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Understanding Inflation: Getting Back to Basics

Introduction

Inflation targets have been the centrepiece of monetary policy in Canada for over 25 years now. Every Canadian has benefited. The high and volatile inflation and interest rates of the 1970s and 1980s are a distant, though painful, memory.

Recently, however, inflation targeting has come under increased scrutiny. Many advanced economies have seen inflation either slow down or remain weak, even while economic growth has been strengthening. This has led some to question whether central banks can still target inflation effectively. Some have even suggested that central banks may be losing the ability to understand the processes that drive inflation.

I hope to persuade you today that this is not the case. I've been at this for a long time, having been part of the team that developed the Bank of Canada's policy framework back in the 1980s. Inflation targeting, supported by a flexible exchange rate, is the product of an enormous cumulation of thought and research spanning an entire generation. In my speech today, I intend to show that the Bank has a solid understanding of the inflation process and retains the ability to guide inflation to our targets over time.

Reviewing the Fundamentals

I will start with a quick review of the fundamentals. We implement monetary policy through our key policy interest rate. Changes to this rate influence other interest rates, such as mortgage rates. Through this channel and others, policy rate changes affect decisions about spending, saving and investment. These adjustments work through the economy and eventually have an effect on inflation. Importantly, it takes one and a half to two years for a change in our policy rate to have its full impact on inflation.

The goal of our policy is to keep the annual rate of CPI inflation at the 2 per cent midpoint of a 1 to 3 per cent range. The idea of a target range has been a key feature of our framework from the beginning. It serves to recognize that inflation targeting is an imprecise business. First, the transmission from monetary policy

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to inflation contains several economic linkages, each of which is complex and highly uncertain. Second, the inflation data themselves are subject to short-term fluctuations that make it difficult to hit the target exactly. A central bank can do little about fluctuations in gasoline prices, for example, yet these transitory movements have a large influence on inflation movements from month to month.

Given these uncertainties, it is not realistic to expect our policy instrument to control inflation down to tenths of a percentage point. In fact, the two-percentage-point inflation-control range is a reasonable approximation of the degree of precision that we can expect to achieve. It is much like piloting a boat in rough water: the boat is buffeted in one direction or the other, and the pilot must continuously adjust the heading so that the fluctuations average to zero in order to arrive at the desired destination.

To help steer through these short-term fluctuations in inflation, we make use of various measures of core inflation. These measures help us judge the underlying trend of inflation—the rate we would see if no sector-specific or one-off factors were at work. Put another way, these measures help us separate inflation's signal from its noise.

The underlying trend in inflation is driven by the laws of supply and demand, which are as applicable today as they ever were. Excess demand pushes inflation up; excess supply pushes inflation down. Central banks exploit this relationship, working to create excess demand or excess supply in the economy, to target the inflation rate.

A central role in this relationship between the economy and inflation is played by inflation expectations. The more anchored those expectations are, the more quickly the economy will find its way back to normal after an economic shock. This is known as the credibility dividend: a credible central bank will see inflation expectations well anchored at the target level and will have a relatively easy time restoring normality after a shock. What this means is that the underlying trend in inflation may become more stable as expectations become more anchored. In short, the more successful the inflation target is, the less obvious the relationship between economic shocks and inflation will become.

But that does not mean that the relationship is no longer there. The relationship between inflation and excess demand or supply really represents a summary of a number of more complex underlying linkages between companies and the labour market. Consider a company that finds itself running at full capacity. If it sees increased demand for its product and expects that demand to persist, the company is likely to invest in new capacity and expand its workforce. If unemployment is already low, the company may have to increase wages to attract new employees. Over time, higher wages can add to inflationary pressure. This is how excess demand works its way through the system and translates into higher inflation.

In addition to these domestic drivers of inflation, a couple of key external factors can also play a role. For example, exchange rate movements can have both direct and indirect impacts. If the value of the Canadian dollar falls, that directly raises the price Canadians pay for imports. Inflation may tick up immediately, albeit temporarily. At the same time, the lower dollar can boost export sales, and

this impact on demand may work its way through ultimately to the inflation rate. The same analysis holds for movements in global commodity prices—they affect inflation directly right away, albeit temporarily, but can also have a more gradual impact via adjustments in the economy. When oil prices plunged in late 2014, we saw both types of shock hitting the Canadian economy simultaneously.

To sum up, in the absence of shocks coming from external factors, we can expect the trend of inflation to be sustainably around the midpoint of the target range when the economy is operating at full capacity and inflation expectations are well anchored on the target. That is why I have said that “home” for the economy is at the intersection of full capacity and 2 per cent inflation.

Recent Inflation Performance

As I said at the outset, inflation in a number of advanced economies has been running short of expectations recently. Consider a prime example, the United States. There, the Federal Reserve looks at core personal consumption expenditure (PCE)—an index of prices consumers pay for goods and services that is adjusted to remove the volatility caused by food and energy prices. Core PCE had climbed close to the Fed’s 2 per cent target around the end of 2016, following a prolonged period of weakness. However, it has slipped by 0.6 percentage points since the beginning of this year and now sits at 1.3 per cent on a year-over-year basis—all while economic growth has been steady and unemployment very low.

While this may raise doubts about our ability to explain the trend in inflation, when you dig a bit deeper you discover that there have been some special factors affecting US inflation. In particular, as mobile phone carriers began offering more unlimited-data plans, there was a significant drop in the cost of data. Staff at the Bank of Canada estimate that special factors such as these account for roughly two-thirds of the decline in US core inflation since the start of this year. The impact on inflation of these relative price changes should not persist—in other words, the underlying trend in US inflation is higher than it appears.

In many other advanced economies, core inflation was soft throughout 2016, even as excess supply was being absorbed. And unlike in the United States, this softness has come mainly from goods prices. Bank staff have identified exchange rate movements and low export prices in emerging-market trading partners as factors acting as a drag on core inflation in these economies.

Here in Canada, total inflation slowed over the first half of this year and has stayed in the lower half of the target range, even as our output gap has been closing rapidly. Both total and core inflation have firmed in the past couple of months. Still, since the middle of last year, an average shortfall in inflation of 0.7 percentage points has been unexplained by fundamental drivers. The factors behind this weakness include below-average food inflation, caused by a combination of abundant crop supplies and increased competition in the retail sector. Another special factor is the impact of the Ontario government’s reduction in electricity prices. Like the United States, these one-off factors account for roughly two-thirds of this year’s shortfall in total inflation in Canada.

The bottom line is that the fundamental drivers of inflation, along with some special factors we can identify, can explain the recent behaviour of inflation reasonably well. Certainly, the remaining shortfall is well within a reasonable margin of error, given that we are working with statistical relationships. Furthermore, the underlying trend in inflation is well within the target range we have committed to.

In short, we understand inflation well enough for policy purposes. Nevertheless, like all central banks, we would prefer to understand inflation perfectly and are not content to leave even a few tenths of a percentage point unexplained. We are working hard on this, and this research agenda is what I turn to now.

Searching for Other Inflation Drivers

Bank staff have examined 20 years' worth of inflation data from 10 advanced economies and the euro area. They used statistical techniques to look for inflation factors that these countries might have in common. The first factor they found in common is fluctuations in food and energy prices across countries—as it turns out, these can explain almost half of the movements in total inflation. This makes sense, as food and energy prices are driven by global commodity prices. But we generally look through movements in food and energy prices when we are assessing the underlying trend of inflation. So, this common factor does not add much to our understanding.

Looking beyond commodity prices, Bank staff found evidence of a second factor common to all countries that can explain around 15 per cent of the remaining variation in core inflation. As it turns out, this factor is correlated with the recent softness in inflation shared by a number of countries, including Canada. While we do not yet know exactly what is driving it, several ideas have been advanced. Generally, these are related to either globalization or the digital economy. Let me review some of these ideas.

Globalization

Globalization could affect prices in a few ways. An obvious one is linked to the movement over the years toward more open trade. When companies are exposed to increased competition in global markets, they face pressure to cut costs and hold down prices. Similarly, consumers have access to a greater supply of imports from lower-cost, emerging-market producers, also dampening inflation. This impact became particularly important for manufactured goods early in the 2000s, after China joined the World Trade Organization, and it could still be at work.

A related idea is that global economic slack is becoming more important for domestic inflation, and domestic slack less so. Since the global economy has become more integrated, excess global supply might hold down inflation, particularly of some goods, regardless of the supply-demand balance in any individual economy. Companies need to worry about competition from other countries, not just local competitors, when deciding whether to raise prices.

The integration of companies in global value chains could also dampen inflation. Since various production stages can be moved to where costs are lowest,

companies and their workers face additional competitive pressure to keep down prices and wages.

The digital economy

Another set of factors that may be acting as a drag on inflation is related to digitalization of the economy. This could affect inflation in at least three ways.

First, there is the direct impact of price changes for information and communications technology (ICT). Given how computer and home electronics prices have plunged over the years, it seems intuitive that lower ICT prices could push down inflation.

Second, digitalization has an impact on competition and market structure. In many sectors, digitalization has lowered barriers for the creation of new firms and increased competition. We have seen the disruptions caused by companies such as Uber and Airbnb. There is also the impact of e-commerce—the so-called Amazon effect—which can certainly affect how firms set prices. Think of how easy it is to check a competitor's price on your phone while you are in a store, considering a purchase.

Third, digitalization can make business processes more efficient, improving productivity and leading to slower price increases. Indeed, productivity has increased more quickly than wages over the past year, roughly coinciding with the weaker inflation that we have seen.

However, Bank staff have yet to find rigorous empirical evidence to show that these factors add to our understanding of Canadian inflation beyond what the basic drivers tell us. To be clear, all I am saying is that the evidence does not pass the formal test for statistical significance. Common sense tells you that globalization and digitalization are affecting prices. Over time, as we accumulate data, we may be more able to identify and statistically quantify these effects.

That said, it seems that, so far at least, the cumulative impact of digitalization is not large enough to challenge our basic understanding of inflation dynamics. The Amazon effect appears to be smaller than the impact of the rise of big box stores about 20 years ago—the so-called “Walmart effect”—and even that was not large enough to force a rethink of the inflation process for policy purposes.

The Wage Phillips Curve

So, if we cannot prove statistically that globalization and digitalization are restraining inflation, what else could be going on? Let us take a deeper look at the linkage I mentioned between unemployment and wages, which economists refer to as the Wage Phillips Curve. The fact is, despite strong economic growth and plenty of job creation, wage growth has remained relatively low.

Possible explanations for this are not that hard to find. Even though Canada's unemployment rate has returned to its 2007 lows, suggesting the labour market is at full employment, other indicators suggest that a fair amount of slack remains. In particular, youth participation rates still seem low, and a lot of people are still working part-time when they would prefer full-time.

As well, we know that many workers who lost high-paying jobs during the oil price collapse in 2014–15 may be moving to employment in other, lower-paying

sectors. Similarly, younger workers may have lower wages than the retiring older workers that they are replacing. And certainly, the perception that companies or workers are facing increased foreign competition could lead to slower wage increases. The fact that wage growth has been slower among goods industries than services—which can be more easily insulated from globalization—supports this idea.

Another conjecture I will offer, which is difficult to test empirically, is that prolonged very low interest rates have lowered the relative cost of capital equipment compared with the cost of labour. Firms may be restructuring their operations, making greater use of capital equipment and thereby limiting the scope for wage increases. Some can do this without even buying equipment, instead buying capital services in the cloud. Even the threat of increased automation may be sufficient to keep wage rises in check. This conjecture is worth exploring in more depth.

Given all these potential factors that may be holding back wage inflation, it is simply premature to conclude that there is something amiss in the traditional inflation process. At a minimum, we need to monitor measures of slack in the labour market to see how it is being absorbed. Over time, this can be expected to lead to a pickup in wage growth, which in turn will feed its way through to inflation.

In short, we believe that there is still a link between labour market slack and wages, just as there is still a link between inflation and the balance of total supply and demand. What this means is that the closer we get to full output and employment, the greater the risk that inflation pressures will appear.

This is just one of the many risks that the Bank will need to manage as we conduct monetary policy. As we said last month, while the economy is likely to require less monetary stimulus over time, we will be cautious in making future adjustments to our policy rate. In particular, the Bank will be guided by incoming data to assess the evolution of economic capacity, the dynamics of both wage growth and inflation, and the sensitivity of the economy to higher interest rates. A lot of pieces need to fall into place before we can be certain that the economy has made it all the way home.

Conclusion

Allow me to conclude. The popular perception that inflation has become inexplicable has been greatly exaggerated. In part, this perception reflects a misunderstanding of the accuracy with which economists can predict inflation, and a misunderstanding of the precision with which central banks can control it. Fundamentally, we know how inflation works—the laws of supply and demand have not been repealed.

Yes, Canada's inflation rate has repeatedly fallen short of our 2 per cent target in the past few years. For the most part, this may be explained by the drag related to the surprising persistence of excess capacity in the economy, and the fact that inflation reacts to excess demand after a lag. This drag can persist until all slack in the labour market is absorbed as firms build additional capacity through higher investment with the economy approaching potential. Beyond these factors, there have been repeated relative price fluctuations—in electricity prices and from

increased competition in food retailing, for example—which have temporary effects on inflation and should be looked through. Moreover, there may also be some drag on inflation from globalization and digitalization. When we put it all together, we see that inflation has been behaving well within the normal zone of statistical and policy tolerance.

I am not claiming that our understanding of inflation is perfect, complete and unchanging. Far from it. We will continue to look closely at forces such as globalization and digitalization so that we can better understand how they are influencing the inflation process.

There are always uncertainties in economics. That is why forecasts are best thought of as ranges, rather than points, and why our inflation-control framework is based on a target band. The bottom line is that inflation targeting has worked, through good times and bad, for more than 25 years. It continues to work today. And Canadians can be confident that it will continue to work for years to come.