Tiff Macklem: Flexible inflation targeting and "good" and "bad" disinflation

Remarks by Mr Tiff Macklem, Senior Deputy Governor of the Bank of Canada, presented to the John Molson School of Business, Concordia University, Montreal, Quebec, 7 February 2014.

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Accompanying charts can be found at the end of the speech.

Introduction

Good afternoon. I want to particularly thank Professor Switzer for inviting me to speak here at the John Molson School of Business.

I grew up in Montréal and this occasion is a sort of a closing of a circle for me. My first speech as Senior Deputy Governor was here in Montréal and this will be my last. In a few months, I will be joining another outstanding business school – the Joseph L. Rotman School of Management. So speaking to business students here in Montréal is a nice bridge from my past to my future.

I want to use this opportunity to discuss a topic that is at the heart of the Bank of Canada's mission: inflation control.

I was part of the team in the early 1990s that designed and implemented the Bank's inflation-targeting framework. We developed the framework against a backdrop of high and variable inflation. Those of you who are old enough will recall the crippling effects of double-digit inflation and mortgage rates that rose above 20 per cent in the 1980s.

Fortunately, inflation targeting worked – indeed, better than many imagined. We've now had more than two decades of low, stable and predictable inflation, and Canadians have confidence in the value of their money. Low, stable and predictable inflation has supported solid economic growth and a well-functioning and more stable labour market. And it provided both a beacon and an anchor as we navigated the global financial crisis.

Inflation targeting has served Canadians well in tranquil and turbulent times.

But this is not the end of monetary history. Globally, the financial crisis shook central banking to its core and took it back to its roots as a lender of last resort and an important player in maintaining financial stability.[1] The fallout of the crisis has been a painfully slow global recovery that has reduced job prospects for a generation of new workers in many advanced economies, and turned the tables on inflation control.

Inflation targeting was conceived as a monetary policy framework to get inflation down and hold it there. But, today, the challenge is to get inflation up. Most advanced economies are experiencing declining inflation or *disinflation*. Over the past two years, inflation in advanced economies has fallen by 1.5 percentage points on average and is below target in most of these economies, Canada included (Chart 1).

I want to focus my talk today on what this disinflation means for our inflation-control policy. I'll begin with a brief review of how our inflation-targeting regime works, and then discuss the post-crisis inflation experience, the factors contributing to disinflation and the implications for monetary policy.

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[1] See T. Macklem, "Raising the House of Reform" (speech to the Rotman Institute for International Business, Toronto, ON, 7 February 2012); M. Carney, "A Monetary Policy Framework for All Seasons" (speech to the U.S. Monetary Policy Forum, New York, New York, 24 February 2012).

To give you a hint of where I am going, not all disinflations are created equal. Some are "good" disinflations caused by increased competition and higher productivity growth, while others are "bad" disinflations stemming from weak demand for goods and workers that puts downward pressure on prices and wages. In theory, monetary policy should respond differently to good and bad disinflation. In practice, this is complicated by uncertainties surrounding our measurements and projections. Our work at the Bank of Canada is both to sharpen the analysis as much as we can and, at the same time, to take account of the risks and uncertainties as we determine the appropriate course for monetary policy to achieve our inflation target.

Let me expand.

Inflation Targeting 101

The Bank's mandate is to mitigate "…fluctuations in the general level of production, trade, prices and employment, so far as may be possible within the scope of monetary action, and generally to promote the economic and financial welfare of Canada."[2] High and volatile inflation in the 1970s and 1980s taught us that the best way for us to achieve these objectives is to keep inflation low, stable and predictable.

When we adopted our inflation-targeting monetary policy in 1991, we were virtually alone. No other G-7 country was doing this. New Zealand, the first country to adopt inflation targeting, had done so only nine months before us. And there was very little in the academic literature on inflation targeting.

Since 1995, the target has been to achieve an annual total rate of inflation of 2 per cent – the midpoint of our control range of 1 to 3 per cent – as measured by the consumer price index (CPI). The target is reviewed jointly with the federal government approximately every five years, and was last renewed in 2011.[3]

To achieve that target, an essential component of our monetary policy framework is a flexible exchange rate. The floating exchange rate is part of the monetary transmission mechanism. It allows the Bank to pursue its own "made-in-Canada" monetary policy that is directed at achieving 2 per cent inflation in Canada and stabilizing our economy. The flexible exchange rate also serves as a kind of shock absorber for the Canadian economy, helping it absorb and adjust to shifts in the global economy.[4]

In light of the recent depreciation of the Canadian dollar, it bears stressing that the Bank does not have a target for the exchange rate – it has an inflation target. The exchange rate is determined in markets, and we neither promote any specific value for the Canadian dollar, nor thwart its movements.

Our inflation-targeting policy has three important features.

It is symmetric. The Bank is equally concerned about inflation rising above or falling below the 2 per cent target. High and variable inflation erodes purchasing power, creates uncertainty, distorts investment decisions, and causes arbitrary redistributions of wealth between savers and borrowers. But sustained negative inflation – or deflation – is even more pernicious. The 2 per cent target provides a buffer that gives monetary policy greater scope to avoid the risk that disinflation could deteriorate into outright deflation. In a deflation, inflation expectations become unanchored on the downside, and people begin delaying

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[2] Preamble to the Bank of Canada Act, R.S.C., 1985 c. B-2.

[3] Bank of Canada, "Renewal of the Inflation-Control Target: Background Information – November 2011."

[4] T. Macklem, P. Osakwe, H. Pioro and L. Schembri, "The Economic Consequences of Alternative Exchange Rate and Monetary Policy Regimes in Canada," paper delivered at the Bank of Canada conference, "Revisiting the Case for Flexible Exchange Rates," November 2000.

purchases because they expect the things they buy will be less expensive in the future. This depresses demand. And as prices and wages fall, the real burden of mortgages and other nominal debt commitments increases, further depressing demand.

Today, with inflation at about 1 per cent, prices are rising, not falling. And we expect inflation to increase gradually to the 2 per cent target. But with inflation persistently below target, we are more concerned about downside risks to inflation than upside ones.

It is forward looking. Monetary policy actions take time – about two years – to work their way through the economy and to have their full effect on inflation. For this reason, monetary policy must always be forward looking, with the Bank setting the policy rate based on its judgment as to how inflation is likely to evolve. Making that assessment requires a careful examination of the economic evidence pertaining to the balance of supply and demand in the economy and other factors affecting inflation.

To help us see through temporary fluctuations in inflation, the Bank uses core inflation, which strips out the volatile components of the CPI, as an operational guide for setting policy in pursuit of the target for total CPI inflation.[5] In our baseline forecast, demand is expected to strengthen, gradually absorbing excess capacity in the economy. As this slack is taken up, core and total inflation are expected to increase to target over the next two years or so.

It is flexible. In assessing whether the stance of monetary policy is appropriate to achieve the inflation target, the Bank must make a judgment regarding the horizon for returning inflation to target. Flexible inflation targeting provides the scope to consider financial stability risks and to manage the volatility that monetary policy actions may induce in the economy and financial markets. In the current context, an important element in our monetary policy decisions – which has been highlighted in our recent policy announcements – is the need to weigh the risks of exacerbating elevated household imbalances against the downside risks to inflation when inflation is already below target.

The Bank's record of inflation control over more than 20 years is impressive. Since1991, inflation in Canada has averaged 2 per cent, as measured by total CPI, and its standard deviation has fallen by roughly two-thirds compared with the 1970s and 1980s (Chart 2). Moreover, the persistence of inflation, as measured by the serial correlation in inflation, fell from 0.8 between 1975 and 1990 to only 0.1 since 1995. Nowadays, fluctuations around the target are typically short-lived, so the best forecast for inflation is 2 per cent – the target. What could be simpler?

Low inflation is also a means to an end – better economic performance. Low, stable and predictable inflation has been associated with more stable economic growth in Canada and lower and less-variable unemployment (Table 1). The average rate of unemployment has fallen, and fluctuations in unemployment, as measured by its standard deviation, have been reduced by more than one-third.[6]

Not surprisingly, other countries have followed Canada's lead. Since 1991, more than 25 other advanced or emerging-market economies have become inflation targeters.[7]

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[5] Our main measure of core inflation is CPIX, which strips out from total inflation eight of the most volatile components of the consumer price index as well as the impact of indirect tax changes on the remaining components.

[6] For more on the improved functioning of labour markets with low and stable inflation, see T. Macklem, "A Measure of Work" (speech to the Winnipeg Chamber of Commerce, Winnipeg, MB, 4 October 2012).

[7] G. Paulin, "Credibility with Flexibility: The Evolution of Inflation-Targeting Regimes, 1990–2006," Bank of Canada Review (Summer 2006): 5–18; S. Jahan, "Inflation Targeting: Holding the Line," International Monetary Fund, Finance and Development, March 2012.

The recent behaviour of inflation in Canada

With that context, let's look at the recent behaviour of inflation in Canada.

Following the global financial crisis, total inflation in Canada fell sharply, to a low of –0.9 per cent in July 2009, largely as a result of a drop in the world price of oil, which plummeted from US$140 per barrel in the summer of 2008 to US$35 later that year. With the resumption of growth in most advanced economies, global oil prices rebounded in 2010 to US$90 per barrel, and total inflation rose to more than 3 per cent in 2011 (Chart 3).

By comparison, core inflation remained relatively stable around 2 per cent during this period. However, since 2012, both core and total inflation have drifted lower and have been below 2 per cent for the past 20 months.

Other measures of core inflation have also declined. Indeed, the disinflation since 2012 is evident in *all* of our measures of inflation (Chart 4). And, if we look at individual components of the CPI basket, it is apparent that the weakness is widespread, with the prices of about three-quarters of the consumer basket now increasing at a pace of less than 2 per cent over the past year (Chart 5).

What explains disinflation in Canada?

Global disinflation

A number of studies have indicated that there is a global dimension to inflation, which is currently low and falling across a wide range of advanced economies.[8] A convenient way to look at this is by using factor analysis, a statistical method that summarizes the common variability among the inflation rates of different countries. When we look at the evolution of global inflation, as measured by this common factor, we see a decline in global inflation since 2012 (Chart 6).[9]

Global *total* inflation is strongly correlated with global energy and food price inflation – the corresponding correlation coefficients are 0.5 and 0.6, respectively. This suggests that much of the recent decline in global *total* inflation can be explained by the recent fall in world energy and food prices (Chart 7). However, longer-term trends are more likely a reflection of movements in global core inflation.

The recent decline in global core inflation is more difficult to understand (Chart 8). It may reflect the large and persistent amount of economic slack in many advanced countries (Chart 9).[10] However, it is less apparent how economic slack can explain why disinflation is occurring now, since core inflation was relatively stable from 2009 to 2011, when the output gaps in most countries were even larger. It may be that the sensitivity of inflation to the output gap increases as the gap becomes more persistent, and this could be reinforced by changes in inflation expectations.

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[8] *Inter alia* M. Ciccarelli and B. Mojon, "Global Inflation," *The Review of Economics and Statistics* 92, no. 3 (2010): 524–35.

[9] For international comparability, core inflation is defined here as consumer price inflation minus food and energy. Still, there are differences across countries with regard to the components that enter the measurement of consumer prices. The charts show standardized inflation rates, whereby all inflation rates have a mean of zero and a standard deviation of one.

[10] Some have argued that increasing trade with China has helped to keep inflation low. While this has been confirmed empirically (L. Morel, "The Direct Effect of China on Canadian Consumer Prices: An Empirical Assessment," Bank of Canada Discussion Paper No. 2007–10; D. Côté and C. De Resende, "Globalization and Inflation: The Role of China," Bank of Canada Working Paper No. 2008–35), the overall effect seems to be quantitatively small, and it has become even less important recently, since Chinese prices are no longer falling and China's market share of imports to advanced economies is no longer rising.

Looking at the relevance for Canada of global inflation developments, it is evident that Canada's total inflation rate co-moves substantially with the common factor in inflation among advanced economies, underscoring the importance of energy and food prices for movements in total CPI inflation in Canada. In contrast, relatively little of the variance of core inflation in Canada appears to be related to movements in global core inflation (Chart 10). The decline in Canadian core inflation in 2012 has been stronger than what was observed at the global level, which is surprising, given that economic slack in Canada looks to be smaller than elsewhere.

This suggests that country-specific factors are likely to be more important in driving core inflation dynamics in Canada.

Subdued domestic fundamentals

The expectations-augmented Phillips curve provides a model for understanding the domestic forces at work on core inflation. In its simplest form, this model expresses core inflation as a function of inflation expectations and a measure of economic slack,

$$\pi t = {}^{Et}(\pi t+1)+b({}^{yt}-\bar{y}t)+\epsilon t$$

where ${}^{\pi t}$ is inflation in this period, ${}^{Et}(\pi t+1)$ is the expected rate of inflation next period, and ${}^{yt} - \bar{y}t$ is the gap between actual output ^{yt} and potential output $\bar{y}t$.[11] The error term ϵt captures other drivers that are missing from the equation, for example, price or supply shocks triggered by factors such as unusual weather or shifts in competition.

An important point to note is that the estimated coefficients on the determinants of inflation in this relationship tend to be very small, and the statistical relationship tends to be weak. While this is not surprising, given Canada's record of stable inflation since the adoption of inflation targeting, it implies that fairly large variations in the output gap are needed to induce economically meaningful movements in core inflation.

This stylized representation is, of course, a simplification of the true inflation process, but it is useful to help us assess the role of potential drivers that could be depressing inflation.

Persistent economic slack

Let's start with the output gap. Slack in the Canadian economy remains significant (Chart 11). Taking into account the full range of indicators of capacity pressures and the uncertainty surrounding any point estimate, we concluded in our most recent *Monetary Policy Report* that the amount of excess supply in the economy in the fourth quarter of 2013 was between ¾ and 1¾ per cent.

Our conventional measure, which is based on a statistical method that combines several data sources, suggests that the output gap was close to the lower end of this range.[12] However, an alternative structural approach suggests that the output gap was closer to 1¾ per cent in the fourth quarter.[13] This reflects material slack in total hours worked, as well as a level of labour productivity that is considerably below its trend. Other labour market indicators also point to a greater degree of slack than the conventional measure. For

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[11] Potential output is the level of output that can be sustained in an economy without adding to inflationary pressures. Identifying the current level of potential output is necessary to estimate the output gap, which is a key measure of inflation pressures.

[12] The conventional measure is based on the extended multivariate filter method (see L. Butler, "The Bank of Canada's New Quarterly Projection Model Part 4. A Semi-Structural Method to Estimate Potential Output: Combining Economic Theory with a Time-Series Filter," Technical Report No. 77, Bank of Canada, 1996.

[13] For a description of the structural approach, see "Appendix A: Potential Output" on page 27 in the October 2013 *Monetary Policy Report*.

example, the proportion of involuntary part-time workers and the average duration of unemployment are still elevated (Chart 12).

Explaining the current level of core inflation with the Phillips curve is not easy. Simple econometric estimates of the coefficient on the output gap, *b*, would suggest a value of around 0.1. Conditional on our assessment of economic slack as 1¼ per cent (the midpoint of the range), this would predict core inflation of 1.9 per cent. This is well above actual inflation, which is running at about 1 per cent.

Of course, the true coefficient *b* could be bigger than 0.1. As you might expect, we have looked at this at the Bank of Canada. And indeed, we find that controlling for factors not captured in this simple equation could increase the coefficient to around 0.3.[14] This produces a predicted value for core inflation of 1.6 per cent. This is better, but it still leaves a significant portion of the weakness in inflation unexplained.

Given the high degree of uncertainty around real-time estimates of the output gap, it is possible that the level of economic slack is greater than currently estimated. Indeed, the range we provide in the *Monetary Policy Report* is designed to convey this uncertainty. However, even assuming a coefficient of 0.3 on the output gap, we would need to more than double our estimate of the degree of slack in order to predict an inflation rate of close to 1 per cent. This is not realistic.

In addition to economic slack, other factors must be causing disinflation.

Changing inflation expectations?

What about inflation expectations? During the past year, survey forecasts of short-term total inflation have moved lower, in line with changes to actual inflation. The January Consensus Economics forecast for total CPI inflation is now 1.5 per cent for this year and 1.9 per cent for next year (Chart 13). According to the Bank's *Business Outlook Survey*, inflation expectations remain steady, with almost all firms expecting CPI inflation to be within the Bank's 1 to 3 per cent inflation-control range over the next two years, and the majority expecting inflation to remain in the bottom half of that range, consistent with the Bank's base-case projection. Market-based measures of longer-term inflation expectations continue to be consistent with the 2 per cent inflation-control target, providing little evidence that inflation expectations are becoming unhinged from the 2 per cent target. Of course, the longer inflation remains below target, the more likely inflation expectations are to decline. This is something to watch closely, but to this point, it is hard to explain the observed disinflation as the result of a shift in expectations.

This leaves only the error term in the Philips curve to account for the unexplained weakness in inflation. What could this negative error reflect? A wide range of evidence points to increased competition in the domestic retail sector.

Increased domestic retail competition

The increase in retail competition is, in many ways, a welcome development. It means lower prices and more selection for consumers. And if retail margins are holding up, which they appear to be, it also suggests that retailers are more productive, which increases real incomes and living standards.

Competitive pressures in the retail sector in Canada appear to have intensified on three fronts: newer and bigger retailers, cross-border shopping and online purchasing.

[14] For instance, empirical work estimates a stronger relationship between a subset of core inflation and the output gap.

Walmart opened its discount stores in Canada in 1994 and, in 2006, began transforming many of them into supercentres that offer food as well as general merchandise. By the end of 2013, 61 per cent of the company's outlets were supercentres.

This new retailing strategy, as well as Walmart's pricing, has increased the competitive pressures on traditional retailers. In addition, Target and a number of other American retailers have recently entered, or are planning to enter, the Canadian marketplace.[15]

So far, despite the significant pressure on prices, retail profit margins are holding up, reflecting improved productivity in the sector (Chart 14). The composition of the sector has changed toward more profitable retailers: chain stores have become an increasingly large share of the retail sector, and their profit margins are almost three times higher than non-chain outlets (Chart 15). Measured productivity in the retail sector has also been improving faster than productivity for the total economy (Chart 16).

Retail competition may also have intensified as a result of the increase in duty exemptions announced in the federal government's 2012 budget. Following the change, the number of travellers returning from the United States by car after an overnight stay (likely for shopping trips) rose significantly.[16] While the volume of overnight car trips displays a significant seasonal pattern (with peaks around the summer months), the average level increased from around 150,000 per month in the five years prior to the duty change to nearly 270,000 per month since then (Chart 17). I would not want to overplay the impact of this change – the share of nominal consumption by Canadians abroad is only about 4 per cent and the recent depreciation of the Canadian dollar will work in the other direction. Nonetheless, increased cross-border shopping may have been a reinforcing factor.

Finally, online shopping has opened a new front on the competitive landscape. More consumers are using the Internet to purchase a wide range of goods and services. Although this remains a small component of consumption, online shopping is adding choice and new competition to the retail sector.[17]

What does all this mean for prices?

Subdued inflation has been reflected in the unusual softness in the prices for core food items and core non-durable goods, two sectors where anecdotal evidence suggests that competition has intensified. Food alone accounts for 17 per cent of the core CPI basket, and it exerted the largest drag on core inflation in 2013 (Chart 18).

Core food inflation is very low by historical standards, and although much of this weakness reflects a decline in global food price inflation, the fall in recent quarters is outsized relative to the drop in global food price inflation (Chart 19).

The agriculture component of the Bank's commodity price index stabilized in late 2012 but core food inflation continued to decrease, consistent with the evidence of greater competition in grocery and general merchandise stores in Canada.

Looking forward, ongoing structural change in this sector suggests that competitive pressures are likely to remain intense for some time. However, the recent depreciation of the Canadian dollar can be expected to offset at least some of the downward pressure on retail food prices.

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[15] Other notable retail entrants include Marshalls, J. Crew and Nordstrom.

[16] The 2012 federal budget raised duty exemptions on goods purchased abroad. The exemption for a stay of 24 to 48 hours was increased from $50 to $200, while the exemption for a trip longer than 48 hours was increased from $400 to $800, both effective 1 June 2012.

[17] In total, in 2012, Canadians placed nearly 164 million orders, valued at approximately $18.9 billion. This dollar amount of spending represents only about 1.9 per cent of nominal consumption in Canada (Canadian Internet Use Survey, Statistics Canada).

For non-durable goods, which include items such as personal care products, price growth has eased significantly in recent quarters, with prices outright falling in the fourth quarter of 2013 (Chart 20). In fact, the last time the rate of inflation for non-durable goods was lower than the current level was when Walmart entered the Canadian market in the mid-1990s.

Overall, our expectation is that while increased competition will have a permanent effect on the level of prices, its impact on the rate of inflation will be transitory. Our best judgment is that more intense competition will subtract around 0.3 percentage points from core inflation in 2014. It is difficult to predict how long increased competition will weigh on inflation, but in our base-case projection we assume that it will continue to drive prices lower for about another year.

Implications for monetary policy

As we just saw, subdued inflation appears to reflect a significant and persistent amount of excess supply in the economy and heightened competition in the retail sector. Our best estimates of the impact of these two factors still leave some of the disinflation unexplained, but together they are not far off. With at least a partial diagnosis, it is time to consider the treatment.

This is most easily demonstrated by comparing the effects of a fall in aggregate demand and an increase in competition in a very simple, stylized model of the economy. The model consists of the Phillips curve previously outlined, equations linking aggregate demand to interest rates and a monetary policy rule in which the policy interest rate responds to divergences of actual inflation from the target and of actual output from potential output (a Taylor rule).

An increase in competition in this model directly lowers inflation but barely affects the output gap (Chart 21). In contrast, a fall in aggregate demand results in an increase in slack in the economy and, through the Phillips curve relationship, this leads to lower inflation. In both cases, inflation falls, but only in the latter is there slack in the economy.

The monetary policy implications of these two scenarios are significantly different. In the case of an increase in competition, monetary policy largely stays the course, leaving the policy interest rate essentially unchanged. For the fall in aggregate demand, both output and inflation decline, and the Taylor rule calls for a cut in interest rates to stimulate demand and bring inflation back to target.

The different policy responses reflect the distinction between “good” disinflation and “bad” disinflation. An increase in competition in a specific sector causes prices in that sector to fall relative to other prices. This is a relative price change, rather than a generalized change in prices. It reflects market forces at work, and it is not a sign of weakness in the economy. Consumers benefit from lower prices, and increased competition is likely to mean higher productivity in the sector – both good things. Hence, there is little need for monetary policy to try to counter this “good” disinflation, provided that inflation expectations remain well anchored.

A decline in aggregate demand, however, reduces employment and income at the same time as inflation declines for a broad range of goods and services. This is “bad” disinflation and something to be resisted by monetary policy.

These stylized simulations arbitrarily assume that the persistence of inflation is the same in both scenarios. And with the same persistence, monetary policy reacts more to a shortfall in demand than an increase in competition. If the impact of increased competition on the rate of inflation is less persistent, as we expect, this conclusion is only reinforced.

That’s the theory. What about the practical world of monetary policy?

We need to do our best to determine why inflation is below target, but no matter how hard we try, there will be uncertainty about our diagnosis. Moreover, the economy is enormously

more complicated than the simple model I used for illustration. We don't have a crystal ball to help us see the future. And monetary policy decisions are not prescribed by a simple rule.

For all these reasons, monetary policy is not a mechanical exercise. It is better described as risk management.[18] There are many sources of uncertainty behind our assessment of the disinflationary forces at work in Canada, ranging from the role of global factors to the amount and impact of excess supply in our economy, the importance and duration of competition effects, and, importantly, the behaviour of inflation expectations. These considerations are all embedded in our decisions.

But theory combined with measurement is at least a crude guide. And as we observe disinflation across a number of advanced countries, the message from theory is that monetary policy should work to counter "bad" disinflation stemming from weak demand, but look through "good" disinflation from increased competition and improved productivity.

Conclusion

Let me wrap up with the Bank's outlook and a few concluding remarks.

As we noted in the *Monetary Policy Report* that the Bank issued two weeks ago, inflation has moved further below the 2 per cent target in recent months. At the same time, Canada's economic growth strengthened in the second half of 2013, and prospects have improved somewhat, with expectations of firmer growth in the United States.

While as yet there are no signs of a rebalancing toward exports and business investment in Canada, the strengthening of the global economy and the recent depreciation of the Canadian dollar should foster a broadening of the composition of growth in Canada. As excess capacity is gradually absorbed and the effects of increased competition wane, the Bank expects that both core and total CPI inflation will return to 2 per cent in about two years. The depreciation of the Canadian dollar may also boost some import prices directly, although our experience is that the pass-through to core inflation is relatively small.

While the fundamental drivers of growth and future inflation appear to be strengthening, inflation is expected to remain well below target for some time. Therefore, the downside risks to inflation have grown in importance. At the same time, the risks associated with elevated household imbalances have not changed materially. Weighing these considerations, the Bank decided at its last fixed announcement date to maintain the target for the overnight rate at 1 per cent. The timing and direction of the next change to the policy rate will depend on how new information influences this balance of risks.

As I noted at the outset, our inflation-targeting policy, combined with a floating exchange rate, has served us well for more than 20 years. Inflation targeting was designed against a backdrop of high inflation, but its key features of symmetry and flexibility also give us room to manoeuvre in an environment of disinflation. We are doing our best to identify the main drivers of disinflation and are continuously assessing their impact on the economy and their persistence. There is, of course, some uncertainty about our judgments, particularly as to how long increased competition will depress inflation. I can assure you that the Bank of Canada will continue to monitor developments closely, whether I am there or not.

Thank you.

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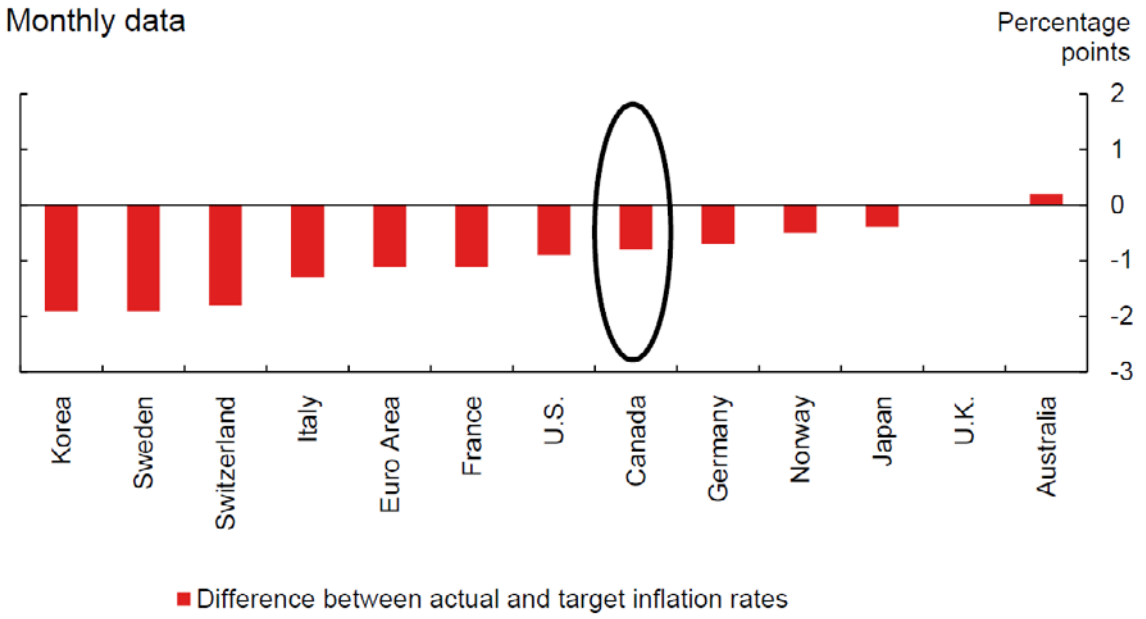
[18] S. Poloz, "Monetary Policy as Risk Management" (speech to the Canadian Club of Montreal, Montréal, QC, 12 December 2013).

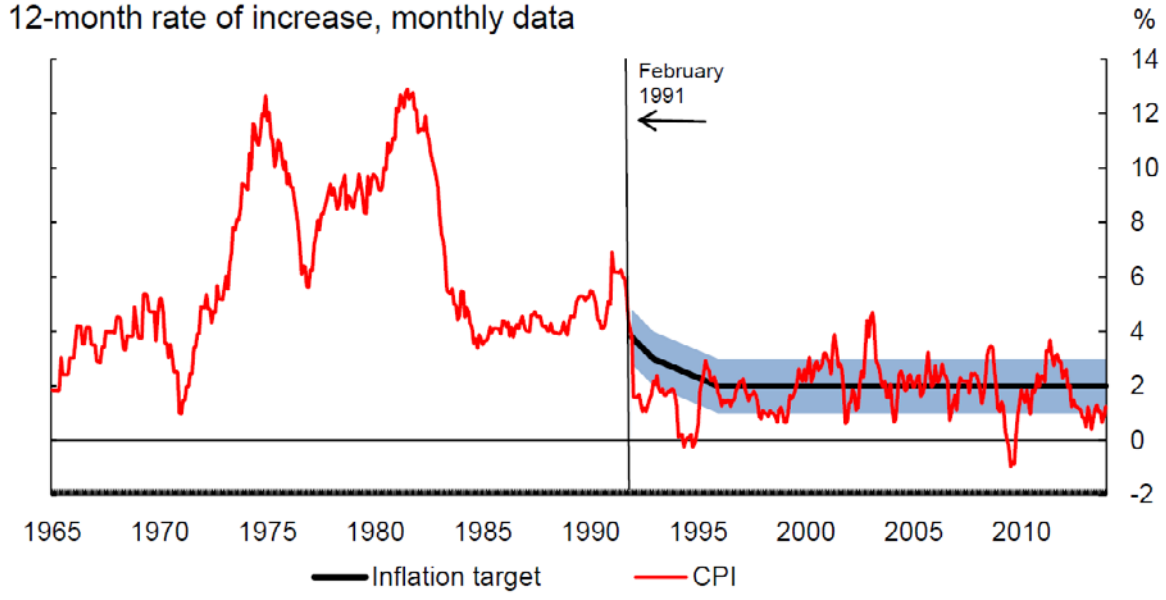
Chart 1: Inflation is below target in most advanced economies



Note: The series shown are the inflation indexes targeted by central banks.
Sources: National statistical offices via Haver Analytics

Last observation: December 2013

Chart 2: Over the past 20 years, inflation has averaged 2 per cent



Sources: Statistics Canada and Bank of Canada calculations

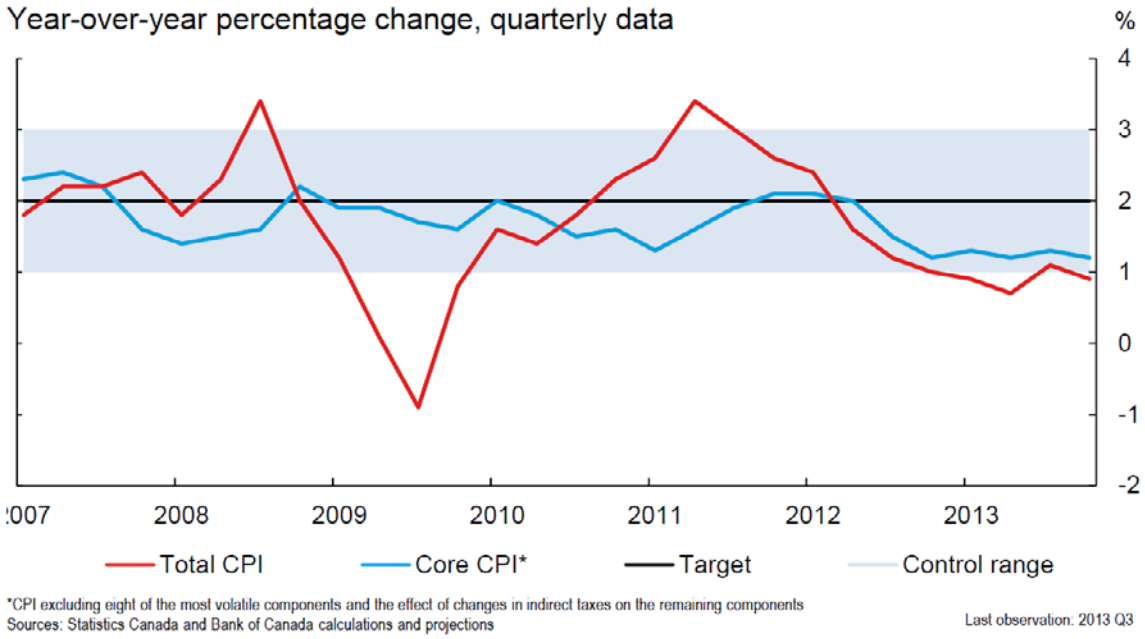
Last observation: December 2013

Table 1: Canada's economic performance, 1975-2013

	Average (%)			Standard deviation		
	1975M1 to 1990M12	1991M1 to 2013M12	1995M1 to 2013M12	1975M1 to 1990M12	1991M1 to 2013M12	1995M1 to 2013M12
CPI: 12-month increase[a]	7.1	2.0	1.9	2.9	1.2	0.9
Real GDP growth[b]	2.9	2.5	2.5	3.9	2.5	2.5
Unemployment rate[c]	8.9	8.1	7.6	1.7	1.6	1.0
3-month interest rate[d]	10.9	3.9	3.3	3.0	2.2	1.8
10-year interest rate[e]	10.8	5.3	4.6	2.0	2.1	1.6

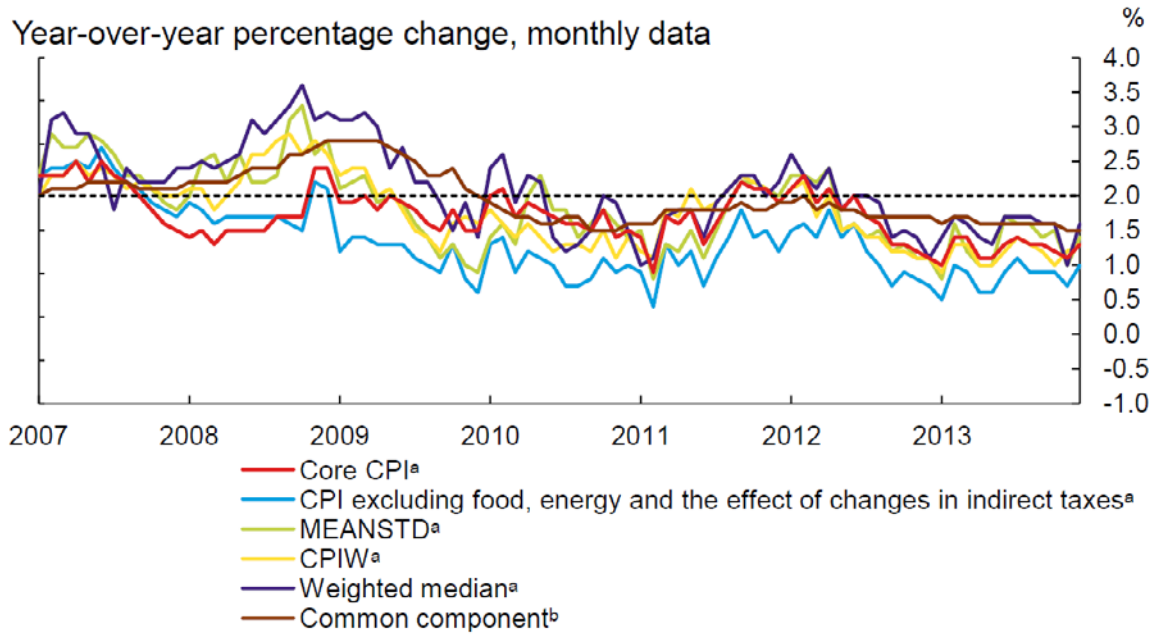
a. Year-over-year percentage change in total CPI (last observation December 2013)
b. Annualized quarter-over-quarter growth rate for quarters within time period, ending 2013Q3
c. Unemployment data start in 1976M1, owing to the introduction of a new labour force survey at that time.
d. The 3-month interest rate refers to the 3-month prime corporate rate from Stats Canada (Series v121812, Table 176-0041).
e. Owing to data availability, the 10-year interest rate refers to the over-10-year government bond yield prior to June 1982 (Statistics Canada, Series v121758, Table 176-0041); and after June 1982, it is based on the 10-year government bond yield from Statistics Canada (Series v121790, Table 176-0041).
Source: Statistics Canada

Chart 3: Inflation projected to return to 2 per cent by end of 2015



*CPI excluding eight of the most volatile components and the effect of changes in indirect taxes on the remaining components
Sources: Statistics Canada and Bank of Canada calculations and projections
Last observation: 2013 Q3

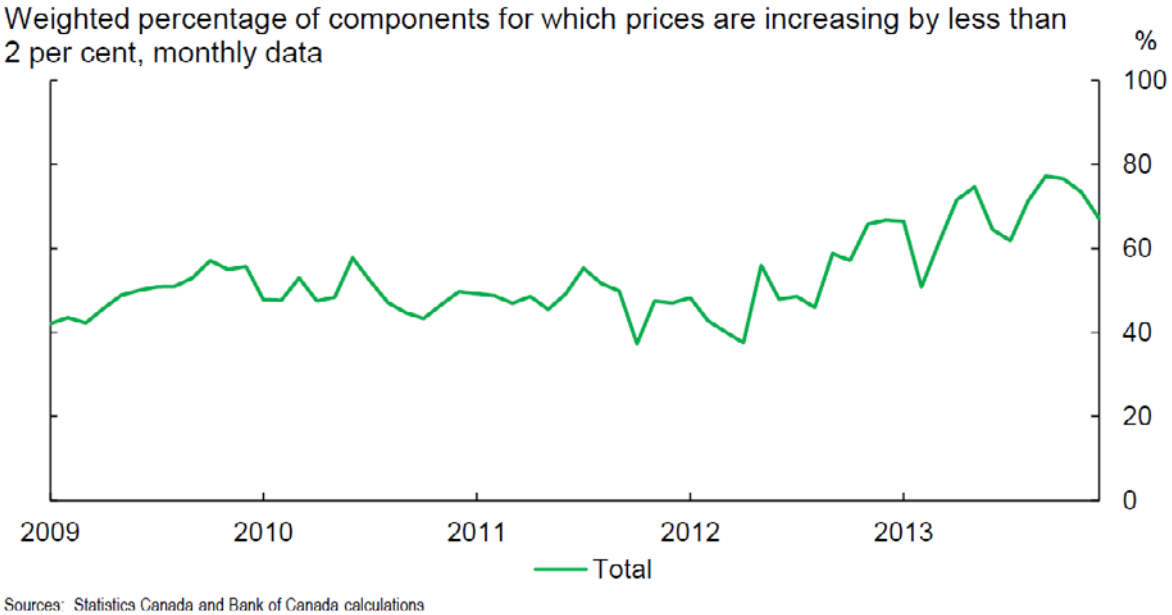
Chart 4: Weak inflation is evident across various measures



a. For definitions, see: Rates & Statistics > Indicators > Indicators of Capacity and Inflation Pressures for Canada > Inflation.
b. Extracts the component of inflation that is common across the individual series that make up the CPI. See M. Khan, L. Morel and P. Sabourin, "The Common Component of CPI. An Alternative Measure of Underlying Inflation for Canada", Bank of Canada Working Paper No. 2013-35.
Sources: Statistics Canada and Bank of Canada

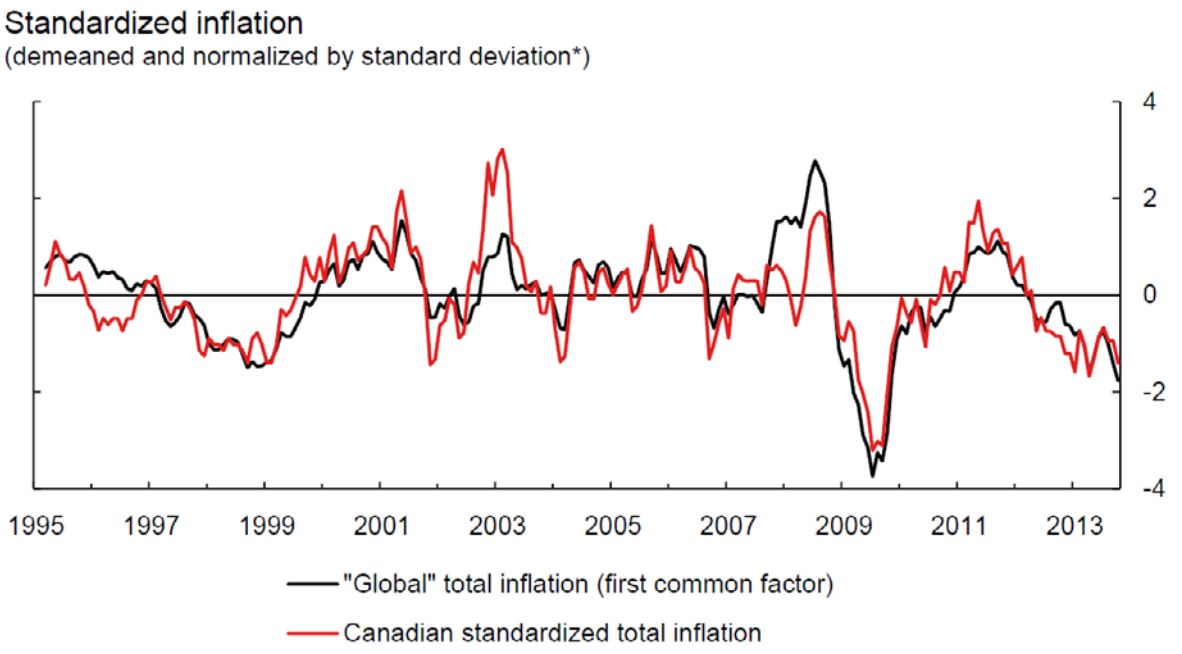
Last observation: December 2013

Chart 5: The proportion of consumer goods and services for which prices are increasing by less than 2 per cent has risen markedly since mid-2012



Sources: Statistics Canada and Bank of Canada calculations

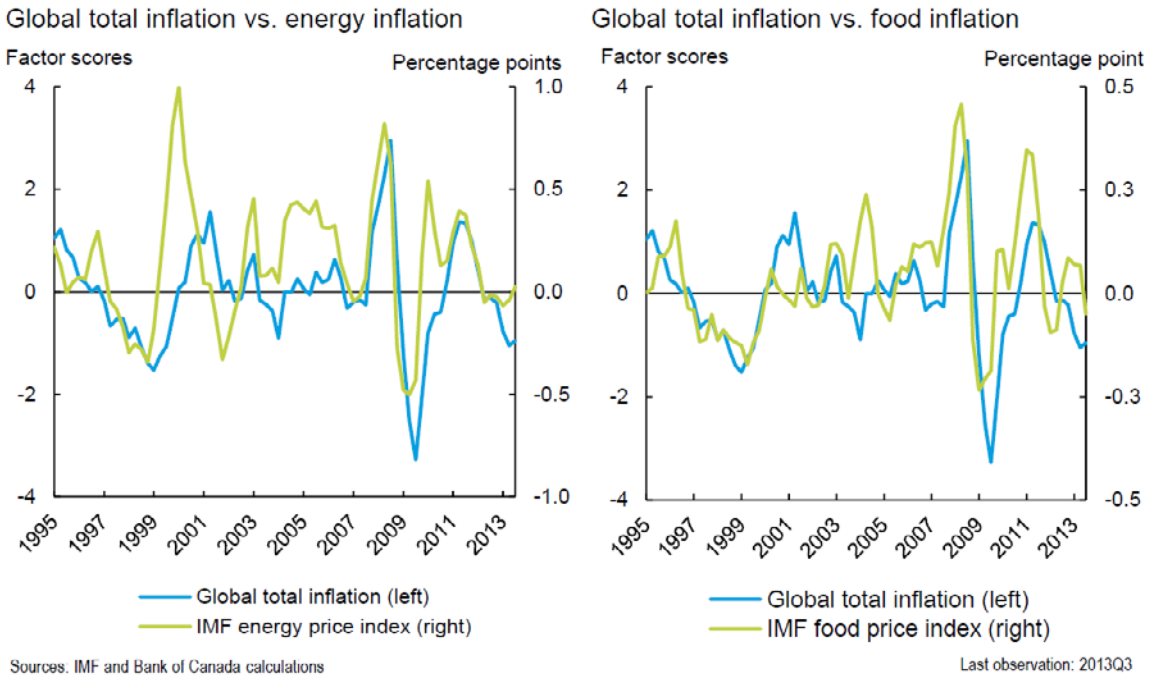
Chart 6: "Global" total inflation shows a marked downturn since 2012



Series are standardized as $(\pi-\mu)/\sigma$, where π is inflation, μ its sample mean and σ its sample standard deviation
Source: OECD and Bank of Canada calculations

Last observation: Oct 2013

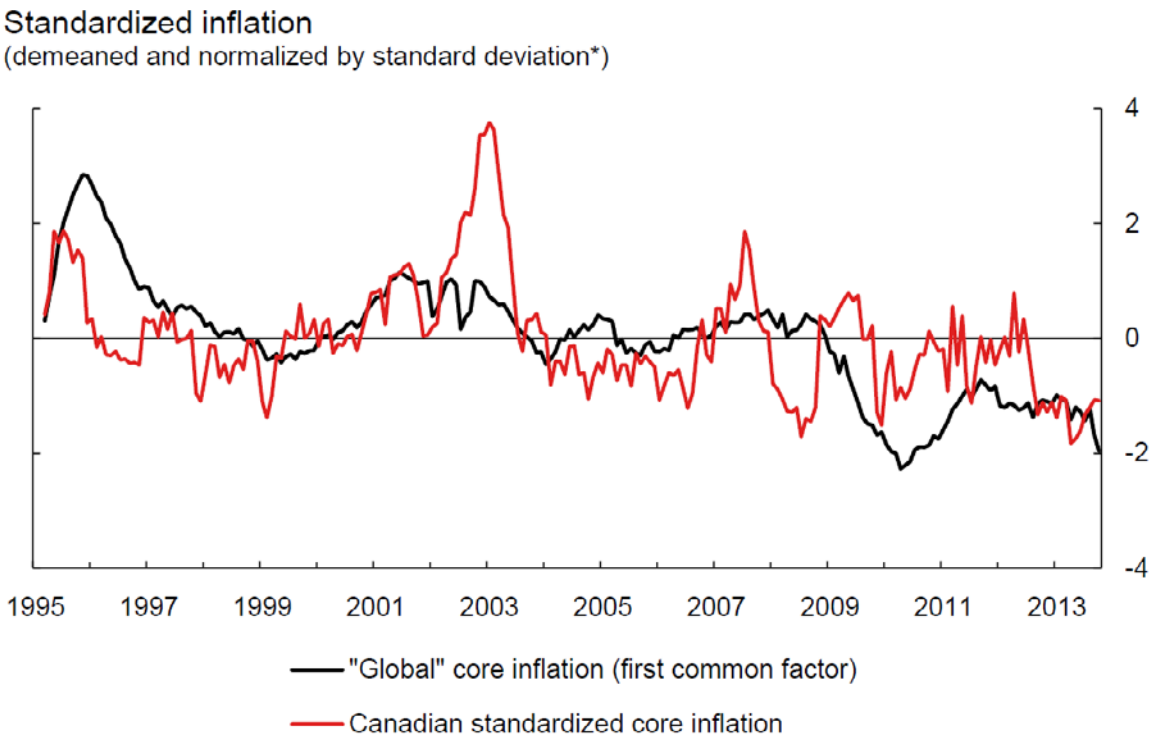
Chart 7: Global total inflation correlates strongly with energy and food price inflation



Sources. IMF and Bank of Canada calculations

Last observation: 2013Q3

Chart 8: "Global" core inflation has been decreasing since 2012

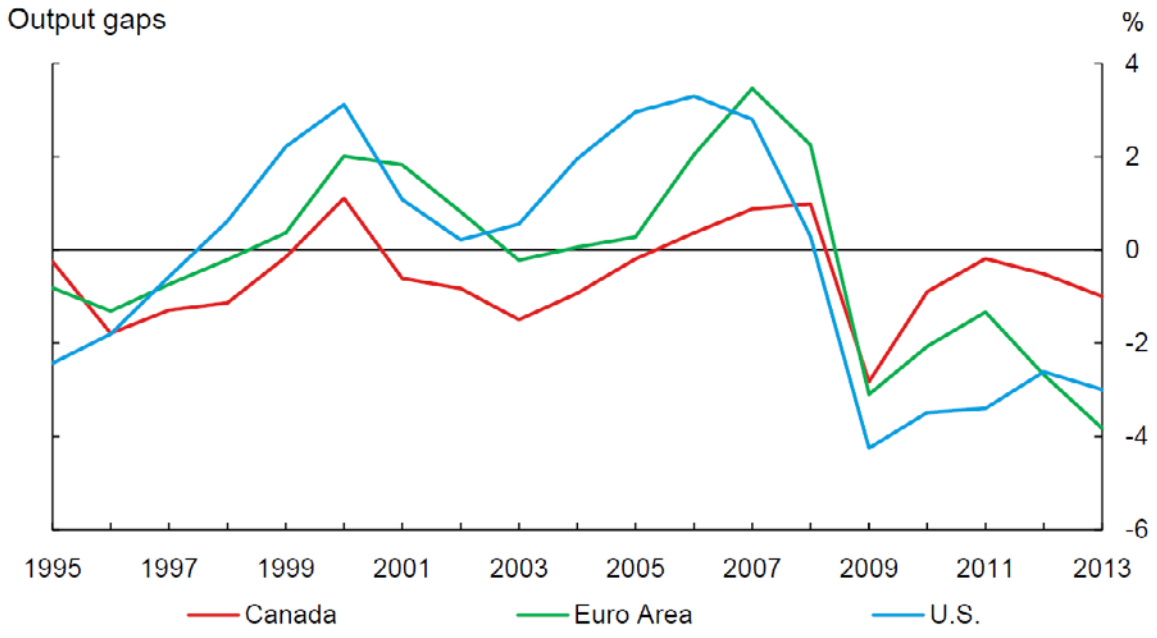


* Series are standardized as $(\pi - \mu)/\sigma$, where π is inflation, μ its sample mean and σ its sample standard deviation

Source: OECD and Bank of Canada calculations

Last observation: Oct 2013

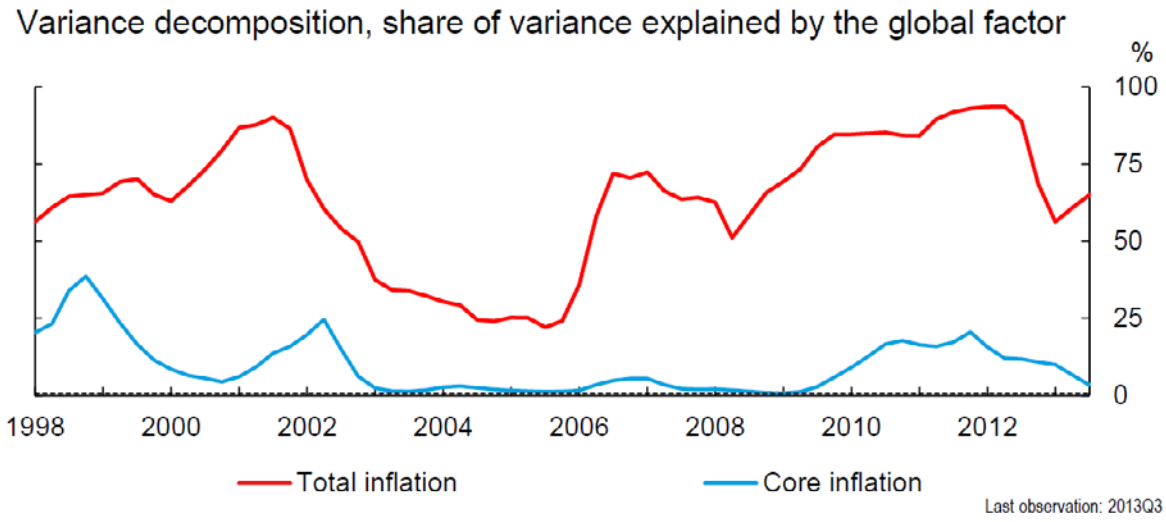
Chart 9: Weak global core inflation is consistent with large output gaps



Sources: Bank of Canada (for Canada) and OECD (for euro area and the United States)

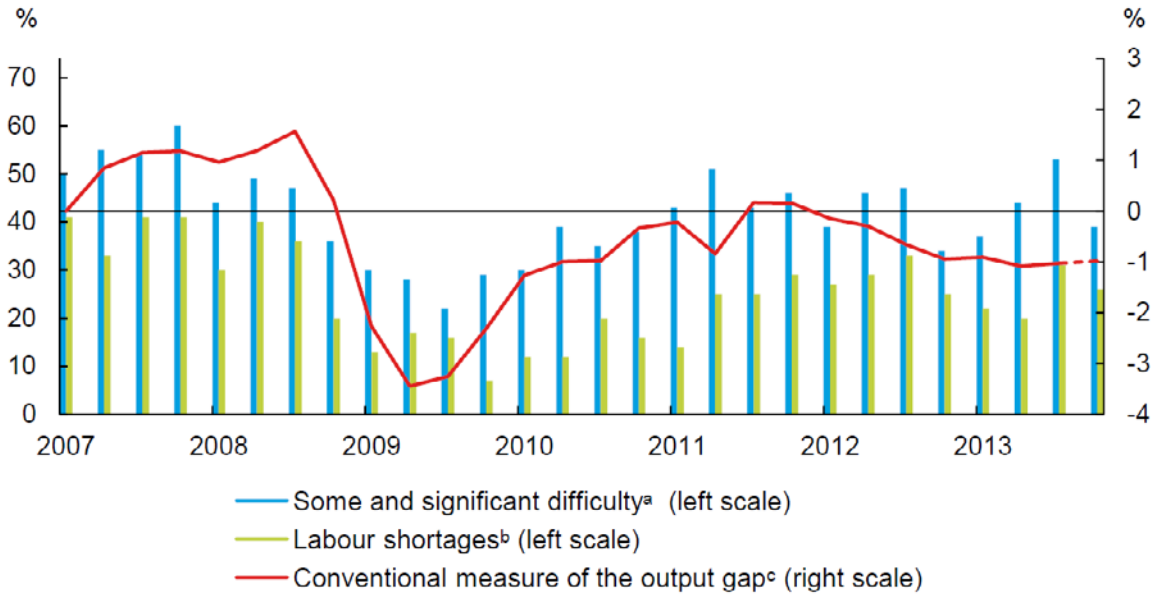
Last observation: 2013

Chart 10: The variance of Canada's total CPI inflation is largely driven by the global factor, which is affecting core inflation much less



Sources: OECD and Bank of Canada calculations

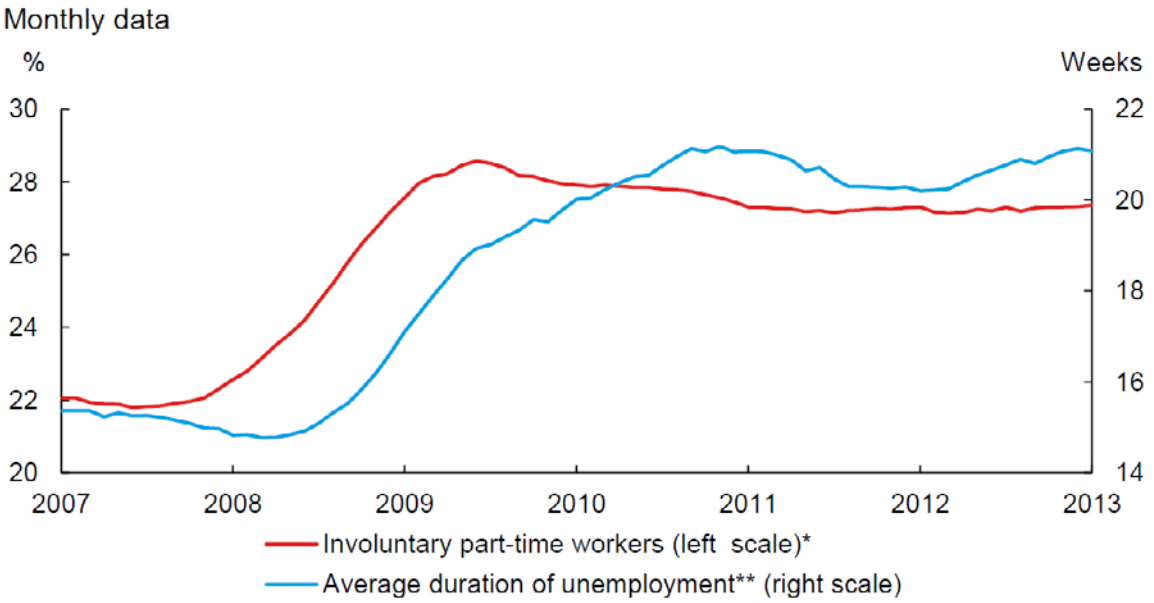
Chart 11: Significant excess capacity remains in the Canadian economy



a. Response to *Business Outlook Survey* question on capacity pressures. Percentage of firms indicating that they would have either some or significant difficulty meeting an unanticipated increase in demand/sales.
b. Response to *Business Outlook Survey* question on labour shortages. Percentage of firms reporting labour shortages that restrict their ability to meet demand.
c. Difference between actual output and estimated potential output from the Bank of Canada's conventional measure. The estimate for the fourth quarter of 2013 is based on an increase in output of
2.5 per cent (at annual rates) for the quarter.
Source: Bank of Canada

Last observation: 2013Q4

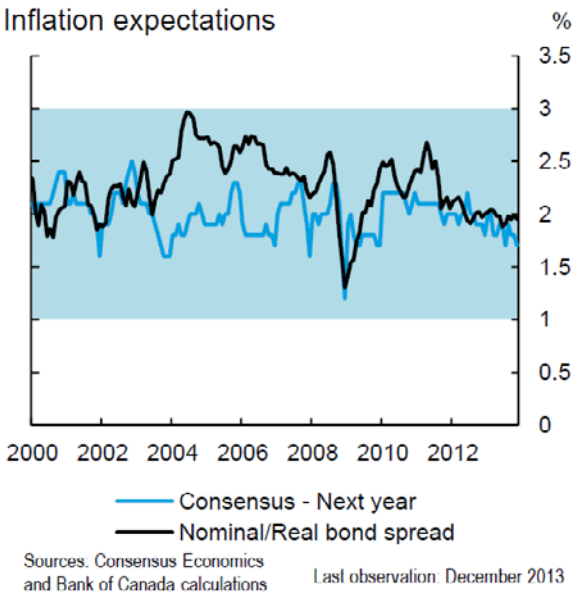
Chart 12: Labour market data point to the persistence of excess supply



*Expressed as percentage of total part-time employment, unadjusted, 12-month moving average
**Expressed as a 12-month moving average, in weeks
Sources: Statistics Canada and Bank of Canada calculations

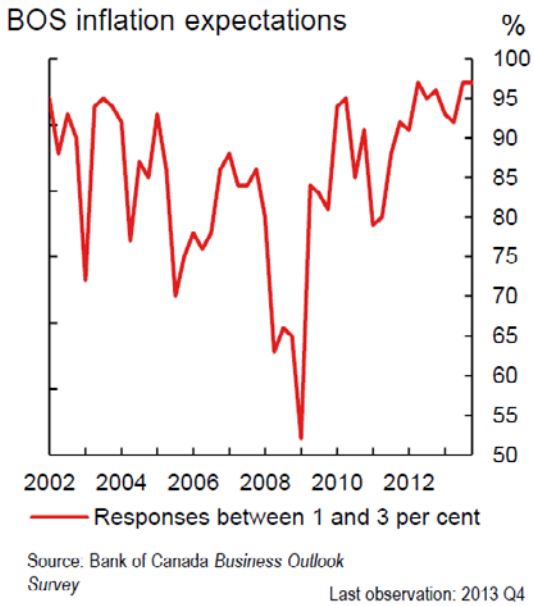
Last observation: December 2013

Chart 13: Measures of inflation expectations remain well-anchored



Sources: Consensus Economics and Bank of Canada calculations

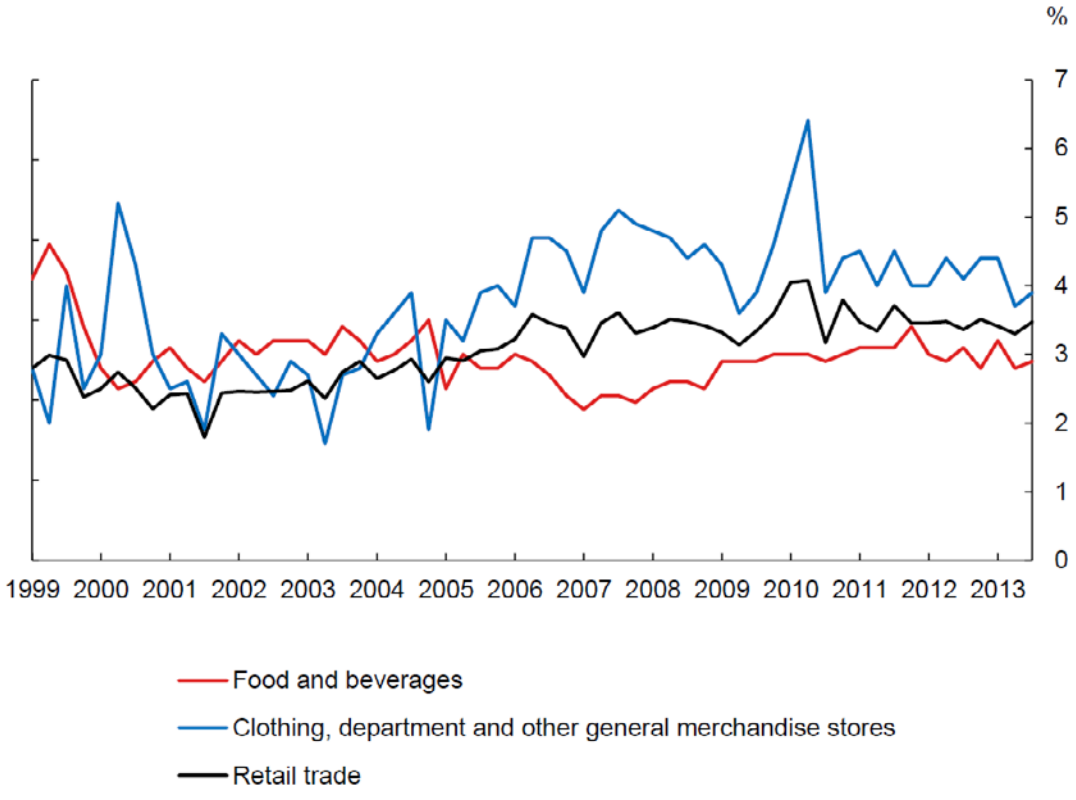
Last observation: December 2013



Source: Bank of Canada *Business Outlook Survey*

Last observation: 2013 Q4

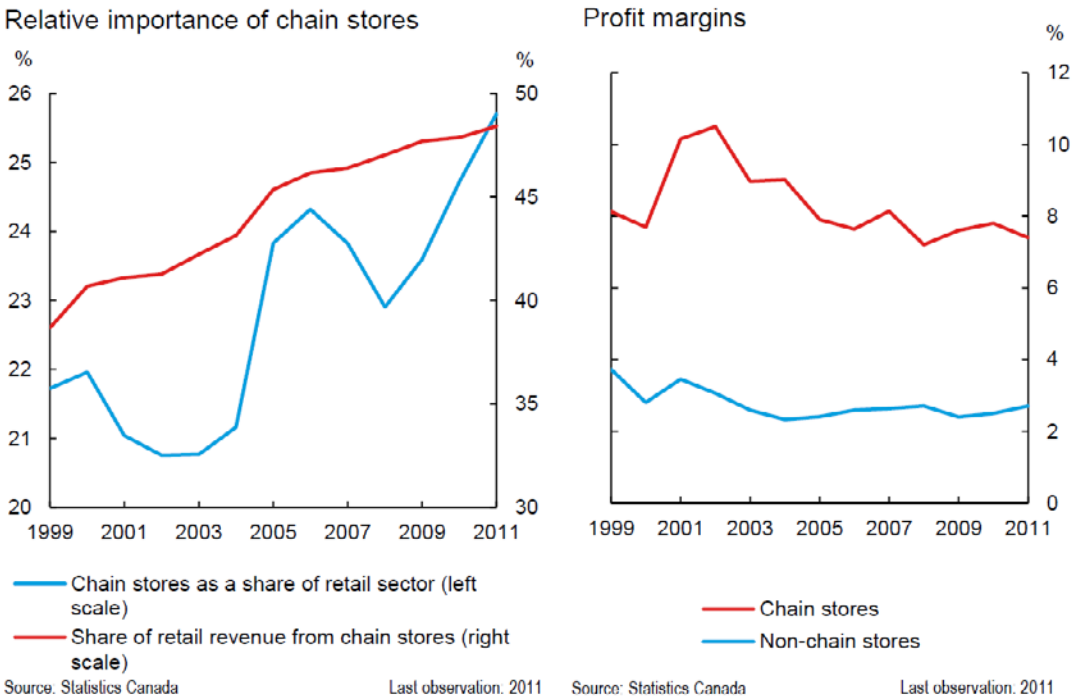
Chart 14: Retail profit margins have been holding up since the end of 2011



Source: Statistics Canada Quarterly Financial Statistics for Enterprises

Last observation: 2013Q3

Chart 15: The composition of the retail sector has shifted toward more profitable firms



Source. Statistics Canada

Last observation. 2011

Source: Statistics Canada

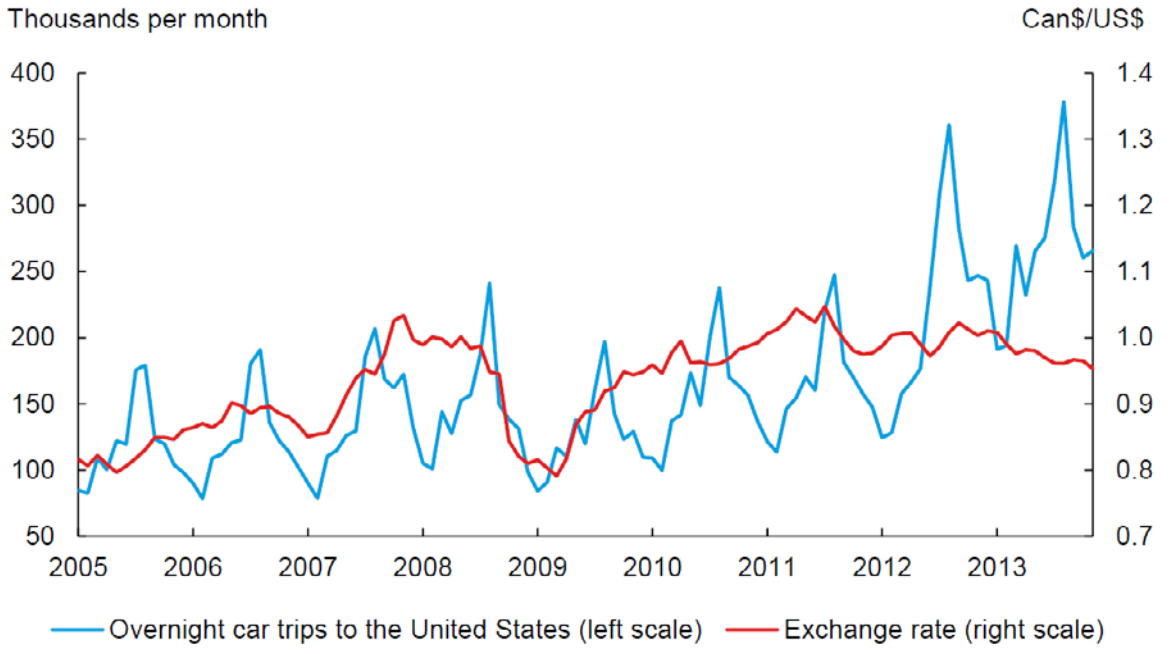
Last observation. 2011

Chart 16: Retail sector productivity is improving faster than overall

Sources: Statistics Canada and Bank of Canada calculations

Last observation: 2013 Q3

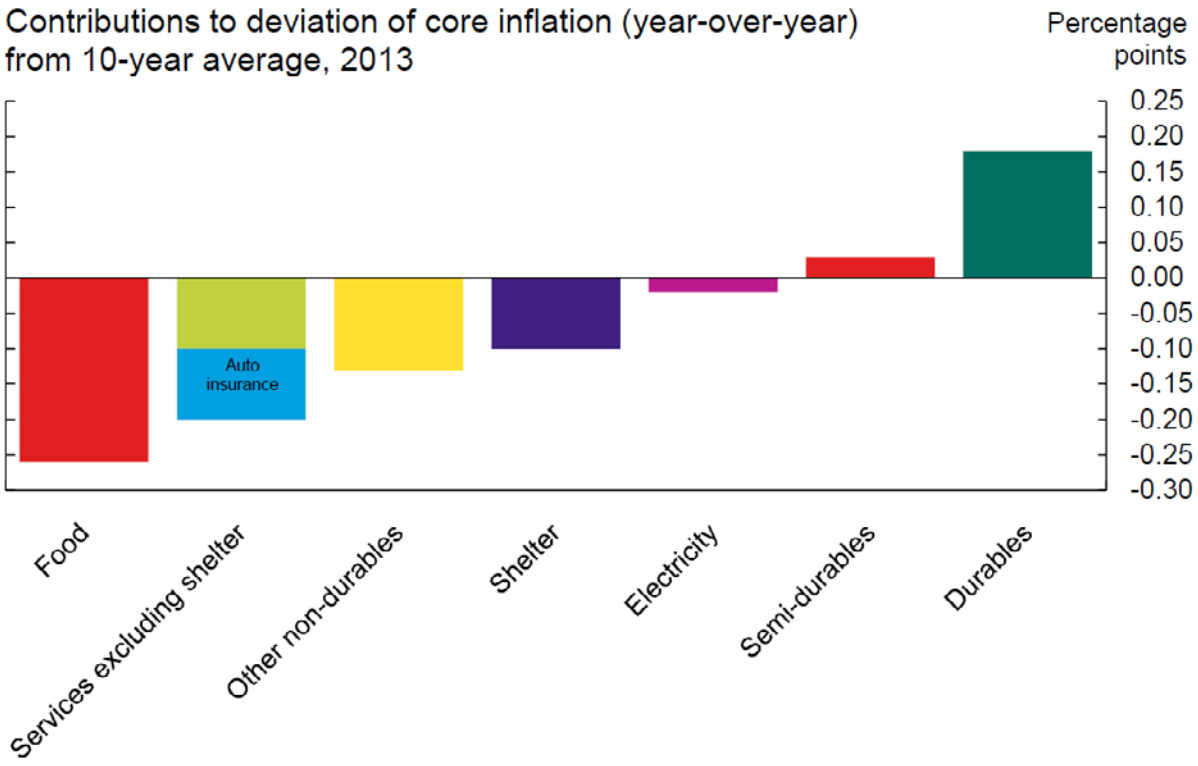
Chart 17: Higher duty exemptions increased the incidence of cross-border shopping



Source: Statistics Canada

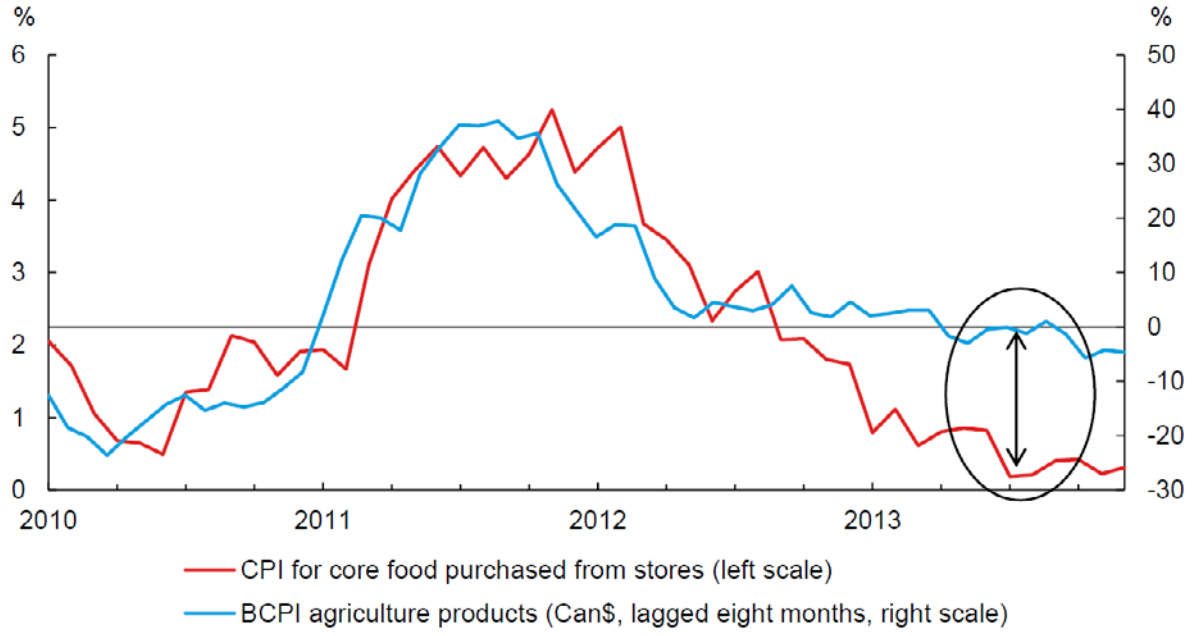
Last observation: December 2013

Chart 18: Food prices exerted the largest drag on core inflation in 2013



Sources: Statistics Canada and Bank of Canada calculations

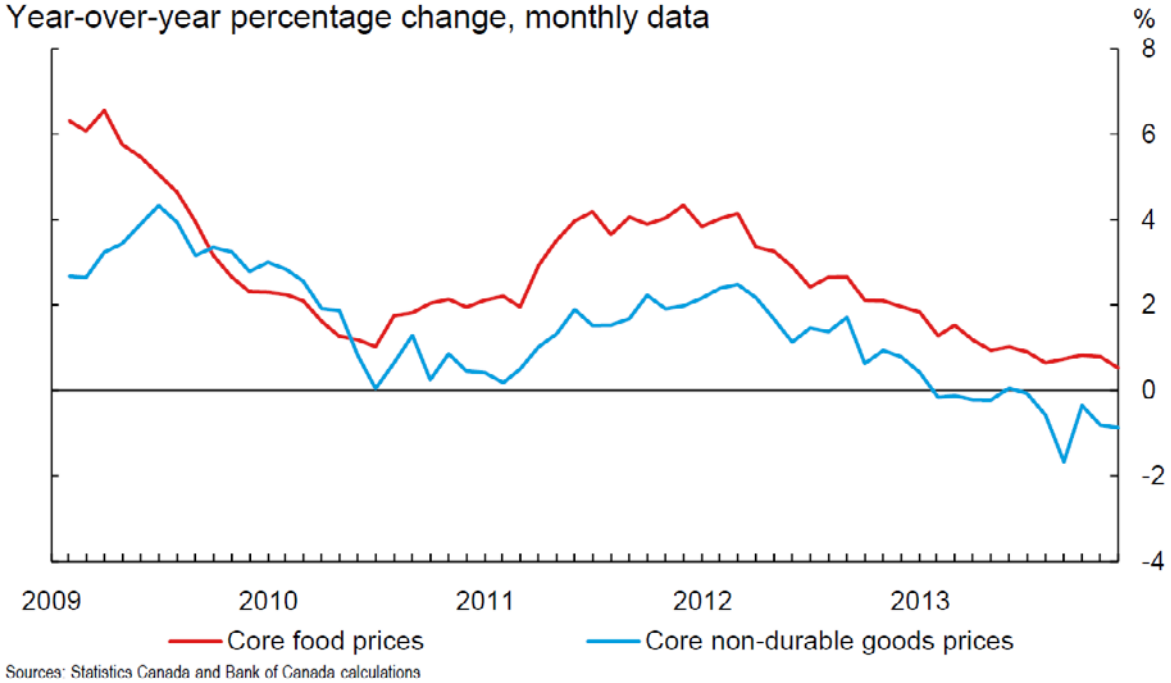
Chart 19: Core food-price dynamics have largely reflected the commodity-price cycle up to 2013



Sources: Statistics Canada and Bank of Canada calculations

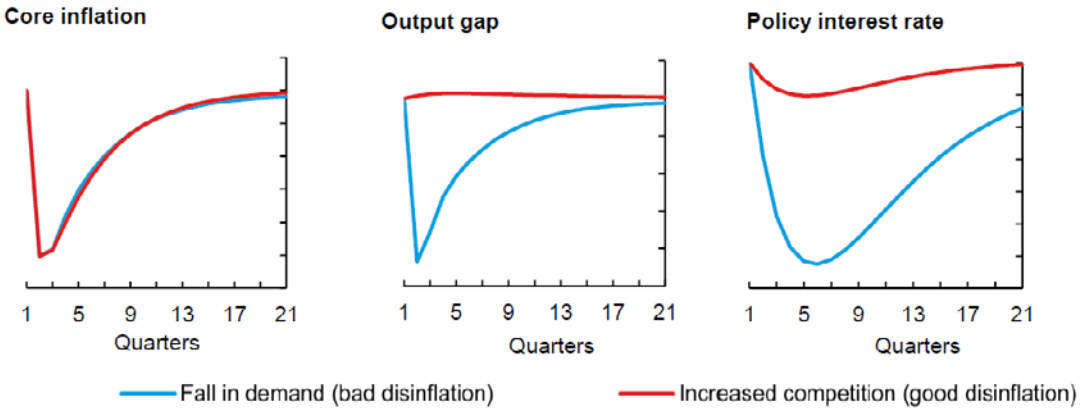
Last observation: December 2013

Chart 20: Increased competition is contributing to weakness in core foods and goods



Sources: Statistics Canada and Bank of Canada calculations

Chart 21: Theoretical monetary response under good and bad disinflation



Source: Bank of Canada