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Does Money Still Matter for Monetary Policy?

By Renee Haltom

Economists agree that inflation is a monetary phenomenon, but since 1982, monetary policymakers have demoted measures of the money supply from prime targets to key indicators to incidental byproducts. With excess bank reserves at all-time highs, however, measures of money may have a renewed purpose as red flags for inflation.

There are two ways for a central bank to conduct monetary policy: targeting the quantity of money or targeting the price of money. Specifically, the Federal Reserve can set a target for the quantity of reserves within the banking system, leaving the price banks pay to borrow those reserves (the fed funds rate) up to market forces, or the Fed can target the fed funds rate and supply whatever quantity of reserves the market demands at that rate.[1] The Fed uses one of these operational targets to influence intermediate targets that the Fed cannot control directly, such as the money supply or the availability of credit, which are thought to influence the Fed's ultimate objectives of maximum sustainable employment and low, stable inflation.

Today the Fed's operational target is the fed funds rate, and there is considerable evidence that the central bank pays little attention to money in conducting monetary policy. The Fed does not have an intermediate target for money supply, and most economic models that explain the behavior of inflation, output, and interest rates do not structure private decisions as depending on the money supply. In addition, most modern central banks, including the Fed, face legislative mandates to focus on real economic variables, such as employment and output.

How could money be irrelevant to monetary policy? After all, the defining characteristic of a central bank—and its key source of influence over the economy—is its monopoly over money creation. Additionally, virtually all economists accept the proposition that inflation is "always and everywhere a monetary phenomenon," as Milton Friedman famously wrote in 1963.[2] This *Economic Brief* explains the apparent puzzle by tracing the evolution of economists' ideas, especially those associated with "monetarism," and the Fed's use of the money supply. It also points to a renewed role for money in the wake of significant changes to monetary policy since the 2007–08 financial crisis.

Money and Monetarism

Monetarism is a set of theories about what generates economic activity. Its core is the view that money is the primary driver of inflation and business cycles. Elements of monetarism appear as early as 1752 in the writings of David Hume. The school of thought faded with the rise of Keynesianism in the 1930s, but was revived in the United States by Friedman in the 1950s. The St. Louis Fed coined the term "monetarism" in 1968 to describe the research of Karl Brunner, a Swiss-born economist who spent most of his career in the United States. There have been many definitions of

"money" throughout this lineage, ranging from gold and silver coins to specific measures of the money supply, such as bank reserves, the monetary base (reserves plus currency), M1 (currency plus demand deposits), M2 (M1 plus other highly liquid assets), and M3 (a broader measure including M2 and some less-liquid assets).

The foundation of monetarism is the Quantity Theory of Money (QTM). The QTM starts with the equation of exchange, an accounting identity that says the money supply multiplied by velocity (the rate at which money changes hands) equals nominal expenditure in the economy (the number of goods and services sold multiplied by the average price paid for them). As an accounting identity, the equation of exchange is uncontroversial, but monetarist theory views velocity as generally stable, implying that nominal income is largely a function of the money supply. Nominal income, in turn, captures both inflation and real economic activity.

Perhaps the foremost monetarist prediction, voiced by Friedman in 1967, is that while changes in the money supply can cause movements in real variables, such as employment, those effects are strictly temporary and unpredictable.[3] Therefore, with velocity stable, excess money growth eventually leads only to inflation, with no change in real output. These ideas lead to some key policy prescriptions. If business cycles are caused primarily by nominal factors (i.e., money growth) and the real effects are temporary, then governments have very limited ability to manage business cycles. Instead, monetarist theory suggests that central banks should follow a money-growth rule to support stable growth in nominal income over time.

It is helpful to contrast monetarist predictions with competing theories. For example, Keynesian theory, based on the work of John Maynard Keynes, suggests that inflation comes primarily from real (non-monetary) factors. Those might include a surge in government spending, monopoly pricing, collective bargaining, or wage-price spirals due to inflationary expectations. Even though inflation is defined as a general increase in the money-denominated prices of goods and services, the money supply plays little role in causing inflation, according to Keynesian theory. Policy prescriptions are therefore very different from those that stem from monetarist theory. If money determines inflation, monetary policy should be used to control it. But if real shocks cause inflation, then it can be addressed through policies such as price controls, freeing monetary policy to manage unemployment and output.

Friedman and his students at the University of Chicago modified the QTM in the 1950s. While Keynes thought velocity was unstable, Friedman considered velocity in the context of portfolio theory as a function of interest and income. This provided a way for central banks to use the money supply in policy: If money demand can be predicted, then central banks can implement a money-growth rule that produces stable growth in nominal expenditure, absent any shocks to the real ability to produce, such as wars or surges in oil prices. Friedman and his students also provided empirical evidence that money, contrary to Keynesian theory, tended to correlate closely with nominal income.

The QTM also received renewed attention due to developments in the economy.[4] In the 1960s and 1970s, policymakers used expansionary monetary and fiscal policies to reduce unemployment, while attempting to control inflation through policies such as price controls. These efforts failed to contain inflation. The QTM was better equipped to explain that failure than Keynesian theory, which had largely disregarded the role of money. During this period, much of the work in monetary economics focused on understanding the demand for money. It was around this time that money began to play a major role in Fed policy.

How the Fed Used Money

The Fed began reporting data on measures of money —including currency in circulation, demand deposits, and time deposits—in the 1940s. The measures of M1, M2, and M3 were introduced in 1971.

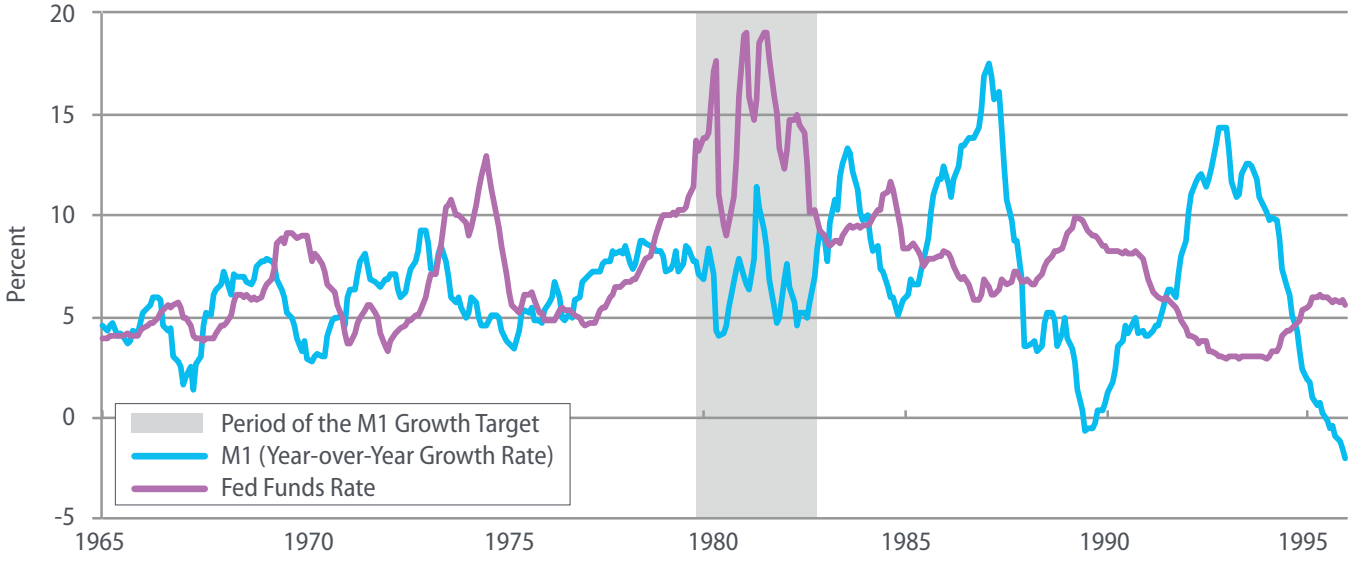
M1 was particularly attractive as an economic indicator because it correlated well with nominal expenditure. It also was a variable that the Fed could

influence easily by directly controlling the quantity of bank reserves, which form the basis for expansion of M1 and the other monetary aggregates. While the fed funds rate was the Fed's operational target, the Fed also adopted targets for M1 in the 1970s relative to a base defined as M1 at the point of any given policy meeting of the Federal Open Market Committee (FOMC). A 1984 paper by former Richmond Fed President Alfred Broaddus and former Research Director Marvin Goodfriend contended that these were not genuine targets, however.[5] If the Fed missed its target, as it often did, it could immediately readjust the base used to calculate the target, a practice called "base drift." In contrast, a monetarist approach would have adjusted the targets in order to compensate for base drift and create the desired rate of money growth. Richmond Fed economist Robert Hetzel noted in a 1981 paper that while these money-growth targets were in place, the Fed appeared to be setting the fed funds rate in a discretionary matter. It could be set to achieve a money-growth target or as its own operational target to influence broader credit conditions in the economy.[6]

In 1979, the Fed switched from focusing on the price of money to focusing on the quantity of money in an effort to curb the very high inflation that had emerged in the mid- to late-1970s. Specifically, the Fed dropped the fed funds rate as its operational target and began targeting a measure of money, the proportion of bank reserves that are not borrowed from the Fed, which were adjusted to achieve broader target growth rates of M1. There are several possible interpretations of how the Fed thought the policy change would help solve the inflation problem. A leading view, supported by FOMC transcripts and other documents from the time, suggests that Fed Chairman Paul Volcker thought the bold change would establish credibility with the public that the Fed was serious about achieving low inflation. Volcker had been a student of expectations, and believed strongly that "inflationary psychology" was keeping inflation high.[7] After the FOMC raised interest rates gradually in the late 1970s, Volcker convened a special meeting of the committee on October 6, 1979, to consider a bolder tightening action phrased in terms of bank reserves rather than the fed funds rate. He told the FOMC that traditional tightening had run out of "psychological gas" and that "we can't walk away today without a program that is strong in fact and perceived as strong in terms of dealing with the situation." A second interpretation holds that the Fed knew interest rates would have to rise significantly, but it was not clear by how much. Hetzel (1984) said that a resolution to this problem was to let the market adjust rates as high as necessary to maintain the four-quarter target range for M1.[8]

A third interpretation suggests that a reserves target allowed the Fed to escape political culpability for

Figure 1: High and Volatile Interest Rates from October 1979 to October 1982



Sources: Federal Reserve Board of Governors, Haver Analytics

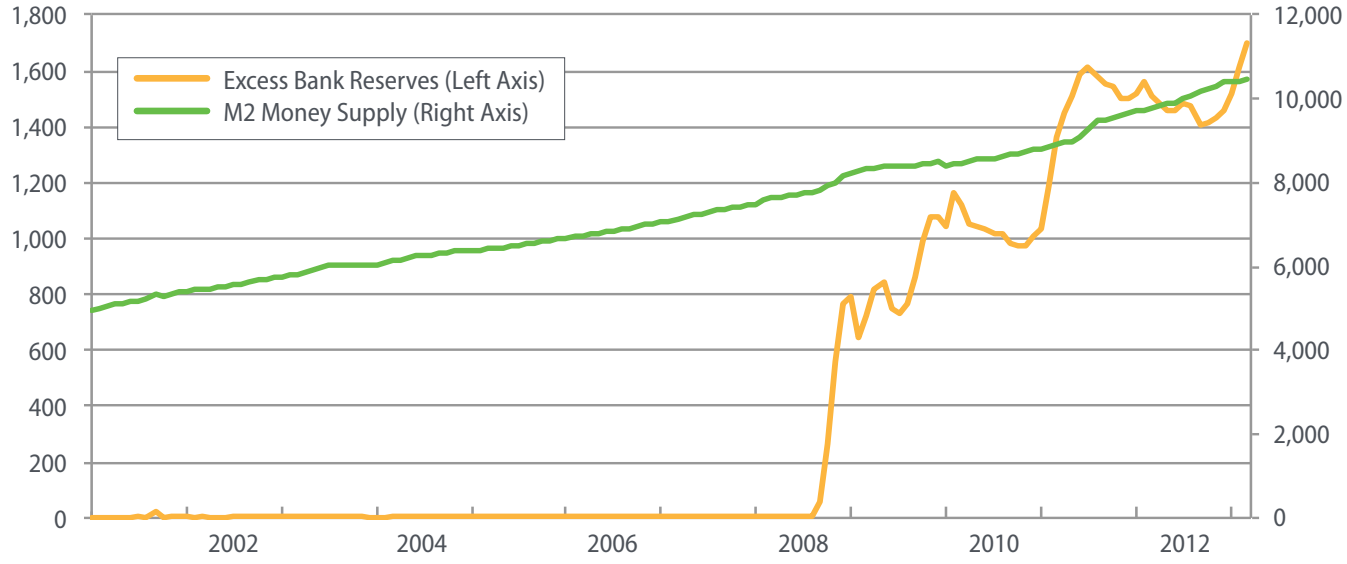
the adverse economic effects of tighter policy.[9] The shift to a money target was immediately followed by relatively dramatic volatility in the fed funds rate. (See Figure 1.) The real economy suffered from tighter monetary policy, and legislation was introduced by both political parties that would have limited the experiment. Before Congress could act, however, the Fed abandoned its money target in 1982 and resumed using the fed funds rate as its operational target for monetary policy. The short-run relationship between money and nominal expenditure had broken down because financial innovation—the result of deregulation and high interest rates—had changed how people held money. By that time, however, the Fed had earned credibility for being willing to let the fed funds rate rise to prevent an increase in inflationary expectations.

Some have argued that the 1979-to-1982 policy shift was not a true "monetarist" experiment. Monetarism prescribes following a money-growth rule. By contrast, Volcker explicitly stated at the launch of the experiment that it would be unwise to commit to a set path for money growth or a single definition for the money supply. Hetzel's 1984 paper argues that the Fed remained primarily focused on the current state of the economy, as opposed to inflation, and never committed to changing the money supply even if it no longer appeared to describe the behavior of the economy. Thus, the experiment "was effected more as a strategy for raising market rates than as a strategy of monetary control in the spirit advocated by proponents of money supply targeting," according to Hetzel.

Over the years, the experiment has received mixed reviews. It reduced inflation and established the anti-inflation credibility that the Fed still enjoys today. But it also led to dramatic interest rate variability, a deep recession, and much public dissatisfaction with the Fed. One lasting result is that the episode helped establish a consensus in favor of the monetarist proposition that inflation is, indeed, a monetary phenomenon and should be the responsibility of the central bank.

Since 1982, money's influence on monetary policy has been declining. Economists continued to study it as an indicator of financial conditions, but the FOMC did not view it as useful for policy. Financial innovation eventually led the Fed to downgrade its use of M1 as an indicator in 1987 in favor of M2. But in 1993, Fed Chairman Alan Greenspan stated to Congress that the relationship between M2 and economic activity also had broken down, and that M2 would no longer be used by the FOMC to guide policy. In March 2006, the Fed ceased tracking M3 altogether because it did not provide information for monetary policy purposes that was not already contained in M2. Money has had a declining influence

Figure 2: Steady Money Growth Despite Dramatic Growth in Excess Bank Reserves (billions of dollars)



Sources: Federal Reserve Board of Governors, Haver Analytics

on theory as well. In a 2000 paper, Columbia University economist Michael Woodford laid out an influential argument for omitting money from theory, and since then money has appeared virtually nowhere in applied theory on monetary policy.[11]

Money in Today's Monetary Policy

Prior to October 2008, a large surge in the monetary base might have raised concerns about inflation. That is because banks generally minimized their reserve holdings, which earned no interest, in order to make loans, which did earn interest. Under these conditions, an increase in the monetary base would translate to an increase in the money supply at a rate determined by the money multiplier. The relationship between bank reserves and the money supply was by no means mechanical, but it was safe to say that a large surge in reserves portended a coming surge in the money supply and possible inflationary pressures.[12]

In October 2008, an important policy change disrupted the link between the monetary base and the money supply. The Fed started paying banks interest on reserves (IOR). This practice reduced the opportunity cost of holding excess reserves, allowing the Fed to dramatically increase reserves without necessarily adding to the money supply. In March 2013, excess reserves were more than 900 times larger than they were in August 2008, the month before the Fed began to increase reserves substantially due to financial crisis lending. Over that same period, M2 grew only 35 percent. (See Figure 2.) The IOR rate likely will remain part of the monetary policy landscape going forward. With many excess reserves in the banking system, the IOR rate should determine the fed funds rate, rather than the quantity of reserves alone as described in the opening paragraph of this essay.

With excess reserves at an all-time high, measures of money have a renewed purpose, as outlined by Richmond Fed economists Huberto Ennis and Alexander Wolman in March 2010.[13] When there are few excess reserves in the banking system, banks need to sell assets, raise deposits, or issue securities to increase lending. These actions would require the Fed to increase reserves in the banking system if it wanted to keep the fed funds rate constant. However, when banks hold excess reserves, they have funds at the ready to increase lending, such that monetary expansion can occur more quickly and without any Fed action. If this started to happen, one signal to policymakers would be a rapid rise in deposits, which would prompt a conversion of excess reserves into required reserves. Ennis and Wolman emphasize that these variables have become key indicators for monetary policymakers in a world with IOR. In response to rising required reserves, which could signal a coming expansion of the money supply, the Fed could raise the IOR rate to limit lending activity if it wishes to keep its monetary policy stance the same.

In many ways, money and monetarism may appear to be irrelevant to modern monetary policy. Still, it is the Fed's direct control over bank reserves that enables it to influence the fed funds rate and, therefore, broader economic conditions. If banks begin to tap high levels of excess reserves to expand lending rapidly, the resulting spike in the money supply might be a red flag for inflation. In addition, many of the principles initially advocated by monetarists have been so broadly accepted in both theory and practice that they are no longer associated exclusively with monetarism. Chief among these principles are assertions that inflation is a monetary phenomenon, that controlling it should be a (if not the) primary responsibility of the central bank, and that there is at best a limited exploitable tradeoff between unemployment and inflation. ■

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Endnotes

[1] This relationship changed in an important way in October 2008, as described in the concluding section of this essay.

[2] Friedman, Milton, *Inflation: Causes and Consequences*, New York: Asia Publishing House, 1963.

[3] See Friedman, "The Role of Monetary Policy," Presidential address to the American Economic Association, Washington, D.C., December 29, 1967, published in the *American Economic Review*, March 1968, vol. 58, no. 1, pp. 1–17.

[4] For an in-depth discussion, see Mayer, Thomas, and Patrick Minford, "Monetarism," University of California, Davis, Working Paper No. 95–21, December 1995.

[5] Broaddus, Alfred, and Marvin Goodfriend, "Base Drift and the Longer Run Growth of M1: Experience from a Decade of Monetary Targeting." Federal Reserve Bank of Richmond *Economic Review*, November/December 1984, no. 70, pp. 3–14.

[6] See Hetzel, Robert L., "The Federal Reserve System and Control of the Money Supply in the 1970s," *Journal of Money, Credit and Banking*, February 1981, vol. 13, no. 1, pp. 31–43.

[7] See quotes provided in Lindsey, David E., Athanasios Orphanides, and Robert H. Rasche, "The Reform of October 1979: How It Happened and Why," Federal Reserve Bank of St. Louis *Review*, March/April 2005, vol. 87, no. 2, part 2, pp. 187–235.

[8] Hetzel, Robert L., "Monetary Policy in the Early 1980s," Federal Reserve Bank of Richmond Working Paper No. 84-1, May 1984.

[9] For example, see Lindsey, Orphanides, and Rasche (2005).

[10] Regulatory changes included the removal of interest rate ceilings on many consumer transaction accounts counted in M1, and the Garn-St. Germain Act, which introduced money market deposit accounts included in M2. As consumers switched easily between these accounts, along with money market mutual funds, it caused funds to shift rapidly between M1 and M2.

[11] See Woodford, Michael, "Monetary Policy in a World without Money," *International Finance*, July 2000, vol. 3, no. 2, pp. 229–260.

[12] Theory suggests that the increase in the money supply should be proportional in the long run to an increase in the monetary base, though before October 2008, it was not clear how long it takes for the "long run" to arrive, and thus how the monetary base should effect the money supply in the short run.

[13] Ennis, Huberto M., and Alexander L. Wolman, "Excess Reserves and the New Challenges for Monetary Policy," Federal Reserve Bank of Richmond *Economic Brief*, March 2010, vol. 10, no. 3.