



BANK OF CANADA



# Uncertainty and the transmission of monetary policy in Canada

The HERMES-Glendon Lecture

by Gordon G. Thiessen

Governor of the Bank of Canada

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York University - Glendon College  
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Just over seven years ago, my predecessor, John Crow, delivered the Hanson Memorial Lecture at the University of Alberta. In it, he discussed a number of issues relating to the conduct of Canadian monetary policy, including the goal of monetary policy, the transmission mechanism, the use of monetary aggregates as policy guides, financial market uncertainty, and the role of the exchange rate. Seven years later, all of these matters remain topical.

What I want to do today is to focus on the inter-relationships of two of these themes -- uncertainty and the transmission of monetary policy to the economy. How do the various types of uncertainty influence the behaviour of economic actors? And how does uncertainty affect the transmission of monetary policy through the economy? In the first part of this lecture I will outline the Bank of Canada's view of the transmission mechanism, paying considerable attention to the role of uncertainty. In the second part, I will set out the various ways in which the Bank has tried to reduce uncertainty.

Before launching into the main part of the lecture, I want to spend a few minutes discussing the various kinds of uncertainty that impinge on the economy and on the policy process. One type of uncertainty arises because of the possible occurrence of events that are largely unexpected. Such shocks can be international or domestic in origin. A recent example was the rise in U.S. long-term interest rates through the first half of 1994. Other sources of shocks can be events that are certain to occur, but whose precise nature or outcome is as yet unknown, for example, a budget, or the upcoming referendum in Quebec.

A second type of uncertainty arises because the private sector may be unsure about the longer-run objectives of economic policies. To complicate the issue further, there can be an interaction of these two types of uncertainty when the markets are unsure about how to interpret the response of the authorities

to a shock. Do the actions of the central bank reflect a change in its long-run objectives or simply a response to the shock with no change in objectives? One of the reasons why markets may be unsure about how to interpret the central bank actions is that they may view the shock differently than the central bank does. In particular, there may be differences of view as to whether the shock is likely to be long-lived or short-lived and as to its implications for the economy.

In deciding on its policy actions, the central bank is in turn faced with an uncertainty about how the financial community and the public will respond to its pronouncements and actions. Will the response be the same as in the past, or will economic relationships be different on this occasion? For example, how will aggregate demand be affected by central bank actions leading to changes in interest rates and the exchange rate? And how will inflation and inflation expectations react to these actions?

What can the central bank do to reduce uncertainty? First, it can try to reduce the uncertainty of the public and of financial markets about its responses to the various shocks. It can do this by making clear the longer-run goal of monetary policy, the shorter-term operational targets at which it is aiming in taking policy actions, and its own interpretation of economic developments. Moreover, by committing itself to a longer-term goal and sticking to it, as well as by lessening uncertainty about its own responses to shocks, the central bank may be able to lessen the effect of the shocks on private sector behaviour.

In sum, uncertainty of various kinds is pervasive. Given its importance, uncertainty deserves much greater prominence than it typically receives in textbook discussions of monetary policy, where it is too often neglected. In my discussion in the rest of this lecture of the transmission mechanism and the initiatives taken by the Bank to reduce uncertainty, I will try to remedy this neglect.

## **PART 1**

### **The Transmission Mechanism**

When central banks take monetary policy actions, they set in motion a series of consequences that starts with an influence on financial markets, works through changes in spending, production and employment, and ends with an effect on the price level or, more specifically, the rate of inflation in the price level. Economists call this chain of developments the "transmission mechanism".

The instrument that the central bank has at its disposal in taking monetary policy actions is its control over the issuance of a crucial financial asset -- typically referred to in the economics literature as "base money". Base money, which is composed of bank notes issued by the central bank and deposits at the central bank held by financial institutions, is important because it provides the ultimate form of liquidity in the financial system. Financial institutions hold such a liquid instrument -- one that involves no risk of default and no delay in obtaining value -- in order to settle among themselves the net flows from payments that take place in the economy every day.

Fundamentally, monetary policy is about the pace of monetary expansion. The rate at which the central bank allows base money to expand over time will either encourage or restrain the financial system in its expansion of money and credit. This in turn will influence the demand for goods and services in the economy. And it is the level of demand relative to the ability of the economy to produce goods and services that eventually determines the rate of inflation.

However, in practice, the relationship of base money to aggregates of money or credit or to measures of aggregate demand in the economy is not stable enough for the Bank of Canada to operate by expanding base money at a given rate. Instead, as you will see from the description of the transmission process that follows, we rely on the linkage from base money to interest rates and the exchange rate, and from these financial market prices to aggregate demand and then to inflation, as the basis for making monetary policy decisions in Canada.

These linkages from monetary actions through to the rate of inflation have been a subject of intense scrutiny over many years. Some parts of the transmission mechanism, such as the effect that changes in interest rates have on aggregate demand and inflation, have received a great deal of attention. Other parts, such as the linkages from central bank actions to movements in interest rates and the exchange rate, have received less attention outside central banks. What I want to do in this part of the lecture is to focus on the role of financial markets in the transmission mechanism and on the influence of various kinds of uncertainty on the response of these markets to economic developments and to monetary policy actions.

**(a) First stage: From central bank actions to very short-term interest rates**

The first step in the transmission process takes place when the central bank adjusts the size of its balance sheet to alter the supply of base money in the financial system. Traditionally, commercial banks held a certain amount of base

money because of legally imposed reserve requirements. However, since the elimination of reserve requirements in Canada, a demand for base money by the major banks and certain other important financial institutions exists because they settle the net outcome of the daily clearings of payments directly on the books of the Bank of Canada. Hence, such institutions are called direct clearers. And "settlement balances" is now the appropriate term to describe the deposits of the direct clearers at the Bank of Canada.<sup>1</sup>

Central banks can adjust the supply of settlement balances available to the direct clearers in a number of ways. While textbooks typically focus on open market operations, in Canada we rely mainly on a technique involving daily transfers of government deposits between the direct clearers and the Bank of Canada. The precise way in which the amount of settlement balances is increased or decreased by the Bank is essentially a technical matter.<sup>2</sup> What is central to the process is that the Bank of Canada is able to provoke a reaction from the direct clearers by confronting them with an excess or shortfall of settlement balances. They act promptly to eliminate the imbalance because of cost considerations. Excess balances are costly because no interest is paid on them to financial institutions, while shortfalls have to be covered by overdraft loans from the Bank of Canada at a penalty rate of interest.

In essence, we use our control over settlement balances to influence the interest rate most relevant to transactions by financial institutions aimed at adjusting these balances. This is the rate on one-day loans, sometimes called the overnight rate of interest. Movements in the overnight rate in turn influence other interest rates and the exchange rate.

On a typical day, after the previous day's payment items have cleared, some direct clearers will end up with a surplus of settlement balances and others with a shortfall. It is only if the Bank of Canada acts to create an overall shortfall or surplus for the group as a whole relative to their desired

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<sup>1</sup> Financial institutions also hold notes and coins to meet the public's demand. But whereas supplying banknotes allows the Bank of Canada to acquire assets that it can use in its market operations, the supply is passively adjusted to the demand for notes and is not part of the monetary policy process as such. The central instrument of monetary policy is the Bank's supply of settlement balances to direct clearers.

<sup>2</sup> See K. Clinton, "Bank of Canada cash management: The main technique for implementing monetary policy", Bank of Canada Review (January 1991).

balances at the Bank, that it can alter the overnight interest rate. Faced with a shortfall, the direct clearers will call one-day loans to security dealers, sell very short-term liquid assets from their portfolio, or bid more aggressively for very short-term wholesale deposits. All three actions tend to put upward pressure on the one-day rate of interest and other very short-term rates. Conversely, when the direct clearers as a group have a surplus of settlement balances, they will tend on balance to extend more one-day loans to dealers, buy very short-term liquid assets, and be less aggressive in bidding for very short-term deposits, thereby putting downward pressure on the one-day rate and other very short-term rates.

However, even at this initial stage of the transmission process the Bank is faced with an element of uncertainty, since the desired settlement balances of direct clearers cannot be forecast with precision. Hence, at times, there may be a lag of a day or two before the Bank's actions have the desired effect on very short-term rates.

**(b) Second stage: From very short-term interest rates to the rest of the term structure and to the exchange rate**

The actions of the Bank of Canada to alter the one-day rate will in turn influence the rest of the term structure of interest rates as well as the exchange rate, but that influence is not a precise one. It depends very much on the expectations and reactions of the financial markets.

The level of money market rates beyond the very short term is closely related to the market's expectations of the future path of one-day rates. If the Bank has just taken action to push up the one-day rate, say because of the release of new information about the strength of demand pressures in the Canadian economy, the impact of this increase on interest rates for one month, three months and so on will depend on how long market participants expect the central bank to maintain the higher one-day rate. The less uncertain the market is about the Bank's intentions, the smoother will be the response of other short-term rates.

In interpreting the movements of interest rates further out the maturity spectrum, it is best to think of medium- and longer-term rates in Canada as depending on expectations of the future path of real interest rates (including risk premiums) and that of the rate of inflation. Expectations of real interest rates over the long term (apart from risk premiums) are likely to

be related mainly to international factors.<sup>3</sup> These include expected world-wide movements in aggregate demand over the next few years and the expected profile over the longer run of the supply of saving (net of government dissaving) and of the demand for investment around the world. Risk premiums in interest rates will reflect such factors as the expected path of fiscal policy and political developments in Canada. Expected inflation, for its part, depends mainly on the market's expectations about monetary policy in Canada. Given the uncertainty surrounding all of these expectations, it is not surprising that markets at times react strongly to the release of information which changes their views about any of these factors. With financial markets around the world becoming much more open in recent years, the size of international financial flows has increased considerably. Thus, a major shift in expectations in one market can have a substantial effect on interest rates elsewhere in the world.

The effect of a change in very short-term interest rates on the exchange rate for the Canadian dollar is also a function of market expectations. The longer a new level of very short-term rates encouraged by the Bank's actions is expected to prevail, the greater the effect on the exchange rate. So the clearer the basis for the Bank's actions, the more predictable will be the effect on the exchange rate. However, the exchange rate is also affected by factors other than Bank of Canada policy actions. For example, the Canadian dollar - U.S. dollar exchange rate is also influenced by U.S. monetary policy, by the stance of fiscal policy in both countries, by the relative positions of the economic cycle in Canada and the United States, by the standing of the U.S. dollar relative to overseas currencies, as well as by political events. Once again, the release of new information can change expectations about future developments in any of these factors in a major way and thus have a significant influence on the exchange rate.

To illustrate the importance of market expectations, let us look at what would happen if the Bank acted in a way that the market viewed as inappropriate to the circumstances.

Suppose, for example, that the Bank acted to ease the one-day rate of interest in response to new information suggesting there was less inflation pressure in the economy than had been anticipated. What if the market did not share the Bank's interpretation of this new information and felt that the

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<sup>3</sup> Divergences between the expected patterns of aggregate demand in Canada and abroad will also have some impact on the real interest rate, and on expected movements in the real exchange rate for the Canadian dollar. But those factors become less important the further out one goes on the maturity spectrum.

Bank's actions involved taking excessive risks on the side of higher inflation? Investors would immediately become more reluctant to hold Canadian dollar instruments at current interest rates, because of their expectation of higher inflation in the future. Moreover, investors' uncertainty about the future would increase because, at higher rates, inflation tends to be less predictable. There would thus be upward pressure on interest rates beyond the shortest term, both because of the higher expected rate of inflation and because of the higher risk premiums that investors would require in order to compensate for the increased uncertainty. Moreover, with the increased reluctance of investors to hold Canadian dollar instruments, the exchange rate would come under downward pressure. If the market began to extrapolate the downward movement of the currency, it would intensify the upward pressure on interest rates as investors moved out of Canadian dollar investments to avoid a potential capital loss.

In the end, while actions by the Bank to bring about a decline in one-day rates in the face of a market that thought that such a change was inappropriate might still force a decline in interest rates at the very short-term end of the money market, perhaps even out to 30 days, they would result in a rise in rates further along the yield curve because of increased fears of inflation and a declining currency.

Investors in long-term bonds have become much more sensitive over the last 20 years to any hint of inflation or to any suggestion that a central bank has become more willing to take risks with inflation and therefore with a depreciating currency. This heightened sensitivity is the result of the high rates of inflation that prevailed in Canada and abroad during the 1970s and 1980s. Similarly, long-term bond markets now respond to fiscal concerns quickly and directly, presumably because of their concern that countries may act to monetize the debt when it becomes too burdensome.

There are also times when markets become particularly nervous and volatile because of economic shocks or concerns about policies, and central bank actions have to be directed to coping with disorderliness in markets. For example, there have been a number of occasions in the past decade when downward momentum in the Canadian dollar undermined confidence and encouraged extrapolative expectations of further declines in the Canadian dollar, which then fed back on interest rates, pushing them sharply higher. In such circumstances, the Bank's immediate task was to calm markets by helping them to find new trading ranges with which they were comfortable. Once the markets settled down, the Bank was able to focus attention on the underlying economic situation, which typically had become lost to view during the turmoil.



**(c) Third stage: From interest rates and the exchange rate to aggregate demand**

We have now discussed in some detail how actions taken by the Bank of Canada influence interest rates and the exchange rate and how the particular outcomes depend in an important way on the views and expectations of financial markets. The next stage in the process involves the transmission from interest rates and the exchange rate to aggregate demand. Here I can be brief as this part of the process has been widely studied and the views we take in the Bank are very much in the mainstream of the economics literature.

Changes in interest rates affect aggregate demand through a number of channels -- the cost of capital, the incentive to save rather than to spend, and the effects on wealth and cash flow. The main components of demand that are affected are housing, consumer spending on durables, business investment in fixed capital and inventory investment. The extent of the response of spending will depend in part on how long the changed level of interest rates is expected to persist. This will be an important factor for those entities that borrow at the shorter end of the market.

The way in which the exchange rate affects demand is also relatively straightforward. A change in the value of the Canadian dollar will initially change the prices of those goods and services produced in Canada that are traded internationally and whose prices are set in world markets, vis-à-vis those whose prices are not, or at least not entirely, determined in world markets. These changes in relative prices will set in train a series of demand and supply responses that will affect the output of Canadian-produced goods, largely through their impact on exports and imports.

Of course, these responses do not take place overnight. And their size is dependent on whether the markets expect the change in the exchange rate to be transitory or long-lasting. Take, for example, a situation in which a sharp downward shock to aggregate demand in Canada leads to a decline in interest rates and to a significant depreciation of the Canadian dollar. The Canadian dollar price of those Canadian products whose prices are determined in world markets, such as most raw materials, will rise, making their production more profitable and inducing producers to exploit existing sources of production more intensively. Over time, suppliers will be induced to increase their capacity to produce such goods. How strong the investment response will be, and how soon it will begin, will depend importantly on expectations about the duration of the lower value of the Canadian dollar. If the decline were expected to be transitory or if there were a great deal of uncertainty about its

persistence, producers would hesitate to expand their productive capacity.

All in all, the conclusion from this brief review of the third stage of the transmission mechanism is that there will typically be a significant response of spending to interest rate and exchange rate movements but that neither the extent nor the timing can be pinned down with precision. Expectations of future developments and the uncertainty surrounding the likely outcomes can have an important effect on how much and how quickly various entities change their expenditure patterns in response to changes in interest rates and in the Canadian dollar. In other words, the lags are long and subject to uncertainty.

**(d) Fourth stage: From aggregate demand to inflation**

The final link in the long chain is from movements in aggregate demand to the rate of inflation. In our view, underlying inflation is affected primarily by the level of slack in the economy and by the expected rate of inflation.

The driving force behind inflation over time is, thus, the cumulative effect of the pressure of aggregate demand on capacity. Moreover, in the years of high inflation, there was a particularly close link between the prevailing rate of inflation and expected inflation. Thus, a period of excess aggregate demand resulted in an increase in the rate of inflation, which, in turn, fed quickly into expected inflation, putting further upward pressure on inflation in a process that eased only when the excess demand was eliminated.

However, to go back to my general theme, the world is a more uncertain and unpredictable place than this brief description of the linkages from interest rates and the exchange rate to aggregate demand and inflation would imply. Both aggregate demand and prices are in practice frequently subject to shocks. Demand shocks can be external or domestic in origin. The latter includes fiscal actions as well as sudden shifts in desired investment by companies or purchases of consumer durables by households. There are also supply shocks, which typically affect prices directly. These are events such as those leading to the increases in oil prices in the 1970s, natural disasters that affect the supply and prices of agricultural products, and changes in technology and shifts in world trade which can affect the availability of goods and their prices.

Such shocks will make demand and prices more uncertain, and they can also make it very difficult to estimate how much pressure aggregate demand is putting on the rate of inflation. Supply shocks can shift potential output in the economy. Potential output is in any case very difficult to pin down

empirically and one must therefore be cognizant of the uncertainties surrounding any measure of slack.

**(e) The role of money and of credit**

You may have noted that as yet I have not discussed the roles of the money holdings of the general public and of credit in the monetary transmission process. This is not to say that we think that such monetary and credit aggregates are unimportant; in fact, we follow their movements very closely. But we use them primarily as indicators of future developments, rather than as links in the long causal chain from Bank of Canada actions to the rate of inflation.

Our research indicates that the growth of real M1 (i.e. the narrow monetary aggregate, M1, deflated by prices) provides useful information on future real output growth, while the growth of the broader monetary aggregates is a good leading indicator of the rate of inflation. The monetary aggregates thus provide a useful cross-check on other projections of output and inflation, and rapid growth in these aggregates that is inconsistent with the economic situation and cannot be accounted for by specific financial developments can be an early warning signal of the need to tighten monetary conditions.

Credit has, until recently, been ignored in most of the mainstream literature about the transmission mechanism. Implicitly, economists have treated it as determined by the demand for funds by borrowers and passively accommodated by financial institutions. A more recent literature has focused attention on the granting of credit, both as a microeconomic phenomenon and as an element in the transmission mechanism. And it has been given a more practical bent in the United States by the debate over the "credit crunch" of the early 1990s.

The aspect of the analysis of credit markets that is of particular interest to the Bank is whether its monetary policy actions lead to a systematic adjustment by financial institutions of their non-price terms and conditions of lending. If there were such adjustments that were not correlated with interest rate movements, the Bank would need to track them closely in assessing the effects on the economy of its policy actions. It is also important to determine whether there are autonomous credit market shocks, such as "credit crunches", that have broad macroeconomic implications and that need a response by the monetary authority.

Although considerable research has recently been done on these issues in the United States, the credit literature in Canada is still in its infancy. A number of papers on the subject were presented at a conference held at the Bank of Canada this past November. While not definitive, these papers did throw

some light on several of the issues raised by the credit approach. Most notably, it would appear that credit is not particularly helpful as a factor explaining the economy-wide growth of nominal spending nor particularly useful as an indicator of changes in the trend of such spending.

## **PART 2**

### **Initiatives Taken By The Bank To Reduce Uncertainty**

The principal theme of the first part of this lecture has been that because of uncertainty of various kinds, the impact on the economy of monetary policy actions is not closely predictable. In this part, I want to discuss the initiatives that we at the Bank have taken to reduce one kind of uncertainty -- the uncertainty that may exist about the Bank's behaviour -- with the objective of improving the operation of financial markets and of the economy more generally. I will discuss five initiatives.

#### **1. Establishing price stability as the goal of monetary policy**

The Bank has discussed the benefits of price stability on many occasions, most fully in the Annual Report for 1990. I do not propose to repeat that discussion here, but I want to underline that one of the benefits of price stability is the increased certainty it brings to the economy. The inflationary process is always an uncertain one and it adds immeasurably to the difficulties facing savers and investors, borrowers and lenders, and employers and employees when they are making economic decisions that involve judgements about the future.

Some people object to this focus on the control of inflation as the final objective of monetary policy because they worry that it might encourage central banks to ignore the level of economic activity and employment. There is no question that monetary policy has a short-term influence on demand, production and employment, but surely the notion of a long-run inverse trade-off between inflation and unemployment has been widely discredited. In the long run the impact of monetary policy is on inflation, and the central bank must set its objective in terms of the variable it can expect to influence.

I hasten to add that the goal of price stability is not at odds with the achievement of economic growth and expanding employment. Because price stability is helpful in making investment decisions that will improve productivity, it is good for growth. Moreover, following a steady path aimed at maintaining price stability means that monetary policy will

operate as a sort of automatic stabilizer for the economy. Excessive demand pressures that could lead to inflation are dampened by such a monetary policy while weak demand that could result in price deflation leads to more stimulative monetary conditions. By contrast, a monetary policy that accommodates inflation will lead to cycles of boom and inflationary excesses, followed by recessions made more difficult by the need to correct inflation-related distortions. Price stability will thus contribute to overall economic stability.<sup>4</sup>

## 2. Inflation-control targets

When a country is suffering from inflation, the mere announcement or reiteration by the central bank of the goal of price stability will not suddenly persuade the public to shift their expectations and begin planning on the basis of price stability. The notion of price stability is somewhat vague and may leave questions in the minds of participants in the economic process. What does price stability mean in terms of the actual change in the price index? Over what time period will it be achieved?

This is the kind of situation we faced in Canada after our experience over the 1970s and 1980s, and it indicated to us that the general commitment by the Bank to move gradually to price stability still left too much public uncertainty about the objective of monetary policy. In other words, after two decades of inflation the credibility of such a general commitment by the Bank of Canada to price stability was not sufficient by itself to contribute to bringing about the changes in behaviour and expectations which would facilitate a decline in inflation.

In response, the Bank of Canada and the government of Canada introduced in February 1991 a set of explicit targets to help make the path to price stability more concrete. The inflation-reduction targets aimed at bringing the rate of inflation down to 2 per cent (or a band of 1 to 3 per cent) by the end of 1995, to be followed by a further downward movement to price stability. In December 1993, a further set of inflation-control targets was jointly announced by the Bank and the government, which extended the band of 1 to 3 per cent inflation through 1998. This is to be followed by a movement to price stability, to be defined operationally by 1998.

By making its inflation-control objectives more explicit, the Bank hoped not only to influence inflation

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<sup>4</sup> A number of issues related to the behaviour of the economy under price stability were discussed at a conference on price stability held at the Bank of Canada in October 1993.

expectations but also to reduce uncertainty in the economy and in financial markets. Moreover, with credible targets, inflation expectations, and therefore inflation, are less likely to react to the temporary demand and supply shocks described earlier. The targets also act as a form of discipline on the Bank by making it more accountable for its actions. And that in turn makes monetary policy actions more predictable and less a source of uncertainty for others as they make economic decisions.

How have the targets worked out in practice? As you know, inflation has declined significantly over the years that the targets have been in place and, at about 2 per cent at present, is near the centre of the target band. However, I would not argue that the targets were single-handedly responsible for that decline. Other international and domestic factors have also been at work since the targets were first announced. Nonetheless, my assessment is that the targets have made a useful contribution to the achievement and maintenance of a low rate of inflation in Canada over the last four years. For example, it is likely that the prediction of very low inflation now being used by many Canadian firms in their medium-term planning is to an important extent attributable to the commitment of the Bank and the government to the targets.

### **3. The use of intermediate targets and indicators**

The long lags and uncertainties in the transmission process leave everyone, including central banks, in a rather unsure and unsettled position while awaiting the effects of monetary policy actions on inflation. As a result, central banks have made use of various intermediate indicators and have at times set targets in terms of those indicators in order to assist in the conduct of policy and to provide more information and more comfort to observers that monetary policy was on track.

Following the abrupt rise in inflation and its persistence in most countries in the 1970s, central banks shifted their focus from operational targets for short-term interest rates to intermediate targets for quantitative variables expressed in nominal terms. Thus, many central banks established intermediate targets in terms of monetary aggregates. These were expected to provide an anchor for monetary policy and to avoid the type of policy which inadvertently accommodated the accelerating inflation of the late 1960s and early 1970s.

The Bank of Canada adopted such a target, expressed in terms of the narrow aggregate, M1, during the period between 1975 and 1982. As it turned out, this target, although useful initially, did not enable the Bank to hold down the rate of inflation when demand pressures built up in the late 1970s. Part of the problem was that M1 was much more responsive to the Bank's

actions on very short-term interest rates than were aggregate demand and inflation.<sup>5</sup> Moreover, extensive financial innovation made interpretation of the aggregate increasingly difficult,<sup>6</sup> and it was finally dropped as a target in 1982.

While the Bank has examined other aggregates to use as possible intermediate targets in the period since 1982, none of them turned out to be sufficiently reliable. As a result, for some years we again had to rely upon operational targets for short-term interest rates.

On the face of it such a policy approach might seem to have all the same problems and uncertainties encountered in the late 1960s and early 1970s when operational targets for interest rates did not provide an anchor against accelerating inflation. What was different this time was a much closer focus on the objective of price stability and, more recently, the adoption of inflation-control targets.

A further important evolution in recent years has been the use by the Bank of monetary conditions rather than short-term interest rates as its operational guide to policy. When we use the term monetary conditions we mean the combination of short-term interest rate and exchange rate movements. And we aim at a path for monetary conditions which would bring about a path for aggregate demand and prices consistent with the control of inflation.

The Bank of Canada adopted monetary conditions as an operational guide because we recognized that, as described earlier, under a flexible exchange rate regime monetary policy operates through both interest rates and the exchange rate. Hence, when the central bank is acting to ease or tighten its policy stance (in response to new information) it must take into account developments in both channels through which its actions influence aggregate demand. Similarly, when there is an exogenous shift in the exchange rate, for example, a depreciation resulting from political concerns, the monetary conditions concept would clearly indicate the expansionary nature of the shock and the need to tighten interest rates to offset it.

The Bank constructs an index of monetary conditions (the MCI) by weighting short-term interest rates and the

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<sup>5</sup> Gordon Thiessen, "The Canadian Experience with Monetary Targeting," in Paul Meek (ed.) Central Bank Views on Monetary Targeting (New York: Federal Reserve Bank of New York, 1983).

<sup>6</sup> Charles Freedman, "Financial Innovation in Canada: Causes and Consequences," American Economic Review 73 (May 1983).

effective exchange rate by the relative size of their estimated effects on aggregate demand. Hence, a movement in the MCI is a short-hand measure of the effect on aggregate demand of the changes in both channels through which monetary actions have their principal effect.

Now, I want to be careful not to oversell the MCI. It is not used in a mechanical way to set policy. For example, we do not respond to every exchange rate wiggle by trying to adjust interest rates. But if some development caused the exchange rate to move to a new trading range and it appeared to be ready to remain there for some time (and if there were no other shocks affecting aggregate demand), the Bank would try to offset its effect on aggregate demand by encouraging an offsetting movement in interest rates.

It is also worthy of note that the Bank has no direct control of the "split" of its actions between interest rates and the exchange rate. At times, because of the uncertainties in financial markets described earlier, an easing in the stance of monetary policy will result in a small decline in interest rates and a sizable depreciation of the Canadian dollar. At other times, the same action might lead to a larger decline in interest rates and little depreciation of the dollar. In this context, let me underline that the Bank does not control and does not attempt to control the level of the exchange rate. It is the market's interpretation of what the central bank is trying to do, in the context of the economic environment, that determines what happens to the exchange rate in response to central bank actions.

While we use monetary conditions as an operational guide, it is not possible to set a target path for the MCI which remains unchanged over time. Rather, monetary conditions must constantly be re-evaluated and adjusted to respond to shocks of one sort or another to ensure that the economy remains on track to the inflation-control objective.

#### **4. Target ranges for the overnight rate**

With the use of monetary conditions, the linkage goes from our actions in adjusting settlement balances to changes in the overnight rate and then to the desired change in the index of monetary conditions. As I noted earlier, this is the stage in the transmission mechanism that has tended to receive the least study, and our actions and intentions have not always been clearly understood in the financial sector.

To provide more transparency to its actions the Bank decided in the middle of last year to change its operating tactics in order to be more explicit about the range into which it wanted the one-day rate of interest to fall. Since that time,



there has been a target range of 50 basis points for the one-day rate. The Bank has intervened actively through its operations in the money market to hold the one-day rate within the range and to make the limits of the range clear to the market. The target range is changed when economic or market conditions require it, but the use of such a target implies that changes would not typically be frequent. Nonetheless, there may be occasions, such as in January of this year, when market conditions necessitate a series of movements in the target range in a very short period of time. When the Bank decides to change the target range, the market learns of the change very quickly from the rates at which the Bank intervenes in the overnight market. By making the target range for the overnight rate explicit the Bank hopes to reduce the uncertainty about its intentions that sometimes has interfered with the transmission of monetary policy actions to interest rates further out along the yield curve and to the exchange rate.

#### **5. More information on the Bank's operations**

The final initiative of the Bank of Canada to reduce uncertainty about monetary policy that I want to mention is the provision of more public information on our monetary policy operations and on our interpretation of economic and financial developments. Many of you may already be familiar with the published excerpts of the report on monetary policy provided to the Directors of the Bank at the regular meetings of the Board. These excerpts have been released since 1987. We have also included a discussion of monetary policy in each issue of the Bank's Quarterly Review since early 1993.

We are about to supplement that information with a more detailed account of inflation developments and our conduct of monetary policy in a semi-annual Monetary Policy Report. This Report will provide an account of our stewardship of monetary policy and will be useful for those who want to know more about monetary policy for their own decision-making. The first such report will be available in early May of this year.

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#### **Concluding Remarks**

There are three important conclusions for monetary policy that I draw from this discussion of uncertainty and the monetary policy transmission process.

The first has to do with the role that monetary policy can play in the economy. The widespread existence of uncertainty

makes it evident that monetary policy cannot be conducted in some sort of mechanistic way. But neither should one go to the other extreme and conclude that it is almost impossible to carry out a coherent policy in the face of all the uncertainty.

Because the effects of monetary policy are spread over time in a way that is not readily predictable, the conduct of monetary policy must have a stable, medium-term focus. That rules out trying to fine-tune the economy in such a way as to avoid cyclical swings in production and employment. In contrast, the goal of maintaining price stability over time is well suited to the monetary policy instrument. To put it another way, price stability is the contribution to the effective operation of the economy that monetary policy is capable of delivering.

My second conclusion has to do with the importance of financial markets and expectations about the future in those markets to the transmission of monetary policy. The description of the transmission process in this lecture does not correspond to the widely held view that the Bank of Canada controls the spectrum of interest rates in Canada. That view is a holdover from the days when financial markets here and elsewhere were subject to controls and restriction of various sorts, and the pressures in markets tended to show up in limitations on the availability of funds rather than in interest rates. These days, markets are more open, more international and, as a result, much more efficient. But it does mean that interest rates are more variable, and rates in Canada will move around in response to international events or domestic developments that alter market expectations.

However, this does not imply that the market controls interest rates and the Bank has no capacity to pursue a monetary policy geared to Canadian requirements. I would summarize my views as follows. The Bank has a direct effect on very short-term rates and through them an influence on the exchange rate. Our main effect on longer-term rates occurs indirectly through our influence on market expectations regarding inflation. These influences are sufficient for the Bank to carry out an independent monetary policy to control inflation. However, the clearer our commitment is to inflation control and price stability, the more effective our monetary policy will be.

That brings me to my third conclusion. In the uncertain world that I described in this lecture, subject to shocks and with financial markets more open and international than they used to be, it is important not only that the ultimate objective of monetary policy be clear but also that the implementation of policy be as transparent as possible. And that is why the initiatives by the Bank to provide more information that I have described involve every stage of the transmission

process, from our operations to influence the one-day interest rate to our ultimate effect on inflation.

Information is of course useful only if it is credible. With respect to our commitment to the achievement and maintenance of price stability, credibility is something that must be earned through performance over time. But if you look at economic history, there can be no question that once a monetary policy geared to price stability gains credibility, the objective is easier to maintain and becomes a powerful force for sustained good economic performance.