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# ***The Evolution of Canadian Monetary Policy: Successful Ideas Through Natural Selection***

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## ***“Better” Government and The Way Ahead***

THE THEME OF THIS FESTSCHRIFT is that economists and policymakers should debate less about whether it is desirable to have “more” or “less” government and instead focus on how to get “better” government. Some ideologues will always identify more with better while others will always identify less with better, but such dogmatic positions rarely contribute to our understanding or to improved public policy. More balanced observers like Ian Stewart will admit that in some situations a new government program is likely to add to overall welfare while in other situations it is the elimination of an existing program that will deliver the welfare benefits. Context matters.

In my view—and I readily admit to having no credentials regarding the detailed functioning of government—better government can be viewed at two different levels of decision making, the “micro” and “macro” levels. At the micro level, the pursuit of better government requires that we design each of our public programs and policies to deliver the intended outcome in the most

efficient or effective manner. We will naturally have some disagreements about how best to achieve such efficiency, but there should be little disagreement about the basic principle; who could justify using more resources rather than fewer to achieve a given policy outcome? At the macro level, having better government means improving our determination about which activities we choose to locate in the public sphere and which ones we choose to leave to private agents. Though these decisions are bound to be both more complex and more controversial than the micro ones, a useful guiding principle is something like “government should only do what only government can do.” I have been unable to establish the pedigree of this principle, but I first recall hearing it invoked by Paul Martin in the early 1990s. It seemed correct to me then, and the passage of time has not changed its basic appeal.

This principle recognizes that many things cannot successfully be done by the private sector and are thus best left to governments. These include both explicit “market failures,” situations in which the free market fails to produce an efficient outcome, and those more nebulous and controversial situations in which the market is deemed to produce undesirable, though perhaps still efficient, outcomes worthy of government attention. Examples include policies aimed at altering the distribution of income and preventing individuals from specific actions which may harm themselves.<sup>1</sup>

The principle equally recognizes, however, that many and perhaps most activities in the economic sphere are best left to the private sector, and thus clear limits should be placed on the government’s role in the economy. It is therefore consistent with what has been called the “informal defence” of free markets (Lipsey, 1984). This defence argues that relatively free markets, in contrast to those characterized by significant government intervention, more quickly adapt to changing circumstances, provide greater incentives for innovation and thus for rising living standards, and lead to a greater decentralization of decision-making power with implications for an increase in personal freedom.

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1 My “macro” concept includes all three of Richard Musgrave’s (1959) well-known objectives for government interventions: efficiency, distribution, and stability.

In recognizing the benefits derived from relatively free markets as well as the situations in which government actions can improve overall welfare, the principle suggests a balanced and pragmatic approach to determining the appropriate role of government in a modern economy. It is crucial to recognize that markets very often allocate resources in ways far better for society than can governments, not least because of the practical limitations on what government actions are able to achieve; but it is equally important to note those circumstances where governments can play a useful role in improving resource allocation and thus overall welfare. The costs and benefits of any specific government intervention should therefore be examined within the context of the specific market setting. Analysis should play a larger role than ideology.

The idea that having a better underlying framework for government policy within a market system can result in fewer undesirable intrusions on personal freedoms is an important theme in *The Way Ahead*, a document published by the Canadian government in the fall of 1976 and motivated by the perceived need to restructure government policies at a time of growing macroeconomic challenges. From his senior position within the Privy Council Office at the time, Ian Stewart played a key role in drafting this document, and his fine sense of balance regarding the appropriate role of government in a modern economy is everywhere on display.<sup>2</sup> As Stewart describes a few years later in a collection of articles written about the Trudeau era, *The Way Ahead* was seen as offering a middle ground between alternative, extreme views of the government-economy nexus:

... While rejecting both minimalist and excessively interventionist government, it sought to define a “new middle”—an updating of the Keynesian consensus more in accord with leaner times.

By this middle road the Trudeau administration sought to combine the principles of the Just Society with an economic policy based on a commitment to fiscal and mone-

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2 Ian claims that Fred Gorbet was a key contributor to *The Way Ahead*; Fred claims that it was mostly Ian. Perhaps we will never know for sure. As often happens with good people, modesty can get in the way of the truth.

tary responsibility and less direct government intervention. (Stewart, 1990, p. 117)

*The Way Ahead* is a fascinating paper. Actually, it reads more like two papers, one laid atop the other. The first is an analysis of the causes and consequences of inflation, and also some discussion about its cures. This paper is very much a “period piece” in that it describes inflation—especially its causes—in more complex terms than would be found in either an academic or government document written today. Most macroeconomists today would make a crucial distinction between temporary or transitional inflation on the one hand, and sustained or long-run inflation on the other. And they would agree that many different kinds of economic shocks can affect a country’s temporary rate of inflation. For better or worse, however, contemporary macroeconomists would also argue that a country’s long-run rate of inflation is almost exclusively determined by that country’s monetary policy; other things being equal, a sustained change in monetary policy is now seen to be *the* cause of a sustained change in the rate of inflation.

Despite the view of inflation in *The Way Ahead* being quite dated, the paper contains a key point about an important but subtle cost generated by inflation. High inflation creates problems in society—primarily related to income redistributions—that invite government intervention as a partial policy solution, and such interventions inevitably lead to reductions in personal freedoms. So a policy justification for maintaining low and stable inflation is to prevent the need for an undesirable expansion of the role of government in society.

If all of the discussion related to inflation is removed from *The Way Ahead*, a very different but still fascinating second paper remains. After thirty years of post-war development and expansion of the welfare state in Canada, and also the macroeconomic confusion and disruption caused by the first OPEC oil shock, the paper offers a nuanced view of the appropriate role of government in a modern economy. The paper emphasizes the importance of using relatively free markets for the organization of activity—for encouraging innovation and also for maintaining crucial individual freedoms. It also recognizes the clear need for government intervention to solve certain problems that private markets are ill-suited to solve—including the provision of public goods, the appropriate pricing of externalities, and the reduction of severe inequities.

While advocating active use of government, however, it acknowledges the limits of government action and also the danger that a creeping scope of government may threaten fundamental liberties. *The Way Ahead* offers both a balanced and realistic view of government in a modern economy.

This same growing recognition of the limitations of government action played a leading role in the development of monetary policy in many countries over the past forty years. This paper examines the evolution of Canadian monetary policy from the late 1970s and argues that a process of “natural selection” led to the creation and refinement of our current and very successful inflation-targeting system. At the core of this evolutionary process was both a continual drive toward “better” government and a recognition of the real limitations to what government can accomplish.

Section 2 of this paper reviews some of the key lessons that economists and policymakers learned over the years, and how these lessons led to the adoption of our current regime. These lessons range from the “discovery” of the supply side of the economy and the recognition of the costs of high inflation to the limitations of monetary policy and the role played by a flexible exchange rate. Section 3 briefly examines what may be the largest current and future challenge faced by the Bank of Canada and other central banks around the world: the need to ensure financial stability. Two aspects of this issue are addressed: the case for monetary policy to “lean” more aggressively against measurable financial excess; and the need for governments to establish better “macro prudential” regulation and oversight. Research on both aspects of financial stability is still young, and so our thinking will hopefully improve considerably over time.

In Section 4, however, I argue that the current Canadian government does not appear to be spending much time thinking about the issue of improved macro prudential regulation and oversight, possibly because the current system is viewed as adequate and the government would rather focus its attention on something more politically appealing. I close with the idea—perhaps channelling Ian Stewart in *The Way Ahead*—that better regulation and oversight does not necessarily mean an undesirable increase in the scope of government. Designing better regulation now, while financial markets are relatively quiet, may prevent the need for the large and dramatic government interventions

that would surely be the response to a future financial crisis in which one or more major institutions fail.

### *Forty Years of Evolution in Canadian Monetary Policy*

Canadian monetary policy, like that in many other developed countries, has changed significantly over the past four decades, and most of this change reflects our learning about various aspects of the functioning of the economy, the behaviour of individuals, and the limitations of central-bank actions. This evolution of monetary policy embodies the “natural selection” of good and workable ideas.

### The Missing Half of the Aggregate Economy

The predominant view among academic and policy-minded macroeconomists until the mid-1970s was that a focus on the demand side of the economy was appropriate for understanding aggregate fluctuations and changes in inflation. Changes in the various components of aggregate demand were the primary drivers of changes in the level of economic activity, and the “management” of these components with fiscal and monetary policy was believed to be an effective means of dampening swings in the business cycle. Moreover, inflation was mostly seen as the consequence of excessive demand.

As an indication of the extent of such “demand dominance” in our thinking, one need only flip through the introductory textbooks of the day. The content of a good principles textbook lags well behind the developments occurring on the frontiers of the discipline, as is probably appropriate given the time required to learn which of the new ideas are truly good ones. A good introductory textbook tends to present the things that the profession is pretty sure about, the things that we as economists think we know with a high degree of confidence. A quick scan of the leading textbooks of the era reveals the main macroeconomic model to be the Keynesian Cross, in which the price level is assumed to be constant, and anything resembling the supply side of the economy is absent. The management of aggregate demand figures prominently. A Phillips Curve sometimes makes an appearance, but is often treated as a “menu of choice” between the desired level of output (or unemployment) and the desired level of inflation, rather than as the adjustment process stemming from

factor markets in disequilibrium. There is certainly no AD/AS model determining the equilibrium level of real GDP and the price level, for the simple reason that the AS curve had yet to be conceived, and without an AS curve it makes little sense to draw an AD curve.<sup>3</sup>

There was naturally a bit more focus on the supply side of the economy within the Bank of Canada, but events would soon prove the need to do much more. The Bank's earliest large-scale macro models, RDX1 and RDX2, were completed by the early 1970s but had quite incomplete coverage of the supply side of the economy (Helliwell, 2005). In particular, there was insufficient scope for fluctuations in the price of oil to impact the economy and, perhaps more important, the mechanism governing inflationary expectations was quite undeveloped. This was an unfortunate combination.

With the arrival of the OPEC oil shocks in 1973 and 1979, the supply side made a dramatic appearance—into macroeconomic outcomes and also into the minds of macroeconomists. These shocks led to reductions in real GDP growth and increases in inflation, previously thought to be two things that did not occur together. The events were so unusual as to require a new label; “stagflation” was the appropriate term coined by Paul Samuelson.

The stagflationary episodes of the 1970s, once they came to be understood, clarified three issues for macro policy. First, supply shocks needed to be built into our macro models in order to provide a better understanding of the nature of fluctuations; the AD/AS apparatus soon became the workhorse model in policy thinking and macro teaching. Second, large negative supply shocks presented policymakers with a dilemma: a policy response that validated the supply shock had the benefit of dampening the effect on output and employment, but only at the risk of starting a wage-price spiral that would reflect the entrenchment of agents' rising inflationary expectations. The 1970s were the beginning of our collective education regarding the importance of anchoring

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3 For example, the third Canadian edition of *Economics* by Lipsey, Sparks and Steiner (Lipsey *et al.*, 1979) contains no systematic discussion of the role of the supply side in determining aggregate fluctuations. Its fourth edition, published in 1982, contains the full AD/AS framework, although even then the role of supply shocks is far smaller than what appeared in subsequent editions of the text.

inflation expectations, and how difficult the control of inflation becomes when no such anchoring exists.

The third issue was more fundamental, and represented an intellectual sea change among macroeconomists. The rise of the “rational expectations revolution” embodied an emphasis on micro-based modelling, forward-looking and optimizing agents, model-consistent expectations, and eventually the appreciation of the Lucas Critique (Lucas, 1976)—the idea that policy actions needed to be explicitly built into the constraints faced by optimizing agents if we are to draw legitimate conclusions regarding the likely effect of policy changes on individual actions and aggregate economic outcomes. It took only a few more years before Real Business Cycles made their appearance (Kydland and Prescott, 1982), significantly altering the course of macroeconomic research; with the assumption of market-clearing and leading roles for technological shocks, the “demand dominance” of the post-war period had been largely eliminated.

### The Costs of High Inflation

It has long been understood that one of the serious consequences of inflation is that it generates unintended and probably undesirable redistributions of income—between workers and firms, borrowers and lenders, and governments and taxpayers. Such redistributions depend on the incompleteness of institutional arrangements that could in principle, but likely at considerable cost, be modified to provide full indexation.<sup>4</sup>

The difference between anticipated and unanticipated inflation also matters. Even in the absence of complete indexation, agents who expect future inflation could incorporate that expectation into their wage or interest-rate agreements, thereby preventing such income redistributions. Indeed, academic economists usually rely on this distinction to argue that it is only unanticipated inflation that presents a serious policy problem, as the costs associated with a fully anticipated (and moderate) inflation are quite small.

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4 Full indexation (to the CPI, for example) would only ever prevent such income redistributions if movements in the CPI were fully independent of changes in relative prices. Such independence is unlikely to ever occur. I thank Michael Parkin for this observation.

Central bankers, however, tend to reject the practical utility of this distinction. While accepting the academic point that a perfectly anticipated high inflation rate may not be that costly, they reject that one has ever occurred. Based largely on their experience from high-inflation episodes, they note the high correlation between a country's average rate of inflation and the volatility of that country's inflation rate. Such volatility is seen as generating two types of uncertainty, both of which are damaging to the functioning of a modern market-based economy. First, the volatility of the inflation rate suggests uncertainty about inflation itself; in the absence of complete indexation, this implies swings in unanticipated inflation that lead to changes in *ex post* real wages, real interest rates, and real tax revenues. Second, and perhaps more important, high and uncertain inflation undermines the functioning of the price system and diverts resources away from the production of inherently valuable goods and services and toward dealing with the problems caused by inflation. In an economy in which movements in relative prices send signals about scarcity and plenty and lead consumers and producers to respond through changes in quantities, high and volatile inflation introduces a great deal of noise into the system. A world with no inflation is complicated enough as there are many real reasons for changes in relative prices; adding volatile inflation to the mix simply results in workers and firms and governments making more mistakes than they would otherwise make.<sup>5</sup>

### The High Cost of Disinflation

If lessons regarding the economic cost of high inflation were sobering, the cost of reducing inflation eventually came to be seen as so large that it provided one of the key motivations for ensuring that inflation, once reduced to low levels, was maintained there.

Inflationary expectations, and the speed with which they adjusted to an announced policy of reducing inflation, played a central role in determining the costs in terms of reduced output and employment. The "sacrifice ratio," the output loss (expressed as a percentage of potential output) per percentage-

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5 See Ragan (1998) and the many references there for a detailed discussion of the costs of inflation and inflation volatility, including the effects of inflation on relative-price variability.

point reduction in the inflation rate, was seen to be an important function of the credibility possessed by the central bank (Ball, 1994). Prior to the U.S. and Canadian disinflations of 1980-82, one set of observers argued that rational and forward-looking expectations implied that the credible and visible announcement of intended disinflation would lead to a rapid reduction in actual and expected inflation, with the result that output and employment losses would be small and brief. Others argued that expected inflation would be slow to adjust to the policy change and that the output and employment losses would be large and enduring. As it turned out, the reality was somewhere in the middle; inflation fell sharply, the contraction in activity was deep, but a healthy economic recovery began very quickly.

In retrospect, it is easier to conclude that credibility is indeed important in reducing the costs of disinflation but that, for good reasons, the Bank of Canada and the U.S. Federal Reserve probably did not have much credibility at the time. After all, the previous decade had not revealed these central banks capable of keeping a lid on inflation, no matter how much they claimed to dislike it. Today, after almost twenty years of inflation targeting, the Bank of Canada has established a great deal of credibility with regard to its commitment to maintaining low and stable inflation, and it is understandably reluctant to take any actions that would diminish it.<sup>6</sup>

Another part of the lesson regarding the high cost of disinflation involves what other policies, in addition to a conventional tightening of monetary policy, might be applied as part of an overall disinflation policy package. In his evaluation of the success of the Anti-Inflation Board (AIB), which operated from 1975 through 1978, McCallum (1986) argues that the AIB successfully reduced the rate of growth of nominal (and real) wages below what would otherwise have occurred, and thus was instrumental in helping Canada avoid a deep recession in the late 1970s. In contrast, with the disappearance of the AIB in 1978, there was no such force preventing the rise of wages in the early 1980s, with the result that Canada experienced a much deeper recession.

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6 It is worth emphasizing that central-bank credibility is something that must continually be earned through action. Even when current inflation is low, it is only the willingness to act to prevent inflation from rising in the near future that will keep inflation expectations well-anchored.

McCallum is essentially arguing that in a world with solidly entrenched inflation expectations, the AIB reduced the sacrifice ratio by helping to dampen the upward drift of Canada's Aggregate Supply curve. Another, and complementary, perspective is to see the AIB as a Keynesian coordinating device, one that makes workers more willing to accept a decline in nominal wage growth so as to generate a better macro response to the inflation and supply shocks of the early 1970s.

With the benefit of hindsight, we might say that if the central bank lacks sufficient credibility to convince private agents that it is serious about disinflation—credibility which would presumably act directly on inflation expectations—an institutional arrangement like the AIB can be a reasonable substitute. Laidler (1976) agrees that AIB-style wage-and-price controls can, in principle, be a useful part of an overall policy package designed for disinflation, but he argues that it would rarely if ever be sufficient; still necessary to a sustained disinflation is a sustained tightening in monetary policy.

Another point made by McCallum (1986) relates directly to one of the central themes from *The Way Ahead*: a major cost of high inflation is that it forces governments to intervene to address some of the problems that inflation creates, but such interventions invariably restrict individual freedoms. He talks of the undesirable choice that confronts policymakers when considering disinflation and the use of AIB-style controls:

... Unless one believes that the inflationary upsurges of the past decade are a never-to-be-repeated thing of the past, it is likely that at some time in the future Canada will again be forced to choose either a major recession without controls (as in 1982) or a much less major recession with controls (as in the mid-1970s). ... [T]his is a most unpalatable choice to have to make, since the benefits of controls in terms of lower unemployment must be set against the unquantifiable but nevertheless very major costs in terms of a general distaste for large-scale government intervention. (McCallum, 1986, p. 142)

### The Instability of Money Demand

Throughout the 1960s and early 1970s there was growing support for the idea that controlling inflation in a sustained manner required controlling the

rate of growth of the money supply. A coherent policy package was provided by Milton Friedman (1960) and a decade later its appeal had only increased. In Friedman's Presidential Address to the American Economic Association of December 1967, roughly half of the speech is devoted to the idea that, to avoid the kinds of mistakes that central bankers with too much discretion and too little information are bound to make, monetary policy should be put on "auto pilot" to ensure a constant rate of growth of the money supply (Friedman, 1968).

By the mid-1970s, with inflation higher and more volatile and apparently not under obvious control by policymakers, the appeal of monetary targeting had continued to grow. It was well recognized that the success of such a policy relied on the existence of a stable relationship between the volume of transactions in the economy and the quantity of money demanded; only with such a stable and predictable money-demand relationship could changes in the supply of money lead to predictable changes in interest rates, with then predictable changes in aggregate demand, output, and inflation.<sup>7</sup> And during the 1960s and early 1970s, this relationship appeared to be stable. As late as 1976, David Laidler argued the benefits of monetary targeting as an effective substitute for wage-and-price controls and made the following claim:...

... It turns out that ... there exists a stable relationship in the economy as a whole between total national spending and the amount of money that the economy requires to carry on its business. The existence of such a relationship for an enormous variety of times and places, including the contemporary Canadian economy, is one of the best established facts of applied economics. (Laidler, 1976, p. 183)

The relationship may have been stable and predictable during the decades preceding 1976, but it took only a few short years for the financial innovations of the late 1970s to put an end to the Bank of Canada's monetary targeting. Having commenced the formal targeting of M1 in 1975, a policy seen as a use-

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7 One could also argue the opposite causality: that only with a stable money-demand relationship would policy-induced changes in the interest rate lead to predictable changes in money, and then to predictable changes in aggregate demand and inflation.

ful complement to the Anti-Inflation Board, the approach never worked as well as the Bank's economists hoped (Crow, 2009a; Freedman, 2002). With the ongoing financial-market innovations and the resulting swapping of funds between bank accounts of various kinds, the measure of M1 was rarely confined to the Bank's proscribed target ranges for growth; in response, the Bank formally terminated the policy in 1982. As Governor Gerald Bouey famously said in 1983: "We didn't abandon M1; M1 abandoned us!"

### The Limitations of Monetary Policy

By the mid-1980s, a growing consensus was emerging among macroeconomists and central bankers regarding the genuine and significant limits to what monetary policy could accomplish. It presumably follows that real limits should be placed on what we ask central bankers to achieve. Consider two aspects of these limitations. The first is the number of policy instruments available to central bankers. Monetary policy has at its base a single instrument: the central bank's balance sheet. This balance sheet reveals the fundamental truth that central banks create money and inject it into the financial system by using it to purchase government securities (or perhaps foreign exchange). We can view policy actions as altering short-term interest rates (as is now the norm for central banks) or as altering the quantity of money (as is now deemed to be "unconventional"), but these two perspectives of monetary policy are just different sides of the same coin.<sup>8</sup>

The second aspect of the limitations involves the distinctions between real and nominal variables and between the short-run and long-run effects of monetary policy. While monetary policy can have a profound influence on a large range of real and nominal variables over a period of a few years, there emerged a growing understanding that these short-run effects eventually get unwound in the long run, leaving an enduring change only on the level or growth path of nominal wages and prices. Since the central bank's instrument is fundamentally about a nominal object—money—it should not be surprising in a market

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8 In the last few years of financial crisis and recession, we have seen central banks in many countries take extraordinary policy actions, mostly involving changes in the terms and conditions of loans to financial institutions, but these actions are just creative ways of using the central banks' balance sheets.

economy that the ultimate influence of monetary policy will apply to nominal variables only.

Implicit in this view of the limitations of monetary policy is the absence of a stable long-run trade-off between the rate of inflation and the level of real GDP or the unemployment rate; the long-run Phillips Curve is vertical. In convincing the academic profession and community of policymakers that these limitations for monetary policy were real and needed to be taken very seriously, there was perhaps no more influential work than Friedman (1968). His specific arguments in favour of maintaining a constant rate of money growth, presented in the same paper, have long since fallen by the wayside; but his arguments regarding the limitations of monetary policy have had an enormous and enduring influence on the economics profession. Friedman's ideas regarding the absence of a long-run trade-off, together with those of Edmund Phelps (1972) as well as widespread empirical evidence from the 1970s and 1980s, have become such a standard part of the economists' intellectual toolkit that in our principles textbooks we often no longer attach their names to the ideas—almost as if such labelling would be an admission that the ideas are still unsettled and open to debate.

### The Role of a Flexible Exchange Rate

As a small and open economy, it is natural that Canadian economists and policymakers tend to place more emphasis on the role of the exchange rate than do our counterparts in larger economies in which trade is relatively less important. In addition, Canada has had more experience in operating with and learning about a flexible exchange rate, since we spent many of the post-war years outside the Bretton Woods system (Powell, 1999). This has given us a great opportunity to learn about how a flexible exchange rate can play a useful role within a coherent framework for monetary policy. Central to this learning has been the distinction between the real and nominal exchange rate, and the different causes of their changes over time.

The nominal exchange rate is, of course, nothing more than the Canadian-dollar price of a unit of foreign currency. If domestic monetary shocks have an enduring effect only on the domestic price level, as would be the case if money is neutral in the long run, then the external manifestation of this neutrality is

that the nominal exchange rate will adjust in the same direction and by the same percentage, thus leaving the real exchange rate unaffected. The same is true for foreign monetary shocks, although in this case the movements will be in the foreign price level and the exchange rate. So in the face of monetary shocks, *ceteris paribus*, price levels and the nominal exchange rate will adjust over time, but real exchange rates will eventually return to their initial levels.<sup>9</sup>

The real exchange rate, in contrast, is the relative price of (baskets of) goods across international boundaries. While monetary shocks should have no sustained influence on the real exchange rate, there are many shocks that will. First, since non-traded goods play a large and increasing role in national consumption baskets, deviations in their prices across countries will lead to changes in real exchange rates. The Balassa-Samuelson effect shows how, with integrated labour markets within countries, differential productivity growth in the traded-goods sector across countries leads to wage changes that drive up the relative prices of non-traded goods in those countries with the highest productivity growth, thus creating a real appreciation (Dornbusch, 1988). Changes in the relative prices of commodities, driven either by technological changes or by changes in demand, lead to real appreciations in commodity-exporting countries (Amano and Van Norden, 1995, 1998). Finally, though it is much less visible in the data, changes in investors' perception of risk premia lead to capital flows that cause real appreciations in the capital-importing countries and real depreciations in the capital-exporting countries.

The slow adjustment of national price levels is probably the key argument in favour of a flexible nominal exchange rate. As Friedman (1953) famously argued, if nominal price levels were fully and instantly flexible in response to shocks, a flexible exchange rate would be unnecessary because all of the needed adjustment in the real exchange rate would naturally and quickly occur through movements in price levels. The rigidity of wage and price adjustment is the fundamental reason that a flexible exchange rate can act as an aggregate

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9 As Dornbusch (1976) made clear in his classic paper, forward-looking expectations and short-run price rigidities ensure that monetary shocks will cause real exchange rates to respond to monetary shocks much more in the short run than in the long run.

“shock absorber” (Murray, 2000). Canada has seen many episodes in which flexibility of the nominal exchange rate facilitated adjustments in the real exchange rate which then dampened the swings in aggregate output and employment caused by external shocks. Following the Asian crisis and subsequent plunge in commodity prices in the late 1990s, for example, the large depreciation of the Canadian dollar stimulated the central Canadian manufacturing and exporting sector, thus reducing the overall negative impact of the shock. Similarly, in the mid-2000s, rising world commodity prices led to a strong appreciation of the Canadian dollar; the booming commodity-export sectors in Western and Eastern Canada were offset to some extent by slower growth in the manufacturing heartland of Central Canada.

The view that nominal exchange rates should be left free to adjust to whatever shocks come along still leaves open one crucial question: should changes in the exchange rate influence the central bank’s policy actions and, if so, how? On this issue, the Bank of Canada has also learned considerably over time. The Bank knows well that different sources of exchange-rate movements require different policy responses, although identifying the precise cause of any observed change is always difficult. For example, a sustained increase in world commodity prices is itself a positive shock to Canadian aggregate demand and thus is likely to be met with a tighter monetary policy. Even though the shock will cause an appreciation of the Canadian dollar which tends to dampen the expansion, the overall effect is still positive for aggregate demand. In contrast, the adjustment of global portfolios away from foreign assets and toward Canadian assets will also cause an appreciation of the Canadian dollar, but such a shock, if significant and sustained, is likely to be met with a looser monetary policy. Having its origins in financial markets and not product markets, this shock has no direct effect on Canadian aggregate demand, although the subsequent currency appreciation still reduces Canadian net exports and thus the overall effect is negative. So, there can be no simple rule of thumb connecting a change in the exchange rate to a change in monetary policy; understanding the cause of the exchange-rate change is crucial.

This general argument that different exchange-rate movements require different policy responses is difficult to communicate with the public and with financial markets. In the mid-1990s, the Bank tried to explain these ideas by

creating and publishing the Monetary Conditions Index (MCI), a weighted average of the exchange rate and an interest rate (Freedman, 1995). It soon appeared, however, that financial markets viewed some MCI movements as a clear indication of a policy change and thus an opportunity for a profitable trade. As a result, the Bank soon abandoned the MCI. In the mid-2000s, with rising commodity prices and a strengthening Canadian dollar, the Bank tried again, but this time by making an explicit distinction between “Type 1” (eg. commodity prices) and “Type 2” (eg. portfolio adjustments) sources of exchange-rate movements (Bank of Canada, 2005; Dodge, 2005; Ragan, 2005). This explicit distinction, together with the cumbersome labels, seems now to be rarely made in speeches by the governor or deputy governors, although the logic of the basic argument is sometimes clear in context. The appropriate role of a flexible exchange rate in the conduct of Canadian monetary policy remains a communications challenge for the Bank of Canada.

### The Current State of Canadian Monetary Policy

After many years, many shocks, and many lessons learned, central banks in most developed countries, including Canada, seem to have converged on some solid guiding principles for monetary policy. These can be boiled down to two key observations regarding how economies function and how monetary policy operates. First, there is a clear recognition that high and variable inflation is costly. Not all of these costs are easy to measure or even to simulate in simple macro models, but they are nonetheless real (Ragan, 1998). Second, there is an equally clear acknowledgement that the rate of inflation is the single macro variable that monetary policy is able to influence in a sustained and systematic manner. With these two underlying principles, it is perhaps not surprising that monetary policy has evolved in many countries to the point where central banks explicitly target a low rate of inflation. Canada was the second country to formally adopt inflation targeting, in 1991, and many countries followed suit over the next twenty years. In retrospect, this evolution of monetary policy toward inflation targeting may seem obvious or inevitable, but it required the shocks and policy mistakes and learning that occurred over the previous thirty years; it really has been a “natural selection” of good and workable ideas.

How can we judge the Bank of Canada's actions since the adoption of inflation targeting? Others have provided an excellent review of Canadian monetary policy (Crow, 2009a; Laidler and Robson, 1994, 2004), and so a detailed treatment here is unnecessary. In terms of the economic impact of monetary policy, Longworth (2002) provides a comprehensive review of the relationship between inflation and many macroeconomic variables, including relative-price dispersion, inflation expectations, and output volatility. The reduction of inflation and adoption of inflation targeting appear to coincide with a general reduction in economic volatility and an improvement in broad measures of performance.<sup>10</sup> As for the achievement of its stated objective, the Bank certainly delivered on its commitments. The formal inflation target has been two per cent since 1995, and from then to 2007 the average rate of inflation was remarkably close to the target, though there were brief periods when inflation strayed noticeably (Melino, 2011).

In terms of the policy process, the 1990s witnessed a notable evolution, with focus on both implementation and communication. The emphasis on the Bank's target for the overnight interest rate as its primary instrument, the establishment of eight fixed announcement dates per year, the regular publication of the *Monetary Policy Report*, and the increase in the number and clarity of public speeches are perhaps the most visible changes that took place during this period. The Bank's communications were aimed not just at explaining what it was doing and why, but also at the need to keep inflationary expectations anchored at the inflation target.

If the experience of 1991–2007 suggests the evolution toward a fully mature and well-functioning policy regime, the events since then reveal that regime's resilience. When the global financial system began to show its strains in the summer of 2007, and these strains eventually revealed deep and systemic problems, the Bank of Canada was able to respond effectively—to increase the liquidity available to financial institutions, reduce the fears of counterparty risk, and maintain the flow of credit.

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10 There remains some debate regarding the appropriate stance of monetary policy during the mid-1990s; for a sample of the view that monetary policy was systematically too tight, see Fortin (1996).

By the fall of 2008, global financial markets were in full crisis. Even though the epicentre of the crisis was not in Canada, the globalization of financial markets assured that Canada would experience significant tremors. Canada's well-anchored inflation expectations, together with the Bank's long-established credibility in returning inflation to target, permitted the Bank to respond aggressively by sharply cutting its target for the overnight interest rate. By the spring of 2009, with its policy rate at its effective lower bound, the Bank was on the verge of implementing quantitative easing and perhaps even credit easing. The U.S. Federal Reserve and the Bank of England had already taken these steps, but the economic situation in Canada was then less dire. Though the Bank explained these policies in its April 2009 *Monetary Policy Report*, they were never implemented. Instead, the Bank tried something less dramatic but no less innovative: it issued a commitment to hold its policy rate at its effective lower bound until the summer of 2010, conditional on the outlook for inflation. The payoff appeared almost immediately in the form of a reduction in long-term interest rates (He, 2010).

Looking back on the period since 1991, and especially the last few years, it is difficult not to be impressed with Canadian monetary policy and the people charged with making it work. For almost twenty years, in the face of shocks from various sources, the Bank of Canada has upheld its commitment to keep inflation low and stable. Even the very dramatic events of the past few years have not revealed the Bank to be lacking in any substantive way, either with an insufficient ability to analyze and respond to unfolding events, or with insufficient command over institutional arrangements to make its policy actions effective.

Laidler (1999) emphasizes four elements of any "coherent monetary order." The monetary-policy regime must: (a) have a well-defined goal; (b) the relevant authorities must have the power and abilities needed to achieve the goal; (c) private-sector agents must understand the goal and expect it to be achieved; and (d) the relevant authorities must be accountable to the electorate both for the choice of the goal and for their performance in achieving it. By this standard, Canada clearly has a coherent monetary order. The Bank of Canada and the Government of Canada have agreed upon a well-defined target for the CPI inflation rate. The Bank has the power and tools needed to keep inflation close

to that target rate. The Bank's inflation target is well known and constantly repeated in the Bank's communications, and private-sector inflation expectations are well anchored at the two-per cent target. Finally, the Bank of Canada is accountable for its actions and for the resulting rate of inflation, through the Minister of Finance and Parliament, to the Canadian people.

The successful evolution of Canada's monetary policy over the past forty years is entirely consistent with this festschrift's theme of emphasizing the need for "better" government as opposed to either "more" or "less" government. By controlling the amount of money in circulation, central banks have tremendous power at their disposal. But it is the intelligent and prudent use of this power that constitutes a successful monetary policy. By recognizing the limits of what this power can accomplish, together with learning some important lessons about how it can best be used in various situations, the Bank of Canada has been able to make a very substantial contribution to the economic welfare of Canadians.

### *Future Challenges for Canadian Monetary Policy*

Despite this success, we should not be blind to the possibility of making further improvements. Complacency is a real danger, especially for policymakers whose recent successes may help to convince them that all is well. Three broad challenges merit attention.

First and foremost, central banks in the developed countries must determine the appropriate policy route back toward "normal" from the highly abnormal events of the recent financial crisis and recession. This is arguably less of an issue in Canada than it is in the United States and the United Kingdom, where significant excess capacity, highly expansionary monetary policy, and the beginnings of large fiscal consolidations may combine with the external forces on energy and food prices to produce a dangerous mix of inflation and stagnation. Yet Canada can never be fully insulated from other economies; events and policies from elsewhere have a significant impact on Canadian economic outcomes and policy choices.

Even before returning to some semblance of normality, there are refinements to Canadian monetary policy that should be considered. One option is to reduce the Bank's inflation target, to one per cent or perhaps even to zero.

The steady and continual erosion in the value of Canadians' money imposes real costs on those individuals who do not have fully indexed nominal incomes, and with the aging of the Canadian population the share of such people in the total population is likely to increase over the next few decades. Another option is to switch from inflation targeting to price-level targeting, so that any shocks to the price level are fully undone as the Bank's policy actions push the price level back to its predetermined path. Even if the targeted price level were to grow at an annual rate of two percent, this option has the advantage over the *status quo* of reducing long-run uncertainty in the price level.

Both policy refinements have advantages and disadvantages over the current system, and they have been well discussed and debated both inside and outside the Bank of Canada (Amano *et al.*, 2009; Ambler, 2009; Melino, 2011; Parkin, 2009; Ragan, 2011). The current agreement between the Bank of Canada and the Government of Canada expires this year, and we will soon see whether the new agreement includes either of these changes.

A more important challenge for Canadian monetary policy is not being so openly debated. The economic events of the past few years have brought to the fore the issue of "financial stability." The nature of the financial crisis led to the widespread recognition that we need to place much more emphasis on the interconnected nature of financial institutions within an overall financial system. Although there are different definitions of financial stability, most people's instinctive definition would probably emphasize the need for the financial system to be resilient to shocks large enough to cause the failure of a small number of financial institutions (Freedman and Goodlet, 2007). Put differently, the failure of a few financial institutions should not be able to cause the large-scale disruption or collapse of the entire system.

The pursuit of financial stability relates to monetary policy in two direct ways.<sup>11</sup> The first, "leaning" against financial excess, is entirely in the hands of central banks; the second, better "macro-prudential" regulation and over-

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11 A third issue related to financial stability is reform of existing financial-market regulations. Central banks, including the Bank of Canada, are actively involved in these discussions, under the auspices of the Basel Committee on Banking Supervision (within the Bank for International Settlements) which develops policy recommendations. For brief reviews of some of the issues, see Masson and Pattison (2009) and TD Economics (2010).

sight, requires active coordination and communication between central banks and other government institutions.

### “Leaning” Against Financial Excess

There is a growing consensus that the cause of the 2007-09 financial crisis was a complex combination of many practises, policies, and institutional arrangements, most of which were deep within the financial system. White (2009) and Laidler and Banerjee (2008) argue convincingly that an important part of the problem was that in the several years prior to the crisis central banks in many countries—including Canada—were too unwilling to “lean” against growing financial excesses, such as dramatic increases in financial leverage in the household and corporate sector. Their implicit preferences were to “clean up” whatever messes were created by the eventual financial collapse.

White (2009), Parkin (2009) and others argue sensibly that we should not think of leaning in terms of the Bank of Canada’s formally targeting a set of asset prices. Not only is it unclear which set of prices to target, but it is also unclear how to identify any given price increase as “inappropriate” or somehow disconnected from the underlying “fundamentals.” White’s concept of leaning is far less formulaic and more subtle than formal targeting would ever permit. If the Bank of Canada chooses to lean against financial excesses, it needs to look broadly at financial markets and use its discretion and judgement very carefully. It needs to cast its eyes over levels of asset prices and financial leverage that are deviating from their longer-run trends, and also examine the growth rates of monetary aggregates and flows of credit that appear to be unusually large (Laidler and Bergevin, 2010). White (2009) reminds us that many financial crises through history were preceded by the development of financial excess, and his guiding principle for policy is that careful but significant pre-emptive policy tightening is more effective than the massive and sudden monetary expansions that typically follow financial crises.<sup>12</sup>

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12 Few analyses of history’s recurring pattern of financial excess and collapse are more readable than Galbraith (1994) and Kindleberger and Aliber (2005).

An important issue in the “lean versus clean” debate remains unresolved: what should a central bank do when different macroeconomic indicators are suggesting different policy actions? For example, suppose that the “price stability” indicators suggest there is little threat of higher inflation in the near future; in this case, the likely policy action by the central bank would be to leave its policy interest rate unchanged. However, suppose at the same time some selection of “financial stability” indicators suggests an unhealthy build-up of financial excess, thus indicating a need to “lean” by increasing the policy interest rate. Should monetary policy be driven by its concern to maintain financial stability even though it may be deviating from its inflation target? Or should it focus on the inflation target and let the financial excesses follow their own path? Since central banks have but a single instrument, and sustained inflation appears to be determined fundamentally by monetary policy, the possible divergence of these two sets of indicators suggests the need for additional policy instruments.

Recent research at the Bank of Canada by Boivin, Lane and Meh (2010) sheds light on this issue and also emphasizes the centrality of the potential difference in scope between monetary policy and financial excesses. Boivin *et al.* (2010) develop model simulations in which the best policy response to sector-specific financial excesses may be well-directed regulatory tools rather than monetary tightening. For example, an unusually large and sustained increase in real-estate prices may be best addressed with a change in mortgage or mortgage-insurance regulations rather than with traditional monetary tightening. The problem with the latter is that it applies more-or-less uniformly to the entire economy and, if the financial excesses are narrow enough, the monetary tightening may make it more difficult for the central bank to achieve its objectives regarding price stability. On the other hand, financial excesses that exist simultaneously in several sectors of the economy, or that can easily spill over from one sector to others, may be best addressed with a combination of regulations and monetary tightening, and in this case the central bank’s actions may be consistent with enhancing both financial stability and price stability. The key policy question for the central bank then becomes whether the existing financial excesses are large enough and widespread enough to warrant monetary policy action.

This line of inquiry and these preliminary findings support Bank of Canada Governor Mark Carney's (2009) argument that the central bank's first line of defence for ensuring financial stability should be reliance on an effective framework of financial-market regulations designed to dampen or offset the effects of financial excesses. This brings us to the second and probably more complex challenge for Canadian monetary policy in ensuring financial stability.

### Better "Macro-Prudential" Regulation and Oversight

The interconnectedness of financial institutions means that policymakers need to give as much attention to ensuring the stability of the overall financial system as is regularly given to ensuring the stability of individual institutions within the system. "Micro-prudential" regulation is directed at ensuring the prudent behaviour of individual institutions, taking the external environment as more-or-less given. "Macro-prudential" regulation is aimed at ensuring the overall stability of the financial system. It takes a broader perspective and thus is more complex. It recognizes not only the kinds of financial shocks that might occur, and from what sources, but also how the behaviour or collapse of individual institutions can influence the overall financial system. Spillovers and positive feedback loops, and thus the potential for systemic instability, are key themes in the macro-prudential mindset (Longworth, 2011).<sup>13</sup>

In Canada, the Office of the Superintendent of Financial Institutions (OSFI) plays the leading role in micro-prudential regulation and oversight, and has done so since its creation in the 1980s. Yet OSFI does not act in a vacuum; through the regular meetings of the Financial Institution Supervisory Committee (FISC), OSFI is brought together with and receives advice from the Bank of Canada, the Canada Deposit Insurance Corporation, Finance Canada, and the Financial Consumer Agency of Canada. In this way, various policy authorities from different parts of the Canadian financial system can share their views and provide advice to OSFI regarding important issues likely to affect the health of Canada's financial institutions (Le Pan, 2009).

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13 Since financial instability at the macro level is likely to be initiated by instability at the micro level, these two concepts overlap considerably more than this paragraph might suggest.

The focus of FISC, however, is to provide advice to OSFI regarding its central mandate, which relates to the prudent behaviour of individual financial institutions. Its key mandate is not about the wider concept of financial stability. Note also that Canada's various provincial securities regulators and representatives from the Canada Mortgage and Housing Corporation (CMHC)—the largest provider of residential mortgage insurance in Canada—are not present at FISC. Given its narrow mandate and representation, therefore, FISC is not well-suited to be Canada's central institution for developing and implementing macro-prudential policies. To ensure financial stability in Canada's future, there is a need for something more.

Yet perhaps there is no need to start from scratch. The existing Senior Advisory Committee (SAC), chaired by the Deputy Minister of Finance, brings together the same membership as FISC to focus discussion on issues of public policy pertaining to the financial system. In recent years, it has addressed issues of financial stability and developed recommendations regarding changes in mortgage and mortgage-insurance regulations; for many of these discussions CMHC was invited to participate.

SAC's informal structure and small size may be important liabilities. Unlike FISC, which is a legislated committee with formal minutes sent to the Minister of Finance who can then learn of any substantive disagreements between the members, SAC is a less formal gathering of a smaller set of key decision makers. Following the recent financial crisis in which securities and housing markets played such major roles, it seems unlikely that any effective body for developing and implementing macro-prudential policies would not contain CMHC and at least some of the securities regulators.

Even if SAC were to expand to include CMHC and the securities regulators, and were to become a legislated committee with a clearly assigned mandate and individual member responsibilities, it would also be important to ensure that the various members of SAC could effectively discuss and debate the key aspects of financial stability. As it now stands, the various members of FISC (who are the likely members of an expanded SAC) probably have quite unequal skills for analysing and debating developments in asset markets, the sustainability of certain financial patterns, and the costs and benefits of various policy actions. The Bank of Canada's ability to determine the key macro forces at play

is probably unmatched by any other member of the group, but its knowledge of the details of what is going on in housing markets, and why, may be considerably less than what resides within CMHC. Any effort to expand and formalize SAC should ensure that enough human capital exists within each of the member institutions for balanced and fruitful discussions to take place.

A final important issue over which there is some debate is the role to be played by the Bank of Canada in any formalized and expanded SAC, and whether its role would add to its existing power. On one side of the debate are those opposed to expanding the Bank's powers. Some on Parliament Hill might believe that any enhanced powers of regulation or oversight should lie with elected rather than appointed officials. There are also those who argue that having the Bank of Canada more closely involved in regulatory affairs may expose it to excessive political influence and thus threaten its valuable operational independence. On the other side of the debate are those who focus more on the technical skills required from any effective macro-prudential regulator. Two observations make it easy to argue for an increased role for the Bank (Crow, 2009b). First, the Bank's expertise in macroeconomics and the macro role of financial markets likely exists in no other Canadian institution, so giving it some increased responsibilities in dealing with macro-prudential regulation seems only logical. Second, if new financial-market regulations involve cyclical indicators or thresholds of any kind, it will be incumbent on someone to determine when the cyclical "trigger" is pulled. Given that the Bank controls the most important counter-cyclical tool in the government's policy arsenal, the Bank should clearly be involved in this decision.

As argued earlier, the evolution toward a "coherent monetary order" in Canada has delivered considerable benefits for many years. The same logic demands that we develop a coherent order for financial stability; but in this task we may still be far from success. Designing an institutional framework for macro-prudential regulation and oversight, and determining the Bank of Canada's appropriate role and responsibilities within it, are not simple tasks. It will require the Canadian government, first, to recognize the importance of the issue and, second, to take the time required in consultation and design to assemble the framework with the appropriate parties involved and responsibilities clearly assigned. Doing it right involves bringing together various policy

authorities with different perspectives, different specialties, and different primary mandates. But such complexities are central to any structure devoted to taking a more systemic view of financial institutions and markets.

### *Final Thoughts*

The evolution of Canadian monetary policy does not just reflect the occurrence of random policy events, some of which worked and some of which did not. From the mid-1970s onward, policymakers at the Bank of Canada have been in the mindset of continually seeking improvements, searching for ways to make “better” policy. Their search for a nominal anchor eventually led to the compelling notion of inflation targeting, an idea that has clearly succeeded. But without the Bank of Canada’s continual efforts at improvement, one can at least wonder whether we would now have our existing monetary coherence.

Similarly, with regard to macro-prudential regulation and oversight, the federal government needs to adopt this mindset of continually searching for policy improvements, and not automatically accepting the status quo. It needs to examine whether the current institutional arrangements provide the macro-prudential regulations and oversight necessary to prevent a crisis in the face of large future financial shocks. Perhaps the current arrangements are satisfactory, or perhaps they are seriously lacking; it is difficult to be sure without devoting much time and energy to a careful review of the issue. But the prudent, sensible and responsible action for the government is to make sure that the difficult questions are being asked, that the genuine debates between various parties are being resolved, and that the necessary responsibilities are being clearly assigned. Given the extent to which Canadian leaders have been accepting congratulations from around the world for having such a sound financial system, it would be embarrassing indeed to discover that this system actually lacked the resilience needed to withstand the next set of shocks or pressures. No political price needs to be paid for quietly asking the right questions and making the appropriate institutional changes behind the scenes; an almost unthinkable political price will be paid if these actions are not taken soon and a future crisis reveals fatal cracks in the system.<sup>14</sup>

Ian Stewart might emphasize that getting this policy issue right—and getting the best institutional framework in place—is not necessarily about advocating “more” government. Rather, it is about ensuring that our underlying policies and policy frameworks are properly designed so that financial markets can be left to operate more-or-less on their own and function well in the face of various kinds of shocks. If the policy framework and macro-prudential regulations are working well, future economic shocks will be unlikely to lead to economic crises—and thus there will be less need for governments to intervene in large and dramatic ways.

There is an important balance to strike here. Some will argue that excessive regulation in financial markets will unduly stifle innovations and will reduce the dynamism of the financial sector. We surely need to recognize the importance of this sector in intermediating between the borrowers and the lenders of the economy, as well as the role played by sophisticated financial instruments in achieving efficient intermediation. So there is a need to be wary of excessive regulation. At the same time, however, we need to recognize that too little regulation—or regulation of the wrong sort—leaves us unduly exposed to the threat of future financial crises, and thus to the enormous costs that follow in their wake. The significant benefits from avoiding such crises warrants incurring the modest costs associated with better regulation; “more” government now may well allow “less” government in the future.

Economic crises naturally make government actions easier to justify. Any individual policy initiative may be sensible or not as a response to an economic or financial crisis, but the mere existence of the crisis makes it far easier for any government to act boldly, and to convince the people of the need for such bold action. The unfortunate corollary, however, is that when crises are past—even though the problems may still lurk beneath the surface—it is easy for politicians to move on to other things, secure in the belief that there is no longer a need for serious policy changes. The fact that Canada’s financial system fared far better over the past few years than did those in the United States or the United Kingdom may indicate that we have no serious policy challenges to

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14 Though there is naturally plenty of debate about the likelihood of large future financial crises, it is difficult after reading tracts like Johnson and Kwak (2010) to not see such crises as inevitable.

solve within the financial sector. Or Canada's relative success may simply reflect our good luck. Or perhaps it is a bit of both.

In any event, prudent behaviour on the part of government would be to hope for the best while planning for the worst, and to view existing challenges not as a political problem to avoid through inaction but as an opportunity through better policy design to secure a better economic outcome for future generations of Canadians. It seems appropriate to close with a quote from *The Way Ahead*, which applied as much to the need to solve the inflationary problems of the late 1970s as it does today to the imperative to think carefully about ensuring financial stability:

Canadians have always faced challenges and it would be naïve to assume that we will not continue to do so. Recognizing their existence is not cause for pessimism, but necessary in order to face them realistically and resolve them successfully. The coming decades offer tremendous opportunities to Canada and to Canadians. To seize these opportunities, however, requires a shared appreciation of the nature of the prospects and problems confronting us. (Government of Canada, 1977)

Such a shared appreciation, in turn, requires that the difficult questions get posed and the genuine debates get resolved. Only then can we hope to design policy frameworks that are resilient to the inevitable challenges that lie in our future.

## References

- Amano, R. and S. Van Norden (1995) "Terms of Trade and Real Exchange Rates: The Canadian Evidence," *Journal of International Money and Finance*, Vol. 14, No. 1, pp. 83-104.
- Amano, R. and S. Van Norden (1998) "Exchange Rates and Oil Prices," *Review of International Economics*, Vol. 6, No. 4, pp. 683-694.
- Amano, R., T. Carter, and D. Coletti (2009) "Next Steps for Canadian Monetary Policy," *Bank of Canada Review*, Spring, pp. 5-18.
- Ambler, S. (2009) "Price-Level Targeting and Stabilization Policy: A Review," *Bank of Canada Review*, Spring, pp. 19-29.
- Ball, L. (1994) "What Determines the Sacrifice Ratio?," in *Monetary Policy*, ed. N. Gregory Mankiw (Chicago: University of Chicago Press).
- Bank of Canada (2005) *Monetary Policy Report Update*, January 27, 2005.

- Boivin, J. T. Lane and C. Meh (2010) "Should Monetary Policy Be used to Counteract Financial Imbalances?," *Bank of Canada Review*, Summer, pp. 23-36.
- Carney, M. (2009) "Some Considerations on Using Monetary Policy to Stabilize Economic Activity," remarks to a symposium sponsored by the Federal Reserve bank of Kansas City, Jackson Hole, WY, August 22.
- Crow, J. (2009a) "Canada's Difficult Experience in Reducing Inflation: Cautionary Lessons," *C.D. Howe Institute Commentary*, No. 299.
- Crow, J. (2009b) "A Bank for All Seasons: The Bank of Canada and the Regulatory Challenge," C.D. Howe Institute, e-brief.
- Dodge, D. (2005) "Monetary Policy and Exchange Rate Movements." Speech to the Vancouver Board of Trade, Vancouver, British Columbia, February 17.
- Dornbusch, R. (1976) "Expectations and Exchange-Rate Dynamics," *Journal of Political Economy*, Vol. 84, pp. 1161-1176.
- Dornbusch, R. (1988) "Purchasing Power Parity," *The New Palgrave Dictionary of Economics* (Reprint ed.) (London: Palgrave Macmillan).
- Fortin, P. (1996) "The Great Canadian Slump," *Canadian Journal of Economics*, Vol. 29, pp. 761-787.
- Friedman, M. (1953) "The Case for Flexible Exchange Rates," in *Essays in Positive Economics* (Chicago: University of Chicago Press).
- Friedman, M. (1960) *A Program for Monetary Stability* (New York: Fordham University Press).
- Friedman, M. (1968) "The Role of Monetary Policy," *American Economic Review*, Vol. 58, pp. 1-17.
- Freedman, C. 1995. "The Role of Monetary Conditions and the Monetary Conditions Index in the Conduct of Policy," *Bank of Canada Review*, Autumn, pp. 53-59.
- Freedman, C. (2002) "Monetary Policy Anchors," *Canadian Conundrums: Views from the Clifford Clark Visiting Economists* (Toronto: C.D. Howe Institute).
- Freedman, C. and C. Goodlet (2007) "Financial Stability: What It Is and Why It Matters," *C.D. Howe Institute Commentary*, No. 256.
- Galbraith, J. (1994) *A Short History of Financial Euphoria* (Penguin).
- Government of Canada (1977) *The Way Ahead: A Framework for Discussion*, Ministry of Supply and Services, Government of Canada.
- He, Z. (2010) "Evaluating the Effect of the Bank of Canada's Conditional Commitment Policy," Bank of Canada Discussion Paper 2010-11.
- Helliwell, J. (2005) "From Flapper to Bluestocking: What Happened to the Young Woman of Wellington Street?," *Bank of Canada Review*, Winter, pp.31-39.
- Johnson, S. and J. Kwak (2010) *13 Bankers: The Wall Street Takeover and the Next Financial Meltdown* (New York: Pantheon Books).
- Kindleberger, C. and R. Aliber (2005) *Manias, Panics, and Crashes: A History of Financial Crises*, 5th edition (Hoboken, N.J.: John Wiley & Sons).
- Kydland, F. and E. Prescott (1982) "Time to Build and Aggregate Fluctuations, *Econometrica*, Vol. 50, No. 6, pp. 1345-1370.

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References

- Laidler, D. (1976) "An Alternative to Wage and Price Controls," *The Illusion of Wage and Price Control* (Vancouver: Fraser Institute).
- Laidler, D. (1999) "The Exchange-Rate Regime and Canada's Monetary Order," Bank of Canada Working Paper 99-7 (Ottawa: Bank of Canada).
- Laidler, D. and R. Banerjee (2008) "Unstable Foundations: Asset Markets, Inflation Targets, and Canada's 2011 Policy Choices," *C.D. Howe Institute Commentary*, No. 278.
- Laidler, D. and P. Bergevin, (2010) "Putting Money Back into Monetary Policy: A Monetary Anchor for Price and Financial Stability," *C.D. Howe Institute Commentary*, No. 312.
- Laidler, D. and W. Robson (1994) *The Great Canadian Disinflation* (Toronto: C.D. Howe Institute).
- Laidler, D. and W. Robson (2004) *Two Percent Target* (Toronto: C.D. Howe Institute).
- Le Pan, N. (2009) "Look Before You Leap," *C.D. Howe Institute Commentary*, No. 296.
- Lipsey, R. (1984) "Can the Market Economy Survive?," Chapter 1 in *Probing Leviathan: An Investigation of Government in the Economy*, ed. George Lermer (Vancouver: The Fraser Institute).
- Lipsey, R., G. Sparks and P. Steiner (1979) *Economics*, Third Canadian Edition, Harper & Row.
- Longworth, D. (2002) "Inflation and the Macroeconomy: Changes from the 1980s to the 1990s," *Bank of Canada Review*, Spring, pp. 3-18.
- Longworth, D. (2011) "A Survey of Macro-prudential Policy Issues," mimeo, March.
- Lucas, R. (1976) "Econometric Policy Evaluation: A Critique," Carnegie-Rochester Conference Series on Public Policy 1, pp. 19-46.
- Masson, P. and J. Pattison (2009) "International Financial Policy Reform and Options for Canada: Think Globally, Act Locally" (Ottawa: Conference Board of Canada).
- McCallum, J. (1986) "Two Cheers for the Anti-Inflation Board," *Canadian Public Policy*, Vol. XII, No. 1, pp. 133-147.
- Melino, A. (2011) "Technical Issues Associated with the 2011 Monetary Policy Agreement," *C.D. Howe Institute Commentary*, No. 317.
- Murray, J. (2000) "Why Canada Needs a Flexible Exchange Rate," *North American Journal of Economics and Finance*, Vol. 11, pp. 41-60.
- Musgrave, R. (1959) *The Theory of Public Finance* (New York: McGraw Hill).
- Parkin, M. (2009) "What is the Ideal Monetary Policy Regime?," *C.D. Howe Institute Commentary*, No. 279.
- Phelps, Edmund S. (1972). *Inflation Policy and Unemployment Theory* (New York: W. W. Norton).
- Powell, J. (1999) *A History of the Canadian Dollar* (Ottawa: Bank of Canada).
- Ragan, C. (1998) "On the Believable Benefits of Low Inflation," Bank of Canada Working Paper 98-15.
- Ragan, C. (2005) "The Exchange Rate and Canadian Inflation Targeting," *Bank of Canada Review*, Autumn, pp. 41-50.

- Ragan, C. (2011) “Precision Targeting: The Economics—and Politics—of Improving Canada’s Inflation-Targeting Framework,” *C.D. Howe Institute Commentary*, No. 321.
- Stewart, I. (1990) “Global Transformation and Economic Policy,” *Towards A Just Society: The Trudeau Years*, edited by Pierre Elliott Trudeau and Thomas S. Axworthy, Viking Canada.
- TD Economics (2010) “Financial Regulation Reform: A Myriad of Double-Edged Swords,” TD Economics Special Report, July 14.
- White, W. (2009) “Should Monetary Policy “Lean” or “Clean”?, Federal Reserve Bank of Dallas, Globalization and Monetary Policy Institute, Working Paper No. 34.