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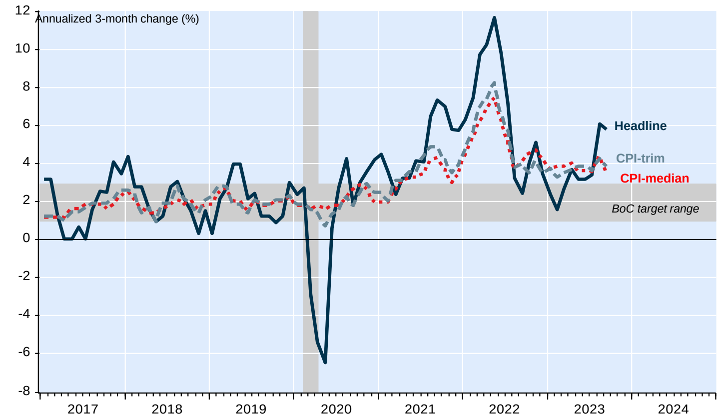
Core inflation in Canada: The imbroglio must end

By Matthieu Arseneau and Alexandra Ducharme

- Since 1992, the Bank of Canada's mandate has remained stable: to keep CPI inflation in the middle of a 1% to 3% range. However, the same can't be said for the core inflation measures used to guide monetary policy and its communication, particularly since 2021.
- Indeed, the many turnarounds of the past three years highlight the fact that the Bank of Canada has too often allowed itself to modify the core inflation measures emphasized in its communications. This gives the impression that specific inflation data is sometimes used in a targeted way to support a pre-established monetary policy decision and communication.
- In short, the Bank of Canada must prioritize an in-depth reassessment of core inflation measures, and not rule out a return to the much more flexible and simple exclusion measures. Furthermore, it must make publicly available all the data needed to replicate these indicators, to avoid the public perceiving them as a black box.

Since March 2022, the Bank of Canada (BoC) has been engaged in a monetary tightening cycle of unprecedented speed and aggressiveness, for a total of 475 basis points in 17 months. In September and October, the Governing Council chose to leave the policy rate unchanged, but remained concerned about the persistence of underlying inflationary pressures and said it was prepared to raise the overnight rate again if necessary, as the average annualized pace of CPI-Trim and CPI-Median remains in the 3.5% to 4.0% range that the Bank has flagged as a level of concern[2]. Meanwhile, progress on headline CPI inflation has been timid given the rebound in energy prices (chart).

The pace of inflation measures preferred by the BoC remains concerning
Annualized 3-month change in CPI-trim and CPI-median



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In addition to its official core inflation measures, the Bank has introduced other core inflation measures to its analytical framework in the last year to guide its decisions. Indeed, it has recently been focusing on inflation in core services excluding housing, which is showing an even more worrying pace (3-month annualized growth of 4.3% in September). Although this measure is not part of the Bank's official analytical framework, some groups of economists go so far as to call it the "supercore" CPI. With the proliferation of core measures used by our central bank, analyzing inflation data has become more complex and it's easy to get lost in the shuffle. In our opinion, the BoC has been contributing to the current imbroglio for some time and needs to stabilize the situation. In this Special Report, we suggest that the central bank prioritizes a thorough re-evaluation of core inflation measures, and even considers a major clean-up.

The short history of core inflation measures in Canada

The Bank of Canada's mandate is to ensure that annual inflation as measured by the Consumer Price Index (CPI) is at the mid-point of a control range between 1% and 3%. Although this target relates to the overall inflation rate, the Bank needs to monitor underlying price pressures so as not to react unduly to a temporary shock affecting particular components. It may therefore be useful to analyze a sub-group of the inflation basket to detect fundamental price movements. There are a number of possible approaches, and there is no consensus among the major central banks as to which measure of core inflation is to be preferred (see table).

[2] For the purposes of this Special Report, we will use the terms "core inflation" and "underlying inflation" interchangeably.

Different approaches to measuring core inflation
Core inflation measures favoured by major central banks

	Exclusion based	CPI-trimmed	CPI-median	Volatility weighted	Model based
Reserve Bank of Australia	✔	★	★		
Bank of England	★				
European Central Bank	★	✔	✔		✔
Bank of Japan	★	✔	✔		
Reserve Bank of New Zealand	★	✔	✔		✔
Central Bank of Norway (Norges Bank)	★	✔	✔		
Central Bank of Sweden (Sveriges Riksbank)	★				
Swiss National Bank	★	★			
Federal Reserve	★	✔	✔		✔
Bank of Canada		★	★		

★ : preferred measurement; ✔ : measurement used
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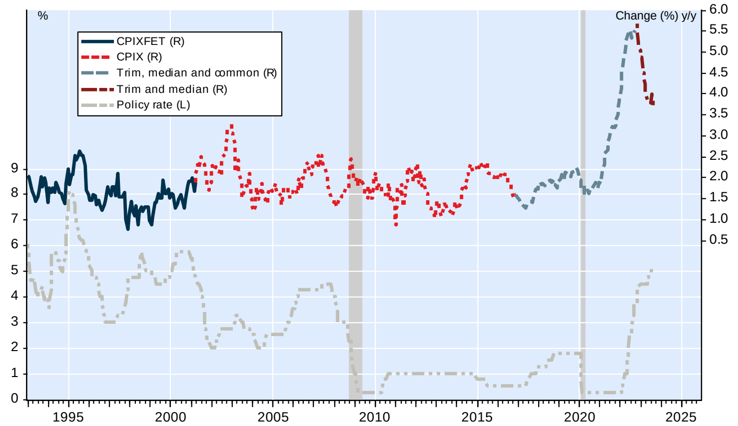
Canada: History of core inflation measures preferred by the BoC
Policy rate and core inflation preferred by time frame



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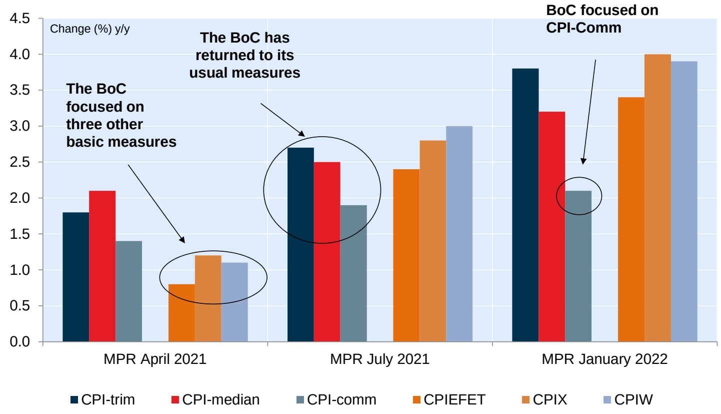
In Canada, the core inflation measures favoured by the BoC have evolved over time. From 1991 to 2001, the Bank's approach was to exclude food, energy and indirect taxes from the basket, a measure similar to the one favoured by the U.S. Federal Reserve to this day (PCE deflator excluding food and energy). Then, from 2001 to 2016, the excluded categories became the eight most historically volatile basket components, along with indirect taxes (CPIX). At the October 2016 inflation target renewal, the Bank signaled a new shift in the way it analyzes underlying price pressures, stating "significant transitory shocks to CPI components not excluded from CPIX". Thus, with the aim of having indicators that are more flexible to these shocks, the Bank has adopted three new core inflation measures, namely CPI-trim, CPI-median and CPI-common, judging them to be more persistent and better correlated with the business cycle than CPIX. These three measures differ from the Bank's previous measures in that they do not systematically exclude the same items from the CPI basket each month. Specifically, the CPI-trim consists of a weighted average of monthly variations in the representative consumer basket, excluding the 20% of components with the highest and lowest monthly growth. In total, the CPI-trim thus represents 60% of the overall CPI basket. The CPI-median, on the other hand, represents the monthly growth of the component at the 50e percentile of the price growth distribution. The CPI-common is based on a statistical model. The last proper assessment of core inflation measures dates back to 2019 (**link**), but that doesn't mean that the last few years have been a smooth ride in this respect – quite the contrary.

Imbroglio of the last three years

From 2016 to 2020, the Bank of Canada has been consistent in its monitoring of core inflation, by commenting on the three measures it officially favoured (CPI-trim, CPI-median, CPI-common). However, in its April 2021 Monetary Policy Report (MPR), the Bank began to sow doubt by indicating that these measures overestimated core inflation and preferred to put forward measures with lower average annual growth (CPIX, CPIXFET, CPIW) on the basis of questionable arguments that we had criticized in a **study.** In its next MPR (July 2021), the Bank turned the spotlight back on its usual measures, with these rates now reporting lower inflationary pressures on average than suggested three months earlier. In January 2022, the Bank followed this up by warning against the message being sent by the CPI-trim and CPI-median, arguing that they might be more reflective of supply chain disruptions. In this context, the Bank was of the opinion that the CPI-common better reflected excess demand in the country. However, the annual change of this indicator was significantly lower than that of its two counterparts. These choices gave the impression of a data selection designed to minimize inflationary pressures and justify the absence of a rate hike. At the time, the BoC adhered to the view of the Fed and other major central banks that inflationary pressures were essentially transitory and did not reflect domestic pressures. However, no less than 9 months later, the BoC jettisoned the CPI-common following a **special report** we had written exposing its shortcomings. Between the time the Bank identified the CPI-common as a preferred measure and the time it abandoned it, the annual growth of this measure for December 2021 had been revised from 2.1% to 3.5%. There are therefore grounds for concern that monetary policy may have been set, at least in part, on the basis of a measure that has proved unreliable, if not inaccurate.

Evolution of CPI measures between April 2021 and January 2022
Year-on-year variation, monthly



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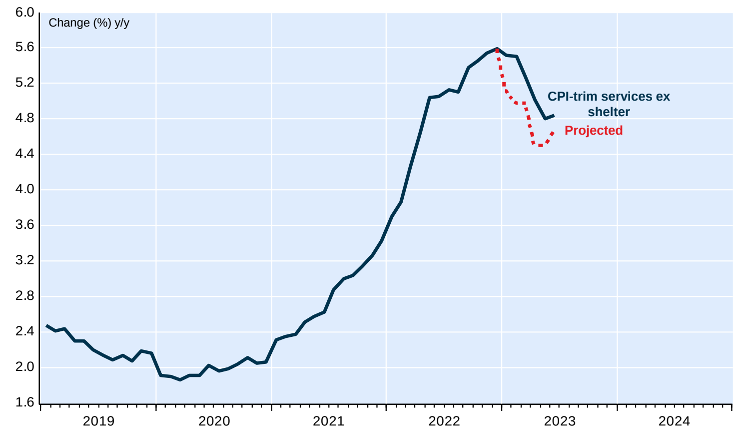
... but subsequently changed its analytical framework
BoC inflation projections for services excluding housing, January 2023 MPR and CPI-trim services excluding shelter



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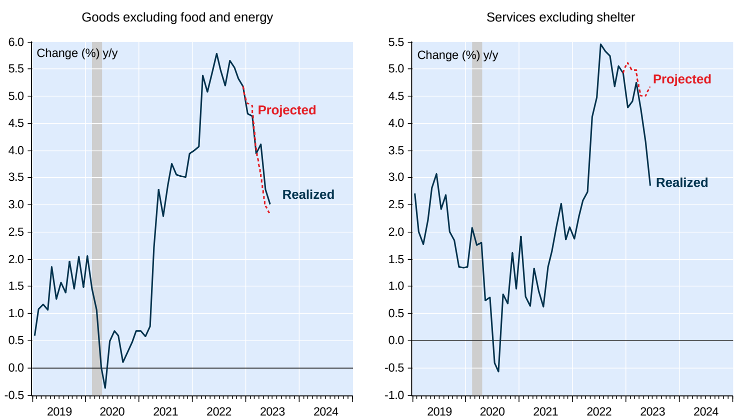
This tendency to alternate between inflation measures commented on in the Bank's official publications continued in the months that followed, this time to justify a restrictive monetary policy. In January 2023, in addition to the CPI-trim and CPI-median, the Bank turned its attention to inflation in services excluding housing, which it expected to remain high for the first half of 2023. This had been justified on the grounds that this price category more closely reflects domestic conditions than goods prices, which are more dependent on import prices. However, inflation in this category has moderated much faster than the Bank had expected (see chart).

Canada: BoC overestimated inflation in services excluding housing...
Annual variation, projections as of January 2023 MPR compared to realized inflation (last data: June)



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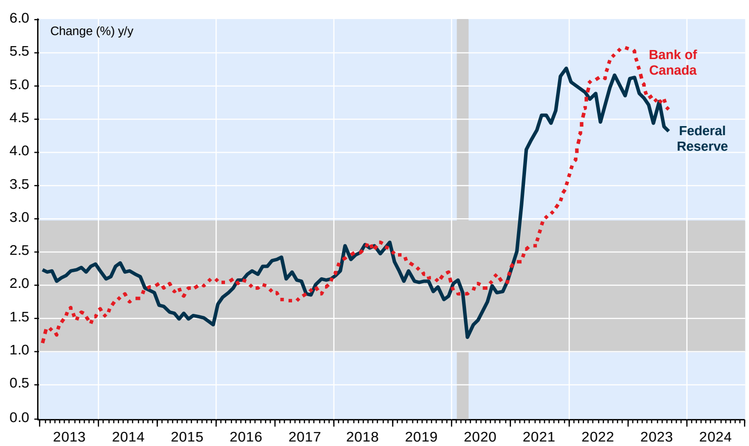
This faster-than-projected moderation did not come as a relief to the Central Bank. In the next Monetary Policy Report, published in April 2023, the Bank introduced yet a new inflation measure that tracks the prices of core services excluding housing, explaining that the non-housing services reported in January 2023 were artificially reduced by "falling prices for childcare services" following the rollout of a government-subsidised scheme. In concrete terms, the prices of "core" services excluding housing as defined by the Bank of Canada are the prices of services that contribute to the CPI-trim, excluding housing-related categories. This price index was higher than the Bank's anticipated trajectory in January for services excluding housing, which may have been one of the reasons why the Bank subsequently raised its policy rate even further (graph).

In doing so, the Bank of Canada now favoured a measure closer to that preferred by the Federal Reserve, which tracks core inflation in services excluding shelter (in its case, this is calculated by excluding food and shelter from services PCE) Indeed, a few weeks before the Bank of Canada's first publication of this inflation measure, Jerome Powell indicated that core services excluding shelter were the most important to follow to understand the future evolution of core inflation. The Federal Reserve Chairman argued that "[b]ecause wages make up the largest cost in delivering these services, the labour market holds the key to understanding inflation in this category". In both the U.S. and Canada, these measures continue to remain at uncomfortable levels for central banks, with annual variations of 4.3% and 4.6% respectively.

Core services inflation, central banks' definitions
Annual change in core inflation excluding shelter, Fed and BoC definitions



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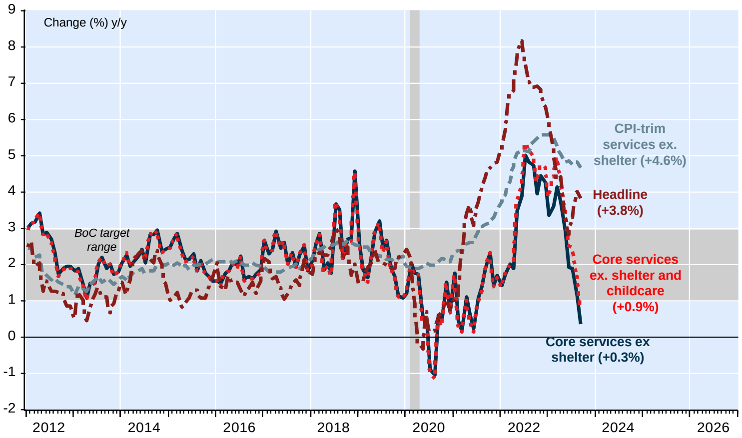
But if the Bank had opted for an integral adoption of the U.S. measure and chose to monitor services excluding food and shelter, the picture would be diametrically opposed to the measure it put forward. Indeed, year-on-year inflation would stand at just 0.3%, well below the 4.6% indicated by the CPI-trim services excluding shelter and the level currently observed in the U.S.. And even when childcare is removed, the gap narrows (+0.9% y/y), but inflation is still around five times lower than the measure chosen by the Bank of Canada, and below its historical average (graph).

Canada: Perspective on inflation measures for core services
Annual variation in various measures of inflation in core services and headline inflation



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These discrepancies raise a few eyebrows, since these are measures that should be sending out messages that are conceptually quite similar. There is reason to believe that the mechanics of the CPI-trim exaggerate the inflation we are currently seeing in services, and that this tool was not built to remove components later. There is a risk that the use of this measure may have misled the central bank as to the underlying inflationary pressures. Note that for the first time since January, there was no mention of the CPI-trim services ex. shelter in the Bank's most recent Monetary Policy Report (October 2023). Instead, the BoC came back with the lower services ex. shelter to comment on "[d]isinflation in some categories of the consumer price index" and support its decision to leave the policy rate unchanged. Furthermore, the Bank also commented on its old core exclusion measures (CPIX and CPI excluding food and energy), which show a more tepid pace than the CPI-trim and the CPI-median.

Conclusion: An analytical framework in need of review

Since 1992, the Bank of Canada's mandate has remained stable: to keep CPI inflation in the middle of a 1% to 3% range. However, the same can't be said for the core inflation measures used to guide monetary policy and its communication, particularly since 2021. Indeed, the many turnarounds of the past three years highlight the fact that the Bank of Canada has too often allowed itself to modify the core inflation measures emphasized in its communications. This gives the impression that specific inflation data is sometimes used in a targeted way to support a pre-established monetary policy decision and communication. Yet in 2001, the year the BoC opted for the CPI excluding the 8 most volatile components as a core measure (abandoned in 2016), a staff report stated that:

"The methodology used to extract core inflation from public inflation rates must not change frequently or be perceived by the public as obscure or under the control of the monetary authorities."

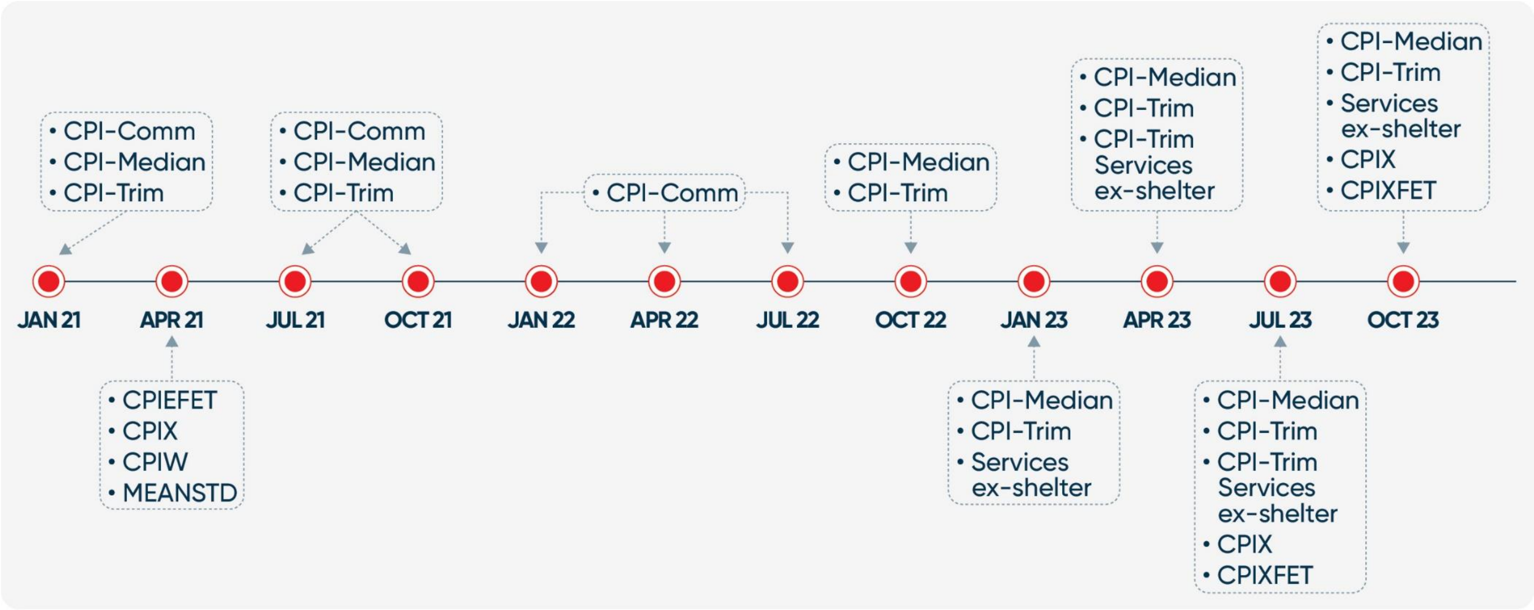
On this level, the Bank of Canada definitely needs to do better. We note that the last review of core inflation measures was in 2019. Such a delay is far too long, as recent months have highlighted the shortcomings of the current measures. The CPI-common has been in the penalty box for almost a year, and we have illustrated that the CPI-trim and CPI-median do not provide all the flexibility needed to analyze portions of the basket as the exclusion measures allow.

In 2019, the Bank of Canada used five criteria: persistence, volatility, correlation with the output gap, ability to filter out sector-specific shocks and ease of understanding the methodology. It was certainly not on the basis of the last criterion that the current three core inflation measures were chosen. Indeed, the chosen analytical framework is far from simple, except for the initiated specialists. The replication process requires special data from Statistics Canada (not directly accessible on the website) and advanced programming and statistical skills. For a long time, these indices were published by Statistics Canada as annual variations only. We have often argued that the Bank should insist that the statistical office publish these data as price indices, so that short-term fluctuations can be analyzed. This became a reality only at the beginning of this year, some 7 years after these indicators became those officially followed by the Bank of Canada.

However, problems relative to data access have not been fully resolved. When the Bank of Canada commented on inflation in ex-shelter services, this series was not directly accessible on the Statistics Canada website (the series has been discontinued since May 2021) and difficult to replicate to capture short-term variations, as the seasonal adjustment parameters are unknown. When the CPI-trim for services excluding shelter was published, the Bank made methodological choices to define whether certain components were considered a good or a service. In this regard, we noted divergences over the summer among groups of economists wishing to replicate the Bank of Canada's measure when the CPI data was unveiled.

In short, the Bank of Canada must prioritize an in-depth reassessment of core inflation measures, and not rule out a return to the much more flexible and simple exclusionary measures. Furthermore, it must make public all the data needed to replicate these measures, to avoid the public perceiving them as a black box.

Appendix: Core inflation measures emphasized by the Bank of Canada since 2021



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