



# The Tug of War Between Deflation and Inflation

## Policy Brief

Economic Policy Series – July 2009

### Introduction

The global recession that ensued from a massive financial crisis and acute loss of confidence has been unprecedented both in terms of its severity and high degree of synchronicity. Worldwide, demand slumped and trade plummeted resulting in a considerable degree of economic slack that has kept downward pressure on prices. Headline inflation has fallen dramatically in advanced economies, and in many countries it has dipped below zero.

As Chart 1 shows, total inflation in Canada - measured in terms of the rate of change in the Consumer Price Index (CPI) year-over-year - has declined sharply, and in June fell into negative territory. Excluding the most volatile components of the Index<sup>1</sup>, the core rate of inflation has remains well anchored and in-line with the Bank of Canada's operational target (1 to 3 percent).



<sup>1</sup> Fruit, vegetables, gasoline, fuel oil, natural gas, mortgage interest, intercity transportation, and tobacco products as well as the effect of changes in indirect taxes on the remaining components.

*The Canadian Chamber is committed to fostering a strong, competitive, and profitable economic environment that benefits all Canadians. This paper is one of a series of independent research reports covering key public policy issues facing Canada today.*

*We hope this analysis will raise public understanding and help decision-makers make informed choices. The papers are designed not to recommend specific policy solutions, but to stimulate public discussion and debate about the nation's challenges.*

Deflation concerns are growing as consumer prices shrink. Deflation is defined as a sustained drop in the general level of prices as measured by an index of consumer prices. This decline affects most (if not all) prices in the economy, and is entrenched in expectations. Deflation should not be confused with disinflation, which is a slowing down in the rate of price increases. Conversely, inflation is a persistent rise in the average level of prices.

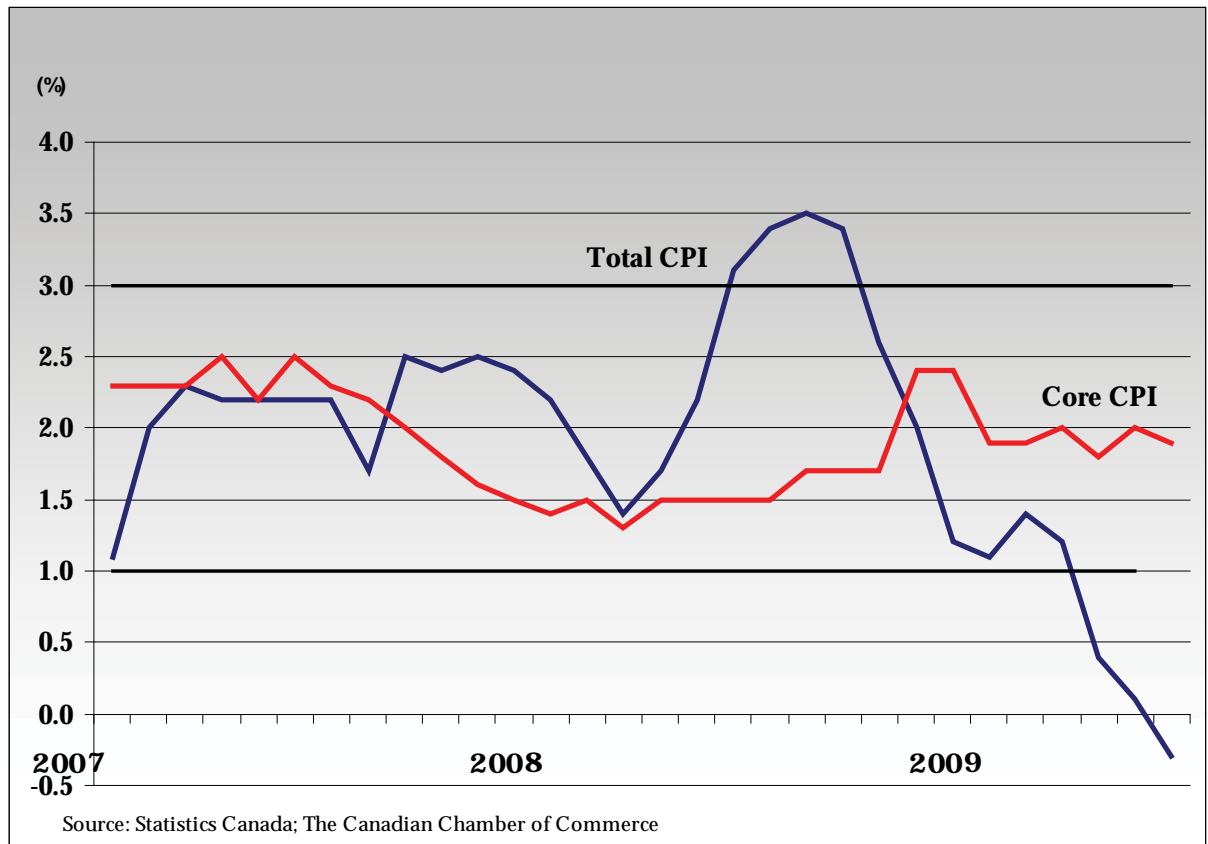
To combat the risk of deflation, central banks around the world (including the Bank of Canada) have aggressively cut interest rates to stimulate aggregate demand. Central banks also introduced

bold and innovative measures to provide the market with much needed liquidity to kindle the flow of credit. Governments have committed substantial fiscal stimulus focused on spending and targeted tax cuts.

This massive fiscal and monetary stimulus has led many observers to warn that rampant inflation, not deflation, is what we need to fear once economic recovery takes hold.

The tug of war between deflation in the near term, and rampant inflation down the road, is still very much in question. We believe neither will materialize in Canada.

**Chart 1: Consumer Price Index  
(year-over-year % change)**



# Why Should We Worry About Deflation?

With the recession hitting many individuals and businesses hard, it may seem inappropriate to worry about a persistent fall in prices. Why is deflation worrisome?

If consumers and businesses expect price declines to persist, they may postpone purchases in the hope of paying lower prices later, exacerbating the current economic downturn. Falling prices and output translate into lower corporate profits resulting in layoffs, decreased ability to pay off debt, falling equity prices, and widespread bankruptcies. Individuals have an incentive to hold cash because a dollar today will be worth

more tomorrow, thus, the incentive to invest, take risks, and spend is dampened. As central banks reduce interest rates to stimulate the economy – and given the natural floor of zero on nominal interest rates – deflation leads to rising real interest rates which discourage borrowing and further depress investment. Households and firms that had accumulated substantial debt before the onset of the deflation must repay their obligations in dollars of increasing real value. All in all, deflation can lead to a vicious circle, with price declines and expectations of price declines gathering force, and a precipitous decline in output.

## Box 1: Canada's Inflation-Control Strategy<sup>2</sup>

### **Inflation control and the economy**

Low, stable, and predictable inflation allows the economy to function more effectively. This contributes to better economic growth over time, and works to moderate cyclical fluctuations in output and employment.

### **The targets**

In February 1991, the federal government and the Bank of Canada jointly agreed on a series of targets for reducing total CPI inflation. Under this agreement, the Bank will conduct monetary policy aimed at keeping total CPI inflation at 2 percent, with a control range of 1 to 3 percent around the target.

### **The monetary policy instrument**

In setting a target for the overnight rate, the Bank of Canada influences short-term interest rates to achieve a rate of monetary expansion consistent with the inflation-control target. There are long and variable lags – six to eight quarters – between changes in monetary policy and their effects on inflation and the economy.

### **Monitoring inflation**

In the short run, a good deal of movement in the CPI is caused by transitory fluctuations in the prices of such volatile components as fruit and gasoline, as well as changes in indirect taxes. For this reason, the Bank uses a core measure of CPI inflation as an indicator of the underlying trend in inflation.

<sup>2</sup> Bank of Canada. "Joint Statement of the Government of Canada and the Bank of Canada on the Renewal of the Inflation-Control Target." *The Bank of Canada Review* (Winter 2006–2007). Pages 45–59.

# Well-Anchored Inflation Expectations Are A Crucial Determinant In The Inflation Process

“Undoubtedly, the state of inflation expectations greatly influences actual inflation” and the economy more generally<sup>3</sup>. Inflation expectations affect people’s behaviour in ways that have a long-term economic impact. For example, if workers expect higher inflation, they will demand higher wages, prompting employers to raise the price of their goods and services, resulting in higher actual inflation. Measures of inflation expectations are also a key data input in the formulation of monetary policy.

Inflation expectations cannot be observed directly but can be derived indirectly by surveying businesses and households, enlisting the opinion of professional forecasters, and by extracting information from financial markets.

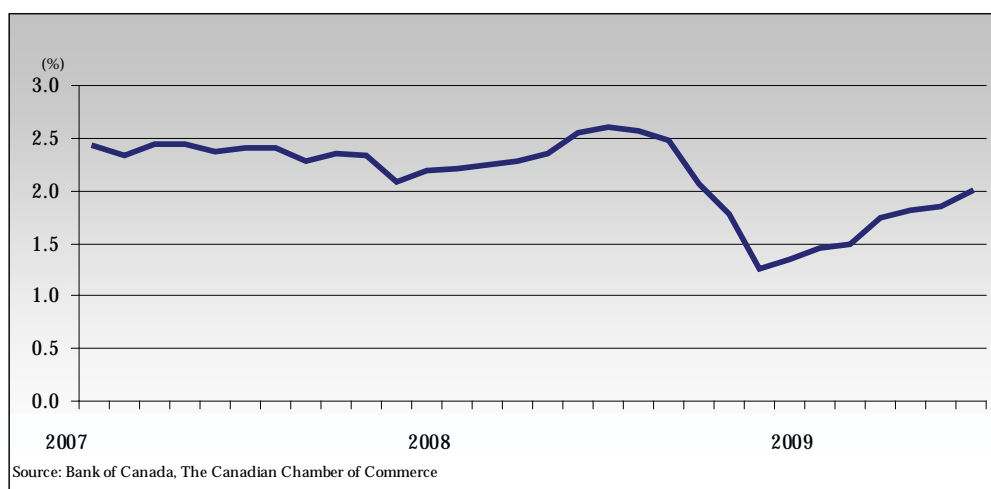
**What are the surveys telling us?** In the Bank of Canada’s *Business Outlook Survey*, 60 percent of firms surveyed in the second quarter of 2009 expect inflation of less than 2 percent over the next two years, and only 11 percent expect inflation to fall below 1 per cent.

**What are professional forecasters telling us?** Leading forecasters surveyed by Consensus Economics<sup>4</sup> in the second quarter of 2009 expect CPI inflation of 0.3 percent in 2009, 1.7 percent in 2010, and 2.2 percent in two-to-three years’ time.

**What are financial markets telling us?** Market participants’ inflation expectations can be obtained from financial instruments. The difference in the yields between Government of Canada conventional and Real Return Bonds (of the same maturity)<sup>5</sup> is the market participants’ expectation of average annual inflation. This measure is referred to as the “breakeven” inflation rate. It had been mostly declining since mid-2008 (when it stood at 2.6 percent) but increased to 2.0 percent in June (Chart 2).

While none of these are perfect measures, together they provide an encompassing view of inflationary expectations. They point to inflation remaining low in the next two years or so, but do not point to the emergence of outright deflation.

**Chart 2: Yield Spread Between Conventional and Real Return Bonds**



<sup>3</sup> Chairman Ben S. Bernanke at the Monetary Economics Workshop of the National Bureau of Economic Research Summer Institute, Cambridge, Massachusetts. July 10, 2007.

<sup>4</sup> <http://www.consensuseconomics.com>

<sup>5</sup> Real return bonds bear interest adjusted in relation to the Consumer Price Index. Breakeven inflation rates may not always accurately reflect market participants’ inflation expectations because they are subject to a number of distortions due to the existence of various premia in the market for inflation-linked bonds (for example, a risk premium and liquidity premium).

# Monetary Indicators

Nobel laureate economist Milton Friedman wrote: “inflation is always and everywhere a monetary phenomenon”. In other words, there is direct relationship between long-term inflation and money supply growth.

When economists refer to the money supply, they refer to the total amount of money available in the economy at a particular point in time. This can be measured in a number of ways. One narrow

definition of the money supply is the monetary aggregate M1+ which consists of items that are most commonly used to buy goods and services – specifically, currency outside banks and chequable deposits held at financial institutions. A broader definition of the money supply, M2++, includes all the items in M1+, all other deposits at financial institutions, and other more sophisticated financial instruments (like mutual funds). See Box 2.

## Box 2: Canada’s Money Supply<sup>6</sup> Monetary Aggregates

### Narrow measures of money

- M1+ (gross) = Currency outside banks plus all chequable deposits held at chartered banks, trust and mortgage loan companies, credit unions and caisses populaires.
- M1++ (gross) = M1+ (gross) plus all non-chequable deposits (other than fixed-term deposits) held at chartered banks, trust and mortgage loan companies, credit unions and caisses populaires.

### Broad measures of money

- M2 (gross) = Currency outside banks plus bank personal deposits, bank non-personal demand and notice deposits.
- M3 (gross) = M2 (gross) plus bank non-personal term deposits and foreign-currency deposits of residents.
- M2+ (gross) = M2 (gross) plus deposits at trust and mortgage loan companies and at government savings institutions; deposits and shares at credit unions and caisses populaires; life insurance company individual annuities; and money market mutual funds.
- M2++ (gross) = M2+ (gross) plus Canada Savings Bonds and other retail debt instruments; plus non-money market mutual funds.

<sup>6</sup> Bank of Canada. “Canada’s Money Supply.” *Fact Sheets*. April 2009.

The Bank of Canada manages the rate of money growth indirectly through its influence on short-term interest rates, or through the reserves provided to large deposit-taking institutions. For example, when interest rates rise, consumers and businesses tend to hold less money, to borrow less, and to pay back existing loans. The result is a slowing in the growth of M1+ and in the other broader monetary aggregates.

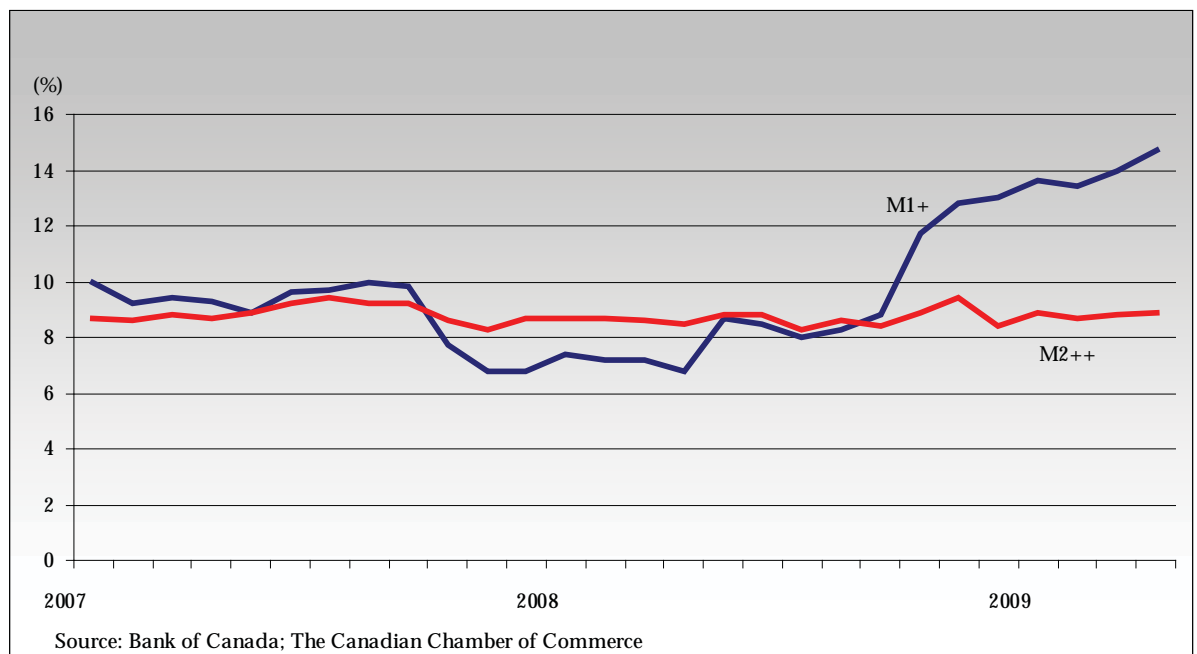
The objective of the Bank of Canada’s monetary policy is to support a level of spending that is consistent with its goal of price stability, defined as keeping inflation within the inflation-control target range of 1 to 3 percent. By monitoring the rate at which the supply of money and credit is growing, along with other indicators, the Bank seeks to ensure that total spending on goods and services in the economy is consistent with achieving that goal.<sup>7</sup>

## What Are the Monetary Aggregates Telling Us?

Monetary aggregates continue to grow strongly (Chart 3). As of April 2009, the year-on-year growth rate in M1+ had reached 14.7 percent per annum. The broader money supply aggregate (M2++) climbed 8.9 percent. “This reflects an increase in money demand associated with low interest rates and portfolio shifts into more liquid

assets.”<sup>8</sup> Heightened uncertainty, together with the loss in household net wealth, has adversely affected confidence levels causing households and businesses to cut back spending sharply, and personal savings to rise. This has reduced the rate at which money changes hands – that is, the velocity of money in circulation (Chart 4).<sup>9</sup>

**Chart 3: Money Supply  
(year-over-year % change)**

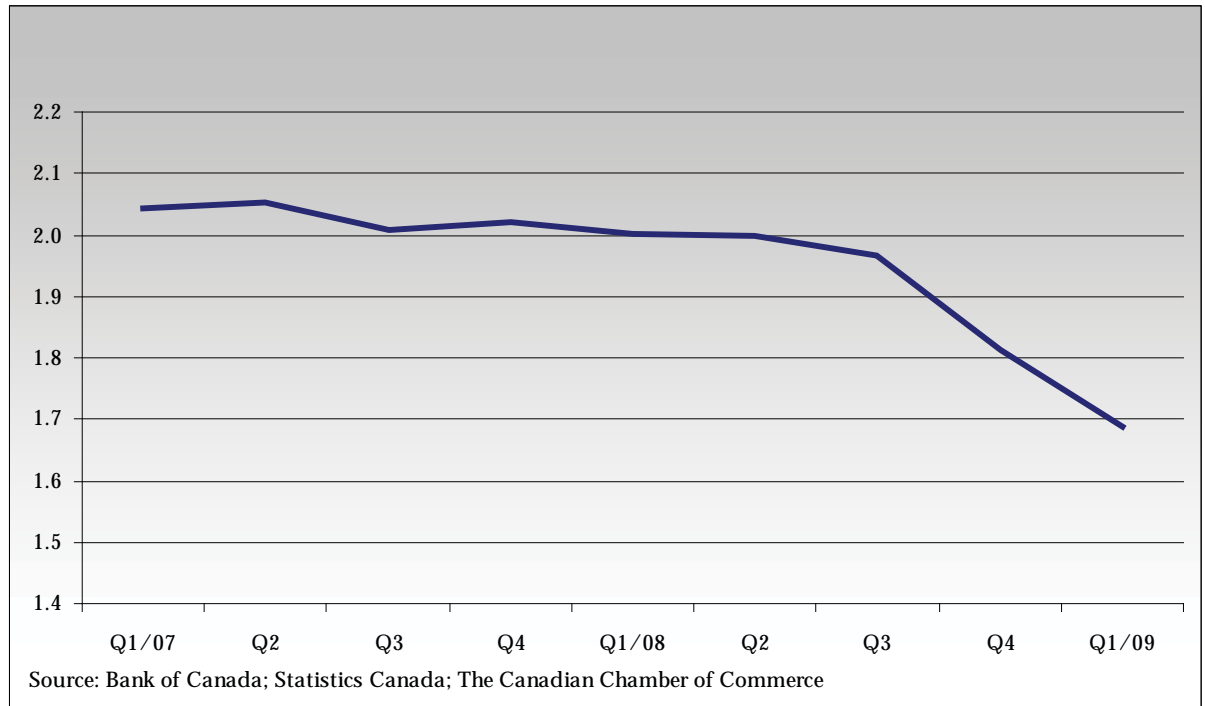


<sup>7</sup> Ibid.

<sup>8</sup> Bank of Canada. *Monetary Policy Report*. April 2009.

<sup>9</sup> Velocity = Nominal GDP / M2

**Chart 4: The Velocity of Money  
(Nominal GDP / M2)**



The Bottom Line: The increase in the money supply would result in higher prices, all other things being constant, but with the circulation (velocity) of money falling, inflationary pressures have been contained (See Box 3). If the circulation of money picks up (i.e. business and consumer spending rebounds), and the Bank of Canada does not get the timing right in reducing the money supply as the economy recovers, inflation could pick up.

In a recent speech, Deputy Governor of the Bank of Canada, John Murray, said: “Central banks will not forget to shut off the liquidity taps when additional stimulus is no longer required. But we shouldn’t get ahead of ourselves. We must first reach a point where growth is self-sustaining and we are confident that our inflation objective can be reached.”<sup>10</sup>

### Box 3: The Money Supply and the Velocity of Money

The relationship between velocity, the money supply, the price level, and output is represented by the equation  $M * V = P * Y$  where M is the money supply, V is the velocity, P is the price level, and Y is the quantity of output.  $P * Y$ , the price level multiplied by the quantity of output, is nominal GDP. The equation can thus be rearranged as  $V = (\text{nominal GDP}) / M$ .

The equation can also be rearranged as  $P = (M * V) / Y$ . In other words, the change in prices is positively related to the change in the money supply (M) and in the change in velocity (V), and negatively related to the rate of change in real output.

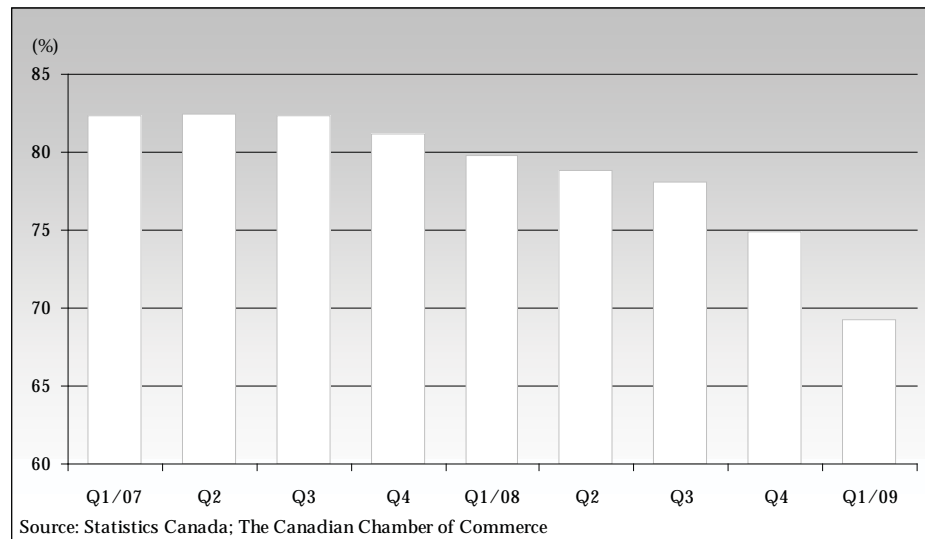
<sup>10</sup> Remarks to the Global Interdependence Center. Philadelphia, Pennsylvania. May 19, 2009.

# Output Gap Continues to Widen

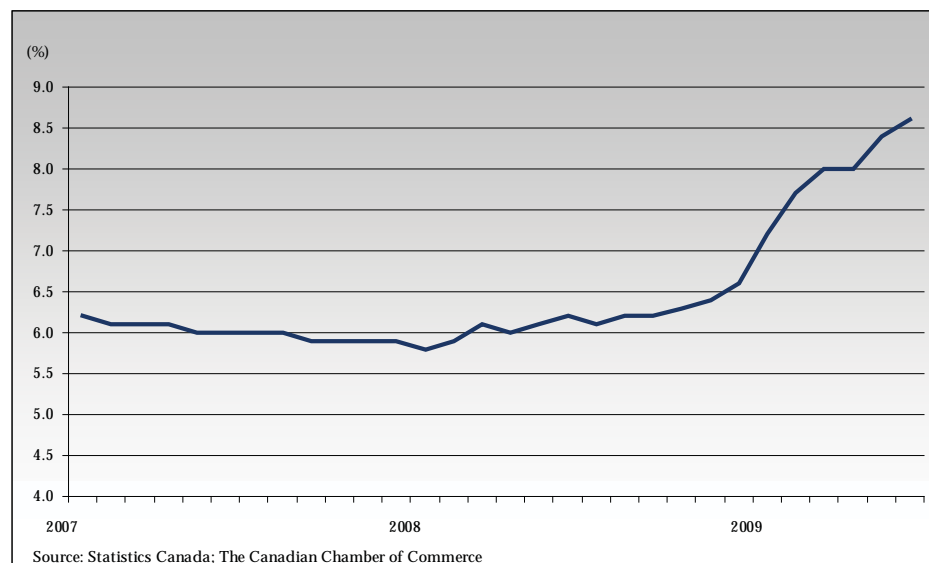
Another way at gauging inflationary pressures is to look at a wide variety of indicators to assess how much pressure there is on capacity. The Bank of Canada monitors how closely factories are operating relative to their capacity, it surveys businesses across the country to see where firms are feeling production constraints, it analyzes labour market data, and pays careful attention to financial market developments.

Owing to weak demand, excess supply in the Canadian economy continues to build – industrial capacity use is falling (Chart 5), and the unemployment rate is rising (Chart 6).

**Chart 5: Total Industrial Capacity Utilization Rates**



**Chart 6: Unemployment Rate**

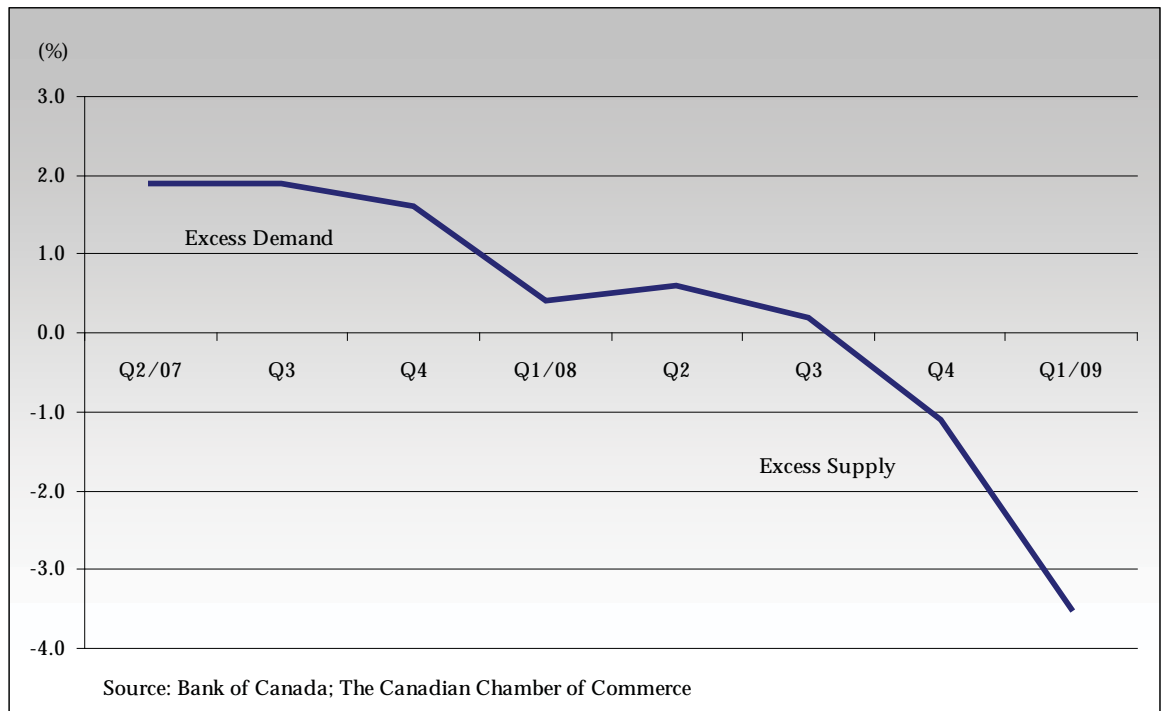


One way of measuring excess supply is the difference between actual output and potential output – the “output gap”.<sup>11</sup> When the economy is producing less than its potential, there is downward pressure on prices. The Bank of Canada’s conventional measure of the output gap suggests that the economy was operating about 4.3 percent below its production potential in the second quarter of 2009 (Chart 7). Canada’s central bank expects the already significant output gap to “continue to widen through the third quarter, putting downward pressure on inflation.”<sup>12</sup> “The

Bank expects core inflation to diminish through 2009, gradually returning to the 2 percent target in the second quarter of 2011 as aggregate supply and demand return to balance. Total CPI inflation is expected to trough at -0.7 percent in the third quarter of 2009 and return to target in the second quarter of 2011.<sup>13</sup>

The Bottom Line: Inflationary concerns should not become an issue until the Canadian economy moves closer to operating at full potential. This is not expected to occur for several years.

**Chart 7: Output Gap**



<sup>11</sup> Actual output is represented by real GDP. Potential output is the level of goods and services that the economy can produce on a sustainable basis without adding to inflation pressures.  
<sup>12</sup> Bank of Canada. “Bank of Canada maintains overnight rate target at 1/4 per cent and reiterates conditional commitment to hold current policy rate until the end of the second quarter of 2010.” *Press Release*. June 4, 2009.  
<sup>13</sup> Bank of Canada. *Monetary Policy Report*. July 2009.

# Summary

We believe deflationary risks are quite low. “Monetary and fiscal stimulus in train will support economic activity and minimize tail risks of significant deflationary pressures.” The Bank of Canada has committed to maintain its key policy rate at its current level (0.25 percent) until the end of the second quarter of 2010 to achieve its 2 percent inflation target. Moreover, Canada’s central bank has appropriately kept open the possibility of using more aggressive measures, if needed.

In order for price pressures to gain much traction, the significant amount of economic slack that has built up (as signaled by falling industrial capacity use and rising unemployment) will need to be worked off. At best, the output gap (the difference between actual and potential real GDP) will close in 2013; thus, inflation will remain benign in the short- to medium-term.

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14 International Monetary Fund. “Canada: 2009 Article IV Consultation.” *IMF Country Report No. 09/162*. May 2009.

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