

# Central-Bank Credibility: Why Do We Care?

## How Do We Build It?

By ALAN S. BLINDER\*

Over the last 15 years or so, the concept of credibility has become a central concern of the scholarly literature on monetary policy. A search of all the abstracts in EconLit reveals that 370 different articles used the word “credibility” in conjunction with either “monetary policy” or “central banking” over the 15-year period 1985–1999. By contrast, a search of the preceding 15 years turns up a mere 4 references.

This heightened interest in the credibility of monetary-policy pronouncements is, in part, tied to the rational expectations revolution: Under certain assumptions, including rational expectations, a completely credible central bank can engineer a disinflation without suffering any adverse effects on employment.<sup>1</sup> But central-bank credibility is relevant even if expectations are less than fully rational. As long as expectations matter—and how can they not?—a central bank’s credibility should influence how its monetary-policy actions affect forward-looking variables like long-term interest rates and other asset prices.

Academic economists are far from alone in their preoccupation with the concept of credibility. It is also a major concern in practical central-banking circles. Actual policy makers may not believe much in the rationality of expectations; heavy exposure to real-world financial markets has a way of shattering such

beliefs. As Fischer Black, who lived successfully in both worlds, is alleged to have said, “Financial markets look more efficient from the banks of the Charles than from the banks of the Hudson.” But central bankers nonetheless take it as axiomatic that their credibility affects the linkages from policy changes (or policy pronouncements) to, say, long-term interest rates and exchange rates.

In a word, credibility matters *in theory*, and it is certainly believed to matter *in practice*—although empirical evidence on this point is hard to come by because credibility is not easy to measure.<sup>2</sup> This paper seeks to shed light on two main issues: Why and how? Why is credibility so important to central bankers? And how can a central bank create or enhance credibility?

I investigate these questions in a rather unconventional way. During the summer of 1998, I mailed a questionnaire to the heads of 127 central banks—the entire membership of the Bank for International Settlements (BIS)<sup>3</sup>—soliciting their opinions on a variety of issues related to central-bank credibility. The response rate was gratifyingly (I might say amazingly) high: 84 of the 127 banks responded, for a response rate of 66 percent. Their answers provide the main data for this study.<sup>4</sup> While I tabulated the answers for OECD central banks and non-OECD central banks separately, I report here mainly the results for the pooled sample of all central banks because—with only a

\* Department of Economics, Princeton University, Princeton, NJ 08544, and Brookings Institution, 1775 Massachusetts Avenue, NW, Washington, DC 20036. I thank the many survey respondents for their kind cooperation, Eleni Constantinou and Matthew Moore for excellent research assistance, Mervyn King, Robert King, Gregory Mankiw, Laurence Meyer, Frederick Mishkin, Lars Svensson, Michael Woodford, and the referees for helpful suggestions, and Princeton’s Center for Economic Policy Studies for financial support.

<sup>1</sup> As pointed out by Thomas J. Sargent (1982). See John B. Taylor (1983) and Laurence Ball (1991) for explicit examples. Ball even shows that, with staggering, a perfectly credible disinflation can cause a boom.

<sup>2</sup> If the central bank has an explicit, publicly announced target for some variable  $x$  ( $x$  = inflation, say), then the gap between the target and market expectations can be taken as an objective measure of credibility. But most central banks have no such target.

<sup>3</sup> I deleted the Federal Reserve Bank of New York, which is a BIS member, and included the European Central Bank even though it was not yet conducting monetary policy.

<sup>4</sup> Because I promised anonymity, I cannot acknowledge them by name, but I am extremely grateful to each of them for their kind cooperation.

few exceptions—the two groups gave similar responses.<sup>5</sup>

My primary interest was in the views of actual central bankers. But I sent a substantially identical questionnaire to a similarly sized sample of academic economists who specialize in monetary economics or macroeconomics.<sup>6</sup> The purpose was to ascertain whether and how the views of academics differed from those of central bankers. Differences might emerge for several reasons. Most obviously, the economists are theorists and econometricians rather than practitioners. In addition, almost all of the economists were either raised or educated (or both) in the United States—whereas the central bankers come from 84 different countries. Somewhat to my dismay, the response rate among the academics—who are presumably sympathetic to data collection!—was considerably lower, but still respectable: 53 out of 115 returned the questionnaire, for a response rate of 46 percent.<sup>7</sup>

Both central bankers and academics apparently consider credibility very important. The questionnaire, which is available from the author on request, opened with the following apparently straightforward query:

*Q1. How important is credibility to a central bank?*

Actually, this question is not all that straightforward. It begs the question of what “important” means (important for what purpose?), and it leaves the term “credibility” undefined. (A few respondents criticized me for that.) Both omissions were deliberate. A series of subsequent questions inquired about the reasons why credibility might be important to a central bank

(see Section II below). And I decided not to force any particular definition of the ordinary-English word “credibility” on respondents who might have other meanings in mind and therefore recoil from mine. The term credibility is much used these days, and in a variety of different ways. I wanted to find out why.

In any case, respondents answered by selecting a number on the following five-point scale:

- 1 = unimportant
- 2 = of minor importance
- 3 = moderately important
- 4 = quite important
- 5 = of the utmost importance.

The mean response among the 84 central bankers was a stunningly high 4.83—with a standard deviation of just 0.37. Indeed, no respondent chose a number below 4. This is an amazing degree of consensus. The economists are somewhat less enthusiastic about the importance of credibility—and also far less unanimous among themselves. Their mean response is 4.23, which is still quite high, but their standard deviation is 0.85 and 6 of the 52 economists chose either “2” or “3.” In general, however, I think it fair to say that both groups attach a great deal of importance to central-bank credibility. There is thus good reason to read on!

### I. A Matter of Definition

As just noted, I deliberately failed to provide a precise definition of credibility, allowing each respondent to attach his or her own preferred meaning to the term. In fact, there appears to be no generally agreed-upon definition. My own favorite definition involves matching deeds to words: A central bank is credible if people believe it will do what it says. This notion is very close to the (Webster’s) dictionary definition: “the ability to have one’s statements accepted as factual or one’s professed motives accepted as the true ones.” But there are many other possible definitions.

In the academic literature, credibility is often identified with one of three things: strong aversion to inflation, incentive compatibility, or precommitment. To illustrate these alternative concepts of credibility, consider the following simple model of central-bank behavior, variants

<sup>5</sup> *t*-tests could reject the hypothesis that the mean responses were the same in only three questions.

<sup>6</sup> The sampling frame was all members of two NBER programs: Economic Fluctuations & Growth and Monetary Economics. Program members are chosen by the NBER based on the recommendations of other program members. Over 80 percent of these people teach at U.S. universities; a few are foreign academics; and a few others are nonacademics—mostly government officials. But most of the “officials” would be recognized as career academics.

<sup>7</sup> A few economists listed as members of one of the NBER programs would not normally be considered macroeconomists and may have little involvement in monetary-policy issues. One such person graciously returned the questionnaire anyway, but with mostly blank spaces. So, in effect, my sample size is 52.

of which appear in many papers, starting with Finn E. Kydland and Edward C. Prescott (1977):

$$(1) \quad \pi_t = \pi_t^e - \beta(u_t - u_t^*) + \gamma \mathbf{z}_t + \varepsilon_t$$

$$(2) \quad u_t = u_t^* + ar_t + \delta \mathbf{x}_t + e_t$$

$$(3) \quad i_t = r_t + \pi_t^e$$

$$(4) \quad L_t = (u_t - ku_t^*)^2 + \alpha \pi_t^2.$$

Equation (1) is an expectational Phillips curve, augmented to include a vector  $\mathbf{z}$  of supply-side variables (e.g., oil prices). Equation (2) says that the deviation of unemployment from its natural rate,  $u^*$ , depends on the real interest rate,  $r$ . ( $\mathbf{x}$  is a vector of other demand-side variables.) Equation (3) defines the central bank's instrument, the nominal interest rate, as the real interest rate plus expected inflation. And equation (4) is the periodic loss function that the central bank is assumed to minimize. As is well known, the parameter  $\alpha > 0$  indicates the degree of inflation aversion, and the parameter  $k < 1$  indicates the temptation to "cheat" by delivering unexpected inflation. It is the source of the "inflation bias" emphasized by Kydland and Prescott (1977) and Robert J. Barro and David Gordon (1983).

In the context of this model, a number of different definitions of credibility arise. One is simply the degree of inflation aversion,  $\alpha$ : More inflation-averse banks are more credible. In some reputational models, a central bank can raise the public's subjective probability that it is "tough" by keeping inflation low.<sup>8</sup> This probability is, in turn, taken as a measure of the bank's credibility, which is a reasonable enough association if credibility is synonymous with inflation aversion (more on this below).

To other theorists, a central bank is not credible unless it is bound by a rule or other "commitment technology" to live up to its word despite the temptation to "cheat" that inheres in the above model. A credible central bank is one that can precommit to a low inflation policy.

Indeed, the inability to precommit is seen as the main reason why central banks allow too much inflation.<sup>9</sup>

In other theoretical models, a central bank's pronouncements are credible only if it attains a higher level of expected utility by following through on its promises rather than renegeing. In other words, duplicity is to be expected unless truthfulness is in the central bank's self-interest. One way to induce the central bank to carry out its pledge to fight inflation is for the government to write an incentive-compatible contract for its central bank. That might, for example, amount to adding an additional (linear) term to (4) that penalizes the central banker for inflation.<sup>10</sup>

Central bankers, it seems to me, use somewhat different, though not contradictory, definitions of credibility. For example, I have often heard central bankers cite the level of a country's long-term interest rates—which presumably reflect inflationary expectations—as a measure of the credibility of monetary policy. Relatedly, a strong track record of fighting inflation is often taken as evidence of high credibility.

One point of contact between policy makers and academics is that many central bankers take the degree of dedication to price stability as synonymous with credibility. Thus the Bundesbank long was considered to be one of the world's most credible central banks even though it missed its professed money-growth target more than 50 percent of the time.<sup>11</sup> When people declared that the Bundesbank had high credibility, they meant that no one questioned its determination to fight inflation. Similarly, when the United States was disinflating in the 1980's, Federal Reserve Chairman Paul Volcker was considered a highly credible inflation fighter even though his attachment to monetarism was more public relations than substance.

While I did not ask respondents to write down their personal definitions of credibility,

<sup>9</sup> See Barro and Gordon (1983) and the scores of papers it has spawned.

<sup>10</sup> See Torsten Persson and Guido Tabellini (1993) and Carl E. Walsh (1995).

<sup>11</sup> See, for example, David Begg et al. (1998 p. 16, Table B2.1), which shows the Bundesbank missing 11 of its last 19 annual target ranges for money growth, even though many of them were three percentage points wide.

<sup>8</sup> Perhaps the classic reference is David Backus and John Driffill (1985).

TABLE 1—REASONS WHY CREDIBILITY IS IMPORTANT

Survey question	Method	Central banks					Economists				
		Mean score	Standard deviation	Mean rank	Standard deviation	Rank	Mean score	Standard deviation	Mean rank	Standard deviation	Rank
Q3	Less costly disinflation	4.13	0.78	2.96*	1.79	2nd	3.83	1.12	3.08	1.97	2nd
Q4	To keep inflation low	4.39	0.60	2.18*	1.30	1st	4.17	0.83	2.00*	1.39	1st
Q5	To change tactics	4.38	0.54	4.25*	1.66	5th	3.97	1.03	3.66	1.65	3rd
Q6	To serve as lender of last resort	4.12	0.77	5.07*	1.34	6th	3.74**	1.07	3.88*	1.56	4th
Q7	To defend the currency	4.29	0.70	3.31*	1.93	3rd	3.47	1.04	4.79	1.40	5th
Q8	Public servants should be truthful	4.00	0.84	5.55	1.74	7th	3.30	1.07	4.84	2.02	6th
Q9	For support for independence	4.34	0.75	4.22**	1.95	4th	3.19	1.00	5.02	1.97	7th

\* Denotes ranked significantly better than the next-best reason at the 5-percent level.

\*\* Denotes ranked significantly better than the reason two ranks below it at the 5-percent level.

the second question on the survey instrument (Q2) asked:

*Q2. How closely related are the following two concepts:*

(a) *a central bank's credibility*

(b) *a central bank's dedication to price stability?*

On the following five-point scale:

- 1 = unrelated
- 2 = slightly related
- 3 = moderately related
- 4 = quite closely related
- 5 = virtually the same,

the central bankers gave a mean response of 4.10, and nearly 90 percent of them answered "4" or higher. Frankly, my experience as a central banker led me to expect an even tighter association. The mean response among the 52 economists was considerably lower—only 3.31; and just over half gave answers of "3" or lower. It thus appears that central bankers identify inflation aversion with credibility far more closely than do economists.

## II. Why is Credibility Important?

Immediately following the two preliminary questions already mentioned, the survey instrument offered respondents seven reasons why credibility might be important to a central bank. These reasons are not mutually exclusive; indeed, some are closely related. Each rationale was phrased as an affirmative statement, and

respondents were asked to express their agreement or disagreement on the following five-point scale:

- 1 = strongly disagree
- 2 = disagree
- 3 = neutral
- 4 = agree
- 5 = strongly agree.

Before proceeding to the answers, three general observations are worth recording. First, in all seven cases, the central bankers assigned higher average scores than did the economists. For five of the seven suggested reasons, the difference was statistically significant at the 5-percent level by a standard *t*-test, and all were significantly different at the 10-percent level. I leave it to the reader to muse over whether this systematic discrepancy implies that central bankers agree with my preferred reasons more or are simply easier graders. Second, the distributions of responses across the central bankers were generally tighter than the distributions across the economists. While it is often said that economists think too much alike, this criticism apparently does not apply to monetary economists! Third, central bankers and economists generally ranked the seven candidate reasons quite differently, as Table 1 shows.

The table rates the seven reasons by two criteria. The first, "mean score," is simply the average rating on the above-mentioned 1–5 scale (shown along with its standard deviation). The second, "mean rank," comes from an additional question—Q10 on the survey instrument—which asked respondents to rank

the reasons explicitly, from first to seventh. The latter is important (and not redundant) information because many respondents gave virtually all the reasons either “4” or “5.”

#### A. *Reducing the Costs of Disinflation (Q3)*

The first of the seven possible reasons appealed to the oft-stated hypothesis that “a more credible central bank can reduce inflation at lower social cost.” (Here, and elsewhere, quotations are drawn from the survey instrument.) This so-called *credibility hypothesis* seems to be part of the conventional wisdom. Furthermore, it is supported by some plausible economic theory—which can be summarized in the context of the four-equation model above as saying that perfectly credible announcements of disinflation will reduce  $\pi^e$  abruptly, enabling  $\pi$  to fall without the necessity for unemployment to increase. Even with the price (or wage) stickiness induced by staggered contracts, a credible disinflation that is *preannounced* sufficiently far in advance can be costless—or better.<sup>12</sup>

Unfortunately, the empirical evidence is squarely against the credibility hypothesis. Because credibility is normally not objectively measurable, students of this issue have generally used central-bank *independence* as a statistical proxy. Using Ball’s (1994) constructed measures of the sacrifice ratios in different countries, both Stanley Fischer (1994) and Adam S. Posen (1995) found a surprising *positive* correlation between central-bank credibility and the sacrifice ratio—suggesting that more credible central banks actually face *worse* trade-offs! Similarly, Guy Debelle (1996) found little evidence that three inflation-targeting nations enjoyed lower costs of disinflation in the 1990’s. (Advocates of inflation targeting sometimes advertise it as a way to build credibility.) To my knowledge, there is no statistical evidence whatsoever on the other side of this debate.

Despite the overwhelming weight of the evidence, my personal experience in central-banking circles led me to believe that many central bankers accept the notion that greater credibility improves the short-run inflation—unemployment trade-off, in the sense of leading

to a lower sacrifice ratio.<sup>13</sup> That belief was borne out by the survey results. The central bankers generally accept the credibility hypothesis—their mean rating is 4.13, which is just above “agree.”<sup>14</sup> When asked to rank the seven candidate reasons explicitly, the credibility hypothesis came in second with an average rank of 2.96.

Economists are a bit more skeptical (mean score = 3.83), although in my view not nearly skeptical enough given the lopsided empirical evidence.<sup>15</sup> There is, however, a great deal of dispersion in the economists’ answers to this question: The standard deviation of 1.12 is the largest among the seven candidate reasons. So average opinion is perhaps less meaningful here than for other questions.

Wishful thinking being what it is, one might expect that people who identify credibility more closely with inflation aversion (as measured in Question 2) would express stronger agreement with the credibility hypothesis. However, this turns out to be the case only among the OECD central bankers ( $\rho = 0.61$ ). Responses to Q2 and Q3 from economists and non-OECD central bankers have correlations of only around 0.15.

#### B. *Helping to Keep Low Inflation (Q4)*

A subtly different version of the credibility hypothesis maintains that, whether or not greater credibility brings down the costs of *reducing* inflation, “once low inflation has been achieved, a more credible central bank is better able to maintain low inflation.” In terms of the simple Phillips curve equation, (1), this presumably means that inflation shocks ( $z$  or  $\varepsilon$ ) are less likely to get embedded in inflationary expectations if the central bank is seen as a more credible inflation fighter.

<sup>13</sup> See Blinder (1998 p. 65). As far as I can tell, all central bankers accept the notion that there is no *long-run* trade-off between inflation and unemployment—despite the fact that the natural-rate Phillips curve fits the data poorly in most countries other than the United States.

<sup>14</sup> This was the only one of the seven reasons about which the views of OECD and non-OECD central bankers differed significantly. The OECD mean was 4.38 while the non-OECD mean was 4.02.

<sup>15</sup> The lower mean score given by economists is not significantly different from the higher mean score given by the central bankers.

<sup>12</sup> See Taylor (1983) and Ball (1991) for examples.

To me, this idea closely parallels the basic credibility hypothesis (that it improves the trade-off). But, apparently, survey respondents see the two as somewhat different: The answers to Questions 3 and 4 correlate around  $\rho = 0.5$  for both groups. While high for this nearly orthogonal data set, that is far from a perfect correlation. How can the two hypotheses differ? One possibility is that the second version (credibility helps keep inflation low, Q4) applies only when inflation is already low while the first (credibility makes disinflation easier, Q3) implies that inflation is too high to begin with. A respondent who believes that credibility effects work mainly at low inflation might agree with the second hypothesis more than the first.

Whatever the reason, both central bankers and economists agree more strongly with the notion that credibility helps keep inflation low than with the standard version of the credibility hypothesis. The ratings are significantly higher among the bankers ( $t = 2.4$ ), and higher, but not significantly so, among the academics ( $t = 1.8$ ,  $p$ -value = 0.076). Indeed, the notion that more credible central banks find it easier to keep inflation down is the most highly rated of the seven ideas—by both groups.

#### C. Flexibility to Change Tactics (Q5)

The next three candidate reasons propose circumstances in which credibility might be important to a central bank. I start with the idea that:

*Q5. A more credible central bank will find it easier to change tactics or operating procedures without upsetting markets or creating doubts about its underlying objectives or its resolve.*

The notion is that credibility gives a central bank greater tactical or even strategic flexibility. For example, a central bank that is known for its anti-inflation zeal might be able to abandon monetarist operating procedures—as the Volcker Fed did in 1982—without inciting fears that it was abandoning the fight against inflation. Similarly, if the Bank of England had high anti-inflation credibility when it left the European Exchange Rate Mechanism (ERM) in the summer of 1992, it might have been able to do so without raising inflationary expectations. Central bankers agree with this idea almost as strongly as they do with the previous one (mean score = 4.38). Econo-

mists, though still decidedly favorable, agree rather less (mean = 3.97). But the economists nevertheless rank this idea third among the seven hypothesized reasons why credibility is important, while the bankers rank it fifth.

#### D. Serving as a Lender of Last Resort (Q6)

Another situational hypothesis is that:

*Q6. A more credible central bank will find it easier to act as a lender of last resort in a financial crisis (e.g., during a market crash or bank run) without creating fears that it has lost its dedication to fighting inflation.*

The idea here is that extensive discount-window lending, which raises bank reserves, would normally be considered an expansionary monetary policy. But, if the central bank is credible, such an injection of credit on an emergency basis need not raise inflationary expectations.

Central bankers accord this reason a 4.12 average rating, while economists give it 3.74. But the (numerically) higher score from the central bankers puts the hypothesis in sixth place, while the economists rank it fourth. I was surprised to find that practitioners rank the lender of last resort idea lower than the academics.

#### E. Defending the Exchange Rate (Q7)

In countries with fixed or quasi-fixed exchange rates, or even in countries that float their exchange rates impurely, a central bank may from time to time be obligated to “defend its currency against a speculative attack.” Can a central bank accomplish this objective better if it is more credible? Central bankers think so—their mean response is 4.29. But economists are more dubious (mean response = 3.47). The difference in opinion is both large and statistically significant.

Note that these favorable responses do not contradict the common notion that fixing the exchange rate may conflict with the dictates of macroeconomic stabilization policy. The survey question explicitly refers to a “speculative attack,” which implies short-term intervention during a crisis. The idea is that more credible central banks can more readily scare off speculators. This particular definition of credibility need not call into question policy makers’ dedication to fighting inflation—or so the central bankers apparently believe.

### F. *A Duty to Be Open and Truthful (Q8)*

A quite different reason for thinking credibility important is that “central bankers are public servants, who therefore have a duty to be open and truthful with the public.” A confession is appropriate here: This is my personal favorite reason for why a central bank should strive to be credible, which to me means matching its deeds to its words.<sup>16</sup> But survey respondents rank it either last (among the central bankers) or next to last (among the economists). The mean score for the central bankers is 4.00 (which translates to “agree”); but it is only 3.30 among the economists. Perhaps, as one central banker wrote on his survey, central bankers do not like to think of themselves as “public servants.”

### G. *Public Support for Central-Bank Independence (Q9)*

The biggest difference of opinion between the central bankers and the economists is over the final suggested reason:

*Q9. Credibility is important as a way to justify public support for an independent central bank.*

The average rating for this idea among the central bankers is a high 4.34, placing it fourth among the seven reasons. But economists rate it dead last, with a mean score of only 3.19—which is barely above “neutral.” Apparently, either the academics do not believe that central-bank independence is terribly important (unlikely), or they believe the public will support independence even for a dissembling central bank.

In their written comments, a few central bankers proposed a variant on this reason: A more credible central bank may find it easier to maintain the support of the public when it has to take unpleasant actions.

### III. What Makes a Central Bank Credible?

The final part of the questionnaire, comprising seven questions, was designed to “inquire into your views on how a central bank can *build* or *create* credibility.” Each question in this section began with the same words: “To establish

or maintain credibility, how important is it that ...”, and completed the thought by proposing some particular feature of central banking that has been linked to credibility. For example, the first question was:

*Q11. To establish or maintain credibility, how important is it that a central bank be independent?*

Respondents were asked to rate each attribute on the same one-to-five scale used for the survey’s first question:

- 1 = unimportant
- 2 = of minor importance
- 3 = moderately important
- 4 = quite important
- 5 = of the utmost importance.

One striking feature of the data gathered in this part of the questionnaire is that, while the economists’ ratings are, once again, more disperse and lower than those given by the central bankers, the two groups rank the seven attributes in precisely the same order. (See Table 2.) Hence I will present their answers in order of expressed importance, rather than in the order in which the questions appeared on the survey.

#### A. *A History of Living Up to Its Word (Q13)*

The top-rated way for a central bank to establish credibility, according to both groups, is to “have a history of doing what it says it will do.” Central bankers give this notion a very high mean rating of 4.58, while economists give it 4.30. The cross-sectional standard deviation within both groups is also the lowest across the seven methods, indicating an unusually high degree of consensus. Indeed, all but one of the 84 central bankers rate this idea as either “quite important” or “of the utmost importance,” as do 47 of the 51 economists.

In contrast to some naive interpretations of rational expectations, in which credibility can be created or destroyed abruptly by, say, announcing or legislating an institutional change, our respondents believe that a consistent track record matters most for credibility.<sup>17</sup> This strong consensus choice of both central bankers and economists

<sup>16</sup> See Blinder (1998 pp. 63–64).

<sup>17</sup> This is hardly a brief against rationality. The historical record is quite relevant in models of rational expectations with learning.

TABLE 2—HOW TO ESTABLISH OR MAINTAIN CREDIBILITY

Survey question	Method	Central banks			Economists		
		Mean score	Standard deviation	Rank <sup>a</sup>	Mean score	Standard deviation	Rank <sup>a</sup>
Q11	Central-bank independence	4.51	0.63	2*	3.99	0.86	2**
Q12	Transparency	4.13	0.71	4	3.44	1.18	4
Q13	History of honesty	4.58	0.52	1	4.30	0.80	1**
Q14	History of fighting inflation	4.15	0.67	3	3.83	0.86	3**
Q15	Constrained by a rule	2.89	1.01	6*	2.32	1.06	6
Q16	Incentives (personal loss)	2.15	1.10	7	1.95	0.96	7
Q17	Small fiscal deficit/debt	3.92	0.93	5*	3.27	1.14	5*

<sup>a</sup> Ranked by mean scores. Respondents were not asked to rank the mechanisms.

\* Denotes ranked significantly better than the next-best reason at the 5-percent level.

\*\* Denotes ranked significantly better than the reason two ranks below it at the 5-percent level.

seems to correspond closely to the dictionary definition offered earlier in this paper. It also accords with my own beliefs about how credibility is created. I wrote in Blinder (1998 p. 65) that:

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.

I was not surprised to find central bankers strongly agreeing with this sentiment. But I was a bit surprised to learn that academics rate it so much more highly than the institutional arrangements that have been emphasized in the literature—such as central-bank independence, precommitment, and incentive-compatible contracts.

#### B. Central-Bank Independence (Q11)

The idea that a central bank builds credibility through a history of living up to its word (Q13) even outscores the central bankers' holy grail (and second-place finisher): central-bank independence. The margin of victory is slender (mean score = 4.51 vs. 4.58) and statistically insignificant among the central bankers. But the gap is wider and almost statistically significant among the academic economists (mean score = 3.99 vs. 4.30,  $t = 1.9$ ).

There is a tantalizing suggestion in these re-

sults: that independent central banks that lack a track record may be less credible than even nonindependent central banks that have a good track record. Is there a lesson here for the European Central Bank? The economists apparently think so, albeit by a narrow margin.

#### C. A History of Fighting Inflation (Q14)

Next in the Table 2 ranking comes the idea "that a central bank [should] have a history of fighting inflation" if it wants to establish its credibility. Note that inflation fighting may well differ from the top-ranked method: keeping your word (Q13). The most prominent example, as I have mentioned before, is the Bundesbank, whose sterling record of fighting inflation coexisted with a checkered history of meeting its self-proclaimed monetary targets.

While both central bankers and economists attach considerable importance to having a history of inflation fighting (mean ratings of 4.15 and 3.83, respectively), both rank it as notably (and significantly) less important than matching deeds to words (mean ratings of 4.58 and 4.30). Honesty, in their view, is a more important credibility builder than inflation aversion. Nor are the two the same. The correlation between the answers to the two questions about the central bank's history (Q13 and Q14) ranged between 0.23 and 0.33 over the three groups of respondents.

#### D. Openness and Transparency (Q12)

The next way to establish credibility—being *open and transparent*—fell squarely in the mid-

dle of the rankings: fourth on a list of seven candidate methods, with an average rating of 4.13 from the central bankers and 3.44 from the economists.

Frankly, I was surprised to learn that central bankers view openness as such a fine way to build credibility. This may be a recent development. After all, the traditional view in central-banking circles prizes secrecy and even a little mystery in monetary policy-making.<sup>18</sup> Too much openness is sometimes portrayed as a threat to credibility. If you keep your mouth shut (and your blinds drawn), the argument goes, no one will be able catch you changing your mind. Such changes of mind, it is alleged, undermine a central bank's credibility.

Apparently, most central bankers no longer accept this argument—if indeed they ever did. However, one policy maker explicitly mentioned that an open central bank can lose credibility by changing its policy frequently, and another insisted that truthfulness (which he favors) does not require openness (which he does not). Recent trends in central banking seem to be moving strongly in the direction of greater transparency, however, with such institutions at the Bank of England and the Reserve Bank of New Zealand in the vanguard. Both of these central banks explicitly adopted inflation targeting and a high degree of transparency as ways to create credibility from scratch. Brazil is embarking on that course now.

#### E. *Fiscal Discipline by the Government (Q17)*

Central banks, even if independent, cannot control the budgetary policies of their governments—as one of the central bankers explicitly noted on his questionnaire. A large fiscal deficit (or debt) can undermine central-bank credibility in a number of ways. Most obviously, if the country has a limited (or zero) capacity to float interest-bearing debt, the central bank may be forced to monetize any budget deficits—with inflationary, or even hyperinflationary, consequences. This danger is greater if the central bank lacks independence. The unhappy experi-

ences of several Latin American countries in the 1960's, 1970's, and 1980's and Russia in the early 1990's are well-known examples.

But even if massive inflationary finance is unlikely, oversized fiscal deficits and/or large accumulations of public debt (relative to GDP) put upward pressure on interest rates, which may induce a more accommodative policy from the central bank. For example, a common monetarist criticism of U.S. monetary policy in the 1960's was that, by pegging the nominal interest rate, the Fed forced itself to respond to a fiscal expansion with an accommodating monetary policy.

The stock of debt is also sometimes thought to threaten the central bank's credibility. For example, prior to EMU convergence, Italy's large public debt was often seen as an inflationary sword of Damocles hanging over the head of the Bank of Italy. The fear was that the central bank would "eventually" have to monetize (some of) it.

One economist and one central banker, however, reversed the line of causation. The economist pointed out that the inflation premium in interest rates will be lower when the central bank is more credible. The central banker hypothesized that a more credible central bank might be better able to pressure its government into exerting more fiscal discipline. In both hypothetical cases, greater central-bank credibility leads to smaller budget deficits. Central bankers, not surprisingly, attach rather more importance to the fiscal factor (mean score = 3.92) than do economists (mean = 3.27), although both rate it only fifth among the seven methods for creating credibility.<sup>19</sup> Given their countries' greater ability to cover deficits by issuing bonds, one might expect the fiscal situation to be of less concern to OECD central bankers than to non-OECD central bankers. That expectation is borne out by the difference in mean scores (3.61 among OECD central banks versus

<sup>18</sup> Hence William Greider's (1987) provocative title, *Secrets of the Temple*. On central-bank secrecy, see Marvin Goodfriend (1986).

<sup>19</sup> A data problem must be mentioned here. Due to a flaw in producing the questionnaire, the five-point scale failed to appear immediately below this question—which was the last one on the questionnaire—as it did after all the others. Most respondents answered anyway, using the five-point scale that was already familiar to them. But eight central bankers and nine economists did not. So sample sizes are smaller for this question.

4.06 outside the OECD), which barely misses significance at the 5-percent level ( $p = 0.052$ ).<sup>20</sup>

#### F. *Precommitment (Q15)*

There is some ambiguity in the use of the word “rule” in the context of monetary policy, as a few respondents noted. For example, Friedman’s  $k$ -percent money growth rule is clearly a rule by anyone’s definition. But what about inflation targeting (one economist explicitly raised this question), or the so-called Taylor rule? The specific question on the survey was:

*Q15. To establish or maintain credibility, how important is it that a central bank’s governor(s) be bound (whether by law or by custom) to follow a prescribed rule that constrains their decisionmaking?*

In phrasing this question, I intended the words “bound” and “constrains their decisionmaking” to evoke the rules-versus-discretion debate in the minds of the academics without using jargon terms (like “commitment technology”) that might be meaningless to central bankers. But there may be no bright line between rules and discretion. For example, Ben S. Bernanke and Frederic S. Mishkin (1997) advocate inflation targeting as a form of “constrained discretion.”

It is hardly surprising that central bankers, who pride themselves on good judgment, are less than enamored of the idea that credibility can be established by tying their hands with some kind of rule. The mean score of 2.89, which ranks it sixth among the seven methods, corresponds to something below “moderately important.”

What is more surprising is that academic economists, many of whom (I thought!) believe in the importance of commitment technologies, rate the idea even lower. Their mean score of 2.32 attaches only a little more than “minor importance” to rules, which leaves one wondering why so much academic ink has been spilled over this issue.

#### G. *Incentive-Compatible Contracts (Q16)*

Once again, I did not use the term “incentive-compatible contracts” in order to minimize jargon. Instead, I asked both central bankers and academics a more specific question:

*Q16. To establish or maintain credibility, how important is it that a central bank’s governor(s) suffer some personal loss (e.g., a lower salary or loss of job) when inflation is too high?*

This interpretation of the contract approach may take Walsh’s (1995) interesting idea too literally. But I stoutly reject the idea that loss of reputation alone can serve as the penalty in the (implicit) contract—as three survey respondents suggested. If failure to live up to the terms of the contract is a sufficient incentive, then every contract is incentive compatible. To be clear, I do agree wholeheartedly with the idea that damage to one’s reputation as a central banker is an effective disciplinary device. But that loss is suffered even in the absence of any contractual arrangement, and it seems far closer to some of the previously discussed methods of establishing credibility—such as a track record of honesty or inflation fighting—than to the contract approach.

In any case, neither central bankers nor academic economists see personal incentives as an important way to build credibility. Both rank it dead last, with a mean score of 2.15 from the bankers and 1.95 from the economists. Once again, the low rating from the central bankers was expected, but I thought incentive compatibility would be rated more highly by a panel of academics, given the scholarly attention the idea has garnered.

#### IV. Conclusions

Credibility is prized by central bankers, who associate it with devotion to fighting inflation, though perhaps not as closely as you might suppose. While central bankers agree with all seven of my proposed reasons why credibility is important, they favor four: Greater credibility makes disinflation less costly, helps hold down inflation once it is low, makes it easier to defend the currency when necessary, and helps garner public support for central-bank independence. Economists generally like the seven reasons a

<sup>20</sup> One needs to remember that, with the addition of Poland, the Czech Republic, Hungary, South Korea, and Mexico, the OECD is no longer a “rich countries’ club.”

bit less and have more disparate views. Although they agree on the two top-ranked reasons (keeping inflation low, and reducing the costs of disinflation), beyond that they have markedly different rankings than the central bankers.

When it comes to appraising methods of building or creating credibility, the views of central bankers and economists are closely aligned. Establishing a history of living up to its word is ranked first, by a narrow margin by the central bankers and by a wide margin by the economists. Central-bank independence is ranked second. Two of the methods most emphasized in the scholarly literature that followed Barro and Gordon (1983)—precommitment and incentive-compatible contracts—are rated as least important by both groups of respondents.

In brief, there appear to be no shortcuts to greater credibility. Respondents think central banks get their credibility the old-fashioned way: They earn it by building a track record for honesty and inflation aversion (in that order of importance), not by limiting their discretion via commitment technologies nor by entering into incentive-compatible contracts.

#### REFERENCES

- Backus, David and Driffill, John.** "Rational Expectations and Policy Credibility Following a Change in Regime." *Review of Economic Studies*, April 1985, 52(2), pp. 211–21.
- Ball, Laurence.** "The Genesis of Inflation and the Costs of Disinflation." *Journal of Money, Credit, and Banking*, August 1991, Pt. 2, 23(2), pp. 49–52.
- . "What Determines the Sacrifice Ratio?" in N. Gregory Mankiw, ed., *Monetary policy*. Chicago: University of Chicago Press, 1994, pp. 155–82.
- Barro, Robert J. and Gordon, David.** "A Positive Theory of Monetary Policy in a Natural Rate Model." *Journal of Political Economy*, August 1983, 91(4), pp. 589–610.
- Begg, David; De Grauwe, Paul; Giavazzi, Francesco; Uhlig, Harald and Wyplosz, Charles.** *The ECB: Safe at any speed?* London: Center for Economic Policy Research, October 1998.
- Bernanke, Ben S. and Mishkin, Frederic S.** "Inflation Targeting: A New Framework for Monetary Policy?" *Journal of Economic Perspectives*, Spring 1997, 11(2), pp. 97–116.
- Blinder, Alan S.** *Central banking in theory and practice*. Cambridge, MA: MIT Press, 1998.
- Debelle, Guy.** "The End of Three Small Inflation: Australia, New Zealand, and Canada." *Canadian Public Policy*, March 1996, 22(1), pp. 56–78.
- Fischer, Stanley.** "Modern Central Banking," in Forrest Capie, Charles Goodhart, Stanley Fischer, and Norbert Schnadt, eds., *The future of central banking*. Cambridge: Cambridge University Press, 1994, pp. 262–304.
- Goodfriend, Marvin.** "Monetary Mystique: Secrecy in Central Banking." *Journal of Monetary Economics*, January 1986, 17(1), pp. 63–92.
- Greider, William.** *Secrets of the temple*. New York: Simon & Schuster, 1987.
- Kydland, Finn E. and Prescott, Edward C.** "Rules Rather Than Discretion: The Inconsistency of Optimal Plans." *Journal of Political Economy*, June 1977, 85(3), pp. 473–91.
- Persson, Torsten and Tabellini, Guido.** "Designing Institutions for Monetary Stability." *Carnegie-Rochester Conference Series on Public Policy*, December 1993, 39, pp. 53–84.
- Posen, Adam S.** "Central Bank Independence and Disinflationary Credibility: A Missing Link?" Mimeo, Federal Reserve Bank of New York, 1995.
- Sargent, Thomas J.** "The Ends of Four Big Inflation," in R. E. Hall, ed., *Inflation: Causes and effects*. Chicago: University of Chicago Press (for NBER), 1982, pp. 41–97.
- Taylor, John B.** "Union Wage Settlements During a Disinflation." *American Economic Review*, December 1983, 73(5), pp. 981–93.
- Walsh, Carl E.** "Optimal Contracts for Central Bankers." *American Economic Review*, March 1995, 85(1), pp. 150–67.