

FEDERAL RESERVE

Playing by the Rules

BY TIM SABLİK

The Fed has followed a number of monetary principles over the years — with mixed results

Milton Friedman often said that, given the choice, he would replace the Federal Reserve with a computer. This computer would have one task: Print out the same amount of money, month after month, year after year. There wouldn't be much work for central bankers, except perhaps as IT personnel.

Friedman's proposal preceded and ultimately complemented work he and several other economists did in the 1960s through 1980s to develop "rational expectations" models. Under rational expectations, market participants make their decisions based not only on past monetary actions but also on their expectations of future actions. If the central bank can commit to a rule for future behavior, it can help set market expectations, making the job of achieving its goals easier. A noncontingent rule — one that doesn't change based on conditions in the economy — makes it even easier for the market to predict future monetary policy; an example is a fixed rate of money growth.

Even before the adoption of the rational expectations assumption, economists understood the importance of having some guide for managing the money presses. Without something to limit the growth of money, a government might be tempted to create more whenever it needed to finance extra spending. That would lead to inflation, the result of too much money chasing too few goods. More important, simply the fear that the government would give in to this temptation could be enough to generate an expectation of inflation, which could then become a self-fulfilling prophecy as new contracts came to reflect that expectation.

The Federal Reserve has never adopted an official monetary rule, but its decisions have been guided by several implicit rules over the course of its 100-year history — frameworks that guide its decisions, even if not as mechanically as Friedman's imagined computer. The most recent was measured by Stanford University economist John Taylor in 1993. The "Taylor Rule" is an empirical summary of how the Fed has actually behaved. It is a mathematical formula for calculating the Fed's interest rate based on the sizes of two gaps: the gap between current inflation and the Fed's target and the gap between current GDP and the economy's potential. When the economy is running above potential and inflationary pressures are high, the Fed raises interest rates to tighten the supply of money in the economy and return inflation and growth to target. When the economy is

below potential and inflation is weak, the Fed lowers rates to loosen money supply and spur growth.

The Fed's Taylor-Rule-like behavior has been credited by some for contributing to the period of low inflation and high growth the United States enjoyed in the mid-1980s through the early 2000s, known as the Great Moderation. But the Fed did not arrive at this behavior overnight. Indeed, the history of the central bank is in many ways a search for the best monetary rule.

The Early Years

The Fed was established in 1913 to serve as a lender of last resort and to meet public demand for exchanging deposits for currency during financial panics. To accomplish this, the Federal Reserve note was envisioned as an "elastic currency" — meaning that the central bank could expand its supply rapidly if needed. At this time, the Fed was not seen as the steward of inflation that it is today; its only overarching objective was financial stability, especially in the short term. Its job was to issue money, and the amount of money to be issued was dictated largely by the gold standard.

The Fed inherited its first guide in the gold standard system. Under this regime, dollars were convertible into gold at a fixed rate of \$20.67 per ounce. The Fed's role in this process was to meet money demand, but the amount of money it could supply was capped by the amount of gold it held in reserve. On the surface, the gold standard was a type of noncontingent monetary rule: The supply of money was restricted by the quantity of gold, which was determined by factors outside the central bank's control. Changes in the price level can occur under a gold standard, but instead of being caused by monetary policy, they are caused by fluctuations in gold supply or by the need for relative prices to change across countries.

"The gold standard, if left alone, in a sense drives the money supply, and there isn't much room for monetary policy," says Michael Bordo, an economist and monetary historian at Rutgers University.

As Bordo noted in a 1997 paper with late economist Anna Schwartz, however, the gold standard was not exactly noncontingent because it was understood that countries would suspend it when convenient. In wartime, governments often went off the gold standard in order to print extra money to finance the fighting.

"The rule was contingent in the sense that the public understood that the suspension would last only for the duration of the wartime emergency plus some period of adjustment, and that afterward the government would adopt the deflationary policies necessary to resume payments at the original parity," Bordo and Schwartz wrote.

Such a suspension occurred in Europe shortly after the Fed was established, when World War I broke out and European countries left the gold standard. The United States remained on the gold standard, but purchases of American weapons and supplies by the Allied powers in Europe resulted in large gold inflows, which led to inflation. “The Fed was relatively powerless in the face of these gold movements,” says Bordo. The episode illustrates one of the downsides of the gold standard as a monetary rule — the money supply was at the mercy of gold movements, which did not always match the needs of the economy. Although gold levels would eventually return to equilibrium, this process could be slow, and the price fluctuations that occurred in the meantime could be painful.

Central banks could speed the adjustment process by increasing or decreasing the amount of credit in the system in the same direction as gold flows. They could also move in the opposite direction to “sterilize” gold flows, for example increasing the amount of credit in the system by an amount equal to the decline in gold. This would keep the money base constant and prices stable. After the experience of inflation in World War I, this was the practice the Fed adopted (see chart). There was a growing belief that the Fed should play a role in maintaining stable prices, and the Fed also argued that until Europe returned to the gold standard, the gold adjustment mechanism would not function properly.

The other monetary principle that guided the Fed at its founding was the “real bills doctrine.” This rule stated that money growth would not be excessive as long as the central bank only made loans backed by real bills (short-term debt from businesses) as collateral. This way, the money supply would expand to meet real growth in the economy rather than speculative investments, which would keep inflation in check. The rule was flawed, however, as it did not account for the fact that rising prices would lead borrowers to demand more money for real bills. As soon as inflation expectations set in, there was nothing in the rule to stop

inflation from spiraling out of control, as the Fed would supply greater amounts of money to feed the rising prices of real bills.

Throughout the 1920s, the Fed and other central banks continued to sterilize gold flows, even after Europe returned to the gold standard. This prevented the natural adjustment mechanisms from working and shifted world gold supplies to the sterilizing countries. Although the full causes of the Great Depression are debated, many economists agree this was a major contributing factor. When the Depression hit, the Fed’s two rules guided it in the wrong direction. The Fed was required to hold gold reserves equal to 40 percent of its issued notes, and Fed leaders feared that expanding reserves would lead to gold outflows that would jeopardize the convertibility of its notes. Additionally, the real bills doctrine made them reluctant to extend credit that might fuel stock market speculation, and they argued that the deflation was a necessary response to the stock market boom of the late 1920s.

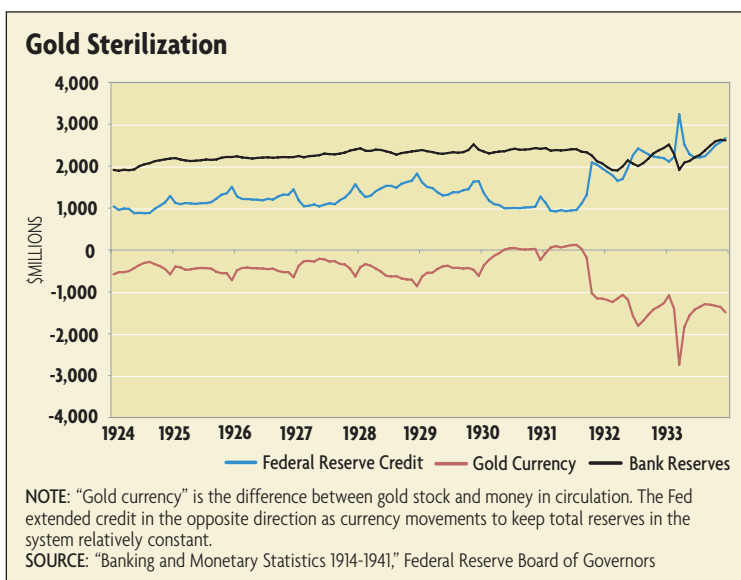
By the mid-1930s, the Fed had demonstrated that it was either unwilling or unable to increase the money supply in response to the Great Depression. The monetary guides it had relied upon failed to provide adequate guidance or, in the case of the gold standard, were distorted by a failure to play by the rules.

“The gold standard tended to prevent the Fed from doing what it should have done to offset the deflation, the fall in output, and the bank failures,” says Bordo. “But it didn’t have to do this.” In research with Schwartz and Ehsan Choudhri, Bordo found that the Fed had enough gold reserves to follow an expansionary policy during the Great Depression if it had chosen to do so.

New Economics, Old Rules

From the mid-1930s and into World War II, the Fed followed a policy of keeping the interest rates of government bonds low to help finance the war effort (a role it had first played in World War I). During this time, Bordo says development of monetary policy in the United States essentially ceased, as the Fed was effectively a branch of the Treasury Department. By the late 1940s, however, it became clear that holding interest rates artificially low was contributing to inflation, and the Fed began agitating for greater independence. That independence was established with the Treasury-Fed Accord of 1951.

The post-war period also brought changes to currency policies. Toward the end of World War II, economic leaders from the Allied countries met in Bretton Woods, N.H., to discuss the formation of a post-war international monetary system. They were concerned about a return to the Great Depression once wartime spending ceased, and they wanted to create a system that would protect against the deflationary spiral that had occurred in the 1930s. The Bretton Woods system combined the fixed money discipline of the gold standard with the flexibility of floating exchange rates. Countries agreed to peg their currencies to the dollar at



an exchange rate that could be adjusted, and the United States agreed to convert dollars to gold at the fixed rate of \$35 per ounce. It was thought that this would provide the best of both worlds: It would keep prices stable through a commitment to gold convertibility, and it would allow nations other than the United States flexibility to set their own monetary policy.

It would take until the end of 1958 before full international convertibility began, but from the start, economists noted flaws in the system. In 1947, Belgian economist

Robert Triffin observed that if the gold base did not expand to meet the growth of the world economy, countries would demand a greater number of dollars as a substitute for gold. At some point, the number of outstanding dollars would be so large that the United States would not be able to credibly promise convertibility to gold at the fixed price of \$35 per ounce, and the system would collapse. Another problem would also hasten the demise of Bretton Woods: the desire by the United States to set monetary policy that ran counter to the rules of the gold standard.

In the 1960s, many Keynesian-oriented economists proposed that fiscal and monetary authorities should play a bigger role in managing the real economy. A key component of this movement was the Phillips Curve, which appeared to show an inverse relationship between nominal wages and unemployment. It suggested that policymakers could obtain lower unemployment in exchange for higher inflation. Like the prewar gold standard, the Bretton Woods system left little room for monetary policy other than keeping the gold price fixed and the number of outstanding dollars low enough to credibly commit to conversion. But policymakers now envisioned a more active role for the Fed. Indeed, Congress established the Fed's "dual mandate" with the Employment Act of 1946, which stipulated that the Fed should set monetary policy to maintain maximum employment and stable prices.

At the time, it was believed that maximum employment meant unemployment of 4 percent, and economists on the Council of Economic Advisers and the Federal Reserve Board believed that as long as unemployment was above that level, expansionary monetary policy could help close the gap without risking inflation. Fed Chairman William McChesney Martin disagreed, arguing that it was difficult to know for certain what the optimal level of employment was, and that expansionary monetary policy past that point would result in inflation. In the mid-1960s, as unemployment approached 4 percent, he argued in favor of tightening, but he was increasingly opposed by others on the Federal Open Market Committee.

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much more important than price stability and that the constraints of the Bretton Woods system were something that had to be jettisoned," says Bordo.

By 1970, inflation had risen above 5 percent and outstanding dollars at foreign central banks outnumbered gold reserves two to one at the official exchange rate. Spending on domestic projects under the Great Society and on the Vietnam War put added pressure on the Bretton Woods system, and attempts to limit gold outflows culminated with the United States

ending convertibility in 1971. The monetary rules guiding the Fed toward expansionary policy to achieve lower unemployment took precedence over the restraint dictated by the gold standard, and the Bretton Woods system collapsed.

Recognizing Limitations

The Fed continued to implicitly target unemployment of 4 percent in the 1970s, following a "stop-go" monetary policy that loosened money supply to target lower unemployment and then tightened when inflation expectations started rising. The problem, as economist and Fed historian Allan Meltzer and others have noted, was that the Fed did not tighten enough during the "stop" periods. In fact, the Fed failed to distinguish between real and nominal rates when setting the federal funds rate target. While it thought it was tightening money supply by raising nominal rates, real interest rates were in fact quite low or even negative (see table).

Over the course of the 1970s, the market came to believe that the Fed was following a rule that placed greater importance on unemployment than inflation, and inflation rose dramatically. The greater weight on labor market conditions was problematic because policymakers miscalculated which unemployment rate to target. In a 2011 working paper, Athanasios Orphanides of the MIT Sloan School of Management and John Williams, president of the San Francisco Fed, proposed a model for a monetary rule consistent with the Fed's behavior during this time. They

End-of-Year Effective Federal Funds Rate 1965-1972

Year	Nominal Rate	CPI Inflation	Real Rate
1965	4.32	1.54	2.78
1966	5.40	3.33	2.07
1967	4.51	3.81	0.70
1968	6.02	5.08	0.94
1969	8.97	5.91	3.06
1970	4.90	6.60	-1.70
1971	4.14	3.10	1.04
1972	5.33	3.00	2.33

NOTE: Consumer Price Index inflation excludes food and energy.
SOURCE: Federal Reserve Economic Data (FRED), Federal Reserve Bank of St. Louis

found that the Fed's underestimation of the natural rate of unemployment at 4 percent, combined with the emphasis it placed on targeting the natural rate of unemployment, led to the Great Inflation of the 1970s.

"We can only tell if the economy is not operating at its natural rate long after the fact by subsequent developments in inflation," says Orphanides. "In the late 1960s and 1970s, the structure of the economy changed considerably, including changes in demographics and a slowdown in productivity. These factors led to a significant increase in the natural rate of unemployment that was only recognized with a significant lag."

It became apparent that the trade-off implied by the Phillips Curve was not as stable as policymakers had thought. Although unexpected inflation was capable of reducing unemployment in the short term, once markets came to expect higher inflation, raising inflation no longer reduced unemployment. In response to loose monetary policy and the lack of a rule to restrain money growth like the gold standard, inflation expectations soared.

In 1979, Paul Volcker was appointed chairman of the Fed to stop the inflation spiral. Volcker favored a change in procedure to regain the Fed's credibility for keeping prices stable. In a special meeting on Oct. 5, 1979, Volcker proposed focusing on price stability rather than unemployment by targeting money growth more aggressively and allowing interest rates to "float" to whatever level needed to bring down inflation. Although the Fed had incorporated monetary targets into its policy in the 1970s, it had frequently overshot these targets. Volcker believed that targeting price stability would ultimately lead to both low inflation and full employment.

This new focus represented a new monetary rule of sorts — one that placed less emphasis on the gap between current employment and full employment and more emphasis on inflation. Volcker's first attempt to convince the market that the Fed was dedicated to price stability failed. Tight monetary policy triggered a recession in early 1980, and as the recession worsened, the Fed felt compelled to ease up. To the market, the episode resembled the same sort of "stop-go" policies they had come to expect, and inflation continued to climb. The Fed tightened again, allowing the fed funds rate to reach about 20 percent, and the economy plunged into a deep recession in 1981-1982. This time, however, Volcker held course, despite unemployment near 11 percent and charges from some in Congress that the Fed

was neglecting its mandate to maintain full employment. But as Volcker, and later his successor Alan Greenspan, interpreted the mandate, full employment would follow naturally from a pursuit of stable prices.

The Fed's actions were a concession to the difficulty in measuring the natural employment level, and to the lesson learned in the 1970s that the Phillips Curve trade-off did not exist in the long run. The Fed's commitment to its new rule in the face of the deep 1981-1982 recession convinced markets, and inflation expectations declined. During the early 1980s, changes in the composition of the money supply made targeting money growth more difficult. The Fed continued targeting the money supply until disinflation set in because of concern that a change in policy would undermine the credibility it was trying to establish. Once inflation had subsided and real interest rates were easier to estimate, the Fed returned to using interest rates as the primary tool for maintaining price stability.

The Great Moderation that followed was a period of low inflation and impressive economic growth, leading many observers in the 1990s to proclaim the monetary policy equation "solved." Some economists attributed that performance to the Fed's adherence to the Taylor Rule, but Orphanides argued in a 2002 paper that Taylor's original equation also fits Fed policy during the Great Inflation when accounting for the data available at the time.

"Policymakers at the Fed always thought that they were following systematic policy in the 1960s and 1970s. The question is: What are your guides? The guides you use may fool you because they may be based on a presumption of too much knowledge, or too precise knowledge," says Orphanides. He argues that simple rules — Friedman's constant money growth being the simplest — are preferable for this reason.

In the wake of the 2007-2009 recession, the Fed turned to a number of discretionary measures to bolster the economy. Interest rates hit zero but the economy remained weak, so the Fed used some unconventional tools that by definition reached beyond the rule it seemed to have been following for decades. Many economists agree that monetary policy should return to rules-based guides sooner rather than later. Although there is no consensus as to which guides the Fed should adopt, history has made one thing clear: Expectations of future monetary policy play a big role in the economy, and those expectations will be driven by the rule the Fed is perceived to be following. **EF**

READINGS

Bordo, Michael D., and Anna J. Schwartz. "Monetary Policy Regimes and Economic Performance: The Historical Record." National Bureau of Economic Research Working Paper No. 6201, September 1997.

Meltzer, Allan H. "U.S. Policy in the Bretton Woods Era." Federal Reserve Bank of St. Louis *Review*, May/June 1991, vol. 73, no. 3, pp. 53-83.

Orphanides, Athanasios, and John Williams. "Monetary Policy Mistakes and the Evolution of Inflation Expectations." National Bureau of Economic Research Working Paper No. 17080, May 2011.

Taylor, John B. "A Historical Analysis of Monetary Policy Rules." In John B. Taylor (ed.), *Monetary Policy Rules*. Chicago: University of Chicago Press, 1999.