The Bank of Canada's Business Outlook Survey

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- *Since the autumn of 1997, the regional offices of the Bank of Canada have conducted quarterly consultations with businesses across Canada. These business consultations are timed to feed into the decision-making process that precedes the Bank's fixed dates for announcing monetary policy decisions.*
- *These consultations are now referred to as the Business Outlook Survey (BOS). The BOS provides a flexible and timely method of gathering business perspectives on topics of particular interest to the Bank. The consultations are structured around a questionnaire. Every quarter, 100 firms that reflect the diverse composition of the Canadian economy in terms of region, type of business activity, and firm size are interviewed. Results of the BOS are available on the Bank's Web site and will be published quarterly.*
- *Since the BOS is a relatively new tool, the survey time series is quite short. The assessment presented in this article, which is based on charts and correlations, is intended as an initial guide.*
- *The findings suggest that the survey provides an informative barometer of the Canadian economic environment and leading signals of future activity. The interview responses also provide information about some important economic concepts; namely, production-capacity constraints, labour shortages, and inflation expectations.*

In the autumn of 1997, the Bank of Canada's regional offices began a structured program of business consultations, now referred to as the Business Outlook Survey (BOS),[1] extending the informal discussions that the Bank had always conducted with businesses, associations, and provincial governments. These consultations, which are structured around a survey questionnaire, are a vehicle for collecting information from businesses across Canada on demand and capacity pressures as well as their forward-looking views on economic activity. The face-to-face format of the meetings facilitates a broader discussion of issues facing firms and allows for clarification of responses. The process also establishes a network of contacts that can be drawn upon to address specific questions as they arise.

Even in the best of times, monetary policy decisions are made in a context of uncertainty about economic conditions, particularly the economic outlook.[2] To mitigate this uncertainty, the Bank gathers information from various sources to develop as much insight as possible into current and prospective economic conditions. Particular attention is paid to the measurement of the output gap[3] and to alternative measures of pressures on the economy's production capacity, since these are considered to be key determinants of inflation pressures and, therefore, of monetary policy decision-making.

1. See Martin and Papile (2004), which presents a more detailed analysis of the results of the BOS.

2. See Jenkins and Longworth (2002) for a more detailed discussion of types of economic uncertainty.

3. The output gap is defined as the difference between what the economy can produce and what it is actually producing at a certain time.

The BOS provides a flexible method for gathering timely information from a cross-section of regions and industries on topics of particular interest to the Bank. For example, businesses are asked for 12-month outlooks on their activities and two-year views on inflation. These horizons, which are longer-term than those used in many surveys produced outside the Bank, are helpful because of the long and variable lags in the effects of monetary policy.[4] When new issues arise, the BOS consultations present an opportunity to probe business reactions and to broaden the Bank's understanding of the likely impact of these developments. The Bank will begin publishing the BOS data on a quarterly basis in July of this year (see Box 1).

While there are advantages to the BOS, it is not intended to replace the large variety of externally produced surveys of Canadian economic participants (see Box 2 for examples), which are regularly reviewed by Bank of Canada economists. Many of the external surveys are based on a larger sample of responses than the BOS, often using a mail-out or e-mail-based questionnaire (the personal interview format of the BOS allows for two-way communication with respondents but is more time-consuming, which limits the size of the sample for practical reasons). Some surveys focus on a particular sector of Canadian business. While these surveys may not be as broad in scope as the BOS, they are able to gather more detailed information relating to the specific activities of that sector.

4. The effects of changes in monetary policy are spread over a period of 12 to 24 months. For an overview of how monetary policy is transmitted, see Bank of Canada (2001).

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The BOS results are presented to the Bank's Governing Council on a quarterly schedule as part of the information that feeds into the monetary policy decision-making process.[5] The presentation adds an important real-world perspective on economic activity by providing insight into business decisions, as well as information on, and evidence of, what business people are seeing and planning.

In this introduction to the BOS, we describe both the consultation process and the questionnaire and make an initial assessment of the survey data gathered during the business interviews.[6] The analysis of such information is an ongoing process at the Bank.

5. Other information includes model-based projections, analysis of financial conditions, and an assessment of financial markets' expectations. For a description of this decision-making process, see Macklem (2002).

6. Two previous articles in the *Review* have presented subsets of this survey data. See Brady and Novin (2001) and Amirault and Lafleur (2000).

Box 1
Publishing the Results of the Business Outlook Survey (BOS)

The results of the latest BOS are available on the Bank of Canada's Web site (http://www.bankofcanada.ca/en/bos/2004/index_0404.htm). Beginning in July, the results will be available in the week preceding the Bank's fixed dates for announcing monetary policy decisions in July, October, January, and April.

Results for eight core questions on future sales, investment in machinery and equipment, employment, labour shortages, firms' ability to meet demand, input-price inflation, output-price inflation, and inflation expectations will be included in each of the published quarterly reports.

The BOS, which measures the sentiments of a sample of 100 businesses across Canada, is one of the sources of information considered when monetary policy decisions are made. The *Monetary Policy Report* and *Updates*, which are released each quarter, explain the Bank's views on economic conditions.

Box 2

A Sample of Other Surveys of Business Activity

Canadian Federation of Independent Business (CFIB), Quarterly Business Barometer: Quarterly survey of CFIB members (predominantly small businesses)

Canadian Manufacturers and Exporters, Management Issues Survey: Annual survey of 400–500 small and medium-sized manufacturing and exporting firms

Conference Board of Canada, Index of Business Confidence: Quarterly survey of a cross-section of Canadian firms that is mailed to approximately 2,000 businesses

Export Development Canada, Trade Confidence Index: Semi-annual survey based on a random sample of approximately 1,000 Canadian businesses, providing responses from a cross-section of industries, regions, and firm sizes

Retail Council of Canada, Report to Members: Occasional surveys of retail firms

Richard Ivey School of Business/Purchasing Management Association of Canada, Ivey Purchasing Managers' Index: Monthly survey of a panel of 175 purchasing managers selected to provide a geographic and industrial cross-section of Canadian firms

Statistics Canada, Business Conditions Survey: Quarterly survey of approximately 4,000 Canadian manufacturing firms, consisting of a questionnaire designed to obtain advance indicators of manufacturing trends such as production, unfilled orders, product inventories, and employment prospects

The [BOS results] add an important real-world perspective on economic activity by providing insight into business decisions, as well as information on, and evidence of, what business people are seeing and planning.

The Consultations

The BOS consultation process provides an opportunity for Bank economists to engage in a dialogue with businesses about developments in the Canadian economy. The observance of utmost confidentiality fosters candid discussions on a wide variety of business issues. The publication of aggregate results respects the parameters of the Bank's confidentiality agreement with the firms.

The BOS is produced on a quarterly basis by the Bank's regional offices, which are: Atlantic Canada (Halifax); Quebec (Montréal); Ontario (Toronto); the Prairies, Northwest Territories, and Nunavut (Calgary); and British Columbia and the Yukon (Vancouver). For each round of consultations, about 100 private sector companies are carefully selected to provide a representative profile of the Canadian economy. The regional and industrial mix of companies approximates their representation in business sector[7] gross domestic product (GDP). The businesses selected by each region reflect the composition of that region's GDP. A cross-section of small, medium, and large companies are interviewed.[8]

Participation is voluntary. If a selected company is unavailable, another suitable company is substituted so that there are consistently 100 respondents and the profile is maintained. No company is interviewed

7. Business sector GDP excludes the public sector.

8. Firm size is defined by the number of employees: small (1–100), medium (101–500), or large (more than 500). Each quarter, the aim is to balance the sample with approximately one-third each of small, medium, and large firms.

more than once a year, to avoid company fatigue with the process. This also allows the Bank to develop a broad base of industry contacts. A disadvantage of this approach is that changes over time in the survey results may, in part, reflect sample turnover rather than changes in business conditions.

Meetings take place over a three-week period during each quarter. Typically, two economists from the Bank's regional offices conduct an interview with the chief financial officer or another senior officer of the company. The meetings are structured around the BOS questionnaire. Since the survey deals exclusively with Canadian activity, companies that have operations in other countries are asked to respond based on the experience of their Canadian operations. Consultations almost always take place in person, although telephone interviews are occasionally arranged to accommodate companies' schedules. This helps to ensure a common understanding of the questions and a better grasp of the issues facing the firm.

The Questionnaire

The BOS questionnaire can be divided into four broad categories of core questions: (i) a question about past business conditions; (ii) questions that gauge the outlook for various aspects of business activity; (iii) questions that evaluate the pressures on firms' production capacity; and (iv) questions that measure firms' outlook on wages, prices, and inflation. A summary is presented in Box 3.

Box 3
Core Survey Questions

Questions included in the BOS can be grouped in the following four broad categories.

Past Business Conditions

Past sales: The growth of sales volume (adjusted for price changes) over the past 12 months (compared with growth over the previous 12 months) was: (*i) greater, (ii) less, (iii) the same.*

Outlook for Business Activity

***Future sales:** The growth of sales volume over the next 12 months (compared with growth over the past 12 months) is expected to be: (*i) greater, (aii) less, (iii) the same.*

***Investment intentions for machinery and equipment:** The level of investment spending on machinery and equipment over the next 12 months is expected to be: (*i) higher, (ii) lower, (iii) the same.*

Investment intentions for buildings: The level of investment spending on buildings over the next 12 months is expected to be: (*i) higher, (ii) lower, (iii) the same.*

***Outlook for employment:** The number of employees (full-time equivalent) employed by your organization over the next 12 months is expected to be: (*i) higher, (ii) lower, (iii) the same.*

Pressures on Production Capacity

***Labour shortages:** The organization is facing shortages of labour that restrict the ability to meet demand: (*i) yes, (ii) no.*

***Ability to meet demand:** Currently, the potential level of difficulty in meeting an unexpected increase in demand or sales would be: (*i) no difficulty (operating below capacity), (ii) some difficulty (at or near full capacity), (iii) significant difficulty (operating above capacity).*

Outlook for Wages, Prices, and Inflation

Outlook for wages: The increase in labour costs (per hour) over the next 12 months is expected to be: *(i) greater, (ii) less, (iii) the same.*

***Outlook for input prices:** The increase in the prices of products or services purchased over the next 12 months is expected to be: (*i) greater, (ii) less, (iii) the same.*

***Outlook for output prices:** The increase in the prices of products or services that are sold over the next 12 months is expected to be: (*i) greater, (ii) less, (iii) the same.*

***Inflation-expectations index:** The firm's expectation for the average annual rate of inflation over the next two years as measured by the consumer price index (CPI) is: (*i) above 3 per cent, (ii) 2 to 3 per cent, (iii) 1 to 2 per cent, (iv) below 1 per cent.*

* Responses to questions marked with an asterisk will be published in the BOS.

Businesses are asked to provide qualitative responses about their business activity. Questions about the volume of sales exclude the influence of price changes and seek information on real activity. The questions on the outlook for sales, wages, and prices are expressed in terms of momentum (changes in year-over-year rates of growth) to obtain a business perspective on how the environment is changing. Seasonal influences on responses are avoided by asking about expectations over the next 12 months (or two years, in the case of inflation expectations).

Supplementary questions that pertain to issues of topical importance to monetary policy decisions are introduced from time to time. Recent examples of such issues include the effects of global uncertainty on investment spending and the impact of the sharp appreciation of the Canadian dollar. While the supplementary questions have certainly added to the usefulness of the survey, they cannot be analyzed systematically and are therefore not included in the analytic work of this article.

Special topics, sometimes explored in a separate survey, have also been introduced to gain further insight into issues such as the effects on firms of restructuring, dollarization, and price-setting behaviour. These survey topics have been interpreted and evaluated independently.[9]

The Time Series

The assessment of the BOS presented in this article is based on 24 quarterly surveys, from 3Q97 through to, and including, 2Q03. The question on firms' ability to meet demand was introduced only in 3Q99, limiting the number of quarterly surveys available for this question to 16, rather than the full 24.

During the survey's first three years, the BOS consultations were conducted with companies three times a year and with industry associations once a year (during the second quarter). The same questions were employed for both companies and associations. Following the association visits of 2000, the decision was made to base the BOS exclusively on interviews with companies in order to improve the consistency of the time series.[10] Given the short sample available, the three data points based on the association visits are included in the time series. These three observations are highlighted in the charts.[11]

The survey questions typically use a three-part scale for measuring qualitative responses: *positive/higher*, *no change/the same*, or *negative/lower*. A balance of opinion is a useful way of summarizing these types of responses. The balance-of-opinion data are constructed by subtracting the proportion of negative responses from the proportion of positive responses. Values can range from -100 to +100. For example, a positive balance of opinion for the question on future sales implies that there are more respondents expecting sales momentum (an increase in the growth rate of sales volume) to be positive than are expecting it to be negative.[12]

The responses to questions on firms' ability to meet demand and on labour shortages are summarized as the percentage of respondents experiencing constraints. For the question on inflation expectations, respondents are offered a range of quantitative options for their reply, and an index is constructed to summarize the results. The index is calculated as an average of the midpoints of the response options weighted by the proportion of responses for each option.[13]

The statistical reliability of the survey results is limited by the small sample size. Objectives are set for the number of firms selected by region, industry type, and firm size, for a total of 100 interviews each quarter. This method of sample selection is referred to as quota sampling. While an effort is made to choose a sample that is representative of the Canadian economy, this is *not* a random sample. Therefore, its statistical properties are difficult to ascertain.[14]

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9. For a summary of the results of these surveys, see Kwan (2002) and Murray and Powell (2002, 2003). Results of the survey on price-setting behaviour, which was conducted in 2003, are currently being analyzed.

10. Industry associations have a unique perspective and are still contacted regularly by regional office staff for their views.

11. The charts indicate a clear difference of perception between companies and associations on the extent of labour shortages. For the question on labour shortages, we therefore present the correlation results for a sample that excludes the three observations from the association visits.

12. Specifically, in response to a question on a firm's expected rate of future sales, if 60 per cent of respondents indicate *greater rate*, 30 per cent indicate *the same rate*, and 10 per cent indicate *lesser rate*, then the balance of opinion is +50 per cent. The proportion of negative responses (10 per cent) is subtracted from the proportion of positive responses (60 per cent).

13. Before 2Q01, the index is the weighted average of three options: index = (percentage of respondents expecting < 1 per cent) x 0.005 + (per cent of respondents expecting 1–3 per cent) x 0.02 + (per cent of respondents expecting > 3 per cent) x 0.035. From 2Q01, the index is a weighted average of the four options: index = (per cent expecting < 1 per cent) x 0.005 + (per cent expecting 1–2 per cent) x 0.015 + (per cent expecting 2–3 per cent) x 0.025 + (per cent expecting > 3 per cent) x 0.035. Note that there is no midpoint for the < 1 per cent and > 3 per cent options. Given the inflation environment of this sample, 0.5 per cent and 3.5 per cent were chosen to represent these options.

14. By comparison, the 95 per cent confidence interval for responses from a random sample of 100 would generally be assessed at +/- 10 percentage points.

Evaluating the Information Content of the Data

A straightforward approach was used to evaluate the information provided by the BOS, given the short time series available for analysis (the 24 quarters from 3Q97 to 2Q03). As a first step, the BOS time series were plotted against comparable variables of economic activity. These charts provide visual evidence of the signalling properties of the data. Large changes in the balance-of-opinion data are of particular interest.

The data are quarterly time series. The BOS data point for time t is the quarter when the survey is conducted. These responses are compared with the economic data for the same quarter. For the forward-looking questions, one must therefore look to quarter $t + 4$ to see the outcome in the economic data. (See Box 4 for a more detailed explanation of the terminology used in the analysis.)

The BOS involves only private sector companies so that, wherever data sources were available, responses were compared with data for the private sector only. The economic time series were also transformed into measurement units that match the formulation of the survey question as closely as possible. For example, responses to questions about changes in activity over the next year were compared with year-over-year growth rates in economic activity. Responses to ques-

Box 4
Terminology

Data are quarterly time series.

Data for time t (for survey results and comparable economic variables): The data point for time t in the BOS is the quarter when the survey data are collected. The comparable economic time series have been constructed so that t represents data for the same quarter.

Data for time $t + 4$ (for survey results and comparable economic variables): The time series for comparable economic variables have been constructed so that $t + 4$ matches the one-year (four-quarter) outlook of the forward-looking questions (future sales, investment intentions, outlook for employment, outlook for wages, input prices, and output prices). For the question on inflation expectations, which asks for a two-year average outlook, the variable constructed for CPI inflation (CPI_{t+8}) matches this outlook.

Growth: Refers to the year-over-year growth rate.

For example,

$$GDPgrowth_t = \left(\frac{GDP_t}{GDP_{t-4}} - 1\right) \times 100.$$

Momentum: Refers to the year-to-year change in the year-over-year growth rate.

For example,

$$GDPmomentum_t = (GDPgrowth)_t - (GDPgrowth)_{t-4} =$$

$$\left[\left(\frac{GDP_t}{GDP_{t-4}} - 1\right) \times 100\right] - \left[\left(\frac{GDP_{t-4}}{GDP_{t-8}} - 1\right) \times 100\right].$$

Leads/Lags ($t - x$, t, $t + x$): These terms refer to the quarterly timing of the relationship between the current-quarter BOS results (t) and corresponding economic variables in other periods. That is, lagged correlations ($t - x$) compare survey results in time t with economic data in time $t - x$; contemporaneous correlations (t) compare survey results in time t with economic data in time t; leading correlations ($t + x$) compare survey results in time t with economic data in time $t + x$.

Example

Future Sales: This question asks whether the growth of sales volume over the next year is expected to be greater, less, or to remain the same. The balance of opinion for the current quarter (proportion of responses indicating a greater rate minus proportion of responses indicating a lesser rate) is compared with the momentum of real business sector GDP (year-to-year change in the year-over-year growth rate). The outlook horizon for the question on future sales is one year, so a comparison with GDP momentum over the next year (quarter $t + 4$) matches that horizon. Correlations are presented for $t - 4 \ldots t \ldots . t + 4$.

tions about the expected change in the rate of increase of activity or prices were compared with measures of GDP or price momentum over the comparable period (i.e., changes in year-over-year growth rates).

The charts provide visual evidence of the signalling properties of the survey data. Large changes in the balance-of-opinion data are of particular interest.

To evaluate the indicator properties of some of the questions, comparisons were also made with measures of economic activity of particular interest to the Bank. For example, the responses to the questions relating to pressures on production capacity were compared with the Bank's estimate of the output gap.[15] The responses to the question on output prices were compared with CPI inflation.

Simple pair-wise correlations between the survey data and the economic variables were calculated to measure the strength of the relationship between the BOS data and official economic data. To test the timing of the relationship, correlations of both leading and lagging values of the economic variables were examined. The outlook questions have a four-quarter horizon, so one might expect the highest correlations with the four-quarter lead. However, certain influences may cause the timing of the relationship with the actual economic data to be different. For example, the world changes in unexpected ways; respondents may formulate outlooks based on past experience; or there may be measurement differences between business evaluations and economic data.

With only 24 observations, the 95 per cent confidence bands for the correlation coefficients are quite wide.

15. The estimate of the output gap used for the analysis in this article is from the Bank's 2003 projection, which was published in the October 2003 *Monetary Policy Report* (Bank of Canada 2003).

The following rough scale of assessment is used to evaluate the correlation coefficients: strong, > 0.80; moderately strong, 0.80 to 0.60; moderate, 0.60 to 0.40; weak, 0.40 to 0.20; insignificant, < 0.20.

The Results: Charts and Correlation Tables

Each of the core survey questions from the BOS questionnaire is evaluated individually. The questions are grouped into the four categories presented in Box 3: Past Business Conditions; Outlook for Business Activity; Pressures on Production Capacity; and Outlook for Wages, Prices, and Inflation.

Summary of Assessment Results

- Overall, the charts indicate that large changes in the balance of opinion appear to signal changes in comparable economic variables.
- The question on past sales experience provides a timely barometer of recent economic activity and sets the stage for the questions on the outlook for business activity and production capacity.
- The questions on the outlook for business activity do not consistently predict future activity. However, large changes in the balance of opinion appear to provide leading signals. Firms' predictions regarding economic developments over the next four quarters are closer to what actually occurs over the next two quarters.
- The responses to questions on pressures on production capacity provide potentially useful proxy indicators for production-capacity constraints, labour shortages, and the output gap.
- The questions on input prices and output prices provide moderately strong signals of price momentum one to two quarters in advance.
- Firms' views about the average rate of CPI inflation over the next two years have been well anchored around the Bank's 2 per cent target for inflation.

Box 5
Summary

Assessing the Correlation Results

Survey variable	Economic variable	Correlation
Past sales	Momentum* of real business GDP	moderately strong: $t - 1$
Outlook for business activity		
Future sales	Momentum of real business GDP	moderate: $t + 1$, $t + 2$
Investment intentions for machinery and equipment	Growth of business investment in machinery and equipment	moderate: $t + 2$
Investment intentions for buildings	Growth of business investment in buildings	weak: $t + 4$
Outlook for employment	Growth of private sector employment	moderate: $t + 2$
Pressures on production capacity		
Labour shortages	Output gap	moderate: $t - 1$, t
Ability to meet demand	Industrial capacity utilization rate	strong: t, $t + 1$
Ability to meet demand	Output gap	moderately strong: t, $t + 1$
Outlook for wages, prices, and inflation		
Outlook for wages	Momentum of business sector compensation	moderate: t; weak: $t + 1$
Outlook for input prices	Momentum of the GDP deflator	moderately strong: $t + 1$
Outlook for output prices	Momentum of the GDP deflator	moderately strong: $t + 1$
Outlook for output prices	Momentum of total CPI	moderately strong: $t + 2$
Inflation-expectations index	2-year total CPI inflation	moderately strong: t, weak beyond $t + 3$

* See Box 4 for a definition of momentum.

Conclusion

The BOS was initiated as an extension of the public consultations that the Bank has always conducted. It formalizes this consultation process and systematically summarizes much of the information obtained on business experiences.

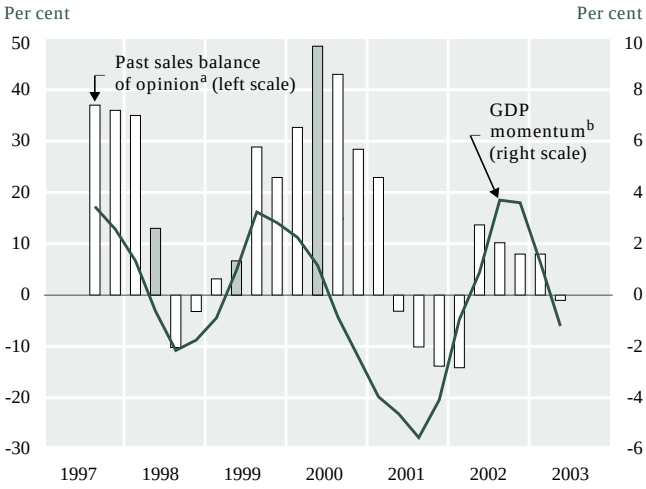
Business perceptions and expectations are interesting in and of themselves. They are of greater value, however, if they can provide policy-makers with a more accurate understanding of current and future economic activity. The assessment presented in this article is intended to provide an initial interpretation of the BOS data. On balance, the results suggest that the BOS provides informative measures of current business conditions and expected future activity. It will be important to update this analysis as the number of observations available expands, allowing for an increased degree of confidence in the results.

It should be emphasized that the value of the BOS goes beyond the data captured by the questionnaire. The BOS interview format allows for a broader understanding of current business perceptions through confidential discussions with business representatives, which provide invaluable information that cannot be measured quantitatively.

PAST BUSINESS CONDITIONS

Chart 1

Past Sales and Real Business GDP



a. Growth of sales volume over the past 12 months compared with growth over the previous 12 months—percentage of firms that experienced faster growth minus the percentage that experienced slower growth

b. Momentum refers to the year-to-year change in the year-over-year growth rate.

2Q98, 2Q99, and 2Q00: industry association survey

Table 1

Correlation Between Past Sales at Time *t* and the Momentum of Real Business GDP (BGDP)

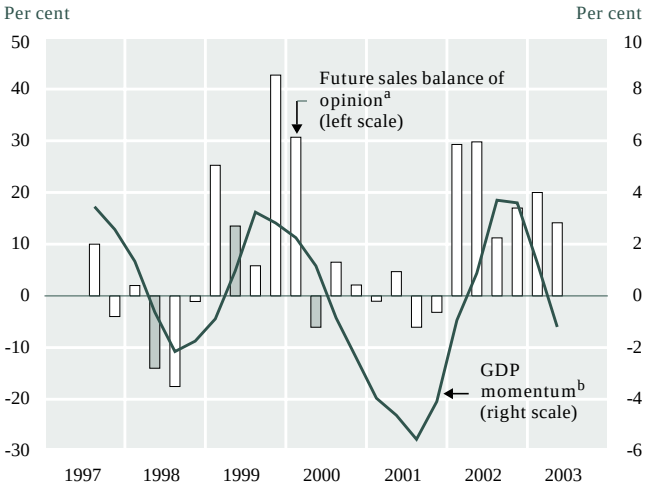
BGDP $_{t-4}$	0.26
BGDP $_{t-3}$	0.50
BGDP $_{t-2}$	0.64
BGDP $_{t-1}$	**0.68**
BGDP $_{t}$	0.53
BGDP $_{t+1}$	0.15
BGDP $_{t+2}$	-0.35
BGDP $_{t+3}$	-0.76
BGDP $_{t+4}$	-0.90

- Responses have a moderately strong correlation with momentum in real business sector GDP in the previous quarter.

OUTLOOK FOR BUSINESS ACTIVITY

Chart 2

Future Sales and Real Business GDP



a. Growth of sales volume over the next 12 months compared with growth over the past 12 months—percentage of firms expecting faster growth minus the percentage expecting slower growth

b. Momentum refers to the year-to-year change in the year-over-year growth rate.

2Q98, 2Q99, and 2Q00: industry association survey

Table 2

Correlation Between Future Sales at Time *t* and the Momentum of Real Business GDP (BGDP)

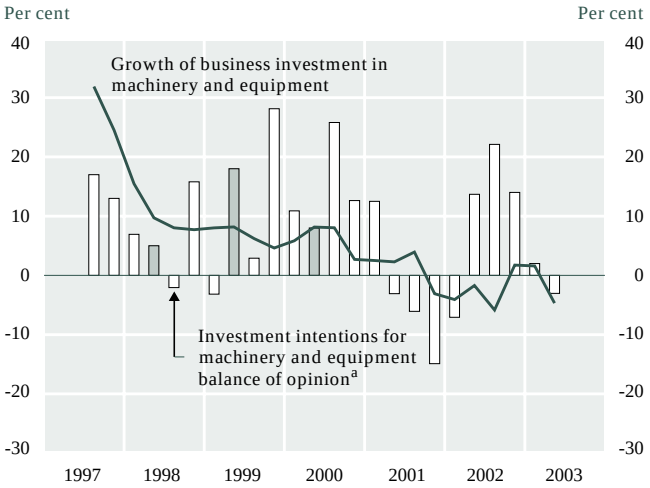
BGDP $_{t-4}$	-0.58
BGDP $_{t-3}$	-0.44
BGDP $_{t-2}$	-0.15
BGDP $_{t-1}$	0.21
BGDP $_{t}$	0.43
BGDP $_{t+1}$	**0.54**
BGDP $_{t+2}$	0.50
BGDP $_{t+3}$	0.18
BGDP $_{t+4}$	-0.26

- This question does not track small changes in momentum in business sector GDP consistently over the sample periods. It does appear, however, to have signalled large changes in momentum (see 1Q99, 2Q00, and 1Q02).
- The correlation with momentum in real business sector GDP indicates that this is a moderate indicator of future activity one to two quarters ahead ($t+1$, $t+2$).

OUTLOOK FOR BUSINESS ACTIVITY

Chart 3a

Investment Intentions for Machinery and Equipment and Business Investment in Machinery and Equipment

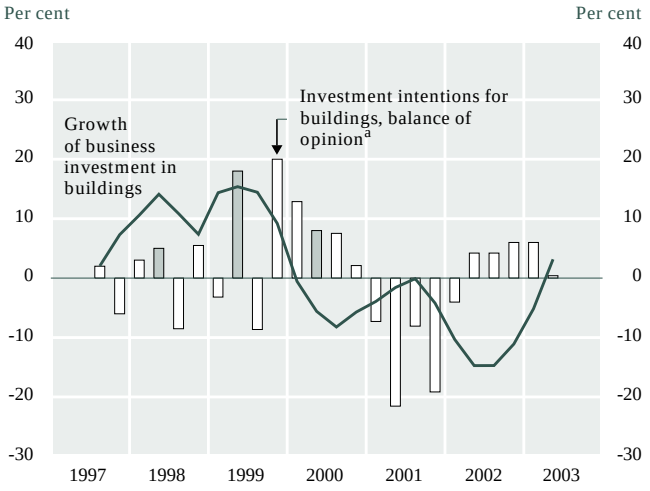


a. Expected level of investment spending over the next 12 months compared with the past 12 months—percentage of firms expecting more investment minus the percentage expecting less investment

2Q98, 2Q99, and 2Q00: industry association survey. Associations were asked one general question about total investment spending, and those results are used in both Chart 3a and Chart 3b.

Chart 3b

Investment Intentions for Buildings and Business Investment in Buildings



a. Expected level of investment spending over the next 12 months compared with the past 12 months—percentage of firms expecting more investment minus the percentage expecting less investment

2Q98, 2Q99, and 2Q00: industry association survey. Associations were asked one general question about total investment spending, and those results are used in both Chart 3a and Chart 3b.

Table 3a

Correlation Between Investment Intentions for Machinery and Equipment at Time *t* and Growth of Business Investment in Machinery and Equipment (INV)

INV_{t-4}	-0.03
INV_{t-3}	0.02
INV_{t-2}	0.08
INV_{t-1}	0.18
INV_{t}	0.28
INV_{t+1}	0.31
INV_{t+2}	**0.41**
INV_{t+3}	0.30
INV_{t+4}	0.15

- The survey asks two questions about investment intentions: one for planned investment in machinery and equipment and the other for investment in buildings.[1] The question about machinery and equipment is of primary interest, since this type of activity is expected to provide the best signal about cyclical developments.
- Chart 3a suggests a poor relationship over the first half of the sample but stronger signals over the most recent sample.
- Correlations were moderate to weak, with the strongest result for investment intentions for machinery and equipment at quarter $t+2$ (0.41).

Table 3b

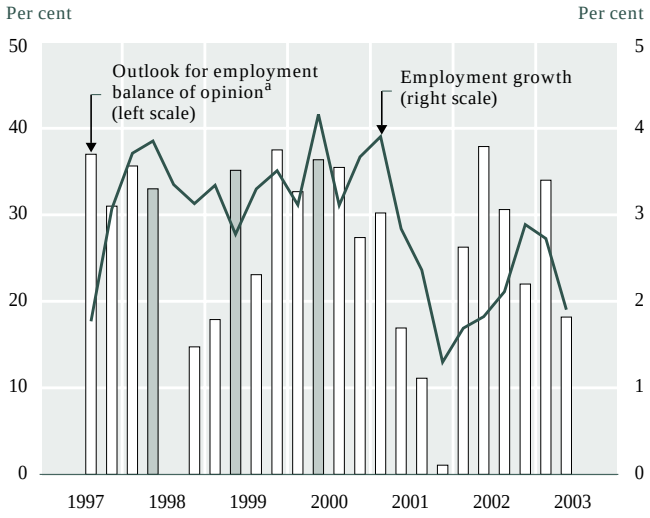
Correlation Between Investment Intentions for Buildings at Time *t* and Growth of Business Investment in Buildings (INVB)

$INVB_{t-4}$	0.40
$INVB_{t-3}$	0.38
$INVB_{t-2}$	0.24
$INVB_{t-1}$	0.15
$INVB_{t}$	0.06
$INVB_{t+1}$	0.07
$INVB_{t+2}$	0.12
$INVB_{t+3}$	0.20
$INVB_{t+4}$	**0.29**

1. The results for the question on investment intentions for buildings are based on a smaller sample of respondents. On average, 20 per cent of respondents answered “Not applicable.”

Chart 4

Outlook for Employment and Private Sector Employment



a. Expected level of employment (full-time equivalent) over the next 12 months compared with the past 12 months—percentage of firms expecting more employment minus the percentage expecting less employment

2Q98, 2Q99, and 2Q00: industry association survey

Table 4

Correlation Between the Outlook for Employment at Time *t* and Growth of Private Sector Employment (EMP)

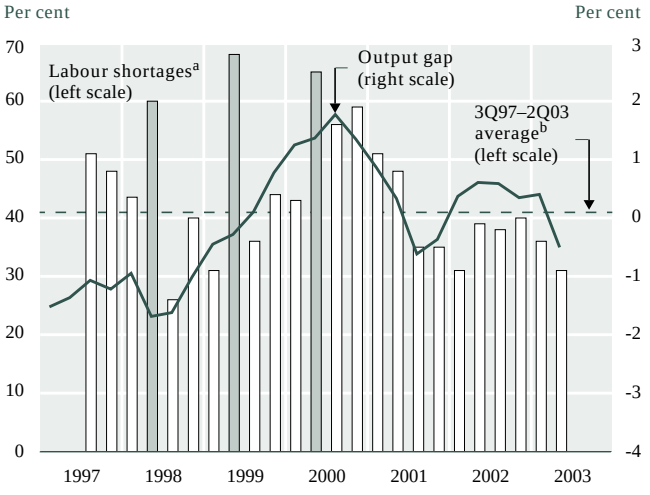
EMP_{t-4}	-0.18
EMP_{t-3}	-0.40
EMP_{t-2}	-0.46
EMP_{t-1}	-0.12
EMP_{t}	0.25
EMP_{t+1}	0.38
EMP_{t+2}	**0.55**
EMP_{t+3}	0.33
EMP_{t+4}	0.08

- The optimistic outlook for employment in 1997, through 1999 and 2000, and in 2002 was consistent with the Canadian experience of strong employment growth during those periods. On the other hand, respondents' pessimism about employment growth from 3Q98 to 1Q99 did not materialize in weak employment growth.
- Overall, the correlations suggest moderate information content, with a correlation of 0.55 for two quarters ahead ($t + 2$).

PRESSURES ON PRODUCTION CAPACITY

Chart 5

Labour Shortages and the Output Gap



a. Percentage of respondents indicating that they face shortages of labour that restrict their ability to meet demand

b. Average calculated excluding association data.

2Q98, 2Q99, and 2Q00: industry association survey

Table 5

Correlation Between Labour Shortages at Time *t* and the Output Gap (OG) (excluding association data)

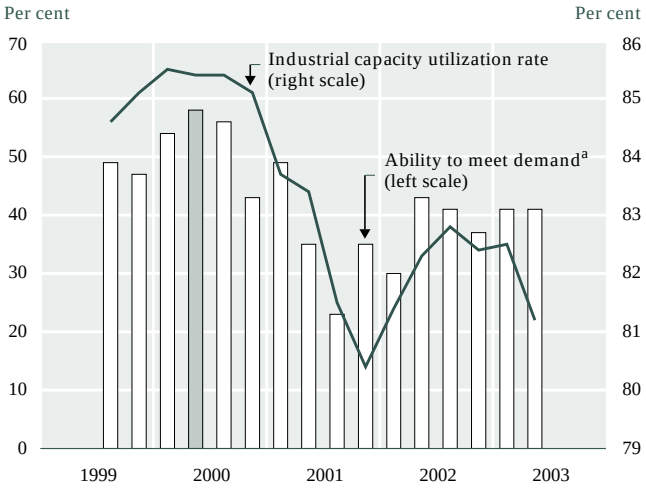
OG_{t-4}	0.01
OG_{t-3}	0.21
OG_{t-2}	0.33
OG_{t-1}	0.43
OG_{t}	**0.43**
OG_{t+1}	0.17
OG_{t+2}	-0.13
OG_{t+3}	-0.32
OG_{t+4}	-0.45

- This question was designed to measure scarcity of resources in the labour market and to signal pressures on the output gap arising from employment conditions.
- The period of labour-market tightness in 2000 did coincide with the peak in the Bank's measure of the output gap. The correlation with the output gap was only moderate (0.43) for quarters t and $t - 1$.

PRESSURES ON PRODUCTION CAPACITY

Chart 6a

Ability to Meet Demand and the Industrial Capacity Utilization Rate



a. Percentage of respondents indicating difficulty in meeting an unexpected increase in demand (significant difficulty / some difficulty)

2Q00: industry association survey

Table 6a

Correlation Between Ability to Meet Demand at Time *t* and Industrial Capacity Utilization Rate (CAPU)

$CAPU_{t-4}$	-0.09
$CAPU_{t-3}$	0.09
$CAPU_{t-2}$	0.43
$CAPU_{t-1}$	0.66
$CAPU_{t}$	0.80
$CAPU_{t+1}$	**0.88**
$CAPU_{t+2}$	0.68
$CAPU_{t+3}$	0.43
$CAPU_{t+4}$	0.17

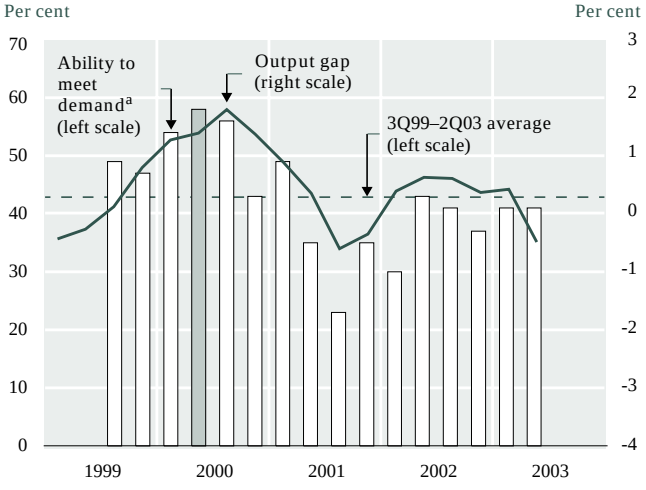
Table 6b

Correlation Between Ability to Meet Demand at Time *t* and the Output Gap (OG)

OG_{t-4}	-0.61
OG_{t-3}	-0.43
OG_{t-2}	0.05
OG_{t-1}	0.44
OG_{t}	0.75
OG_{t+1}	**0.77**
OG_{t+2}	0.51
OG_{t+3}	0.26
OG_{t+4}	0.02

Chart 6b

Ability to Meet Demand and the Output Gap



a. Percentage of respondents indicating difficulty in meeting an unexpected increase in demand (significant difficulty / some difficulty)

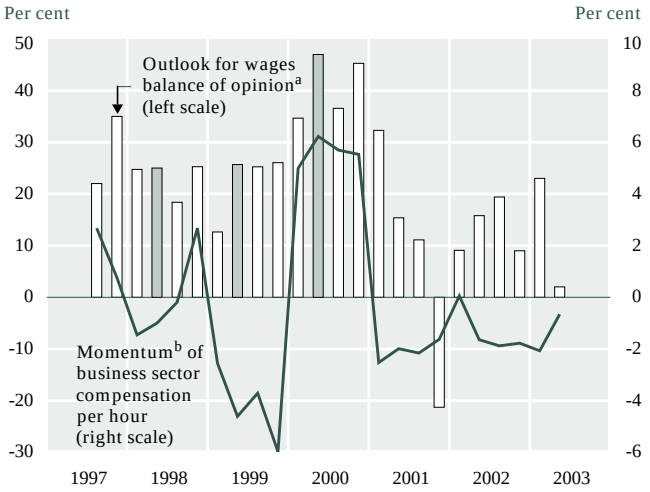
2Q00: industry association survey

- Note that the time-series data for this question begin in 3Q99.
- Comparisons were made with the Statistics Canada measure of industrial capacity utilization and the Bank's estimate of the output gap.
- The charts and correlations suggest strong information content. This question appears to provide a good proxy for capacity utilization and the output gap.

OUTLOOK FOR WAGES, PRICES, AND INFLATION

Chart 7

Outlook for Wages and Business Sector Compensation per Hour



a. Expected increases in labour costs (wages per hour) over the next 12 months compared with the past 12 months—percentage of firms expecting greater increases in labour costs minus the percentage expecting lesser increases

b. Momentum refers to the year-to-year change in the year-over-year growth rate.

2Q98, 2Q99, and 2Q00: industry association survey

Table 7

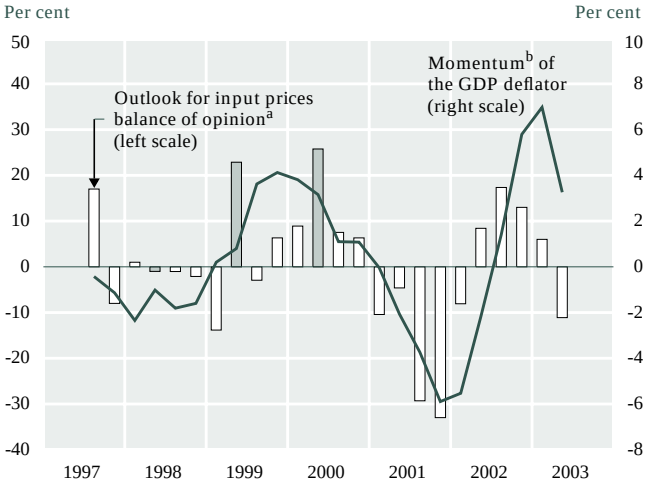
Correlation Between the Outlook for Wages at Time *t* and Momentum of Business Sector Compensation per Hour (BSC)

BSC $_{t-4}$	-0.42
BSC $_{t-3}$	0.09
BSC $_{t-2}$	0.26
BSC $_{t-1}$	0.45
BSC $_{t}$	**0.49**
BSC $_{t+1}$	0.30
BSC $_{t+2}$	0.28
BSC $_{t+3}$	0.18
BSC $_{t+4}$	0.02

- The BOS responses are compared with compensation in the business sector and do not consistently track this measure of wages.
- Responses were moderately correlated with current wages and provided weak leading information at quarter $t + 1$.

Chart 8

Outlook for Input Prices and the GDP Deflator



a. Expected increases in input prices over the next 12 months compared with the past 12 months—percentage of firms expecting greater price increases minus the percentage expecting lesser price increases

b. Momentum refers to the year-to-year change in the year-over-year growth rate.

2Q98, 2Q99, and 2Q00: industry association survey

Table 8

Correlation Between the Outlook for Input Prices at Time *t* and Momentum of the GDP Deflator (PGDP)

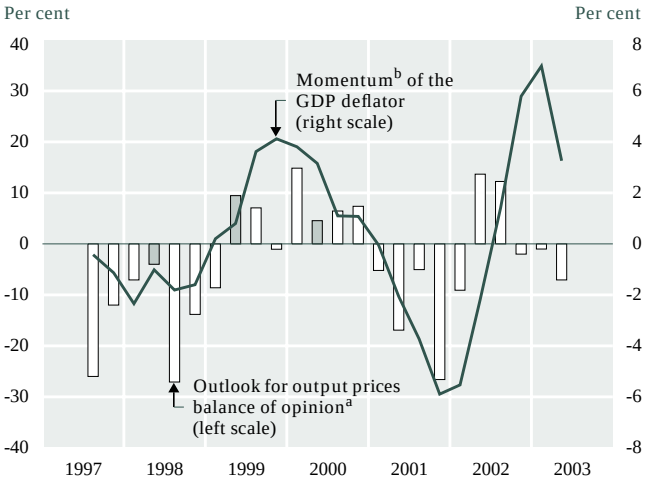
PGDP $_{t-4}$	-0.24
PGDP $_{t-3}$	-0.17
PGDP $_{t-2}$	0.05
PGDP $_{t-1}$	0.30
PGDP $_{t}$	0.55
PGDP $_{t+1}$	**0.72**
PGDP $_{t+2}$	0.50
PGDP $_{t+3}$	0.15
PGDP $_{t+4}$	-0.32

- The BOS results track the broad cyclical movements of the measure of momentum in the GDP deflator quite well, providing advance indications of the sharp increase in the deflator in 2002 and the subsequent decline in momentum in 2003.
- The correlation results indicate that the survey results provide moderately strong leading information for prices in the next quarter, with a coefficient of 0.72 ($t + 1$).

OUTLOOK FOR WAGES, PRICES, AND INFLATION

Chart 9a

Outlook for Output Prices and the GDP Deflator



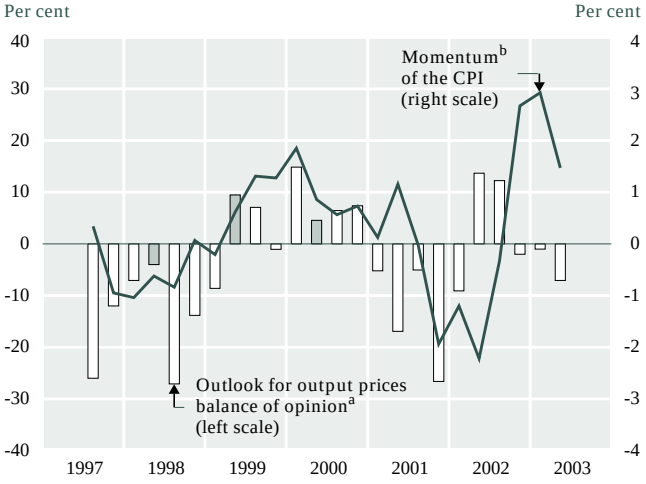
a. Expected increases in output prices over the next 12 months compared with the past 12 months—percentage of firms expecting greater price increases minus the percentage expecting lesser price increases

b. Momentum refers to the year-to-year change in the year-over-year growth rate.

2Q98, 2Q99, and 2Q00: industry association survey

Chart 9b

Outlook for Output Prices and the CPI



a. Expected increases in output prices over the next 12 months compared with the past 12 months—percentage of firms expecting greater price increases minus the percentage expecting lesser price increases

b. Momentum refers to the year-to-year change in the year-over-year growth rate.

2Q98, 2Q99, and 2Q00: industry association survey

Table 9a

Correlation Between the Outlook for Output Prices at Time *t* and Momentum of the GDP Deflator

$PGDP_{t-4}$	-0.11
$PGDP_{t-3}$	-0.05
$PGDP_{t-2}$	0.08
$PGDP_{t-1}$	0.24
$PGDP_{t}$	0.50
$PGDP_{t+1}$	**0.64**
$PGDP_{t+2}$	0.54
$PGDP_{t+3}$	0.23
$PGDP_{t+4}$	-0.25

Table 9b

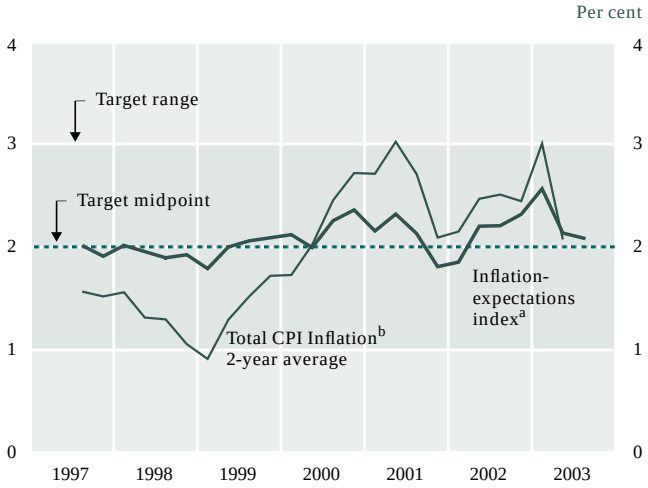
Correlation Between the Outlook for Output Prices at Time *t* and Momentum of the CPI

CPI_{t-4}	0.09
CPI_{t-3}	0.06
CPI_{t-2}	-0.07
CPI_{t-1}	0.08
CPI_{t}	0.29
CPI_{t+1}	0.49
CPI_{t+2}	**0.75**
CPI_{t+3}	0.40
CPI_{t+4}	-0.10

- Both the charts for the GDP deflator and CPI momentum demonstrate the strong information content of the question on output prices.
- Correlation results indicate that the BOS data provide moderately strong leading information for momentum in the GDP deflator one quarter ahead (0.64 at $[t+1]$) and for momentum in the CPI two quarters out (0.75 at $[t+2]$).

Chart 10

Inflation-Expectations Index and CPI Inflation



a. Index of responses for the expected annual rate of CPI inflation over the next two years. For index methodology, see footnote 13 on p. 7.

b. For more information on the target rate for inflation, see the Bank's Web site at: http://www.bankofcanada.ca/en/backgrounders/bg-i3.htm

Table 10

Correlation Between the Inflation-Expectations Index at Time *t* and Total CPI Inflation (2-year average) (CPIT)

$CPIT_{t}$	**0.78**
$CPIT_{t+1}$	0.58
$CPIT_{t+2}$	0.52
$CPIT_{t+3}$	0.48
$CPIT_{t+4}$	0.25
$CPIT_{t+5}$	0.22
$CPIT_{t+6}$	0.35
$CPIT_{t+7}$	0.31
$CPIT_{t+8}$	-0.02

- Inflation expectations appear to have been well anchored over the sample period. The inflation-expectations index fluctuated within a relatively narrow range, very close to the Bank's target of 2 per cent. From 3Q97 to early 2000, this index was virtually unchanged.
- Correlation results indicate a strong relationship between the inflation-expectations index and total CPI inflation in the current quarter (0.78[*t*]) and weaker correlations over the outlook period. The magnitude of the movements in this index have been quite small relative to the total CPI measure.

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Appendix

Data Sources

The data used to prepare the charts and tables were obtained from the following sources as of October 2003.

Economic Variables: Series Name	**Source**
Business sector GDP at basic prices, seasonally adjusted, constant 1997 dollars	Statistics Canada: V2044313
Private sector employment, unadjusted	Statistics Canada: V2067135
Business investment (machinery and equipment), unadjusted, current dollars	Statistics Canada: V499493
Business investment (buildings), unadjusted, current dollars	Statistics Canada: V499491
Total CPI, all items, unadjusted	Statistics Canada: V735319
Total industrial capacity utilization rate	Statistics Canada: V4331081
GDP deflator	Statistics Canada: V1997756
Output gap, Bank of Canada estimate	Bank of Canada: October 2003 *Monetary Policy Report*
Business sector compensation per hour (index)	Statistics Canada:V1409158
Business Outlook Survey	Bank of Canada