ENDNOTES

INTRODUCTION

1. See a companion piece to this study, Bernanke and Mishkin (1997), for a more theoretical discussion of the rationale for inflation targeting. In particular, the authors stress that inflation targeting should be seen not as a rule, but as a framework that has substantial flexibility.

PART I. THE RATIONALE FOR INFLATION TARGETING

1. "I believe that the potentiality of monetary policy in offsetting other forces making for instability is far more limited than is commonly believed. We simply do not know enough to be able to recognize minor disturbances when they occur or to be able to predict either what their effects will be with any precision or what monetary policy is required to offset their effects. We do not know enough to be able to achieve state objectives by delicate, or even fairly coarse, changes in the mix of monetary and fiscal policy" (Friedman 1968, p. 14).

2. This argument is made in the leading macroeconomics and money and banking textbooks. For examples, see the discussion in Dornbusch and Fischer (1994, p. 437), Hall and Taylor (1993, pp. 440-1), Mankiw (1994, p. 323), and Mishkin (1994, pp. 701-4).

3. This view is accepted in the leading macroeconomics and monetary economics textbooks. For examples, see Abel and Bernanke (1995, pp. 458-9), Barro (1993, p. 497), Hall and Taylor (1993, p. 222), Mankiw (1994, p. 479), and Mishkin (1994, pp. 651-4).

4. This argument was developed in papers by Kydland and Prescott (1977), Calvo (1978), and Barro and Gordon (1983).

5. Briault (1995) gives a good summary of these effects.

6. Sarel (1996), for example, presents a strong argument that the growth costs of inflation are nonlinear and rise significantly when inflation exceeds 8 percent annually.

7. See Judson and Orphanides (1996). Hess and Morris (1996) also disentangle the relationship between inflation variability and the inflation level for low-inflation countries.

8. For central bankers' views, see Crow (1988), Leigh-Pemberton (1992), and McDonough (1996a); for academics' views, see Fischer (1994) and Goodhart and Viñals (1995).

There is also a literature suggesting that lower inflation will not only produce a higher level of output but also cause higher rates of economic growth, thereby providing a further reason for pursuing the goal of price stability. For example, see Fisher (1981, 1991, 1993), Bruno and Easterly (1995), and Barro (1995).

9. However, as pointed out in Bernanke and Mishkin (1997), the provisions for short-run stabilization objectives in inflation-targeting regimes suggest that, in practice, inflation targeting may not be very different from nominal GDP targeting.

PART III. GERMAN MONETARY TARGETING: A PRECURSOR TO INFLATION TARGETING

1. Laubach and Posen (1997a) provides a more detailed analysis of the German case as well as a comparison with the Swiss monetary targeting regime and address many of the same themes.

2. While this belief may indeed be consistent with later academic arguments that there is an inflationary bias to monetary policy (for example, because of time inconsistency) requiring a central bank to tie its hands, it is important to note that Germany's adoption of monetary targeting precedes these arguments by several years. Some later observers have argued that the Germans were broadly distrustful of monetary discretion, but this interpretation should not be exaggerated through contemporary mindset. To most observers, that issue had already been addressed by the granting of independence to the Bundesbank in 1957, the distrust being the *politicization* of monetary policy.

3. The announcement was reprinted in Deutsche Bundesbank (1974b, December, p. 8).

4. The central bank money stock is defined as currency in circulation plus sight deposits, time deposits with maturity under four years, and savings deposits and savings bonds with maturity under four years, the latter three weighted at their required reserve ratios as of January 1974. The Bundesbank's rationale for this choice of intermediate target variable will be discussed in the next section.

5. Neumann (1996) and Clarida and Gertler (1997) argue both points, that the Bundesbank has multiple goals and that it does not strictly target money. Von Hagen (1995) and Bernanke and Mihov (1997) focus on the latter point, while Friedman (1995) discusses why the Bundesbank might not want to look at M3.

6. The weights are 16.6 percent, 12.4 percent, and 8.2 percent, respectively.

7. See, for example, Deutsche Bundesbank (1981a, "Recalculation of the Production Potential of the Federal Republic of Germany").

8. The vast variety and depth of information provided by the Bundesbank in its *Monthly Report* and *Annual Report* would appear to be evidence that a wide range of information variables, far beyond M3,

Note 8 (continued)
velocity, and potential GDP, play a role in Bundesbank decision making (the work involved in producing the data and analysis makes it unlikely that it is merely a smokescreen or a public service). Nevertheless, monetary policy moves are always justified with reference to M3 and/or inflation developments, rather than with these other types of data.

9. The Bundesbank describes the *Annual Report* as "a detailed presentation of economic trends, including the most recent developments, together with comments on current monetary and general economic problems."

10. Actually, it was the third year of four in a row where the 8.0 percent CBM monetary growth point target was exceeded by at least a percentage point (see Bernanke and Mishkin [1992, p. 201, Table 4]).

11. Two more technical developments also suggested the switch from CBM to M3 targets. The first was that minimum reserve requirements had changed substantially since 1974, so that CBM, computed on the basis of 1974 ratios, corresponded less and less to the monetary base and thus to "the extent to which the central bank has provided funds for the banks' money creation." The second development was the increasing need to include new components, such as Euro-deposits held by domestic nonbanks, in some broadly defined money stock for control purposes. Since these components had never been subject to minimum reserve requirements, the weight at which they should enter CBM was not clear, a problem that does not exist for some extended definition of M3.

12. "While officially the question of the correct exchange rate was still under discussion, the German Chancellor announced his decision on the exchange rate without informing Bundesbank President Karl-Otto Pöhl, although they had met only a few hours before" (Hefeker 1994, p. 383). See Marsh (1992) for a longer historical description. For most east German citizens, personal assets were converted at the rate of 1 to 1. However, for larger holdings, a declining rate of exchange was employed.

13. Since the achievement in the mid-1980s of effective price stability in Germany, the Bundesbank has spoken of "normative price increases" rather than "unavoidable inflation" in response to the high inflation of the 1970s and early 1980s (we are grateful to Otmar Issing for emphasizing this shift to us). This change in language could be interpreted as a sign that the Bundesbank expresses greater confidence in its ability to achieve its ultimately desired inflation goal.

14. For two recent examples of this repeated argument, see Issing (1995b) and Schmid (1996).

PART IV. NEW ZEALAND

1. Before the passage of the Reserve Bank of New Zealand Act of 1989, the Reserve Bank was ranked as low in independence. See Alesina and Summers (1993).

2. "The role of monetary policy under [the new government's] approach is aimed in the medium term at achieving suitably moderate and steady rates of growth in the major monetary aggregates. This is directed ultimately at the inflation rate, as control over the monetary aggregates is seen as a prerequisite for a lower, more stable rate of inflation" (Reserve Bank of New Zealand 1985b, p. 513).

3. The problem of the treatment of housing costs was addressed at the beginning of 1994, when the weight of existing dwellings in the CPI was largely replaced by including the cost of construction of new houses. Similar problems in the treatment of housing costs were a feature of the CPI in the United States before 1983.

4. This is not simply a matter of who guards the guardian, serious though that may be. "Because the Reserve Bank's estimate of underlying inflation relies on judgment in its construction, its validity cannot be directly verified [by outside observers]. In addition, there is room for disagreement concerning the proper model to be used in estimating the impact of one-time shocks" (Walsh 1995). The Reserve Bank itself has made note of this potential conflict of interest and its possible effect on credibility in articles in the *Reserve Bank of New Zealand Bulletin*.

5. Strictly speaking, the first PTA only allowed for, or required renegotiation of, the Agreement, while the second and third PTAs required such a response to shocks.

6. We are grateful to Governor Brash for clarifying this point. The exclusion of the effects of taxes imposed by local authorities proved impractical given the difficulties of identifying policy changes at that level. The effect, however, remained potentially quite large, with the movement toward "user-pays pricing" of services provided by the public sector as part of the broader reforms.

7. Some bank documents, however, have made the contradictory claim that the move to targeting and central bank independence would be expected to have an effect on the potential costs of disinflation. For example, "in order to improve the prospects of monetary policy to remain—and be seen to remain—on the track to low inflation, and thereby help reduce the costs of disinflation, attention turned to possible institutional arrangements which would improve monetary policy credibility" (Lloyd 1992, p. 208). See Posen (1995), Hutchison and Walsh (1996), and Laubach and Posen (1997b) for econometric assessments of this effect.

8. Again, this may be contrasted to the Bundesbank's framework, which does not address the short-run real effects of monetary policy in public statements but keeps all responsibility for the timing and duration of disinflation with the Bundesbank.

9. The article cited here, while signed by Lloyd, not only appeared in the *Reserve Bank of New Zealand Bulletin* under the authoritative title "The New Zealand Approach to Central Bank Autonomy," but parts of it also appeared verbatim in other statements by Reserve Bank of New Zealand officials given in 1992 and 1993, so it is reasonable to treat this statement as representative of the Bank's view.

10. With regard to financial stability, inflation targeting has an important advantage over an exchange rate peg because under an inflation target, the central bank has the ability to act as a lender of last resort. This option is not as available with a fixed exchange rate regime, as the Argentinean experience in 1995 demonstrates (see, for example, Mishkin [1997]).

11. A similar point about the gap between the perception and the operational reality of monetary targeting in Germany was made in the case study in Part III.

12. For brevity, references in this section are given by the month and year of the *Monetary Policy Statement*.

13. See, for example, *New Zealand Herald* (1990a).

14. See *New Zealand Herald* (1990b). Interestingly, after losing power, the Labour Party, which instituted the inflation targets (and the economic reforms, more generally) after taking office in 1984, announced its opposition to the inflation target remaining at a narrow 2 percent band, although it continued to be adamant that the center of the target range should remain at 1 percent.

15. In March 1997, the Bank discussed moving to a more directly controlled instrument rate, but in June the Bank announced that a directly controlled interest rate would in fact not be adopted.

16. See, for example, Reuters Financial Service (1991).

17. Until December 1993, the Bank's inflation forecasts assumed that the exchange rate would remain constant at the level present at the time of the forecast. The vindication of the statement above over the preceding two years led the Bank in June 1994 to assume from that point on an annual appreciation equal to the difference between the trade-weighted inflation forecasts for New Zealand's main trading partners and the midpoint of the 0 to 2 percent target range from June 1994.

18. See, for example, Louisson (1994).

19. We are grateful to Governor Brash for his discussion of these developments.

20. Proportional representation was approved in a nationwide referendum. It was largely interpreted as a means for the public to put a brake on activist programs by the government—be they of the right or left reform persuasion—for under majoritarian parliaments, New Zealand had seen major shifts (such as Labour's "Rogernomics" reforms after 1984), whereas coalition governments would be less likely to accomplish this. The effects of multiple parties on inflation rates and fiscal policy (usually held to increase the former and loosen the latter in the economics literature) do not seem to have entered the discussions.

PART V. CANADA

1. To cite two examples of expectational sluggishness: "There is no doubt that Canadian markets are not at all supportive of inflationary actions nowadays. But it does take time for such reality to have an impact on market behavior, and on the costs and prices that flow from this behavior" (Crow 1991b, p. 13); "the lags in the response of the Canadian rate of inflation to changes in monetary policy have traditionally been long, both as a result of institutional characteristics . . . and expectational sluggishness" (Freedman 1994a, p. 21). Moreover, Longworth and Freedman (1995) explain how backward-looking expectations play a significant role in the current Bank of Canada forecasting model.

2. See similar statements in Jenkins (1990), Bank of Canada (1991c), and Freedman (1994a).

3. The example of New Zealand was probably not yet well established, and it is not acknowledged in public statements by senior Bank officials until Freedman (1994a).

4. Thiessen (1994a, p. 86) makes an almost identical statement of these two points.

5. "Over longer periods of time, the measures of inflation based on the total CPI and the core CPI tend to follow similar paths. In the event of persistent differences between the trends of the two measures, the Bank would adjust its desired path for core CPI inflation so that total CPI inflation would come within the target range" (Bank of Canada 1996, November, p. 4).

6. "Accommodating the initial effect on the price level of a tax change but not any ongoing inflation effects was the approach set out with the February 1991 inflation-reduction targets, and restated in the December

Note 6 (continued)
1993 agreement [extending the target framework]" (Thiessen 1994a, p. 82). Of course, unlike the assessment of differences between core and headline CPI, the assessment of the size of a tax increase's initial as opposed to pass-through effect on prices depends on an analyst's assumptions. The Bank does publish its own calculations of the price effects of tax changes.

7. "It is important to stress that the objective continues to be the control of inflation as defined by the total consumer price index" (Thiessen 1996d, p. 4).

8. "The targets continue to be expressed as a range or a band rather than a specific inflation rate because it is impossible to control inflation precisely" (Thiessen 1994a, p. 86).

9. "Other sources of unexpected price increases, which are typically less significant than the three singled out for special attention, will be handled within the one percent band around the targets for reducing inflation" (Bank of Canada 1991c, p. 4).

10. This may be due to the fact that more than any other inflation-targeting country, Canada has had to cope with headline inflation falling below the target or reaching the target ahead of schedule and, perhaps as a result, with greater public criticism of the targets as harmful to the real economy. These challenges are discussed in the next section.

11. See Thiessen (1994a, p. 89) and Freedman (1994a, p. 20) for examples.

12. This statement is representative of the Bank's position. See also, for example, Bank of Canada (1995, May), which states: "The ultimate objective of Canadian monetary policy is to promote good overall economic performance. Monetary policy can contribute to this goal by preserving confidence in the value of money through price stability. In other words, price stability is a means to an end, not an end in itself."

13. This interpretation of short-run flexibility was raised in a different context in Bernanke and Mishkin (1992). In a more recent example, in the Bank of Canada's *Annual Report, 1994*, the Bank states that "in late 1994 and early 1995, the persistent weakness of the dollar began to undermine confidence in the currency, and the Bank of Canada took actions to calm and stabilize financial markets" (p. 7), while the *Annual Report, 1996* lists "promoting the safety and soundness of Canada's financial system" (p. 4) as the second part of its section "Our Commitment to Canadians." In short, the Bank found no inherent conflict between seeking within limits either the goal of financial stability or the goal of limiting real economic swings (as seen in the gradual convergence discussed above) and the pursuit of price stability over the long run. In this characteristic, it is similar to all central banks we studied, though perhaps more open about it.

14. Real—that is, inflation-indexed return—bonds have been issued in Canada since 1991 following the example of the United Kingdom. One motive cited for the creation of these real bonds was precisely to obtain a measure of inflation expectations. As the Bank of Canada itself has pointed out, however, the market for real bonds to date has been relatively small and illiquid. In addition, it has only a short history, which makes direct measurement of the implicit inflation expectations difficult.

15. This idea has been picked up since by a number of other countries and several private sector forecasting groups as a compact means of expressing the relative tightness of monetary policy in open economies.

16. For a more complete discussion of the MCI, see Freedman (1994b).

17. Freedman (1995, p. 30) offers the opinion that "it may well be that their [*Monetary Policy Report*'s] most important contribution will be to signal prospective inflationary pressure and the need for timely policy action, at a time when actual rates of inflation (which are of course a lagging indicator) are still relatively subdued." This scenario is premised on Canada starting from a situation of "relatively subdued" inflation pressures, which was the case by 1995.

18. Citing New Zealand, the United Kingdom, and Sweden, Freedman (1995, pp. 29-30) notes, "These reports, which have both backward-looking and forward-looking perspectives, have received considerable attention and careful scrutiny by the press, the financial markets, and parliamentary committees." See also Thiessen (1995d, p. 56), who states: "This report will provide an account of our stewardship of monetary policy and will be useful for those who want to know more about monetary policy for their own decision-making."

19. This move may have seemed necessary after the October 1993 election was fought in part over the Bank's monetary policy, and Crow eventually decided not to be considered for a second term. The newly elected Liberal Government chose to extend rather than to replace the inflation targets. This event demonstrates how inflation-targeting frameworks can differ or change along the axis of accountability independently of their stated inflation goals and monetary policy procedures (which may remain the same).

20. According to Cukierman's (1992) legal index of central bank independence, the Bank of Canada ranks, with the Danish central bank, just below the Federal Reserve in independence.

21. Laidler and Robson (1993, Chap. 9) provide an extensive discussion of the Bank of Canada's practical independence and its limits up through 1992.

22. In this regard, Canada's framework is even more similar to that of Switzerland—a country that, like Canada, has a small, open economy. See Laubach and Posen (1997a).

23. *Creating Opportunity: The Liberal Plan for Canada,* cited in Crane (1993).

24. The targets were intended to define the path implied by the various actual inflation targets at eighteen-month intervals of 3 percent by year-end 1992, 2.5 percent by mid-1994, and 2 percent by year-end 1995.

25. For example, "'the government is betting on its own inflation targets,' said Toronto-Dominion Bank chief economist Doug Peters, referring to Canada's target of 2 percent inflation in 1995" (Szep 1991).

26. See, for example, Ip (1991).

27. The committee's formal title was the Standing Committee on Finance, Subcommittee on the Bank of Canada, of the House of Commons, but it was called the Manley Committee after its chairman, John Manley. See its report, *The Mandate and Governance of the Bank of Canada,* February 1992.

28. It should be noted that, for all the attention central banks' written charters and legal mandates attract, there are only a few central banks that have dedicated price stability mandates. Not only have many inflation targeters—such as Canada, Sweden, Australia, and the United Kingdom—adopted largely successful inflation-targeting regimes without revision of their legal mission, but the Bundesbank is the only one of the three independent central banks with a long-standing successful inflation record (the Swiss National Bank and the U.S. Federal Reserve are the others) that has had such a clearly limited legal mandate.

29. The Liberal Party's campaign platform, *Creating Opportunity: The Liberal Plan for Canada*, included the statements: "Liberals believe that economic policies must not merely attack an individual problem in isolation from its costs in other areas. . . . The Conservatives' single-minded fight against inflation resulted in deep recession, three years without growth, declining incomes, skyrocketing unemployment, a crisis in international payments, and the highest combined set of government deficits in our history." See Crane (1993).

30. For a sample of private sector reactions, see Marotte (1993).

31. For press coverage of Freedman's speech, see, among others, Ip (1993).

32. During the period of an announced downward path for inflation, the emphasis in the Bank of Canada's discussion was on the midpoint, whereas once the range of 1 to 3 percent was reached, the emphasis shifted to the bands. We are grateful to Charles Freedman for discussion of this point.

33. Some press observers characterized the contemporaneous developments in transparency undertaken by the Bank as reflecting a desire to make the Bank seem more generally accountable rather than identified with a particular individual. See, for example, Vardy (1993) and McGillivray (1994).

34. The Bank had explained beforehand that it expected only a temporary blip in inflation in 1995 from the depreciation of the Canadian dollar. The fact that the depreciation did not lead to a persistent rise in inflation, even without a further tightening of monetary conditions, helped build the Bank's credibility.

35. The body of the *Monetary Policy Report* states, "Since the last *Report*, the Canadian economy has been weaker than expected and the degree of slack in labor and product markets has been correspondingly greater" (p. 3). And later, "Although a slowdown had been anticipated, the Bank was surprised (along with most others) by how abruptly the situation changed" (p. 6).

36. For example, "for the medium-term, a key issue is whether the trend of inflation might move below the 1 to 3 percent target range. . . . This in turn would imply an easing in the desired path of *medium-term* monetary conditions" (Bank of Canada 1996, May, p. 3). Governor Thiessen and other officers made similar statements to the press.

37. In addition to citing Akerlof, Dickens, and Perry (1996), Fortin also gives prominence to James Tobin's discussion of the macroeconomic significance of the nominal wage floor in his 1971 Presidential Address to the American Economic Association (p. 779).

38. See, for example, Crane (1996) and Fortin (1996b).

39. The speech, reprinted in Thiessen (1996a), was delivered before the Board of Trade of Metropolitan Toronto on November 6, 1996.

40. "However, inflation will work as a lubricant only if it fools people into believing that they are better off than they really are. There is, in fact, every reason to expect that people's behavior adapts to circumstances. In a low-inflation environment, employees are likely to

Note 40 (continued)
come to understand the need for occasional downward adjustments in wages or benefits" (Thiessen 1996a, pp. 68-9). Note that Thiessen does not assert that such wage flexibility has already occurred or is likely to arise quickly.

PART VI. UNITED KINGDOM

1. On May 6, 1997, the new Labour Chancellor of the Exchequer, Gordon Brown, announced that he was granting the Bank of England "operational independence," that is, the Bank could now set interest rates in the pursuit of the specified inflation goal at its own discretion. We return to this development at the end of this section.

2. This announcement was made official by the simultaneous delivery of a letter from the Chancellor to the Chairman of Parliament's Treasury and Civil Service Committee.

3. Speeches by officials of the Bank of Canada in the late 1980s leading up to that country's adoption of inflation targets made the same point with some of the same rhetorical spirit.

4. Of course, the Bank of England and the Chancellor were aware of the innovations in inflation targets in New Zealand and Canada, but, as typical and reasonable for national officials, explicit references in public to other countries' behavior were avoided. Still, the U.K adoption of inflation targeting may be legitimately thought of as part of a larger movement.

5. In a speech on June 14, 1995, Chancellor Kenneth Clarke (1995) announced that this objective would be extended indefinitely beyond the next general election. Without a change in the status of the Bank of England, however, the ruling party had no power with which to bind future governments, so the force of Clarke's statement was unclear. In late 1996, prior to the spring 1997 election campaign, Labour Party leaders indicated that they would continue the inflation-targeting framework (and the current targets) should they, as expected, win the election.

6. This is akin to the Swiss National Bank's rationale for its point target for monetary growth. As the Bank of England's own research suggests, however, if a target range were designed to truly capture some reasonable confidence interval of outcomes, given control problems, the range would be too wide for credibility with the general public. See Haldane and Salmon (1995).

7. Note that the point target does not imply performance assessment on the basis of a backward-looking average. Instead, the inflation performance relative to the point target is explained as the result of past actions and intervening developments. We are grateful to Mervyn King for clarifying this point.

8. The Labour Party's commitment to the inflation target and to greater operational independence for the Bank of England was made explicit in the party's official election platform. The rapid granting of independence—the day after Labour took office—nonetheless was a surprise to all observers.

9. The conveying of this information in an appropriate way to a nontechnical audience has challenged the staff of the *Inflation Report*. Initial efforts to depict the trend path of inflation with probability "cones" moving out from it were not widely understood. The recent pictures of a probability density for future inflation with shading from red (most likely) to pink (tail of distribution) appear to have been well received.

10. The statements quoted represent the Bank's official stance. In the same issue of the *Quarterly Bulletin*, the Bank's "General Assessment" echoes both statements—that "the achievement of price stability remained the ultimate objective of monetary policy" (p. 355), and that "had the United Kingdom remained in the ERM, it is quite possible that price stability would have been achieved during the next year. Although clearly desirable in itself, price stability attained too quickly might have intensified the problems of domestic debt deflation. Some easing of policy was, therefore, desirable" (p. 356).

11. At least, so long as an "optimal" contract for central bankers penalizing inflation performance alone is not in force.

12. There is some requirement for the Bank and its senior staff to give testimony to the House of Commons Treasury Committee, now on a regular basis as opposed to the by-request (though frequent) appearances in the past. Nonetheless, the record of these past testimonies—as well as the lack of incentives facing backbenchers on the committee to deviate from respective party leaderships' lines on monetary policy—suggests that these hearings are unlikely to influence Bank policy significantly.

13. The depreciation is measured by the Bank of England's exchange rate index.

14. The point should not be exaggerated, however, since Italy also managed to limit the pass-through effect of its ERM exit without adoption of inflation targets (see Laubach and Posen [1997b]).

15. See, for example, *Economist* (1994).

16. Minutes of the Monthly Monetary Meeting, July 28, 1994, p. 5.

17. Minutes of the Monthly Monetary Meeting, July 28, 1994, p. 6.

18. Svensson (1996) makes clear the benefits of having the transparent target be the monetary policymaker's inflation forecast.

19. The Bank assumes in its projections unchanged official interest rates and movements in the exchange rate reflecting the differential between U.K. and trade-weighted overseas short-term interest rates.

20. Several British press commentators observed that the timing of the May meeting was postponed until after some local elections, and took this as an indication that a rate hike was coming, since Clarke would not want to implement his policy the day before the polls. While the Bank-Chancellor meetings are monthly, the exact timing is not systematic, with occasional reschedulings occurring. In this instance, there was a widespread expectation before the meeting that the Chancellor would agree with the Bank's assessment; his later public overruling of the Bank, leaving rates unchanged, might be seen as an accommodation to broader Tory political reality, but one that emphasized the economic realities as well. As noted below, the U.K. press tends to look for politicization of monetary policy.

21. Minutes of the Monthly Monetary Meeting, June 7, 1995, p. 8.

22. Minutes of the Monthly Monetary Meeting, June 5, 1996, p. 9.

23. See, for example, *Financial Times* (1996). It should be noted that the British press tends to focus on the possibility that business and monetary cycles are governed by political and electoral developments, despite little econometric or other evidence to believe that such cycles are operative in the United Kingdom, an open economy with brief election campaigns on short notice.

24. Debelle and Fisher (1994) make the useful distinction between "goal" independence and "instrument" independence for central banks. For example, the Bundesbank has goal as well as instrument independence because it chooses inflation targets and sets interest rates. In the other three countries considered here, central banks have only instrument independence because the government, acting alone or jointly with the central bank, sets the goals of policy.

PART VII. HOW SUCCESSFUL HAS INFLATION TARGETING BEEN?

1. Ammer and Freeman (1995) perform a similar exercise. They interpret their results as showing below-predicted GDP growth after targeting, as well as lower inflation and interest rates. Their simulations, however, were based on data series ending two years before the series presented here. As can be seen in the GDP growth results for New Zealand and Canada (Panel B of Charts 2 and 3), GDP growth was initially below predicted values, perhaps due to the pre-adoption disinflationary policies. Over the whole post-targeting-adoption period, however, GDP growth rebounds and averages the predicted level.

For New Zealand, we use the discount rate because it is the only continuously available series that can be seen as reflecting the stance of monetary policy. Since the late 1980s, the Reserve Bank has been keeping the discount rate 0.9 percent above the interbank overnight rate.

2. A formal test for structural breaks in monetary policy reaction functions has three limitations that prevent its use in this assessment of inflation targeting's effectiveness: first, the test would be of extremely low power given the limited time since adoption even in New Zealand; second, the test would require us to impose a structural model of monetary policymaking for each country, which appears excessive; third, the test would provide a yes/no answer where more qualitative results are of interest.

3. Country-specific shocks are not the only potential source of problems for this comparison. Another possible reason why inflation and interest rates could be lower than forecast would be the existence of a widespread disinflationary trend across many countries over this time period, which drove these variables down in targeters and nontargeters alike. Laubach and Posen (1997b), however, explicitly compare the simulations for targeters and nontargeters over the same period and find that significant inflation and interest rate undershooting of forecast occurs only in the targeting countries.

4. Additional evidence suggests that the latter interpretation should be given more weight than the former. The effect of the adoption of inflation targeting on sacrifice ratios, or on the predictive power of previously estimated Phillips curves to continue forecasting inflation in the 1990s, appears to have been minimal, as mentioned at several points in the case studies.