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Measurement Bias in the Canadian CPI

The **Consumer Price Index** (CPI) is the most commonly used measure of inflation in Canada. The CPI is used to make cost-of-living adjustments in wages and salaries and to index the income tax system and social benefits such as pensions. So it is important that the CPI be as accurate a measure of inflation as possible.

A good measure of price changes in the economy is also critical for the conduct of monetary policy, especially in an inflation-targeting regime such as ours. Under this system, the Bank of Canada is expected to keep inflation, as measured by the total CPI, at an annual rate of 2 per cent over the medium term.

As a measure of changes in the cost of living, the CPI is subject to various types of measurement bias. In setting an inflation target, it is important that the Bank of Canada take into account any significant bias in the CPI.

Sources of measurement bias

There are several reasons why changes in the CPI may not provide an accurate measure of actual changes in the cost of living.

Commodity-substitution bias

One reason is that the change in the CPI measures the cost to the consumer of buying a fixed basket of goods and services, the contents of which are updated only once every two years. In reality,

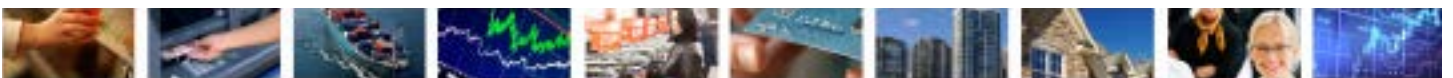
consumers can and do substitute cheaper items for those that become more expensive when the relative prices of different products change between basket updates. For example, if the price of beef rises sharply, consumers may buy pork or chicken instead, if they are cheaper. Because of this shift in spending patterns, the actual increase in the overall cost of living is less than the increase in the cost of buying the original fixed basket. So, the true cost of living can be overstated if there is a commodity-substitution bias.

New-goods bias

New products (e.g., high-definition TVs, digital cameras) that come onto the market between updates of the consumer basket can also be a source of measurement bias. Typically, the relative prices of some of these new products (notably home electronics) drop considerably following their introduction. If those price decreases happen before the basket is updated to include the new goods, the overall CPI will overstate the true cost of living (by an amount that depends on the share of the new goods in total spending).

Quality-change bias

The CPI aims to measure the pure price change of a basket of consumer goods and services of constant quality by comparing their prices at two points in time. In fact, quality improvements may decrease the prices of certain items. For example, rapid technological advances have resulted in lower prices for personal





B A C K G R O U N D E R S

computers, as well as an increase in computing capacity. Although Statistics Canada uses various methods to correct prices for quality changes, such adjustments may not fully remove the bias, leaving the overall CPI overstated if quality improvements occur faster than they are measured.

Outlet-substitution bias

The entry into Canada of new discount retailers and large warehouse stores has resulted in shifts in market shares from high- to low-price retailers. If the effect of these shifts on the prices paid by consumers is not fully captured, the true cost of living will be overstated.

Overall estimated measurement bias in the Canadian CPI

Bank of Canada research suggests that the above four main sources of bias, taken together, cause the Canadian CPI to overstate increases in the cost of

living by about 0.5 per cent per year. This is somewhat below most estimates in other countries. In the United States, the measurement bias is estimated to be around 1 per cent.

For more details, see A. Crawford, "Measurement Biases in the Canadian CPI: An Update," *Bank of Canada Review* (Spring 1998): 39–54.

J. Rossiter, "Measurement Bias in the Canadian Consumer Price Index," *Working Paper No. 39*, Bank of Canada, 2005).

P. Sabourin. 2012. "Measurement Bias in the Canadian CPI: An Update," *Bank of Canada Review* (Summer 2012): 1–11.

May 2013

