Efficiency in Monetary Policy—
Some Approaches at the Bank of Canada*

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To strengthen its accountability to the Canadian public and to its Board, the Bank of Canada has developed a number of measures and approaches to gauge its efficiency and effectiveness. These measures and approaches have been developed for all of the Bank's major functions. In addition to monetary policy, these include: financial system, funds management, currency, and retail debt.

Efficiency has to do with both "outputs" and "inputs." And it has to do with the way inputs are combined to get "intermediate products" that are then used to produce "outputs." In the absence of a known recipe or production function, changes are made to (i) the amount of inputs used; (ii) the quality of inputs that are used; and (iii) the combination of the various inputs that are used.

The purpose of this paper is to examine the ways that the Bank (and, in some cases, academics and central bank researchers) has explored measuring "outputs," "intermediate products," "inputs" (often for a given output), and "changes in inputs" to improve efficiency in regards to the monetary policy function.

Context

Over the past few years, the Bank of Canada has developed a performance measurement framework to monitor and assess its performance as well as to support the Bank's decision making and accountability to the Bank of Canada's Board of Directors[1] and to the Canadian public.

There are three principles that guide the Bank's performance measurement framework. These are that the measures of performance should:

- focus on the results the Bank wants to achieve

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1. The Bank's Board of Directors consists of the Governor, Senior Deputy Governor, twelve part-time outside directors appointed by the cabinet of the federal government for overlapping three-year terms, and the (non-voting) Deputy Minister of Finance *ex officio*. The Board has no responsibility for monetary policy decisions which, by law, rests with the Governor. The Governor has delegated this responsibility to the Governing Council, on which he sits with the Senior Deputy Governor and four Deputy Governors, all of whom are full-time employees of the Bank.

- reflect the relative importance of cost, quality and timeliness
- concentrate on key processes

A key starting point to assess performance is being clear on the goals and objectives of what the Bank wants to achieve over the medium term. As a first step in the mid 1990s, the Bank introduced a planning process to identify the key strategic issues over the medium term. Since then, the Bank has continued to strengthen its planning, expenditure monitoring, performance measurement, risk management, and stewardship processes. The performance measures are discussed as part of the annual stewardship process, which begins with an internal self-assessment in November or December of each year, which is then summarized for a discussion at the Board meeting which takes place at the time that the draft of the *Annual Report* is considered early in the following year.

More recently, the Bank's new Medium-Term Plan (MTP) for 2003-05, which was developed in consultation with the Board of Directors in 2002, articulates the Bank's vision through its: "Commitment to Canadians," "Commitment to Excellence," and "Commitment to One Another" (see Annex 1). The MTP sets out the objectives, strategic direction, and initiatives for each of the Bank's main business functions. The financial and human resource requirements have been identified in the MTP for each business function, as well as key performance measures and risk management activities in order to monitor and assess the Bank's results.

Over the past decade, the Bank has paid considerable attention to increasing the focus on its core mandate (i.e., getting out of non-core areas) and looking for ways of improving the efficiency and effectiveness of its operations. The Bank has used a number of performance measures of its overall results. These include:

- numerical targets
- benchmarking, including formal studies, expert opinion (external assessments), and external awards or ratings
- self-assessment

- quantitative indicators (for which there are no targets, but which are helpful in self-assessment)

As well, to examine changes in the appropriate inputs, the Bank has used:

- activity review
- comprehensive reviews
- client and staff surveys
- risk assessments

Plan of the paper

The Bank of Canada's monetary policy objective is to provide low, stable, and predictable inflation. Thus, in our discussion of outputs (section 1), we look at: (i) the closeness to the inflation target *ex post*; (ii) *ex ante* indicators of closeness to the inflation target; (iii) other performance measures (evaluations by the IMF and OECD, and the forecasting record for inflation and output), and (iv) measures of efficient monetary policy from the literature based on the Taylor trade-off curve, as well as measures related to the variances of various macroeconomic variables.

In our consideration of intermediate products (section 2), we survey the use of: (i) self-assessment, including an annual Stewardship process which records the lessons learned through the year and helps set goals for the next year; (ii) benchmarking of research (external assessment); and (iii) quantitative indicators and self-assessment of the understanding by the media and the general public of the Bank's communications.

In regard to inputs (section 3), we examine benchmarking of staff quality, staff compensation, and staffing levels, as well as functional cost allocations.

Table 1 presents an overview of the various performance measures discussed in this paper for outputs, intermediate products, and inputs.

Table 1

Measurement of Monetary Policy Output, Intermediate Products, and Inputs

	Numerical Targets	Benchmarking			Self-Assessment	Quantitative Measures
		Formal Studies	Expert Opinion	External Awards/Rat.*		
Output						
• *ex post* inflation	x					
• *ex ante* inflation	x					
• projection		x				
• overall monetary policy		(1)	x(2)		x	
Intermediate Products						
• current analysis					x	
• economic projection		x	x(3)		x	
• research			x(4)		x	x
• communications**				x(5)	x	x
Inputs						
• staff quality			x		x	
• staff compensation		x				
• staffing levels	(x)					
• functional costs	(x)					

Notes:

* - ratings
** - including transparency and accountability
x - used at the Bank of Canada
(x) - yearly reporting against plan at the Bank of Canada
Examples of studies by academic and central bank researchers evaluating central banks:
(1) Cecchetti et al. (2001)
(2) Kohn (2001), Svensson (2001), Svensson et al. (2002), Begg et al. (2002)
(3) Pagan (2003)
(4) Eijffinger et al. (2002)
(5) Briault et al. (1997), de Haan et al. (1999), Fry et al. (2000), Eijffinger and Geraats (2002), Chant (2003), Fracasso et al. (2003)

Finally, in our discussion of changes in inputs (section 4), we look at: (i) a major activity review undertaken in the mid 1990s; (ii) comprehensive reviews, including the informal cost-benefit cases, that were made in the cases of: the establishment and (later) the expansion of regional offices, the introduction of fixed announcement dates for changes in policy interest rates and associated briefing meetings, and the changes in some of the responsibilities for data management, including the creation of a group to look at meta data; (iii) client and staff surveys; and (iv) risk assessments.

While most of the paper is devoted to the monetary policy function, we touch at times on other functions of the Bank to illustrate certain aspects of the way the Bank approaches efficiency issues.

We conclude with a discussion of the usefulness of having a number of measures and procedures, and of areas where perhaps more can be done.

1. Measuring Outputs

The "Joint Statement of the Government of Canada and the Bank of Canada on the Renewal of the Inflation-Control Target" (May 2001) states the following: "The objective of Canada's monetary policy is to support and advance national economic well-being by contributing to sustained economic growth, rising levels of employment and improved living standards. The best contribution monetary policy can make to securing this outcome is to preserve confidence in the value of money by providing individuals and businesses with the certainty of a stable, low-inflation environment for their economic decisions." It further says: "The inflation-control target range will continue to be 1 to 3 per cent; within this range monetary policy will continue to aim at keeping the trend of inflation at the 2 per cent target midpoint."

The target is set in terms of the 12-month rate of increase in the consumer price index (CPI). In addition, the Bank finds it helpful to have a measure of core inflation to use as a shorter-run operating guide to policy. Core inflation is currently defined as the CPI excluding the eight most volatile components as well as the effect of changes in indirect taxes on the remaining components.[2]

Given the objective for monetary policy and the target for inflation, there are four types of measures that are relevant for the measurement of the "output" for monetary policy. First, there is the closeness of inflation to the target midpoint (an *ex post* measure). Second, there is the closeness of core inflation and inflation expectations to the target midpoint (*ex ante* measures). Third, there are two other *ex post* performance measures that have been formally approved by the Bank for the monetary policy function. Fourth, there are *ex post* measures of efficient monetary policy from the literature based on the Taylor trade-off curve, as well as *ex post* measures related to the variances of various macroeconomic variables. These four groups of measures are considered in turn.

1.1 The closeness of CPI inflation to its target midpoint

The Bank's semi-annual *Monetary Policy Reports* and the *Updates* that appear in the intervening quarters, as well as its *Annual Report*, regularly contains charts like Chart 1, which plot actual CPI inflation against the target midpoint and range. This enables the public to judge how well we have been doing in meeting our target. As well, from time to time (Crawford 2001, Longworth 2003), the Bank calculates the percentage of time that inflation has been within given ranges around the target. The first row of Table 2 gives the relevant percentages for the period from December 1995, when the target first became 2 per cent, to December 2002. Over that period, total CPI inflation has been within the 1 to 3 per cent target range 78 per cent of the time and the standard deviation of inflation around its target was 0.83 percentage points.

Because total CPI inflation is subject to relative price shocks to which it may not be optimal to react if they are believed to be relatively short-lived, total CPI inflation may tend to deviate more from its target in some periods than others and monetary policy will be able to do very little about it. This leads to the need for some *ex ante* measures of where inflation is likely to be headed, as well as explanations about what is happening and is likely to happen to total CPI inflation.[3]

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2. Before May 2001, core inflation was defined as the CPI excluding food, energy, and the effect of changes in indirect taxes.

3. "When CPI inflation persistently deviates from the target midpoint, the Bank will give special attention in its *Monetary Policy Reports* or *Updates* to explaining why inflation has deviated to such an extent from the target midpoint, what steps (if any) are being taken to ensure that inflation moves back to the target midpoint and when inflation is expected to return to the target midpoint. These explanations will focus on the movements in total CPI inflation, core inflation, and the components excluded from the core measure, as well as changes in indirect taxes." (Bank of Canada 2001). The first such special attention was given in a box that appeared in the April 2003 *Monetary Policy Report*.

Table 2: Inflation Measures and Various Ranges

(Dec. 1995 to Dec. 2002)

Range:	+/- 1.5%	+/- 1.0%	+/- 0.7%
CPI	95	78	55
CPIXT	95	71	55
Core	100	96	75

Note: For each 12-month measure of inflation, the table shows the percentage of time it fell within the specified ranges around a target midpoint of 2 percent. CPIXT is total CPI adjusted by changes in the effect of indirect taxes. (Whether an observation is within the range or not is based on calculations to 2 decimal places.) Source: Longworth (2003)

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1.2 Ex ante *measures relating to the closeness of CPI inflation to target*

The Bank has argued (Bank of Canada 2001) that "To the extent that it isolates the underlying trend in inflation, core inflation tends to be a better predictor of future changes in the total CPI than does the recent history of CPI inflation. That is, using core inflation as the operational guide increases the likelihood of keeping future CPI inflation on target." Thus, core inflation (shown in Chart 1) can be a useful *ex ante* measure of where future CPI inflation is likely to be, especially when short-run relative price shocks or changes in indirect taxes disappear from the total CPI measure.[4,5] Because core inflation is less volatile than total CPI inflation, it tends to fall within a given range a greater percentage of the time (Table 2).

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4. See Macklem (2001) for further discussion.
5. Although the Bank looks at a number of measures of underlying inflation as inputs to its monetary policy decisions and reports them regularly in its *Monetary Policy Reports* and elsewhere, it gives pride of place to its official measure of core inflation.

Measures of inflation expectations are also useful in judging whether there are pressures that are likely to keep total CPI inflation away from its target midpoint in the future. Near-term measures of inflation, such as the Conference Board's survey of business expectations over the next six months (Chart 2, regularly shown in the *Monetary Policy Report*), can be used to judge short-run inflation pressures. Given the lags in the effects of monetary policy, however, what are more important are the measures of inflation expectations for two or more years out. These include the Conference Board's survey of inflation forecasts for 2 years out, the *Consensus Economics* survey of inflation forecasts for 6 to 10 years out, and a measure derived from the difference between yields on 30-year conventional and Real Return bonds (Chart 3). The Bank of Canada also gathers a measure of inflation expectations over the next two years in its quarterly business survey (Chart 4). Several such measures of inflation expectations are typically discussed in the *Monetary Policy Report* and the *Annual Report*.

1.3 Two other "formal" ex post *performance measures*

As alluded to above, to assure its corporate Board of Directors that it will be able to demonstrate that it is meeting its objectives, the Bank has adopted formal performance measures for each of its major functions. For the monetary policy function there are three such measures. One of these is the "achievement of the inflation target," which in practice includes the material covered in both subsections 1.1 and 1.2. The other two are dealt with in this subsection.

The first of these is external assessments by the IMF and OECD, outside experts, and the "informed public," to judge the formulation and implementation of policy more broadly. The *Annual Report* and stewardship report contain representative quotes from IMF and OECD comments on Canada, which typically come from the annual IMF Article IV consultations or from the *OECD Economic Survey* of Canada. The following are illustrative quotes from recent *Annual Reports*:

- "The stronger growth performance of the Canadian economy in part reflects the authorities' commitment to sound monetary and fiscal policies, which have brought about a marked improvement in economic fundamentals. This has been manifest in continued low inflation...." (*OECD Economic Surveys: Canada*, 2000)

- "Monetary policy has successfully maintained low inflation, and the Bank of Canada's policy management over the past year has further enhanced the credibility of the monetary policy framework." (2002 Article IV Consultation Statement of the IMF Mission, December 2001)

- "The economy's strong performance owes much to the sound policy framework and its skilful implementation. Inflation targets have helped to anchor expectations and permitted a forceful injection of monetary stimulus in the face of last year's shocks." (2003 Article IV Consultation Statement of the IMF Mission, 15 November 2002)

Every two years, as part of external assessment, IMF officials, whose knowledge of the Bank's staff and monetary policy framework stems from their involvement in the annual Article IV review of Canada, provide feedback on the quality of the Bank's monetary policy framework and the Bank's staff, in a private meeting with the Board of Directors. The Bank's special advisers,[6] who visit the Bank for a one year term, also meet privately with the Board of Directors to provide "external" views and perspectives on topics of interest. These views and perspectives are also shared with Bank management in general.

Other central banks or treasuries have also sought expert opinion from academics or officials from other central banks on broad aspects of monetary policy. Svensson (2001) examined monetary policy in New Zealand at the request of the Minister of Finance, while Kohn (2001) reported to the Court of the Bank of England on monetary policy processes and the monetary analysis. Central banks also carefully read policy reports undertaken by academics, such as the *Norges Bank Watch* commenting on Norwegian monetary policy (see, for example, Svensson et al. 2002) and the CEPR reports on monetary policy at the European Central Bank (see, for example, Begg et al. 2002).

The other performance measure is a benchmark comparison of the Bank's forecast errors on GDP growth and inflation with those of other forecasters—particularly the consensus. At the present time, this has been based on the unpublished staff quarterly forecasts which, although they can

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6. The Bank's special advisers have all been university professors or financial market experts. They have included Professors David Laidler, Daniel Racette, Angela Redish, and John Chant, as well as Andrew Spence.

differ somewhat from those of the Governing Council shown in the *Monetary Policy Reports* and *Updates*, give quarterly details that often have not been presented in the *Reports* and *Updates*. Additional quarterly information about the total CPI inflation and core inflation forecasts was introduced in the April 2003 *Monetary Policy Report*. This will enable a comparison of the Governing Council forecasts with those of the consensus forecast in the future.

1.4 Measures of "efficient" monetary policy from the literature

There is a small economic literature that looks at "efficient" monetary policy in terms of monetary policy outcomes relative to the "efficient frontier" between the variance of inflation about target and the variance of actual output about its potential (Taylor 1979). (This type of efficiency should not be confused with the efficiency in terms of producing a given output at minimum cost.) The most explicit empirical treatment of this framework has been in the work of Cecchetti, Flores-Lagunes, and Krause (2001), who note that output variability can fall when inflation variability falls if there is "more efficient policy-making by the monetary authority" or a "reduction in the variability of aggregate supply shocks."

The authors start by noting that, in their sample of 23 countries, inflation variability fell in 21 moving from the 1980s to the 1990s, while output volatility fell in 15. By estimating a model of output and inflation for each country and for each decade, the authors are able to construct various efficiency frontiers for output and inflation variability. Each frontier is calculated, subject to the constraint of their estimated model, "as the solution to a simple optimization problem in which policymakers are assumed to minimize a loss function that is a weighted average of the squared deviations of inflation and output from their target levels." By using the two sample periods (and two frontiers) for each country, the authors can compute the change in the value of the loss function for each country that is a weighted sum of inflation and output volatility.[7] Furthermore, they are able to divide the change in the loss function into two parts: the first comes from the movement in the efficiency frontier and the second from a movement toward the frontier (i.e. more efficient policy-making).

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7. The weights in the loss function are inferred from the point where the ray from the origin to the point indicating the actual variances cuts the efficiency frontier.

The authors' results depend heavily on three assumptions: (i) the inflation target was 2 per cent throughout the two decades; (ii) output can be represented by industrial production and potential output can be described by a log-linear trend; (iii) the structure of the economy can be described by simple equations that explain the movements in inflation and output. The first two of these assumptions are problematic for three reasons: (i) most countries did not have inflation targets as low as 2 per cent in the 1980s, and some not even in the 1990s; (ii) in a number of countries, movements in industrial production are not good proxies for movements in gross domestic product; and (iii) log-linear trends tend not to be good proxies for movements in potential output, as trend growth in the size of the labour force and in productivity has not been constant. This being said, however, the procedure provides an interesting first cut at a difficult problem of disentangling the movement in the efficiency frontier from the movement towards the efficiency frontier.

The authors find that 20 out of 23 countries, including both Canada and the United States, had a decline in the value of their loss function going from the 1980s to the 1990s. 18 of these 20 countries, including both Canada and the United States, plus 2 out of the 3 other countries, experienced an improvement in the efficiency of monetary policy. 17 of the 23 countries, including the United States, experienced an inward move in the efficiency frontier (attributed by the authors to a reduction in the variance of supply shocks). Canada had an almost imperceptible outward move in the efficiency frontier.

Cecchetti and Krause (2002) use the results of their earlier study to examine the distance of each country from its estimated efficiency frontier in the 1990s. Canada had the third smallest distance, after Australia and the Netherlands.

Longworth (2002) documents the changes in the properties of major Canadian macroeconomic variables from the period 1981-90 to the period 1991-2000 (henceforth referred to as the "1980s" and "1990s"). Table 3 notes the changes in the standard deviations of several output measures, several inflation measures, a measure of the cross-sectional variability of wage settlements, and several interest rate measures.

A few words are in order about the choice of these periods, since there is always an element of arbitrariness about such a choice. February 1991 marked the start of the inflation-targeting regime

in Canada; 12-month inflation rates came down sharply over the subsequent year or so. Thus, from a monetary policy perspective, 1991 is a useful point at which to divide the period as a whole. To appreciate the significance of the change in 1991 in a longer-term context, it is useful to examine data for at least 10 years before and after the event. It is important to note, however, that the recession of the early 1980s and the subsequent decline in inflation through early 1984 meant that the behaviour of a number of macro variables was significantly different in the 1985-90 period than in the early 1980s. Therefore, for some variables, it is useful to look at the 1985-90 subperiod. In the 1990s, the behaviour of certain variables adjusted only slowly to the new monetary policy regime. Thus, significant difference in their behaviour are apparent only in the second half of the decade, which makes the 1996-2000 period a useful one to examine. For these reasons, the subperiods 1985-90 and 1996-2000 are also shown in Table 3.

The data show that there have been reductions in the standard deviations of both inflation and output measures in moving from the 1980s to the 1990s. As well, the standard deviations of interest rates and the cross-sectional variation of wage settlements have also declined. While it is not evident how much of this reduction has come from a better monetary policy framework and how much from other factors, the results are consistent with the Cecchetti et al. (2001) study.

Table 3: Variability of Canadian Macro Variables from 1981-2000

Variable	1981-90	1991-00	1985-90	1996-00
Standard deviation of CPI inflation (12-month measure, monthly data)	2.96	1.46*	0.48	0.70**
Standard deviation of core CPI infl. (12-month measure, monthly data)	2.28	0.51*	0.58	0.33*
Average inflation uncertainty (Crawford-Kasumovich, quarterly) (data end in 2002Q2)	2.43	1.15*	2.17	1.01*
Dispersion of long-term inflation expectations (max. minus min. forecast, KPMG, average) (data begin in 1982Q4)	6.55	2.91*	5.78	2.49*
Standard deviation of the output gap (quarterly data from Nov. 2001 *Monetary Policy Report*)	2.26	1.79*	1.14	1.63**
Standard dev. of unemployment rate (monthly data)	1.69	1.50*	1.20	1.13*
Stand. dev. of GDP quarterly growth (annualized data begin in 1981Q2)	4.00	2.48*	3.41	1.81*
Standard deviation of 10-yr. GoC bond yield (monthly data begin in June 1982)	1.53	1.41*	0.83	0.78*
Stand. dev. of 90-day comm. paper rate (monthly data)	3.11	1.64*	1.84	0.84*
Stand. dev. of priv. sector wage settlements (av. of annual s.d.'s)	2.22	1.48*	1.90	1.45*

* In the 1991-00 column, means lower than in the 1981-90 column. In the 1996-00 column, means lower than both 1991-00 as a whole and 1985-90.
** In the 1996-00 column, means lower than in 1991-00 as a whole, but not lower than in 1985-90.

Source: Longworth (2002)

2. Measuring Intermediate Products

The Bank identifies the main intermediate products in the Monetary Policy function as: current analysis and projection, research, and communications. Self-assessments, benchmarking (including that done by external experts), and some numerical indicators and procedures aimed at assisting the self-assessment of our communications are used to evaluate the quality of intermediate products. This section looks at each of these three assessment methods in turn, and then discusses how academics and central bank researchers have assessed issues of transparency and accountability—issues closely related to communications.

2.1 Self-assessments

In the area of self-assessments, the Bank's annual stewardship process—which includes preparing a list of lessons learned—provides an important evaluation of each of its business functions. Each year, the results of this assessment are presented in a Stewardship Report and discussed with the Board of Directors. For the Monetary Policy function, there is self-assessment of current analysis, the economic projection, research, and communications.

As one part of the year-end Stewardship of the Bank's research and analysis on monetary policy and financial system issues, members of the Monetary Policy Review Committee[8] assess the quality and relevance of the research. Information on a number of quantitative indicators is also reviewed and discussed as part of the assessment process. The quantitative indicators on research include the number of: papers in refereed journals, conference volumes and books; *Bank of Canada Review* articles, Working Papers and Technical Reports; and presentations at conferences, universities and central banks.[9] These indicators, which are compared with the previous years' statistics, are useful input into the Stewardship process.[10]

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8. The Monetary Policy Review Committee, which meets weekly to hear reports on economic data, as well as a few times before each fixed announcement date for interest rate decisions, consists of the six Governing Council members, six advisers, the four chiefs of the economics departments, the financial market directors in Toronto and Montreal, two members of the Communications Department, and the Bank's general counsel.
9. The *Annual Report* for 2002 notes, for example, that Bank researchers actively took part in some 90 academic and central bank seminars and conferences (up from over 80 in 2001), and produced a record 42 Working Papers (up from 27 in 2001).

The Bank is also examining a more formal approach that could be used to evaluate current analysis briefing notes.

2.2 Benchmarking

Going forward, the Bank is evaluating different tools and techniques for gathering opinions from "external experts" on the quality of the Bank's research so that this information can be taken into account during the annual Stewardship assessment of the Bank's research program. In the past, the Research Department has used an outside expert to evaluate its work on the re-development of the QPM projection model.

Benchmarking with other organizations has helped the Bank to identify best practices and opportunities for improvement, particularly in the areas of information technology, facilities management, and corporate administration—areas which all support the Monetary Policy function as well as other Bank functions.

The Bank has had limited experience with formal benchmark studies of its core functions. One example from outside the monetary policy area is a study sponsored by the Bank for International Settlements of interested central banks on the cost of distributing bank notes. The study highlighted some of the difficulties in comparing central bank activities with different philosophies and mandates, and different accounting and costing principles. However, the exercise was valuable in terms of learning about the challenges and experiences of other central banks but it required considerable time and effort by the central banks involved.

Some of the expert opinion obtained by the Bank from IMF officials and the Bank's special advisers about monetary policy in general spills over into specific intermediate products, such as research, as well. Other central banks have employed experts to look at specific intermediate products. For example, Adrian Pagan (2003) was asked to report on modelling and forecasting at the Bank of England.

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10. Eijffinger et al. (2002) have ranked the research performance of European central banks based on the number of scientific papers per employee engaged in research.

2.3 Self-assessment with numerical indicators: communications

The Bank relies on a number of qualitative indicators, as well as some quantitative measures to evaluate performance in communications. Media monitoring and analysis provide a continual reading of how the Bank's key messages are being disseminated in the media, and give a broad indication of the reach and impact of the information. In addition, direct feedback from specific target audiences—journalists, market participants, financial sector economists, and business people—is gathered both formally and informally.

Each year, the Communications Department prepares an analysis of the press coverage of monetary policy. It examines whether the Bank's main messages are being disseminated in the media and provides some statistics on press coverage. Table 4 shows the number of stories that appeared in the various media in 2002 (with the corresponding numbers for 2001 in brackets).

Table 4: Statistics on Press Coverage 2002 (2001 in brackets)

Media	Interest Rate Announcements	*MPR / Updates**	Major Speeches	Total
Wire services/ Financial Markets	128 (122)	70 (58)	82 (72)	280 (252)
Press	476 (527)	240 (204)	385 (337)	1101 (1068)
Radio/TV	1095 (681)	669 (202)	438 (292)	2202 (1175)
Total	1699 (1330)	979 (464)	905 (701)	3583 (2495)
Average coverage per "event"	212 (148)	245 (116)	113 (100)	179 (125)

* *Monetary Policy Reports* and *Updates*.
Note: The numbers for "Press" include appearances in multiple newspapers.

Two other quantitative indicators for communications worthy of note are the number of public and private speeches by Governing Council members and the number of visits to the Bank's Web site. The number of speeches and public statements has more than tripled over the past few years from 21 speeches and statements in 1999 to 74 in 2002. The Bank now expects the number of speeches and statements over the next few years to remain at about the 2002 level. In addition, with respect to the number of visits to the Bank's Web site, there has been a substantial growth in activity in recent years. Indeed, from 2000 to 2002, the number of visits per week more than doubled, rising from 48 thousand to 127 thousand, while the average number of page hits per week rose from 198 thousand to 352 thousand. In terms of quality measures, the Bank was awarded Central Banking Publications and Lombard Street Research's award for the best central bank Web site, in March 2003.

2.4 How researchers have assessed issues of transparency, accountability, and communication

A number of academics and central bank researchers have taken an interest in questions of the transparency, accountability, and communications efforts of central banks. These characteristics can all be seen as intermediate "products" in the monetary policy area, although there is disagreement about whether more is always better.[11] This section discusses some of the work by academics and central bank researchers on quality and effectiveness in these areas.

Eijffinger and Geraats (2002) propose a comprehensive index for central bank transparency that comprises the political, economic, procedural, policy and operational aspects of central banking. The index, which is based on information disclosure practices, is calculated for six inflation-targeting countries, the Euro zone, Japan, and the United States. Canada is ranked fourth (with a score of 10.5/15), following New Zealand (13.5/15), the United Kingdom (12.5/15), and Sweden (12/15). Canada scores low on the "procedural" category because of an absence of minutes and voting records. John Chant (2003), a former Special Adviser to the Bank of Canada, notes that the Eijffinger-Geraats results show an interesting comparison between federal and unitary states with respect to their disclosure of voting records: among the five federal states, the United States is the only one where voting records are disclosed, while central banks in all four of the unitary states

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11. Winkler (2000) argues that clarity may be more important than making more material available.

disclose voting records. Chant argues that "the disclosure of minutes and voting records could pose significant dangers by creating identifiable regional pressures on monetary policy."

Several groups of authors have constructed indexes of the accountability of monetary policy. Briault et al. (1997) produce an index based on parliamentary monitoring, the release of minutes, the publication of an inflation report, and the existence of an override mechanism.[12] Based on the situation at the time, Canada ranks third out of fourteen industrial countries with a score of 2.5/4, following the United Kingdom and New Zealand. de Haan et al. (1999) construct an index of accountability based on "decisions about the explicit definition and ranking of objectives of monetary policy; transparency of actual monetary policy; [and] who bears final responsibility with respect to monetary policy." Out of 16 industrial countries, Canada again ranks third (with a score of 7/13), following the United Kingdom and New Zealand. Fry et al. (2000) calculate a measure of policy explanations for 94 central banks, based on the explanation of policy decisions, the publication of forward-looking analysis, and the explanation of assessment and analysis. Canada scores 79 out of 100, which gave it 13th place. Sweden, the United States, and the United Kingdom scored the highest. [13]

Fracasso et al. (2003), in a report commissioned by the Norwegian central bank, evaluate the *Inflation Reports* published by inflation-targeting central banks. The authors asked five graduate students to read one issue of each of the twenty inflation reports and to rate a large number of characteristics on a scale of one to ten. These characteristics relate to: the quality of the information provided, the clarity of the assumptions made at the time of a decision, the quantity of information provided, how difficult it is to find the information, the presentation of the policy-making process, the inflation forecasts, the underpinnings of the inflation forecasts, and the readability and quality of the executive summary. The impressions are then summarized under five headings: convincing, central bank expertise, completeness of report, writing style, and information pro-

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12. It goes without saying that some of the elements of this measure and the others reported are within the control of the government, not the central bank. Therefore, the scores are truly for the countries, not for their central banks alone.

13. Since the measures reported in this paragraph were constructed, the Bank of Canada instituted fixed announcement dates for interest rate decisions and began to publish semi-annual *Updates* to its *Monetary Policy Report*. These initiatives would have led to increases in some of the Bank's scores.

vided. An average over these five characteristics is used to "provide a rough measure of the overall quality of reports."

There are three aspects of the methodology used in this study that could be questioned. First is whether the breadth of perspectives of the graduate students that undertook the evaluation is sufficient. They all appear to be from the same university. And "the readers are graduate students in economics familiar with broad principles but not necessarily 'central bank watchers.'" Second, the sample size of five is very small for a non-expert survey. Third, the implicit assumption appear to be that each central bank sees the purpose of its inflation report to be the same, which is to convey everything that one would want to know about monetary policy and the economic background in that country.

Overall, the Bank of Canada's *Monetary Policy Report* is ranked thirteenth out of twenty in this study. Its shortness may have something to do with this ranking. None of the reports are any shorter and only the Reserve Bank of South Africa and the central bank of Peru have reports of approximately the same length. The authors note the following: "More surprising is the disappointing performance of two veteran and highly reputed IT central banks, Australia and Canada. In both cases, much information is provided through other means, including the websites. A fair conclusion could be that these central banks do not consider that their IRs should be an exhaustive document."

The Bank of Canada, however, receives the third highest rating for writing style, and the authors find—but do not play up the fact—that the absolute value of interest rate surprises are most negatively correlated with writing style, among the five characteristics examined.

Central banks in general do pay close attention to the analysis by academics represented by the studies just discussed. In the end, however, those analyses will form only one part of an assessment of the efficiency or effectiveness of monetary policy.

3. Measuring Inputs

This section provides highlights of the financial and human resource inputs, which have been devoted to meet the Bank's responsibilities and objectives. In addition, attracting and retaining quality staff is an important focus for the Bank's management. A number of initiatives have been implemented over the past few years to help ensure the Bank continues to be competitive with its markets of comparison and provides an appealing work environment.

3.1 Staff levels and functional operating expenses

As shown in Charts 5 and 6, staff levels[14] and expenditures for the Monetary Policy function were reasonably stable during the mid to late 1990s largely because of a management decision to constrain expenditure growth. This approach was in support of the view that investments in new initiatives would be at the margin and therefore could be managed by improving the efficiency of existing processes and by eliminating lower priority activities.

However, in 2000 and 2001, the expenditure constraint was lifted in order to meet the growing business requirements in the Monetary Policy and Financial System functions. After a careful review, staff resources were added to assess international economic and financial developments and their implications for Canadian monetary policy, as well as to implement a more systematic and integrated approach to communicating monetary policy.

In addition, to achieve the strategic direction outlined in the new Medium-Term Plan, management and the Board of Directors approved additional economist and research assistant positions over the medium term to expand the breadth of the Bank's research and analysis on the structural and sectoral issues that affect the Canadian macroeconomy, including the changing structure of credit markets in the transmission of monetary policy.

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14. The staff levels in the Chart are for the Bank's four economics departments, not just for the monetary policy function. Although the vast majority of the staff-years in the Bank's economics departments are devoted to monetary policy, some are in the financial system and funds management functions. The other main department supporting monetary policy is communications, where the number of staff years have increased significantly in recent years.

The operating expenses shown in Chart 6 for Monetary Policy and the Bank's other functions include both *direct costs* (i.e. salaries, benefits, travel and training, etc.) and *indirect costs* for corporate administrative services, which are allocated to each function based on the function's usage of these services (i.e. human resource administration, financial reporting and budgeting, information technology, etc.).

3.2 Staff quality and staff compensation

Over the past few years, the Bank has strengthened its human resource management framework to continue to attract and retain a talented and qualified work force. These improvements include:

- strengthening its university recruitment program and increasing its focus on mid career recruitment for some senior positions;
- benchmarking annually, with the assistance of Hay Management consultants, the Bank's total compensation to its markets of comparison;
- implementing two broad career streams, one with management responsibilities and one dedicated more to research, in order to meet the different needs and aspirations of staff;
- introducing a talent review and development process to help ensure staff enhance their knowledge and their skills on key competencies, thus also benefiting the Bank; and
- establishing a set of values for the Bank's work environment including work and family balance.

The International Monetary Fund and the Bank's Special Advisers provide the Board of Directors with independent opinions on the quality of the Bank's staff each year.

4. Changing Inputs

The Bank carries out periodic reviews to assess the effectiveness of its operations in meeting the Bank's objectives and to identify opportunities for streamlining key business processes in order to eliminate overlaps and duplication. This section looks at the Bank's experience with four

approaches—activity review; comprehensive reviews; client and staff surveys; and risk assessments.

4.1 Activity review

In the mid-1990s, the Bank conducted an activity review that took a fundamental look at how the Bank carried out its responsibilities. At that time, the Bank identified those services that were no longer a priority or that could be scaled back. In addition, the Bank re-engineered and re-organized some of its operations. One of the key results of the fundamental review was that the Bank sharpened its focus on those activities central to its public policy role, on the needs of its clients, and on the efficiency and effectiveness of its operations. The review and subsequent restructuring required new investments in technology and staff training, as well as spending to improve communications and expand the Bank's regional offices.

Overall, the net result for the Bank as a whole was a savings of more that $39 million, or 24 per cent, in 1998 compared with expenditures in 1994. The Bank's total regular staffing levels declined from 2,100 to 1,400 staff-years.

The most significant changes occurred in functions other than Monetary Policy. The Currency function was the area in which the Bank's activity review led to the most dramatic change in the way its business was conducted. In 1996, a new method of distributing bank notes was implemented, in close partnership with financial institutions, in which the latter assumed more responsibility for note distribution under the new system. As a result of this new arrangement with financial institutions, the Bank closed 9 of its agency operations across Canada.

In the case of the Monetary Policy function, three main areas of activity were reviewed—analysis of current developments, research, and economic projections. This included a detailed assessment of the information critical to the analysis of current economic and financial development. In some areas, it concluded that the scope or frequency of analysis could be reduced. In other areas, expanded use of new technology resulted in savings in the way information is processed and reported.

The review reaffirmed the importance of well-focused economic and financial research in maintaining the Bank's ability to respond to unexpected developments. It also confirmed the necessity for economic projections and policy analysis so that monetary policy can be conducted in a forward-looking context. Overall, the review resulted in a savings of about 10 per cent in expenditures for the Monetary Policy function.

4.2 Comprehensive reviews

The Bank has an ongoing program in place to conduct comprehensive reviews of its key business areas and processes periodically (every five years or so) to ensure the efficiency and effectiveness of its operations.

In the area of Retail Debt Services, which the Bank provides as the government's fiscal agent, the review of this business led to a decision to outsource the operations and systems-support services for the processing of Canada Savings Bonds and other retail debt instruments in 2001, together with the associated restructuring of the Bank's corporate services. Approximately 600 staff were transferred to the outsourced company or have left the Bank.

With this fundamental change in its operations, the Bank is a smaller, more homogeneous institution focused on its core business functions—Monetary Policy, Currency, Financial System and Funds Management. The Bank currently utilizes about 1,100 staff-years (regular employees), about one-half of the total of the mid-1990s.

For the Monetary Policy function, a number of reviews are worthy of note. First, in 1997, to enhance communications on monetary policy, the Bank opened new offices in Halifax and Calgary and expanded its existing regional offices in Vancouver, Toronto, and Montréal. The main objectives of the Bank's regional presence program were the following: to support the Governing Council and the Board of Directors in their outreach activities across the country; to carry out research and analysis; and to liaise with academics and local industry representatives to gather data for input into monetary policy decisions. In 2001, a review of the Bank's regional presence program, which included consultation with the Board of Directors, was completed. It re-affirmed

the importance of the Bank's regional outreach program to support the Bank's communication strategy. In addition, it confirmed the value of contacts with local organizations as a source of information that is valuable input into monetary policy decisions.

Second, in 2000, the Governing Council decided to implement a system of fixed announcement dates for interest rate decisions in order to improve the conduct of monetary policy.[15] At that time, a task force was set up to identify the selection of specific action dates, taking into account the flow of economic information, as well as to review modifications to the Bank's current analysis and projection processes to support the number and nature of the briefings required prior to each fixed announcement date. Moving to fixed dates has resulted in streamlining and efficiency gains because briefings can be concentrated in the days leading up to those dates, with the key points being summarized.

Third, a review is currently underway in the Economic Departments to examine the data management processes and products and to identify ways to meet future data needs in a cost effective way. One of the proposals being considered is to create a central repository that would provide staff with easy access to the descriptions of the statistical data they use in their work. The main benefits of a central repository is lowering the cost of data entry and of maintaining multiple databases as well as providing reliable and easy-to-access data.

4.3 Client and staff surveys

Client surveys are useful for assessing operational effectiveness in terms of quality, timeliness and cost of the products and services provided. Client surveys have been used by the Bank with its external clients, for example with financial institutions for the bank note distribution business and with the Department of Finance for the provision of funds-management services.

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15. Fixed announcement dates were expected to reduce uncertainty in financial markets, enhance the focus on the Canadian context, place greater emphasis on medium-term policy, and enhance the Bank's transparency, accountability, and dialogue with the public. Parent (2002) provides evidence of reduced uncertainty—and a greater focus on the Canadian context—in financial markets following the introduction of fixed dates.

In addition, the Economics Departments periodically survey senior management on the outputs produced on a weekly basis which support the fixed action date decisions. The feedback is useful in refining these products and outputs.

Staff surveys are useful in measuring overall staff satisfaction and staff preferences on specific corporate-wide initiatives on compensation proposals and work environment initiatives.

4.4 Risk Assessments

Each year as part of its annual planning activities, senior management identifies and assesses the key areas of risk that could compromise the fulfilment of the Bank's responsibilities and/or the achievement of its strategic direction and objectives. For each area of risk, an assessment is made as to the likelihood of the risk occurring, the potential consequences, and the approaches in place for managing the risks. The three broad categories of consequences relate to financial, operational, and reputational risk. This process provides valuable information on the effectiveness of the Bank's systems and operations in managing risk.

In addition, the Audit Department conducts periodic reviews of Bank operations, including the Bank's risk management process, to assess the appropriateness and effectiveness of the systems of internal control implemented by management to mitigate risk, and thus to provide reasonable assurance that objectives will be achieved.

5. Conclusion

The two key components of the Bank's framework for managing the efficiency and effectiveness of its operations are the clarity of its mandate and vision, and the development of its Medium-Term Plan, approved by its Board of Directors, which sets out the strategic direction and objectives together with financial resources needed for each of its business functions over the medium term.

In the case of Monetary Policy, the key performance measure is the achievement of the inflation target, which in practice means the extent to which total CPI inflation remains close to the 2 per

cent target midpoint and the extent to which core inflation and inflation expectations remain close to the 2 per cent target.

Other performance measures have at times sparked significant internal debate because of a tension between wanting to have quantitative measures for everything and knowing that measuring something which is only a proxy for what one really cares about is, at best, misleading and, at worst, could distort behaviour. Therefore, the approach that the Bank has often taken is to have a mix of performance measures, especially for the intermediate products, which cover various types of benchmarking (formal studies, expert opinion, and external ratings and awards) as well as self-assessment that is often informed by quantitative measures for which there are no specific targets (at times because of fear of distorting behaviour).

Overall, tracking the Bank's success in meeting its objectives and, in addition, performing comprehensive reviews on a periodic basis together with annual self-assessments and external assessments in the Stewardship process provide the Bank with important information to manage the efficiency and effectiveness of its Monetary Policy function.

Looking forward, the Bank would like to continue to strengthen its assessment process and to benefit even more from the experience of other central banks. Opportunities to share experiences in the areas of benchmarking and external assessments of aspects of the Bank's monetary policy function would be important in this regard.

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Annex 1

Our Commitment to Canadians

To promote the economic and financial welfare of Canada, we:

- conduct monetary policy in a way that fosters confidence in the value of money
- supply quality bank notes that are readily accepted and secure against counterfeiting
- promote the safety and efficiency of Canada's financial system
- provide efficient and effective funds-management services
- communicate our objectives openly and effectively and stand accountable for our actions

Our Commitment to Excellence

Building on our strengths, we aim to meet our commitment to Canadians through performance second to none among the central banks of the world.

We strive for excellence through leading-edge research and analysis, through partnerships within the Bank and with outside organizations, and through:

- innovation in all aspects of our work
- leadership that spurs us on to new success
- integrity in our business and in our actions
- diversity of people and ideas

Our Commitment to One Another

We aim to achieve our best in a workplace where we:

- communicate clearly and openly
- share knowledge and experience
- develop our talent and careers
- recognize those who live up to our commitments
- respect one another and our lives outside work

Chart 1
Consumer Price Index
Year-over-year percentage change

——— Core CPI *
– – – Total CPI
——— Target range
——— Target range
- - - - Target midpoint

* CPI excluding the eight most volatile components and the effect of changes in indirect taxes on the remaining components.

Chart 2
Percentage Distribution of Expected Price Increases over the Next Six Months
Quarterly

——— 1 percent and less
– – – 2 percent and less
——— 3 percent and less
——— 4 percent and less

Source: Conference Board of Canada, Index of Business Confidence

Chart 3
30-Year Bond Yields and Inflation Expectations

——— Inflation forecast - monthly *
- - - Inflation forecast - semi–annual **
——— Bond yield differential ***

* CPI Inflation forecast 2 to 3 years ahead. Source: Consensus Economics Inc.
** CPI Inflation forecast 6 to 10 years ahead. Source: Consensus Economics Inc.
*** The differential is calculated using the appropriate compound interest formula.

Chart 4
Two-year Inflation Expectations
Bank of Canada Quarterly Survey

Above 3 %
2–3%
1–2%
below 1%

Staff-Years

Chart 5
Analytic Departments
Regular Establishment

Data:
1994 to 2002: Actuals
2003: Budget Estimates

280	
240	
200	
160	
120	
80	
40	
0	1994 1995 1996 1997 1998 1999 2000 2001 2002 2003

millions $

Chart 6
Operating Expenses (ex Retail Debt)

180	
160	
140	
120	
100	
80	
60	
40	
20	
0	1994 1995 1996 1997 1998 1999 2000 2001 2002

All Other ■
Monetary Policy ▨