Canada's Money Targeting Experiment

by Paul Gomme

Like many countries, Canada experienced historically high inflation rates in the 1970s. At the start of 1975, inflation topped 10 percent. In response, Bank of Canada Governor Gerald Bouey announced in November of that year the policy which became known as *gradualism*: The Bank would target the growth rate of the narrowly defined monetary aggregate M1, made up of currency plus demand deposits at chartered banks. Over time, the Bank would set gradually declining M1 growth rates (for these target ranges and actual M1, see figure 1). The idea was that as the Bank met its early M1 growth targets, it would win credibility for its later targets and would be able to break both high inflation and high inflation expectations without increasing unemployment.

But gradualism was a failure. Although inflation fell in 1975 and 1976,[1] it trended upward again from 1977 on; by the early 1980s, it had passed 10 percent once more.[2] In November 1982, the Bank formally abandoned gradualism, although it was clear to many observers that the policy had effectively been dropped by mid-1981.[3]

This article considers why Canada tried using money targets to curb inflation, what went wrong with that effort, and what lessons policymakers can learn from it. The argument, in brief, is that the relationship between the Bank's intermediate target (money growth) and its ultimate target (inflation) broke down. In February 1991, the Bank implemented a new solution—targeting inflation directly—a policy that has been markedly more successful than gradualism. Since 1991, inflation in Canada has averaged around 2 percent.

■ In Theory ...

The quantity theory of money states that

$$MV = PY,$$

where M is the stock of money, V is velocity, P is the price level, and Y is real income. Thus, the right side of the equation is nominal, or current dollar, income. Velocity is the number of times a dollar is used to provide a dollar of final output. This equation can be thought of as *defining* velocity, since both nominal income and the stock of money are easily measured.

Two important factors affect velocity. First, higher interest rates encourage individuals to conserve on money balances, thus raising velocity. In other words, velocity reflects the interest sensitivity of money demand. Second, velocity can be influenced by financial innovations. Prior to automated teller machines (ATMs), the inconvenience of bank visits made individuals more likely to obtain large amounts of cash each time they went to the bank, and so to hold high average money balances. Following the introduction of ATMs, we would expect people to make more frequent, but smaller, cash withdrawals, since using a machine is more convenient than visiting the bank. As a result, individuals would hold lower average cash balances. Financial innovation turns out to be an important part of the story of Canada's gradualism years.

An implication of the quantity theory of money is that

> Money Growth + Velocity Growth =
> Nominal Income Growth,

or, stated another way,

> Money Growth + Velocity Growth =
> Inflation + Real Output Growth.

Historical relationships between money growth and inflation suggest that controlling money growth should tame inflation. In the mid-1970s, the Bank of Canada targeted M1 growth, yet inflation continued. What went wrong?

If changes in velocity are negligible, then (over sufficiently long periods), nominal income growth equals the growth rate of money. If, in addition, long-run real output growth is independent of monetary policy, then money growth translates directly into inflation. For example, if real output expands at a rate of 2½ percent, then 10 percent money growth will lead to 7½ percent inflation (again, over a long enough horizon). This is the basis of Milton Friedman's often-quoted assertion that "inflation is always and everywhere a monetary phenomenon."

From this perspective, the Bank was clearly responsible for Canada's predicament in 1975: Excessive money growth had led to unacceptably high inflation. From 1970 to 1975, M1 grew at a 14.5 percent annual rate, while real output grew 5.5 percent; the result was an average yearly inflation rate of 7.5 percent.

If excessive money growth was the cause of high inflation in the early 1970s, the cure was obvious: Slow money's growth rate. With gradualism, Governor Bouey was in effect declaring a policy of slowly reducing the inflation rate: The Bank would publish growth rate bands—or target ranges—for M1,[4] and the average growth rate target would fall over time.[5] The Bank would gain credibility by meeting its early targets, so future

FIGURE 1 ACTUAL AND TARGETED M1 GROWTH[a]

Billions of Canadian dollars
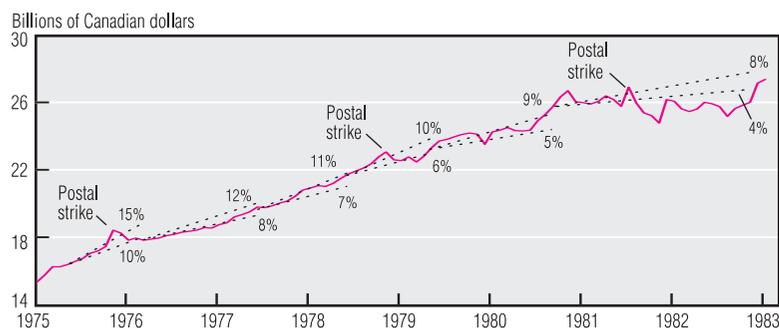
a. Data are seasonally adjusted.
SOURCE: Bank of Canada.

announcements would moderate inflation expectations. In this way, the Bank hoped to avoid large real output losses.

As an alternative, the Bank could have gone cold turkey, reducing money growth to its lower long-run value immediately instead of over several years. Using my earlier example to achieve zero inflation, the Bank would have reduced money growth to 2½ percent to match long-run real output growth. The Bank rejected the cold turkey approach (at least in the 1970s), fearing that entrenched high inflation expectations would adjust sluggishly to such a policy, causing large losses in real output and correspondingly high unemployment rates.[6]

Notice that Canada used monetary targeting as a *means* to an *end:* low inflation. In other words, money growth rates were an *intermediate* target of monetary policy and inflation was the *ultimate* target.

■ **... But in Practice**
During the late 1970s, Canada's inflation rate remained high. In fact, by the start of 1980, it had regained its 1975 level and was still rising. The experiment ended with Governor Bouey's official renunciation of gradualism in 1982.[7] It was only when the Bank effectively took the cold turkey approach, dramatically reducing money growth, that inflation finally fell.

The Bank's biggest problem was a series of downward shifts in M1 demand, starting in 1976 and continuing throughout the gradualism period.[8] By one estimate, these shifts amounted to 28 percent of M1 by 1982,[9] implying that monetary policy was much looser than the Bank had intended. One can think of these shifts as increases in velocity. According

to the quantity theory of money, a 1 percent increase in velocity has the same effect on the inflation rate as a 1 percent increase in money growth.

One set of shifts in M1 demand affected corporations.[10] First, banks offered them preferable loan rates, provided that part of the loan was held in a demand deposit (known as a compensating balance). Since the demand deposit paid no interest, this practice increased the effective loan rate. In the mid-1970s, banks started eliminating compensating balances and raised corporate loan rates. As a result, the level of demand deposits fell.

Second, banks started unbundling their products. For example, they had previously offered a package of free services to corporate clients who maintained a minimum level of demand deposits. When banks began charging for these services, clients reduced demand deposits further.

Third, banks introduced corporate cash-management strategies. For example, at the end of a day, they would place a firm's demand deposits in an overnight account that earned interest. This decreased reported M1, since it is end-of-day demand deposits that banks report to the Bank of Canada.

Two important innovations affected personal deposits: the introduction of daily interest savings accounts (DISAs) in 1979 and daily interest checking accounts (DICAs) in 1981. Before DISAs, savings account interest was based on a minimum monthly balance. Thus, if a customer had $1,000 in a savings account for 30 days of a month and $10 in it on the thirty-first day, that month's interest would be paid only on the $10. This practice gave depositors

little incentive to move funds between savings accounts (outside M1) and checking accounts (inside M1). By paying interest on daily balances, DISAs encouraged people to make such transfers, thus reducing average M1 balances. By allowing checking, DICAs obviated the need to move funds in and out of M1 deposits, although technically, DICAs were notice deposits and so were excluded from M1.[11]

The net result of these institutional changes was higher velocity. This meant that while M1 growth moderated under gradualism, inflation remained high. Some analysts argued that the continued high growth of broader monetary aggregates like M2 and M3 was a truer reflection of monetary policy during this period (see figure 2).[12] Evidently, the Bank of Canada was running a loose monetary policy at a time when it believed policy was fairly tight.

■ **Why M1?**
Perhaps it was merely bad luck that the financial innovations just described coincided with the Bank's gradualism policy. Many of these innovations would have occurred in any case. For example, the corporate cash-management strategies were adopted from U.S. practices. DISAs and DICAs were initially offered by credit unions and later by trust companies; the chartered banks surely had to follow their competitors' lead.

A more pessimistic view is that chartered banks changed their behavior because the Bank's new policy gave them an incentive to reduce M1 deposits.[13] If M1 growth was above target, the Bank would raise interest rates. The chartered banks, in turn, would have to increase loan rates and so curtail loan activity. Although this incentive to reduce M1 deposits affected the banking system as a whole rather than individual institutions, the Canadian system is highly concentrated, dominated by six large chartered banks.[14] It is not difficult to imagine that they acted in concert.

The Bank chose M1 as its target for operational reasons: It implemented its policy by first setting the Bank rate that would determine the growth rate of money, followed by nominal income growth.[15] This meant that the Bank needed a highly interest-sensitive monetary aggregate (that is, one for which small interest rate changes would produce large changes in money demand).

FIGURE 2   INFLATION AND MONEY GROWTH RATES
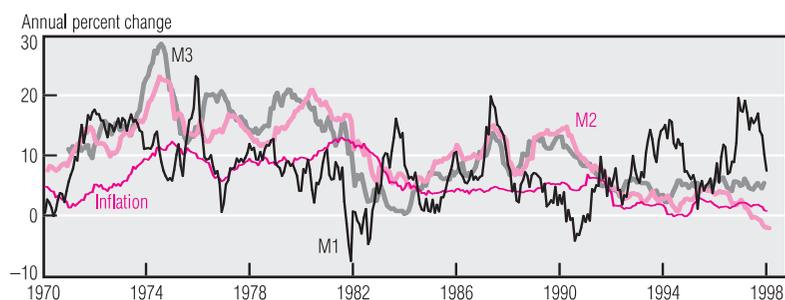
SOURCE: Statistics Canada.

M1 was such an aggregate. Most of its components paid either zero or very low interest rates, so any increase in rates would elicit a large response as depositors shifted funds out of demand deposits and into interest-bearing deposits, which are excluded from M1.[16]

Before, during, and after gradualism, some economists advocated targeting a broader monetary aggregate like M2,[17] whose actual behavior suggests it would have been a sound choice. M2 grew strongly through the late 1970s, as inflation remained high, then dropped sharply in the early 1980s, before inflation fell (see figure 2). From the Bank's perspective, M2 would have been a poor choice because of its low interest sensitivity. It is composed chiefly of interest-bearing deposits, and most of the substitution of M1 deposits that resulted from a change in interest rates was within the M2 aggregate. Thus, large interest-rate movements would have been needed to bring M2 growth into its target range. Alternatively, the Bank could have set a level for the reserve base that would have allowed a particular M2 growth rate.[18] This brings the Bank's operating procedures into question: There was no particular reason why it should use interest rates rather than reserves to implement policy.

Another possibility would have been for the Bank simply to target reserves, letting the interest rate adjust freely to clear the money market. The virtue of this policy would have been that reserves are clearly controllable because they are the Bank's liability.

■ Lessons

Targets certainly make it easier for central bankers to explain their policy decisions to the public. For example, the Bank raised interest rates when money growth was above target, and lowered

them when money dropped below target. However, Canada's experience illustrates some of the drawbacks of monetary targets. The basic problem was that the relationship between the intermediate target (M1 growth) and the final target (inflation) broke down during the M1 targeting period.

An optimistic assessment of the Canadian experiment would be that the basic policy of controlling money growth was sound, but its implementation was flawed. The Bank chose M1 for its high interest sensitivity because it implemented policy through interest rates. Later events showed that M2, which others had advocated as a target, reflected actual inflation much better than did M1.[19]

A pessimistic conclusion is that the relationship between an intermediate target and the ultimate target is likely to break down just when the monetary authority is trying to use that relationship. This interpretation of events suggests that the use of any intermediate target is doomed to failure. The Bank's choice of M1 as an intermediate target was unimportant. If it had chosen M2, M3, or reserves, monetary targeting would have failed just the same.

An even more pessimistic view, known as Goodhart's Law,[20] holds that *any* statistical relationship is likely to break down when policymakers try to exploit it. For example, the information content of any aggregate—or, indeed, of any leading indicator—is likely to vanish if the central bank tries to use this information, whether it formally announces that aggregate as an intermediate target or not.

One way to bypass Goodhart's Law is to dispense with intermediate targets, focusing directly on the final target instead. This was the solution eventually adopted in Canada when, in February 1991, the Bank and the government of Canada announced inflation targets. Thus far, this policy has met with better success than gradualism in producing low inflation rates.

■ Footnotes

1. In October 1975, the Canadian government announced a policy of wage and price controls that lasted three years. It is difficult to separate its effects from those of gradualism.

2. Of course, gradualism may have kept inflation lower than it would have been otherwise.

3. Two important external events placed downward pressure on the exchange rate in 1981. First, the National Energy Program encouraged the takeover of foreign-owned companies in an effort to Canadianize the oil and gas industry. Second, tight U.S. monetary policy opened large interest-rate differentials between Canada and the United States (see the Bank of Canada's 1981 annual report, pp. 8–9).

4. The M1 target ranges did not imply that Canadian monetary policy was on autopilot. For example, the Bank let M1 exceed its upper target range during postal strikes, which increased the demand for M1 balances (see figure 1).

5. The plan to wind down inflation through gradually lower money growth was evident in the Bank of Canada's 1975 annual report.

6. One recent study identifies two reasons why inflation expectations may be important—long-term labor contracts and imperfect information about prices throughout the economy. See Owen F. Humpage, "Monetary Policy and Real Economic Growth," Federal Reserve Bank of Cleveland, *Economic Commentary,* December 1996. See also the Bank of Canada's 1975 annual report.

7. One analyst questions whether the commitment to gradualism faltered as early as 1978, when the Bank started placing more emphasis on exchange rate movements. See Thomas J. Courchene, *No Place to Stand? Abandoning Monetary Targets: An Evaluation,* Toronto: C.D. Howe Institute, 1983, pp. 20–21. See also the Bank of Canada's 1978 annual report.

8. Governor Bouey was clearly aware of the possibility of shifts in M1 demand, which he discusses in the Bank of Canada's 1975 annual report.

9. See Stephen S. Poloz, "Unstable Velocity and the Monetary Approach to Exchange Rate Determination," paper prepared for the Economic Research Institute, Economic Planning Agency, Tokyo, December 1984.

10. The discussion of shifts in M1 demand summarizes the description in Courchene (footnote 7), pp. 42–8.

11. Both DISAs and DICAs were initially offered by credit unions (*caisses populaires* in Quebec), followed by trust and mortgage loan companies. Since these institutions are not chartered banks, their deposits are not included in the monetary aggregates.

12. See the following studies, published by the C.D. Howe Institute, Montreal: Thomas J. Courchene: *Money, Inflation, and the Bank of Canada: An Analysis of Canadian Monetary Policy from 1970 to Early 1975* (1976); *The Strategy of Gradualism: An Analysis for Bank of Canada Policy from Mid-1975 to Mid-1977* (1977); *No Place to Stand?* (see footnote 7); and Peter Howitt: *Monetary Policy in Transition: A Study of Bank of Canada Policy,* 1982–85 (1986).

13. This behavior change is consistent with the "Lucas critique," which states that economic agents will alter their behavior in response to changes in their environment, including shifts in government policy.

14. The Bank of Canada reports an M2+ monetary aggregate that, in addition to M2, includes deposits at trust and mortgage loan companies, credit unions, and *caisses popu-laires,* individual annuities at life insurance companies, personal deposits at government savings institutions, and money market mutual funds. In 1975, M2 was just over 70 percent of M2+, which gives some idea of the size of chartered banks relative to other financial institutions in Canada.

15. If money demand is stable, setting the interest rate is equivalent to setting the money supply. A particular setting for the money supply will imply an interest rate; a judiciously chosen interest rate will, via money demand, imply a particular value for the level of money balances.

16. This money demand explanation is consistent with the quantity theory of money if we recognize that velocity is affected by the interest rate. Broadly speaking, the Bank set an interest rate that, via money demand, determined the level of money balances. Interest rate adjustments allowed the Bank to manipulate the level of M1 to ensure that it would stay within its target ranges.

17. See Courchene (footnote 12).

18. Such a policy would have been complicated by the fact that M1 deposits were subject to a 12 percent required reserve ratio, but other deposits to only 4 percent. A uniform requirement would have greatly simplified such a policy. For details, see Courchene (footnote 12).

19. See Courchene (footnote 12).

20. C.A.E. Goodhart is a member of the Monetary Policy Committee of the Bank of England and a professor at the London School of Economics and Political Science. He explains his law in *Monetary Theory and Practice: The UK Experience,* London: Macmillan, 1984, p. 96.

Paul Gomme is an economist at the Federal Reserve Bank of Cleveland.

The views stated herein are those of the author and not necessarily those of the Federal Reserve Bank of Cleveland or of the Board of Governors of the Federal Reserve System.