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Briefing Note

Revisiting the Spectre of Deflation

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The *Federal Accountability Act* mandates the Parliamentary Budget Officer (PBO) to provide independent analysis to the Senate and House of Commons on the state of the nation's finances, government estimates and trends in the national economy.

In meeting the commitments of this mandate, this short briefing note provides some historical and conceptual background on deflation and describes some concerns it raises.

Prepared by: Stephen Tapp*

*Senior Economist, Economic and Fiscal Analysis, Office of the Parliamentary Budget Officer. E-mail: tapps@parl.gc.ca. This work draws on Gregor Smith's 2006 Canadian Economics Association Presidential Address. I thank Mostafa Askari, Chris Matier, Kevin Page, James Rossiter, Gregor Smith and Armine Yalnizyan for helpful comments. I am responsible for any errors.

1. Introduction

Deflation fears are once again on the rise. In recent months, commodity prices and stock market values have plummeted, housing price growth has decelerated greatly, and in some countries turned negative, all while the business press reports stories of retailers offering deep discounts for the holiday season. Figure 1 shows the recent spike in Google searches for "deflation", which is a simple way of illustrating the current global interest in this issue.[1] Indeed, the global economic woes have led well-respected economists to actively support policies directed at *creating inflation* — something which was unheard of before now.[2]

While deflation concerns are largely international, focusing on the U.S. economy where consumer prices have fallen at a record pace in recent months, they have recently emerged in Canada.[3] This short note provides a conceptual background and historical context, and describes some concerns about deflation, including: its association with declining economic activity and job loss; the increased burden of debt repayment; and the potential limitations of monetary policy to provide support to the economy.

2. Defining Deflation

The CPI measures prices of hundreds of items, so at any time, prices for some items will fall, and others rise.

The Consumer Price Index (CPI) broadly measures the cost of living, and its year-over-year percentage change is the most commonly-cited measure of inflation.[4] The CPI inflation measure is important because it is used to update public and private pension payments, and is a key consideration in wage negotiations.

The CPI tracks the cost of purchasing a typical consumption *basket* in Canada, relative to its cost in a base year (currently 2002). The CPI basket weighs the prices of roughly 600 goods and services to reflect what an average Canadian household purchases. Because the basket includes so many goods and services, at any point in time, prices for some items are rising and prices for others are falling.

Inflation describes when the price of the basket is rising, on average over time. *Disinflation* describes a reduction in the rate of inflation, say when inflation falls from 3% to 2%. *Deflation* typically describes falling average prices, i.e., when inflation is below zero. However, a main concern for economists and policymakers is not simply if prices fall for a short period, but rather if there is a sustained, broad-based price decline.

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[1] As economics professor Greg Mankiw quips, "Presumably, this is not because motorists are suddenly concerned about their tires running out of air."

[2] 'And the lesser evil is ... inflation', Globe and Mail, Commentary by Ken Rogoff, Dec 2, 2008

[3] 'Biggest inflation rate fall since 1959 raises deflation concerns', Canadian Press, Nov 21, 2008.

[4] Other measures use changes in: the GDP deflator; personal consumption expenditure deflator, and producer prices.

3. Identifying Deflationary Episodes

Because of measurement problems, the official CPI inflation statistics typically overstate the true increase in the cost of living. Measurement problems occur mainly because of: 1) *substitution bias:* consumers substitute towards cheaper products when relative prices change and the CPI basket weights do not fully reflect this substitution; and 2) *quality adjustment bias:* part of an increase in overall prices reflects improved quality of goods and services. Research by the Bank of Canada estimates that Canadian inflation may be overstated by roughly 0.6–0.8 percentage points annually (Rossiter, 2005).[5] Thus, as Smith (2006) points out, even when modest inflation is officially reported, consumers may actually be experiencing deflation.

Mild, short-lived deflationary episodes have occurred in Canada.

Figure 2 shows the long history of total CPI inflation in Canada since 1923. One important feature of Canadian price movements is that mild, short-lived episodes of declining prices are not that rare. Indeed, taking measurement bias into account, there were nine distinct episodes of deflation in Canada in the past nine decades. Most of these deflations occurred during the gold standard period and before Canada adopted a floating exchange rate. Nonetheless, Canada has experienced deflation more recently in 1994, after the adoption of inflation targets.

Many economies have quite recently experienced deflationary episodes.

There is nothing particularly unique about Canada's past deflationary experiences. In fact, many economies across the world have quite recently experienced deflation. During 2000-02, 13% of the world's 35 largest industrial and emerging market economies experienced outright deflation, which rises to 22% when one accounts for measurement problems (IMF, 2003).

There is an additional distinction between how consumers actually experience inflation and how it is reported in the official statistics. Headline inflation numbers typically focus on year-over-year price changes, which is one natural time frame to consider. However, when consumers shop for goods and services, their likely frame of reference is their last recollection of the price for the item, which is unlikely to be the price from 12 months earlier. This observation raises two points:

The recent monthly decline in Canada's total CPI, while steep, has occurred several times in recent history.

A steep drop in core inflation would be cause for greater concern.

1. In addition to year-over-year inflation numbers, quarterly and monthly price movements are also relevant for people's actual inflation experiences. Figure 3 shows monthly movements using the seasonally adjusted total CPI data, since 1992. Notice that the recent monthly decline in the total CPI in October 2008, while steep in magnitude, has occurred several times before in recent history. A steep drop in core inflation below 1% — the measure the Bank of Canada tracks to gauge inflation's underling trend, which removes volatile components like food and energy

[5] A countervailing factor during the recent run-up in housing prices is that the housing component of the CPI may have understated the true housing costs if rent costs are not fully captured. The personal consumption deflator could potentially provide more accurate measurement of living costs, however, it is less timely because it is reported quarterly rather than monthly like the CPI.

— would be a cause for deeper concern, but that has not yet materialized;

2. Items that people buy more frequently — such as groceries, gasoline, and monthly bill payments for utilities, which have fluctuated quite a lot in recent years — may be given excessive weight in forming consumers' *perceptions* of inflation, relative to items they buy infrequently, such as durable goods.

4. Four Key Concerns About Deflation

1) Declining economic activity

Prices move for a variety of reasons, so identifying the specific factors causing price declines is crucial.

One popular concern is that sustained deflation is associated with declining economic activity. Economists typically focus on two main determinants of overall price pressures: 1) the level of slack in the overall economy (i.e., the output gap); and 2) people's expectations of future prices and wages. That said, prices move for a variety of reasons so it is crucial to identify the specific factors causing price declines. For example, productivity improvements can cause beneficial price reductions because the productive capacity of the economy increases. In other cases, prices fall in response to weak domestic demand, or developments in international markets, and occasionally, prices fall reflecting market corrections to more normal historic levels following brief periods of excessive speculation.

Examining data for a wide range of countries reveals the vast majority of deflations were not accompanied by falling real output.

Overall, these considerations suggests that while falling prices and economic weakness may occur together, as occurred most dramatically in the Great Depression, there is not necessarily a tight positive statistical link between the two. Indeed, examining data for a wide range of countries reveals that the vast majority of deflations (nearly 90%) were not accompanied by falling real output (Atkeson and Kehoe, 2004).

Perhaps the most common concern found in the business press is that falling prices will *cause* weaker economic activity because they lead to a cycle of consumer retrenchment. In this situation, businesses discount prices because consumers aren't buying, consumers see falling prices and delay their purchases because they expect cheaper items in the future. The fall in consumer demand, in turn, leads businesses to further reduce prices, causing consumers to further delay purchases, thereby perpetuating the cycle. This concern is most applicable to consumer durable goods. (Box 1 of the Appendix explores this relationship in the Canadian data.)

There are some considerations and important counter-arguments against this conventional wisdom. First, if consumers are currently delaying purchases it is difficult to determine conclusively that this is because they are waiting for bargains, rather than being due to concerns over their job and income prospects because of increased uncertainty in labour markets. Second, if consumers delay purchases, this raises their saving rates for a period of time, which helps improve their balance sheets. Third, if consumer retrenchment leads to a rise in private savings,

it could also lower the cost of borrowing (real interest rates should fall), thereby providing some offsetting incentives to the lower perceived benefits of current durable purchases and investment. Finally, when economic activity begins to rebound, pent-up demand from delayed spending should fuel a stronger recovery.

2) Slow wage adjustment in labour markets and rising unemployment

If deflation occurs, the ability and speed of wage contract re-negotiation may be important to prevent a larger unemployment spike.

Deflation is thought to negatively impact labour markets because worker's nominal wages may not move down in step with the overall decline in the price level (i.e., if there is 'downward nominal wage rigidity' over a sustained period). As a result, workers' real (inflation-adjusted) wages rise. This is a good thing for those who keep their jobs, but because businesses see their wage costs rise, they may layoff workers to control their costs, and unemployment may increase as a result.

If Canada were to enter a period of deflation, the ability and speed of re-negotiating wage contracts may be important to prevent a larger spike in unemployment.

3) Wealth redistribution: borrowers lose, lenders win

Falling asset prices lower the value of collateral, increase the real cost of debt repayment, and can raise personal and business bankruptcies.

When borrowers and lenders expect inflation to fall, nominal interest rates will typically fall in step, ensuring lenders a given expected real (inflation-adjusted) rate of return and borrowers a given expected real cost of borrowing. However, if prices ultimately fall more than were expected and thus built-into contracts, lenders win and borrowers lose. Lenders are better off because as prices fall, the nominal interest they receive gives them more purchasing power. Conversely, borrowers are worse off because the real (inflation-adjusted) cost of paying off their borrowing has increased.[6]

In the current context, concerns about falling prices pertain most to falling asset prices. This lowers the value of personal and financial collateral and increases the real cost of debt repayment, which in turn, may increase personal and business bankruptcies.

4) Limited effectiveness of conventional monetary policy to stimulate the economy

In deflationary environments monetary policy can continue to provide some economic stimulus, so too can fiscal policy.

Falling prices could make monetary policymaking more difficult, particularly if people's expectations of falling prices become entrenched. Monetary policy traditionally operates by changing the Bank of Canada's short-term policy interest rate. The concern is that a deflationary episode would result in a low nominal policy interest rate, which, because it can't fall below zero, would leave limited scope for providing additional monetary stimulus to the economy. If the nominal policy interest rate hits zero, non-conventional monetary policy tools would be required. Some strategies have been used in the past and there is much recent research that suggests monetary policy could still continue to provide some help to

[6] The ex-post real interest rate (on borrowing) is the nominal interest rate plus realized deflation.

the economy. Monetary policy options include: government purchases of long-term bonds, which would lower long-term interest rates and provide economic stimulus; and shaping the public's expectations by communicating the government's commitment to keep short-term interest rates low for a specified period of time; among others (see, e.g., Bernanke and Reinhart, 2004). However, in this context, fiscal policy may be required to provide additional economic stimulus through increased spending or tax reductions.

5. Conclusions and Current Prospects for Deflation in Canada

Currently, core inflation remains well-anchored and the possibility of persistent deflation in Canada remains remote, based on private sector economists' forecasts.

Internationally, there has been much recent concern about the possibility of a deflationary episode, particularly for the beleaguered U.S. economy where consumer prices have fallen at a record pace in recent months. Indeed, the Federal Reserve has acknowledged the small, but growing deflation risk in the U.S. and has re-affirmed that it will take the necessary actions to avoid deflation.[7]

For Canada, a small minority of private-sector forecasters now expect a short-period of negative numbers for total CPI in the near-term (on a year-over-year basis). However, at the current time, the possibility of *persistent* outright deflation in Canada remains low. According to the PBO's private sector survey, as of December 12, 2008, the average forecast for total CPI inflation in Canada was 1.3% for 2009 and 1.6% for 2010. Both of these annual average forecasts are within the Bank of Canada's 1%-3% inflation target band. Furthermore, despite a recent substantial monthly price decline in total CPI, core inflation — the preferred measure of inflation's underlying trend — has not yet recorded a drop to more worrying levels.

At the same time, the lowest CPI forecast reported in the PBO's survey calls for inflation of 0.8% and 0.6% in 2009 and 2010 respectively. This is not an expectation of outright price declines in Canada over a sustained period, but does indicate very weak price pressures overall going forward. Overall, at the current time, taking account of the CPI measurement problems discussed above, these forecasts point to a small possibility of a quite modest deflationary experience for Canadian households during the on-going economic slowdown.

Finally, an international historical perspective offers two additional points for consideration — points which are not intended to dismiss or discredit the current deflation concerns, but rather to offer a broader context for on-going discussions. First, mild, short-lived deflationary episodes are more common than most people think; and second, with the notable exception of the Great Depression, the economic record during these past deflationary episodes is not as bad as most people fear.

[7] '*Fed vows to avert deflation'*, Nov 19, 2008, Financial Times.

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Figures

Figure 1: Google Searches for "Deflation"

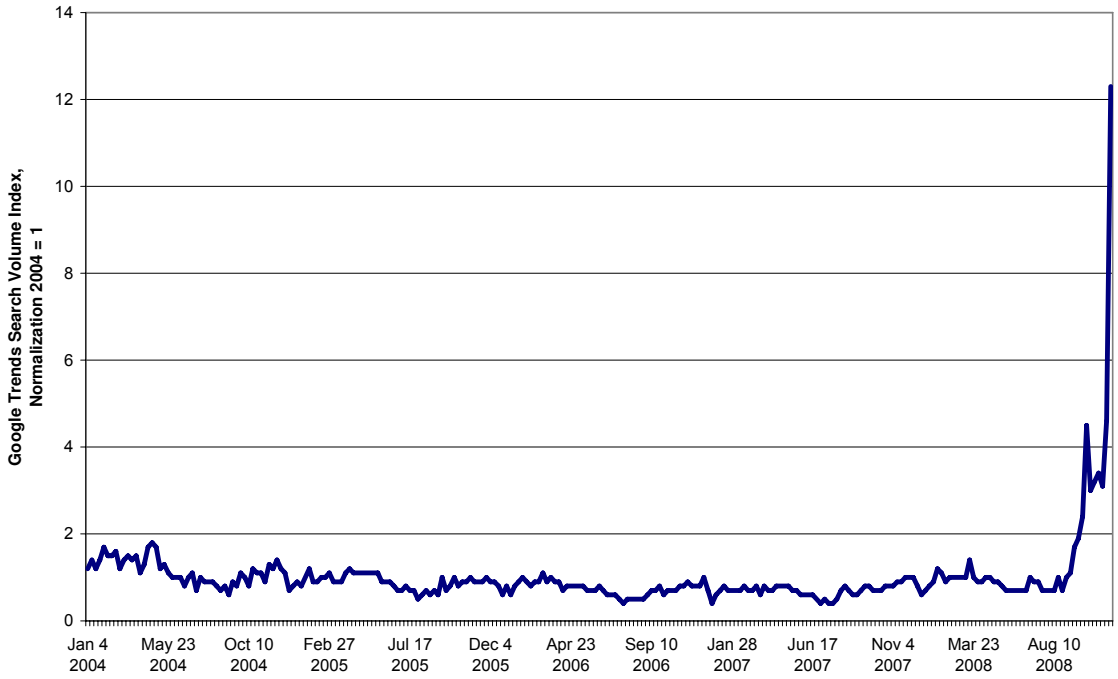


Figure 2: Canadian CPI Inflation, Year-over-Year Percentage Change

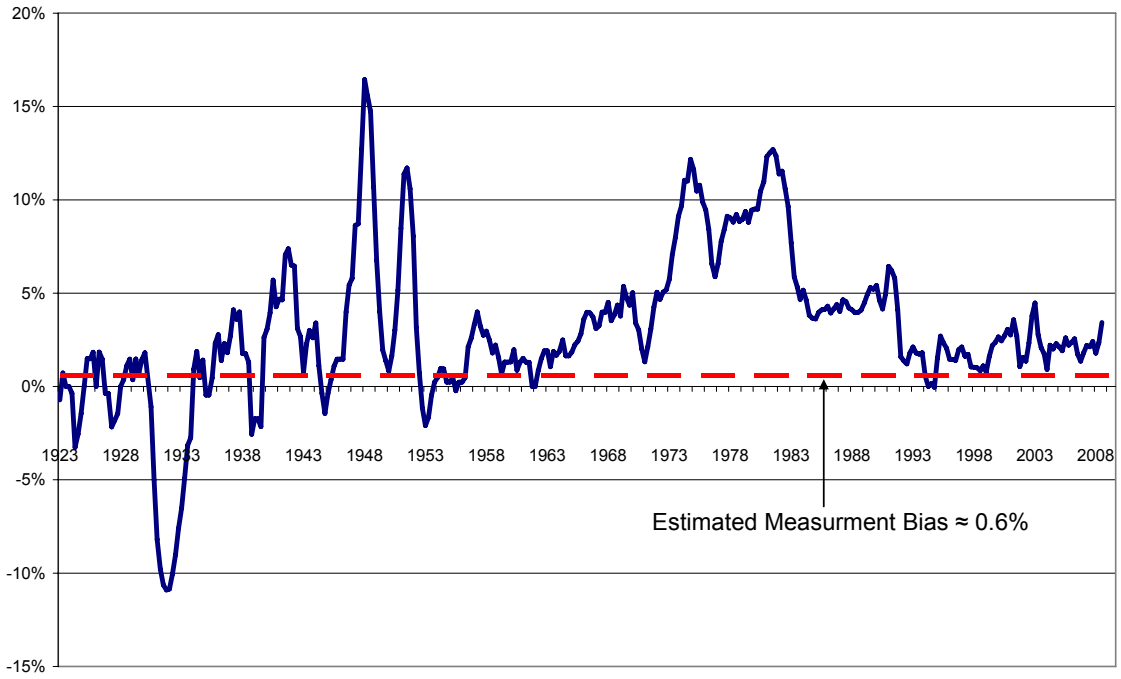
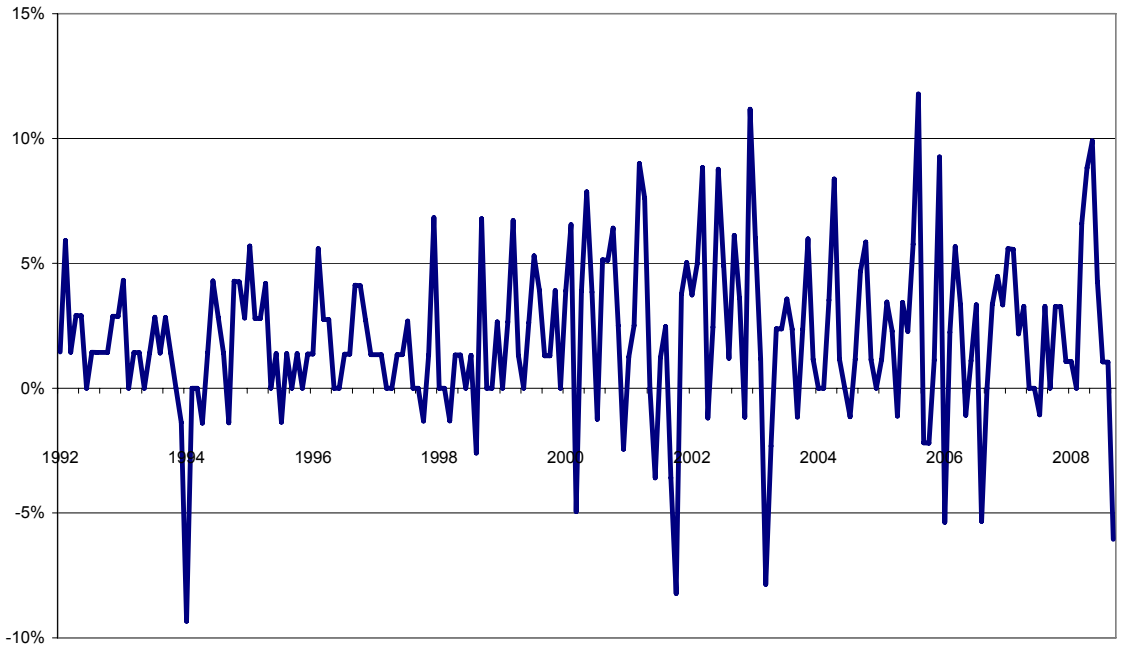


Figure 3: Canadian CPI Inflation, Monthly Percentage Change (Seasonally Adusted)



Box 1: Deflation and Consumer Retrenchment in Canada: Some Evidence from Durables

To the extent a 'deflationary retrenchment cycle' exists, it should appear strongest in the data for consumer durables. Durables are long-lived, big-ticket items which are often financed by borrowing and where postponing purchases is easiest (i.e., inter-temporal substitution is relatively high). At the same time, prices for durables have been one of the fastest falling components of the CPI for the past two decades, making it a convenient candidate to assess the retrenchment theory.

Figure 4 plots the year-over-year movements in durables prices and real consumer durables spending during the last five decades. The figure shows that durables spending is quite volatile, and dropped significantly during past recessions in the early 1980s and 1990s—consistent with overall consumption-smoothing behaviour. However, over the period as whole, there is little evidence to suggest that falling durables prices actually drove down consumer durables spending, which would, of course, require the price decline to precede the fall in spending. Indeed, since the mid-1990s, while durables prices have secularly trended down, real consumer durables spending has remained quite strong.

This case illustrates the so-called 'good' deflation, driven by increased supply that has occurred more recently in consumer electronics, appliances, automobiles and others. Technological improvements and, given their large import content, improved trade have lowered production costs and supported lower retailer prices while demand has simultaneously increased (but at a slower rate than supply improvements). This underlies the point that prices are an equilibrium outcome of both supply and demand conditions; as a result falling prices on their own do not necessarily signify weak demand.

Figure 4: Consumer Durables Spending and Price Changes, Year-over-Year Percentage Change