A Survey of Consumer Expectations for Canada

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- The Bank of Canada recently launched a quarterly survey to measure the expectations of Canadian households: the *Canadian Survey of Consumer Expectations* (CSCE).

- The data collected provide comprehensive information about consumer expectations for inflation, the labour market and household finance, as well as about consumer uncertainty in those areas.

- Information from the CSCE will help the Bank analyze and forecast inflation, assess labour market conditions and monitor issues related to financial stability. It will also improve our understanding of how households form and update their expectations.

- The methodology used for the new survey is largely inspired by the Federal Reserve Bank of New York's *Survey of Consumer Expectations.*

For an inflation-targeting central bank like the Bank of Canada, monitoring the behaviour of inflation expectations is critical to gauging current and prospective inflation pressures. To perform these tasks efficiently, the inflation expectations of various types of economic agents must be measured regularly. This article provides background information and preliminary results from a new Bank of Canada survey—the *Canadian Survey of Consumer Expectations* (CSCE). This new survey addresses gaps in existing sources of information on household behaviour.

Why Do We Consider Expectations?

As discussed in Boivin (2011), economic outcomes result from people's collective decisions, and these decisions depend on what people expect the future to bring. In other words, how people anticipate the future affects the decisions they make in the present. For example, when deciding to buy a house, people will factor in their expectations of future income, interest rates and the value of real estate. This has a significant impact on current economic outcomes. Given that consumer expectations affect how the economy evolves, they need to be considered when setting monetary policy.

In particular, since expected inflation influences current wage negotiations, price setting and financial contracting for investment, it is one of the main drivers of current inflation. This connection means that central banks can affect current and future inflation by better anchoring people's expectations for long-term inflation. Accordingly, measures of longer-term inflation expectations are particularly useful for central banks because they provide signals about the credibility of

◀ *Measures of longer-term inflation expectations are particularly useful for central banks because they provide signals about the credibility of monetary policy*

monetary policy. Inflation expectations are thus an important part of the information used by central banks to understand, forecast and control inflation, which is why it is important to have adequate measurements of these expectations.[1]

Measures of Inflation Expectations Available in Canada

There are two main ways to measure inflation expectations in Canada: survey-based measures and market-based measures. As discussed in Cunningham, Desroches and Santor (2010), there are advantages and disadvantages to each type of measure. In general, available measures differ considerably in their breadth of coverage, the frequency and time span over which they are accessible, and the extent to which they may be distorted by certain biases. It is therefore preferable to use a variety of measures that complement each other when conducting monetary policy. This section provides an overview of the two broad types of measures as well as a list of specific measures available for Canada (**Table 1**).

Table 1: Measures of inflation expectations available for Canada

	Participants	Start date	Frequency	Organization	Measure and horizon
Survey-based					
Survey of Business Confidence	500 firms	1987	Quarterly	Conference Board of Canada	Price increases over the next 6 months
Business Outlook Survey	100 firms	1997	Quarterly	Bank of Canada	Expected annual rate of CPI inflation for the next 2 years
Survey of Forecasters	Less than 10 forecasters	1999	Quarterly	Conference Board of Canada	Calendar-year inflation forecasts
Consensus forecast	Around 15 forecasters	1989	Monthly	Consensus Economics Inc.	Inflation forecasts for the next 1, 2, 3, 4, 5, and 6 to 10 years[a]
Survey of private sector forecasters	Around 15 forecasters	1994	Quarterly	Finance Canada	Calendar-year inflation forecasts (CPI and core CPI)
Survey of economic expectations	More than 40 economists	1982	Annual	Towers Watson	Inflation forecasts for the next 1, 2 to 5, and 6 to 15 years
Market-based					
Break-even inflation rate	Not applicable	1991	Monthly	Not applicable	Spread on nominal/Real Return Bonds, long term
Term-structure model	Not applicable	1992	Monthly	Not applicable	Inflation expectations implicit in nominal yield for the next 1 and 2 years

a.   Longer-term inflation forecasts are provided on a quarterly basis.

Source: Bank of Canada

Survey-based measures

Surveys of firms typically ask respondents what they expect inflation to be in the next four to eight quarters and beyond. In its *Survey of Business Confidence*, the Conference Board of Canada asks approximately 500 chief executive officers of Canadian businesses about their expectations for price increases over the coming six months. The Bank of Canada's *Business Outlook Survey* (BOS) conducts inter-

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1   See Côté (2015) for a discussion of the importance of inflation expectations to monetary policy.

views with 100 firms across Canada in sectors that broadly reflect the composition of gross domestic product (GDP). The survey asks firms about their forecasts of annual consumer price index (CPI) inflation over the next two years. In 2014, the Bank introduced a new question in the BOS that measures uncertainty around expectations.

Surveys of forecasters usually follow a calendar-year horizon and report the mean of respondents' inflation forecasts. In its *Survey of Forecasters*, the Conference Board of Canada collects the opinions of a small number of forecasting organizations on their outlook for the Canadian economy. Similarly, Consensus Economics conducts a monthly survey of a cross-section of professional forecasters, asking each for their predictions for inflation, as well as for economic growth, unemployment, and short- and long-term interest rates. Inflation expectations are provided for various horizons, as far as 6 to 10 years ahead. Finance Canada also regularly surveys private sector forecasters for their views on inflation and other economic variables.[2] Towers Watson surveys business economists and portfolio managers on an annual basis and reports forecasts of macroeconomic and financial variables at various horizons.

Market-based measures

Inflation expectations can also be inferred from asset prices, such as by calculating the break-even inflation rate (BEIR). The BEIR is the difference between the nominal yield on a fixed-rate bond and the real yield on an inflation-linked bond (or Real Return Bond) of the same term and maturity. Reid, Dion and Christensen (2004) find that the BEIR in Canada has been higher, on average, and more variable than survey-based measures of inflation expectations, which may be explained by the effects of market-based risk premiums and other distortions embedded in the BEIR. To help address these shortcomings, term-structure models can be used to provide market-based estimates of the average expected inflation rate. These models decompose nominal yields into real yields, expectations of future inflation and inflation risk premiums.

This review of the existing measures of inflation expectations highlights a significant data gap: there has been no measure of household inflation expectations available in Canada.[3]

International Experience with Measuring Household Inflation Expectations

While a regular survey of household inflation expectations did not exist in Canada until recently, such measures of household inflation expectations are common in other countries. Central banks from most advanced economies use information about household inflation expectations as inputs into their monetary policy deliberations and in communications with the public.[4] For example, the Bank of England uses three different surveys to monitor household inflation expectations. The results of these surveys are analyzed and communicated in the Bank of England's *Inflation Report* and *Quarterly Bulletin*.

◀ *Central banks from most advanced economies use information about household inflation expectations when setting monetary policy*

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2   The average of private sector forecasts forms the basis for the economic assumptions that Finance Canada uses for fiscal-planning purposes.

3   The only regular survey of household opinions in Canada is the Conference Board's monthly *Consumer Confidence Survey*, which asks about consumers' level of optimism regarding current economic conditions but does not cover issues related to inflation expectations.

4   According to a survey by the Centre for Central Banking Studies, 85 per cent of central banks use measures of inflation expectations from consumers.

In the United States, the most widely used survey of consumer inflation expectations is the Reuters/University of Michigan Survey of Consumers. A different random sample of individuals is selected monthly for this telephone survey, which asks respondents about their point forecasts for the change in "prices in general" over the next 12 months as well as 5 to 10 years into the future by selecting from a range of options.

Recently, the Federal Reserve Bank of New York launched a new survey, the *Survey of Consumer Expectations* (SCE, **Box 1**). Other central banks using surveys of household inflation expectations include those from the euro area, Sweden, New Zealand and Australia.

Box 1

The Federal Reserve's *Survey of Consumer Expectations*

The Federal Reserve Bank of New York formed a team of economists and psychologists to study the feasibility of improving the measurement and analysis of consumer inflation expectations. Through several cognitive interviews and experimental surveys, they assessed the content of the information that could be gathered using different survey questions. For example, they examined the difference between asking about "prices in general" and asking directly about the rate of inflation. They found that when asked about prices in general, consumers tend to focus on a few prices specific to their personal experience. In contrast, questions about the rate of inflation tend to elicit responses more closely related to the broader macroeconomic concept that economists are interested in. This research led to the design and implementation of the *Survey of Consumer Expectations* (SCE). The SCE is innovative because, in addition to asking respondents for a point forecast, it uses probability-based questions to generate the respondents' density forecast (**Box 2**). The density forecasts can then be used to construct measures of individual forecast uncertainty. The Federal Reserve Bank of New York has found that individuals are as willing and able to respond to well-written probability questions as they are to traditional attitudinal questions on the same subject.

The SCE also measures expectations about labour market conditions and household finance.

Creating a Survey of Consumer Expectations for Canada

Based on the experience and recent research of other central banks, the Bank of Canada developed a survey to measure the expectations of Canadian households on a regular basis. The methodology the Bank used for this survey largely follows that of the Federal Reserve Bank of New York's SCE, which was deemed to represent the cutting edge of consumer survey design.

The CSCE is a nationally representative, web-based quarterly survey of 1,000 heads of households that is administered by a large polling firm on behalf of the Bank of Canada. A rotating panel of respondents is used to track the same individuals over time. Respondents participate in the panel for up to a year, with a roughly equal number rotating in and out of the panel each quarter. This reduces the variability caused by changes in sample composition, leading to greater stability and precision in the estimates. The survey also collects information on income, age, gender, region and numeracy, so the results can be analyzed for different consumer groups.

The web-based approach allows a great deal of flexibility to ask new questions and makes it considerably easier to pose more complex probability-based questions. It is also the most cost-effective way to collect information.[5] As in the SCE, the new survey not only covers issues related to expectations about inflation, but it also takes the opportunity to ask questions about a broader range of expectations related to consumer economic behaviour, from current and prospective labour market conditions to household finances.

Inflation module

The inflation module begins with general questions about consumer sentiment. Respondents are then asked about their perception of the current 12-month rate of inflation as well as their point predictions (i.e., single-value forecasts) for inflation over the next 12 months, the following 12 months, and five years into the future. Respondents are also asked for their point predictions of changes in the price of various goods and services for one year ahead.[6] Tracking expectations for prices of specific goods can help explain changes in overall inflation expectations.

Following the SCE approach, a key aspect of the CSCE is that, in addition to traditional point forecasts, it also measures inflation expectations using density forecasts, where participants are asked to assign probabilities to intervals of future inflation outcomes (**Box 2**). Probability-based questions capture respondents' beliefs more fully and therefore allow for a more accurate and complete representation of individuals' subjective expectations.

Using the survey responses to track uncertainty of inflation forecasts provides insights into the credibility of a central bank and its ability to communicate monetary policy effectively. In other words, an increase in uncertainty about future inflation outcomes may be an early warning of eroding central bank credibility.[7] More generally, such measures may be useful to improve the accuracy of inflation forecasts and to detect potential turning points in inflation expectations. Another important advantage of density forecasts over point predictions is that they allow interpersonal comparisons; when relying on point predictions, the measure of central tendency reported (mean, median or mode) is not clear.

Labour market module

The labour market module collects information about employment status and expectations of future wage growth, including uncertainty about future wage changes. In addition, it elicits year-ahead expectations of the following: (i) the likelihood of voluntary job exits (resignations) and involuntary job exits (layoffs); (ii) the likelihood of finding and accepting a job within three months if the respondent were to become unemployed today; and (iii) the likelihood of moving during the next year. Together, these expectations represent a rich set of indicators of current and prospective labour market conditions.

◀ The new survey asks questions about a broad range of expectations related to consumer economic behaviour, from current and prospective labour market conditions to household finances

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5   There is also some evidence that web-based surveys have higher response rates to personally sensitive questions.

6   These include food, gasoline, gold, medical care, rent and education.

7   If individuals were to become less certain about how the central bank responds to shocks that push inflation away from the target, measures of uncertainty about the future level of inflation may rise. Measures of uncertainty are also helpful for assessing the importance that people attach to various outcomes, such as the risk of deflation.

Box 2

Examples of Survey Questions

In the *Canadian Survey of Consumer Expectations*, the sequence of questions regarding inflation expectations over the next 12 months is as follows:

Over the next 12 months, do you think that there will be inflation or deflation? (Note: deflation is the opposite of inflation.)

Please choose one.

☐ Inflation

☐ Deflation (the opposite of inflation)

What do you think the rate of [inflation/deflation] will be over the next 12 months? Please give your best guess.

Please enter a number greater than 0 or equal to 0.

Over the next 12 months, the rate of [inflation/deflation] will be ___ %.

In your view, what would you say is the per cent chance that, over the next 12 months,[1]

The rate of inflation will be 12% or higher	___ per cent chance
The rate of inflation will be between 8 and 12%	___ per cent chance
The rate of inflation will be between 4 and 8%	___ per cent chance
The rate of inflation will be between 2 and 4%	___ per cent chance
The rate of inflation will be between 0 and 2%	___ per cent chance
The rate of deflation (opposite of inflation) will be between 0 and 2%	___ per cent chance
The rate of deflation (opposite of inflation) will be between 2 and 4%	___ per cent chance
The rate of deflation (opposite of inflation) will be between 4 and 8%	___ per cent chance
The rate of deflation (opposite of inflation) will be between 8 and 12%	___ per cent chance
The rate of deflation (opposite of inflation) will be 12% or higher	___ per cent chance
TOTAL	100

1   This specific set of possible answers replicates the approach taken by the Federal Reserve Bank of New York, which is based on historical patterns as well as initial findings from a set of pilot surveys and cognitive interviews. Answers to probability-based questions must sum to 100 for respondents to proceed.

Household finance module

The final component of the survey collects year-ahead expectations of household income, spending, house price growth, taxes and interest rates. Additional questions ask about the ability to make a debt payment over the next three months, as well as expectations and perceptions of changes in access to credit. This information provides a real-time picture of the perceptions of Canadian households of their financial situation and credit supply as well as rich and unique data for use by policy-makers, researchers and the public. While other surveys, such as the Statistics Canada *Survey of Financial Security*, provide data on the finances of Canadian families, few data sources provide timely information on such a broad set of information.

Initial Findings and Next Steps

The first wave of the CSCE covered the fourth quarter of 2014. At the time of writing, data through to the third quarter of 2015 are available. Since this relatively short time span limits the scope of analysis, we focus on insights gleaned from cross-sectional findings. What follows is by no means exhaustive; it is simply intended to demonstrate the potential of the CSCE.

We find a high level of engagement among survey respondents, with about 70 per cent indicating that the survey is "somewhat" or "very" interesting (**Chart 1**). Respondents also perform favourably on numeracy tests (**Chart 2**), the overall scores of which are determined by answers to five questions related to basic principles of mathematics and statistics. Finally, an overwhelming majority of respondents report that they understand the concept of inflation (**Chart 3**). This bodes well for the quality of responses to questions related to inflation expectations.

We also find that survey respondents are highly willing and able to provide answers to probability-based questions, which have response rates close to 100 per cent (**Table 2**). Respondents make extensive use of the bins to which they can assign probabilities, particularly for inflation and house prices. Not surprisingly, respondents demonstrate less uncertainty regarding their wage expectations (as seen by the fewer bins used) since they are being asked about their personal experience rather than a macroeconomic concept.

◀ *About 70 per cent of respondents found the Canadian Survey of Consumer Expectations "somewhat" or "very" interesting*

Chart 1: Interest in the survey

Respondents (%)
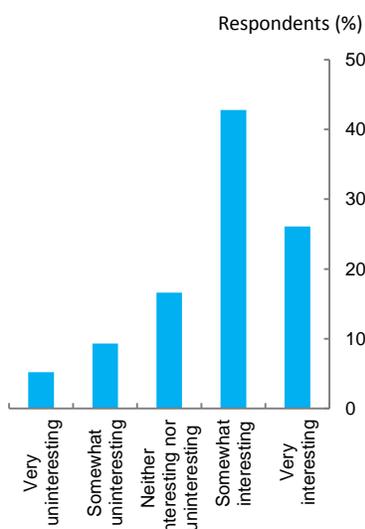
Chart 2: Numeracy results

Respondents (%)

Numeracy score (%)
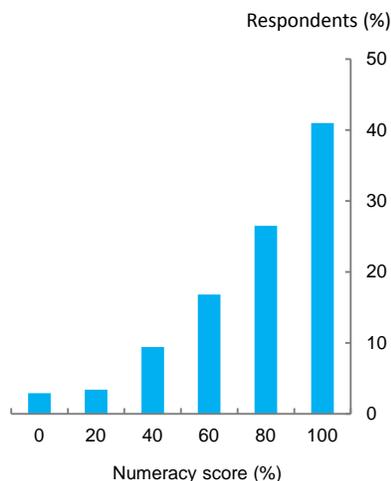
Chart 3: How well do you understand what inflation means?

Respondents (%)

I don't know ↔ I know exactly
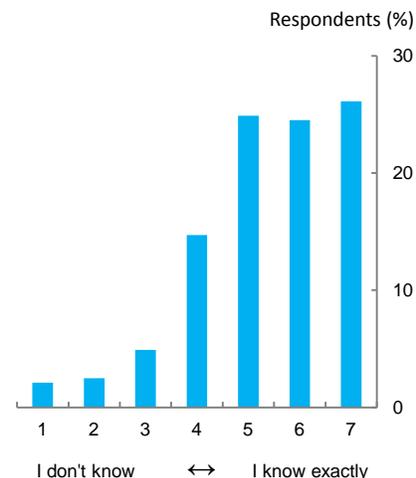
Source: Bank of Canada

Table 2: Household expectations, for one year ahead

	Inflation	House prices	Wages
Response rate (%)	99.9	99.9	97.1
Proportion with positive probability in more than one bin (%)	91.9	85.8	68.8
Average number of bins with positive probability	5.1	5.1	3.6

Source: Bank of Canada

Consistent with the U.S. experience (Bruine de Bruin et al. 2009), we observe significant variation in inflation expectations across different demographic characteristics. For instance, we find inflation expectations to be higher among less-educated, lower-income and younger households. These characteristics are also associated with a greater degree of uncertainty regarding future inflation. We also see that, irrespective of demographic characteristics, inflation expectations tend be somewhat higher than recent or average CPI inflation in Canada. This is a common feature of consumer inflation expectations and suggests that it will be more informative to examine differences between groups and changes over time rather than absolute levels (**Table 3**).[8]

◄ *It will be more informative to examine differences between groups and changes over time rather than absolute levels*

Table 3: One-year-ahead inflation expectations, by demographic characteristic

Demographic characteristic	Median point forecast	Interquartile range[a]
Female	3.0	4.0
Male	2.5	1.0
High school or less	4.0	8.0
College degree	3.0	3.0
University degree	2.5	1.4
Household income < $80,000	3.0	4.0
Household income ≥ $80,000	2.5	1.0
Age 15 to 24	4.0	9.0
Age 25 to 54	2.5	3.0
Age 55 +	3.0	2.0
Numeracy score < 80 per cent	3.0	8.0
Numeracy score ≥ 80 per cent	2.5	2.0

a.   The interquartile range provides a measure of statistical dispersion by taking the difference between the upper and lower quartiles of point forecasts for year-ahead inflation expectations.

Source: Bank of Canada

In addition to providing data on household expectations, the CSCE can provide valuable insights into how those expectations are formed and updated. For example, one area of future work will be to investigate how inflation expectations evolve with expectations for category-specific inflation rates. The literature suggests that consumer inflation expectations can be quite sensitive to news about rising prices, which, in turn, tends to focus mostly on gasoline prices (Ehrmann, Pfajfar and Santoro 2014).

The CSCE also elicits information about expectations of labour market turnover, an important gauge of labour market health for which available Canadian data are limited.[9] These statistics tend to vary significantly, depending on the level of education attained. Less-educated workers perceive a higher likelihood of being laid off and are less likely to voluntarily quit a job, but they are also more confident that they will find a new job should the need arise (**Table 4**). Monitoring the evolution of these turnover probabilities will be particularly interesting in the Bank's efforts to deepen our understanding of the Canadian labour market.

8   A number of possible explanations for this phenomenon have been proposed. For example, the expectations of some consumers may be unduly influenced by price changes in a narrow set of categories (such as food and energy) that tend to undergo large and frequent price movements.

9   There is no Canadian equivalent to the U.S. *Job Openings and Labour Turnover Survey*.

**Table 4: Average job exits and job-finding probabilities**

Level of education	Lose job	Leave job	Find job
High school or less	19.5	16.0	53.8
College	19.9	16.5	49.8
University	15.3	21.7	43.7

Source: Bank of Canada

The CSCE can also be used to shed light on issues related to financial stability, an area of growing consideration to the conduct of monetary and macroprudential policy. For example, **Chart 4** and **Chart 5** show responses to questions aimed at assessing the financial vulnerability of Canadian households. We find that very few respondents express concern about meeting their financial obligations. Households also claim to be relatively immune to a sizable decline in the value of their homes.

Finally, an important advantage of the CSCE is that special one-off questions can be included to help deepen the Bank's understanding of recent economic developments. For example, the CSCE for the first quarter of 2015 included a question about how the large decline in gasoline prices, which had occurred in the months before the survey, affected consumer expenditures. Responses to this question suggested that consumers were unlikely to significantly increase their spending in light of potential savings from lower gasoline prices. This aspect of the CSCE will be leveraged extensively in future surveys.

Chart 4: Likelihood of failing to make debt payment within the next three months

Mean probability = 11.4
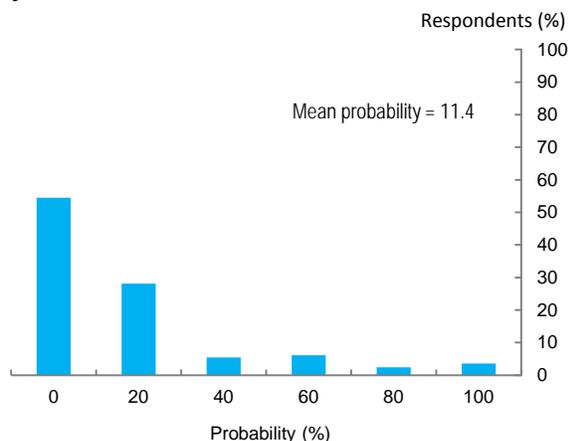
Source: Bank of Canada

Chart 5: Expected impact on household spending of a 10 per cent decline in house prices
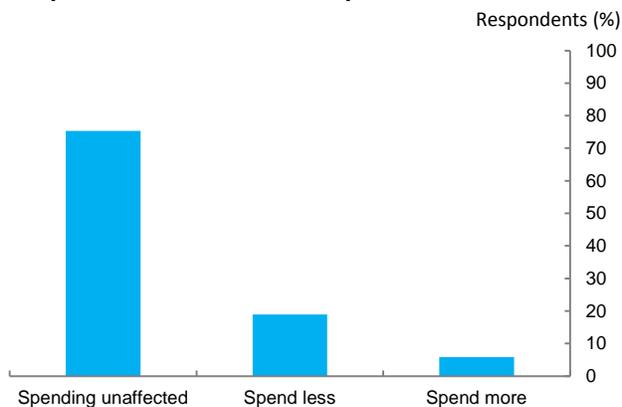
Source: Bank of Canada

Conclusion

The new *Canadian Survey of Consumer Expectations* is a major innovation because it contains information not previously collected from Canadian consumers on a regular basis. The survey fills gaps in existing sources of information on household behaviour, including data on household inflation expectations, as well as expectations regarding the labour market and household finances. Information gleaned from data on consumer expectations will be useful in several ways. First, it will help enhance our understanding of how expectations are formed and updated and, ultimately, of how expectations affect actual household behaviour. Second, it will improve our ability to build models of expectations beyond traditional ones based on rational expectations. Third, and perhaps most importantly, data on consumer expectations will provide valuable input into the evaluation of the economic outlook and the formulation and communication of monetary policy.

◄ *The survey fills gaps in existing sources of information on household behaviour*

The survey will provide useful and timely information about the current financial situation of Canadian households as well as how households anticipate their financial situation will change. By monitoring expectations of future outcomes, such as income and access to credit, policy-makers will be able to use important insights from this survey to formulate effective policy. Finally, the time series produced by the new survey will be of great value to economists who study the extent to which expectations influence actual economic outcomes. Data from the CSCE will be made available to the public in 2016.

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