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Recent Central-Bank Reforms and the Role of Price Stability as the Sole Objective of Monetary Policy

1. Introduction

The wave of recent and prospective central-banking reforms represent attempts to develop institutional solutions for the inflation bias that can arise under discretionary monetary policy. Institutional changes that operate by reducing the flexibility of the central bank to engage in discretionary policy, however, run the risk of producing suboptimal stabilization policy. The task of central bank design is to balance the need to limit average inflation with the need to maintain sufficient flexibility for the central bank to respond to economic disturbances.

Currently, there is strong support for the notion that this balance can best be achieved by insulating central banks from direct political influences. In Europe, for example, the Maastricht Treaty has initiated a broad movement to rewrite national central-banking legislation to reduce the role of elected governments in the conduct of monetary policy. Central-banking reforms are also taking place among developing nations (e.g., Chile, Mexico) and the economies of Central Europe (e.g., the Czech Republic, Hungary).

Another recent trend is towards inflation targeting, either as an operational procedure for implementing policy or as a formally mandated

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policy objective.¹ Inflation targeting has been adopted in the absence of any change in central bank legislation (e.g., in Canada and the U.K.), and in combination with greater central bank independence (e.g., in New Zealand).² Formal mandates for price stability or inflation targeting requirements represent means of institutionalizing an achievable objective for monetary policy. By mandating outcomes, however, such an approach potentially restricts the flexibility of the central bank.

An alternative to mandated objectives or targeting requirements is offered by recent applications of mechanism design theory to monetary policy. Walsh (1995b) shows how an optimal policy can be sustained through an incentive contract that bases the central bank's rewards (or penalties) solely on the realized rate of inflation, a result generalized and extended by Persson and Tabellini (1993).³ This would seem to provide some theoretical support for the establishment of inflation targeting procedures or for making price stability the sole objective of monetary policy. However, the contracting approach has also emphasized the need to give the central bank complete discretion in the actual conduct of policy, while targeting approaches have emphasized the need to restrict central bank flexibility in order to establish the credibility of a low-inflation policy. Despite these differences in perspectives, the finding that an optimal contract can be based solely on observed inflation suggests that a mandated objective to achieve price stability or an inflation targeting requirement may represent alternative means of institutionalizing an optimal incentive contract.

Deriving optimal incentive schemes can provide a normative benchmark against which existing or proposed central bank institutions can be compared. Used in this way, however, the contracting perspective provides only qualified support for formally mandating a single objective for the central bank. An inflation-based contract, combined with central bank independence in the actual implementation of policy, achieves optimal policy outcomes only if the central bank shares social values in

1. Swinburne and Castello-Branco (1991) provide a comprehensive summary of the arguments in support of establishing price stability as the single objective of monetary policy. These include the following: as a single instrument, monetary policy should have a single target; monetary policy cannot have sustainable real effects; and multiple objectives are less consistent with stable and credible monetary policy.
2. For discussions of recent experiences with targeting, see Ammer and Freeman (1994) or Fischer (1993). General discussions of monetary targeting can be found in Goodhart and Vinals (1994). An extensive collection of papers on various aspects of targeting can be found in Federal Reserve Bank of New York (1990).
3. In the standard Barro–Gordon model, optimality requires that these rewards and penalties be linear in the realized rate of inflation. See also Fratianni, von Hagen, and Waller (1993). Tirole (1994) argues more broadly for the usefulness of incentive theory for the study of governmental organizations.

trading off unemployment and inflation (Walsh, 1995b). When the central bank does not share society's preferences, the optimal contract is no longer a simple function of inflation; more complicated incentives must be generated to insure that the central bank maintains low average inflation while still engaging in appropriate stabilization policies. And the tradeoffs inherent in the conduct of policy suggest that a central bank charged only with the objective of price stability should not have complete discretion in setting short-run targets.

The contracting approach points generally in the direction of short-run adjustable inflation targets and considerable central bank independence. Such a system gives the central bank a great deal of instrument independence but little goal independence, in the terminology of DeBelle and Fischer (1994). And means to insure accountability for achieving specified goals should form a critical component of any institutional design. The central-banking reforms carried out in New Zealand match well the implications of the optimal-contracting approach, although the effectiveness of the New Zealand reforms has yet to be tested. Recent European reforms match less well, with greater emphasis being placed on achieving political independence for central banks. Less attention has been given to insuring that the correct incentives for making short-run policy tradeoffs are established, nor has sufficient attention been paid to insuring accountability.

2. The Role of a Formal Mandate for Price Stability

If the government can structure a contract that directly affects the incentives faced by the central bank, it is possible to eliminate the inflation bias of discretionary monetary policy while still leaving the central bank free to respond flexibly to economic disturbances. The contracts studied in Persson and Tabellini (1993) and Walsh (1995b) involved central bank rewards and penalties based only on the realized rate of inflation. In that sense, they can be interpreted as providing support for imbedding a mandate for price stability into central-banking legislation. The basic insight is that the standard inflationary bias under discretion arises because the monetary authority systematically understates the marginal cost of faster money growth. This bias can be offset if the monetary authority must internalize a penalty function that depends directly on the realized rate of inflation. Once the incentives are right, the central bank's discretion and flexibility should not be restricted. It is then possible both to eliminate the inflation bias and to achieve optimal policy responses to shocks.

Getting the incentives right through a contracting mechanism may be hard. High-powered incentive schemes—that is, schemes that make the

central bank's payoff very sensitive to policy outcomes—may be required, and these may be difficult to implement in practice.⁴ And if the government can commit to the optimal contract with central bank, one might ask why the government is unable to commit to a low-inflation policy in the first place. One answer is that contract incentives can be “institutionalized”; the costs of changing institutional structures are generally viewed as larger than the costs of changing government policy. Objectives formally incorporated into a central bank's enabling legislation are likely to be more difficult to change than less formally established rewards and penalties and are therefore more likely to affect the inflation outcomes generated by the political process. Requirements of supermajorities, or the simple requirement that changes be announced publicly, can represent significant costs to changing policy objectives. Making price stability the sole objective of monetary policy by a formal mandate is a way of institutionalizing the idea of a contract based on inflation outcomes.⁵

A key characteristic of optimal contracts is that, once in place, they allow the central bank complete discretion to conduct stabilization policy. Similarly, mandating that the central bank achieve price stability need not preclude a role for stabilization policy. Tirole (1994) notes, however, that rules are often imposed when agents cannot be trusted with discretion. With monetary policy, however, the fear is that the government will exploit policy for short-term gain. This possibility can be limited by forcing the government to adhere to a rule—such as the gold standard—or by insulating the central bank from direct political control via the establishment of an independent central bank. The *process of delegation* through which the government assigns immediate responsibility for the conduct of monetary policy to a central bank is a means of restricting the strategy space available to the *government*. The extent to which this delegation is accompanied by autonomy corresponds to the varying degrees of central bank independence that have been the focus of much recent work. If political pressures generate a positive inflation bias, delegation can serve an important role in supporting a credible low-inflation environment.

4. The optimal contract can be mimicked by a dismissal rule that involves firing the central banker if inflation exceeds a critical value (Walsh, 1993). If there is a supply of new central bankers, the threat to fire is credible, since the government can replace the fired central banker with a new one. Ex ante the government also wants low inflation and so is better off firing any central banker who succumbs to the temptation to inflate even though, ex post, the government might be glad she did. In more complex environments than that of the standard Barro–Gordon model, the optimal contract may need to be state-contingent in complicated ways.
5. In fact, from a longer-run perspective, the central bank's performance is easy to measure, so the optimal incentive scheme is likely to involve high-powered incentives tied to price performance alone.

The *details* associated with monetary policy delegation, however, are often designed to restrict the strategy space of the *central bank*. For example, inflation targeting rules, such as the multiperiod horizon targeting rule proposed and analyzed by Canzoneri (1985) under which the central bank is required to achieve a specific average rate of inflation over a period of fixed length, restrict the space from which the central bank can choose its strategy. A mandated objective would do the same. As a consequence, the flexibility of the central bank is reduced, and this may give rise to a cost in the form of suboptimal responses to economic disturbances.

Besides reducing flexibility, mandated objectives and inflation targeting requirements make inflation outcomes the sole performance measure of the central bank. As Walsh and Persson and Tabellini demonstrate, however, an optimal contract can be based on the inflation rate alone only if the monetary authority shares society's preferences between output and inflation; the optimal commitment policy is not sustained if the central bank only cares about inflation. The role of a low-inflation mandate or a mandate for price stability in an optimal contract is to make a marginal adjustment in the central bank's policy objective, not to constitute the sole factor the central bank considers in setting policy.

If the central bank does not share society's preferences, then its contract will need to be more complex. One means of reconciling the use of a mandate for price stability as the performance measure for monetary policy in the long run with the need to make tradeoffs for stabilization purposes in the short run is through the use of adjustable short-run inflation targets. Short-run targets expressed in terms of the price level or the rate of inflation provide a consistent connection between long-run and short-run objectives. However, any short-run targeting procedure risks imposing unnecessary fluctuations on the economy by restricting the central bank's flexibility unless there is a mechanism that allows the target to be state-contingent. A surprising result of the contracting approach within the Barro–Gordon model was the finding that the parameters of the optimal contract were not state-contingent. Unfortunately, this is not likely to be the case in more realistic environments (see Persson and Tabellini, 1993; Walsh, 1994; or Canzoneri, Nolan, and Yates 1995).

Any mechanism for adjusting short-run inflation targets must face the inevitable need to make tradeoffs between multiple objectives.⁶ An independent central bank that focuses always and exclusively on price stabil-

6. In a situation characterized by multiple objectives, one would expect to find both low-powered contracts—payoffs are not very sensitive to observable outcomes—and restrictions on the agent's freedom to act (Holmstrom and Milgrom, 1994).

ity is likely to lose its independence.⁷ Governments in democracies are accountable to the electorate and as such are justified in feeling they have the right to exert some influence over monetary policy. Any monetary contract, therefore, will need to establish a mechanism for adjudicating disagreements between the government and the central bank in a manner that preserves the long-run objectives of monetary policy.⁸

Letting the government play a role in setting short-run targets runs the risk of compromising long-run objectives. An alternative approach is simply to let the central bank establish its own objectives (Garcia, 1993; Walsh, 1995a). It is shown in Walsh (1995a) that the central banker may have an incentive to opt for an excessive focus on inflation objectives even when society places great weight on minimizing employment fluctuations. To understand why, recall that Rogoff (1985) showed it would be optimal for society to appoint a central banker who places a greater weight on inflation objectives than society does. But, by an exactly parallel argument, the welfare of such a conservative central banker is maximized if she can turn monetary policy over to an even more conservative central banker. Allowing the central banker to delegate is equivalent to letting her choose her own performance measure and leads to a central banker who places zero weight on unemployment fluctuations. This result is independent of the weight society places on unemployment relative to inflation. And while central bankers often justify a focus on inflation by minimizing the impact they can have on the real economy and on unemployment, the central bank will choose to make inflation its sole objective no matter how large is the short-run effect of monetary policy on output.⁹ This may help to explain why, despite the apparent concern with unemployment expressed by the general public, and despite the important short-run effects of monetary policy on unemployment, central bankers are increasingly calling for their mandates to be narrowly focused on inflation.

This, if short-run objectives are to be established, and the central bank is to be judged on the basis of its ability to achieve those objectives, the objectives should not be chosen solely by the central bank. Some means of insuring governmental input into the process of setting short-run objectives needs to be developed. Perhaps the best means for incorporat-

7. Woolley (1985) stresses the interaction between political pressures and central bank independence. See also Posen (1993).

8. Lohmann (1992) shows how discretion can be combined with a governmental override to improve the tradeoff between the inflation bias and stabilization.

9. These results are obtained in a variant of the model used by Rogoff (1985) and others. If there are velocity disturbances that the central bank cannot offset, then the central bank may choose to place some weight on employment fluctuations.

ing the government in the setting of short-run targets is to require that such targets, and any changes in them, be made public.

Establishing a legislated objective for monetary policy, or a performance contract more generally, may have little practical consequence unless accompanied by some mechanism for insuring that the central bank will be held accountable for its performance. One option is a dismissal contract (Walsh, 1993). Another is simply to require the central bank to justify its policies publicly in terms of its mandated objectives. For this to work requires that the central bank's objective be clearly defined in terms of a specific price index. Otherwise, mandated objectives and reporting requirements contribute little to establishing accountability.¹⁰ And the government must also be held accountable with respect to its commitment to the contract with the central bank. While institutionalizing the delegation of monetary policy to the central bank raises the cost to any government of abrogating the goal of price stability, requiring that any instructions the government gives to the central bank be given publicly also serves to raise the costs to elected governments of inflationary policies.

Attempts to develop central banking institutions must face the issues of balancing the goal of price stability with the need for flexibility, of restricting the scope of the government to compromise price stability with the need for governmental involvement in making short-run trade-offs, and of maintaining accountability for policy outcomes. To see how recent central-banking reforms have addressed these issues, the next two sections examine reforms in New Zealand and in Europe.

3. The New Zealand Experience

The 1989 reform of New Zealand's central bank addressed each of the mechanism design issues discussed in the previous section in a more direct and explicit manner than have other recent central-banking reforms. The purpose of the Reserve Bank Act, which took effect on February 1, 1990, was to establish a clear and achievable policy objective for which the Reserve Bank of New Zealand (RBNZ) could be held accountable. In addition, the Act set up a procedure by which the government and the central bank jointly set shorter-run targets defined in terms of a specific price index, defined a set of contingencies under which these targets could be modified, and established a means of enforcing accountability on the part of the official in charge of monetary policy.

10. An obvious case in point is the experience in the U.S., where the Federal Reserve's use of target ranges for multiple monetary aggregates made its performance more difficult to evaluate.

The Act, which was passed with support from both major New Zealand political parties, specifies clearly that "The primary function of the Bank is to formulate and implement monetary policy directed to the economic objective of achieving and maintaining stability in the general level of prices."¹¹ Yet while the Act establishes price stability as the sole objective of monetary policy, the Reserve Bank is not allowed complete discretion in its pursuit of price stability. Instead, policy is formulated in terms of short-run targets, and these targets are determined *jointly* by the government and the Reserve Bank. They may be revised by agreement between the Governor of the Reserve Bank and the Finance Minister as long as any new targets are recorded in writing and made public. Each policy target agreement, or PTA, has also included a definition of price stability, considered to be an inflation rate of 0–2% as measured by the Department of Statistics's consumer price index (CPI), and has set out conditions under which the Reserve Bank might deviate from the target. Significantly, the developments that would justify deviations from the 0–2% target range are all aggregate-supply in nature: terms-of-trade price shocks from external sources, changes in indirect tax rates, a natural disaster or major fall in livestock numbers due to disease, and price-level changes resulting from government levies. Finally, the Act is explicit in assigning responsibility for achieving the targets; according to Section 41(1), "It is the duty of the Governor to ensure that the Bank carries out the functions imposed on it by this Act." And failure to achieve the policy targets can lead to the removal of the Governor.¹²

The Policy Target Agreement can be viewed as an employment contract between the government and the Governor of the Reserve Bank; it spells out the objectives for monetary policy and a specific measure, the CPI rate of inflation, by which the Governor's performance will be judged. It also specifies the conditions under which the target inflation rate can be altered. Given this performance measure, the Governor is free to conduct policy with discretion and without direct interference.

11. In contrast, the previous legislation (the Reserve Bank of New Zealand Act of 1964) listed ". . . the maintenance and promotion of economic growth and social welfare in New Zealand, having regard to the desirability of promoting the highest level of production and trade and full employment, and of maintaining a stable internal price level" as monetary policy objectives (Section 8, Reserve Bank of New Zealand Act of 1964, quoted in Buckle and Stemp, 1991). Section 10(a) of the new Act does state, however, that in implementing monetary policy the Reserve Bank should take into account the "efficiency and soundness" of the financial system. For a more complete discussion of the Act, see Dawe (1993) or Walsh (1994).

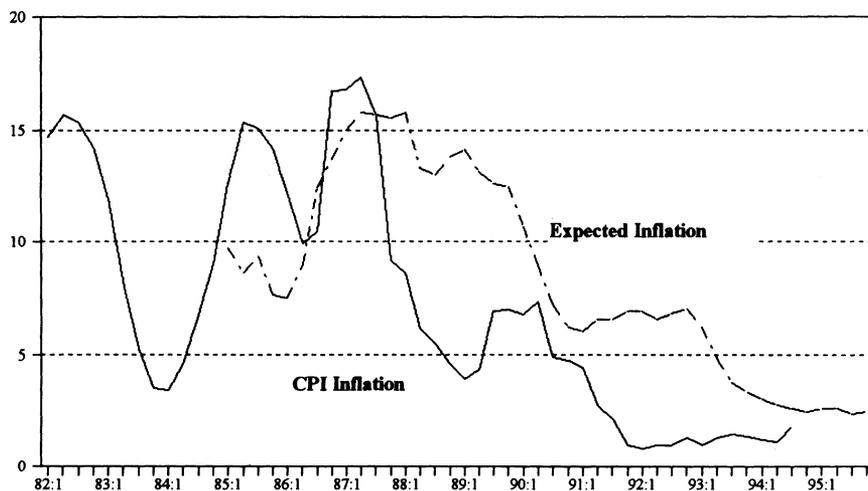
12. Unlike the situation in the U.S., where a committee (the FOMC) is responsible for monetary policy decisions, the Governor of the Reserve Bank is solely responsible for the conduct of monetary policy in New Zealand.

While the government can alter the Reserve Bank's objective, it must do so publicly, thus raising the political costs of deviating from a policy path consistent with price stability. Finally, the Act includes a clear mechanism for insuring accountability through its threat of dismissal.

Have the institutional changes instituted by the Reserve Bank Act reduced the costs associated with New Zealand's disinflation by contributing to the credibility of the policy? Debelles (1994) argues that the answer is no. Fischer and Orr (1994) find no evidence that RBNZ announcements or New Zealand's legislative changes had any effect on mean survey measures of perceived or expected monetary conditions.

Figure 1 shows the recent behavior of New Zealand's rate of inflation as measured by the CPI. Also shown is the mean expected inflation rate based on the Reserve Bank Survey of Expectations. This series, based on a regular survey conducted by the RBNZ, gives the mean inflation rate respondents expected to occur over the next 12 months. For each date, the figure shows the realized inflation rate over the previous 12 months and the annual inflation rate expected by survey respondents 12 months earlier. As others have noted (Fischer, Debelles), the Reserve Bank has apparently had to "earn" the reductions in expected inflation; expectations fell only *after* actual inflation was reduced. This is consistent with the evidence on targeting credibility found by Svensson (1993). His test for credibility rejects inflation-target credibility in New Zealand prior to

Figure 1 NEW ZEALAND'S 12-MONTH INFLATION (CPI) AND EXPECTED INFLATION



mid-1992; the test fails to reject credibility after mid-1992. By the middle of 1992, the Reserve Bank had succeeded in keeping inflation within the 0–2% target band for over 6 months; credibility of the targeting regime was established by that success and not simply by the legislative changes incorporated in the Reserve Bank Act.

The conclusion that the major institutional reforms in New Zealand failed to produce a “credibility bonus” may be too pessimistic. Relying on comparisons of actual inflation and expected inflation in order to measure credibility can be problematic, since unforecastable fluctuations in inflation can cause actual inflation to differ from expected inflation even when policy is credible. This problem can be avoided to some degree by comparing the Reserve Bank’s own forecasts of inflation with private-sector expectations about inflation. This has been done by Hutchison (1995). He finds that the average gap between the Survey of Expectations and the Reserve Bank’s inflation forecast fell after the passage of the Act. Thus, the institutional reforms were associated with a convergence of the public’s inflation expectations and the Reserve Bank’s inflation forecasts, a result that is consistent with the hypothesis that the reforms helped to generate credibility for the disinflationary policies. Actual inflation fell much faster than the Reserve Bank (and the public) had forecast, leading to the appearance that expectations fell only after the actual reductions in inflation.

There is no question of the RBNZ’s greater commitment to low inflation today than in the early 1980s. In part, the institutional reforms reflect that commitment rather than the other way around. New Zealand’s reforms are likely to have a continuing influence on the conduct of monetary policy, in large part because the new structure provides an integrated linkage from the objective of policy (price stability) to the short-run path designed to achieve the objective (the PTA and specific inflation targets) to a system of insuring accountability (potential dismissal for the Governor and public scrutiny for any government that alters policy targets). However, the new policy-making structure is largely untested. The RBNZ is now forecasting that CPI inflation will exceed 3% in 1995 but has argued that its own estimate of underlying inflation will peak at 1.9%, still within the 0–2% range. And the mean expected rate in the December 1994 survey for the year ending September 1995 was 2.5%, a rate above the 0–2% range in the PTA. The moves by the RBNZ to redefine the measure of inflation in order to stay within the 0–2% range suggests that the Act’s careful attempts to enforce accountability can be circumvented (Spiegel, 1995). And the power of the dismissal clause will be tested as actual inflation rises above 2% this year.

4. Reforms in Europe

I focus on four proposed or enacted changes affecting central banks in the EU: the statutes of the European Central Bank (ECB) contained in the Maastricht Treaty, the legislative changes for the Banque de France that went into effect in January 1994, the inflation targeting procedure adopted in the U.K. in October 1992, and the recommendations of a private study sponsored by the Centre for Economic Policy (Roll et al., 1993), which has put forward specific proposals for the reform of the Bank of England. Since the Maastricht Treaty requires, as a condition of joining the proposed monetary union, that individual member nations make the structure of their central banks consistent with that of the European Central Bank (ECB), the Banque de France provides an example of how this requirement is being met, while the developments in the U.K. provide a somewhat contrasting attempt to establish a commitment to low inflation. From the contracting perspective, the European reforms have emphasized the need to restrict elected governments over the need to ensure that the short-run trade-offs made by the central bank reflect public preferences and that the central bank faces some degree of accountability for its performance.

The Maastricht Treaty sets out the institutional structure of the ECB and addresses some of the design issues that the contracting approach emphasizes are of critical importance.¹³ It makes the maintenance of price stability the primary objective of the ECB. In principle, this provides a clearly defined performance measure that could be used to gauge the success or failure of the ECB and, at least potentially, is consistent with the contracting approach's use of incentives based on realized inflation.

In its pursuit of price stability, the ECB is granted a high degree of independence from political influence and wide latitude for discretion. In fact, the ECB was clearly designed to restrict elected governments' control over monetary policy. Insulation from political pressures is achieved by explicitly prohibiting the ECB from accepting instructions from the member governments of the EC (although the President of the European Council may participate without vote in meetings of the ECB governing council), and members of the governing board are to have long (8-year), *nonrenewable* terms. The ECB is directed to support the general policy of the EC, but only if the objective of price stability is not jeopardized.

Because central banks inevitably face trade-offs in the short-run implementation of policy, the contracting approach showed that basing the central bank's performance on the realized rate of inflation alone will not lead to optimal stabilization unless the central bank shares society's pref-

13. For more detailed discussion of the ECB, see, for example, Fratianni, von Hagen, and Waller (1992).

erences. Nothing in the design of the ECB insures this will be the case, and, as argued earlier, an independent central bank may have an incentive to focus exclusively on inflation at the cost of stabilization goals.

The contracting approach also draws attention to the need for accountability. The Maastricht Treaty provides no clear means through which the ECB will be held accountable for achieving the goal of price stability. In fact, establishing nonrenewable terms for the members of the governing board removes a potential channel for insuring accountability. Failure to provide a specific definition of price stability also serves to reduce the public's ability to evaluate the ECB's performance. The only formal requirement that may serve an oversight function is the requirement that the ECB publish quarterly reports and present an annual report to the European Parliament.

The Maastricht Treaty requires that members of the proposed monetary union revise their national central banking legislation to be consistent with the ECB. In January 1994, France met this requirement by implementing revised statutes for the Banque de France. Like the governing accord for the ECB, the Banque de France is directed to pursue price stability as its primary objective. However, France's new legislation goes on to state that the Banque de France "shall carry out these duties within the framework of the Government's overall economic policy."¹⁴ And while the Banque de France "shall neither seek nor accept instructions from the Government," the Prime Minister and Minister for Economic Affairs may attend and submit proposals at meetings of the policy-making council (although they may not vote). This participation may serve to insure that the Banque de France does not focus exclusively on price stability in its conduct of policy, but there is no mechanism that ties short-run performance to an easily monitored outcome.

Nor is there a specific means of insuring accountability. The Governor and the two Deputy Governors of the Banque de France may be reappointed once (each term of office is 6 years), but reappointment is not conditional on any well-defined and publicly verifiable measure of performance, such as price stability, and is therefore more likely to provide a means for political influence than for enforcing accountability.¹⁵ The Gov-

14. The current governor of the Banque de France, Jean-Claude Trichet (appointed September 1993), has said, "Independent central banks, where they exist, must, in one form or another, support the general economic policies of their country without prejudicing, of course, their monetary independence" (quoted in *The Banker*, February 7, 1994).

15. The other six members of the Banque de France's Policy Council are chosen by the government from lists submitted by the National Assembly, the Senate, and the Economic and Social Council. These six will serve staggered 9-year nonrenewable terms. As shown by Waller (1992), the presence of staggered terms can serve to restrict the government's ability to influence the conduct of policy.

error of the Banque de France is required to appear at least twice a year before the National Assembly and Senate, but the Governor is not required publicly to set short-run targets that might serve as a means for providing some degree of accountability in the conduct of monetary policy.

In the U.K., the Bank of England has not been granted greater legal independence of the government, nor has any policy objective been mandated by law. Instead, the government has formulated inflation targets that serve as goals within which monetary policy is conducted. This policy framework was introduced in late 1992. Rather than defining a goal of price stability, an inflation rate of 1–4% serves as the medium-term target of policy, with a 2% target serving as a longer-run goal. The move to an inflation target was not accompanied by any increase in the Bank of England's legal independence, nor are the inflation targets legally binding. However, the practical independence of the Bank has been increased by the establishment of a new relationship between the Chancellor of the Exchequer and the Bank; the minutes of the meetings between the Governor of the Bank of England and the Chancellor are now made public. The Bank is also to publish quarterly a report on its policies for achieving the inflation targets. Because these changes are not established in law, the degree to which they represent a commitment to price stability is unclear.

By way of contrast, the Roll Panel (Roll et al., 1993) has provided a detailed proposal for legislative reform of the Bank of England. The panel recommended that Parliament amend the 1946 Bank of England Act to specify price stability as the sole objective of policy, thereby establishing a formal mandate for policy more in line with that of the ECB and the Banque de France. The Roll Panel recommendations would reduce the direct role of the government by giving the Bank of England complete discretion in setting monetary policy. The government would have the ability to override the proposed statutory goal of price stability, but only through an Act of Parliament "of limited duration." Thus, the Roll Panel is more in line with the ECB and French frameworks in not following the New Zealand model of involving the government directly in the setting of short-run targets for inflation.

The Roll Panel does recommend that the Bank of England announce short-run inflation targets. It argues that such targets, expressed in terms of a single objective, make it easier to monitor policy performance. In addition, the Governor would be answerable before a Parliament Select Committee. As the contracting work has shown, a central bank will pursue appropriate stabilization policies only if it shares society's preferences; left to itself to establish short-run targets, a central bank

with the sole objective of achieving price stability may neglect the stabilization role monetary policy can play in the short run.

Several key differences exist between the New Zealand approach and the European alternatives. First, the approach in Europe has placed greater emphasis on restricting the ability of governments to influence monetary policy and less emphasis on adjudicating potential disagreements between central banks and governments. Second, New Zealand has incorporated more mechanisms to insure accountability on the part of the central bank than Europe has. The reforms in Europe rely heavily on strict political independence and public announcements by the central bank to enforce accountability and enhance the credibility of policy. While the New Zealand reforms also have emphasized the role of public announcements as a means of constraining government influence on policy, the potential of dismissal for failing to achieve the PTA goals does provide a stronger enforcement mechanism than exists in any of the European plans.

5. *Conclusions*

The mechanism design or contracting approach offers insights that are relevant for the recent discussions of institutionalizing price stability as the sole goal of monetary policy. If monetary policy has little effect on the real economy—as most economists accept as a reasonable description in the long run—then the price level is the obvious choice as a performance measure for the central bank, and a high-powered incentive scheme is optimal. That is, the central bank should be punished for deviations from price stability; such punishment might take the form of a dismissal rule. A formal mandate that establishes price stability as the sole objective of monetary policy would seem to be an appropriate means of institutionalizing such a contract.

In the short run, however, monetary policy has important real effects, and policymakers must inevitably make tradeoffs between multiple objectives. In such an environment, optimal incentive schemes are more difficult to design, since performance is hard to measure. Low-powered schemes are appropriate, perhaps combined with some limits on central bank flexibility. Short-run inflation targets that are publicly announced provide a means of formulating policy that is consistent with longer-run price stability while serving as benchmarks for judging the central bank's actions. If central banks have a bias towards focusing excessively on inflation, it may be necessary for the government to play some role in setting short-run targets.

Of the central-banking reforms discussed, New Zealand's policy struc-

ture most resembles a performance contract. It has well-defined procedures involving both the central bank and the government for the setting of short-run targets, and it contains a system to insure accountability through the requirement that any government override be made publicly and through the dismissal of the central bank governor if targets are missed. As yet, however, this system has not really been tested; the projected inflation increases for 1995 will constitute its first real test. In Europe, the ECB and the Banque de France have mandates to achieve price stability, but their institutional frameworks do not insure that they will have the correct incentives to address short-run policy tradeoffs. Neither the ECB nor the Banque de France is required to announce short-run targets that could be used to evaluate their performance. The Roll Panel proposals do require that short-run targets be set by the Bank of England, but the recommendations do not incorporate a mechanism to insure that appropriate stabilization policies are followed. Finally, the current targeting procedures employed in the U.K. represent the least institutionalized commitment of any of the reforms discussed.

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