

## Symposium Summary

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*George A. Kahn*

Central banks throughout the world are moving to adopt long-run price stability as their primary goal. Whether operating with multiple short-run goals or legislative mandates for price stability, virtually all central banks have recognized the desirability of achieving price stability over time. Countries with moderate to high inflation are adopting policies to reduce inflation, and countries with low inflation are adopting policies to achieve and maintain price stability.

To better understand how central banks can best reduce inflation and what policies and operating procedures should be implemented to maintain price stability, the Federal Reserve Bank of Kansas City sponsored a symposium entitled “Achieving Price Stability,” held at Jackson Hole, Wyoming, on August 29-31, 1996. The symposium brought together a distinguished group of central bankers, academics, and financial market representatives. Participants at the symposium agreed that low or zero inflation is the appropriate long-run goal for monetary policy. They disagreed, however, about whether a little inflation should be tolerated and what strategies should be adopted to achieve and maintain price stability.

### **Defining price stability**

Symposium participants accepted Paul Volcker’s and Alan Greenspan’s conceptual definition that price stability obtains when people

do not consider inflation a factor in their decisions. Participants disagreed, however, about operational definitions of price stability. While a wide range of people advocated price stability as the primary long-run goal of monetary policy, they interpreted the term *price stability* differently.

Stanley Fischer suggested the long-run goal of monetary policy should be defined as inflation of about 2 percent, on average, with a range of 1 to 3 percent per year.<sup>1</sup> One reason he felt the goal should be a low, positive inflation rate is that measured inflation overstates actual inflation. This view was widely accepted. As Alan Greenspan emphasized in opening comments at the symposium, the mismeasurement of inflation results, in part, from inadequately accounting for improvements in the quality of goods and services over time.<sup>2</sup> Mismeasurement also results from an inability to account for the continual introduction of new goods and services, especially those produced from “intellectual insight, as distinct from physical effort.” Estimates of the upward bias in the consumer price index range from about 0.5 percent to 2 percent in the United States and average about 0.5 percent in Canada and the United Kingdom (Fischer, Freedman).

Another reason given for targeting a low, but positive, inflation rate is that a little inflation might “grease the wheels” of the economy and monetary policy. Fischer and Lawrence Summers emphasized two ways a little inflation might have lubricating properties. First, they said a little inflation would allow employers to lower real wages without cutting nominal wages.<sup>3</sup> The premise of the argument is that nominal wages are downwardly rigid. And, without a mechanism for lowering real wages in times of economic stress, employers would have to resort to laying off workers.

Second, Fischer and Summers said a little inflation lubricates monetary policy by making it possible for central banks to occasionally engineer negative real interest rates. Negative real rates, it is argued, are sometimes helpful in stimulating an economy out of recession. With positive inflation, central banks can push short-term nominal interest rates below the rate of inflation. Such a policy

action would be impossible without some inflation since nominal interest rates cannot fall below zero. This argument has gained relevance in light of the recent recession in Japan, where historically low nominal interest rates appeared inadequate to foster economic recovery in the presence of zero or negative inflation.

Many participants at the symposium disagreed with the view that a little inflation greases the wheels of the economy. Some participants thought the evidence on nominal wage rigidity—which comes largely from historical data drawn from periods of moderate inflation—did not necessarily apply to a prospective environment of price stability. Such evidence was at best considered inconclusive (Feldstein, Freedman). In addition, many participants thought the negative real interest rate argument ignored the influence of monetary policy on other asset values, such as equity prices and the exchange rate (Feldstein). Moreover, they attributed the problems in Japan, not to a lack of monetary policy potency, but rather to the delayed actions of the Bank of Japan in lowering rates (McCallum).

Another issue discussed at the symposium was whether price stability should be defined in terms of the inflation rate or as a path for the level of prices. Under the first definition, a shock to the inflation rate would be followed by a gradual return of inflation to the rate associated with price stability. In the process, the price level would drift randomly over time. Under the second definition, a shock to the inflation rate would force the central bank to move inflation, for a period of time, above or below the level associated with price stability (and in some cases causing actual deflation). As a result, the price level would eventually return to its original path. The advantage of such a pre-determined path for the price level is that it would reduce uncertainty about the level of prices far into the future. The disadvantage, according to conventional wisdom, is that it would require greater variability in the inflation rate, with central banks having to offset positive shocks to inflation with negative shocks and vice versa (Fischer, Mullins).

Most participants at the symposium thought price stability should be defined in terms of the inflation rate, not the price level. However,

Lars Svensson put forward a technical argument suggesting that, contrary to conventional wisdom, achieving a pre-determined path for the price level could result in lower inflation variability. Some symposium participants were skeptical about the validity of this result in practice. Most participants felt that, at least for now, monetary policy should be aimed at achieving a low and stable inflation rate. Later, after further research, central bankers could reconsider the benefits and costs of stabilizing the price level.

### **Reducing inflation**

Given that inflation in many countries is above the rate consistent with both conceptual and practical definitions of price stability, a key topic at the symposium was how central banks should reduce inflation. Following a discussion of conceptual issues, central bankers who had successfully reduced inflation in their countries described their experiences.

Symposium participants agreed reducing inflation was desirable because “inflation is economically and socially costly” (Fischer). One major cost is the uncertainty inflation creates about future prices. Another cost stems from the interaction of inflation with the tax code. For example, looking at the interaction of capital income tax rules and inflation, Martin Feldstein concluded the economic costs of inflation in the United States were surprisingly large. Specifically, he estimated the annual cost of an inflation rate of 2 percent rather than zero was 1 percent of GDP. Thus, permanently lowering inflation by two percentage points would generate an extra 1 percent of GDP each year. While not everyone agreed with Feldstein’s surprisingly large estimates, everyone did agree there were significant benefits from reducing inflation and, therefore, inflation should be reduced over time.

With the desirability of reducing inflation clearly established, Mervyn King provided a conceptual framework for analyzing how central banks should reduce inflation over time. In particular, he examined how fast central banks should reduce inflation and how accommodating they should be in response to temporary economic

shocks. He argued the best policy would combine explicit inflation targets with a discretionary approach to economic shocks. On the issue of the speed of disinflation, King advocated a gradual timetable, with inflation targets consistently set below the public's inflation expectations and steadily falling. On the issue of the appropriate response to shocks, King recommended that central banks at least partially accommodate temporary inflation shocks such as those stemming from increases in food and energy prices. However, he also suggested that until central banks establish their inflation-fighting credibility in the eyes of the public, they need to be particularly cautious in accommodating shocks, especially at the beginning of the disinflationary process.

Throughout his discussion, King emphasized the role of learning by central banks and the public. Monetary policy procedures evolve over time as central banks learn, and the public's expectations about monetary policy change only gradually.<sup>4</sup> It is therefore important for central banks to communicate what they learn to the public and for disinflationary policies to be transparent. Policymakers should make clear through their public statements and their actions what their inflation objective is, how they will respond to temporary shocks, and how they think the economy behaves.

The approach to disinflation that King advocated is a deliberate one, under which policymakers would try to make steady progress, year by year, toward price stability. An alternative approach is an opportunistic strategy, under which policymakers would try to keep an already low inflation rate low while waiting for an unexpected recession or favorable supply shock to ratchet the inflation rate down over time. Donald Kohn argued that an opportunistic strategy might enable central banks to reach price stability without deliberately slowing economic growth or reducing the level of economic activity. While Kohn said opportunistic disinflation was a strategy worth considering, he emphasized it was not the official policy of the Federal Reserve.

King had reservations about the opportunistic strategy. He suggested such a policy ran the risk of being interpreted as targeting an unem-

ployment rate below the rate consistent with stable inflation. As a result, such a policy might reduce central bank credibility and thereby increase the output loss associated with disinflation. Other participants at the symposium (Freedman, Svensson) also had reservations about opportunistic disinflation, and the issue was left unresolved.<sup>5</sup>

Turning to the unique problems associated with a legacy of high inflation, Rudiger Dornbusch examined how countries with high inflation could best move toward price stability. He divided the problem into two parts—how to get out of extreme inflation (over 15 percent per *month*) and how to reduce moderate inflation (15 percent or less per *year*). To reduce extreme inflation, he recommended a complete change of regime, in which the government budget could not be financed by the central bank and in which the central bank would tie its currency to that of another country. Better yet, Dornbusch suggested, countries with extreme inflation should simply replace their local currency with that of a neighboring country with low and stable inflation, such as the United States or Germany.

To reduce moderate inflation, Dornbusch recommended the effort be viewed as one of several economic problems to be solved, and that a time frame of five or more years be adopted. For countries with a legacy of high inflation, too zealous an approach to reducing a moderate inflation risks “super-high” real interest rates, an overvalued currency, severe recession, and banking system problems. While concern for reducing moderate inflation is clearly appropriate, it must be balanced with a concern for economic growth.

Following the discussion of conceptual issues involved in reducing inflation, a panel of three central bankers discussed how they had reduced inflation in their countries. Donald Brash emphasized the comprehensive nature of reform in New Zealand and the use of explicit inflation targets to reduce inflation. Jacob Frenkel described the role of the exchange rate against the dollar in Israel’s transition to moderate inflation and the use of inflation targets as a transparent guide to low inflation. Finally, Josef Tosovsky reviewed the Czech

Republic's rapid transition from a command economy to a market-oriented economy in which the nominal exchange rate was used as the anchor for stabilization policy.

At a luncheon address, Domingo Cavallo continued the discussion of practical experiences by describing the approach used in Argentina. Among other reforms, Argentina put in place a new monetary system which transformed the central bank into a virtual currency board. As such, the central bank permitted holders of pesos to exchange, at any time, one peso for one U.S. dollar. At the same time, all indexation clauses were prohibited. The results were striking. Inflation fell from 1,344 percent in 1990 to 1.6 percent in 1995 and to 0 percent from June 1995 to June 1996.

### **Maintaining price stability**

After considering conceptual and practical issues in reducing inflation, the discussion turned to strategies for maintaining price stability. A variety of strategies were proposed, but all shared at least one common feature. All the strategies allowed monetary policy some capacity to accommodate shocks while still maintaining long-run price stability.

John Taylor began the discussion by reviewing various explanations for why price stability had not been maintained in the past. In his view, the most compelling explanation was the rise of economic theories in the 1960s suggesting a long-run tradeoff between inflation and output. These theories provided the intellectual basis for policymakers to pursue monetary policies biased toward higher inflation. When combined with unrealistically low estimates of the "full-employment unemployment rate" and energy price shocks, these policies inevitably produced higher inflation. Only after the economics profession began incorporating more realistic theories of expectations formation into models of inflation did policymakers move toward lowering and stabilizing inflation. The superior performance of the U.S. economy since the early 1980s has made it clear, in retrospect, that disinflation was the correct policy to pursue after the inflationary 1970s.

Looking to the future, specifically at policies for maintaining price stability once it has been achieved, Taylor advocated the flexible use of a policy rule. In particular, he recommended a rule incorporating a short-run tradeoff between inflation and output but not a long-run tradeoff. Taylor's preferred rule, which sets (along with various other parameters) a long-run target for inflation consistent with price stability, would guide policymakers in adjusting short-term interest rates in response to deviations of real GDP from potential and inflation from target.<sup>6</sup> Thus, if an output shock raised real GDP above potential, policymakers would raise short-term interest rates. Likewise, if inflation came in above target, policymakers would raise rates. While the rule would allow policymakers to counter adverse short-run shocks to supply and demand, adherence to the rule would nevertheless maintain long-run price stability.

In commenting on Taylor's presentation, David Mullins disagreed somewhat with Taylor's view on what went wrong in the 1970s, but generally agreed with Taylor on how to respond to shocks once price stability has been achieved. Arguing that the economics profession had less influence on policy than Taylor asserted, Mullins put relatively less weight on misguided economic theory and relatively more weight on adverse price shocks in explaining why price stability had not been maintained in the past. On the broader issue of how monetary policy should respond to shocks, Mullins emphasized the need to stay focused on the long-run goal of maintaining price stability.

Turning to monetary policy implementation, Charles Freedman reviewed from a practitioner's perspective a wide range of issues involved in maintaining price stability. Within the framework of explicit inflation targets, Freedman described (among other things) the role of inflation forecasts in conducting policy, the appropriate response of policy instruments to changes in forecast inflation, and the importance of transparency and communication. Central to his analysis were the effect central bank credibility has on the response of financial markets and inflation expectations to monetary policy actions, and the effect that monetary policy actions have on central bank credibility. The more credible the central bank's commitment



is to price stability, the more flexible monetary policy can be in responding to shocks.

In responding to a deviation of inflation from target, monetary policy actions that return inflation quickly to target build credibility. However, they might also lead to undesirable volatility in output, interest rates, and exchange rates. A more gradual return of inflation to target smooths fluctuations in output and financial market variables but risks damaging central bank credibility and entrenching inflation expectations. Freedman said that empirical studies for Canada suggested the optimal time horizon for returning inflation to target was six to eight quarters. To minimize any harmful effects on credibility of such a gradual approach, the Bank of Canada has explicitly explained the approach in its statements to the public.

In commenting on Freedman's paper, Otmar Issing and Donald Kohn both expressed reservations about the use of explicit inflation targets. Issing argued that having a commitment to price stability and announcing a low inflation target were not enough to anchor inflation expectations. Rather, the central bank needs to disclose its policy procedures to the public and assure the public that these procedures are capable of maintaining price stability over the long run. Given lags between monetary policy actions and their effects on the economy, intermediate indicators serve as necessary signals of inflationary pressures. While inflation forecasts can serve as one such indicator, Issing thought they should be supplemented with other indicators, including, most importantly, monetary aggregates. In addition, he said, the use of monetary aggregates as intermediate targets for policy increases monetary policy transparency and helps define the responsibilities of the central bank as distinct from institutions responsible for fiscal or wage policy.<sup>7</sup>

Kohn took a slightly different tack, suggesting that inflation targets could limit a central bank's flexibility in responding to shocks. For example, inflation targets that tie monetary policy to a timetable for achieving a specific inflation outcome might prevent a central bank, which is otherwise committed to maintaining price stability, from responding to unexpected developments. For exam-

ple, inflation targets could be inconsistent with a Taylor-type rule in which the central bank's commitment to price stability is explicit, but the time frame over which price stability is maintained depends on economic circumstances. In the United States, considerable flexibility has been retained in determining the time frame for achieving price stability. As Kohn stated, "Long-run discipline on monetary policy has been provided not by numerical targets but the firm focus of an independent central bank on reducing inflation over the long run, so as to eventually reach price stability—as specified in the Federal Reserve Act."

### **Conclusions**

The symposium concluded with comments from three overview panelists. Andrew Crockett questioned when and whether central banks would take the final step to move from moderate inflation to price stability. He noted that most central banks are not fully satisfied with current inflation yet appear unprepared to pay the price, in terms of lost output, of moving deliberately toward price stability.

Martin Feldstein made a strong case for central banks achieving not merely low inflation but no inflation. He recommended the goal should be to equate the measured rate of inflation to the bias in the consumer price index and suggested the United States achieve the goal in the next four years. He discussed the economic gains from pursuing such a policy and explained why he felt policies that accepted higher inflation were ill-advised.

Finally, in looking to the future of monetary policy in Europe, Jean-Claude Trichet compared the prospective role of the European Central Bank (ECB) in pursuing price stability with the current policy of the Bank of France. Like the Bank of France, the ECB will operate independently under a legal mandate to ensure price stability. Also like the Bank of France, the ECB will likely adopt monetary aggregates as intermediate targets of policy. Echoing the comments of many symposium participants, Trichet emphasized that sound and credible medium-term and long-term objectives are crucial for achieving and maintaining price stability. And, he noted, coping with

a changing economy—and coping with changing perceptions about the economy—are essential in the analysis and conduct of central banking.

## Endnotes

<sup>1</sup>Fischer did not identify a specific index of inflation to be used as the target of policy.

<sup>2</sup>Summers was not convinced this quality bias needed to be built into the concept of price stability, at least to the extent the concept was used as a long-run target for monetary policy. He believed the “sticker price” was what people cared about, not quality-adjusted changes in cost.

<sup>3</sup>Fischer cited a recent study by George Akerlof, William Dickens, and George Perry, “The Macroeconomics of Low Inflation,” published in the *Brookings Papers on Economic Activity*, no. 1, pp. 1-59.

<sup>4</sup>McCallum made the point that, even if the public’s learning process was fully understood, the output effects of a transition period to lower inflation would depend critically on what was assumed about aggregate supply—that is, the economy’s “wage-price-output dynamics.”

<sup>5</sup>McCallum distinguished between the use of the term “opportunistic policy” to refer to regime design and to the process of transition between regimes. With respect to regime design, McCallum viewed opportunistic policy as “very unattractive.” With respect to transition between regimes, he said opportunistic policy “might make some sense, at least on political grounds.”

<sup>6</sup>Svensson advocated a slightly different rule. While Taylor specified a formula for adjusting a policy instrument—the federal funds rate—Svensson specified a “target” rule. Specifically, he argued that the central bank should use a *forecast* of inflation as its intermediate target and set its instruments to equate the forecast of inflation to the long-run target for inflation. Svensson suggested such a target rule was superior to Taylor’s instrument rule.

<sup>7</sup>Jean-Claude Trichet also advocated the use of monetary aggregates as intermediate targets.

