
Policy Systems in Operation

The quantitative analysis of policy rules in the preceding two chapters is representative of a fundamentally new development in macroeconomics. That analysis could not have been done ten years ago—before the invention of new solution and estimation techniques for economywide equilibrium models with rational expectations, before the refinement of expectations-consistent wage and price theories that would fit actual data, or before the development of an empirical framework to handle international capital flows in efficient world markets.

Few would even have thought about doing such an analysis more than fifteen years ago—before the Lucas critique, before the recognition that rational expectations did not imply that policy was ineffective, before credibility was seen as an empirically significant virtue, or before the time-inconsistency rationale for policy rules was developed. Traditional econometric models were fine for directing policy.

It would be incomplete and misleading, however, to finish this book by pointing smugly to new policy methods and their advantages, looking disparagingly at old methods and mistakes, and omitting perhaps the most difficult element of macroeconomic policy, the operational step between policy analyzing and policy making. This chapter focuses on what new policy research implies for practical policy making. Put more formally, having studied the design of policy rules and the transition between rules in Chapters 6 and 7, this chapter looks at the operation of policy rules.

8.1 From Policy Rules to Credible and Systematic Policies

The policy rules investigated in Chapter 6—for example, the formula for the price rule in Equation (6.1) or the formula for the nominal income rule in Equation (6.3)—do not involve fixed settings for the instruments of

monetary policy. This is a substantial difference from rules with fixed settings for the instruments such as the constant-growth rate rule for the money supply originally advocated by Milton Friedman. The rules of Chapter 6 are responsive, calling for changes in the short-term interest rate in response to deviations of the price level or real income from a target. They are quite precise about this response—the coefficients in the algebraic formulas provide exact instructions about how much the Fed should adjust the federal funds rate.

Despite the responsiveness and specificity of the algebraic formulas, however, policymakers are unlikely to start following them mechanically. And, at least with the current state of economic knowledge and technique, they may have good reasons. For example, the quarterly time period is probably too short to average out blips in the price level that are due to temporary changes in commodity prices. And although it is essential that interest-rate targeting pay attention to what is happening to real interest rates, the one-year-ahead rational forecast of the inflation rate from a multicountry model may not be measuring inflation expectations as accurately as surveys or evidence from futures markets. On the other hand, a quarter is too long to hold the federal funds rate fixed between adjustments. For example, when the economy starts into recession, sharp and rapid interest-rate declines might be appropriate.

Many of these problems could be corrected by straightforward generalizations of these policy rules. A moving average of price level deviations from a target over a number of quarters, for example, would be a way to smooth out temporary price fluctuations. Averaging real output deviations—or nominal output deviations—from target could also be considered. Measuring the expected inflation rate over a number of different horizons might also be desirable. Going to a monthly model (not a straightforward exercise)—and taking even longer moving averages—would be a way to make the interest rate more responsive in the very short term. Such generalizations are an important task for future research.

However, these modifications would make the policy rule more complex and more difficult to understand. And even with many such generalizations, it is difficult to see how such an algebraic rule could be sufficiently encompassing. For example, interpreting whether a rise in the price level is temporary or permanent is likely to require looking at other measures of prices (such as the consumer price index, the producer price index, or the employment cost index). Looking at expectations of inflation as measured by bond prices, surveys, or forecasts from other analysts is also likely to be helpful. Interpreting the level and the growth rate of potential output—the target Y^* in the policy rule—involves other factors such as productivity, labor force participation and demographic effects on unemployment. While the analysis of these issues can be aided by quantitative methods like the ones examined in this book, it is difficult to formulate them into a precise algebraic formula. Moreover, there will be episodes where the funds rate target will need to be adjusted to deal with special factors. For example, the

Federal Reserve provided additional reserves to the banking system after the stock market break of October 19, 1987, and it helped prevent a contraction of liquidity and restored confidence. Although liquidity shocks and confidence shocks are part of the analytical framework of the multicountry model, the Fed would need more than the interest-rate rule as a policy guide in such cases.

But where does this leave us? Should we give up on policy rules and return to discretion? In fact, arguments like the one in the preceding paragraph sound suspiciously like those used by advocates of discretion rather than rules. But if there is anything about which modern macroeconomics is clear—and on which there is substantial consensus—it is that policy rules offer major advantages in improving economic performance, as explained in Chapter 1 and elsewhere. Hence, it is important to seek a way to preserve the concept of a policy rule in a world where it is still unlikely that to follow mechanically a policy rule is advisable.

One such approach is described here. It was developed by the Council of Economic Advisers in 1989 and 1990 and was incorporated in the *Economic Report of the President*¹ in a way that was generally accepted in government policy-making agencies.² The approach consists of three parts that I illustrate in the context of monetary policy.

A New Look for Policy Rules

The first part is purely a semantic one. It simply involves introducing some new language as a proxy for potentially misleading academic jargon. In the first chapter of this book I emphasized that the term “policy rule” does not necessarily mean either a fixed setting for the policy instruments or a mechanical formula. My saying so, however, does not change common usage. The term “policy rule” sometimes connotes a fixed setting for the policy instruments, and it usually connotes a simplistic mechanical procedure. It would help if there were an alternative terminology.

One terminology was adopted in the 1990 *Economic Report of the President*. “Policy rule” was replaced by “systematic policy” or sometimes by “policy system” when a noun seemed more appropriate. Thus, in describing his economic policy principles in his 1990 economic message to Congress, President Bush stated, “My Administration will . . . support a credible, systematic

¹The term “Economic Report of the President” conventionally refers to both a short economic message from the president to Congress (technically called the “Economic Report of the President”) and the Annual Report of the Council of Economic Advisers. Both are printed in the same bound volume. Unless otherwise stated, I will use the conventional terminology.

²Drafts of the *Economic Report of the President* are circulated for comment throughout the White House, the Cabinet agencies, and the Federal Reserve. Major areas of disagreement are usually worked out so that the *Report* could legitimately be said to represent the Administration’s economic-policy principles. Hence, the language from the *Report*, which I will refer to, is much more than the thinking of several economic advisers. It is something the line agencies could accept as well.

monetary policy program that sustains maximum economic growth while controlling and reducing inflation.” (p. 4, italics added)

The adjective “systematic” is defined in the *Oxford American Dictionary* as “methodical, according to a plan, and not casually or at random.” This connotes the important properties of a policy rule, without focusing on the more mechanical details. In any case, this was the intention.

Drawing the Line between Fundamentals and Details

The second part is to give a characterization of the fundamental properties of a systematic policy, stopping short of specifying less important details. Perhaps it is best to start with an analogy. Consider patent laws, for example, which are frequently compared with macropolicy rules in time-consistency literature. Patent laws establish the principle that inventors who register have the rights to market their invention for a given number of years. The details—whether the invention is novel, who invented it first, new licensing agreements—are left to patent office officials and to the court system. The question of where one draws the line between the fundamentals and the details will depend on many factors and is a good subject for future research. Clearly the line will be drawn at a different place for different types of policies—monetary policy, fiscal policy, or exchange-rate policy.

Some of the fundamental features of a monetary policy rule—like Equation (6.4) of Chapter 6—were given in the 1990 *Annual Report of the Council of Economic Advisers*:

The Federal Reserve generally increases interest rates when inflationary pressures appear to be rising and lowers interest rates when inflationary pressures are abating and recession appears to be more of a threat Assessing just how much the policy instrument needs to be changed as circumstances evolve requires judgment. Thus, a policy approach that relies on the expertise of the FOMC members is appropriate and should be preserved. If the operating stance of policy is . . . measured by interest rates, appropriate settings vary with the interest sensitivity of aggregate demand. (p. 85)

Note that this characterization gives the *signs* of the response coefficients of the policy rule: in terms of Equation (6.4), it says that the coefficients g_1 and g_2 should be positive. Rather than specifying the magnitudes of the coefficients, however, it states that the magnitudes should depend on the sensitivity of aggregate demand to interest rates. Put differently, the response coefficients should depend on the empirical relationship between interest rates and aggregate demand—the sum of consumption demand, of investment demand, and of the demand for net exports. That certainly is the implication of the design analysis of Chapter 6, but it is considerably less specific than stating the magnitudes of the responses as one could with an estimated model. However, given that there is no consensus on a single econometric model of the economy and given the well-founded suspicion

that even structural models change over time, this is probably as far in the direction of specificity as one can draw the line at this time.

This characterization by itself, however, is not specific about the target for inflation or for real output. It only states that the federal funds rate should be adjusted when inflation rises or falls and when output rises or falls. By omitting a target for inflation, it draws the line well short of some of the fundamental properties of a good policy rule. Certainly, more is needed if the characterization is to effectively convey the fundamental properties of a policy rule such as Equation (6.4).

How can we include some of these fundamentals? Since the mid-1970s monetary targets have been used in many countries to state targets for inflation. If money velocity were stable, then, given an estimate of potential output growth, money targets would imply a target for the price level; given velocity and a real output target, the target price level would obviously fall out algebraically from the money-supply target. But the 1980s have shown that money velocity is not stable in the short run; this is why the discussion focuses on interest-rate rules. Nevertheless, the long-run stability of the velocity of some monetary measures allows one to state targets for the price level and to keep the tradition of focusing Federal Reserve policy on long-run targets on the money supply. The 1990 *Economic Report of the President* put it this way referring to the M2 measure of the money supply:

Despite problems with the monetary aggregates, the Federal Reserve has not adopted a purely discretionary approach to policy In particular, research at the Federal Reserve and elsewhere shows that the velocity of M2 has been essentially stable over the long run. M2 could serve therefore as an anchor for price stability and as a basis for a credible, systematic long-run monetary policy. That is, as long as there are no signs of *permanent* shifts of M2 velocity, the Federal Reserve would do well to commit to eventually maintaining *long-run* growth of M2 consistent with expansion of the economy's potential to produce, while allowing higher or lower growth rates over shorter periods of time to offset shifts in velocity. Such an approach would be consistent with the Federal Reserve Act's requirements for monetary policy. (p. 86)

For example, with an estimated secular growth of real output of 2.5 percent, and steady velocity, a money growth range of 2.5 percent to 6.5 percent—the Fed's targets for 1991—would imply that the price level target grows at the rate of 0 to 4 percent per year. Given biases such as index-number problems in measuring prices, the average 2 per year implicit target inflation rate is probably very close to price stability or “zero” inflation.

A Consensus Rationale for Systematic Policies: Credibility

The third part is to give an easily understood rationale for sticking to a given systematic policy. Given the wide consensus about its importance, credibility should be at the heart of this rationale, as the simulations with

the models in this book have shown that credibility does improve economic performance. The 1990 *Economic Report of the President* put it this way:

Economic research and the lessons of the past two decades suggest a macroeconomic strategy for meeting the challenges of the 1990s and beyond. If fiscal and monetary policies are systematic and credible, rather than characterized by the frequent exercise of short-sighted discretion, strong sustainable noninflationary growth can be achieved.

Popular accounts of economic ideas typically focus on controversies and areas of disagreement. This focus is particularly common in discussions of macroeconomics, where monetarists, supply-siders, Keynesians, new classical macroeconomists, and others are often paired off against each other. While such controversies exist and have been important in the development of economic thinking, they mask two key areas of consensus concerning macroeconomic policy.

First, agreement is now widespread on the detrimental effects of a short-sighted discretionary approach to macroeconomic policy that attempts neither to lay out policy plans nor to maintain a commitment to such plans. Because policymakers are regularly praised and criticized for short-run developments, they experience pressures to approach economic policy from a short-run viewpoint. Stating a plan or program as clearly as possible tends to counteract such pressures.

Second, research and experience have demonstrated the great advantages of establishing a credible commitment to a policy plan. Improved credibility, which is enhanced by achieving stated policy goals and consistently following stated policy principles, can favorably affect expectations. It can help resolve the uncertainty that arises when changes in the structure of the economy complicate the interpretation of policy actions. It also enables households and businesses to plan for the future, thereby promoting saving, investment, and economic growth.

These three parts—(1) introducing the notion of “systematic” policies in place of the more mechanical-sounding policy “rules,” (2) defining systematic policy in particular applications by drawing a line between essential fundamentals and details that are either less important or less amenable to formulation, and (3) stressing credibility as a key rationale for sticking with a policy rule—constitute one approach to the operation of policy rules in practice. The second part requires the most analysis and could benefit greatly from additional research. Given this operational approach, I now consider three case studies to illustrate its use.

8.2 The Oil-Price Shock of 1990

Operating a systematic monetary policy in the face of an oil-price shock is difficult and deserves particular study. It is even more difficult if the shock occurs during a transition to a new policy. I focus here on the events that followed the Iraq invasion of Kuwait on August 2, 1990, roughly six months

after the principles of a systematic policy, summarized above, were published in the 1990 *Economic Report of the President*.

The oil-price shock occurred as the U.S. economy was growing slowly following the 1988–1989 monetary tightening—increases in the federal funds rate that had been aimed at containing and reducing the rate of inflation. If one characterizes the Fed actions in terms of the systematic policy described in the preceding section, then the increase in the federal funds rate can be interpreted as occurring for two reasons. First, economic growth in 1987 and 1988 was very strong, and inflation was rising; both factors would call for an increase in the federal funds rate according to a policy rule like that in Equation (6.4). Moreover, the Fed had indicated that its intention was to move the economy toward price stability. In other words, the Fed had been attempting to gradually disinflate—to make a *transition* to price stability, in the terminology of Chapter 7. In fact, the mean of the target growth rate ranges for the *M2* money supply had been reduced from 7 percent in 1987 to 5 percent in 1990 and was reduced to 4½ percent in 1991. The explicit intention of reducing the growth-rate targets was to reduce the rate of inflation by an equivalent amount.

Iraq invaded Kuwait on August 2, 1990. Iraq and Kuwait together had been producing 4.3 million barrels of oil a day, and there was a threat to the supply of oil from Saudi Arabia. Not surprisingly the price of oil rose sharply from \$21 per barrel at the end of July to \$28 on August 6 and eventually to a peak of \$46 in mid-October. The monthly average price rose from \$17 in July to \$36 in October. The effect that this increase in oil prices might have on the economy was of great concern, and major efforts were put in place to estimate the economic impacts. Task forces were assembled, and many models—both traditional and forward-looking—were simulated to obtain estimates. The Council of Economic Advisers published a consensus estimate that a one-year temporary increase in oil prices of 50 percent could temporarily raise the overall price level (output deflator) by about 1 percent and, with a longer lag, cause real output to fall by about the same amount.

Policy Response

What should be the monetary and fiscal policy reaction to these changes? Suppose that a systematic monetary policy like the one described in the preceding section were in place. Taken literally, Equation (6.4) would say that an increase in the central bank's interest rate target—relative to what it otherwise would be—was in order: in the short run the price level would rise more than real output would fall. However, such an interest-rate increase would be inappropriate if the price level rise was temporary and would soon disappear.

In fact, much analysis suggested that the increase would be temporary. The futures market for oil was helpful in making this assessment. Although the spot price for oil doubled by mid-October, the one-year-ahead futures

price changed very little. The December 1991 futures price rose by only about \$4 per barrel while the spot price rose by \$25. Moreover, oil-supply analyses suggested that increased oil production elsewhere could eventually make up most of the lost production in Iraq and Kuwait if the embargo continued. The main uncertainty was whether additional oil-production facilities would be destroyed before the conflict ended. This uncertainty was dramatically resolved with the successful start of Desert Storm in mid-January 1991.

For these reasons, an increase in interest rates to counteract the increase in the price level brought about by the oil shock would be inappropriate—despite the literal interpretation of Equation (6.4). However, not adjusting interest rates in the face of a rising price level requires an increase in the rate of money growth (again compared with what it otherwise would be), as well as an increase in nominal income. As the 1991 *Economic Report of the President* put it, “Depending on the size of the shock, a temporary increase in money-supply growth might be necessary . . . increasing it somewhat may result in a temporary increase in nominal GNP growth. But eventually, nominal GNP growth should return to a path consistent with low and stable inflation. Given credible monetary policy, an increase in nominal GNP growth need not cause an increase in long-run inflationary expectations.” (p. 94)

In order to emphasize the importance of maintaining a credible policy in the face of a price shock, the experience of the 1970s was reviewed carefully. The oil-price shocks that occurred in the 1970s, it was argued, occurred at a time when monetary policy had little credibility. In fact, inflation was rising at a rapid pace before both the 1973 and the 1979 oil shocks. With little credibility, monetary policymakers could not permit the oil shocks to pass through completely into the price level without causing fear that they were continuing to tolerate even higher inflation.

The experience in Japan in the first and second oil shocks provided a useful example of the payoff from a credible monetary policy stance. The 1973 oil-price shock occurred in Japan while inflation was rising rapidly. However, the 1979 oil-price shock occurred after the Bank of Japan had adopted a more credible monetary policy with a much lower rate of money growth and a much lower rate of inflation. It turned out that the 1979 oil-price shock had much less effect on inflation and real output in Japan than the 1973 oil shock and a remarkably smaller effect than in the United States and other countries. Figure 8-1, which is a replica of two charts prepared by the staff of the OECD in August 1990 soon after the Iraq invasion of Kuwait, nicely illustrates the difference in Japanese policies toward the two oil-price shocks of the 1970s. The Japanese policies also make a striking contrast with the U.S. policies in the late 1970s.

International Macroeconomic Policy

What was the analysis in other countries? How did other countries respond to the 1990 oil-price shock, and how did it affect international

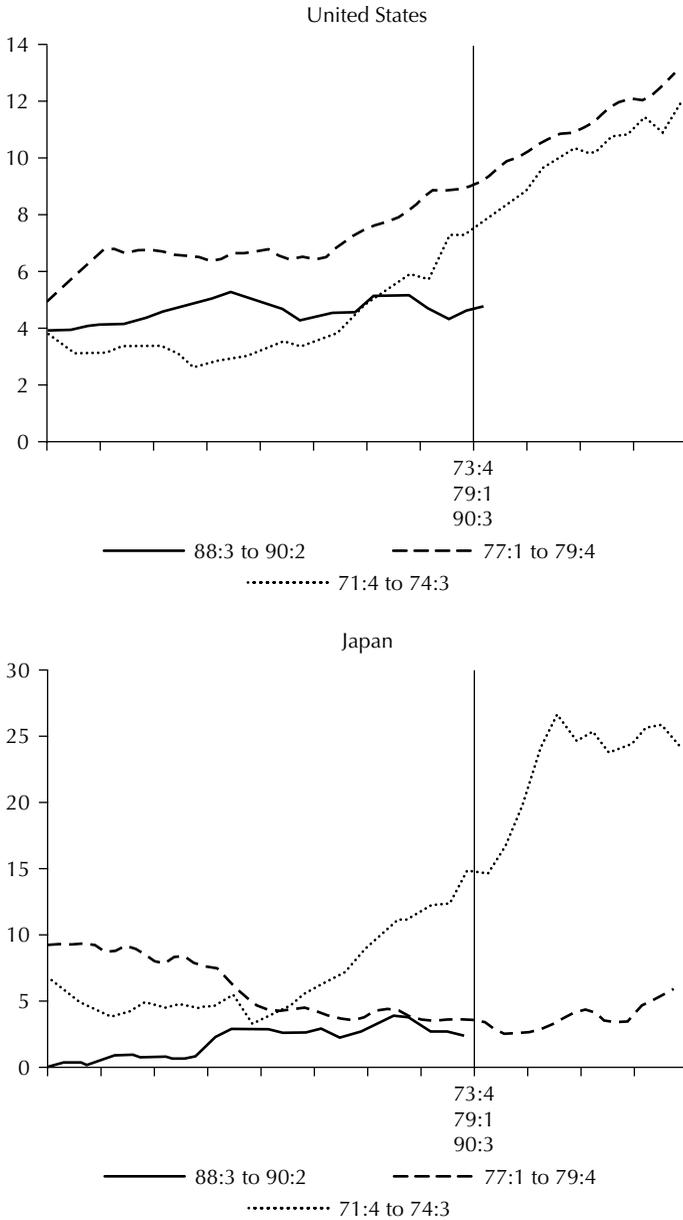


FIGURE 8-1 Current Inflation and Inflation at the Time of the Oil-Price Rises of the 1970s (percentage change in CPI from year before). The vertical line indicates the oil shock.

coordination? One of the first regular meetings of international finance officials that occurred after the Iraq invasion of Kuwait was the so-called “Working Party 3” of the OECD in Paris. This group includes senior policy officials from the finance ministry and the central bank in each of ten large industrial countries and usually meets four times a year to discuss macroeconomic policy and developments in each country.³ The September 1990 meeting provided a good opportunity to consider the appropriate policy response to the oil-price shock that began in August and was still occurring at the time of the meeting.

That meeting ended with a considerable degree of consensus that was to continue throughout the fall at a number of meetings of the G-7 and of the International Monetary Fund. Perhaps most important was that the oil-price rise was not viewed as requiring short-term changes in monetary policies. With central banks following monetary strategies that focused on adjustment of interest rates, this position is best interpreted as a policy response like the one discussed for the United States: interest rates should follow the path that would have occurred without the oil-price shock. In other words, the course that was correct before the oil shock should be maintained. If that meant that interest rates were to decline, then the decline should not be delayed; the “systematic” interest-rate policy should be maintained as closely as possible. There was also a broad consensus that the credibility of economic policies, which had been built up in the 1980s, should be maintained and that a clear message should be sent that this was the intention of policymakers.

The role of fiscal policy was also discussed. The automatic stabilizers of fiscal policy provide some built-in response to any negative effects on real output and employment that an oil shock might have, and it was certainly the intention in the United States in the summer of 1990 to allow this response to work to mitigate the impact of the oil-price shock on the economy. Some policy officials raised the possibility of overriding the automatic stabilizers—offsetting them by increasing taxes or reducing expenditures elsewhere—but others raised strong opposition to such overrides. Surprisingly, therefore, there was less consensus about continuing to keep “systematic” fiscal policies in place than there was about monetary policy.

The Gramm-Rudman-Hollings budget law, which was still in force in the United States in the summer of 1990, did not allow for the automatic stabilizers. Increases in the budget deficit, whether caused by new programs or by the automatic stabilizers, were against this law and would result in across-the-board cuts in spending. The deficit targets would not change even if an oil-price shock worsened economic conditions. Hence, changes

³The United States is the only country with three representatives at the table, the extra place traditionally reserved for a member of the Council of Economic Advisers. The chief economist from the International Monetary Fund and the Bank for International Settlements also attend these meetings and present forecast and policy analysis.

in this law were needed if the automatic stabilizers were to be allowed to help stabilize the economy. The revisions in the budget law worked out in the weeks following the oil-price shock required that the budget targets be adjusted for changes in the economy. The next section describes how these changes were put into the law and provides another illustration of the operation of policy rules.

8.3 Automatic Stabilizers and the Revision to the Budget Law

As part of the 1990 Budget Summit agreement, several legislative changes were made that altered the responsiveness of fiscal policy to the state of the economy. The changes were made at a time when it was recognized that the economy might be negatively affected by the oil-price shock and that the likelihood that the slowdown would turn into a recession was increasing. In fact the economy did enter a recession, and events that occurred during that recession illustrate some of the difficulties of operating a systematic fiscal policy in practice.

The new budget procedures distinguished between two types of government spending: (1) “discretionary” spending, which consists primarily of military purchases, foreign aid, and domestic purchases of goods and services, and (2) “entitlement” spending, which consists largely of transfer payments such as welfare, medicare, medicaid, and unemployment insurance. The budget law put explicit dollar “limits” on discretionary spending for five years and required that any *new* entitlement program be matched either by reductions in other entitlement programs or by increases in taxes; the latter was called the “pay-as-you-go” rule. Any legislation that violated either the “limit” rule or the “pay-as-you-go” rule would bring about an automatic “sequester”—an automatic across-the-board cut in the category of government spending where the violation occurred. If effective, the procedures would prevent *new* government programs from increasing the budget deficit.

Increasing budget deficits would be allowed if caused by the automatic stabilizers, however. For example, if unemployment compensation were to rise as the economy slowed down, then this would be allowed to increase the deficit. But legislated changes in entitlement programs would not be allowed unless they could be offset elsewhere in the budget or unless an emergency was declared by the president.

In effect, the 1990 budget agreement attempted to both reduce the structural deficit through the “limit” and “pay-as-you-go” rules and allow the automatic stabilizers to increase the budget deficit in a recession. Although the new budget law has such features, there is still significant room for improvement. The growth of “entitlement” spending, even on existing programs, began to rise rapidly. Legislative changes will be required simply to restrain this growth.

8.4 The Bond Market and Inflation

Assessing whether an increase in long-term interest rates is due to an increase in expected inflation or to an increase in the real interest rate is part of the task of operating a systematic monetary policy. For example, if the policy is to raise interest rates when inflation picks up, then a rise in long-term interest rates might suggest an incipient rise in inflation and might make policymakers less willing to keep the short-term interest rate steady, even if actual inflation does not change. But that increase in long-term interest rates could be due to other factors, such as a shift in the demand for investment or saving.

Such a situation arose in early 1990. After declining in the latter part of 1989, long-term interest rates rose sharply in early 1990. Ten-year Treasury-bond yields rose by 75 basis points. Concern about a rise in inflation could have caused this increase and, if so, could have called for a postponement of declines in interest rates that the systematic monetary policy would have called for. However, considerable evidence suggested that other factors were responsible for the increase in long-term rates.

The United States was not the only country to experience an increase in long-term interest rates. Germany had even larger increases, suggesting the possibility that real factors were behind the increase in interest rates. The German and U.S. interest rate increase is shown in Figure 8-2. In an integrated world capital market, an increase in interest rates in Germany could be transmitted to U.S. interest rates. That is the implication of the multicountry model used in this book.

In fact, there was a major change in Germany at this time that could have had such an impact on German long-term rates—anticipations that East Germany and West Germany would be unified and that the unification would increase the demand for capital in Germany and lead to an increase in the government budget deficit in Germany. Greater investment demand would be expected to raise real interest rates in Germany later in 1990 and in 1991 and, with forward-looking expectations, to raise long-term interest rates immediately. Again this is the implication of the multicountry model used in this book. In fact, the anticipated increase in demand for investment and reduction in national saving occurred in 1990 as the unification took place. In 1989 the West German budget was essentially in balance, with a surplus of .2 percent of GDP. That surplus turned dramatically in 1990 into a deficit of 3 percent of GDP. Hence, the timing turned out to be correct and consistent with this explanation.

But monetary policy decisions in early 1990 could not wait until 1991 when evidence was available about unification and its impact. In early 1990 the analysis had to rely on forecasts and model simulations to see if the magnitudes were plausible. In other words, would an increase in the demand for capital in Germany of plausible magnitudes cause an increase in interest rates of the magnitudes observed? Was it a quantitatively sufficient explanation? Calculations were made with forward-looking empirical

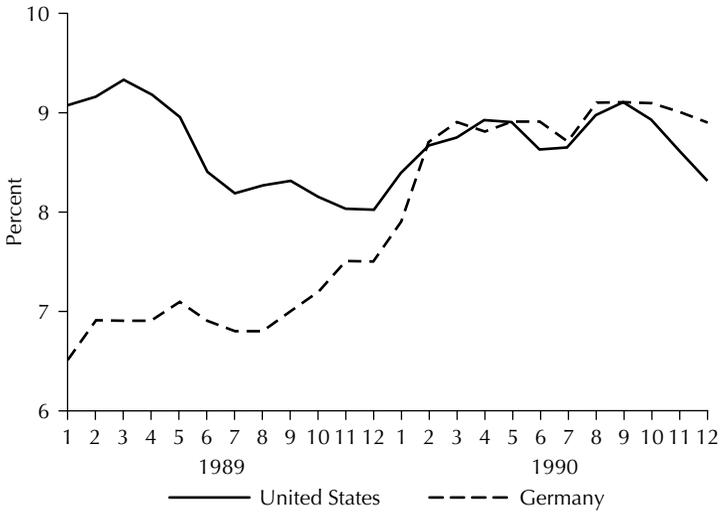


FIGURE 8-2 Long-Term Interest Rates in the United States and Germany in 1989 and 1990

models. The simulations suggested that increases in interest rates of about 1 percentage point were consistent with reasonably plausible increases in the demand for capital. Hence, an increase in expected inflation was not needed to explain the increase in long-term interest rates and gave some indication that the Fed’s interest-rate policy need not be adjusted. It was necessary to use quantitative models to make this calculation, but a simple algebraic formula could not have captured the monetary actions.

8.5 Assessment: A Continuing Revolution?

Keynesian economics was born in the 1930s with the publication of Keynes’s *The General Theory of Employment, Interest, and Money* (1936), popularized in the 1940s with the first edition of Paul Samuelson’s principles text, and put into a specific econometric form in the 1950s with Lawrence Klein’s Model I and follow-up models. But, as Walter W. Heller put it, Keynesian economics “came of age in the 1960s” when it was “pressed into public service.” Commenting on this public service in the 1960s, Heller wrote, “These are profound changes. What they have wrought is not the creation of a ‘new economics,’ but the completion of the Keynesian Revolution—thirty years after John Maynard Keynes fired the opening salvo.”⁴

The 1970s saw another revolution in macroeconomics—represented by the research papers collected in 1981 by Robert Lucas and Thomas Sargent.⁵

⁴Heller (1966), pp. 1, 2, and 59.

⁵Lucas and Sargent (1981).

One can see efforts to popularize this revolution in textbooks in the 1980s, at least at the intermediate level. And, as I hope the first seven chapters of this book make clear, efforts have been made to put the new ideas in econometric form—now perhaps beyond the equivalent of Klein’s Model I.

This chapter touches on issues closer to the “coming-of-age” stage, the “pressing-into-public-service” stage, of the revolution. Does what I have written about in this chapter constitute the completion, in Heller’s sense, of a revolution? I don’t think so. At least I hope not.

Progress has been made on the semantics of rules, systems, and discretion and on the incorporation of credibility and systematic features into certain aspects of policy making. But there is still a huge gap between technical work, such as the stochastic simulation of algebraic rules in estimated rational expectations models, and the front-line conduct of monetary and fiscal policy. In a way, the focus on rules rather than discretion, which is inherent in modern research, has made filling that gap much more difficult and much less appealing to both researchers and policymakers than in the case of the Keynesian revolution. Heller began his 1966 book stating that the new economics of the 1960s was a source of “presidential power.” Today’s macroeconomic research—with its focus on limiting the discretion of policymakers, on designing institutions that will help ensure that policy rules are not changed for time-inconsistency reasons—cannot be advertised as a source of power in the same sense. Perhaps the increased recognition that limiting discretion with better institutional design is the way and the promise of the future will accelerate the completion of the current macroeconomic revolution. In any case, the “coming-of-age” pace set by the Keynesian revolution was thirty years. By the standard of that pace, we still have another ten years before the macroeconomic revolution of the 1970s could be viewed as immature for its age. There is no reason to be disappointed yet.

Reference Notes

The interpretation in Section 8.1 of policy rules as something less than mechanical formulas but more than discretion is still somewhat controversial. For example, Laidler (1991), who has been an advocate of monetary policy rules concludes, “We are left, then, with relying on discretionary policy in order to maintain price stability.” McCallum (1988) is concerned with finding a specific formula that can be followed mechanically. Lucas’s (1980) analysis of practical policy focused more on making additional legislative changes to enforce the policy rule.

The patent example is discussed in Kydland and Prescott (1977) and used by Taylor (1983b) to support the view that time inconsistency is not likely to be a good positive theory of inflation, even though its normative implication is profound. The translation of monetary targets into price-level targets, as discussed in Section 8.1, is behind the concept of P^* used at the

Fed. This concept is an attempt to specify the targets for a “systematic” monetary policy.

A good summary of international macroeconomic policy discussions in various fora including the OECD is found in Crocket (1989) and Dobson (1991).

One calculation of the impact of German unification on long-term interest rates, using a multicountry rational expectations model as discussed in Section 8.4, is published in Adams, Alexander, and Gagnon (1991). The *MX3* model that was used for these calculations at the Fed is published in Gagnon (1991).

