

# ***Discussion Paper on Inflation in Canada***

*Is the Driver Demand or Supply?*

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## **Introduction**

A traditional economic viewpoint holds that increases in the rate of inflation are driven by excessive demand (including excessive strength in the employment situation, which enables workers to bargain for excessive wage increases). In this model, in order to reduce inflation, it is necessary to use interest rates (the “policy rate” plus “quantitative tightening”) to reduce that excessive demand and to weaken the employment situation (in order to reduce the bargaining-power of workers).

About a year ago, I began to think that this traditional model does not apply in the current circumstances. In this report, three major sections take different analysis approaches (and a brief fourth section attempts to look at inflation-targeting from a long-term, geo-economic perspective).

- The first section updates the analysis that I have done during the past year (which argues that using interest rates to suppress demand is the wrong approach to an inflation that has been caused by supply problems). These policies will have some impact on inflation, but at a cost that is inordinately high. Mostly, future inflation will be determined on the supply side.
- The second section takes a quick look at the “Phillips curve”, the idea that inflation is primarily caused by excessive strength in the employment situation (and therefore that inflation should be attacked by using high interest rates to weaken employment). While this concept is a major milestone in the history of economic thought, it passed its best-before date a generation ago.
- The third section was inspired by a recent study from the US that used a detailed analysis of individual categories of consumption, which concludes that the recent slowing of inflation has been due to events on the supply side: <https://rooseveltinstitute.org/publications/supply-side-expansion-has-driven-the-decline-in-inflation/>. This is a really important insight.

The Bank of Canada continues to focus on “surprisingly strong demand” (the July *Monetary Policy Report*) and “excess demand” (the September 6<sup>th</sup> policy announcement). The problem is that demand (per capita) in the Canadian economy is no stronger than it was before Covid. I argue here that the excess inflation during the Covid era has, by a vast majority, been caused by supply-side events. Looking forward, inflation will continue to be determined on the supply side.

Covid is not over, and neither are its economic consequences. High interest rates won’t fix that.

- Ditto for Russian war crimes.
- Ditto for extreme climate events.
- Ditto for decisions by oil producers.

*High interest rates are unnecessarily adding to the considerable stresses that exist in our world.*

### **1.0 Debunking Excess Demand as the Driver of Inflation in Canada**

I like to look at most economic indicators on a per person basis – after all, the fundamental reason we should use those indicators is to determine if we are becoming better-off or worse-off, and therefore a per capita analysis is more revealing than looking at the total levels.

In my current analysis, I also frequently look at current conditions compared to the pre-Covid period.



Major economic indicators for Canada show that, on a per capita basis, conditions are very similar to 2019 – therefore, demand is quite similar to 2019. Yet, during the past two years, inflation has been sharply higher than in 2019.

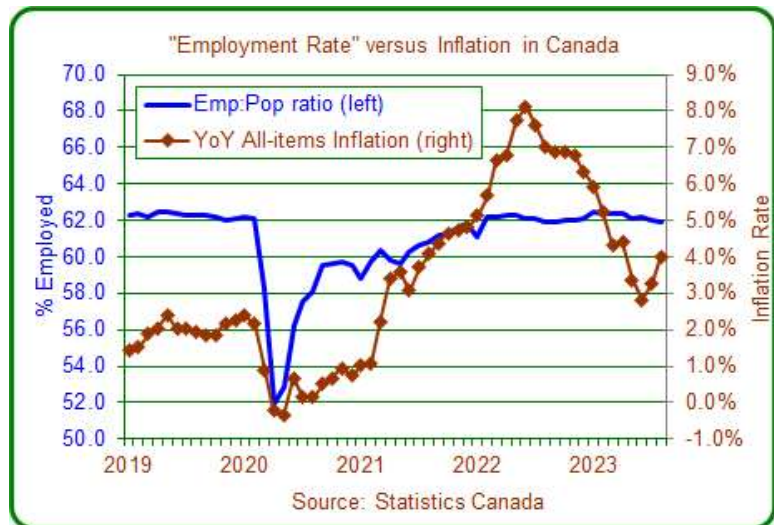
Total output in Canada (Gross Domestic Product, or “GDP”), adjusted for population growth, has recovered from the initial damaging effects of Covid. But, at best it only got back to the same level as in 2019, during the second and third quarters of 2022. More recently, this indicator (as of 2023-Q2) is 1.4% lower than the average for 2019.

Looking at the employment situation, it is not materially different than in 2019 (measured by the percentage of adults who have jobs, or the “employment-to-population ratio”). The employment ratio averaged 62.3% in 2019, 62.0% in the second half of 2022, and 62.2% so far in 2023.

One might look at a different indicator for the employment situation – the unemployment rate. It also has not been materially different than pre-Covid – 5.1% in the second half of 2022, 5.2% for so far this year, versus an average of 5.7% in 2019.

Inflation began to accelerate in Canada during the spring of 2021 and into 2022, and then began to slow during the second half of 2022 into 2023. During the period of acceleration, GDP and the employment situation were improving. To be more accurate, they were recovering from the extreme dips that occurred early in the Covid period. In historical terms (comparing to 2019) those indicators have not been unusually strong. Similarly, when inflation began to slow during the second half of 2022 and into 2023, economic indicators were not weak.

This data indicates that the surge of inflation that began early in 2021 was not driven by unusually strong economic conditions. Similarly, the subsequent retreat of inflation was not relatable to any change in economic conditions (employment or demand).



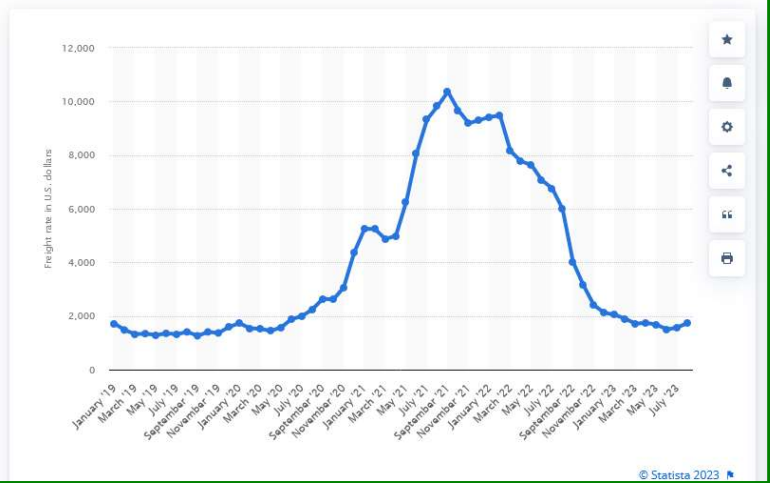


The data provides a simple clue that this inflation has not been due to excessive demand. What's left is a possibility that the inflation was mainly due to events affecting supply.

Those supply-side events include disruptions to supply chains (especially for goods that are imported from Asia, but also including some industries within Canada and the US). Examples of supply-side disruptions include:

- An extreme rise in ocean-shipping costs, which had to pass into consumer-level prices.
- Extreme disruption at the largest port on the US west coast (Long Beach).
- Rampant Covid in the Alberta meat processing industry, which forced shutdowns.
- Extreme weather events that impeded food supplies (notably in California, including drought, and then flooding caused by extreme rainfall).
- War crimes by Russia that have severely reduced food exports from Ukraine.
- Decisions by energy producing countries to reduce their production.
- Fears about personal safety (from Covid) that discourage people from working in public-facing occupations.

**Global container freight rate index from January 2019 to August 2023**  
(in U.S. dollars)



Source: <https://www.statista.com/statistics/1250636/global-container-freight-index/>

Sharp rises in commodity prices have contributed to rapid price growth for many consumer goods and services. The commodities in this discussion are mostly traded internationally (and therefore the prices are determined internationally).

For example:

- The Canadian price index for wheat rose very sharply, peaking in May 2022 at 130% higher than the average for 2019. There has been some reduction in wheat prices since then, but as of August, this index is still 56% higher than in 2019.
- For canola, the index peaked in April 2022, at 157% higher than in 2019, and is now 71% higher than in 2019.
- Those increases have fed directly into food price inflation, and indirectly (by raising the costs of feeding livestock).
- The price index for live animals is currently 50% higher than the average for 2019.
- The price index for food is now 23.4% higher than in 2019 (versus a smaller rise of 15.4% for all-items excluding food).



- For crude energy products, prices peaked in June 2022, at 100% higher than in 2019. Prices are now lower, but are still 45% higher than in 2019, and those energy prices have begun to rise once again (and this fed into an uptick for the all-items Consumer Price Index in August).
- Food costs have been and remain quite inflationary. The year-over-year inflation rate for food peaked at 10.4% this January (versus 5.9% for all-items at the same time). As of August, the inflation rate for food is 6.8% versus the all-items rate of 4.0%.

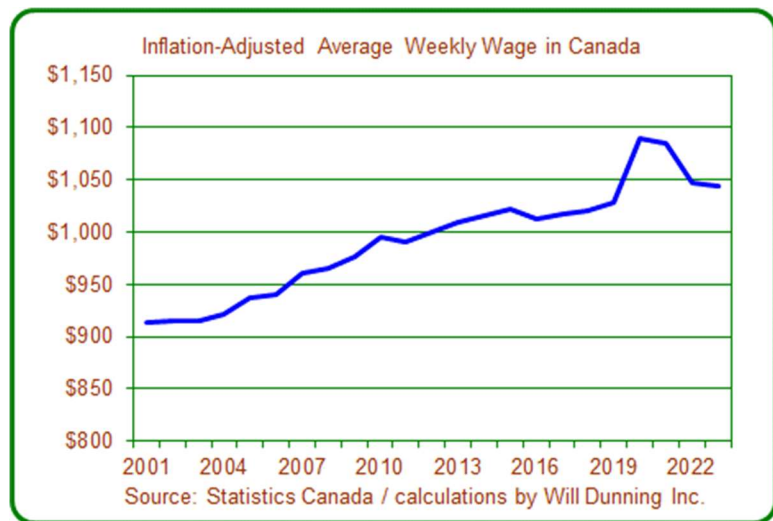
To repeat, these inflationary forces originate mostly internationally: reducing demand or employment in Canada will not materially affect the future course of those drivers of inflation.

For the most part, inflation in Canada will be what-it-is, irrespective of the interest rate policies of the Bank of Canada.

The Bank of Canada argues that wage growth has increased. It is not saying that the wage growth has caused the inflation, but rather that it might contribute to elevated expectations about future inflation (and therefore the BoC is arguing that a goal of its policy must be to suppress wage growth, by weakening the employment situation).

The question at issue here is to what extent are wages in Canada keeping up to inflation, and how do current inflation-adjusted wages compare to the past?

Using data from Statistics Canada's Survey of Employment, Payrolls and Hours, as well as the Consumer Price Index, this chart shows inflation-adjusted average weekly wages in Canada (on an annual basis). This chart indicates that there was a large jump (6.0%) in the inflation-adjusted wage in 2020. During 2020, employment in public-facing industries was substantially reduced by lockdowns. Those industries tend to have below-average wages, and so the large rise in the average was in part a "composition effect". As the economy reopened during 2021 and into 2022, there was some reversal of that composition effect, which brought a small drop in the inflation-adjusted wage (0.5%) in 2021, followed by a larger drop (3.5%) in 2022. For the first half of 2023, the average is slightly 0.4% lower than in 2022.



For the first half of 2023, the average inflation-adjusted wage is 2.0% higher than in the first half of 2019. This equates to an average "real" increase of 0.5% per year. During the period covered by this dataset (since the start of 2001) up to 2019, wage increases exceeded inflation in most years (15 out of 18 years). For those 18 years, the "real" increase averaged 0.66% per year. So, the average increase during the Covid period (0.5% per year) is slightly below the average seen during the pre-Covid period.

Wage growth in Canada has been a response to inflation, not a cause of it.



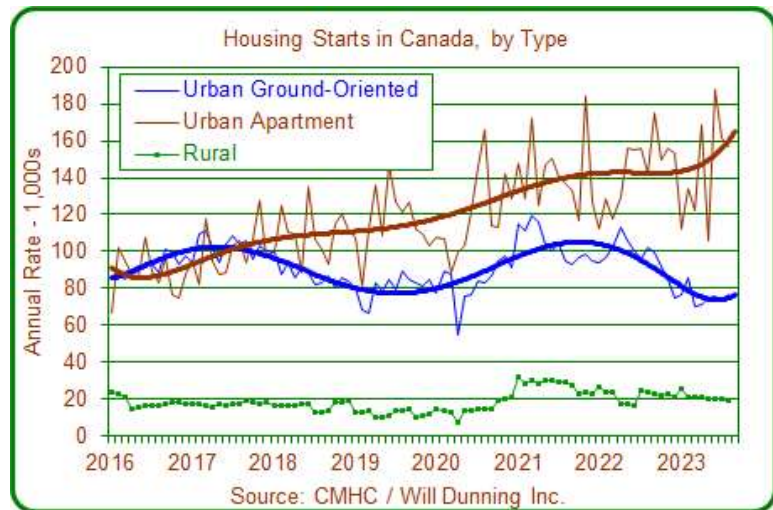
Canadian workers have managed to negotiate improved living standards over time. What they have achieved during the past four years is no better than previously (in fact, it is slightly weaker).

I am unable to conclude that wage growth in Canada is currently excessive, or that the Bank of Canada should try to weaken workers' bargaining positions.

I have argued that elevated interest rates cannot fix the supply-side problems that have been mostly responsible for the recent inflation, and that the course of inflation will have little to do with the Bank of Canada policy.

But, in the medium-term and long-term, high interest rates will discourage investments, which will add to supply-driven inflationary pressures.

We are already seeing the early stages of supply suppression at the leading edge of the Canadian economy – housing construction has begun a sharp downturn for low-rise housing. Construction of apartments has longer pre-construction processes, so starts in that sector continue to reflect the very low interest rates that existed previously. Scattered information implies quite strongly that starts of apartments will also begin to fall during 2024.



Construction of new housing in Canada has fallen far short of the needs of our growing population, and inadequate housing supply has been a substantial driver of inflation. Due in part to interest rate policies, the housing supply deficit is going to get even larger, resulting in long-term upward pressure on housing costs.

We should expect that these interest rates are going to impede investments in other sectors of the economy, affecting future productive capacities and contributing to inflationary pressures.

Two further points:

- The interest rate policies of the Bank of Canada have now become a major driver of inflation. Statistics Canada estimates that, as of August, mortgage interest costs for home owners are 30.9% higher than a year ago. And, there must be some other areas of the economy in which interest costs are forcing price increases. But, those elements of interest-rate-driven inflation are not being measured or reported.
- Canada is now much more interest-rate sensitive than the US, due to our proportionally much higher consumer debt level, and because each year more of our mortgages are subject to renewal. Therefore, it is quite likely that the economic impacts of current policies will be much more harsh in Canada than in the US. Our interest rate policies should not be coupled to the US. Some people will argue that decoupling would result in a much weaker dollar and therefore

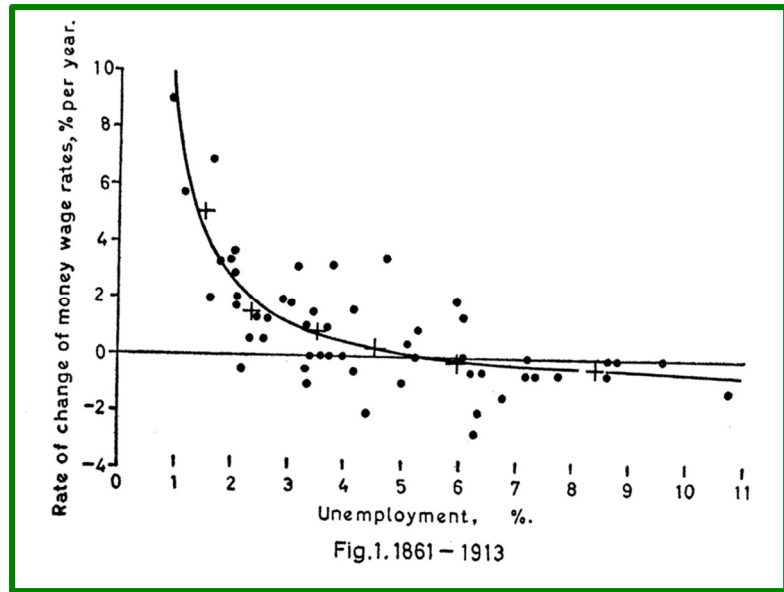


imported inflation. But, the exchange rate is affected by factors other than interest rate spreads: historically, movements in commodity prices have been more influential than the rate spread.

## 2.0 The “Phillips Curve”

The idea that changes in inflation depend on demand in the economy and especially on the employment situation relies a great deal on an old concept called the “Phillips curve”, which entered the world on or about my 3<sup>rd</sup> birthday.

The original analysis looked at the relationship between the unemployment rate (in the UK) and growth of wage rates, and found that wage growth is related to the level of the unemployment rate and change in the unemployment rate.<sup>1</sup> Here is the chart that I find most useful. The relationship isn’t perfect, since a lot of the datapoints are far from the trend line, but it is clear that there is somewhat of a relationship for the time period of 1861 to 1913. The paper goes on to conclude that the relationship was sustained during the period up to 1957.



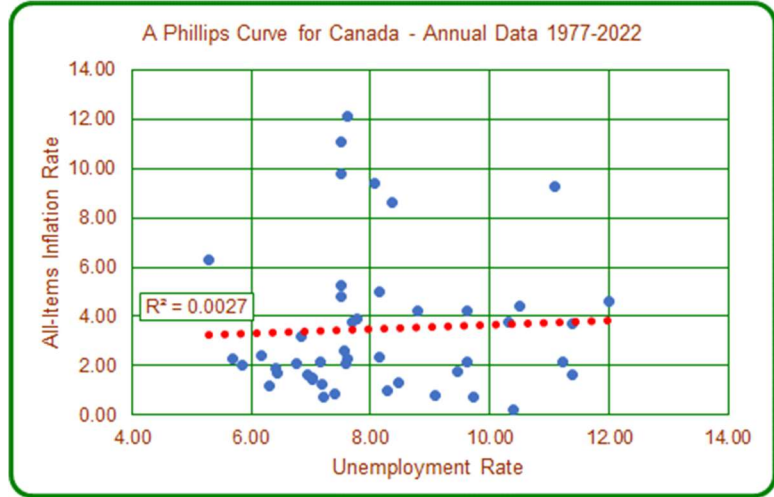
The concept has evolved since then, to conclude essentially that strong employment situations drive wage growth and those cost increases cause higher inflation. This is at the core of central bank policies, which are currently using increased interest rates with the intention of slowing national economies and causing increased unemployment.

There has been a lot of discussion about the “flattening” of the Phillips curve (and about the consequent implications for policy). Here is my quick attempt to add to that discussion.

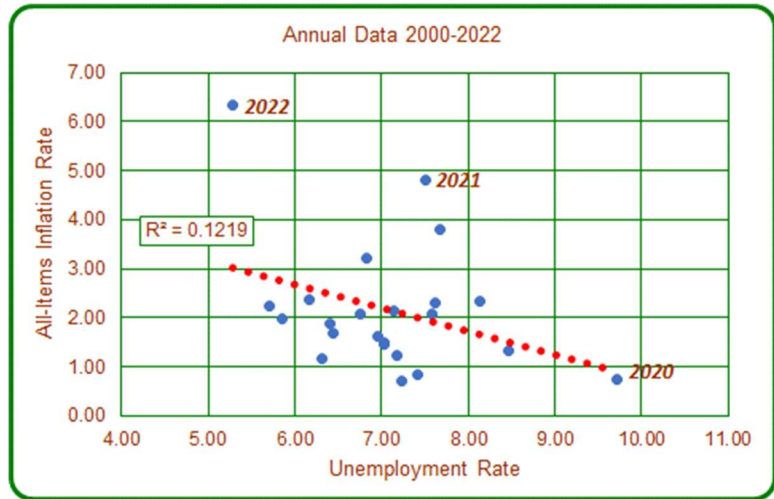
<sup>1</sup> By searching for “Economica, November 1958”, I found a link to the original study at the website of the economics department at Duke University:  
[https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&ved=2ahUKewi70t2MzMiBAXVMEjQIHQWJDrYQFnoECA8QAQ&url=http%3A%2F%2Fpublic.econ.duke.edu%2F~kdh9%2FCourses%2FGraduate%2520Macro%2520History%2FReadings-1%2FPhillips.pdf&usg=AOvVawOul8ZBjDFjQ4X\\_qoN6\\_xql&opi=89978449](https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&ved=2ahUKewi70t2MzMiBAXVMEjQIHQWJDrYQFnoECA8QAQ&url=http%3A%2F%2Fpublic.econ.duke.edu%2F~kdh9%2FCourses%2FGraduate%2520Macro%2520History%2FReadings-1%2FPhillips.pdf&usg=AOvVawOul8ZBjDFjQ4X_qoN6_xql&opi=89978449)



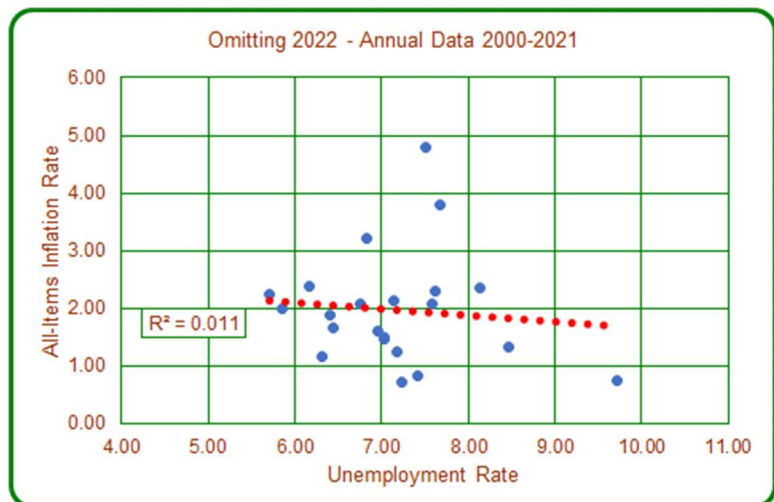
The Phillips curve for Canada has flattened. Looking at the period for 1977 to 2022, the trend line is essentially flat: to the extent that it has a slope, the trend points in the wrong direction, suggesting that high unemployment is associated with higher inflation. The  $R^2$  statistic (which is shown on this chart) would have a value of 1.00 if there is a perfect relationship. Here, the  $R^2$  value is extremely close to zero, telling us that in this data there is no relationship.



During the second half of the analysis period, there might be a relationship, as the trend line has the expected downward slope. But, the relationship is very weak, as the  $R^2$  statistic is far from 1.0, at just 0.12. In this chart, there are two other datapoints (2018 and 2019) when the unemployment rate was similar to 2022 (below 6%) yet the inflation rates were very close to the 2% target. Moreover, the downward slope of the trend line is the result of two datapoints from the Covid period (2022 and 2020).



Taking out one datapoint (2022) the  $R^2$  statistic (0.01) tells us that for 2000 to 2021, there is no relationship between the unemployment rate and inflation. So, was it the 5.28% unemployment rate that caused the inflation rate to be 6.32% in 2022 (the demand argument about inflation), or did the inflation have a different cause? (If all three Covid years are taken out of the dataset, the trend line is almost perfectly flat, and the  $R^2$  is 0.00001. I'm guessing that during the past 40 years I have never seen an economic relationship that is this weak.)







Should we say that the Phillips curve ceased working for more than 40 years, but has reasserted itself during the Covid period and therefore it is critical that the economy be weakened and unemployment be increased? Or, should we say that this inflation is due to a combination of a once-in-a-century global health emergency, plus war crimes, extreme climate events, and decisions by oil producers, and that these high interest rates are unnecessarily adding to the considerable stresses that exist in our world?

### **3.0 A Micro-Economics View from America**

A study from the US (published on-line in early September) has added to my thinking about demand versus supply as drivers of inflation: <https://rooseveltinstitute.org/publications/supply-side-expansion-has-driven-the-decline-in-inflation/>

The study's headline conclusion is that the recent slowing of inflation has been mostly driven by expansions in supply rather than reductions in demand.

The paper comments: "Many economists believed that this was not possible—that we couldn't see substantial deceleration in inflation without an increase in unemployment or even a recession", and further that "Inflation has fallen at such a speed that it is no longer in the range predicted by a persistent Phillips Curve model trained on data from the 1970s".

For me, this study implies (but doesn't address) a question that I consider more important: to what extent was the acceleration of inflation (2021 and 2022) due to either contractions of supply or to excessive demand?<sup>2</sup> Furthermore, to what extent has the recent supply expansion been a recovery from an earlier contraction, versus new growth? For these reasons, I think it's much more useful to look at the Covid period as a whole, rather than at any individual sub-periods.

In this section, I'm attempting to create a similar analysis, using Canadian data, to address the implied questions. The conclusion developed here is that Canadian inflation during 2021 to 2022 was mostly due to constraints on supply, and that the supply-driven pressure has abated during the past year. Demand has had very little impact on inflation.

In essence, the methodology is to use data for individual categories of consumer expenditures, comparing changes in prices versus changes in consumption.

The US study has quite detailed data (covering 123 consumption categories). For Canada, I used a dataset that has less detail (39 categories)<sup>3</sup>. In the analysis, I added another step, adjusting for population growth to calculate per capita "real" consumption.

The data can be neatly summarized using scatterplots (for each category, price growth is compared to growth of per capita real consumption): if the trend line slopes upwards, then the inflation is generally driven by demand; if it slopes downwards, then supply is the driver.

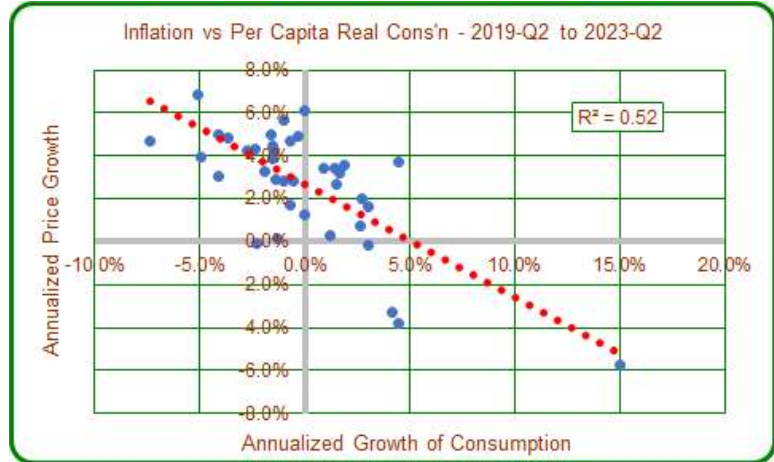
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<sup>2</sup> However, the report adopts a methodology that was used in a different study, which concluded that "a majority of the rise in inflation in the 2021-2022 period is attributable to acyclical Covid-sensitive categories". (Adam Hale Shapiro, Federal Reserve Bank of San Francisco, Working Paper 2020-29, published June 14, 2022).

<sup>3</sup> The data is in Statistics Canada Table: 36-10-0107-01.



This chart looks at the changes (annual averages) for 2019-Q2 to 2023-Q2 (in other words, this period covers the acceleration of inflation, then disinflation, during the Covid period). The trend line shows a strong downward relationship (many of the data points are reasonably close to the trend line, and the R<sup>2</sup> of 0.52 is respectable). The data and the trend line show that for categories with the most rapid inflation, consumption tended to fall.<sup>4</sup>



The downward slope in this data implies that the change in inflation during the Covid period has been due more to changes in supply than to changes in demand.

Within this analysis framework there are 4 combinations of price growth and changes in consumption, which help us interpret the roles of demand and supply.

<b>Interpreting the Data</b>			
		<b>Inflation</b>	
		<i>Exceeds 2% target</i>	<i>At or below 2%</i>
<b>Real Consumption per Capita</b>	<i>Increases</i>	Excess demand	Adequate supply
	<i>Decreases</i>	Inadequate supply	Ambiguous

Source: Will Dunning Inc.

To be more specific:

- Excess demand: per capita “real” consumption increases and price growth exceeds the benchmark target of 2% per year.
- Inadequate supply: price growth exceeds 2% but real consumption has fallen. Demand can’t be the driver: the issue is that supply has been disrupted.
- Adequate supply: consumption expands but inflation is moderate (below 2%, and especially if prices are falling).
- Ambiguity (in the lower right-hand corner of the table above): if inflation is below 2% and consumption has fallen, then the data by itself doesn’t tell us if the outcome is due to weak demand and/or weak supply (but we might be able to apply other information that leads to a conclusion).

Within the data shown in the chart above:

<sup>4</sup> The dataset includes one significant outlier (Cannabis, in the lower right-hand corner) which had the largest growth rate for consumption and a large price decline. Omitting it from the data would have little impact on the trend line and would not alter the overall conclusion that excessive inflation has been primarily driven by supply.



- Excess demand: 7 out of 39 categories have inflation exceeding 2% per year over the 4 years and per capita consumption increased. Therefore, for those categories, the inflation might (preliminarily) be considered demand-sensitive. Those 7 categories currently account for 28.9% of consumption (as of 2023-Q2). But, 2 of those 7 categories are for housing: “Paid rental fees for housing” (5.5% of consumption) and “Imputed rental fees for housing”<sup>5</sup> (16.0% of consumption). I hope we can agree that the rapid price growth for housing expenditures (averaging 3.4% per year during the 4-year period) was primarily due to the inadequacy of housing supply in Canada.<sup>6</sup> Taking housing out of this group, the remaining 5 demand-sensitive categories account for 7.4% of consumer expenditure. The 5 demand-driven categories include:
  - Non-alcoholic beverages (1.0% of total consumption, 6.1% average inflation, growth microscopically above 0, at 0.03%).
  - Water supply and sanitation services (0.6% of total consumption, 2.7% average inflation, per consumption growth at 1.5%).
  - Household appliances (0.8% of total consumption, 3.6% average inflation, per consumption growth at 1.9%).
  - Other recreational items and equipment, garden products and pets (2.5% of total consumption, 3.7% average inflation, per consumption growth at 4.5%).
  - Personal care (2.5% of total consumption, 3.2% average inflation, per consumption growth at 1.7%).
- Inadequate supply: 20 categories have inflation above 2% per year and per capita consumption fell. This combination indicates that the inflation is not due to demand, but because there wasn’t enough supply. These 20 categories account for 44.2% of consumption. If we can agree that excess inflation for the 2 housing categories is also due to inadequate supply, then the excess inflation has been supply-sensitive for 65.7% of consumption.
- Among the 20 categories for which the data shows inadequate supply, the 5 largest are:
  - Food (7.5% of total consumption, 5.6% average inflation, per capita consumption fell by 1.0%).
  - Operation of transport equipment (6.5% of total consumption, 5.0% average inflation, per consumption fell by 1.6%).
  - Purchase of vehicles (5.6% of total consumption, 4.3% average inflation, per consumption fell by 2.7%).
  - Food and beverage services (5.4% of total consumption, 4.2% average inflation, per consumption fell by 1.4%).
  - Recreational and cultural services (3.1% of total consumption, 3.3% average inflation, per consumption fell by 1.9%).
- Adequate supply: 9 categories have inflation below 2% and consumption has increased. These 9 categories account for 21.1% of consumption.
- Combining the groups of adequate supply plus inadequate supply, the data covers 29 out of 39 consumption categories, and 65.3% of consumption. And, if we add the 2 housing categories

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<sup>5</sup> In this dataset, the cost concept for owner-occupied housing is “what would the cost be if it was rented”.

<sup>6</sup> Also, I have to wonder if the data is correct that per capita “real” consumption of housing increased during this period. Is it possible that the estimate of price growth (3.4% per year) is an under-estimate, that in consequence real consumption was over-estimated, and that there was actually a real reduction?



that are under-supplied, inflation is chiefly determined by supply in 31 categories that account for 86.9% of total consumption. (The share for excess demand has been calculated at 7.4%).

- Ambiguity: there are 3 categories (accounting for 5.7% of consumption) for which inflation averaged less than 2% per year and per capita consumption fell.

The detailed results of the calculations are shown in a table on pages 14 and 15.

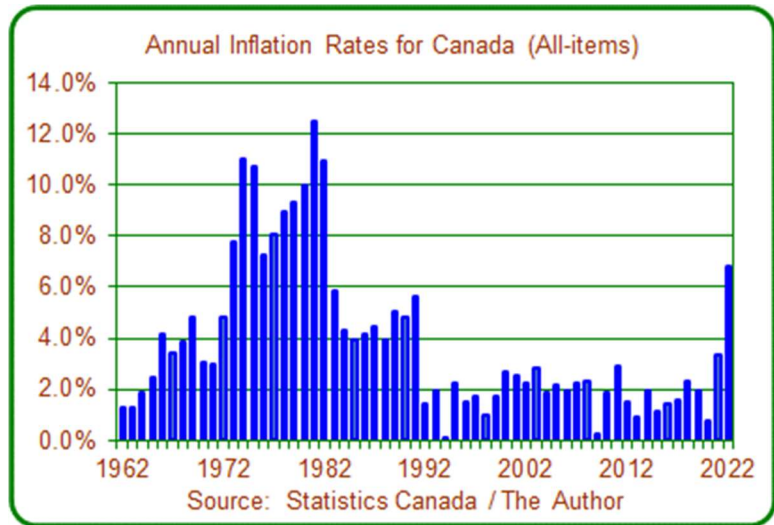
#### 4.0 A Long-Term Supply Event That Has Influenced Inflation

During the past three decades, achieving 2% inflation has been easy, due to geopolitics and geoeconomics. The future might be a lot less friendly to inflation-control. I can foresee a future in which there is a lot of arguing about the feasibility (and cost) of a 2% target.

“Off-shoring” of manufacturing (mostly to Asia) has been strongly deflationary: the much lower wage rates that can be paid at Asian factories have resulted in very slow inflation, and in many cases falling prices, for many of the finished products that we buy.

This has resulted in low inflation rates, which has made it easy for central banks to set low targets for inflation, and easy to achieve those targets. During the past three decades, the all-items inflation rate for Canada averaged 2.0% per year. As is shown in the table, the average rate was slightly less for goods (1.6%) and slightly higher for services (2.3%).

Prior to the massive off-shoring, the inflation rates had been higher.



<b>Average Annual Inflation Rates by Decade</b>			
<i>Decade up to...</i>	<i>All-Items</i>	<i>Goods</i>	<i>Services</i>
1972	3.3%	2.6%	4.5%
1982	9.6%	9.9%	9.2%
1992	4.3%	3.9%	4.8%
2002	1.8%	1.5%	2.1%
2012	2.0%	1.3%	2.6%
2022	2.2%	2.0%	2.3%

Source: Statistics Canada table 18-10-0005-01, calculations by Will Dunning Inc



If and when there is an end to shifting production to Asia, deflationary effects will be reduced, which will make it harder for the Bank of Canada (and other central banks) to achieve a 2% inflation target.

And, if there is a substantive reverse process that moves production back to Canada, the US, and Europe – let’s call it “reshoring” – that would reverse the deflationary pressures and cause re-inflation.

I can imagine some factors that could cause a large and long-lasting reshoring, such as:

- Concerns about stability of supply chains.
- Geopolitics – decisions to be less dependent on countries that have autocratic governments.
- Environmental considerations.

And so, I can imagine a future in which there is inherently more inflationary pressure. I’m not saying that I foresee this as a certainty, but it is a possibility.

I think we should see the 2% inflation rate over the past three decades as an accident of history, an accident that was very beneficial to us. (There has also been a downside, as off-shoring has contributed to worsening of income inequality.) 2% inflation might not be achievable in future, at least not at an acceptable cost.

All of this to say, I see a possibility that during the coming years we will get into arguments about resetting the official target for inflation. During the second half of the 1960s and of the 1980s, a 4% inflation rate was typical, and it was acceptable economically and socially. That might be the future.

In that future, high interest rates won’t fix the inflationary pressures that result from reshoring: high interest rates would cause a lot of pain, and add to medium-term inflation pressures (by discouraging investment). In a longer process of reshoring, using interest rates to fight re-inflation might be an expensive mistake.

I expect to hear some rebuttals, like “we can’t give up the hard-earned gains that we get from 2% inflation rates”. But, we didn’t do anything “hard” that “earned” 2% inflation. It was an accident of history, and it was easy. When that accident ends, 2% inflation will no longer be easy.

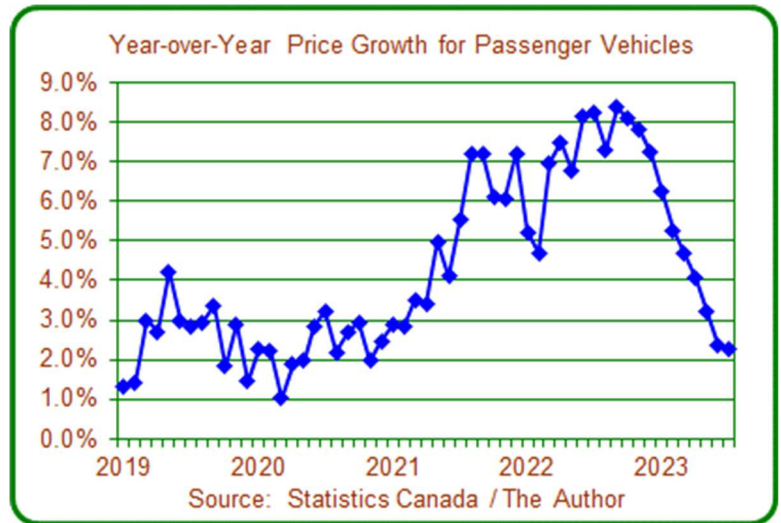
The sharp rise in vehicle price inflation seen during 2021 and 2022 is partly a consequence of the historical off-shoring: the disruption of supply chains that was caused by Covid caused shortages and raised costs for imported goods.

As an illustration: a year ago, I thought about buying a new car, and found it impossible – new car dealers had no inventories, and long and uncertain periods on waiting lists. Also, my neighbour found that new cars were being sold as if they were used, at substantial increments above the MSRPs.

Available data are consistent with these personal observations: as is shown on the next page, sales of passenger cars are far lower than they were pre-Covid, and prices spiked during 2021 and 2022. While price growth has decelerated considerably during the past year, the level of prices remains elevated (20% higher than in 2019). Car sales remain quite weak so far in 2023, indicating some combination of continued supply constraints and/or consumer resistance to elevated prices. This example of greatly weakened cars sales combined with very rapid price growth is illustrative of a situation in which inflation can reasonably be attributed to constraints on supply, rather than to demand factors.



<b>Sales of New Motor Vehicles in Canada (units)</b>			
Year	Passenger Cars	Trucks (1)	Total
2016	661,088	1,322,657	1,983,745
2017	646,960	1,429,985	2,076,945
2018	586,357	1,459,364	2,045,721
2019	496,851	1,483,299	1,980,150
2020	325,494	1,266,625	1,592,119
2021	327,994	1,364,320	1,692,314
2022	272,408	1,285,829	1,558,237
<b>Ch. vs 2019</b>			
2020	-34%	-15%	-20%
2021	-34%	-8%	-15%
2022	-45%	-13%	-21%
Source: Statistics Canada table 20-10-0001-01, calculations by Will Dunning Inc			
Note: (1) "Trucks" include "light trucks" (such as SUVs) that may be used as personal passenger vehicles			



### About the Author

I have been analyzing housing markets since 1982.

In September 2000, I opened my own consulting company (Will Dunning Inc.), specializing in analysis of housing markets. Clients include a wide range of industry associations, governments, non-governmental organizations, financial institutions, home builders, investors, and asset managers.

My prior experience includes various positions in economic and housing market analysis with Canada Mortgage and Housing Corporation (1982 to 1997).

My website – [www.wdunning.com](http://www.wdunning.com) – provides a variety of reports on housing markets, including “Housing Market Digest”. The two monthly editions of the HMD reports discuss market trends for Canada and the Greater Toronto Area.



<b><i>Inflation Rates and Changes in Per Capita Consumption, 2019-Q2-2023-Q2 (Annualized)</i></b>						
<i>Consumption Category</i>	<i>YoY Inflation</i>	<i>YoY Growth of Consumption per Capita</i>	<i>% of Total Consumption</i>	<i>Inflation &gt; 2%</i>	<i>Consumption Growth &gt; 0%</i>	<i>Supply vs Demand Indicator</i>
Food	5.6%	-1.0%	7.5%	Yes	No	Inadequate supply
Non-alcoholic beverages	6.1%	0.03%	1.0%	Yes	Yes	Excess demand
Alcoholic beverages	2.8%	-1.0%	1.8%	Yes	No	Inadequate supply
Tobacco	6.8%	-5.1%	0.9%	Yes	No	Inadequate supply
Cannabis	-5.8%	15.0%	1.0%	No	Yes	Adequate supply
Clothing	-0.2%	3.0%	4.0%	No	Yes	Adequate supply
Footwear	0.3%	1.2%	0.7%	No	Yes	Adequate supply
Paid rental fees for housing	3.4%	1.5%	5.5%	Yes	Yes	Excess demand
Imputed rental fees for housing	3.4%	0.9%	16.0%	Yes	Yes	Excess demand
Maintenance and repair of the dwelling	4.5%	-1.5%	0.3%	Yes	No	Inadequate supply
Water supply and sanitation services	2.7%	1.5%	0.6%	Yes	Yes	Excess demand
Electricity, gas and other fuels	4.3%	-1.5%	2.2%	Yes	No	Inadequate supply
Furniture, furnishings, carpets and other floor coverings	4.7%	-0.7%	1.6%	Yes	No	Inadequate supply
Household textiles	5.0%	-4.1%	0.3%	Yes	No	Inadequate supply
Household appliances	3.6%	1.9%	0.8%	Yes	Yes	Excess demand
Tools and equipment for house and garden	2.0%	2.7%	0.6%	No	Yes	Adequate supply
Other goods and services related to the dwelling and property	3.8%	-1.5%	2.1%	Yes	No	Inadequate supply
Medical products, appliances and equipment	1.6%	3.0%	2.7%	No	Yes	Adequate supply
Out-patient services	4.3%	-2.3%	1.5%	Yes	No	Inadequate supply
Hospital services	3.9%	-4.9%	0.2%	Yes	No	Inadequate supply
Purchase of vehicles	4.3%	-2.7%	5.6%	Yes	No	Inadequate supply
<b><i>Continued...</i></b>						



<i>... Continued</i>						
<i>Consumption Category</i>	<i>YoY Inflation</i>	<i>YoY Growth of Consumption per Capita</i>	<i>% of Total Consumption</i>	<i>Inflation &gt; 2%</i>	<i>Consumption Growth &gt; 0%</i>	<i>Supply vs Demand Indicator</i>
Operation of transport equipment	5.0%	-1.6%	6.5%	Yes	No	Inadequate supply
Transport services	3.0%	-4.1%	1.8%	Yes	No	Inadequate supply
Communications	-3.3%	4.2%	3.3%	No	Yes	Adequate supply
Audio-visual, photographic and information processing equipment	-3.8%	4.5%	1.9%	No	Yes	Adequate supply
Other major durables for recreation and culture	4.9%	-3.6%	0.6%	Yes	No	Inadequate supply
Other recreational items and equipment, garden products and pets	3.7%	4.5%	2.5%	Yes	Yes	Excess demand
Recreational and cultural services	3.3%	-1.9%	3.1%	Yes	No	Inadequate supply
Newspapers, books and stationery	4.7%	-7.4%	0.4%	Yes	No	Inadequate supply
Education	1.3%	0.0%	1.6%	No	Yes	Adequate supply
Food and beverage services	4.2%	-1.4%	5.4%	Yes	No	Inadequate supply
Accommodation services	4.9%	-0.3%	1.0%	Yes	No	Inadequate supply
Insurance	1.7%	-0.7%	2.4%	No	No	Ambiguous
Financial services indirectly measured	-0.1%	-2.3%	2.2%	No	No	Ambiguous
Other financial services	0.7%	2.7%	5.3%	No	Yes	Adequate supply
Personal care	3.2%	1.7%	2.5%	Yes	Yes	Excess demand
Personal effects	2.8%	-0.6%	0.7%	Yes	No	Inadequate supply
Social services	0.1%	-1.3%	1.2%	No	No	Ambiguous
Other services	2.9%	-1.4%	0.9%	Yes	No	Inadequate supply
Source: calculations by Will Dunning Inc., using data from Statistics Canada tables 36-10-0107-01 and 17-10-0009-01						