Communicating a Policy Path: The Next Frontier in Central Bank Transparency?

By George A. Kahn

In the last two decades, central banks have taken a variety of steps to increase the transparency of monetary policy. For example, most central banks now provide regular reports on recent economic developments, the stance of monetary policy, and the outlook for inflation and other goal variables. In addition, a number of central banks have adopted explicit numerical inflation targets.

Today, many economists are suggesting ways to further increase transparency, and central bankers are considering further steps. One area of considerable interest is the outlook for the future path of the policy rate. The policy rate is the short-term, typically overnight, interest rate that central bankers use to adjust the stance of monetary policy. While central banks typically announce changes in the policy rate when they occur, very few central banks provide an explicit description of where the policy rate is likely to be set in the future.

Yet this information is clearly of value to financial markets. Financial market participants want to know the policy path, so they can properly price long-term assets, such as government notes and bonds, which depend in part on future short rates. In addition, speculation about the

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outlook for the policy rate is a staple of the financial press, and futures markets have developed to allow investors to hedge risk or speculate about future policy moves. More information about the policy path might make these markets more efficient and reduce asset price volatility.

This article surveys current central bank practices and identifies some of the conceptual and practical issues that may limit central banks' ability and willingness to provide more information about the policy path to financial markets. The first section of the article defines the policy path and describes alternative approaches to constructing the path. The second section discusses the pros and cons of formulating a policy path and communicating it to the public. The third section reviews the current practices in a number of central banks. The fourth section identifies a number of practical issues that make providing such information a challenge.

I. WHAT IS THE POLICY PATH AND HOW IS IT CONSTRUCTED?

Today, most central banks conduct monetary policy by exerting control over the policy rate—a short-term interest rate such as the overnight federal funds rate. This control over the policy rate gives the central bank considerable influence over short-term market interest rates. In addition, central banks seek to influence longer-term interest rates by influencing market expectations about the future stance of monetary policy. They do this by communicating information to the public about their long-run objectives, their outlook for economic activity and inflation and, to varying degrees, their assessment of the future course of the policy rate. Financial market participants, in turn, use this information to price financial assets such as Treasury securities.

While most central banks seek to influence market expectations of the future course of monetary policy, to date, very few central banks formulate or communicate an explicit path for the policy rate. In fact, the concept of a policy path is relatively new. This section describes what a policy path is and how it might be constructed.

What is a policy path?

A policy path is the sequence of current and expected future settings of the policy rate that central bankers believe will be consistent with achieving their goals. Along the policy path, the policy rate will not generally be constant but rather may rise or fall over time based on current and expected future economic conditions. For example, if policymakers expect inflation pressures to build over the next year or two, they may believe the policy rate will need to be raised over the next several quarters. If so, the policy path would slope upward. In addition, the entire policy path itself may change over time with the arrival of new information that changes the outlook for economic activity and inflation.

Currently, most central banks do not formulate an explicit policy path or communicate one to the public. Most central banks instead focus primarily on the current setting of the policy rate. They communicate their decisions about the current policy rate to the public, along with information about the rationale for policy decisions, the outlook for economic activity and inflation, and the objectives of monetary policy. While some central banks provide *qualitative* information about the expected path of the policy rate in the future—for example, whether the policy rate is more likely to rise or fall in the foreseeable future—most stop short of communicating an explicit numerical path.

Even though central banks may not formulate an explicit policy path, financial market participants must anticipate future policy rates when pricing financial assets. The expectations theory of the term structure of interest rates provides a model for understanding how the market's view of the policy path influences interests rates of different maturities. In the expectations theory, the interest rate on any government security can be viewed as an average of today's policy rate and the policy rates that financial market participants expect to prevail over the life of the security, plus a term premium.[1] For example, today's one-year rate can be thought of as an average of today's policy rate and the sequence of policy rates investors expect over the next year, plus a term premium. Similarly, today's five-year rate can be thought of as an average of the policy rates expected over the next five years, plus a term premium.

Under the expectations theory, interest rates change when investors believe the future path of the policy rate will be changed. For example, suppose investors change their expectation for future policy from a constant path for the policy rate to a path in which the policy rate rises by 50 basis points in six months and remains there. The six-month rate would remain unchanged since the policy rate increase is not expected to take place for six months. In contrast, the six-month rate six months in the future would increase by the full 50 basis points. And, the one-year rate would increase by 25 basis points, the average of the increase in the current six-month rate (zero basis points) and the increase in the six-month rate expected six months from now (50 basis points).[2]

Information from financial markets can be used to estimate market participants' view of the policy path. One approach is to use information from financial futures markets, such as federal funds futures or eurodollar futures. Another approach is to use data from the term structure of interest rates to estimate expected future rates on securities.[3] Yet another approach is to survey market participants directly on their expectations about future monetary policy actions. It is important to note, however, that a policy path constructed in this manner represents the financial market's perception of the policy path and that this perceived path may or may not be consistent with the policy path in the minds of policymakers. To the extent the market views the outlook for economic activity and inflation differently from the central bank or lacks a full understanding of the goals and strategies of monetary policy, the market's expected policy path may differ from the policymaker's view of the policy path.

How might a policy path be constructed?

Policymakers can, in theory, construct an explicit policy path using a model of the economy and an explicit policy objective function. The model of the economy describes how the economy operates and, in particular, defines how monetary policy influences economic activity and inflation. The objective function identifies the goals of monetary policy and the preferences of policymakers when tradeoffs exist among multiple goals (appendix). Typically, most model-based approaches to constructing a policy path assume the goals of monetary policy are to minimize

the variability of inflation around an inflation target and output around its potential level.[4] Policymakers can construct a policy path by optimizing this objective function subject to their model of the economy.

In theory, if the public has access to the same information as policymakers about the state of the economy and knows their model, policymakers could reveal the policy path by communicating their objective function to the public. This could involve policymakers communicating to the public an explicit numerical objective for inflation, an explicit estimate of the economy's potential level of real output, as well as explicit parameters governing their willingness to trade off inflation stability for output stability.[5] Policymakers would need to convey this information to the public through both their communications and their actions. The public could then solve the same optimization problem faced by the central bank and arrive at the same policy path.

In practice, implementing such an approach could prove difficult or impossible. The model of the economy may be large and complex, requiring the policy path to depend on detailed information about the state of the economy. Model parameters and structure may change over time. Policymakers may use judgment to incorporate information from outside the model into the determination of the optimal policy path. Communicating these parameter changes and judgmental adjustments may be difficult. And market participants may lack the information required to compute the central bank's optimal policy path.

Recognizing these difficulties, policymakers might instead choose to set policy according to a relatively simple rule. Under such a procedure, policymakers would specify, and commit to following, a formula for setting the policy rate in response to either current economic conditions or expected conditions at some point in the future (appendix). Typically, such a rule would not incorporate all contingencies and, therefore, at best, would only approximate the setting of the policy rate that follows from optimization of an objective function subject to a complex model of the economy. However, the approach has the advantage of making clear how the policy rate responds to deviations in goal variables from target.

Policymakers could communicate the policy rule to the public along with their forecast for output and inflation. Market participants could then construct the policy path without knowing the policymakers' model of the economy. Participants could just plug the central bank's

forecast for inflation and output at any future point in time into a formula describing the policy rule and derive the corresponding policy rate expected for that date. But, in practice, no central bank has been willing to commit to, and communicate to the public, an explicit policy rule—much less communicate its policy goals in the form of an explicit objective function.

Under these circumstances, a possible alternative approach would be for the central bank to determine its policy path and, rather than expect the public to infer it from an objective function or a policy rule, simply communicate it directly to the public. In other words, the central bank could announce an explicit sequence of expected future policy rate settings. Policymakers would also need to communicate their forecast for inflation and output expected to be consistent with the policy path. In this way, the public could verify that the policy path was consistent with the stated objectives of policymakers. Furthermore, to communicate the uncertainty associated with the explicit policy path, policymakers might also want to provide a description of the range of uncertainty surrounding it or provide a range of alternative paths that correspond to a variety of alternative economic scenarios.

II. PROS AND CONS OF COMMUNICATING A POLICY PATH

Formulating and communicating an explicit policy path to the public carries with it both potential benefits and drawbacks. Determining the net benefit is difficult given central banks' limited experience to date in communicating a policy path. This is especially true in assessing the marginal benefit of an explicit policy path when other transparency-enhancing measures have already been put in place.

Pros

A number of potential benefits arise from communicating an explicit policy path. First, communicating a policy path could enhance monetary policy transparency. In a democracy with an independent central bank, transparency provides a means of accountability. Transparency allows the public to judge whether the central bank's goals are aligned with the public's interests and whether the central bank's actions

are consistent with its goals. Providing information about the policymakers' expected future path for the policy rate gives the public a means to evaluate the consistency of policy plans with policy goals. This, in turn, helps hold monetary policymakers accountable for their actions.

Second, communicating an explicit policy path may help demonstrate policymakers' commitment to achieving long-run goals. For example, if policymakers announce a commitment to lower inflation from an unacceptably high level, that commitment may be more credible if policymakers simultaneously announce the policy path they expect will be required to achieve that inflation objective. In addition, once the inflation objective and policy path are announced, reneging on either commitment may become more difficult.[6] To the extent that communicating a policy path helps anchor long-run inflation expectations, temporary shocks to inflation are less likely to be built into wage- and price-setting behavior. This, in turn, will lead to greater stability in the macro economy.

Third, announcing a policy path may help financial market participants more efficiently price assets. For example, while an explicit inflation objective helps anchor long-run inflation expectations and, therefore, long-run nominal interest rates, considerable uncertainty may still surround the near-term outlook. One source of uncertainty about the near-term outlook is the outlook for monetary policy. Policymakers can reduce this near-term uncertainty by communicating a path for the policy rate. This, in turn, may lead to lower volatility of asset prices. However, uncertainty about the policy path will not be completely eliminated because the policy path will change over time with the arrival of new and unexpected information about the state of the economy.

Fourth, announcing a policy path may give policymakers greater leverage over long-term interest rates. According to the expectations theory of the term structure, medium- and long-term interest rates are an average of the current and expected future policy rate. For example, if policymakers credibly communicate an intention to keep the policy rate higher for a longer period of time than financial markets currently expect, medium-term to long-term interest rates would likely be higher than if policymakers communicate only their current target for the policy rate.

Thus, the communication of the policy path might give monetary policy more "bang for the buck," allowing longer-term rates to react not only to the current setting of the policy rate, but also to expected future actions. Medium- and long-term rates might react faster and further when a policy action is accompanied by communication of a complete policy path. To the extent that medium- and long-term rates have a greater influence than short-term rates over economic activity and inflation, monetary policy actions would be more potent. This greater potency of policy would be especially beneficial if policymakers want to limit short-run interest rate volatility. Small changes in the policy rate that are expected to persist for a long time would have the same effect on longer-term rates as larger, more transitory changes in the policy rate.[7]

Finally, evidence from macroeconomic theory suggests that providing information about the policy path when the public does not have full information about the policymakers' objective function or policy rule can improve macroeconomic performance. Rudebusch and Williams examine the effect of providing information about the policy path to private agents who do not know the parameters of the policy rule and therefore must estimate them from past policy actions. They show that providing information about the policy path helps private agents estimate the policy rule and, by aligning the public's and central bank's expectations of future policy rates, noticeably reduces fluctuations in output and inflation. Rudebusch and Williams also show the value of providing information about the policy path when the public is uncertain about the central bank's inflation objective. Again, information about the policy path helps align public and central bank expectations about future monetary policy and facilitates the economy's convergence back to the inflation objective after a shock.[8]

Cons

First and most basically, most central banks have no explicit policy path to communicate. While policymakers may have a sense of the direction of future policy rate changes, in most cases they have not tried to reach agreement on an explicit future path. To communicate a policy path, policymakers in many central banks would need to change their procedures to focus, not just on the current setting of the policy rate, but on the entire policy path.

Second, policymakers may be concerned that financial markets and the public will view an explicit policy path as an unconditional commitment as opposed to a plan that is subject to change. This could cause financial markets to respond more sluggishly than warranted to new information that changes the outlook for economic activity and inflation. When financial market participants eventually recognize that the policy path has changed, they may feel misled by the central bank.[9] To some extent, policymakers could mitigate this concern by providing ranges around the central policy path, or they could communicate alternative scenarios that would call for alternative paths. However, there may still be a concern that market participants would focus too heavily on the midpoint of the policy path's confidence range or on the central bank's baseline scenario for the policy path.

Third, communicating an explicit policy path may make policymakers less willing to change their policy path in light of new information. Policymakers may be concerned that a frequent updating of the policy path might undermine the public's confidence in their forecasting ability or in their commitment to follow through on announced plans. This could lead to a policy path that is not fully updated over time with the arrival of new information and is therefore suboptimal.

Policymakers may be particularly concerned about this issue when they contemplate reversing the direction of a previously communicated policy path. For example, when policy turns from an accommodative to a restrictive stance, the policy path may turn suddenly from downward sloping or steady to upward sloping. Policymakers may be concerned that financial markets will overreact to such a shift in policy, leading to excessive financial market volatility.[10]

Fourth, at times, there may simply be too much fundamental uncertainty, complexity, and change in the economic environment to form a policy path with any confidence. Geopolitical events or financial market crises may cloud the near-term outlook. Structural change driven by technology, globalization, and financial innovation may be so pervasive that economic models based on the past become unreliable. Uncertainty about the structure and parameters of economic models call into question the dependability of model-based forecasts and policy prescriptions. Objective functions may be far more complex than can be captured in a simple expression with fixed parameters. These uncertainties may make policymakers cautious in communicating their views of future economic conditions and the future policy path.

An example of a period of unusual uncertainty about future economic conditions occurred in March 2003 in the days leading up to the U.S. invasion of Iraq. In the statement released after its March 18 meeting, the Federal Open Market Committee (FOMC)—the Federal Reserve's principal monetary policymaking body—indicated that "In light of the unusually large uncertainties clouding the geopolitical situation in the short run and their apparent effects on economic decision-making, the Committee does not believe it can usefully characterize the current balance of risks with respect to the prospects for its long-run goals of price stability and sustainable growth. Rather, the Committee decided to refrain from making that determination until some of those uncertainties abate…."

Finally, the marginal benefit of providing an explicit numerical policy path to the markets may be small given the many other steps central banks have taken to increase transparency. Many banks already provide qualitative guidance about the policy path, and most provide forecasts of inflation and economic activity. Many banks also provide explicit numerical targets for inflation. Given sufficient clarity about the goals of policy, the outlook for economic activity, and perhaps some qualitative guidance about the outlook for future policy, there may be little or no net benefit from announcing an explicit numerical policy path.

Moreover, announcing an explicit path for the policy rate may not always be effective in influencing financial market participants' views of the likely path of monetary policy. This situation might arise when financial market participants have a different outlook for economic activity and inflation than the central bank. In late 2006, for example, the FOMC highlighted in its post-meeting statements an upside risk to inflation, suggesting that a future policy rate increase was more likely than a decrease. Nevertheless, as evidenced by the federal funds futures market and the Treasury yield curve, financial markets expected the next policy move was more likely to be a rate decrease.[11]

In sum, the net benefits of announcing an explicit policy path are uncertain, and different central banks may assess them differently. As a result, central banks have taken a variety of approaches to communicating information about the future outlook for monetary policy. The next section examines these different approaches by surveying the current practices of a number of central banks in developed economies.

III. A SURVEY OF CURRENT PRACTICES

To date, only two developed-economy central banks—the Reserve Bank of New Zealand and the Norges Bank, the central bank of Norway—formulate and communicate an explicit policy path.[12] The Reserve Bank of New Zealand, for example, provides quarterly projections of key macroeconomic variables using an endogenously determined policy path. All of the projections are derived from an economic model with the policy path determined by a rule that is subject to judgmental adjustment by the policymaker. Likewise, the Norges Bank publishes forecasts of macroeconomic variables three times a year with the policy rate similarly determined by a judgmentally adjusted policy rule.

All other central banks communicate information about the outlook for monetary policy more indirectly. One approach is to provide forecasts of goal variables under an interest rate assumption that may differ from the central bank's most likely policy path. Another approach is to provide qualitative guidance about the likely policy path through official statements and minutes from policy meetings, other regular reports, public speeches and official testimony of policymakers, and, in some cases, press conferences.

Central bank forecasts

As shown in Table 1, all of the surveyed central banks provide information to the public about their outlook for inflation and economic activity but condition their forecasts on different interest rate assumptions. Key macroeconomic variables that are forecast include inflation, output, and, in some cases, unemployment. Central banks provide these forecasts at frequencies ranging from two to four times a year over forecast horizons ranging from one to four years. While the Reserve Bank of New Zealand and the Norges Bank provide "unconditional" forecasts based on the expected policy path, other banks either condition their forecasts on an explicit interest rate assumption or provide forecasts without spelling out the precise interest rate path on which they are based.

Banks that provide an explicit interest rate assumption other than the policy path itself typically take one of two approaches. The first approach, used by the Swiss National Bank, is to assume the policy rate

Table 1

CENTRAL BANK STRUCTURE, FORECAST PRACTICES, AND INTEREST RATE ASSUMPTIONS

Country	Central Bank	Inflation Forecast	Output Forecast	Unemployment Forecast	Approx. Horizon	Frequency	Interest Rate Assumption	Numerical Inflation Objective	Inflation Targeting Strategy	Monetary Policy Committee Size
Australia	Reserve Bank of Australia	Qualitative description	Qualitative description	No	1-2 years	Four times a year	Unspecified	Yes	Yes	9
Canada	Bank of Canada	Yes	Yes	No	2-3 years	Four times a year	Unspecified	Yes	Yes	6
Euro zone	ECB	Yes	Yes	No	1-2 years	ECB: March and Sept; ECB and Euro area national central banks: June and Dec	Market expectations	Yes	No	19
Japan	Bank of Japan	Yes	Yes	No	1-2 years	Twice a year	Market expectations (as of 2006)	Consensus view of policy board members	No	9
New Zealand	Reserve Bank of New Zealand	Yes	Yes	Yes	3 years	Four times a year	Explicit policy path	Yes	Yes	1
Norway	Norges Bank	Yes	Yes	Yes	3-4 years	Three times a year	Explicit policy path	Yes	Yes	7
Sweden	Riksbank	Yes	Yes	Yes	3 years	Three times a year	Market expectations* (as of 2005)	Yes	Yes	6
Switzerland	Swiss National Bank	Yes	Qualitative description	Qualitative description	3 years	Four times a year	Constant rate	Yes	Yes	3
United Kingdom	Bank of England	Yes	Yes	No	2-3 years	Four times a year	Market expectations (alternative scenario based on a constant rate)	Yes	Yes	9
United States	Federal Reserve System	Yes	Yes	Yes	1½-2 years	Twice a year	"Appropriate" monetary policy	No	No	12 members with 19 participants

*The Riksbank has announced plans to adopt an explicit policy path (Rosenberg).
Sources: Central bank websites; Berg; Kuttner; and Paulin

remains constant at its current level over the forecast horizon. This approach has the advantage of not presuming any future change in the policy rate and, therefore, reduces the chances that the public might view the constant interest rate assumption as the policy path. Yet, at the same time, the public can infer information about the policy path by comparing the central bank's forecast for goal variables, under the assumption of no change in the policy rate, with the central bank's objectives for goal variables. If under a constant interest rate assumption, a central bank forecasts that its goal variables will deviate from their objective, it is likely that the implied policy path will deviate from the assumed constant rate path in a predictable direction.

How the public might formulate an estimate of the policy path would depend on whether and how the central bank's forecasts of its goal variables deviate from the central bank's objectives. For example, if inflation is forecast to exceed its objective over the forecast horizon under a constant interest rate assumption, it is likely that the central bank's implicit policy path will have an upward trajectory over the near term. Similarly, if the interest rate assumption leads to lower-than-desired inflation, the central bank's implicit policy path will likely involve lower rates, at least in the near term.

Basing projections on an unchanged policy rate, however, has a number of disadvantages. It would rarely be consistent with the historical behavior of policymakers and would, therefore, be inconsistent with a macro model that is based on historical behavioral patterns. If the policy rate is held constant at an unusually high or low level for a prolonged period, projections of output and inflation could drift off to historically unprecedented levels. The central bank may find itself publishing forecasts that fall outside historic norms and that fail to achieve policy objectives over the forecast horizon. The approach also incorporates an assumption about monetary policy that policymakers themselves do not likely believe.

The second approach to forecasting goal variables is to assume the policy rate follows the financial market's expectations for interest rates as implied by market data or surveys of market participants. The European Central Bank (ECB), the Bank of Japan, Sweden's Riksbank, and the Bank of England currently take this approach.[13] Like the constant rate assumption, this approach allows the public to infer information about

the likely policy path by observing whether and how a central bank's projections diverge from its stated objectives. For example, the central bank's forecast of inflation under the assumption of the financial market's expected interest rate path may produce an inflation forecast that is higher than the bank's inflation objective. If so, the public can infer that the policy path will likely require higher rates than the market currently expects, at least in the near term. If inflation is lower than the objective, the public can infer that the policy path will require lower rates than the market is currently expecting, at least in the near term.

Basing projections on the market's expectations of future policy rates may have some advantages over the constant interest rate assumption. The approach allows interest rates to adjust according to the financial market's view of how monetary policy has behaved historically. As a result, the approach is more historically consistent and less likely to produce forecasts outside historic norms. On the other hand, the approach may give the appearance that market expectations drive monetary policy, rather than policy driving market expectations. And, if the market's expectations differ from those of policymakers, they will still result in projections that do not reflect policymakers' own view of the most likely outcome for goal variables. If market expectations for policy rates do not match those of policymakers, there may be value in the policymaker informing the market of the discrepancy rather than reinforcing it.

Other central banks, including the Reserve Bank of Australia, the Bank of Canada, and the Federal Reserve, provide forecasts of key macroeconomic variables but do not reveal the explicit numerical assumption for the policy rate on which their forecasts are based. In the case of the Federal Reserve, projections of key variables are based on each FOMC member's view of "appropriate" monetary policy. While an explicit policy path is not communicated to the public, each member of the committee must have in mind a policy path that underlies his or her semiannual projections. Therefore, to determine the range of policy paths underlying the FOMC's projections, the public would need to know each FOMC member's individual policy path. And each member's policy path would, in turn, depend on each member's model of the economy, their judgment about the outlook, and their explicit objectives for monetary policy.[14]

Qualitative guidance

Besides the information about the policy path that can be discerned from central bank forecasts, qualitative information about the future path of monetary policy is frequently conveyed through official statements, the minutes of policy committee meetings, and other reports. The Federal Reserve has been at the forefront of central banks that have provided such qualitative guidance through their public communications.

Since May 1999, the FOMC has issued an explanatory statement immediately after each of its meetings. These statements have, over time, provided guidance about the likely policy path. For example, for several meetings in 1999, the Committee indicated not only the current setting for the policy rate but also the likely direction of any change in the policy rate that might occur before the next scheduled meeting.[15]

Because of concern about what was viewed as outsized market responses to these statements, in 2000 the FOMC changed the language in its statements to reflect the risks to the achievement of its goal variables rather than a description of the likely direction of a future change in the policy rate. These statements continued to provide information about the likely policy path in the sense that the risks to the achievement of the FOMC's goals could often be translated into an outlook for future policy. For example, in February 2000 the Committee indicated that it "believes the risks are weighted mainly toward conditions that may generate heightened inflation pressures in the foreseeable future." With risks weighted toward "heightened inflation pressures," the statement could be read as suggesting a policy path in which a policy rate increase was more likely than a rate decrease. Similarly, in the August 2002 statement, risks that "are weighted mainly toward conditions that may generate economic weakness" could be read as suggesting a policy path in which a future rate decrease was more likely than a rate increase.

In 2003, the risk of inflation becoming undesirably low prompted the FOMC again to provide more direct guidance about the policy path. In its August statement, the Committee indicated it "believes that policy accommodation can be maintained for a considerable period," suggesting that the policy rate was likely to remain at a historically low level for an unusually long time. Then, in January 2004, the Committee said it "believes that it can be patient in removing its policy accommo-

dation." Finally, as the committee contemplated raising its policy rate later that year, it said it "believes that policy accommodation can be removed at a pace that is likely to be measured," suggesting a gradual upward trajectory for the policy path.

Other central banks have been somewhat less willing to provide verbal guidance about their policy path. Instead, they have tended to focus more directly on risks to their key objectives, leaving the markets to interpret any possible implication of these risks for policy rates. There have, however, been exceptions. For example, the Bank of Japan indicated in 1999 its intention to maintain its policy rate at zero "until deflationary concerns are dispelled." And, in 2006, the Bank of Canada indicated in its policy statements that "some modest further increase in the policy interest rate may be required to keep aggregate supply and demand in balance and inflation on target over the medium term" (Rudebusch and Williams, pp. 7-8).

Why don't more central banks communicate an explicit policy path? The next section takes up this question, describing some of the challenges that make communicating a policy path to the public problematic.

IV. PRACTICAL CHALLENGES

Because the net benefits are uncertain and subject to interpretation, other factors may drive the decision to formulate and communicate an explicit policy path. Some monetary policy strategies may lend themselves more naturally than others to an explicit policy path. In addition, the structure of the decision-making process may influence the feasibility of formulating and communicating a policy path.

Monetary policy strategies

Although the net benefits of formulating and communicating an explicit numerical policy path are uncertain, as suggested above, a few central banks, including the Reserve Bank of New Zealand and the Norges Bank, have adopted strategies for monetary policy in which policy paths are explicitly formulated and communicated to the public. What makes these banks different?

One feature that might make use of an explicit policy path more appealing is the framework of inflation targeting under which these banks operate. While not unique to these banks, the Reserve Bank of New Zealand was a pioneer in conducting monetary policy under an inflation targeting regime (Table 1). It has also been a pioneer in communicating its policy path. The Norges Bank is also an inflation targeter, although it has used its own forecast of the policy path in forecasting inflation and output only since March 2005.

Under an inflation targeting regime, the central bank announces an explicit numerical inflation target and typically indicates a timeframe for achieving it. In many cases, including the Reserve Bank of New Zealand and the Norges Bank, the inflation objective is given to the central bank by the government.[16] In addition, the central bank issues regular inflation reports which present the bank's official forecast for inflation.

Relative to other monetary policy strategies, an inflation targeting regime may be more conducive to formulating and communicating a policy path. As discussed above, inflation forecasts are necessarily based on an interest rate path. And the only model-consistent interest rate path is one in which the policy path is endogenously determined. The establishment of a numerical inflation target makes it easier to use an economic model and a policy rule to determine an optimal policy path. Still, even most inflation targeting banks do not communicate an explicit policy path to the public. One reason, in addition to the cons discussed earlier, may be related to the structure of decision-making in most central banks and, in particular, whether a single decision-maker or a committee is responsible for monetary policy.

Structure of decision-making

A single decision-maker could arguably formulate and communicate a policy path more easily than a committee. The decision-maker could choose the policy path that optimizes his or her objective function given his or her model of the economy. He or she could communicate directly to the public with one voice. An example of a central bank that fits the single decision-maker model is the Reserve Bank of New Zealand.

Together with its well-established inflation targeting regime, the Reserve Bank's single decision-maker model may facilitate to some extent the formulation and communication of a policy path.

Most central banks, however, do not have a single decision-maker. Decisions are made instead by a monetary policy committee. In contrast to a single decision-maker structure, a committee may find it more difficult to formulate a policy path because committee members are likely to subscribe to different models of the economy and, possibly, hold different views about the objective function. Even when an explicit inflation objective is given to the policymakers by the government, committee members may disagree about the weight to place on stabilizing inflation around its target relative to stabilizing output.

Nevertheless, the diversity of views and information held by committee members, as well as a more deliberative approach to decision-making, arguably may result in better decisions. Blinder identifies the advantages of a committee structure as stemming from the different and idiosyncratic information held by individual committee members, the checks and balances that a committee imposes on individuals with strong political views, the pooling of information from members subscribing to different models of the economy, the advantage of combining individual forecasts, and the ability of committees to take advantage of members' diverse decision-making methods.[17]

To exploit these advantages, any committee must establish ground rules for decision-making. Members have to come to a consensus on some issues while allowing differences of views on other issues. At one extreme, a committee can seek agreement on all aspects of the policy-making process. At the other extreme, a committee can seek agreement or consensus just on its current policy stance and, potentially, on the policy path. Under the former approach, a committee would need to reach a common understanding of the goals of policy, the model or models to be used in forecasting the economy, and the determinants of policy actions. In such a decision-making process, actual and expected policy actions would typically follow directly from the prior consensus. While reaching consensus on an objective function and model may be difficult, once a consensus is achieved, a policy path might be relatively easy to formulate.

At the other extreme, a committee might attempt to achieve consensus on the policy path without necessarily agreeing on the precise goals of policy or the model used in forecasting. But achieving a consensus on the entire future path for the policy rate is a far more difficult decision-making process than simply deciding the current setting of the policy rate. While a voting mechanism might be designed that would determine a policy path, each committee member might have very different reasons for adopting any particular policy position.[18] This diversity of views might make communicating the rationale for the policy path to the public difficult. The public would need to interpret each member's position to assess the likely future consensus of the committee and the likely course of policy. But averaging across a diversity of views may take greater advantage of the benefits of a committee structure.

Committee size is another dimension along which monetary policy committees differ. Currently, they range in size from three members at the Swiss National Bank to 19 members at the ECB (Table 1). The Federal Reserve's FOMC is also a relatively large committee with 12 members and 19 participants. In a large and diverse economy, it may be important for the central bank to take into account information from a wide range of regions and industries and from a variety of economic perspectives. A larger committee may make it easier to incorporate diverse sources of information into the decision-making process. In addition, in a large and diverse economy, a committee may require representation from many regions to help maintain trust in the central bank and support for its independence.

On the other hand, academic research suggests there may be a trade-off between the greater access to information of a large committee and a number of coordination and incentive problems that increase with committee size. For example, larger committees may be subject to a free-rider problem. Individual members' efforts may decrease with group size, unless their individual contribution can be identified and evaluated. In addition, large committees can be subject to "group think" (Sibert).

On balance, large and diverse economies such as the United States or the Euro area may require monetary policy committees that are large and more diverse. This may make achieving consensus on an explicit policy path more difficult. Smaller monetary policy committees in smaller and more homogeneous economies may find achieving consensus somewhat easier.

In short, while a committee structure may improve decision-making through the diversity of its members, it may make formulating and communicating a policy path more difficult. In the end, other considerations may dominate—such as the concern that a policy path might be viewed as an unconditional commitment, the view that qualitative guidance is sufficient, and the belief that the net benefits of communicating an explicit policy path are small and uncertain.

V. CONCLUSIONS

Formulating and communicating a policy path have been advocated as the next frontier in monetary policy transparency. A policy path can be formulated by using an economic model to choose the path for the policy rate that optimizes the policymakers' objective function. The path can be communicated indirectly by providing the public detailed information about the objective function and economic model, or by providing detailed information about the policymakers' policy rule and their forecast for goal variables. Alternatively and more practically, the path can be communicated directly as a projection over the relevant planning horizon of the policy rate itself.

A number of possible benefits might be associated with communicating the central bank's policy path. First, announcing a policy path may increase transparency and accountability by providing the public a means to determine whether policymakers' plans are consistent with their objectives. Second, announcing a policy path may help anchor long-run inflation expectations, leading to greater stability in the macro economy. Third, announcing a policy path may help financial market participants price medium- and long-run financial assets more efficiently, reducing financial market volatility. Finally, announcing a policy path may give policymakers greater leverage over medium- to long-run interest rates.

On the other hand, communicating an explicit policy path may have some drawbacks. Potential issues include concern that the public will take a policy path as an unconditional commitment rather than a plan, concern that announcing a policy path will make policymakers less willing to change policy in light of new information, and skepticism that a policy path can even be formulated given the complexity, uncer-

tainty, and change inherent in modern economies. In addition, given the steps that central banks have already taken to increase transparency, the marginal benefit of announcing an explicit numerical policy path may be small.

In light of these concerns, monetary policy committees may find it difficult to reach consensus on a policy path, especially when they are composed of a large number of members with diverse views on policy objectives, models, and economic forecasts. This diversity of views may be a strength of monetary policy committees that offsets some or all of the benefits associated with forging a consensus on an explicit policy path.

APPENDIX

To identify a future path for the policy rate, policymakers must forecast their goal variables subject to fundamental economic developments, including all possible paths for the policy rate. They then need to pick the one path for the policy rate that best achieves their goals. Economic theory provides a framework for describing how policymakers might approach constructing such a policy path.

Using a model of the economy, policymakers can determine a policy path by optimizing an objective function, which defines the goals of monetary policy and the preferences of policymakers when tradeoffs exist among the goals. The standard model is typically forward looking in the sense that expectations of the future affect the economy today; agents are rational in the sense that they form expectations based on full information including knowledge of the model itself; and prices adjust gradually to supply and demand shocks. In such a model, monetary policy not only determines the current policy rate, but also affects longer-term rates through the public's expectations of future policy rates.[19] The more leverage a central bank has over the public's expectation of future policy actions the greater the potential a central bank has to influence longer-term rates in a way consistent with its goals.

Given such a model, policymakers might choose the policy path that optimizes their objectives expressed in the form of an explicit loss function. Policymakers would then minimize the loss function. One such loss function, *L*, takes the following form:

$$L = \sum_{i=0}^{T} \beta^{i} \{(\pi_{t+i} - \pi^*)^2 + \lambda(y_{t+i} - y_{t+i}^*)^2 + \alpha(r_{t+i} - r_{t+i-1})^2\},$$

where β is the rate at which policymakers discount the future, $(\pi_{t+i} - \pi^*)$ is the deviation of inflation, π_{t+i}, from the inflation objective, π^*; $(y_{t+i} - y_{t+i}^*)$ is the deviation of output, y_{t+i}, from its potential rate, y_{t+i}^*; and $(r_{t+i} - r_{t+i-1})$ is the change over time in the policy interest rate, r_{t+i}. The parameters λ and α represent the willingness of policymakers to trade off their objectives for inflation, output, and interest rate stability. The higher λ the more willing policymakers are to tolerate inflation and interest rate volatility to achieve greater output stability. Similarly, the higher α the greater the preference is for smoothing interest rates. The loss function

assumes that policymakers choose the path for r_t that minimizes the variation in inflation around their inflation objective, in output around the potential rate of output, and in the level of the policy interest rate over time—recognizing that stabilizing one variable may come at the expense of stabilizing another.

The timeframe, T, over which policymakers would formulate a path for the policy rate would need to be long enough to allow the economy to return to its long-run equilibrium if a shock took inflation or output away from their objectives. This timeframe would likely extend to several years because of the persistence of inflation and output after an economic shock.

Economists have proposed a number of rules that characterize monetary policy in recent years and that are calibrated to approximate the outcome from minimization of the policymakers' loss function. One such rule takes the following form:

$$r_t = a(r_{t-1}) + (1-a)[(r^* + \pi_t) + b(\pi_t - \pi^*) + c(y_t - y_t^*)] + u_t,$$

where r^* is the equilibrium real interest rate so that $(r^*+\pi_t)$ is the equilibrium nominal interest rate; and u_t is a zero mean, finite variance disturbance term. The central bank chooses parameters a, b, and c to minimize the loss function subject to its model of the economy. Under such a rule, the policy rate is increased if inflation exceeds target or if output rises above potential. The policy rate is lowered if inflation falls below target or output falls below potential. The parameter a identifies the weight between zero and one that the central bank places on smoothing the policy interest rate over time. A value of 0 indicates no interest rate smoothing, while a value of a greater than 0 indicates the central bank deviates from the policy recommendation of a simple Taylor-type rule to smooth the policy rate over time.

The disturbance term, u_t, represents the discretionary component of monetary policy. Except for this component, policymakers respond systematically to incoming information about output and inflation. The disturbance term represents a way to model instances where policymakers might deviate from their systematic approach to policy to address unusual circumstances such as a financial crisis.

ENDNOTES

[1]A term premium is the extra compensation required for an investor to purchase a long-term security rather than a series of short-term securities.

[2]This analysis assumes the term premiums remain unchanged. See Sellon for an extended discussion of the relationship between the policy path and the term structure of interest rates.

[3]Sellon computes the financial market's expected policy path based on the U.S. Treasury yield curve for three historical periods.

[4]Policymakers may also want to minimize financial market volatility by smoothing changes in the policy rate over time. In this case, the objective function would penalize changes in the policy rate.

[5]To the extent policymakers' objective function also reflects a desire to smooth changes in the policy rate over time, policymakers would also need to communicate how willing they are to trade off their inflation and output objectives to achieve greater stability in the policy rate. In addition, policymakers might also have to indicate their willingness to trade off achievement of their objectives today relative to the future and their views about key exogenous variables such as fiscal policy.

[6]As discussed later, the difficulty of backing away from an announced policy path when economic conditions change unexpectedly is also one reason given for *not* announcing an explicit policy path.

[7]Greater policy potency associated with a credible and persistent policy path may also help policymakers address deflationary shocks in a low interest rate environment (Woodford 1999).

[8]The advantages of a central bank formulating and communicating an explicit policy path are also discussed in Faust and Leeper.

[9]Charles Freedman, then Deputy Governor of the Bank of Canada, provides an example from the spring of 1998 in which the Bank of Canada provided guidance about future policy in the form of a conditional statement. Financial market participants apparently interpreted the statement as an unconditional commitment and felt misled when the bank later altered course in light of changing economic circumstances.

[10]For example, in 1999, the Federal Open Market Committee's first experience with including forward-looking language about policy in its post-FOMC meeting statements was viewed as having caused confusion in financial markets (Rudebusch and Williams, pp. 5-6).

[11]Another potential drawback of providing more explicit information to the public about the policy path is the possibility that the private sector will become less willing to acquire information on its own, which could reduce welfare (Morris and Shin). However, Svensson (2005a) argues this result applies only in very special circumstances.

[12]The central banks of Colombia and the Czech Republic also assume an endogenous policy path (Paulin; Central Bank of Colombia). In addition, Sweden's Riksbank has recently announced its intention to begin publishing an explicit policy path (Rosenberg).

[13]The ECB's projections are the staff's, not the Governing Council's. The Bank of England also presents alternative projections based on a constant policy rate.

[14]Financial markets may glean some of this information from members' public statements and voting records.

[15]The statement of the policy bias appeared in the FOMC's directive to the Open Market desk at the Federal Reserve Bank of New York beginning in 1983. However, until May 1999, this information was made public only after the next FOMC meeting, considerably reducing its information value to the market. For a detailed discussion of the evolution of forward-looking language in the FOMC statements, see Rudebusch and Williams. See also Thornton and Wheelock.

[16]In the case of the Reserve Bank of New Zealand, the Minister of Finance and the Governor of the Reserve Bank together agree on the specific target for achieving and maintaining price stability.

[17]Blinder also provides a "typology" of monetary policy committees—from individualistic to differing degrees of collegiality.

[18]Svensson (2005b) advocates formulating and announcing the policy path and suggests a voting procedure. Mishkin and Goodhart argue against having a policy committee establish an explicit policy path.

[19]Such a model is known in the economics literature as a new Keynesian general equilibrium model. See Woodford (2003) for an example of such a model.

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