find ways to adjust to changes in their mortgage payments.

So, the greatest risk related to mortgages is a change in the economy that negatively affects employment.

What we have seen during the past two years is a gradual rise in the mortgage debt service ratio as the result of mortgage renewals. There is a small but gradually expanding pool of mortgage borrowers who have to adjust their budgets to accommodate rising mortgage costs. As they make those adjustments, there is a possibility of negative impacts on the broader economy (which would affect employment). To date, it seems that there has not been a noticeable impact in the employment data. But, as that pool of affected borrowers continues to grow, the risks for the economy will become greater (at a quite gradual pace).

An added consideration is that we may start to see a more substantial negative change from falling employment in residential construction.

In consequence, while the arrears rate is now extremely low, there will be gradual increases in the near term, with a risk of more substantial rises to come later.

I have explored the arrears data in much more detail in other reports, especially in a submission to OSFI about the mortgage stress tests. The message is that the mortgage regulations are testing the wrong risk (increased interest rates), with the consequence that hundreds of thousands of Canadians have been unduly prevented from making housing choices that they have seen as being in their best interests. This is also an issue that has impaired housing supplies. That discussion can be found here:

[https://www.wdunning.com/files/ugd/ddda71\\_b47248fb0ea24d3d8982cb9c7255fdcf.pdf](https://www.wdunning.com/files/ugd/ddda71_b47248fb0ea24d3d8982cb9c7255fdcf.pdf)

Another issue that I discussed in the submission, but I'm not going to elaborate here, is that under the OSFI regulations, mortgages that are moved to a different federally-regulated lender must be stress tested at the contracted interest rate plus 2 points. This creates a risk that borrowers who renew could be trapped (and potentially exploited) at their current lender. Undue increases in mortgage costs could add to economic risks.



## ***Debt Renewals by REITs***

Many years ago (at least 20), I had a fun adventure at the large annual real estate conference.

I was waiting for a break-out session (the CEOs of Canada's Real Estate Investment Trusts). Just before it started, the Moderator told me that he couldn't do it, and I had to.

I had something I really wanted to say, so I did it.

I began by congratulating them for being incredible. Then, I told them that when they renew their mortgages, they should do it with short-term paper, not with 5-year and 10-year mortgages.

All of them thought I was a lunatic.

I was expecting that, and I was OK with it.

In retrospect, if they had done it, their combined gain over the next two decades (through increased distributions, reserves, and debt retirement) might have been a 9-zeros number.

(In this line of work, we're expected to make forward-looking statements, and they always turn out to be wrong - to varying degrees. When you're close-enough, you have to celebrate it and hold onto it.)

My point is – this would be a really good time for the CEOs of the REITs to think about doing their renewals with short-term instruments.

(Disclosure: I have investments in two Canadian REITs.)



## Catch-22

One of the great modern-classic novels (1961) and a decent movie (1970).

As I remember it, the premise is:

- It's set in the US air force, during WW2.
- You can go home if you can convince us you're crazy.
- No one who is truly crazy can be aware that they are.
- If you tell us you're crazy, that is proof that you're not.
- Ergo, you can never go home.

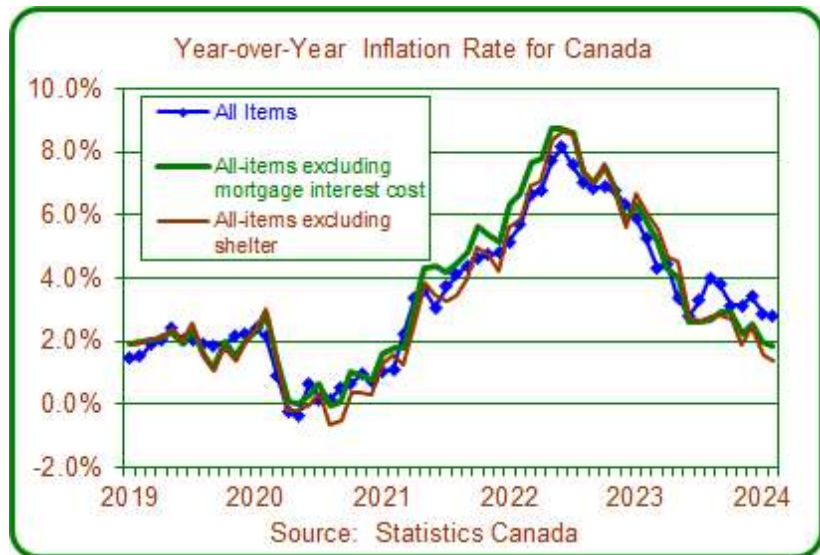
Current central bank policies (the Bank of Canada and elsewhere) are a modern version of Catch-22. I'm not saying that the Bank of Canada is crazy, just that their thinking is trapped in a paradox that they can't or won't acknowledge (let alone fix): **in essence, the BoC's expectation now is that its policy will counteract its own consequences**. Would it be crazy for us to think that they should see the flaw in their own logic, and fix it?

The rate of inflation will not get to 2% for a long time, because the interest rate policies (the Policy Rate and Quantitative Tightening) are causing inflation to be higher than it would otherwise be, and this will continue. The all-items inflation rate will be at or close to 2% when one of these things happens:

- The Bank of Canada changes its policy and interest rates are reduced to neutral.

The inflation rate for mortgage interest cost (and therefore for overall inflation) falls gradually during the subsequent months. But, this can't happen: the Bank won't materially change policy because it is the reason that inflation will continue to exceed 2%.

- It's 2028. Interest rates passed the neutral level 5 years ago. Now, almost every residential mortgage has a high interest rate, and when they're renewed again, the payments don't change. This causes the inflation rate to fall.
- The policy has damaged the economy so badly damaged that the inflation rate for everything except shelter is close to (or even below) 0%. But, the economic damage has so far barely started, and it will be a while before the policy has the effect of materially reducing inflationary pressures – the drop in the inflation rate so far is mainly due to reductions in supply-side pressures, not to the BoC's policies. High interest rates actually worsen supply-side issues: an example is now developing in housing construction.





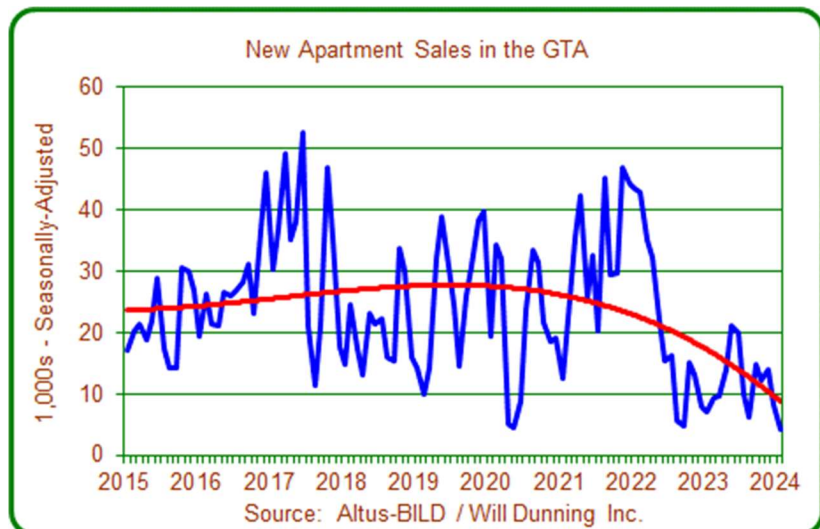
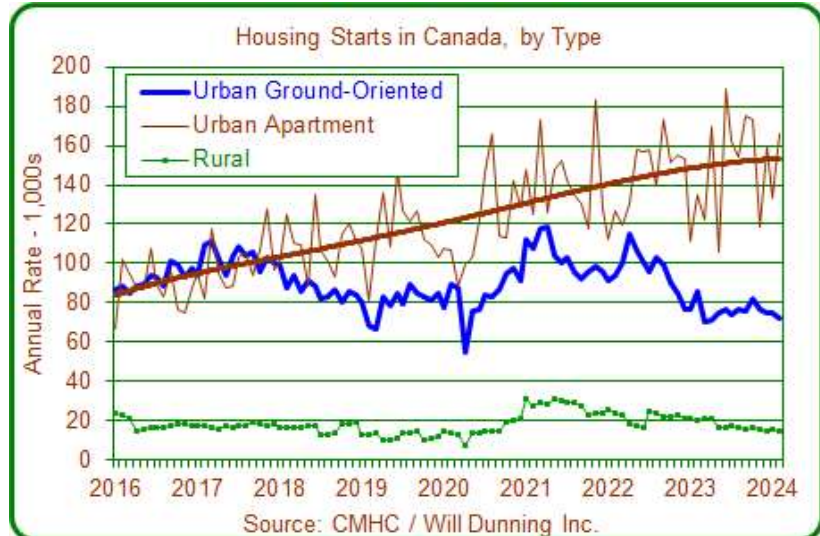


The inflationary consequences of the Bank's policies have a long way to run. As noted, home owners' mortgage interest costs will continue to inflate rapidly for some time. In the rental sector, pressures have intensified a great deal, and this is partly due to high interest rates (because there are fewer movements out of rentals into home ownership, plus landlords are pressured to raise rents to cover actual and pending increases in mortgage costs).

Looking forward, new housing production will be reduced. This is just barely getting started: starts<sup>22</sup> have fallen in the low-rise sector, but not yet for apartments, because there are longer pre-construction processes for apartments, and starts continue to reflect decisions that were made when interest rates were exceptionally low. New home sales data for Toronto show that pre-construction sales of condominium apartments have fallen very sharply. The induced shortages will create, but quite gradually, additional pressures on housing prices and rents. This Bank of Canada policy-driven intensification of the supply deficit will continue until 3 years after mortgage interest rates return to neutral (somewhere in the low 3%<sup>s</sup>).

***The federal government should adjust its mandate agreement with the Bank of Canada. Rather than relying on the "total inflation rate", it should state that the relevant measure of inflation is to exclude the inflation that results from the Bank's policy.***

Statistics Canada could calculate that inflation rate. It already estimates inflation due to mortgage interest costs. Therefore, the inflation rate excluding mortgage interest costs could immediately become the interim measure. As of January, that was 2.0%. For February, it was 1.9%. For later, StatsCan would need to also calculate the inflation that results from pass-through of interest rates into the prices of other goods and services.



<sup>22</sup> In this chart, I have re-categorized the data that is published by CMHC, because I find low-rise versus apartments more useful as an indicator of construction trends.