Talking about Monetary Policy:
The Virtues (and Vices?) of Central Bank Communication

by

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Abstract

Central banks, which used to be so secretive, are communicating more and more these days about their monetary policy. This development has proceeded hand in glove with a burgeoning new scholarly literature on the subject. The empirical evidence, reviewed selectively here, suggests that communication can move financial markets, enhance the predictability of monetary policy decisions, and perhaps even help central banks achieve their goals. A number of theoretical drawbacks to greater communication are also reviewed here. None seems very important in practice. That said, no consensus has yet emerged regarding what constitutes "optimal" communication strategy—either in quantity or nature.

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1. The background: Why communicate?

Not long ago, central bankers thought it appropriate to shroud themselves in mystery and speak in tongues. For example, in 1981 Karl Brunner (1981, p. 5) wrote, with evident sarcasm, that:

> Central Banking… thrives on a pervasive impression that [it]… is an esoteric art. Access to this art and its proper execution is confined to the initiated elite. The esoteric nature of the art is moreover revealed by an inherent impossibility to articulate its insights in explicit and intelligible words and sentences.

Fifteen years later, in my 1996 Robbins lectures at the London School of Economics, I expressed a view of what central bank communications *should be*—but wasn't yet:

> Greater openness might actually improve the efficiency of monetary policy… [because] expectations about future central bank behavior provide the essential link between short rates and long rates. A more open central bank… naturally conditions expectations by providing the markets with more information about its own view of the fundamental factors guiding monetary policy…, thereby creating a virtuous circle. By making itself more predictable to the markets, the central bank makes market reactions to monetary policy more predictable to itself. And that makes it possible to do a better job of managing the economy. (Blinder (1998), pp. 70-72)

A scant five years later, Michael Woodford (2001, pp. 307 and 312) assured an audience of central bankers assembled at the Federal Reserve's famous Jackson Hole conference that:

> … successful monetary policy is not so much a matter of effective control of overnight interest rates… as of affecting… the evolution of market *expectations*... [Therefore,] transparency is valuable for the effective conduct of monetary policy… this view has become increasingly widespread among central bankers over the past decade.

I'm sure Woodford overstated the case. But notice the sharp progression here: from Brunner's 1981 lament about central bankers' refusal to communicate, to Blinder's 1996 argument that more communication would enhance the effectiveness of monetary policy, to Woodford's 2001 claims that the essence of monetary policy is the art of managing

expectations *and that this was already received wisdom*. It is no exaggeration to call this a revolution in thinking.

These new ideas from the academy had major impacts on actual central banking practice. Even the Federal Reserve, where then-Chairman Alan Greenspan once prided himself on "mumbling with great incoherence," has been increasing its communicativeness incrementally since 1994. And the Fed is far from a leader in this regard. Indeed, one might argue that the European Central Bank (ECB) has been more transparent than the Fed ever it opened for business. The Reserve Bank of New Zealand and the Bank of England were early and enthusiastic converts to greater transparency and remain among the leaders in that regard, although Norges Bank and Sveriges Riksbank may now be in the vanguard. And there are many other examples. The attitudes that Brunner parodied have been resoundingly routed.

Reasons for communication

These remarkable strides in transparency have been powered by two principal rationales. One is the notion that greater central bank independence implies a greater need for *democratic accountability*, e.g., that independent central banks have a duty to explain both their actions and the thinking that underlies those actions. The second is the notion, exemplified by the Blinder and Woodford quotations above, that clearer communication enhances the *effectiveness of monetary policy*.

While I have long been a strong advocate of both arguments, the scholarly literature focuses almost entirely on the second. Studies of how central bank communications *create news* focus, e.g., on how policy pronouncements influence expectations and therefore move asset prices. Studies of *reducing noise* focus, e.g., on how central bank talk increases the

predictability of monetary policy, which should in turn reduce financial market volatility. In both cases, the central bank's presumed objective is to raise the signal-to-noise ratio of monetary policy.

That said, central bank talk can be done well or badly, and no one has yet formulated a set of clear principles (much yet clear practices) for "optimal" communication strategy, whatever that might mean.[1] Empirically, the key questions are whether communication contributes to the effectiveness of monetary policy by creating news (e.g., by moving short-term interest rates in a desired way) and/or by reducing noise (e.g., by lowering market uncertainty).

In their well-known survey, "How Do Central Banks Talk?," Blinder *et al*. (2001, p. 9) wrote that: "To date, there is no research to report on." That is far from true today. An impressive number of mostly empirical studies of central bank communication have been conducted in this decade, and I will review some of their findings here.[2] Much of the new research focuses on the impacts of central bank communications on financial markets. The basic idea is simple: If communications steer expectations successfully, then (a) asset prices should react appropriately and (b) policy decisions should become more predictable. The empirical literature says, almost without exception, that both have happened. A second line of research tries to relate differences in communication strategies to differences in economic performance. For example, does announcing a numerical inflation target help anchor the public's long-run inflation expectations? The answer seems to be a qualified yes.

[1] See Blinder (2007) on how a central bank's communications strategy should depend on the nature of its monetary policy committee.
[2] For much more detail, see Blinder *et al.* (forthcoming).

But before reviewing some of these studies, it is worth pausing briefly to think *theoretically* about how and why central bank communication might enhance the effectiveness of monetary policy—and how it might fail.

I start with an assertion that may seem surprising—until you think about it: There is no role whatsoever for monetary policy communication in what might be called the *pure rational expectations paradigm*. By this term, I mean the class of models in which the economic environment is *stationary*, expectations are *rational*, and the central bank is *credibly committed* to an *unchanging policy rule*. While these are patently unrealistic conditions, they do characterize a great many modern theoretical macro models. In such an idealized world, central bank communication is redundant because any systematic pattern in the way monetary policy is conducted would already have been correctly inferred (up to stochastic errors) from the bank's observed behavior. Central bank talk would be not only cheap, but superfluous.

The pure rational expectations paradigm is perhaps a straw man. But it does make a useful conceptual point: that any value from monetary policy communication must derive from (a) non-stationarities (the world and/or the central bank is changing), (b) lack of commitment to a policy rule (probably for good reasons), (c) poor understanding of the central bank's policy rule (if one exists), or (d) non-rational expectations (which includes both information asymmetries and learning).[3] It should be clear that better central bank communication can influence each of the four items on this list. It should therefore also be clear that, once one escapes from the confines of the pure rational expectations paradigm, any analysis of monetary policy that ignores central bank communication is seriously

[3] For example, Bernanke (2004) used the recent academic literature on adaptive learning to explain how the feedback effect of learning on the economy can lead to unstable or indeterminate outcomes—outcomes that effective central bank communication can help to avoid. See Orphanides and Williams (2004) and others.

deficient. Indeed, if today's overnight bank rate hardly matters, then managing expectations is the essence of monetary policy—as Woodford claimed.

Limits to communication

That said, poorly designed or poorly executed communications can do more harm than good. So it is not obvious that a central bank is always better off by saying more. In practice, central banks do limit their communications in a variety of ways. Internal deliberations are kept normally secret. Few central banks project the future path of their policy rate. (More on this later). Most observe a blackout or "purdah" period before each policy meeting. And I have called attention to the danger of creating a cacophony when a monetary policy committee (MPC) speaks with too many disparate voices (Blinder, 2004, Chapter 2). So, in principle, fuller communication might be undesirable or detrimental under some circumstances, as any competent theorist can surely prove. But theory, like talk, is cheap. The real question is: Are there *empirically relevant* arguments for limiting communication on monetary policy?[4]

One possible argument dates back to the seminal work of Cukierman and Meltzer (1986). Their case for obfuscation rested on two assumptions: that only unanticipated money matters, and that the central bank's preferences are not precisely known by the public. Under these assumptions, a fully-transparent central bank cannot move real activity because it cannot create surprises. So some degree of opacity is essential to the effectiveness of monetary policy. However, Gosselin *et al.* (2007) recently pointed out that both the view that only unanticipated money matters and the idea that a central bank conceals its preferences in order to pursue its own agenda are increasingly anachronistic.

[4] Other than a few obvious ones: the need to preserve confidentiality, the fact that financial stability sometimes limits central bank talk, and the obvious point that no central bank can divulge what it does not know

A central bank should perhaps be wary of talking about issues on which it receives noisy signals itself—such as the evolution of the economy (as opposed to, say, its upcoming interest rate decisions)—a point emphasized by Amato, Morris, and Shin (2002). If market participants defer too much to the wisdom of the central bank, it is even possible that more central bank communication could reduce welfare. But Svensson (2006a) pointed out that this argument holds only when central bank communications have a much lower signal-to-noise ratio than private information—an implausible assumption in this context. Furthermore, if we focus on providing information *about future monetary policy*—as opposed to, say, forecasting the stock market or the exchange rate—there is an even simpler and more compelling objection to the Morris-Shin reasoning. Who, after all, knows more about the central bank's intentions than the central bank itself? Thus *honest* central bank talk about prospective monetary policy is almost certain to coordinate beliefs in the *right* direction.

Finally, if a cacophony problem arises from the fact that an MPC has too many uncoordinated and inconsistent voices that confuse rather than enlighten the public, the appropriate remedy is greater clarity, not silence.

Communication is not precommitment

Over the years, many central bankers and economists have occasionally confused *communication* with *commitment*—or worried out loud that the public might do so. Specifically, it has been agued that words uttered today might reduce the effectiveness of monetary policy by restricting the freedom to maneuver tomorrow. For example, then-Chairman Paul Volcker defended the Fed's refusal to announce its decisions immediately in 1984 as follows:

> One danger in immediate release of the directive is that certain assumptions might be made that we are committed to certain operations that are, in fact, dependent on future events, and these interpretations and expectations would tend to diminish our needed operational flexibility.[5]

Echoing these sentiments in 1989, Alan Greenspan opposed immediate disclosure of the FOMC's decisions because "a public announcement requirement also could impede timely and appropriate adjustments to policy."[6] Yet, less than five years later, he *voluntarily* did precisely that.

From today's standpoint, the objections of Volcker and Greenspan to this minimalist disclosure proposal sound like throwbacks to the Stone Age. While there are cases in which statements *do* constrain future behavior—as in "giving a verbal commitment"—most central bank communication is not, or need not be, of this nature. In particular, the mere conveyance of information—about the policy decision, the inflation target, the forecast, etc.—does not commit the bank to any future action or inaction (although it might hint at such). Even the famous published "forward tracks" of the Reserve Bank of New Zealand (discussed later), which are *conditional forecasts* of its own future behavior, are conditioned on many future variables.

Of course, there may be times when a central bank *wants to* use words to commit itself—say, to manage expectations or to exploit the advantages of commitment (which are related). For example, Bernanke *et al.* (1999) argued in favor of inflation targeting precisely as a way to constrain central bank discretion. But that is the exception, not the rule. More important, it is volitional. Monetary policy communications need not entail any form of commitment *unless the central bank wants it to*.

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[5] Quoted in Goodfriend (1986), pp. 76-77. Goodfriend's paper was an early, and at the time highly controversial, critique of the Federal Reserve's secrecy—written by a Fed employee.
[6] Quoted in Blinder (1998), pp. 74-75.

In sum, as compared to the apparently powerful conceptual arguments for why central bank communication should be expected to matter, and to be beneficial, the arguments against greater transparency appear to be thin gruel. We turn now from theory to practice.

2. What to communicate

Looking at real-world practices, two facts stand out. First, central banks with similar monetary policy objectives nonetheless communicate very differently. Second, communication policies at the same central bank change over time. Together, these two facts demonstrate that there is no accepted how-to-do-it manual for central bank communications. What, then, are some of the major choices?

Central banks talk about at least four different aspects of monetary policy: their overall objectives and strategy, the motives behind a particular policy decision, the economic outlook, and future monetary policy decisions. I take them up in turn.

Objectives and strategy

Central bank communication is one useful way to inform the public about the objectives and strategies of monetary policy. An independent central bank should have a clearly-defined mandate. The Bank of England's inflation target, for example, comes straight from the Chancellor and is very precise. Some central banks that are not assigned quantitative objectives by their governments, like the ECB, have nonetheless decided (or been directed) to provide their own quantification—as a way to facilitate accountability and/or to anchor expectations. These accountability and anchoring arguments figure prominently in the debate over inflation targeting (IT) because better and more open communication is often offered as one of the defining virtues of IT. Other central banks,

like the Federal Reserve, have no explicit numerical targets.[7] However, few if any central banks announce a precise policy rule. Instead, private agents learn about the "rule"—really, the central bank's average behavior pattern—by watching what the bank *does* and by listening to what it *says*.

Policy decisions

Almost all central banks nowadays inform the public about their monetary policy decisions immediately or with very short delays. However, this was not always the case. Prominently, the Federal Reserve only began announcing changes in its target federal funds rate immediately after FOMC meetings in February 1994. Before that, markets had to infer the intended funds rate from subsequent open-market operations--until the decision was published after the next FOMC meeting.

Prompt and clear announcement of monetary policy decisions clearly creates news, but it also reduces noise by eliminating any guessing on the part of the public. So this type of central bank communication evidently raises the signal-to-noise ratio. We will see later that it also leads to improvements in the efficiency of monetary policy.

Practices regarding what to say in the statement that accompanies the monetary policy decision differ enormously across central banks. One area of disagreement is over how much to disclose about the decisionmaking process itself, e.g., through the release of minutes and voting records. The ECB does not publish minutes and insists that it makes monetary policy decisions by unanimity. But it does hold press conferences. The Fed and the Bank of England (BoE) do release minutes (and both recently expedited their release), along with recorded votes. This information is particularly important for the BoE, whose

[7] However, the Fed's new practice of publishing three-year-ahead inflation forecasts can be (and has been) viewed as tacitly announcing an inflation target. It can also be viewed (but has not been) as stating an unemployment target.

Monetary Policy Committee members are individually accountable. Interestingly, dissents on the British MPC are much more frequent than they are on the FOMC, where decisions are typically unanimous and dissent connotes fundamental disagreement.[8]

The economic outlook

Central banks differ sharply in whether and how they communicate forward-looking information, including forecasts of future inflation, forecasts of future economic activity, and inclinations regarding future monetary policy.

Inflation-targeting central banks typically offer their assessments of expected future inflation in periodic inflation reports, sometimes using "fan charts" to display probability distributions. However, central banks that are not inflation targeters also often release (some aspects of) their inflation forecasts. In the case of the ECB, this is now done by publishing staff projections four times a year. These forecasts serve as inputs to the Governing Council's discussions, but need not be endorsed by it—a very different role from inflation forecasts in an IT strategy. The Federal Reserve, curiously, keeps its staff projections secret. But it now publishes official FOMC forecasts of inflation four times a year. Its new three-year-ahead inflation forecast effectively reveals the inflation target without calling it that.

Until recently, the diversity across central banks was even wider when it came to forecasting real output. However, the Fed has now joined the Bank of England and the ECB in providing more frequent official output forecasts. A few central banks (including those of New Zealand, Norway, the Czech Republic, Sweden, and Hungary) even publish estimates of the output *gap*.

The path of future policy rates

[8] On this point, see Chappell, McGregor and Vermilyea (2004) and Meade and Sheets (2005).

Many central banks nowadays provide some sort of forward guidance regarding likely future policy decisions, albeit in very different ways. Some, such as the ECB, use indirect signals, often in the form of code words like "vigilance." Other central banks are more explicit. FOMC statements, for example, sometimes (but not always) include an indication of where monetary policy is headed. At times, such as during the 2003–2005 period, the FOMC has been quite direct about its expected future path of interest rates.

A few central banks even provide *quantitative* guidance by publishing the numerical path of future policy rates that underlies their macroeconomic forecasts. Sweden and Iceland recently joined a small group that includes New Zealand and Norway in doing so. Some observers view forecasting its own future behavior as the last frontier of central bank transparency, and none of the major central banks have yet been willing to go that far. The issue remains controversial.[9]

Both Goodhart (2001) and Mishkin (2004) have argued against announcing a projected path for the policy rate on the grounds that it may complicate the committee's decision-making process. It may also complicate communication with the public, which might fail to understand the *conditional* nature of the projection (Issing, 2005). In practice, the main concern holding back many central bankers may be that such communications could be mistaken for *commitments*. Then, if the projected developments do not materialize, any discrepancies between actual and previously-projected policy might damage the central bank's credibility. In addition, while forward guidance by the central bank is intended to guide expectations, and thereby to reduce misallocations of resources, inaccurate forecasts might actually *induce* such misallocations, e.g., if agents make faulty economic decisions (such as taking on a mortgage) based on the central bank's miscommunication.

[9] For the case in favor, see Svensson (2006b) or Woodford (2005).

To guard against these potential pitfalls, all central banks that provide forward guidance on interest rates emphasize that forward-looking assessments are always conditional on current information—and therefore subject to change. For example, the Riksbank regularly emphasizes the conditionality of its projected repo rate path by repeating the mantra: "It is a forecast, not a promise."

3. How to communicate

Central banks can communicate in a wide variety of ways, and each chooses its own preferred methods.[10] This short section examines one particularly important decision, namely, the choice of *sender* (e.g., whether a signal is sent by the committee or by an individual committee member), which in turn may influence the precision of the signal. When signals are sent by or on behalf of the monetary policy committee, the appropriate content, timing, and channels must all be chosen. Communication by individuals raises further issues—such as whether one member (e.g., the chairman) should serve as spokesperson for the committee, reflecting a more collegial approach to communication, or each member should present his or her own views, representing an individualistic communication strategy.

Communication by committees

The most natural occasions for central bank communication come on MPC meeting days, when decisions are announced. But both the timing of this communication and the amount of detail it provides differ substantially across central banks. The Federal Reserve offers a short press release containing the decision, a concise (and typically stylized) explanation of its underlying reasoning, and often some forward guidance. The Bank of

[10] See Blinder *et al.* (2001) for a detailed, though by now somewhat dated, account and explanation of the various instruments used by central banks.

England's press statement announces the decision, but normally provides an explanation only when interest rates have been changed or when its decision was unexpected.[11]

By contrast, the ECB not only releases a press statement with the policy decision, but also holds a press conference on meeting days--including a question and answer session.[12] Compared to the minutes of the Bank of England or the Federal Reserve, the ECB press conferences appear to be less detailed. But holding a televised press conference gets the news out faster, certainly to a broader audience, and probably more frankly. Perhaps most important, the Q&A sessions enable the press to clarify ambiguities by asking follow-up questions. In a fascinating study, Ehrmann and Fratzscher (2007a) find that ECB press conferences have larger estimated effects on asset prices than its policy announcements do. Furthermore, these larger impacts come with smaller effects on volatility, clearly indicating a particularly high signal-to-noise ratio.

Legal reporting requirements present another natural communication opportunity. For example, many central banks are obliged to provide annual reports and/or to testify before their legislatures. Among the most important of the reporting vehicles are regular publications such as the ECB's *Monthly Bulletin,* the Bank of England's quarterly *Inflation Report*, and the Federal Reserve's semiannual *Monetary Policy Report to the Congress*, which is presented along with the chairman's congressional testimony. Each of these garners substantial press attention.

[11] Somewhat later, but prior to the subsequent meeting, both the Fed and the BoE provide detailed accounts and explanations of the decisions in their minutes. And five years later, the Fed even releases verbatim transcripts of FOMC meetings.

[12] The central banks of the Czech Republic, Japan, New Zealand, Norway, Poland, Sweden, and Switzerland also hold regular press conferences.

Communication by individual committee members

Most central banks these days make decisions by committee, reflecting an apparent consensus that doing so leads to superior policy (Blinder, 2004, Chapter 2). But committees come in a wide variety of shapes and sizes. Blinder (2004) distinguishes among three types of committees—*individualistic* (examples: the Bank of England and Sveriges Riksbank), *genuinely collegial* (examples: the ECB and the FOMC under Ben Bernanke), and *autocratically collegial* (examples: Norges Bank and the FOMC under Alan Greenspan). He emphasizes that these distinct committee types require different communication strategies. In the individualistic case, the diversity of views on the committee should be made apparent to the public, as a way to help markets and interested citizens understand the degree of uncertainty surrounding monetary policy making. But in the collegial case, a similar diversity of views, if made public, might undermine clarity and common understanding and create a cacophony instead. Therefore, communication should mainly convey the committee's views.

Since the importance of communicating individual views should reflect an MPC's structure and functioning, it follows that it should vary both across banks and across time. Paradoxically, despite its collegial structure, the FOMC pursues a rather individualistic communication strategy, which sometimes produces highly diverse opinions that leave outside observers confused. The ECB, on the other hand, follows a far more collegial communication strategy, often displaying a much higher degree of consistency among the statements of individual committee members (Ehrmann and Fratzscher 2007b).

One difference between communications by individuals and by committees is the greater flexibility in timing of the former. Committee communications are difficult to

arrange other than at well-defined events. But changes in circumstances may not coincide with meeting dates or testimonies. When timeliness is important, speeches and interviews by individual committee members offer more flexible ways to communicate changes in the central bank's views rapidly. But the large variation across central banks in their intensity of inter-meeting communication suggests that they differ greatly in how much importance they attach to speed.

4. Short-term predictability: Impacts on financial markets

The huge variability observed in central bank communication practices raises several obvious questions. First, are there better and worse ways to communicate? Second, while the clear trend toward more frequent and more open communication suggests that most central banks have decided that more communication is beneficial, are they right? Both of these are empirical questions to which I now turn.

I begin with financial market reactions—which is where empirical investigators have concentrated, and not by coincidence. While central bank communications affect financial markets very quickly, interest rates and asset prices affect the rest of the economy only gradually—with the proverbial long and variable lags. Couple that with the many other factors that influence key macroeconomic variables, and isolating the macroeconomic effects of any particular communication event becomes next to impossible. But over the narrow time windows used in event studies, financial market variables arguably are reacting only, or at least mostly, to central bank signals. So it is much easier for an econometrician to estimate the impacts of central bank communications by using high-frequency data from financial markets than by using low-frequency data on macroeconomic performance.

That is fine for researchers. But central bankers are probably much more concerned with *long-term* predictability. What really matters is whether the public develops a good understanding of the way the central bank thinks and operates. That is presumably what King (2000) had in mind when he stated provocatively that a central bank should be "boring." It is certainly what Blinder (2004, p. 25) had in mind when he suggested that "perhaps the best a central bank can do is to 'teach' the markets its way of thinking."

Predicting the next monetary policy decision

But because long-term predictability is so difficult to measure, most empirical studies focus on *short-term* predictability, that is, on the market's ability to forecast the central bank's next move. The typical tool is an event study of how financial market prices react to news about monetary policy. This body of research is now sizable, and it has established convincingly that the predictability of interest rate decisions has improved notably in recent years.

The case of the Federal Reserve, which has periodically improved its transparency, has been studied most extensively. Poole and Rasche (2003) provide evidence that the surprise component of monetary policy decisions decreased considerably after the FOMC took the simple step of announcing its federal funds rate target immediately (starting in February 1994). Lange, Sack, and Whitesell (2003) show that the ability of Treasury bill yields to predict changes in the funds rate some months in advance has increased since the late 1980s. Swanson (2006) finds that U.S. financial markets and private sector forecasters have become both better able to forecast the funds rate at horizons out to several months and less uncertain about their forecasts *ex ante*--as indicated both by interest rate options and by the cross-sectional variance of interest rate forecasts. Since private sector forecasts

of macroeconomic variables have *not* shown similar improvements, that evidence strongly suggests a specific effect of monetary policy communication, rather than just a general decline in macroeconomic volatility ("the Great Moderation"). Each of these authors argues that the Federal Reserve's practice of making same-day announcements of monetary policy decisions was an important factor in reducing uncertainty.

Particularly strong effects on interest-rate predictability should be expected when the authorities explicitly reveal their own expectations of future rate decisions. Unfortunately, no research yet analyzes the effects of the publication of quantitative forward guidance, as practiced for years by the Reserve Bank of New Zealand (RNBZ) and, more recently, by Norges Bank and Sveriges Riksbank. There is simply not enough data yet. But as more experience is accumulated, e.g., in Norway and Sweden, this will be a high priority area for future research.

A different type of forward-looking communication has attracted far more scholarly attention: the *qualitative* guidance provided by the Federal Reserve (and other central banks) that issue "bias" or "balance of risks" statements. Perhaps surprisingly, however, the predictive power of these statements for future monetary policy seems to be modest.

In the case of the Fed, it is important to distinguish between bias statements made before and after May 1999. Until that date, FOMC policy directives were *internal* declarations of intent, presumably focused narrowly on the inter-meeting period, and made public only after the *next* FOMC meeting. Even insiders were often confused about what they meant. For example, the transcript of the July 1994 FOMC meeting contains the

following humorous interchange, which illustrates how a newcomer to the committee struggled with the meaning of a so-called asymmetric directive:[13]

> MS. MINEHAN: … Just being new to this whole business, if we go asymmetric, what does that really mean?
>
> CHAIRMAN GREENSPAN: We don't have a specific formulation. Asymmetry merely means a general sense of the Committee's disposition or the direction of our bias.
>
> MS. MINEHAN: How long should we expect you to wait before making a change?
>
> CHAIRMAN GREENSPAN: No, I have tried to articulate this and I have been much too specific, so I'll call on Don Kohn. [Laughter]
>
> Donald Kohn, then the director of the Fed's Division of Monetary Affairs, and Greenspan then both tried to explain the meaning of asymmetry. After some confusing discussion, William McDonough, President of the Federal Reserve Bank of New York, interjected a question:
>
> VICE CHAIRMAN MCDONOUGH: Is that fully clear to you?
>
> MS. MINEHAN: Yes, I am really clear on this. [Laughter]

Despite the muddled message, the pre-1999 bias has been shown to be a statistically significant predictor of the likelihood and direction of changes in the fed funds target during the subsequent inter-meeting period (Lapp and Pearce 2000), but not thereafter (Thornton and Wheelock 2000). Since May 1999, however, the balance-of-risks assessments have been *external* information provided to the markets. And Ehrmann and Fratzscher (2007c), focussing on this period, find them to be consistent with subsequent interest rate moves.

Pakko (2005) takes a different approach to the same question. Starting with the usual Taylor-rule variables for the Fed's reaction function, he asks whether the content of the "bias" statements is a statistically significant *additional* variable predicting changes in the

[13] Cathy Minehan, then the new President of the Federal Reserve Bank of Boston, was attending her first meeting as a member of the FOMC. These words are excerpted from a longer passage quoted in Blinder *et al.* (2001), p. 69.

funds rate. His answer is yes. Pakko's approach has also been applied to the ECB, though with mixed results.[14]

Which forms of central bank communication matter?

The evidence culled from various event studies demonstrates that central bank statements and/or speeches quickly filter into financial market prices. The seminal study by Kohn and Sack (2004) found that both FOMC statements and Greenspan *testimonies* moved markets, but that Greenspan *speeches* did not. Reeves and Sawicki (2007) find similar evidence for Bank of England communications. However, some other studies (e.g., Ehrmann and Fratzscher (2007b)) find significant effects of speeches on financial markets, perhaps due to different procedures for selecting communication events.

A comprehensive study of different communication tools in six different central banks by Connolly and Kohler (2004) finds that monetary policy reports in Australia, Canada, New Zealand, and the US provide information that significantly affects markets' expectations, and thus interest rate futures. Parliamentary hearings affect futures rates in Australia, New Zealand, the UK (albeit only marginally), and the US, but not in Canada or the euro area. However, where they have effects, the impacts of hearings on interest rate expectations are the largest among the various communication tools.

Central banks often provide substantially more detailed follow-up explanations of their decisions in the minutes of policy meetings. But if the minutes are to provide meaningful news to financial markets, they must be released *before* the committee's next meeting. In recent years, both the Federal Reserve and the Bank of England have shortened the lag in releasing their minutes, moving it from after to before the subsequent meeting.

[14] Rosa and Verga (2007) find that ECB communications add information to Taylor-type rules, but Jansen and De Haan (2006) do not.

Both Reinhart and Sack (2006) and Reeves and Sawicki (2007) find discernable financial market reactions only with more timely release.

Clarity and uncertainty in central bank communication

Central bank communications are rarely known for their sparkling prose—or even for their clarity. Since clearer communications presumably have higher signal-to-noise ratios, they should in principle convey more information. A few fascinating studies suggest that they do.

Fracasso, Genberg, and Wyplosz (2003) develop three subjective indicators of the *quality* of inflation reports in 19 countries and find that higher quality reports are associated with smaller policy surprises. Jansen (2008) supports their findings. Using objective measures of readability to measure the clarity of the Federal Reserve chairman's semi-annual Humphrey-Hawkins testimonies, he finds that greater clarity often reduces the volatility of interest rates. Finally, Ehrmann and Fratzscher (2007a) exploit the fact that ECB press conferences normally follow ECB policy announcements with a 45-minute lag to show that press conferences have larger average effects on asset prices and smaller effects on volatility—which indicates a higher signal-to-noise ratio of press conference communications. Why? They suggest that the Q&A session enables journalists to ask clarifying questions.

While the clarity issue has received scant attention in the literature, I find it tantalizing that three studies with such different methodologies all come to the same conclusion: that greater clarity enhances the quality of central bank communication.

Unclear communication is one source of uncertainty in central bank communication. But it is not the only source. Inconsistent signals can also arise when different members of a

monetary policy committee convey different messages—whether intentionally (e.g., by conducting a debate in public) or unintentionally (e.g., via uncoordinated communication). As Blinder (2007, p. 114) notes, "A central bank that speaks with a cacophony of voices may, in effect, have no voice at all."

On the other hand, Bernanke (2004) argues that "the willingness of FOMC members to present their individual perspectives in speeches and other public forums provides the public with useful information about the diversity of views and the balance of opinion on the Committee." Both views have validity. Whether communicating individual committee members' views to the public enlightens or confuses is ultimately an empirical issue. And whether it is advisable or inadvisable depends, *inter alia*, on whether the committee has group or individual accountability.

While FOMC members sometimes speak with disparate voices, the ECB generally speaks more with a single voice.[15] However, was not always the case. Jansen and De Haan (2006) show that communication about monetary policy inclinations by individual members of the Governing Council was relatively high in the initial years of the ECB, but then declined over time.

Do more consistent communication practices improve the predictability of monetary policy? Ehrmann and Fratzscher (2007d) find that more dispersed communication on Federal Reserve monetary policy is associated with less predictable policy decisions at short- and medium-term horizons, and that the magnitude of this effect is large. There is also evidence that the voting records of the Bank of England's MPC members help predict future policy changes (Gerlach-Kristen, 2004). Casting a minority vote appears to be a

[15] Issing (1999) has justified this on the basis of the ECB's special supranational nature.

bigger step, and therefore carries more information, than merely expressing a personal dissenting view in public.

Of course, markets will adapt to *any* central bank communication style. When central banks emit relatively dispersed, or even conflicting, signals, financial markets will attempt to identify pivotal committee members and attach more weight to their statements. For example, Andersson *et al*. (2006) find that markets react more strongly to statements by the Riksbank's governor. Ehrmann and Fratzscher (2007b) show the same for the Fed chairman. But in the case of the more collegial ECB, they find that markets react more equally to statements by all members of the Governing Council.

Importantly (but largely ignored), central bank communication must have both a transmitter and a receiver, and uncertainty or confusion can emanate from either end. On the receiving end, the same message might be interpreted differently by different listeners, who may have different expectations or believe in different models. One example is provided by Fracasso *et al*. (2003) who, using survey data, show that the same inflation report is perceived differently by different respondents, and that interest rate surprises tend to increase with the divergence in perceptions. In another example, De Haan, Amtenbrink, and Waller (2004) find substantial differences between newspaper reports published the day after ECB policy decisions in the Financial Times (FT) and the Frankfurter Allgemeine Zeitung (FAZ). The British-based FT is critical of the ECB's money growth "pillar" and tends to pay relatively little attention to it. But the home-town FAZ, which believes that money should play a prominent role in the ECB's strategy, gives that pillar substantial attention.

5. Longer-term predictability: Anchoring inflation expectations

As noted earlier, the long lags in monetary policy and the myriad influences on macroeconomic outcomes make it virtually impossible to isolate specific effects of a particular communication event on, say, inflation. So this section takes a longer-term perspective by summarizing the empirical literature on how (if at all) different communication *strategies* influence actual and expected inflation. Specifically, a number of studies have assessed the effects of an explicit numerical inflation target on inflation outcomes. The central questions are whether a numerical inflation objective (a) anchors the public's long-run inflation expectations, (b) reduces inflation forecast errors, and (c) reduces inflation.

One major finding (or rather anti-finding) in this literature is that comparisons between inflation targeters and a control group of non-targeters are enormously sensitive to the choice of the control group (see Mishkin and Schmidt-Hebbel (2007)). One reason might be the following potentially serious endogeneity problem: Just ask yourself whether the adoption of IT reduces inflation, or whether the desire to reduce inflation induces a country to adopt IT.

Subject to these very major caveats, a number of studies, using different methods, do find that IT successfully anchors inflation expectations. One approach is due to Johnson (2003), who first *estimates* the determinants of *expected* inflation (π^e) in the period before inflation targeting, and then uses that estimated model to predict π^e under the IT regime. The difference between actual and predicted π^e is then interpreted as the effect of the institutional change. Using this method, he estimates large reductions in expected inflation

after the announcement of inflation targets in Australia, Canada, New Zealand, and Sweden, but not in the United Kingdom.

A second approach compares targeting to non-targeting countries. Controlling for country, year, trend inflation, and business-cycle effects, Johnson (2002) detects a reduction in inflationary expectations in the IT countries but not in the control group. Levin, Natalucci, and Piger (2004) provide evidence that long-term inflation forecasts exhibit strong correlation with a three-year moving average of actual inflation in the control group, but not in the IT group--suggesting that inflation-targeting central banks have successfully de-linked expectations from realized inflation.

A third approach uses index-linked bonds to derive measures of long-term inflation expectations. Gürkaynak, Levin, and Swanson (2006) show that the implied break-even inflation rate is less responsive to both incoming macroeconomic data and monetary policy announcements in Sweden and the United Kingdom, two IT countries, than it is in the United States, which has no explicit inflation target.

All that said, a number of authors find that inflation expectations are equally well anchored in non-targeting countries, which casts doubt on whether the effect identified in other studies is really causal. For example, Castelnuovo, Nicoletti-Altimari, and Palenzuela (2003) find that long-term inflation expectations are well-anchored in all countries in their sample except Japan—regardless of whether the central bank has an inflation target, a quantitative definition of price stability, or no quantified target at all.

What about the behavior of inflation itself, as opposed to that of expected inflation? Does the introduction of IT reduce the average level of inflation—which was certainly the intent of its inventors in New Zealand and most (if not all) of its early adopters?

Surprisingly, Ball and Sheridan (2005) find no empirical evidence that inflation targeting improves inflation performance in a cross section of countries, once you control for regression to the mean. (High inflation tends to come down.) They offer the endogeneity issue mentioned earlier as an explanation: Countries that adopted IT had above-average inflation prior to adoption. Willard (2006), after dealing with the endogeneity problem in a variety of ways, supports Ball and Sheridan's conclusions. But other studies (e.g., Vega and Winkelried (2005)) do not.

What are we to make of these disparate results? As noted, Mishkin and Schmidt-Hebbel (2007) emphasize the importance of the control group. There appears to be no systematic difference in the inflation performances of successful countries with and without explicit inflation targets. The main benefit they see in inflation targeting is as a disciplinary device that helps potentially wayward countries move closer to the performance of the successful group.

6. So what do we really know (and not know)?

The empirical evidence reviewed here is not entirely one-sided. But it certainly points strongly in one direction. It seems safe to conclude that communication is an important and powerful part of the central bank's toolkit. Central bank talk clearly can move financial markets and improve the predictability of monetary policy. With very few exceptions, the research to date suggests that more and better central bank communication has succeeded in both "reducing noise" and "creating news." It may also help the monetary authorities achieve lower and more stable inflation, although here the findings are—perhaps necessarily—much less clear. All that said, the usefulness of monetary policy signals can be

degraded if the central bank speaks with too many conflicting voices—as sometimes happens at the Federal Reserve, for example.

I have mentioned that no consensus has yet emerged on what constitutes "optimal" communication policies, nor on how that choice depends on the institutional environment, the nature of the central bank's decisionmaking process, and the structure of its monetary policy committee. Practices, in fact, differ substantially and continue to evolve. While central banks clearly must tailor their communication strategies to these and other institutional features, thinking on that important topic has barely begun.

The research reviewed here, and in much greater detail in Blinder *et al.* (forthcoming) constitutes a quantum leap over what we knew at the start of the decade, which was virtually nothing. But there is a lot more to learn. As one prominent example, consider the publication of projected paths for the central bank's policy rate. While this practice appears to be the "new frontier" in central bank communication, it has existed in so few countries for so few years that we have little empirical knowledge of its effects as yet. As more data accumulates, this should be a high-priority area for future research.

Finally, virtually all the research to date focuses on central bank communication with the financial markets. It may be time to pay some attention to communication with the general public. Admittedly, studying communication with the general public poses new and difficult challenges to researchers—not least because financial market prices are far less useful. But the issues are at least as important. In the end, central banks derive their democratic legitimacy, and hence their cherished independence, from the consent of the general public.

7. Toward optimal central bank communication policies

I switch now from the comparatively safe domain of *positive* analysis to the inherently more dangerous domain of *normative* prescription. I do so with some trepidation because, as I have emphasized repeatedly, when it comes to central bank communications policy, one size (or shape) certainly does not fit all. This concluding section is therefore intended more to spur debate than to provide definitive answers.

Given what we know now about the effects of central bank communications, what policies might be thought of as "best practice"?

To begin on what seems to be safe *quantitative* grounds, I would judge that no central bank on earth currently communicates too much information, and that many communicate too little. Whether judged by the need for democratic accountability or by the effectiveness of monetary policy, the central banks of Norway and Sweden may now be the gold standard, and aspiring to their level of transparency may not be bad advice for the laggards.

Turning to specifics, it is hard to understand what purpose (other than deliberate obfuscation) is served by being less than fully transparent about the central bank's objectives, including posting a numerical inflation target (whether a point or a range). Notice that, if the bank has a dual mandate, revealing the objectives is *not* equivalent to inflation targeting. Notice also that the rhetoric of some inflation-targeting central banks, which focuses so single-mindedly on inflation, does not match their observed behavior, which also displays concern with, say, output gaps.[16] That, to me, is miscommunication and lack of transparency.

The statement that accompanies each monetary policy decision poses more delicate issues, since "optimal statement policy" must depend on the nature of the decisionmaking

[16] I will not name the guilty, but Norway and Sweden are innocent of this charge.

body. Briefly, a sole decisionmaker (e.g., New Zealand) should be able to release a lengthy and coherent explanation of both the decision and the reasons behind it right away. At the other end of the spectrum, an individualistic MPC (e.g., the UK) may be incapable of doing so in such a short time frame; indeed, the members may not even have agreed on the decision, much less on its rationale. In such cases, meaningful explanations must wait for the minutes, which should therefore be published as quickly as possible. Genuinely-collegial committees (e.g., the ECB and perhaps the Fed) are somewhere in between.

The case for public release of the central bank's forecast (possibly excluding the interest-rate forecast; see the next paragraph) also seems clear. Understanding the forecast on which the decision is based is an indispensible component of understanding the rationale for the decision itself. But here an operational issue arises for the overwhelming majority of central banks that make decisions by committee: Should it be the MPC's forecast or the staff's forecast that is released? My suggested answer is simple. If the discussions at MPC meetings are based on the committee's forecasts, then that is the one to release. If not, the bank should release the staff forecast. And I don't see why this information cannot be released with the statement. After all, forecasts obsolesce quickly.

But should the publicly-released forecast include the central bank's forecast of its own future behavior—the expected future path of the policy rate? As indicated earlier, this is a ticklish issue on which opinions vary. The experience of New Zealand, Norway, and Sweden demonstrates that doing so is feasible. The Swedish experience, though still brief, demonstrates that it can even be done with an individualistic committee, which might have seemed implausible on its face. On the other hand, forecasting the future of the policy rate would require major changes in the *modi operandi* of many central banks. So this last

transparency frontier may have to remain part of the aspiration level for most central banks for a while. While they are waiting, publishing interest rate forecasts from a reaction function estimated (or concocted) by the staff, but not necessarily "owned" by the MPC, seems a good compromise.

Who should speak for the MPC? The right answer here seems straightforward enough. Genuinely collegial committees should make every effort to avoid the cacophony problem by speaking with (as close as possible to) one voice. That could mean that only the chairman speaks for the committee, or that everyone may speak but adheres to a common message. On individualistic committees, however, multiple independent voices are essential and should not be suppressed.

Some evidence, though still thin in volume, suggests that clearer communications are more effective—a finding that implies some obvious advice to central bankers who may still like to be cryptic. (Remember, Karl Brunner!) In addition, the study that found more market impact from ECB press conferences than from ECB statements suggests that holding a press conference may be a particularly good way to communicate.

By now, I must surely have given my discussants plenty to which to object. I look forward to their reactions.

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