

Central Banking in Theory and Practice

Lecture II: Credibility, Discretion, and Independence

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Marshall Lecture

Presented at

University of Cambridge

Cambridge, England

May 5, 1995

I am grateful to my Federal Reserve colleagues Janet Yellen, Jon Faust, Richard Freeman, Dale Henderson, Karen Johnson, Ruth Judson, David Lindsey, Athanasios Orphanides, Vincent Reinhart, Peter Tinsley and, especially, David Lebow for extensive assistance and useful discussions. The insularity of this list does not reflect any belief that all wisdom resides inside the Fed, but merely the fact that time and my calendar precluded any further circulation of this draft.

Yesterday, I somewhat arbitrarily divided the subject matter for these two lectures into "old-fashioned" and "new-fangled" portions, taking up the former first and saving the latter for today. My dividing line corresponds--very roughly--to issues that, respectively, do not and do depend critically on expectational and game theoretic considerations. Today's lecture begins with a fairly extensive examination of an issue that is at once very old and very new, and which therefore neatly bridges the two camps: the debate over rules versus discretion.

1. The Rules vs. Discretion Debate: Then and Now

Economists have argued for a long time about whether or not society would be better off if discretionary monetary policy were replaced by a mechanical rule. To my knowledge, practical central bankers have not joined this debate--presumably because they think they know the answer. I, of course, agree with this assessment. But before proceeding further, let me clarify what I mean by a monetary policy rule, so that we at least know what we are arguing about.

What is a rule?

The Tinbergen-Theil program that was discussed in yesterday's lecture will, if carried out, lead to a policy reaction function relating the central bank's instrument to a variety of independent variables--most prominently, the deviations of target variables from their desired levels. For example, the equation might have the overnight bank rate on the left and such items as inflation, unemployment, and the exchange

rate or current account deficit on the right. That is not what I mean by a rule. Rather, such an equation is, to me, a mathematical--and somewhat allegorical---representation of discretionary policy. It is the way an economist theorizing in the Tinbergen-Theil tradition imagines monetary policy to be made. To qualify as a rule, in my parlance, the "equation" for monetary policy must be simple and non-reactive, or nearly so. Friedman's famous k-percent rule is the clearest example. Pegging the exchange rate is another.

There is, however, a third case that has gained prominence in the theoretical literature: assigning the central bank a rule based on outcomes, rather than one (like Friedman's) based on instruments. The two most obvious such rules are targeting inflation or targeting nominal GDP growth. There is indeed an intellectual case for a rule of this sort. In fact, such rules come fairly close to--and in some cases duplicate--the legal mandates of central banks. The problem is they are not really rules at all, but rather objectives that may require a great deal of discretion to accomplish. A government that wants to, say, stabilize the inflation rate at 2% cannot replace its central bank by a computer and go home. Hitting that target and staying there is sure to require human judgment and adaptation to changing circumstances--to wit, discretion. The harsh but simple fact is that no central bank directly controls inflation, unemployment, or nominal GDP--much as economic theorists pretend otherwise.

So, to me, the operational question is: Would it be better to replace central bank discretion with a simple rule based on instruments the bank can actually control, not on outcomes which it cannot control? Two very different lines of reasoning have been used to answer this question in the affirmative.

The old debate and the new debate

The old-fashioned approach is intimately linked to the name of Milton Friedman. Friedman and others argue that the automatic servo-mechanism of an unregulated economy will produce tolerably good, though certainly not perfect, results. While activist stabilization policy might be able to improve upon these results in principle, they doubt it will prove efficacious in practice because policymakers lack the knowledge, competence, and perhaps even the good will necessary to carry out the task. Faced with a choice between an imperfect economy and an imperfect government, Friedman and his followers dash without hesitation for the former. They share the worries of Lord Acton more than those of Lord Keynes.

The arguments on each side of this old debate have been hashed over numerous times, so I will not repeat them here. Suffice it to say that, while I myself find the Friedmanite arguments for rules less than persuasive, they cannot be summarily dismissed. Our knowledge is indeed not quite up to the task, and many monetary authorities have failed to acquit themselves with distinction. In all honesty, we must admit that there is at least an outside chance that Friedman could be right.

However, I mention this older debate not to take sides but rather to contrast it with the newer version of the rules-versus-discretion debate.

The new arguments for rules take an entirely different tack. They are based neither on the ignorance nor the knavery of public officials and, in fact, assume that everyone--even the government!---knows how the economy operates. Moreover, the government's objectives are assumed to coincide with the people's objectives, and everyone has rational expectations. Despite these seemingly ideal circumstances, modern critics argue that a central bank left with discretion will err systematically in the direction of excessive inflation. To remedy this distortion, they advocate a fixed rule.

Kydland and Prescott (1977) initiated this new round of discourse by observing that the expectational Phillips curve poses a temptation to the monetary authorities. Specifically, by stimulating aggregate demand and surprising the private sector with more inflation than anticipated, the central bank can reduce unemployment temporarily. Lower unemployment is a worthy goal, to both the public and the central bank. The problem is that you can go to this well only so often and, under rational expectations, not very often at all. If expectations are rational, people understand the central bank's behavior and monetary policy cannot produce systematic gaps between actual and expected inflation. So a central bank that reaches for short-term gains will, on

average, produce more inflation but no more employment than a central bank that is more resolute. Kydland and Prescott dubbed this (an example of) the problem of time inconsistency and suggested that the way to solve it was to adopt a rule.

Barro and Gordon (1983a, 1983b) and Barro (1986) clarified this message and extended it in a variety of ways, noting among other things that the rule could be reactive and exploring the role of reputation as a way to produce less inflationary policies in repeated games. Their analyses spawned a small growth industry that spins theories of central bank behavior and offers remedies for the alleged inflationary bias of discretionary monetary policy. Even before I became a central banker, I found this analysis unpersuasive,¹ and nothing I have learned since has altered my view. Let me try to explain why.

Three major objections

First, an historic point is worth making. With some variations in timing, the period from the late 1960s to the early 1980s was one of accelerating inflation in the industrial countries. Barro and Gordon ignored the obvious practical explanations for the observed upsurge in inflation--the Vietnam War, the end of the Bretton-Woods system, two OPEC shocks, etc.--and sought instead a theoretical explanation for what they

¹See, for example, Blinder (1987).

believed to be a systematic inflationary bias in the behavior of central banks.² They found it in Kydland and Prescott's analysis.³

But that was then and this is now. Recent history has not been kind to the view that central banks have an inflationary bias. In fact, the history of much of the industrial world since roughly 1980 has been one of disinflation--sometimes sharp disinflation, and sometimes at high social cost. Furthermore, the monetary authorities of many countries have displayed a willingness to maintain their tough anti-inflation stances despite persistently high unemployment. Whether or not you applaud these policies, they hardly look like grabbing for short-term employment gains at the expense of inflation.

How are we to reconcile the disinflation history of 1980-1995 with a theory that says that central banks systematically produce too much inflation? My view is that we cannot. Nor can we dismiss the 1980-1995 period as a brief interlude of history, insufficiently long to belie the Barro-Gordon analysis, for the 1965-1980 period used as "evidence" of inflationary bias lasted no longer.

I am tempted to conclude that Barro and Gordon and their followers have been theorizing about the last war just as real-world central bankers were fighting the next one. In addition, it

²Of course, some might interpret the fact that central banks allowed these shocks to pass through into higher inflation as evidence for inflationary bias.

³Notice, by the way, that the theory predicts stable inflation that is too high, not accelerating inflation.

is worth noting that the cure to the "inflation bias" problem did not come from adopting rigid precommitment ("rules"), as Kydland-Prescott and Barro-Gordon suggested. It came from determined but discretionary application of tight money. Rather than seeking short-term gains, central banks paid the price to disinflate. As in the Nike commercial, they just did it.

My second objection is simple and practical: Most of the literature presumes that the central bank controls either the inflation rate or the unemployment rate perfectly on a period-by-period basis. Obviously, this is not so in reality. Now, a theorist may argue that this is an inessential point; after all, no theory is meant to be literally true. But I think that retort dismisses the objection too cavalierly. When the literature comes to discussing solutions to the inflationary-bias problem, as I will shortly, the arguments for simple rules based on outcomes (like "keep inflation at zero") or for certain incentive-based contracts seem to hinge sensitively on the notion that either the central bank controls inflation perfectly or that shocks are perfectly verifiable ex post. Trust me; the real world is not that simple.

My third objection appears to be a narrow technical detail but is not. The literature derived from Barro and Gordon (1983a) posits a loss function in inflation and unemployment that looks something like the following:

$$L = a(p_t - p_{t-1})^2 + (u_t - ku^*)^2,$$

where p is the log of the price level, u is the unemployment

rate, u^* is the natural rate, a is a "taste" (or inflation-aversion) parameter, and k is a constant less than one indicating that the optimal unemployment rate is below the natural rate.⁴

This last parameter turns out to be essential to the argument for inflationary bias. In fact, in most models the inflationary bias of discretionary policy disappears if $k=1$. I can assure you that it would not surprise my central banker friends to learn that economic theories that assume they seek to drive unemployment below the natural rate imply that their policies are too inflationary. Furthermore, if this is the source of the problem, there is a disarmingly simple solution: direct the central bank to shoot for u^* rather than ku^* .

Three proposed solutions

Let me now examine three "solutions" to the inflationary-bias problem found in the theoretical literature. My purpose in each case is to match theory up against reality.

1. Reputation: The first solution hinges on notions of reputation--a concept, I can assure you, that is near and dear to the hearts of central bankers. Here theorists have been barking up the right tree. Nonetheless, theoretical models of reputation have some peculiar features.

Consider, for example, Barro's (1986) model, in which the central banker is either a "tough guy," who will always opt for

⁴To be clear, ku^* is the optimal unemployment rate if there were no worry about inflation. So it is reasonable to assume $k < 1$ in the loss function.

low inflation, or a "wet," who is willing to deviate in order to boost employment. The public does not know which kind of central banker it has, and is therefore forced into statistical inference. If the central bank keeps playing the low-inflation strategy, its reputation---that is, the subjective probability that it is tough--will rise. This part rings true. For example, the Federal Reserve probably had relatively little anti-inflation credibility in the late 1970s but has quite a lot now. Closer to this location, I believe the monetary authorities of both the U.K. and France have built up substantial anti-inflation capital during the 1990s.

But in the model, as soon as the bank allows high inflation, even once, the public concludes--with certainty--that it is a hopeless "wet." This is the part that strikes me as eccentric, for there are many types of central banker, not just two, and many random shocks cloud the mapping from outcomes back to types. For these reasons, reputation is not like pregnancy: You can have either a little or a lot. For example, the Bundesbank's entire reputation did not collapse when German inflation rose from about zero in 1986 to about 4% in 1992. Nor should it have. In central banking circles, it is viewed as obvious that the accumulation and destruction of reputational capital behaves more like adaptive than rational expectations. Here, I think, the central bankers are closer to the truth than the theorists.

2. Principal-agent contracts: A second proposed cure for the alleged inflationary bias of monetary policy that has attracted

the recent attention of theorists is drawing up a contract between the central bank as agent and the political authorities (which I shall parochially call "Congress" rather than "parliament") as principal. The genesis of the idea is simple. The Kydland-Prescott analysis suggests that decisionmaking is distorted toward excessive inflation. Say the word "distortion" and economists reflexively think of taxes and subsidies. So Walsh (1993) and Persson and Tabellini (1993) have proposed making the central banker's salary decline in proportion to inflation.⁵ They show that this particular incentive scheme induces the central banker to behave optimally in the context of a model like that of Barro and Gordon (1983a).

What's wrong with this idea? Well, to start with, a small decrease in salary is probably not much of a motivator for central bankers who are already voluntarily giving up a large portion of their potential earnings to do public service. Let me put it bluntly and personally: I currently suffer a 1% real wage loss for each point of U.S. inflation. But that meagre \$1231 has never once entered my thinking about monetary policy.

Second, we must face up to the embarrassing fact that virtually no central bank explicitly ties its salaries to economic performance--not even New Zealand, where there really is a formal contract between the governor of the Reserve Bank and

⁵Actually, many people had proposed such a scheme before. Walsh and Persson-Tabellini proved its optimality in a formal model.

the minister of finance. The governor may be dismissed (and thus suffer a huge pay increase!) if inflation comes in too high. But he does not have his salary docked.

Third, and finally, there is a severe problem with the party on the other side of the contract. In practice, "the public" cannot serve as the principal in the contemplated contract, so Congress must play this role as surrogate. But Congress is really an agent, not a principal. Do not members of Congress--who must stand for reelection--face even stronger incentives to go for short-term gains than central bankers? If so, why should Congress propose a contract with the central bank that would eliminate the inflationary bias? And why would it enforce such a contract if the central bank deviated and thereby caused a little boom? Critics of government everywhere complain that elected officials often fail to deliver what is in the best interests of the public. The notion that highly disciplined politicians can cure the wayward ways of profligate central bankers seems to get the sign wrong.

3. Conservative central bankers: This brings me to the third proposed theoretical solution to the conundrum posed by Barro and Gordon--the one with the most practical appeal. Rogoff (1985) cleverly suggested that, if there is an inflationary bias in monetary policy, the cure may lie in the appointment of more "conservative" central bankers. Now that really does have the ring of truth! Indeed, in the real world the noun "central banker" practically cries out for the modifier "conservative." To

Rogoff, conservatism has a very specific meaning. The taste parameter, α , indicating the relative disutilities of inflation and unemployment is presumed to be common to the central bank and the public. Rogoff suggested that politicians should deliberately select central bankers who are more inflation averse than society as a whole. That way, one bias (the unrepresentative preferences of the central bank) can cancel out the other (dynamic inconsistency).

Rogoff's model is a splendid illustration of the humorous definition of an economist as someone who sees that something works in practice and asks whether it can also work in theory. Is there any doubt that central banks in general, and successful inflation-fighting central banks in particular, have been run by quite conservative people? Rogoff's model argues that this common practice is wise. Nonetheless, a few points about his proposed solution are worth making.

First, the enhanced vigilance against inflation produced by conservative central bankers comes at a cost: real output and employment are more variable than in the dynamically inconsistent solution. That is fine because it presumably moves society closer to the optimum. My point is just that the gains on the inflation front come at some cost. Appointing conservatives to the central bank board does not buy society a free lunch.⁶

⁶It may be possible to fix this problem by combining the conservative banker and contract approaches.

Second, you can have too much of a good thing. In Rogoff's model---and, I believe, in reality--it is possible to appoint a central banker who is too conservative, that is, whose value of the parameter α is so high that he does not deliver the combination of inflation and output variability that society really wants. Specifically, such a central bank will fight inflation too vigorously and be insufficiently mindful of the short-run employment costs. This too rings true; it suggests that there is an optimal type of person best suited to a central bank board.

Third, Lohmann (1992) suggested an interesting amendment to the Rogoff approach which improves upon the solution--but one which, frankly, makes me uncomfortable. There may be times when it is optimal for the government to overrule the decision of the conservative central banker--for example, following a large supply shock. Lohmann suggests that such actions should be allowed, but only if the government pays a cost. In reality, the cost might be, e.g., the political heat the minister of finance would take if she overruled an important decision of the central bank governor. For example, the governor might resign in a huff.

Lohmann's idea is correct in theory. In a democracy there do, after all, have to be some checks on the behavior of an over-zealous central bank. But here, I suspect, we have an instance in which the theoretical best may be the enemy of the practical good. One of the hallmarks of a truly independent central bank is that its monetary policy decisions cannot be reversed except

under truly extraordinary circumstances. Indeed, I do not know how a central bank can claim to be independent without this provision. So any real-world government that adopts the Lohmann amendment must ensure that elected politicians overrule the central bank extremely rarely--for example, by making central bankers removable only for gross negligence. In the U.S., Federal Reserve governors are removable by the President only for cause. And, of course, Congress can abolish the Federal Reserve at any time. But these are grave steps. In practice, Fed decisions are never overruled.

The bottom line?

Where does this extended discussion of rules versus discretion leave us in the real, as opposed to the theoretical, world?

While Kydland and Prescott's insight points to a genuine difficulty for monetary policy, and some of the subsequent literature has been enlightening, there is less there than meets the eye. If there is strong agreement on both the positive aspects (e.g., the Phillips curve) and the normative aspects (e.g., the social welfare function) of a time-inconsistency problem, as Barro and Gordon assume for the inflation problem, societies should have little difficulty in "solving" it, albeit imperfectly. For example, I just suggested one simple solution: directing the central bank to prefer u^* rather than ku^* .

In fact, nations and households seem to have found simple, practical ways to cope with a wide variety of potential dynamic

inconsistencies--ways that bear little resemblance to the solutions suggested by theorists (except for Rogoff). Some common examples are dealing with flood plains, avoiding capital levies, punishing your children when they misbehave, and giving final examinations in courses. In each case, society copes with a potential time-inconsistency problem, by creating--and usually following--norms of behavior, by building reputations, and by remembering that there are many tomorrows. Rarely does society solve the problem by rigid precommitment or by creating incentive-compatible compensation schemes for decisionmakers. Enlightened discretion is the rule.⁷

Similarly, the revealed preferences of many democratic societies are to deal with the problem of dynamic inconsistency in monetary policy by legislating a long-term goal (e.g., price stability), giving discretion to nonpolitical central bankers with long time horizons and an aversion to inflation, and then hoping for the best. This is not obviously a bad solution.

2. Central Bank Independence

Everything, it seems, runs in fads. Lately, it appears, fashion has been running increasingly in the direction of central bank independence--a salutary development in my view. But since the term "central bank independence" is somewhat vague and has occasionally been abused, it may be useful, once again, to begin with a definition. To me, the term means two things: first,

⁷One prominent exception is patents, where a rigid rule is generally inscribed in law to protect patents.

that the central bank has freedom to decide how to pursue its goals and, second, that its decisions are very hard for any other branch of government to reverse. A few words on each are in order.

When I say that an independent central bank has considerable latitude to decide how to pursue its goals, that does not mean that the bank gets to select the goals by itself. On the contrary, in a democracy it seems entirely appropriate for the political authorities to set the goals and then instruct the central bank to pursue them. If it is to be independent, the bank must have a great deal of discretion over how to use its instruments to pursue its legislated objectives. But it need not have authority to set the goals and, indeed, I would argue that giving the bank such authority would be an inappropriately broad grant of power. The elected representatives of the voters should make such decisions. The central bank should then serve the public will.

So, for example, the Bundesbank is directed by law to "safeguard the currency" and the Federal Reserve is instructed to pursue "maximum employment" and "stable prices."⁸ In each case, the goals of monetary policy are set forth in legislation but are sufficiently imprecise that they require considerable interpretation by the central bank. Taking the Federal Reserve as

⁸Actually, there is a third goal: "moderate long-term interest rates." But most of us believe that comes for free if you succeed in achieving price stability.

an example, our dual mandate requires us--tacitly or explicitly-- to give content to the vague phrases "maximum employment" and "stable prices" and then to decide how to deal with the short-run tradeoff between the two. This interpretative role enhances the de facto power of the Fed. But I think it is quite possible to have a highly independent central bank with more precisely-defined goals; the numerical inflation target of the Reserve Bank of New Zealand is a case in point.

The second--and critical--hallmark of independence is near irreversibility. In the American system of government, for example, neither the President nor the Supreme Court can countermand the decisions of the Federal Open Market Committee (FOMC). Congress can, but only by passing a law that the President signs (or by overriding his veto). This makes our decisions, for all practical purposes, immune from reversal. Without this immunity, the Fed would not really be independent, for our decisions would hold only so long as they did not displease someone more powerful.

Having defined independence, let me now pose a naive question: Why should the central bank be independent? My answer is disarmingly simple. Monetary policy, by its very nature, requires a long time horizon. One reason is that the effects of monetary policy on output and inflation come with long lags, so decisionmakers do not see results of their actions for quite some time. But the other, and far more important, reason is that

disinflation is an investment activity: it costs something up front and pays back only gradually over time.

But politicians in democratic--and even undemocratic--countries are not known for either their patience or their long time horizons. Neither is the mass media nor public opinion. And none of these constituencies have much understanding of the long lags in monetary policy. So, if politicians made monetary policy on a day-to-day basis, the temptation to go for short-term gains at the expense of the future (that is, to inflate too much) would be hard to resist. Knowing this, many governments wisely try to depoliticize monetary policy by, e.g., putting it in the hands of unelected technocrats with long terms of office and insulation from the hurly-burly of politics. The reasoning is the same as that which led Ulysses to tie himself to the mast: He knew he would get better long-run results even though he wouldn't feel so good in the short run!

Empirical evidence bears out this hypothesis, at least in a crude way. Researchers have employed a variety of creative ways to measure central bank independence, including a number of legal provisions, turnover of the central bank governor, the nature of the bank's mandate (e.g., is it directed to pursue price stability?), and answers to a questionnaire. A common, but not universal, finding is that countries with more independent

central banks have enjoyed lower average inflation rates without suffering lower average growth rates.⁹

So far, I have been speaking about independence from the rest of the government and therefore, by inference, from both partisan politics and public opinion. This sort of independence seems to be what people have in mind when they talk about independent central banks, and it is certainly the concept of independence on which both the academic literature and the Maastricht Treaty focus. To be independent, the central bank must have the freedom to do the politically unpopular thing. But there is another type of independence that, in my view, is just as important but is rarely discussed: independence from the financial markets.

Now, in a literal sense, independence from the financial markets is both unattainable and undesirable. Monetary policy works through markets, so perceptions of likely market reactions must be relevant to policy formulation and actual market reactions must be relevant to the timing and magnitude of monetary policy effects.

When I speak of making the central bank "independent" of the markets, I mean something quite different. Central bankers are often tempted to "follow the markets," that is, to deliver, say, the interest rate path that the markets have embedded in asset

⁹See, for example, Alesina and Summers (1993), Cuckierman et al. (1992), and Fischer (1994). Posen (1993) questions whether the relationship is causal.

prices. It is easy to understand how such a temptation arises; after all, the markets are like a giant biofeedback machine that constantly monitors and evaluates the central bank's performance. Central bankers are only human and want to earn high marks--from whoever is handing out the grades. Since it can be agonizing to wait years for the verdict of history, which is the only verdict that really matters, central bankers naturally turn to the markets for instant evaluation.

Following the markets may be a nice way to avoid unsettling financial "surprises," which is a legitimate end in itself. But I fear it may produce rather poor monetary policy, for several reasons. One is that speculative markets tend to run in herds¹⁰ and overreact to almost everything.¹¹ Central banks need to be more cautious and prudent. Another is that financial markets seem extremely susceptible to fads and speculative bubbles which sometimes stray far from fundamentals.¹² Central bankers must inoculate themselves against whimsy and keep their eyes on the fundamentals.

Finally, traders in financial markets--even those for long-term instruments--often behave as if they have ludicrously short

¹⁰For a theoretical explanation based on short-time horizons, see Froot, Scharfstein, and Stein (1992).

¹¹The literature on financial market overreaction, begun by Shiller (1979), is by now voluminous. For a survey, see Gilles and LeRoy (1991).

¹²Regarding fads, see Shiller (1984). Regarding bubbles, see Flood and Garber (1980) and West (1987).

time horizons. By contrast, maintaining a long time horizon is the essence of proper central banking. Here's an example of what I mean. You can use the term structure of yields on U.S. Treasury debt to compute implied forward rates up to 30 years into the future. During 1994, the observed correlation between changes in the current one-year rate and changes in the implied one-year forward rate 29 years in the future was 0.54 on daily data!¹³ I have a hard time believing that the daily flow of news really has that much durable significance. Rather, I believe, the 30-year bond behaves altogether too much like a one-year instrument.

Notice the extreme irony here. Perhaps the principal reason why central banks are given independence from elected politicians is that the political process is apt to be too short-sighted. Knowing this, politicians willingly and wisely cede their day-to-day authority over monetary policy to a group of independent central bankers who are told to keep inflation in check. But if the central bank follows the markets too closely, and strives too hard to please them, it is likely to tacitly adopt the markets' extremely short time horizons as its own.

Do not get me wrong. I do not believe that a central banker can afford to ignore markets. Nor should he want to, for markets convey valuable information--including information about expected future monetary policy. I myself look at and appraise the information in stock, bond, foreign exchange, and other markets

¹³The correlation moves around quite a bit over time. It was generally lower in 1988-93, but higher in 1979-87.

constantly. My point is simply that delivering the policies that markets expect--or indeed demand--may lead to very poor policy.

3. Credibility and Accountability

In discussing the arguments for central bank independence, I did not mention a rationale that is often offered by central bankers and academics alike: the notion that more independent central banks are more credible inflation fighters and, therefore, can disinflate at lower social cost. Indeed, extreme versions of the credibility hypothesis, which have appeared in the academic literature, claim that costless disinflation is possible if central bank policy is completely credible.¹⁴ The reason is simple. The essence of an expectational Phillips curve is that inflation depends on expected (not lagged) inflation plus a function of unemployment plus other variables and random shocks:

$$p_t - p_{t-1} = {}_{t-1}E p_t - p_{t-1} + f(u_t) + \dots$$

If expectations are rational and the monetary authority has total credibility, the mere announcement of a disinflation campaign will make ${}_{t-1}E p_t$ fall abruptly, bringing inflation down with no transitional unemployment cost.

Omitting the credibility hypothesis was not an oversight. Much fascinating theory to the contrary, I do not know a shred of evidence that supports it. It seems to be one of those hypotheses--like the interest elasticity of saving--that sounds

¹⁴See, for example, Taylor (1983) or Ball (1994).

plausible but turns out to be untrue. The available evidence does not suggest that more independent central banks are rewarded with more favorable short-run tradeoffs.¹⁵ Nor does the recent experience of OECD countries suggest that central banks that posted inflation targets were able to disinflate at lower cost than central banks without such targets. Nonetheless, these claims continue to be made. As Julius Caesar observed: "Men are nearly always willing to believe what they wish."

Whether or not it is an important determinant of the costs of disinflation, I can tell you from personal experience that central bankers prize credibility and view it as a precious asset not to be squandered. And I agree. But not because it makes disinflation easier. Then why? A central bank is a repository of enormous--and, if it is independent, virtually unchecked--power over the economy. This power is a public trust assigned to the bank by the body politic. In return, the citizenry has a right to expect--no, to demand---that the bank's actions match its words. That, to me, is the hallmark of credibility: matching deeds to words.

Academic economists often employ a different definition. In a game-theoretic setting, credibility is identified with dynamic consistency or incentive compatibility. The notion is that, if the central bank announces a policy and private decisionmakers take actions predicated on belief in the announcement, the

¹⁵See Fischer (1994) and Posen (1995).

central bank must either be bound by rule to follow through on its promise or have a clear incentive to do so. If there is neither precommitment nor incentive, policy may be time inconsistent and policy pronouncements will therefore be noncredible. As I noted in Section 1, this is the logic behind modern arguments for rules that tie the central bank's hands or for compensation schemes that give it a pecuniary incentive to behave. Each mechanism is viewed as a way to produce credibility.

But when practical central bankers talk about credibility, they have a simpler definition in mind. In their view and mine, credibility means that your pronouncements are believed--even though you are bound by no rule and may even have a short-run incentive to renege. In the real world, such credibility is not normally created by incentive-compatible compensation schemes nor by rigid precommitment. Rather it is painstakingly built up by a history of matching deeds to words. A central bank that consistently does what it says will acquire credibility by this definition almost regardless of the institutional structure.

Thus, for example, the Bundesbank is believed when it says it is determined to reduce inflation, even though it follows no rule and its council members have no financial stake in disinflation. Furthermore, this concept of credibility is not a zero-one variable but a continuous variable; you can have more credibility or less. As I stated earlier, I believe the Federal Reserve now has much more anti-inflation credibility than it had,

say, 15 years ago. And it did not acquire this credibility through institutional change.

Here is an interesting question to ponder. The academic literature posits that central banks invest in credibility in order to improve the short-run tradeoff. But there seems to be no such credibility bonus. Why, then, are central bankers so concerned with credibility? (Trust me, they are.)

Three answers suggest themselves, and I believe there is something to each. First, many central bankers probably believe the credibility hypothesis despite the evidence against it, just as many policymakers believe that tax incentives raise personal saving. Second, central bankers are only human; we want to be believed and trusted--not thought to be duplicitous liars. Third, central bankers may want the latitude to change short-run tactics (e.g., abandon a money growth target) without being thought to have changed their long-run strategy (e.g., fighting inflation). To pull off such a feat without spooking markets, it helps to have a reputation for keeping your word.¹⁶

This last possibility leads me to the next topic: accountability. When it wants to change policy or procedures, a central bank may find it helpful to bring society along by explaining what it is doing and why. By explaining its actions reasonably fully and coherently, a central bank can remove much

¹⁶An example came in the spring of 1983 when the Fed under Paul Volcker abandoned monetarism without creating fears that it was abandoning the fight against inflation.

of the mystery that surrounds monetary policy, give the public a chance to appraise its policy decisions contemporaneously, and then--importantly--enable outside observers to judge its success or failure after the fact.

This educational role of the central bank is, in my view, an important aspect of accountability. But not everyone sees it that way. It is alleged, for example, that being more accountable in this sense threatens the independence of the central bank. Mystery, according to this view, is necessary to preserve independence.

I could not disagree more. In fact, I view public accountability as a logical corollary of central bank independence in a democratic society. Our freedom to act, it seems to me, implies a moral obligation to explain ourselves to the public. Nor will doing so harm the central bank. If the Federal Reserve makes good decisions, we should have no trouble explaining and defending them in public. (Remember, we do not have to put them to a vote!) If we cannot do this, maybe our decisions are not so good. In this respect, I find the Reserve Bank of Australia a model central bank. When it changes short-term interest rates, the governor issues a lengthy statement explaining in detail the reasoning behind the decision and what the bank hopes to achieve by it.¹⁷

¹⁷These statements are printed in the Reserve Bank of Australia Bulletin; see, for example, the September 1994 issue, pp. 23-24.

A second aspect, or perhaps definition, of accountability is related to something I dealt with earlier: rewards and punishments. In business organizations, the concept of accountability often entails bonuses for success and punishments for failure. Such incentives make people personally responsible for their actions and help align the employee's interests with those of the firm. This type of accountability takes a rather different form in central banking. Unless the central bank is a superb obfuscator, people will know that it is largely responsible for macroeconomic management. It will therefore automatically get credit (grudgingly, of course!) when things go well and blame when things turn sour. So, for example, the central bank governor may be rewarded with kudos and reappointment for success and punished with scorn and dismissal for failure. That's pretty fair accountability, it seems to me.

Finally, we can interpret accountability in the quite literal sense of accounting for your actions. In the monetary policy context, this means, e.g., periodic reporting of monetary policy actions and their consequences to the legislature, press, and public. Central banks vary a great deal in how much of this they do. At one end of the spectrum, there may be little beyond a formal annual report with no public questioning. Such a document is almost bound to be self-serving, much like a corporation's annual report. At the other end, we can imagine a central bank governor who is constantly subjected to public questioning by the legislature--which strikes me as altogether too much hectoring.

The Federal Reserve is somewhere in the middle of this spectrum. Since early 1994 the FOMC has announced its monetary policy decisions immediately, abandoning a long tradition of letting the market guess what we are up to. This small step, by the way, was once controversial and viewed as potentially dangerous; now it is universally accepted. However, we still do very little in the way of explaining FOMC decisions; I believe we could and should do more. In addition, our Chairman testifies periodically before Congressional committees, and the FOMC reports officially on monetary policy twice a year. Most obviously, of course, our policy is analyzed and dissected in the financial press on a daily--if not minutely--basis.

4. Central Banking by Committee

This has been a long journey, but there is one last stop in the practical world. In some countries, including my own, monetary policy is made not by a single individual but by a committee. Few theorists have ever made anything of this fact.¹⁸ Rather, central banks are normally modeled as if they have a well-defined preference function, just like an individual.

From my current vantage point, this theoretical lacuna looks to be significant. I am keenly aware that committees routinely aggregate individual preferences, need to be led, tend to adopt compromise positions on difficult questions, and--perhaps because

¹⁸An interesting exception is Faust (1993).

of all of the above--tend to be inertial. This last point has both advantages and disadvantages.

On the minus side, the nature of decisionmaking by committee may have something to do with the observed tendency of central banks to overstay their stance--remaining tight for too long, thereby causing recessions, or remaining easy for too long, thereby allowing inflation to take root.¹⁹ Had Newton served on many faculty committees at Cambridge, the first law of motion might have read: A decisionmaking body at rest or in motion tends to stay at rest or in motion in the same direction unless acted upon by an outside force.

Inertial behavior has its virtues, as I will remark shortly. But it does lead to systematic policy errors. I wish I could claim that the Federal Open Market Committee has been immune to this ailment over the years, but I cannot. However, there is at least one tradition at the Federal Reserve that tends to minimize it: that of the strong chairman. The law says that each of the 12 voting members of the FOMC has one vote. But no one has ever doubted that Alan Greenspan, or Paul Volcker, or Arthur Burns were "more equal" than the others. The Chairman of the Federal Reserve Board is virtually never on the losing side of a monetary policy vote. So, to a significant extent, FOMC decisions are the chairman's decisions, as tempered by the opinions of the other members. Nonetheless, a chairman that needs to build consensus in

¹⁹This is not the only reason. I observed in the first lecture that underestimation of lags may play a significant role.

his committee may have to move more slowly than if he was acting alone.

Now for the positive side. I come, as you know, from the land of checks and balances. American traditions harbor great fears of unbridled, centralized power. It is an anti-government form of government--the little government that couldn't because it was too tied up in knots. Yet the Federal Open Market Committee has great freedom to do as it will with monetary policy--without asking permission from any other branch of government and with little fear of being countermanded. So long as our decisions on open-market policy are done by the book and remain within our legal authority, we are neither checked nor balanced. At least not externally.

But the group-nature of FOMC decisions creates what amounts to an internal system of checks and balances. No Chairman can get too far out in front of his committee. Decisionmaking by committee, especially when there is a strong tradition of consensus,²⁰ makes it very difficult for idiosyncratic views to prevail. So monetary policy decisions tend to regress toward the mean and to be inertial--and hence biased in just the same sense that adaptive expectations are biased. But errors like that will generally be small and tend to shrink over time. And, in return,

²⁰Curiously, there is no such tradition of consensus decisionmaking on the U.S. Supreme Court, where 5-4 votes occur about 20% of the time. But over the last 20 years there has been only one 7-5 vote and one 6-4 vote on the FOMC, and there have been only seven other votes with four dissents.

the system builds in natural safeguards against truly horrendous mistakes. I leave it to some clever Cambridge don to prove that this is optimal institutional design.

5. In Conclusion

I am afraid I have worn my central-banker hat rather more prominently than my professor hat in today's lecture. It can hardly be considered startling to hear a central banker favoring discretion over rules, extolling the independence of central banks, and stating that credibility and accountability are important. But I hope at least to have given these concepts sharper definition and to have brought to bear on them some interesting real-world perspectives.

As I warned yesterday, I have been somewhat critical of some recent theoretical research on normative aspects of monetary policy---especially that pertaining to time inconsistency and rules and to costless disinflation via credibility. On the other hand, recent empirical research on some positive aspects of central bank independence has been both imaginative and instructive. And I hope my criticisms of the theory are at least not uninformed. Some modern theorizing could, I believe, benefit from a healthy dose of reality.

As Marshall, that most practical of theorists, wrote of Edgeworth, "It will be interesting... to see how far he succeeds

in preventing his mathematics from running away with him, and carrying him out of sight of the actual facts of economics."²¹

²¹Quoted in Keynes', Essays in Biography, p. 159.

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