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**The Eric Hanson Memorial Lecture**  
**Draft remarks by David Dodge**  
**at the Economics Department**  
**University of Alberta**  
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## **Monetary Policy Forty Years On**

I would like to begin by thanking the organizers for inviting me to give the 2008 Eric Hanson Memorial Lecture. This year has considerable significance both for the University of Alberta and for me. It marks the 100th anniversary of the university, as well as the end of my seven-year term as Governor of the Bank of Canada. For monetary economists and the Bank of Canada, of course, this year and this event have an added importance. It is the 20th anniversary of Governor John Crow's Hanson lecture, in which he discussed in considerable detail the "The Work of Monetary Policy." Although this lecture's significance might not have been fully appreciated at the time, the symposium that the Economics Department of the University of Alberta has organized is testament to its importance. Governor Crow touched on many monetary policy topics that were the subject of active debate in 1988 – several of which continue to be debated today. However, in retrospect, the two most noteworthy elements of his lecture were (1) his clear commitment to the goal of price stability, and (2) his clear intention to actively pursue it. While the identification of price stability as the Bank's primary objective was not necessarily new, his strong affirmation of this goal's importance was nevertheless noteworthy, and helped lay the groundwork for much of the monetary policy success that followed in later years.

My lecture will touch on some of the same topics that John Crow discussed, but from a somewhat broader historical perspective. The title for my presentation is "Monetary Policy Forty Years On." More specifically, I will talk about how dramatically the understanding and practice of monetary policy has changed since I was a university student at Queen's and Princeton in the 1960s. This is not intended as a slight or criticism of what was known in the 1960s (and especially not a criticism of the manner in which it was taught to me). Indeed, in reviewing older documents and texts, I am often struck by how much was understood by earlier economists, how well their thoughts were expressed, and how much unnecessary re-learning we occasionally do of things that should never have been forgotten. Nevertheless, despite this important base of knowledge, remarkable progress has been made over the last 40 years in the area of monetary policy, as well as in many other areas of economics. Economic history, in other words, has not been a process of merely recycling and re-learning past ideas, but rather a steady progression, punctuated, on occasion, by a few unfortunate digressions and detours.

When I was a student, Keynesian economics was at its peak, but had started to be challenged by Milton Friedman and the New Quantity Theory of Money. Since then we

have witnessed the rational expectations revolution and real business cycle theory, the emergence of Neo-Classical economists and, most recently, the New-Keynesians. My presentation tonight begins with a review of the major goals that monetary policy, and macroeconomic stabilization policy more generally, were expected to pursue in the 1960s, and how these have shifted over time. I then examine changing views on the effectiveness of monetary policy and how it should be implemented. This is followed by a discussion of increased policy transparency, the move to inflation targeting, and the greater emphasis that is now being given to communication and accountability. The speech ends with some thoughts on a few old ideas that may be reappearing in a new guise, and a brief conclusion.<sup>1</sup> In this regard, I will make specific reference to the financial turbulence that has been observed in recent months, the challenges that it has posed for policy-makers, and the new questions that it has raised concerning the appropriate formulation and implementation of monetary policy. Academic advances and real world events have always played a critical role in shaping policy design, and may be changing accepted wisdom even as we speak.

### *I. What Should Monetary Policy Try to Do?*

The Preamble to the Bank of Canada Act, drafted in 1934, states that the Bank should

“...regulate credit and currency in the best interests of the economic life of the nation, [] control and protect the external value of the national monetary unit and [] mitigate by its influence fluctuations in the general level of production, trade, prices and employment ...”<sup>2</sup>

Fortunately, although this legislation pre-dated Tinbergen’s seminal work on policy tools and targets, the drafters realized that not all of the goals that they had identified would be mutually compatible nor attainable with a single policy instrument. They therefore added the words

“... so far as may be possible within the scope of monetary action ...”<sup>3</sup>

Nevertheless, this is a rather long and ambitious list. One objective, however, clearly assumed primary importance in policy circles. Governments in the immediate post-war period were determined to avoid any re-occurrence of the massive unemployment experienced in the Great Depression, and were also committed to creating employment for returning veterans. These sentiments were perhaps expressed most forcefully in the White Paper on Employment and Incomes, issued by the Government of Canada in 1945.

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<sup>1</sup> I would also like to draw attention to an excellent lecture that Gordon Thiessen delivered in 1999, which covered a number of the same issues. “Then and Now: The Change in Views on the Role of Monetary Policy since the Porter Commission,” The Tony Hampson Memorial Lecture, delivered at the C. D. Howe Institute, Toronto, Ontario, 11 March 1999.

<sup>2</sup> *Bank of Canada Act*, r.c., C.B.-2, S.1. Preamble.

<sup>3</sup> *Ibid.*

“... the Government has stated unequivocally its adoption of a high and stable level of employment and income, and thereby higher standards of living, as a major aim of Government policy. It has been made clear that, if it is to be achieved, the endeavour to achieve it must pervade all government economic policy ... transcending in importance all sectional and group interests.”<sup>4</sup>

This policy guidance presumably included monetary policy as well as other macro-policy levers. Through much of the 1950s, it looked like it might be possible to achieve the ambitious goals laid out in the White Paper without any serious long-run effects on other macro goals such as price stability. Strong output and employment growth were recorded during this period, along with sharply rising real wages and incomes, without putting undue pressure on prices or interest rates, owing to the exceptional growth in productivity.

Little had changed by the mid-1960s, in spite of some temporary bouts of higher inflation in the late 1940s and in the period immediately following the Korean War. Growth and employment were still the primary objectives of macro policy, while price stability occupied an evident secondary position. When the Economic Council of Canada was created in 1964, the five main macroeconomic goals for Canada, as specified in the Council’s terms of reference, were

- “ - full employment
- a high rate of economic growth
- reasonable stability in prices
- a viable balance of payments, and
- an equitable distribution of rising incomes”<sup>5</sup>

Although it is difficult to quibble with these objectives, their order and the wording of the third objective (concerning “reasonable price stability”) are both significant, since this was the height of Keynesian economics -- a time when it probably exerted its greatest influence over policy-making in Canada and in most other advanced industrial countries.<sup>6</sup>

The downward sloping Phillips curve, and the notion that there could be a permanent trade-off between growth and inflation, had by then gained widespread acceptance in academia, and in many parts of the policy-making community.<sup>7</sup> In addition, pressure to find jobs for returning veterans had been replaced by worries about the wave of baby-boomers who were now entering the workforce and needed to find employment. While many central bankers, including James Coyne, voiced concern about price

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<sup>4</sup> Government of Canada, “Employment and Income with Special Reference to the Initial Period of Reconstruction,” (Ottawa: King’s Printer, 1945).

<sup>5</sup> Economic Council of Canada, “Economic Goals for Canada to 1970,” First Annual Review, December 1964, p. 1.

<sup>6</sup> Of course, what we now regard as “Keynesian economics” is based on one part of Keynes’ contribution to economic thinking, drawn from his “General Theory of Employment, Interest and Money” and popularized by Alvin Hansen (1953).

<sup>7</sup> Phillips (1958).

stability, and questioned whether there was any long-run tradeoff between inflation and output growth, their warnings were typically ignored, and were seldom followed by disciplined actions either in their own institutions or elsewhere. A little inflation was not necessarily a bad thing, it was argued, and whatever harm it might cause could be easily corrected through indexation. Keynes' famous dictum, "In the long run we are all dead", had become the leit-motif for a generation of economists.

The "Great Inflation" of the 1970s was a consequence of this thinking, although there were other contributing factors. Subsequent experience showed how serious the costs of inflation could be, and how difficult they were to eradicate once an inflationary mind-set had replaced an earlier generation's presumption of proximate price-stability. Experience with dramatic price deflation in the Great Depression had taught older Canadians that prices could go down as well as up, which provided a form of social capital that helped anchor expectations through much of the 1950s and early 1960s. Once an inflationary mind-set was firmly embedded, however, the costs of eliminating inflation rose appreciably. Dealing with the symptoms, rather than the disease, was not any easier. Indexation was not the simple panacea that some had assumed, and created a new set of problems, making inflation even more persistent.

During the past twenty years, all this has changed. Much greater prominence is now given to achieving and maintaining low and stable inflation. Moreover, there is general agreement that this is the best contribution that monetary policy can make to sustainable growth, high employment, and economic welfare. John Crow captured the essence of this in his Hanson lecture, when he stated

"Monetary policy shares the same bottom line as other broad economic policies to contribute to raising our living standards. But how can it best do so? ... To say that the goal of monetary policy should be price stability is not simply an arbitrary preference. Rather it is a recognition of the plain fact that because inflation creates distortions, output will be higher over time in conditions of price stability than those of inflation."<sup>8</sup>

This goal was made explicit in the inflation reduction targets agreement jointly announced by the government and the Bank of Canada in 1991, and subsequently renewed as inflation control agreements on four separate occasions over the last 17 years. It is not that the earlier policy prescription was fundamentally wrong; price stability is, after all, simply a means to an end. It is just that there is now a greater appreciation of the economy's capacity limits, and how a stable price environment contributes to better real economic outcomes. Olivier Blanchard has recently referred to this as the "divine coincidence" of price stability and full employment.

## *II. How Effective Is Monetary Policy?*

In the early 1960s, an active debate developed in the United States over whether the rising unemployment that had been observed was structural or cyclical in nature.

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<sup>8</sup> Crow (1988).

Charles Killingsworth, Chairman of the Council for Economic Advisers under President Eisenhower, suggested that it was caused principally by changing structural forces, such as demographics, and that attempts to reduce it through macroeconomic stimulus would end in failure. Killingsworth argued that the natural rate of unemployment, as it would later be called, helped determine the capacity limits of the economy. Structural reforms and improved institutional arrangements might lower the natural rate, but demand management could do nothing in this regard. Others, like Arthur Okun, argued that the problem was deficient aggregate demand and called for standard “Keynesian” remedies. Because subsequent events in the early 1960s appeared to support Okun’s argument, the broader implications and applicability of Killingsworth’s message over the long run were largely ignored.

Among those who favoured stimulative measures, there was also a sharp divide. Okun, and most other economists of the day, championed fiscal policy (and the Kennedy tax cuts) as best way to deal with the employment problem. Little attention was given to monetary policy, except by a small and increasingly vocal group of monetarists. Keynesian economists, for the most part, did not regard monetary policy as a very effective or reliable policy instrument.<sup>9</sup> This was true not only in states of suspected liquidity traps, such as the Great Depression, but during normal periods, especially if there was a need for additional easing. Phrases such as “pushing on a string” were used to characterize the questionable potency of monetary policy in these circumstances. Whatever effectiveness monetary policy might have been believed to come largely through policy directives, credit controls, interest rate ceilings, and moral suasion, as opposed to the more indirect, market-based, channels that are favoured today.

The unfortunate events of the 1930s had left many economists deeply suspicious of financial markets and the ability of price mechanisms to sensibly direct economic activity. Adjustments in the cost of credit as a means of conducting monetary policy were dismissed as impotent and/or possibly destabilizing. The primary focus of central banks, therefore, was controlling the quantity of credit in the financial system and, where appropriate, redirecting it to the most deserving ends. The skepticism about the usefulness of monetary policy action was reinforced by a concern that credit and money were difficult, if not inherently impossible, to control. Indeed, owing to the emergence of near-banks and the fungibility of money, authors like Gurley and Shaw argued that efforts to contain the growth of credit were typically futile. The U.S. Commission on Money and Credit, the Radcliffe Committee in the United Kingdom, and the Porter Commission in Canada, all reached similar conclusions.<sup>10</sup>

The answer to this problem for many central banks was to adopt a “belt and suspenders” approach to conducting monetary policy, in which a variety of instruments and direct controls were relied upon to keep the growth of credit in check. These controls

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<sup>9</sup> This is somewhat ironic, since Keynes himself regarded monetary policy as an important policy tool except in the presence of a liquidity trap. See, for example, Keynes’ famous “Treatise on Money.” Indeed, even the General Theory is about “Money, Employment and Interest.”

<sup>10</sup> See Report of the Commission on Money and Credit (1961), Radcliffe Report (1959), and Porter Commission Report (1964).

included primary and secondary reserve requirements, additional liquidity provisions, and a host of other interventionist measures. Although some of them might have been helpful from a regulatory, prudential perspective, their application in the context of macro stabilization was more problematic. One of the most popular and enduring misconceptions of this period concerned the money multiplier and the widespread belief that without legislated reserve requirements the multiplier would be infinite, and the money supply would soon become unbounded. There was no sense that price adjustments in the form of changes to interest rates and the cost of credit would automatically prevent this.

Towards the end of the 1960s, an animated debate developed between “fiscalists” and “monetarists,” concerning which macro instrument had the greatest influence over output growth and inflation. The monetarist camp had been attracting increased attention and support, owing largely to the tireless efforts of Milton Friedman, Allan Melzer, Karl Brunner, Phillip Cagan, and a coterie of other devoted followers based in Chicago and the Federal Reserve Bank of St. Louis. The debate was conducted largely in terms of simple reduced-form equations, with output growth as the dependent variable on the left-hand side of the equation, and a string of independent and supposedly exogenous variables on the right. The latter included crude proxies for the stance of fiscal policy and monetary policy. Both sides claimed victory and criticized the work of the opposing camp. Neither group seemed to realize how misleading such exercises could be, until Blinder and Goldfeld (1976) showed how even policies that allowed one to perfectly control the dependent variable could appear disconnected and ineffectual in the context of a reduced-form equation. Their simplest example involved a world in which monetary policy could control output with almost perfect precision. Interest rates in this world would be seen to move frequently in anticipation of incipient fluctuations in output. However, by keeping actual output perfectly stable, interest rates would appear to have no obvious connection to developments in the real economy. Monetary policy, as judged by these equations, would be a victim of its own success.

One important way in which monetary policy was potentially ineffective through much of the post-war period was never fully appreciated until Mundell’s path-breaking work in the early 1960s.<sup>11</sup> Drawing on economic developments in Canada, he demonstrated how most countries operating under a fixed (or pegged) exchange rate system, such as Bretton Woods, would have the potency of monetary policy effectively vitiated, while fiscal policy would play a much more dominant role.<sup>12</sup> The reverse would be true for renegade countries, such as Canada, which operated outside the Bretton Woods system under a flexible exchange rate system. Mundell’s “impossible trinity,” as it came to be known, highlighted the fact that countries could not simultaneously have (1) open capital markets, (2) operate under a fixed exchange rate regime, and (3) conduct an independent monetary policy. Only two of these three conditions could be simultaneously satisfied. In the event, most industrial countries in the immediate post-war

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<sup>11</sup> Mundell (1961, 1962, 1963).

<sup>12</sup> This was especially true of small open economies, like Canada. Larger economies, such as the United States, which served as the anchor country or “nth-currency” for the Bretton Woods system, could enjoy a greater degree of monetary policy discretion.

period opted for capital and currency controls as a way of preserving some degree of monetary policy independence under a pegged exchange rate system. These controls lasted through much of the 1980s and early 1990s in many cases, with countries like Canada, which had open capital markets, being a clear exception.

Summing up, this was an era in which there was widespread mistrust of the price signalling mechanism, and a failure to fully appreciate the capacity limits of the economy and their implications for macro stabilization. It was also an era of extensive capital controls, fixed exchange rates, and relatively closed economies. Contrasting this earlier era of monetary policy skepticism with the present situation, one is struck by the dramatic change that has taken place. The advocates of monetary policy have won the day. Monetary policy is no longer regarded as fiscal policy's weak sister. While the policy tools recommended by the early monetarists, based on money-aggregate targeting and rules-based reaction functions, have largely been discarded, inflation control via monetary-policy means and the primacy of the goal of low and stable inflation have both gained widespread acceptance. Economists are more aware of structural issues, the natural rate of unemployment, and the capacity limits of the economy, and they have also discarded their earlier skepticism of price signals. In the post-Bretton Woods world, most industrial countries operate with floating exchange rates, thereby avoiding the potential problem of monetary policy impotence that Mundell had diagnosed. Now, in cases of deficient or excessive demand, monetary policy is commonly regarded as almost "everywhere and always effective," and the instrument of choice for short-run stabilization in those countries that are willing to let their exchange rates float.<sup>13, 14</sup> Indeed, some observers, including several central bankers, feel this confidence in the ability of monetary policy may have gone too far.<sup>15</sup> They worry that market participants may have become too sanguine about the fine-tuning capabilities of central banks, and in their ability to rescue investors from their own excesses. I believe that the Great Moderation that we have witnessed over the past 15 to 20 years does owe a great deal to improved monetary policy, aided, of course, by substantial growth in productivity and the enhanced competition that has come from the opening of international markets. (Here there are echoes of the 1950s.) However, I certainly recognize that the business cycle is still very much alive, and that financial crises are not necessarily a thing of the past. The financial turbulence that we have recently experienced might have a silver-lining in this respect, to the extent it encourages a more appropriate pricing of risk and prevents the emergence of even greater dislocations and imbalances.

### *III. Does Monetary Policy Need to Be Complicated and Opaque to Work?*

Another stark difference between monetary policy then and now concerns the manner in which it is conducted. In the 1960s and through much of the 1970s and 1980s, to the extent monetary policy was deemed to have any effectiveness, it was seen to rely importantly on the element of surprise or even conscious misdirection on the part of

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<sup>13</sup> China is an example of a country that has tried unsuccessfully to rein in money and credit growth without allowing sufficient exchange rate flexibility.

<sup>14</sup> The one possible exception concerns countries, such as Japan in the 1990s, that have to contend with the "zero-interest-bound."

<sup>15</sup> See, for example, recent speeches by Mervyn King, Ben Bernanke, Rachel Lomax and myself.

authorities. The transmission process was typically viewed as inherently complicated, and central banks had little interest in explaining exactly how it worked. Some of the opaqueness reflected deficiencies in our understanding of the macro economy, while the rest might be credited to a deliberate desire on the part of some authorities to preserve an air of mystery and uncertainty. Many central bankers felt that too much information sharing would weaken the effectiveness of policy and also erode credibility – akin to Dorothy peeking behind the curtain in the *Wizard of Oz*.<sup>16</sup>

For a significant portion of the post-war period, there was also a deep-seated distrust of financial market forces, and a sense that only direct means of controlling the provision of credit, buttressed by an array of instruments, restrictions, and regulations, could be relied upon to implement policy. As noted earlier, chartered banks in Canada were subject to multiple reserve requirements, supplementary liquidity provisions, and interest rate ceilings.<sup>17</sup> And moral suasion was often used to achieve the desired outcome as opposed to any more transparent and market-oriented way of conducting policy.

What I will call the “modern view” has turned much of the earlier received wisdom on its head. In place of intervention and off-line “window guidance,” central banks now rely on interest rates and market-oriented means of adjusting the stance of policy.<sup>18</sup> Money and credit aggregates, while preserved as one of many financial indicators that we continue to monitor, have a greatly diminished role. Indeed, many modern macro models do not even include them – “monetary policy without money” is how one noted academic has referred to it.<sup>19</sup>

Canada has been in the vanguard of the revolution to reduce the implementation of monetary policy to its essential elements and to eliminate the unnecessary costs and uncertainty that market participants have had to endure in the past. The most dramatic changes have involved the payments system and the reserve requirements that were imposed on banks. Early in the 1990s, Canada began to reduce the required reserve ratios on chartered bank deposits, and by the mid-1990s had reduced them to zero. Reserve ratios are now regarded as an unnecessary burden on banks and have no usefulness in terms of implementing monetary policy. The introduction of a Large Value Transfer System in 1996, and other changes to the payments and settlements system, meant that virtually all uncertainty connected with the clearing process was also eliminated. The principal reasons for chartered banks to hold required reserves had therefore disappeared. In other words, almost every tenet of 1950s and 1960s-style monetary policy implementation had been overturned, without any evident loss of control. (I must admit

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<sup>16</sup> Some researchers, such as Acheson and Chant (1973), drew on the emerging theory of bureaucracies, and credited this behaviour to a natural desire on the part of policy-makers to avoid accountability.

<sup>17</sup> Some of these tools may have useful application in the context of prudential oversight, but they have proven to be unnecessary for effective macro stabilization.

<sup>18</sup> Another important aspect of this renewed faith in market mechanisms was the decision by an increasing number industrial and emerging market economies to move from the system of pegged exchange rates to a system of flexible exchange rates. The latter are a necessary condition for effective monetary policy independence, and are also valued for the insulation properties they provide in response to economic shocks.

<sup>19</sup> Friedman (2003).



that over the past couple of years, somewhat greater attention should perhaps have been paid to the effects that changing financial market structures, securitization, and compressed yield spreads were having on the relationship between policy interest rates and “effective monetary conditions”. This might have helped prevent some of the excesses that were later observed. Certainly, it is still true that prudential regulators should care about the liquidity position of banks and their capital requirements. It’s just that, from a monetary policy and macro-stabilization perspective, required reserves and other direct interventions were found to be unnecessary.

This revolution in policy implementation has also involved a significant improvement in transparency in monetary policy, though not in the transparency of financial instruments. Rather than have market participants guess at what the Bank’s target for the overnight rate might be, target interest rates are now publicly announced. Uncertainty about when the target rate of interest might be changed has also been largely eliminated. Changes in the target overnight rate, barring exceptional circumstances, are announced on one of eight Fixed Announcement Dates throughout the year.

Policy-makers in other countries were initially surprised by these developments, and questioned whether such a simple system could actually work. Some referred to it as a system of “virtual control,” in which the Bank of Canada simply declared its target interest rate and magically the financial system responded. But appearances can be deceiving. While this is essentially how it works, the Bank’s declaration of the target interest rate has more substance and influence than if you or I, as private citizens, tried to do it. It works because the Bank has the ability to back its words with actions. And in more turbulent times, such as this summer and fall, the words were backed by strong actions.<sup>20</sup> However, in normal times, when the structure of financial markets is stable or unchanging, the process is as simple as it sounds.<sup>21</sup>

#### *IV. Expectations and Inflation Targeting*

The difference between the 1960s and now goes well beyond debates about the goals of monetary policy, the effectiveness of monetary policy, and the simple process that is currently used to implement it. The philosophical shift towards working with markets rather than against them is also manifest in a more open and transparent approach to the formulation of monetary policy. Central banks, as noted earlier, used to believe that unexpected policy moves were often the most effective. They also believed that the less said about economic conditions and prospective policy moves the better. The rational expectations revolution of the 1980s appeared to provide further support for this “sneak attack” approach, although, along with the introduction of real business cycle theories, it also undermined most of the justification for any sort of consistent counter-cyclical policy.

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<sup>20</sup> These actions included carrying out Special Purchase and Resale Agreements (SPRA) at the target overnight rate, sometimes in multiple rounds, and raising the targeted amount of settlement balances.

<sup>21</sup> When times are calm, the target for settlement balances is a constant \$25 million, SPRAs are not conducted, and the auction of Receiver General deposits during the afternoon ensures that actual amount of settlement balances meets the targeted amount.

While not everyone subscribed to this extreme form of rational expectations, greater recognition of the importance of forward-looking expectations and anticipatory behaviour did have an influence on the economics profession. Opinions evolved towards what many would regard as a more balanced and realistic view of the way the world operates. Instead of naive regressive and extrapolative expectations mechanisms, we suddenly had the Lucas critique and the realization that you could not fool all of the people all of the time. By being clear about their objectives, establishing a credible commitment to a specific policy framework, and sharing information more fully with markets, central banks could simplify their task. Policy implementation could be made easier and more efficient, in the sense of requiring smaller interest rate changes to accomplish the job, with the market doing much of the work for us. In addition, unnecessary dislocation and confusion could be eliminated.

Elements of this *modus operandi* were evident in the 1970s regime of explicit money targeting, but were perhaps not fully appreciated. A clear target for the growth of money aggregates was identified, and central banks were more explicit about how they hoped to achieve it. Enhanced accountability was also an important part of the new policy framework, together with a hope that credibility would be improved and expectations could be conditioned in a way that facilitated the disinflationary process. By establishing a clear, gradual, path for reducing the growth of money, economists hoped that the output and employment costs associated with squeezing inflation out of the system could be minimized. Policy-makers started from an unenviable position, however. Inflation was already very high and policy credibility was very low.

Canada tried to overcome this “credibility deficit” by introducing a program of wage-price controls in 1975. The hope was that by forcing the growth of wages and prices to decline gradually over a three-year period, consistent with the implementation of tighter monetary and fiscal policy, the country might be able to minimize the negative effects of disinflationary policy on output and employment. A critical element in the program was supposed to be a meaningful change in the stance of fiscal and monetary policies over the controls period, in order to validate and then sustain the disinflation once the controls were lifted. While the concept was sound, some significant real world complications intervened to undermine the initiative when the program was launched. An unstable velocity of money, coupled with a lack of fiscal discipline, meant that, in fact, macro policy was far too loose to be consistent with the inflation targets. Various structural changes that had taken place over the 1970s, including the “deform” of the unemployment insurance system, and an unrecognized slowing of productivity growth, also posed a problem. By the start of the 1980s, inflation had returned to a post-war high. Policymakers were forced to rely on the traditional medicine of sharply higher interest rates and high unemployment to bring inflation down.

However, by the end of the 1980s, inflation was on the rise again, and we all knew that more restrictive macroeconomic policies would be required. John Crow’s Hanson lecture could be viewed as an attempt, once again, to condition expectations, and to reduce the costs associated with the tightening of policies we knew had to come. It is not obvious however, that the implications of this renewed commitment to price stability

were fully appreciated by governments, or banks, or the public at large. Monetary policy based on inflation targeting had never been contemplated as a possible solution to the expectations problem, here or elsewhere, but would prove to be a useful aid in this regard.

When Canada moved to inflation targeting in February 1991, the academic literature provided very little guidance.<sup>22</sup> Essentially, the Department of Finance and the Bank of Canada embarked on an exercise of learning by doing. In the end, it is fair to say that this exercise exceeded even our highest hopes. Inflation expectations adjusted far faster than even we had anticipated. Having experimented with many other monetary policy frameworks, running from fixed exchange rates to unstructured full-discretion, the Bank of Canada is convinced that inflation targeting has out-performed all of them. While positive structural reforms, supportive fiscal policies, and perhaps a more competitive external environment certainly account for some of the improved macroeconomic performance that has been seen in recent years, it is clear that the new monetary policy regime has also played a critical role.

Inflation in Canada has remained low and remarkably stable over the past 17 years, and has averaged close to 2 per cent – our official inflation target – since 1995. Long-run inflation expectations have become firmly anchored at 2 per cent, adding to the efficiency of monetary policy. Output growth has also been steady and displayed much less volatility than over the preceding 16 years. In addition, the employment rate in Canada has reached all-time highs, the unemployment rate has reached 33-year lows, and interest rates are lower than at any point since the 1950s and have often fallen below U.S. levels (something that most people would have thought impossible in the early to mid-1990s).

The inflation targeting framework has made the objective of monetary policy explicit and thereby enhanced accountability. Canada's monetary policy has also been supported, as in every other inflation targeting country, by a more comprehensive and timely communication strategy. This has given businesses and households a clearer understanding about our prospective policy actions and our views on the state of domestic and international economies. It also makes any policy errors that we might make more evident, but this is part of its purpose. Greater discipline leads to better policy outcomes. And the more active debate created by increased transparency leads to better policies and smoother economic adjustment. In retrospect, it is surprising that central banks did not recognize these potential benefits sooner, and move to inflation targeting before the 1990s. Some important players, of course, such as Japan and the United States, have yet to be convinced. But even they seem to be operating on the basis of a very close variant of inflation targets – opting for an implicit target or something that is an explicit inflation target in all but name.<sup>23</sup>

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<sup>22</sup> In an entirely different context, the Reserve Bank of New Zealand had adopted inflation targets one year earlier.

<sup>23</sup> The European Central Bank, the Swiss National Bank and the Bank of Japan, for example, all have explicit inflation objectives and clear definitions of what constitutes reasonable price stability, but claim they are not inflation targeters. The U.S. Federal Reserve has no explicit target for inflation, but is known

### *V. Are Any Further Improvements Possible?*

It might seem natural at this point to ask where all of this leaves us. Are any further improvements in the monetary policy framework possible? Is this as good as it gets? Are we at the end of monetary policy history? The present monetary policy framework and the success that we have enjoyed do set a pretty high bar for any future changes. Nevertheless, there is reason to believe that additional substantive changes might be possible. Moreover, it is our obligation as policy-makers to pursue these possibilities if there is any chance that they might improve the economic well-being of Canadian households and businesses. Two classes of issues need to be examined in this regard. The first concerns further refinements to the inflation target itself and how it is pursued; the second is more general in nature and concerns the monetary policy transmission mechanism and improving our understanding of the way the macro economy operates.

When the Bank of Canada renewed its inflation targeting agreement with the government for another five-year period in 2006, the 2 per cent target and 1 to 3 per cent control range were left unchanged. However, the Bank – with the support of the Government – committed itself to an ambitious medium-term research program, focusing on two major questions.

(1) “What are the costs and benefits of an inflation target lower than 2 per cent? Would an inflation target lower than 2 per cent generate significant net benefits for the economy and for Canadian households?”

(2) “What are the costs and benefits of replacing the current inflation target with a longer-term, price-level target? Would a price-level target produce significant net benefits for the economy and for Canadian households?”<sup>24</sup>

These are not new questions. Bank of Canada researchers and economists elsewhere have thought about them intermittently for many years.<sup>25</sup> The first inflation target agreement in Canada, announced in February 1991, stated that while the medium-term objective for monetary policy would be 2 per cent,

“Thereafter, the objective would be further reductions on inflation until price stability is actually achieved... A target path after 1995 [] remains to be fixed, but again pending new evidence, the aim would be to continue to make steady progress.”<sup>26</sup>

At the time of the next renewal, in 2011, Canada will have been operating under an inflation target for slightly more than 20 years. The research plan outlined in the most recent renewal is motivated in part by the sense that it should be possible to provide more

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to have a comfort zone of 1 to 2 per cent inflation for the core PCE deflator, and has recently announced a new communication strategy which implicitly reveals the FOMC’s goals for output growth and inflation.

<sup>24</sup> Bank of Canada and Government of Canada. “Renewal of the Inflation-Control Target,” November 2006.

<sup>25</sup> See “Economic Behaviour and Policy Choice Under Price Stability,” Bank of Canada (1993).

<sup>26</sup> Bank of Canada, “Targets for Reducing Inflation.” *Bank of Canada Review* (March, 1991): 11.

definite answers to these questions after such an extended period of experimentation and analysis, provided it is buttressed by a more concerted effort on the research front.

There is general agreement among central banks that 2 per cent is a reasonable target and is consistent with low, stable and predictable inflation. However, it is not consistent with what one might call true price stability. Through the magic of compounding, an inflation rate of 2 per cent a year causes prices to double every 35 years. Targeting an inflation rate of zero has considerable intuitive appeal and widespread economic support, all other things constant. However, we know that all other things are not constant. Three main arguments have been advanced as to why it might be unwise to aim for such a low rate of inflation. The first concerns measurement error and the positive bias that is believed to exist in the present Consumer Price Index. If this is correct, aiming for a measured inflation rate of zero would imply a modest amount of ongoing price deflation. The second argument concerns the presence of nominal wage-price rigidities that might become more serious close to a zero inflation rate, reducing employment and output by constraining necessary movements in relative prices. This worry was most recently popularized by Akerlof, Dickens and Perry,<sup>27</sup> but has a long history in economics. Economists in the 1960s, such as George Shultz, often observed that a little inflation might be necessary to “grease the wheels” of the economy.<sup>28</sup>

The third reason for not being more ambitious with regard to lowering the inflation target has only become prominent in recent years, and concerns the “zero interest-bound.” James Tobin and Larry Summers were among the first to note that monetary policy might be overly constrained and perhaps ineffective at low rates of inflation, since nominal interest rates cannot go below zero. (If interest rates were, for some reason, able to go below zero, the rates of return they offered would be dominated by holding zero-interest earning cash balances. With zero therefore representing an effective barrier to monetary easing, it might be difficult for central banks to stimulate economic activity in times of depressed demand.)

Past research at the Bank of Canada has indicated that the first two arguments described above – measurement error and the wage-price rigidities – are not as important as previously thought, and would not, on their own, justify an inflation target as high as 2 per cent. Measurement error in Canada’s CPI is estimated to be, at most, 3/4 per cent, but is probably closer to 1/2 per cent.<sup>29</sup> And wage-price rigidities have not been found to have any significant effect on output growth or employment.<sup>30</sup> While future work may overturn these results, wage-price rigidities are not regarded as major obstacles to a lower inflation target. The third argument, in contrast, relating to the zero-interest-bound, is taken far more seriously, especially after Japan’s experience with ongoing deflation through the 1990s and early 2000s. Although a number of means have been proposed for dealing with the problem and restoring the effectiveness of monetary policy in the presence of the zero-bound, few observers question the challenges that this poses for

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<sup>27</sup> Akerlof, Dickens and Perry (1996).

<sup>28</sup> See also Fortin, Akerlof, Dickens and Perry (2002).

<sup>29</sup> Crawford (1998) and Rossiter (2005).

<sup>30</sup> Crawford and Wright (2001).

effective counter-cyclical measures. More research will clearly be needed in this area before any proposal to lower the target inflation rate can be seriously contemplated.<sup>31</sup>

A separate, but complementary, line of research that the Bank is pursuing centres on the possibility of switching from an inflation-targeting framework to a price-level targeting framework. For those not already familiar with the distinction between these two terms, a short explanation might be in order. Price-level targeting is not a new concept, but has admittedly received much less attention than inflation targeting in the academic literature. In fact, only one other country to my knowledge has ever tried it. Sweden experimented with price-level targeting in the 1930s, and by all accounts it was quite successful.<sup>32</sup> The key difference between inflation targeting and price-level targeting is that the former forgives past errors, while the latter does not. For example, if a central bank targets a 2 per cent inflation rate, but fails to achieve it, there is no need to offset the error in subsequent periods. If actual inflation were 3 per cent, there would be no need to target 1 per cent the following year in order to bring the average back to 2 per cent. Under price-level targeting, in contrast, the economy would have to experience a period of below 2 per cent inflation in order to bring the price-level back to the desired track over time. The main benefit of this is that households and businesses would have greater confidence in where the price level would be over the long term, and could therefore make economic decisions with greater certainty.

The downside to this prospective benefit is perhaps greater volatility in inflation and output growth as past errors are corrected, even if a suitably long averaging period is used. Not all economists are convinced that this would be true, however. While it is impossible to bring any conclusive empirical evidence to bear, since only Sweden has ever tried price-level targeting, several papers have appeared in recent years demonstrating that it might be possible to lower the volatility of inflation and achieve more stable output growth under price-level targeting, depending on how inflation expectations are formed. An added bonus might be that it would also be possible to overcome, or at least minimize, the problems posed by the zero-interest-bound. I will not go into all of this here, but suffice it to say that price-level targeting and its implications for macroeconomic performance will also be the subject of intensive research at the Bank over the next three years. Some of the more specific questions that will be addressed in this research agenda are described in the background paper that the Bank published last year at the time of the most recent inflation targeting renewal.<sup>33</sup>

Of course, improving the Bank of Canada's monetary policy framework is not the only monetary policy issue that requires more attention. Our understanding of more basic questions, such as the structure of the macroeconomy, the channels through which monetary policy operates, and how all of this is changing over time, is far from complete.

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<sup>31</sup> A minor variant of this, which has been suggested, is to expand the target bands surrounding the 2 per cent target mid-point. The bands are presently 1 to 3 per cent, and could be expanded to 0 to 3 per cent, effectively lowering the target mid-point to 1.5 per cent.

<sup>32</sup> Based on this positive, yet admittedly limited experience, it is not obvious why other countries have never followed the Swedish example.

<sup>33</sup> Bank of Canada, "Renewal of the Inflation-Control target: background Information -- November 2006."

While much has been learned, a great deal more remains to be studied and then applied to policy-making. The development of new financial instruments and the dramatic changes that have occurred in the global financial system over the past few years have exerted an important influence on the transmission of monetary policy and the role of credit in the economy. Productivity growth and the other factors that determine the capacity limits of our economy – indeed, the global economy – are only partially understood. Improving our understanding of these issues is critical to making monetary policy work well.

Most of what we have learned and thought we understood over the years has been incorporated in the econometric models that we have built and used for our projections. The Bank of Canada has a long tradition of being at the forefront of macro modelling, beginning with RDX, one of the earliest large scale econometric models in the world. It was developed in the late 1960s and early 1970s. Our latest model, ToTEM or Terms of Trade Economic Model, is a vast improvement over RDX.<sup>34</sup> It is one of a growing number of Dynamic Stochastic General Equilibrium Models, with multiple sectors and many advances relative to earlier models in terms of economic rigour and the way it incorporates expectational effects. Nevertheless, we know that even it has important deficiencies.

Macroeconomics textbooks in the 1950s and 1960s often began with a discussion of the various factors that distinguished microeconomics from macroeconomics. One well-known text, by Edward Shapiro, described the differences as follows:

“What microeconomics takes essentially as given – namely, the total output for the economy as a whole – is what macroeconomics takes as the prime variable whose size or value is to be determined. What macroeconomics takes as given – namely, the distribution of output, employment, and total spending among particular goods and services of individual industries and firms – are all variables in microeconomics.”<sup>35</sup>

The disaggregated approach used in ToTEM to examine the behaviour of different sectors of the economy, coupled with the more rigorous microeconomic foundation that underlies each of the central relationships in the model, makes this distinction less meaningful today. Macroeconomics, in general, now rests upon a more secure and conceptually appealing microeconomic base. The challenge, at times, has been to incorporate these theoretical refinements without sacrificing the explanatory and predictive capabilities of the models.<sup>36</sup> Work is underway to try to narrow this gap and address other issues, but we know the task is in reality never ending, as new insights emerge along with major changes in the underlying structure of the Canadian economy.

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<sup>34</sup> Murchison and Rennison (2006).

<sup>35</sup> Shapiro (1966)

<sup>36</sup> One notable feature that ToTEM shares with most other modern macro models is that it has no role for money. Indeed, money and credit aggregates do not appear in the model, nor is there a banking sector. This is one of the reasons that the Bank of Canada has always supplemented the information drawn from its main econometric models, with results taken from a suite of other satellite models, which are based on different paradigms and offer different points of view.

## *VI. Conclusion*

Monetary policy has changed dramatically over the past 40 years. Opinions about the appropriate macroeconomic objective(s) for monetary policy, as well as the effectiveness and usefulness of monetary policy have all shifted, giving more prominence to the need for controlling inflation and more reliance on monetary policy for countering cyclical fluctuations in the macroeconomy. Our monetary policy framework has also improved, along with our understanding of the way the macroeconomy operates. Our knowledge is still very limited, however, and monetary policy-makers must always approach their task with considerable humility and crossed fingers.

New questions are always appearing, and some old questions occasionally reappear, albeit in a new guise. When I was a student, many economists questioned the efficacy of monetary policy, largely in a closed economy setting. This skepticism was gradually overturned by advances in economic theory and real world developments. In the last few years, however, new doubts have been raised about its usefulness in a globalized world. Are monetary authorities in national economies, especially those in small, open economies such as Canada, losing control over domestic economic activity and inflation? I do not think so, for a variety of reasons, but it may well be that additional regulatory tools are at times required to deal with pressures in specific sectors of the economy. Recent problems in New Zealand's housing market associated with Japanese carry trades may be a case in point.

Another topical issue reminiscent of an earlier debate involves the new exotic instruments that have been introduced in financial markets, and the appearance of large, often uncontrolled, financial institutions and investment funds that operate much like banks. Although significant benefits are likely to be realized in the form of more complete financial markets, recent developments do raise serious concerns about the implications of these highly levered firms and complex financial instruments for market stability and the conduct of monetary policy during periods of major structural change in financial markets and institutions. While it is too early to draw firm conclusions about any reforms and institutional changes that might be required to guard against these risks, questions have been raised about some of the views that I presented earlier regarding monetary policy objectives and implementation. William White, Senior Adviser at the Bank of International Settlements and a former Deputy Governor of the Bank of Canada, has written a paper entitled "Is Price Stability Enough?"<sup>37</sup> He and other authors suggest that it is not, and have argued that monetary policy should give more explicit attention to asset prices, not simply the Consumer Price Index, and adjust their targets to give greater priority to financial stability as opposed to monetary stability. My view is that, while monetary authorities do indeed need to recognize ongoing changes in financial markets and institutions, it is regulators who have primary responsibility for oversight of the financial system.

Other researchers and policy-makers have questioned whether the present monetary policy instruments are sufficient to deal with a securitized world in which banks play an increasingly smaller role. There is no time to go into these intriguing issues

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<sup>37</sup> White (2006).



in any detail. I will simply note that most practitioners and academics believe the consensus views I described earlier still hold true. While some flexibility might be required in the pursuit of our inflation target from time to time, I want to emphasize that monetary policy must keep its focus on medium-term macroeconomic stabilization issues. First-best solutions involve central banks focusing on their comparative advantage, macro stabilization, and having regulators concentrate on questions of allocative efficiency and the stability of financial markets. It is also very important for bank supervisors, market regulators, and monetary authorities to communicate regularly, and know what one another is doing as well as what is expected of each of them. It has been my experience in this regard that we in Canada are second to none, but there always remains room for improvement. In particular, I would note the need to work together to improve the oversight of the market for residential mortgages and to improve transparency in the so-called exempt market for securities, especially highly-structured securities. And in a world where accounting standards require immediate marking to market of all assets and liabilities, we all need to consider the best ways to deal with the greatly magnified volatility of earnings. While these are issues that relate primarily to the efficiency and stability of financial markets, as we have seen in the past six months, they can certainly affect the ability of monetary policy to act as a macroeconomic stabilizer.

The only other point that I would add relates to the dangers of “fine tuning.” Monetary policy, as is often stated, is subject to long and variable lags. It is a blunt but very effective instrument at a medium-term horizon. It should not be expected to deal with every short-term bump or wiggle in the economy, nor should people ask it to do so.

Let me conclude. Before I became Governor of the Bank of Canada I had occupied many other public policy positions, including Deputy Minister of Finance. In many of these positions, I was forced to give serious consideration to the state of the macroeconomy and to actions of the monetary authorities. It is safe to say, however, that until I became Governor, I did not fully appreciate how much had changed in the art and science of monetary policy-making since I first started teaching Money and Banking 40 years ago. This is the reason that I chose “Monetary Policy Forty Years On” as the subject for tonight’s presentation. It allowed me to reflect on my own experience over the past seven years and how much I have learned. I hope you found this journey interesting, and I would now be delighted to take your questions.

## References

- Acheson, K. and J. Chant. 1973. "Bureaucratic Theory and the Choice of Central Bank Goals: The Case of the Bank of Canada." *Journal of Money, Credit, and Banking*: 637-655.
- Akerlof, G., W. Dickens, and G. Perry. 1996. "The Macroeconomics of Low Inflation." *Brookings Papers on Economic Activity* 1: 1-59.
- Bank of Canada Act*. R.C., C.B.-2, S.1. Preamble.
- Bank of Canada. 1991. "Targets for Reducing Inflation." *Bank of Canada Review* (March).
- \_\_\_\_\_. 1993. Economic Behaviour and Policy Choice Under Price Stability. Proceedings of a conference held at the Bank of Canada, October, 1993. Ottawa: Bank of Canada.
- \_\_\_\_\_. 2006. *Renewal of the Inflation-Control Target: Background Information*. Ottawa: Bank of Canada.
- Bank of Canada and Government of Canada. 2006. *Renewal of the Inflation-Control Target*. Ottawa: Bank of Canada.
- Blinder, A. and S. Goldfeld. 1976. "New Measures of Fiscal and Monetary Policy: 1958-73." *American Economic Review*. vol. 66 (5): 780-96.
- Crawford, A. 1998. "Measurement Biases in the Canadian CPI: An Update." *Bank of Canada Review* (spring): 31-37.
- Crawford, A. and G. Wright. 2001. "Downward Nominal-Wage Rigidity: Micro-Evidence from Tobit Models." Bank of Canada Working Paper No. 2001-7.
- Crow, J. 1988. "The Work of Canadian Monetary Policy." Eric John Hanson Memorial Lecture Series. University of Alberta, 18 January.
- Economic Council of Canada. 1964. "Economic Goals for Canada to 1970." *First Annual Review*, December.
- Fortin, P., G. Akerlof, W. Dickens and G. Perry. 2002. "Inflation and Unemployment in the U.S. and Canada: A Common Framework." Département des sciences économiques, Université du Québec à Montréal Working Paper No. 20-16.
- Friedman, B. 2003. "The LM Curve: A Not-So-Fond Farewell." in *Macroeconomics, Monetary Policy, and Financial Stability*. A festschrift in honour of Charles Freedman. Proceedings of a conference held by the Bank of Canada. Ottawa.

Friedman, M. 1956. "The Quantity Theory of Money -- A Restatement." in *Studies in the Quantity Theory of Money*; edited by M. Friedman. Chicago: University of Chicago Press.

Government of Canada. 1945. *Employment and Income with Special Reference to the Initial Period of Reconstruction*. Ottawa: King's Printer.

Hansen, Alvin. 1953. *A Guide to Keynes*. New York: McGraw-Hill Book Company, Inc.

Keynes, J. M. 1930. *Treatise on Money*. King's College Fellow, Cambridge: Cambridge University Press.

\_\_\_\_\_. 1936. *The General Theory of Employment, Interest and Money*. Macmillan Cambridge University Press.

Mundell, R. 1961. "Flexible Exchange Rates and Employment Policy." *The Canadian Journal of Economics and Political Science* 27 (November): 509-17.

\_\_\_\_\_. 1962. "The Appropriate Use of Monetary and Fiscal Policy for Internal and External Stability." *IMF Staff Papers* 9 (March).

\_\_\_\_\_. 1963. "Capital Mobility and Stabilization Policy Under Fixed and Flexible Exchange Rates." *The Canadian Journal of Economics and Political Science* 29 (November): 475-85.

Murchison, S. and A. Rennison. 2006. "ToTEM: The Bank of Canada's New Quarterly Projection Model." Bank of Canada Technical Report No. 97.

Phillips, A. 1958. "The Relationship Between Unemployment and the Rate of Change of Money Wage Rates in the United Kingdom, 1861-1957." *Economica* 25 (November): 283-99.

Porter Commission Report. 1964. *Report of the Royal Commission on Banking and Finance*. Ottawa: Queen's Printer.

Radcliffe Report. 1959. *Committee on the Working of the Monetary System* (August). London: Her Majesty's Stationary Office.

Report of the Commission on Money and Credit. 1961. *Money and Credit: Their Influence on Jobs, Prices and Growth*. New Jersey: Prentice-Hall.

Rossiter, J. 2005 "Measurement Bias in the Canadian Consumer Price Index." Bank of Canada Working Paper No. 2005-39.

Shapiro, Edward. 1966. *Macroeconomic Analysis*. New York: Harcourt Brace Jovanovich, Inc.

Thiessen, G. 1999. "Then and Now: The Change in Views on the Role of Monetary Policy since the Porter Commission." The Tony Hampson Memorial Lecture, delivered at the C.D. Howe Institute, Toronto, 11 March.

White, W. 2006. "Is Price Stability Enough?" BIS Working Paper No. 206.