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What Is the Monetary Standard? The Fed Should Tell Us

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Abstract

The Federal Reserve System (Fed) is a regular feature in the media. When the Fed communicates with the public, its focus is on forward guidance related to monetary policy—specifically, for achieving low unemployment and low inflation. Fed participants on the Federal Open Market Committee (FOMC) convey what they see as the likely path of policy, including changes in the federal funds rate, a standard monetary policy tool. Because financial markets find this information useful, news stories thoroughly cover Fed communication.

However, such communication fails to explain the structure of the economy that disciplines how the FOMC achieves its objectives for employment and inflation. The FOMC necessarily conducts monetary policy based on assumptions about this structure. What is now implicit should be made explicit. Such explicitness by the FOMC is necessary for the public to understand the monetary standard that it has created. That is, the Fed needs to explain the framework it assumes to then explain how its actions translate into achievement of its objectives.

Such transparency will be challenging. The standard Fed narrative implicitly assumes that a free-market economy and financial markets are inherently unstable. Economic instability originates in the private sector, and an independent Fed is required to mitigate this instability. Again, implicitly, the assumption is that the Fed understands the structure of the economy so that it knows the origin of instability and how its actions will offset that instability.

Despite the Fed narrative, there is a need for a debate over the optimal monetary standard. In the 1960s, the monetarist-Keynesian debate raised the key issues relevant to the design of the optimal monetary standard. Is inflation a monetary or a nonmonetary phenomenon? What accounts for the simultaneous occurrence of monetary instability and real instability. Does the direction of causation go from monetary to real instability or vice versa? The intent of this article is to revive the earlier debate. To do so, it will be necessary to re-exposit monetarism in a way relevant to current central bank practice. To do so, I re-exposit monetarism in a way that is relevant to current central bank practice, using the term "Wicksellian monetarism" as the descriptive label.

Such a debate is especially urgent at present given the FOMC's current policy of disinflation. The FOMC needs to articulate a monetary policy in terms of a long-term strategy (rule) that will restore price stability and then maintain that stability. How does current policy ensure that a declining rate of inflation will stop at 2 percent and then remain there? That is, for the long run, the policy needs to provide a stable nominal anchor. Such a policy should allow the FOMC to lower the federal funds rate to prevent a serious recession while maintaining credibility for a long-run policy to restore price stability.

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INTRODUCTION

The monetary standard is the framework within which the FOMC pursues its objectives. That framework clarifies not only the objectives of monetary policy but also the structure of the economy that intermediates the monetary policy actions of the FOMC and the behavior of its objectives. Given those objectives, monetary policy is the reaction function (the rule) the FOMC uses to set its instrument (the federal funds rate) in response to incoming information on the economy. Although the FOMC lacks a detailed model of the structure of the economy, it still must choose a monetary policy based on assumptions about the basic character of that structure.

The design of the optimal monetary standard and of a stabilizing monetary policy depends upon the character of inflation. If inflation is a monetary phenomenon, monetary policy must provide for monetary control. The control of paper money creation through the bookkeeping open-market operations of the New York Fed's Open Market Trading Desk does not provide the FOMC with the ability to control systematically the behavior of the real economy. Monetary policy must give free rein to the stabilizing properties of the price system to control real variables (output and employment).

Alternatively, if inflation is a nonmonetary phenomenon, to control inflation, monetary policy must control slack in the utilization of resources. The control of slack necessitates balancing the objectives of unemployment, which increases with slack, and inflation, which decreases with slack. The trade-offs are given by the empirical relationship known as the Phillips curve. In the former case in which inflation is a monetary phenomenon, the FOMC is relying on the stabilizing properties of the price system to achieve full employment. In the latter case in which inflation is a nonmonetary phenomenon, it is overriding those properties by manipulating slack in the economy.

There is a lack of professional consensus over the nature of inflation and the strength of the stabilizing properties of the price system. That reality in no way obviates the need for the Fed to choose a monetary policy based on an assumption about these characteristics of the economy. Heuristically, the FOMC must decide whether to juggle one ball or two balls. That is, should it concentrate on one ball (price stability) and leave unaided market forces to deal with the other ball (unemployment)? Alternatively, should it juggle two balls by manipulating inflation-unemployment trade-offs? Transparency about the monetary standard that the FOMC has created would require it to clarify its assumptions and subject them to professional debate. The two views that have historically defined the debate are "traditional Keynesian" and "Wicksellian monetarism."

Throughout the 1970s, a vigorous monetarist-Keynesian debate contested the issues basic to the design of the optimal monetary standard. Given the long period of relative quiescence in inflation after the Volcker disinflation, the debate receded. Given the current rise in inflation, the debate should be

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The ideas in this article draw on the monetarist tradition developed by a remarkable assemblage of economists at the Federal Reserve Bank of St. Louis in the 1960s and 1970s, attracted by Homer Jones, the research director at the time: Leonall Andersen, Richard Anderson, Anatol (Ted) Balbach, Al Burger, Rik Hafer, Scott Hein, Jerry Jordan, Michael Keran, Jim Meigs, Robert Rasche, and Jack Tatom. The St. Louis Fed also publicized work by Karl Brunner, Allan Meltzer, and Anna Schwartz. See Bordo and Schwartz (2008). This article is dedicated to Marvin Goodfriend, from whom the author drew inspiration. An earlier iteration of this article appeared in the working paper series of the Mercatus Center at George Mason University.

revived. However, given the fact that the FOMC ignores the behavior of money and uses an interest rate rather than a reserves aggregate as its instrument, the original monetarist views appear to have lost relevance. This paper re-exposits monetarism as Wicksellian monetarism to make it relevant to current practice.[1] To reinforce the point that there remains a need to revive the earlier debate to confront the basic issues that must be decided in the design of the optimal monetary standard, this article contrasts the two views—traditional Keynesianism and Wicksellian monetarism.

Policy in the Keynesian tradition implicitly assumes that inflation is a nonmonetary phenomenon. A stickiness in relative prices that imparts inertia to market clearing prices causes the price system to work only poorly to maintain full employment. FOMC procedures for setting the federal funds rate must override the operation of the price system to manage purposefully slack in the economy. Necessarily, the FOMC balances off the two competing targets of low unemployment and low inflation using the trade-off given by the empirical relationship known as the Phillips curve.

Policy in the Wicksellian monetarist tradition implicitly assumes that inflation is a monetary phenomenon. Given a rule based on maintenance of the expectation of price stability—that is, a stable nominal anchor—the stabilizing properties of the price system work well to maintain full employment. FOMC procedures that cause the federal funds rate target to track the natural rate of interest turn over to the unfettered operation of the price system the determination of real variables (output and employment).

Section 1 makes the case that transparency and accountability require the FOMC to articulate the nature of the monetary standard that it has created. Section 2 makes explicit the issues the FOMC would have to address to defend its standard narrative that economic instability always arises in the private sector. In a re-exposition of the monetarist-Keynesian debate, sections 3 and 4 make relevant this earlier debate by delineating the differences in the structure of the economy assumed by each school. The terms used, "traditional Keynesian" and "Wicksellian monetarism," are meant to be broadly suggestive rather than historically rigorous.

Section 5 furnishes an historical narrative illustrating how the actual monetary standard has changed in a way dependent upon which of these views predominated within the FOMC. These alterations constitute the experiments for testing which standard constitutes the optimal monetary standard. The FOMC should defend its choice of standard in terms of which ones have worked and not worked in the past. Section 6 reviews the monetary policy the FOMC initiated in response to the pandemic. Section 7 explains how the FOMC should reorganize its discussion to reflect its choice of the monetary standard. Section 8 illustrates why at present given the FOMC's policy of disinflation it is especially important to articulate the nature of the monetary standard in a way that makes credible a long-term stable nominal anchor. Section 9 concludes.

1. THE FED SHOULD MAKE EXPLICIT THE MONETARY STANDARD IT HAS CREATED

Constitutionally, Congress is responsible for the monetary standard. It has delegated the responsibility for creating and implementing that standard to the Fed. The relevant language in Sec. 2A of the Federal Reserve Act explains: "The Board of Governors of the Federal Reserve System and the Federal Open Market Committee shall maintain long run growth of the monetary and credit aggregates commensurate with the economy's long run potential to increase production, so as to promote effectively the goals of maximum employment, stable prices, and moderate long-term interest rates. [12 U.S.C. 225a] (as amended through P.L. 117-263, enacted December 23, 2022)

1. Belongia and Ireland (2019) argue that the monetary aggregates adjusted for changes in the output gap would work well as an FOMC intermediate target. Belongia and Ireland (2022) make the case for using Divisia aggregates. Both papers argue that money would work well as a target at the zero lower bound. Anderson, Bordo, and Duca (2015) examine the interest sensitivity of velocity. Sumner (2014) re-exposits the monetarist rule of steady money growth as nominal GDP targeting.

A statement of what constitutes a monetary standard shows how ambiguous is the congressional mandate delegated to the Fed. A monetary standard explains how the FOMC's reaction function for setting the federal funds rate gives money (the goods price of money, which is the inverse of the price level) a well-defined value. It also explains how the reaction function keeps output growing around its potential trend, which keeps employment at its "maximum" (sustainable) value. A characterization of the monetary standard requires explicitness not only about the objectives of monetary policy but also about *how* the FOMC pursues them given the constraints imposed by the structure of the economy.

In a wartime economy with rationing and price controls, operating as a central planner, the Fed can exercise at least partial direct control over its objectives. In a peacetime economy, however, the behavior of firms and households is coordinated by the decentralized operation of the price system. The FOMC must pursue its objectives through the way that its instrument, which is an interest rate (the intertemporal price of resources), interacts with the operation of the price system. The agents in the economy (households and firms) respond to the resulting signals of the price system in a way that determines the behavior of the FOMC's objectives. The monetary standard conceptualizes how the price system intermediates the two-way interaction between the behavior of the federal funds rate and the behavior of the economy.

The mandate Congress has given to the Fed is too general to determine the character of the monetary standard. The objectives of "stable prices" and "maximum employment" amount to little more than instructions to achieve all good things. As a condition for its independence to conduct monetary policy, the Fed should be transparent about the monetary standard that it has created. Accountability requires transparency and transparency is integrally related to learning. Without a clear articulation of the monetary standard, the Fed has no way of learning from the accumulation of experience. The Fed has a responsibility, now unfilled, to defend the existing monetary standard by articulating it and then by placing it in the historical context of what standards have stabilized the economy in the past and what standards have destabilized it. The Fed still has a long way to go to fulfill the program of transparency initiated by Marvin Goodfriend (1986) with his paper "Monetary Mystique: Secrecy and Central Banking." To a significant extent, the Fed remains in the "trust me" stage.

The Fed's failure to articulate the nature of the monetary standard is concerning because of the grave consequences of destabilizing monetary policy. That failure is a paradox. Significant time has passed since the Fed began operating in late 1914. Should the Fed not record what it did over time and assess when its actions were stabilizing or destabilizing? Would not the accumulation of experience over time then lead to an accumulation of knowledge about what constitutes the optimal monetary standard? To learn, however, the FOMC would have to address the simultaneity problem. Namely, the behavior of the FOMC affects the behavior of the economy, and the behavior of the economy affects the behavior of the FOMC. To learn from historical experience what kinds of monetary policies have been stabilizing or destabilizing, it is necessary to sort out the one-way causation from FOMC behavior to the behavior of the economy.

The standard FOMC narrative, however, simply attributes instability to external shocks, which monetary policy always mitigates. The implicit assumption is that the FOMC possesses the knowledge of the structure of the economy required to identify the one-way causation going from its monetary policy (rule) to the behavior of the economy. Because FOMC participants talk in detail about the state of the economy, the public assumes without questioning that the FOMC possesses the knowledge required to choose a rule for conducting monetary policy based on a solution to the simultaneity problem. The FOMC then is free to communicate a narrative in which economic instability is an inherent characteristic of a free-market economy. It follows that an independent Fed is essential to mitigate that instability.

The juxtaposition of the traditional Keynesian view and Wicksellian monetarist view below illustrates the reality that the basic issues that must be decided in the design of the optimal monetary standard

remain contentious. There remains a need for a vigorous debate over the design of the optimal monetary standard.[2]

2. SUBJECTING THE FED NARRATIVE TO SCRUTINY

The intuitive character of FOMC communication seems to render unnecessary any articulation of the monetary standard to explain how the FOMC achieves its objectives. When "maximum employment" is the primary problem, the FOMC lowers the federal funds rate to loosen conditions in financial markets. When "stable prices" is the primary problem, the FOMC raises the funds rate to tighten conditions in financial markets. Based on the (undefined) criterion of "optimal policy," FOMC participants also make quarterly forecasts of the evolution of the economy. However, intuition and undisciplined forecasts do not substitute for a monetary policy based on articulation of the structure of the economy that mediates how FOMC actions translate into the behavior of the economy.

As described above, the standard Fed narrative implicitly assumes that the FOMC has solved that simultaneity problem so that it can predictably mitigate rather than cause instability in the private sector. That is, policymakers understand the one-way causation going from their behavior to the behavior of the economy. But how? The problem is apparent in the interpretation of the FOMC's lean-against-the-wind (LAW) procedures that have formed the basis of monetary policy since their creation by William McChesney Martin in the post-1951 Treasury-Fed Accord period. With these procedures, the FOMC raises the funds rate above its prevailing value when the economy is growing unsustainably fast as measured by persistent declines in the economy's rate of resource utilization. Converse statements hold in the event of weakness in the economy.

Those LAW procedures produce a correlation between changes in the funds rate and changes in the economy's rate of resource utilization (measures of the degree of slack in the economy or an output gap). The question is how to interpret the correlation. With an interpretation in the Keynesian tradition, the FOMC is controlling the degree of slack. With the Wicksellian monetarist interpretation, the FOMC is tracking the natural rate of interest and the price system is working to keep output at potential.

The absence of money targets in central bank procedures and the routine LAW response to the behavior of the real economy can easily lead to an interpretation in the Keynesian tradition that the FOMC is balancing off competing targets for low inflation and low unemployment. That interpretation appears in the characterization of "flexible inflation targeting" (FIT) offered by Lars Svensson, the Deputy Governor of the Sveriges Riksbank at the time. Svensson (2009, p. 1-2) wrote

> The Riksbank and all other inflation-targeting central banks conduct *flexible* inflation targeting rather than *strict* inflation targeting. Flexible inflation targeting means that monetary policy aims at stabilizing *both* inflation around the inflation target and the real economy... By stabilizing the real economy I mean stabilizing resource utilization around a normal level... Because of the time lags between monetary-policy actions and their effect on inflation and the real economy, effective flexible inflation targeting has to rely on forecasts of inflation and the real economy... In the event of conflicting objectives, it achieves a reasonable compromise between the stability of inflation and the stability of resource utilization... Inflation and resource utilization are target variables here, that is, variables that are arguments of the central bank's loss function. (italics in original)

2. Bordo and Prescott (2019, 2022) argue that the Fed's federal structure ensures a vigorous debate over fundamental issues. The poster child for their position is the way that the Federal Reserve Bank of St. Louis in the 1960s and 1970s challenged the prevailing FOMC view that the control of inflation did not require the control of money growth. However, it could be that the willingness of the St. Louis Fed to challenge the status quo was an historical accident. It happened to have a Board of Directors both willing to appoint bank presidents (Delos Johns, Darryl Francis, and Lawrence Roos) who were willing to challenge the Fed narrative and to allow the directors of research (Homer Jones and Anatol Balbach) to build a research department with the resources necessary to support such a challenge.

Svensson (2009, p. 2) argued that his interpretation is "consistent with the standard quadratic loss function, $L_t = (\pi_t - \pi^*)^2 + \lambda(y_t - \bar{y}_t)^2$, where π_t denotes inflation, π^* the inflation target, $y_t - \bar{y}_t$ the output gap between output and potential output $\bar{y}_t$, and the output gap is used as a measure of resource utilization." Svensson assumes a structural model of the economy that allows the central bank to predict and to control the real economy and the relationship between the real economy and inflation. Through its knowledge of and control over slack in the economy (the output gap) and subject to the inflation-unemployment trade-offs given by the Phillips curve, the central bank can choose a socially optimal combination of inflation and unemployment. The implication of using slack in the economy (the difference between the unemployment rate and a NAIRU [non-accelerating inflation rate of unemployment] value consistent with no change in inflation) as an intermediate target to control a combination of inflation and slack implies that inflation is a nonmonetary phenomenon.

A related issue of identification is the nature of the transmission mechanism for monetary policy. Consider restrictive monetary policy, which causes a contraction in bank loans and deposits. There is an associated reduction in the debt of interest-rate-sensitive sectors of the economy and a decline in house and equity prices. These observed facts are consistent with a transmission mechanism based on the FOMC's influence on financial intermediation (the credit view). They are also consistent with a transmission mechanism based on a portfolio balance effect with which the FOMC reduces the liquidity of the public's asset portfolio below its desired amount (the monetary view).

Each version leads to a different conception of the control of inflation. With the monetary view, with its monopoly over reserves creation, the FOMC can exercise exclusive control of the trend growth of aggregate nominal demand relative to the growth of potential real output and thus can control trend inflation (Hendrickson, 2012). Inflation is a monetary phenomenon, and the central bank is an inflation creator. With the credit view, the central bank is only one of many influences on financial intermediation. The central bank is an inflation fighter.

3. THE TRADITIONAL KEYNESIAN MODEL

Since the 1951 Treasury-Fed Accord, the FOMC's choice of the monetary standard has depended on policymakers' implicit understanding of the price level as a nonmonetary or monetary phenomenon. This choice broadly reflects a traditional Keynesian or Wicksellian monetarist view of the world. To assess the validity of these contrasting views, it is useful to summarize their differing assumptions about the structure of the economy.

Traditional Keynesianism starts with the assumption that external shocks overwhelm the stabilizing properties of the price system. To maintain the full employment of resources, policymakers need to manage aggregate demand (the spending of the public). Moreover, Keynesians view the price level as a nonmonetary phenomenon. At times, inflation originates from an eclectic assortment of real factors that cause relative prices to pass through in a persistent way to the price level (cost-push inflation). At other times, inflation originates from an excessive amount of aggregate demand with money growth as a possible but not a necessary cause (demand-pull inflation). Using the interest rate (monetary policy) and the deficit (fiscal policy), policymakers should aim for a socially desirable mix of low unemployment and low inflation.

Macroeconomic instability possesses a microeconomic foundation based on two factors. First, for a variety of institutional reasons, relative prices are rigid in that they fail to vary sufficiently to clear markets in response to external shocks. The classic example is nominal wage rigidity that prevents wages from falling to maintain full employment in recessions. Second, the public's expectations of the future behavior of inflation are backward looking. They can be viewed as derived from a weighted average of current and past values of realized inflation. Because expectations are not tethered to the systematic behavior of monetary policy, policymakers can take them as given when they choose the values of their

instrument. An analogy is a ship captain steering a course through a storm. The winds that buffet the ship in no way reflect a forecast of how the captain will behave in the future.

Backward-looking expectations impart persistence to inflation shocks, causing the relative price shocks that pass through to the price level to propagate. Inflation can turn into a wage-price spiral because the expectation of inflation becomes unmoored from the FOMC's inflation target. A consistent focus on price stability would impose a significant cost in terms of high unemployment.

The failure of the stabilizing properties of the price system to maintain full employment means that policymakers must set a goal for unemployment as well as for inflation. The dual mandate goals of maximum employment and stable prices become goals for low unemployment and low inflation. The trade-off is given by the Phillips curve. The nonmonetary character of inflation is what gives substance to the ability of the Phillips curve to predict the inflation-unemployment trade-off. The two factors referred to above, inflexible dollar prices and backward-looking expectations, are the levers that make it possible for the Fed to control the amount of slack in the economy and move along the Phillips curve in a predictable way.

The FOMC moves inflation by controlling the amount of slack in the economy: the unemployment rate relative to the unemployment rate consistent with no change in inflation, the NAIRU (Modigliani and Papademos, 1975). At each meeting, the FOMC can take as given some part of nominal (dollar) prices that are determined by institutional factors and the monopoly power of corporations and labor unions. That nominal rigidity gives the FOMC a lever for controlling slack. Over time, it can offset increases in these rigid prices by increasing slack, as predicted by the Phillips curve. When the FOMC reduces an entrenched inflation, the cost in terms of slack is given by the sacrifice ratio: the number of person-years of excess unemployment required to reduce inflation by 1 percentage point.

In this world, the Fed is an inflation fighter, not an inflation creator. The behavior of the Phillips curve is the central focus of monetary policy. External forces produce headwinds in this fight (cost-push inflation) by raising the level of the Phillips curve or tailwinds (cost-pull deflation) by lowering the level of the Phillips curve. Discretion is required to choose a socially optimal combination of inflation and unemployment. The desirability of discretionary management of aggregate demand to manage Phillips curve trade-offs is necessitated by the existence of cost-push inflation. The higher is cost-push inflation, the higher is the unemployment rate (the NAIRU) required to restrain inflation. The presumed existence of cost-push inflation in the 1970s formed the rationale for the Fed's tolerance of high rates of inflation. That is, the Fed assumed that it needed to allow significant inflation to maintain a socially desirable amount of low unemployment.

The character of monetary policy must change over time with the evolution in the behavior of the Phillips curve. Following that evolution necessarily requires discretion. A rule is impractical because of lack of knowledge of how the Phillips curve will evolve. Mary Daly (2023), president of the San Francisco Fed expressed this view:

> Policymakers have to respond to an economy that is evolving in real time and prepare for what the economy will look like in the future... Before the pandemic and the current episode of high inflation, the world was starkly different. The principal and decade-long challenge for the Federal Reserve and most other central banks was trying to bring inflation up to target, rather than pushing it down... Large structural forces were to blame. The most notable was population aging... Despite sustained monetary policy accommodation after the Great Recession, annual personal consumption expenditures (PCE) inflation remained below 2% for 84 out of 98 months... Over that same period, the federal funds rate was set near zero almost half of the time... Let me offer four things that I think could be important for our future inflation path. One is a decline in global price competition... Another potential factor affecting future inflation is the ongoing domestic labor shortage... Inflation pressures could also move upward as firms make the transition to a greener economy... If the old dynamics are eclipsed by other, newer influences and the pressures on inflation start pushing upward instead of downward, then policy will likely need to do more.

Consistent with the assumption that economic instability arises in the private sector, it follows that financial markets are also one source of economic instability. For most of its history, the Fed refrained from intervening in credit markets to allocate credit (Goodfriend, 1994). However, beginning with the Bernanke FOMC, the Fed reinvented itself as a combination central bank and housing GSE. Under the presumption that financial markets fail to assess risk adequately and that the Fed can stimulate aggregate demand by stimulating financial intermediation, the Fed has made the size and composition of the asset side of its balance sheet an independent instrument of aggregate-demand stabilization.

4. WICKSELLIAN MONETARISM

In fall 1982, the FOMC abandoned the experiment of setting a target for the monetary aggregate M1 when its growth changed from procyclical to countercyclical. The precipitating factor was a reduction in the cost of moving funds electronically between money market instruments and bank deposits. When money market interest rates change, banks only tardily adjust the rates they pay on deposits. The public then possesses an incentive to reintermediate funds into bank deposits when market rates decline and disintermediate funds from bank deposits when market rates rise. The resulting inflows into or outflows out of bank deposits from money market instruments used primarily as savings rather than transactions instruments change the liquidity incorporated in bank deposits. M1 then ceased to measure the liquidity in the public's asset portfolio. Specifically, weakness in the economy and the accompanying decline in market interest rates caused M1 growth to strengthen without signaling an expansionary monetary policy. A target for M1 growth would inappropriately indicate that the federal funds rate should rise rather than fall.

The fact that the monetary aggregates M1 and M2 no longer serve as accurate measures of the liquidity of the public's asset portfolio does not mean that the liquidity desired by the public is no longer captured by a stable functional form. The FOMC still needs to control reserves creation to allow bank deposit creation to provide the public with the liquidity it desires in an environment of expected price stability. The rule that controls liquidity (money) creation to be consistent with price stability possesses a demand and a supply aspect.

The demand aspect comprises a rule that creates the expectation of price stability. The seller in a transaction accepts money because they believe that it will possess value in exchange in the future. The rule disciplines the expectation that a dollar will possess a stable value for an average of the transactions that could arise in the future for the seller. The supply aspect entails procedures that cause the funds rate to track the natural rate of interest. (The natural rate of interest is the real interest rate that controls the intertemporal allocation of aggregate demand to maintain contemporaneous demand equal to potential output.) As explained below, the practical implementation of such a rule suggests the label "LAW with credibility."

With the funds rate tracking the natural rate of interest, real output grows in line with growth in potential output. Money demand then grows in line with growth in potential output. Given the FOMC's interest rate target, banks accommodate the demand for money through their deposit creation. Because money grows in line with potential output, it remains consistent with price stability. Alternatively, with output equal to potential, the New York Desk does not need to defend its interest rate target by monetizing excess supply in the bond market arising from excess demand in the goods (output) market. Consequently, it avoids creating destabilizing monetary emissions. (Converse statements hold for preventing monetary contraction.)

Specifically, with an FOMC interest rate target, increases in the demand for money are accommodated by commercial bank creation of deposits. That is, if the public wants additional deposits, it sells securities to banks and the banks create the deposits. The associated increased reserves demand is met

as the result of the New York Desk's buying of Treasury securities to prevent increases in the funds rate above its interest rate peg. With an interest rate instrument, the discipline required for monetary control emerges from procedures that allow the price system freedom to operate and thus avoid interference with its stabilizing properties. Such interference is the macroeconomic equivalent of price fixing and creates destabilizing changes in bank deposits and the liquidity of the public's asset portfolio (measured by destabilizing fluctuations in the monetary aggregates before the early 1980s).

The equation of exchange is written as $MV = py$. (M is money, V is the velocity of money, p is the price level, and y is real output.) As described above, a rule that causes the funds rate to track the natural rate of interest and thus maintains growth in output, y, equal to growth in potential output maintains the demand for money, the inverse of V, consistent with the expectation of price stability. Given the funds rate target, money grows at a rate consistent with price stability. All the variables in the equation of exchange are endogenous and determined in a way shaped by the FOMC's rule.[3] However, a failure of FOMC procedures to respect the working of the price system by failing to keep the funds rate in line with the natural rate of interest creates destabilizing monetary emissions or contractions. The standard interpretation of the equation of exchange, with money an independent variable, is then appropriate.

Why should one accept the fundamental premises of Wicksellian monetarism that inflation is a monetary phenomenon and that the natural rate of interest determined by market forces clears the goods market? The reason is that they bring coherence to the Volcker-Greenspan policy that produced the Great Moderation. The relevant model is the New Keynesian model of Goodfriend and King (1997). In their model, price stability turns the determination of real variables (output and employment) over to the real business cycle core of the economy. Price stability allows the stabilizing properties of the price system to maintain full employment. Broaddus and Goodfriend (2004, pp. 3, 9) use the Goodfriend-King model to capture the spirit of the Volcker-Greenspan era:

> The case for maintaining price stability—in the United States and elsewhere—is rooted in experience and theory, which indicate that monetary policy best supports employment, economic growth, and financial stability by making price stability a priority... The long campaign from the late 1970s through the early 1990s to reduce inflation and establish price stability arguably succeeded only when the Fed finally acquired credibility for low inflation in the eyes of the public in the late 1990s. Indeed, the acquisition of this credibility was essentially equivalent to establishing price stability—two ways to describe the same achievement. Similarly, the Fed needs to acquire credibility for *sustaining* price stability going forward. (italics in original)

To give empirical content to the rule that implements the separation of the behavior of the real economy from maintenance of price stability, it is necessary to incorporate Aoki (2001). Aoki classifies firms as belonging to the flexible-price sector in which prices are set in auction markets and firms belonging to the sticky-price sector in which firms set prices for multiple periods. Through a credible rule, the FOMC can control the expectation of inflation of firms in the sticky-price sector and cause them all to coordinate on the FOMC's inflation target—ideally, price stability. The rule then ties down trend inflation while allowing transitory fluctuations originating in the flexible-price sector to pass through to headline inflation. Because only the interaction between inflation and sticky prices distorts the optimal allocation of resources, this distinction is desirable. Moreover, by controlling trend inflation through controlling the expectation of inflation in the sticky-price sector, the FOMC is free to implement procedures that cause the funds rate to track the natural rate of interest.

The failure of markets to clear in recession and the accompanying unemployment comes from monetary instability, which takes the form of an unpredictable evolution of the price level. Firms that

3. Money is like a "stick in the closet." If expected inflation exceeds price stability, the FOMC can raise the federal funds rate; create a monetary contraction that sets off a negative portfolio balance effect, depressing output; and restore credibility for price stability.

set dollar prices for multiple periods do so based on an expectation of the future price level. Without a stable nominal anchor in the form of the expectation of price stability, different firms in the sticky-price sector will base their price setting on different values of the expected future price level. Moreover, there is no guarantee that whatever expected value firms choose will be consistent with the value ultimately determined by monetary policy. Setting market-clearing relative prices will then be problematic. Because the public forms its expectations in conformity with the monetary policy followed by the Fed, assuming that policy is clearly articulated and pursued consistently, a policy of price stability eliminates monetary instability as the major source of economic instability.

Households and firms are forward looking. Provided that the FOMC operates with a rule that makes the evolution of the price level predictable, ideally through a policy of price stability, agents can sort out changes in the price level from changes in relative prices (Lucas, 1972). They can then make optimal allocative decisions. A policy of keeping sticky-price inflation steady while allowing flexible-price inflation to fluctuate freely facilitates the unhindered determination of relative prices (Aoki, 2001). Moreover, as long as the FOMC allows the price system to operate, despite shocks to the economy, agents will remain optimistic about the future. They will then maintain their current consumption to smooth their consumption over time.

Confusion exists over the monetary control feature of the procedures developed in the Volcker-Greenspan era because they do not entail a feedback rule for eliminating misses in money from target. Confusion also exists over the FOMC's concentration on the restoration of the expectation of price stability in the Volcker-Greenspan era as opposed to direct targeting of inflation. Direct targeting of the price level though a feedback rule using the FOMC's instrument for implementing policy runs afoul of Friedman's "long and variable lags" phenomenon as Friedman (1960, pp. 87-8) illustrated with just such an example[4,5]:

> There is much evidence that monetary changes have their effect only after a considerable lag and over a long period and that the lag is rather variable... Under these circumstances, the price level—or for that matter any other set of economic indicators—could be an effective guide only if it were possible to predict, first, the effects of non-monetary factors on the price level for a considerable period of time in the future, second, the length of time it will take in each particular instance of monetary actions to have their effect, and third, the amount of effect of alternative monetary actions.

The reference to "non-monetary factors" can be taken to be the behavior of relative price changes originating in the flexible-price sector that pass through to the price level. The reference to "any other set of indicators" generalizes the argument to a criticism of any policy of aggregate-demand management designed to control the behavior of real variables (fine tuning). After the above quotation, Friedman argues that such a policy would founder in that the phenomenon of long and variable lags would lead to destabilizing go-stop monetary policy. Friedman's vindication came in the 1970s with the FOMC's policy of aggregate-demand management turned into stop-go monetary policy.

Despite the need to start from a model, it is important to appreciate that models are abstractions. Policymakers do not know the structure of the economy except very generally in the form of beliefs about basic principles and are ignorant of the equilibrium values of real variables (the natural rate of interest, the natural rate of unemployment, and potential output with the concomitant value of the

4. Hetzel (2022a, chap. 23) argues that the European Central Bank (ECB) was responsible for the 2008-2009 recession in the Eurozone by attempting to directly target the price level in 2008, which was elevated because of a world inflation shock due to an increase in commodity prices caused by the integration of the BRIC's (Brazil, Russia, India, and China) into the world economy.

5. Milton Friedman (1960) advocated steady growth in the money stock. At the time he formulated the rule, monetary aggregates existed that were relatively interest inelastic and that bore a predictable relationship to the nominal expenditure of the public. Steady growth in nominal expenditure would have provided a stable nominal anchor by maintaining rough price stability. It would also have turned over to the unfettered operation of the price system the determination of the real rate of interest and other real variables (output and employment).

output gap). It follows from the Goodfriend-King model that FOMC procedures must cause the real funds rate to track the natural rate of interest and in so doing turn the determination of real variables over to the unfettered operation of the price system. Without a structural model of the economy, the procedures that cause the funds rate to track the natural rate of interest must be determined through empirical investigation of Fed history. In the past, what FOMC procedures have been associated with price stability and, by implication, have satisfied this condition?

Such an investigation must start in the post-Treasury-Fed Accord period with the invention of the aforementioned lean-against-the-wind (LAW) procedures by William McChesney Martin and his assistant Winfield Riefler. As an empirical matter, Hetzel (2008, 2012, and 2022a) terms the FOMC procedures associated with price stability "LAW with credibility." LAW with credibility focuses on an ongoing assessment by the FOMC of whether the economy's rate of resource utilization is increasing or decreasing in an unsustainable way (the unemployment rate is decreasing or increasing in a persistent way). In the event of unsustainable strength or weakness, the FOMC raises or lowers the funds rate in a sustained way to counter persistent changes in the rate of resource utilization.

When the rate of resource utilization is steady, the economy is growing at potential. However, when the economy is growing unsustainably fast and the rate of resource utilization is rising persistently, the real funds rate lies below the natural rate of interest—and conversely in the event of weakness. These LAW procedures move the funds rate in a way that discovers the natural rate of interest, which keeps the economy growing at potential.[6]

Starting with the Volcker era, the concern for nominal expectational stability prompted the FOMC to make preemptive increases in the funds rate to prevent the emergence of inflation. Through 1994, this concern caused the FOMC to make these preemptive changes based on the FOMC's observation of long-term bond rates for confirmation that markets believed that funds rate changes would cumulate to whatever extent required to maintain price stability (Goodfriend, 1993). After 1994, when the FOMC's preemptive increases in the funds rate vanquished the bond market vigilantes, the criterion for such preemptive increases became evidence of overheating in labor markets. Credibility for price stability was critical to the operation of the Volcker-Greenspan version of LAW. With such credibility, the stabilizing properties of the price system work because the yield curve responds in a stabilizing way to, say, news that the economy is growing faster than anticipated with all the rise in forward rates taking the form of real increases rather than increases in inflation premia.

With this framework, one can give content to how monetary policy transmits to the economy. There are two cases. When the FOMC follows its LAW with credibility procedures, the price system works well to keep output fluctuating around potential. Money is a veil. Monetary policy is passive in

6. That is, they keep the output gap equal to zero by tracking the natural rate of interest. The exposition follows Barsky et al. (2014). The real rate of interest, r_t, is $r_t = i_t - E_t\pi_{t+1}$ where i_t is the market rate of interest and π_{t+1} is expected inflation. The natural rate of interest, r_t^n, equals (1).

$$r_t^n = \rho_t + s^{-1}E_t(\Delta y_{t+1}^n) \tag{1}$$

where y_t^n is the natural rate of output, ρ_t is the subjective rate of time preference, and s is the intertemporal elasticity of substitution in consumption. The output gap equals $\tilde{y}_t \equiv y_t - y_t^n$.

Using (1) and its counterpart, the household Euler equation expressed in actual values of the real rate of interest and output, using the output gap, and solving forward yields (2).

$$\tilde{y}_t = -s\sum_{k=0}^{\infty} E_t(r_{t+k} - r_{t+k}^n) \tag{2}$$

That is, the output gap equals the sum of future interest-rate gaps. Finally, (3) expresses the NK Phillips curve.

$$\pi_t = \beta E_t[\pi_{t+1}] + k\tilde{y}_t \tag{3}$$

As Barsky et al. (2014, p. 38) note, "An interest rate path in which the actual real rate is always equal to the natural rate achieves both an output gap of zero... and zero inflation." The former implication follows from (2). The latter follows from (3) because with price stability actual and expected inflation are equal and $\tilde{y}_t$ equals zero.

its effect on the real economy. In the second case in which FOMC procedures for implementing policy interfere with the unfettered operation of the price system through eschewing preemptive funds rate increases, thereby imparting cyclical inertia to the required funds rate changes, monetary policy exerts its influence on the real economy through a (destabilizing) portfolio balance effect.

Specifically, if the FOMC maintains its target for the funds rate below the natural rate of interest by failing to follow LAW with credibility procedures, the resulting money creation stimulates the expenditure of the public by increasing the liquidity (moneyness) of the public's asset portfolio. The open market purchases required to maintain an unsustainably low funds rate target replace illiquid assets like long-term Treasuries and mortgage-backed securities (MBS) in the public's portfolio with liquid bank deposits. The public is reconciled to holding a more liquid asset portfolio through expenditure on illiquid assets (equities, houses, consumer durables) that raises their prices. The resulting increase in the price of these illiquid assets relative to their service flows produces an increase in investment that raises the stock of such assets (Tobin's Q; Friedman, 1961 [1969]).

With LAW with credibility, the natural rate of interest moves in a measured way with strength or weakness in the economy. However, destabilizing money creation that sets off a portfolio balance effect initiates changes in the natural rate of interest, making it hard to track. The time required for the effects of the portfolio balance effect to work themselves out on asset prices and expenditures accounts for the Friedman phenomenon of "long and variable lags." Unwinding an inflationary monetary policy and its effect on asset prices requires a cyclically high real rate of interest and a problematic recourse to creating slack in the economy.

With purposeful money creation through open market purchases in the form of quantitative easing (QE), there are three separate cases. The first case, relevant to the early part of the recovery from the Great Recession, is when the natural rate of interest is negative, and the funds rate is at the zero lower bound (ZLB). QE and the stimulus associated with the portfolio balance effect is desirable in that it raises the natural rate of interest. The second case, relevant to the preemptive increases in the recovery by the Yellen FOMC, is when the FOMC is following a neutral monetary policy (LAW with credibility). As long as FOMC procedures maintain aggregate demand growing in line with growth in potential output, the money creation associated with QE possesses no predictive ability for nominal or real output. The third case, relevant to the QE starting March 2020, occurs with forward guidance that promises to maintain the funds rate at the ZLB until inflation rises. In this case, money creation is helicopter money and is ultimately inflationary. There is a difference in degree but not in kind from the monetization of government debt practiced in a country like Zimbabwe or Venezuela.

LAW with credibility preserves the sharp distinction between monetary policy and credit policy. From the March 1951 Treasury-Fed Accord lasting through fall 2008, the Fed scrupulously avoided intervention in credit markets to allocate credit. The allocation of credit is inherently political. Favoring some borrowers over others is fiscal policy, which by the Constitution is reserved for Congress. Goodfriend (1994) especially argues that involvement in credit policy poses dangers for the Fed's independence to conduct monetary policy. Given a stabilizing path for the funds rate and a yield curve that fluctuates with the risk-free interest rate, avoidance of intervention in credit markets leaves to the private sector how many IOUs (credit) get created, with what risk and liquidity premia, and the allocation of credit among competing uses.

The fact that the FOMC implements monetary policy by setting a target for an interest rate, the funds rate, leaves ambiguous the role of the interest rate in the transmission of monetary policy. According to the Keynesian tradition, monetary policy works through its influence on financial intermediation. It is then just one influence on aggregate nominal demand and inflation. A large bank or collection of banks like Bank of America and JPMorgan Chase could act like a central bank by raising interest rates and tightening credit conditions. Starting in early 2009 and again in March 2020, the Fed

bought massive amounts of MBS. Because FNMA also buys MBS, it can duplicate this aspect of FOMC policy. However, according to Wicksellian monetarism, the interest rate is a part of the price system with the natural rate of interest as a price that clears the goods market. The ideal rule gives the price system free rein to regulate the real economy and avoids the allocation of credit.

The ideal rule that makes money a "veil" appears in Friedman's (1974) quotation from John Stuart Mill (1848 [1987], p. 488):

> There cannot... be intrinsically a more insignificant thing... than money; except in the contrivance for sparing time and labor. It is a machine for doing quickly and commodiously, what would be done, though less quickly and commodiously, without it: and like many other kinds of machinery, it only exerts a distinct and independent influence of its own when it gets out of order.

Friedman (1974, p. 349) then added, "Mill was perfectly correct although one must add that there is hardly a contrivance man possesses that can do more damage to a society when it goes wrong."

5. USING NARRATIVE HISTORY TO SORT OUT THE SOURCE OF ECONOMIC INSTABILITY

The FOMC has no choice but to make monetary policy based on a belief about the general structure of the economy that intermediates between its actions and the behavior of the economy. Since the 1951 Accord, those beliefs can be characterized as falling into one or the other of two classes, the Keynesian tradition or Wicksellian monetarism. That fact provides the "experiments" for assessing the optimal monetary standard. Learning about the source of macroeconomic instability requires a narrative history that treats changes in the monetary standard as semi-controlled experiments yielding predictions about the source of instability. Unfortunately, policymakers never articulate their understanding of the monetary standard they have created. As a result, there is no consensus over the characterization of the monetary standard and how changes in it can serve as semi-controlled experiments. There is then no clear way to learn from historical experience. Researchers interested in an alternative to the Fed narrative must construct a history that elucidates policymakers' understanding of their world and how that understanding shaped the pursuit of the objectives they took as their responsibility.

The alternations in the monetary standard can be expressed in terms of a two balls metaphor. When policymakers treated the price level as a nonmonetary phenomenon and dismissed the stabilizing properties of the price system, they pursued two competing, independent objectives—low unemployment and low inflation. That is, they tried to juggle two balls (the Keynesian tradition). When policymakers treated the price level as a monetary phenomenon and accepted the stabilizing properties of the price system, they pursued the single goal of price stability. They juggled a single ball (Wicksellian monetarism). This distinction serves as a marker for identifying the character of the monetary standard and its changes over time.

In March 1951, the Treasury-Fed Accord restored to the Fed its independence from the Treasury.[7] Starting with the Roosevelt administration in 1933, the Fed had been subservient to the Treasury, whose dominant concern was with selling its debt at a low, stable interest rate. In World War II, the Fed operated under the constraint that it had to buy all the bonds the Treasury could not sell at an interest rate of 2½ percent. That imposed peg was still in effect at the start of the Korean War. When the Chinese crossed the Yalu River and created the prospect of a World War III, the fear of a return to wartime price controls and shortages led to an increase in the price of commodities and in inflation. Banks and insurance companies sold Treasury securities, which the peg forced the Fed to buy and monetize. Governor Marriner Eccles, who earlier had been FOMC chairman, talked about the Fed as "an engine of inflation."

7. See Hetzel (2008, 2012, 2022a and 2022b) for a detailed defense of the generalizations summarized in this section.

Unlike their Keynesian counterparts in academia, the confidence gained by the victory in WWII reinforced in Fed policymakers (such as the new FOMC chairman William McChesney Martin) a belief in free markets. They did not want a return to wartime price controls and shortages. They had a firm attachment to price stability, which would obviate the need for price controls. The concern that the Truman administration would turn to Congress if the Fed abandoned its role as buyer of last resort for Treasury debt had constrained the Fed after the war. However, pushed by the deceitful way in which it was treated by the Treasury and administration and emboldened by the rift between Congress and the administration over the firing of General Douglas MacArthur, the FOMC credibly threatened to unilaterally abandon the peg. The result was the March 1951 Accord (Hetzel and Leach, 2001a and 2001b).

The problem for the Fed was what to do after having regained its independence from domination by the Treasury, which lasted from 1933 until 1951. In the aftermath of WWII, real bills as a guiding principle collapsed. The failure of a credit structure built on government debt, rather than on real bills to collapse leading to depression and deflation discredited the real bills doctrine. In filling the void left by the obvious failure of real bills as an organizing principle, FOMC chairman William McChesney Martin and his aide Winfield Riefler created the modern central bank through a monetary policy organized around LAW procedures, which Martin coined.[8]

The two related imperatives of policy were a commitment to price stability and a determination to remain free of Treasury control. For Martin, the rationale behind LAW was that persistent excess growth in output reflected in persistent increases in the economy's rate of resource utilization would generate excess demands for credit, which would be inflationary. Despite breaking with real bills, he retained the view that inflation came from speculative excess caused by excessive growth in credit. Martin wanted steady growth in credit in line with growth in the economy. However, he could not set a target for credit growth, which would create pressure from the Treasury to set the target at a level that would accommodate Treasury debt issuance. LAW would discipline credit growth indirectly through the way in which free reserves targets influenced bank credit growth by causing free reserves to vary inversely with strength in output growth. Also, LAW conveyed the message to the public that the focus of monetary policy should be on the health of the economy not on keeping interest rates low to facilitate the financing of government debt.

LAW procedures developed only over the course of the 1950s. Inflation rose to 3 percent in 1955 and 1956. Policymakers understood that rise in inflation as the result of a failure to tighten sufficiently quickly as the economy recovered from the 1953-1954 recession. After the 1958 recession, undertaken to restore price stability, Martin settled on LAW with preemptive increases in interest rates, termed here LAW with credibility. Martin also used long-term bond rates as indicators of inflationary expectations and rejected the former real bills focus on stock market prices and inventory accumulation as evidence of speculative excess.

Finally, Martin implemented LAW through a policy of "bills only," that is, of restricting the Fed's portfolio to short-term Treasury securities. "Bills only" precluded credit policy, which entailed the allocation of credit. To support that policy, Martin worked to develop the market for government bonds so that the Fed could confine its operations to bills and avoid Treasury pressure to intervene to support the price of long-term Treasury bonds. That priority reflected a belief in the stabilizing properties of free markets.

Originally, LAW concentrated on price stability. The Eisenhower administration supported price stability and believed that confidence in the dollar was the bedrock for the success of the Bretton Woods

8. Martin never admitted that the Fed had an interest rate target. The FOMC effectively controlled short-term interest rates indirectly, however, by setting a target for free reserves, excess reserves of banks minus discount window borrowing. These procedures determined the marginal cost of bank reserves as the sum of the discount rate plus an amount inversely related to the level of free reserves.

system of pegged exchange rates. Supported by the conservative Douglas Dillon Treasury, the Kennedy administration deferred to the Martin FOMC because of Kennedy's desire to avoid a dollar crisis while dealing with the Cuban missile crisis.

At the same time, the Walter Heller Council of Economic Advisors (CEA) in the Kennedy administration was quintessentially Keynesian. It advocated 4 percent as a national objective for unemployment. Although the target was not constraining in the Kennedy administration, it became a constraint on the FOMC in the Johnson administration. Conflict between the Fed and the Johnson administration emerged over preemptive increases in interest rates to prevent the emergence of inflation. The Heller CEA wanted increases only as the recovery from the 1960-1961 recession had proceeded sufficiently to ensure 4 percent unemployment.

During the Johnson administration, the political system united in pressuring the Fed to add low unemployment as an objective of monetary policy. With the riots in inner cities (such as in Watts in Los Angeles), with a militant civil rights movement, and with protests over the Vietnam War and flag burning, Congress and the administration formed a consensus for the desirability of low unemployment as a social balm for a deeply fractured society. Keynesian economists, who had been sidelined up to that point, became vocal in promising to deliver with fiscal and monetary policy a low unemployment rate accompanied by only a modest amount of inflation.

Hampered by a divided Board of Governors, Martin tried to forestall inflation by lobbying for a tax increase to balance the budget and pay for the guns and butter programs of the Johnson administration. When Martin held off raising interest rates to encourage Congress to pass a tax increase and presumably to make higher interest rates unnecessary, money growth and inflation surged. Congress did pass a tax surcharge in June 1968, which turned a deficit into a surplus. If the Keynesian consensus had been correct about the power of the deficit for economic stabilization, the resulting surplus should have more than offset a monetary policy that held the real rate of interest below the natural rate of interest, as evidenced by high rates of money growth. In the event, economic stability both real and nominal required a monetary policy that tracked the natural rate of interest and that ensured moderate growth in money.

Martin realized his mistake too late. Although he implemented a contractionary monetary policy in 1969 intended to restore price stability, his term as chair ended in January 1970, too soon to succeed. In contrast, with their nonmonetary view of inflation, Keynesians focused on the presumed trade-offs offered by the Phillips curve and accepted 4 percent as a target for full employment. They had interpreted the behavior of the Phillips curve earlier in the 1960s as evidence favoring this view. With unemployment in excess of 4 percent during the recovery from the 1960 recession, price stability had prevailed. From 1960:Q1 to 1966:Q1, core CPI inflation averaged only 1.3 percent. Furthermore, when the unemployment rate fell below 4 percent in the second half of the 1960s, reaching 3.9 percent in 1966:Q1 and 3.4 percent in 1968:Q4, inflation (core CPI) rose, averaging 5.8 percent from 1967:Q4 through 1970:Q4.

With 4 percent the assumed level of unemployment consistent with full employment, inflation should not have been a problem as the unemployment rate rose from its cyclical low starting in January 1970. Although the unemployment rate rose from 3.5 percent in December 1969 to 6.1 percent in December 1970, inflation did not abate. Instead, inflation (core CPI) averaged 6.5 percent in 1970. Instead of giving up on the Phillips curve, however, Keynesians explained high inflation as arising from cost-push forces that raised its level. FOMC chair Arthur Burns accepted the Keynesian view that the inflation that arose when the unemployment rate exceeded its presumed full-employment rate of 4 percent had to be due to cost-push forces. With 6 percent unemployment and 6 percent inflation in 1970, Burns believed that inflation arose from the exercise of the monopoly power of corporations and labor unions.

Consequently, controlling inflation required raising unemployment, a difficult task in a deeply divided society. Burns lobbied for wage and price controls to lessen the pain of such a trade-off and regularly held off raising the funds rate as part of getting the policy he wanted from Congress and the administration. Burns dismissed the inflationary consequences of high rates of money growth. The result was stop-go monetary policy combined with an inflation rate that rose over the decade of the 1970s.

The Keynesian aggregate-demand policy of the 1970s oscillated between either expansionary or contractionary monetary policy as Friedman (1960) had predicted. As summarized in the title of Burns's (1979) defense of his tenure as FOMC chairman, *The Anguish of Central Banking*, the FOMC allowed high inflation to avoid the presumed social cost of raising unemployment to suppress inflation understood as cost-push.

Goodfriend (2005, pp. 244, 245, and 247) summarized monetary policy (LAW with trade-offs) in the 1970s:

> Inflation would rise slowly as monetary policy stimulated employment in the go phase of the policy cycle. By the time the public and Fed became sufficiently concerned about rising inflation for monetary policy to act against it, pricing decisions had already begun to embody higher inflation expectations. At that point, a given degree of restraint on inflation required a more aggressive increase in short-term interest rates, with greater risk of recession... The absence of an anchor for inflation caused inflation expectations and long bond rates to fluctuate widely... [It] became increasingly difficult to track the public's inflation expectations to tell how nominal federal funds rate policy actions translated into real rate actions.

The change in the monetary standard between the Arthur Burns and G. William Miller FOMCs to the Paul Volcker and Alan Greenspan FOMCs offers a test of traditional Keynesian and Wicksellian monetarism. In the Volcker-Greenspan era, the overriding desire to return to price stability and nominal expectational stability disciplined policy. In practice, that discipline required preemptive increases in the funds rate to prevent the emergence of inflation. Monetary policy returned to Martin's original preferred policy of LAW with credibility.

By the time Volcker became FOMC chairman in August 1979, spurred by the Newsweek columns of Milton Friedman, public opinion had changed from blaming inflation on the exercise of private monopoly power to blaming it on the Fed. However, success of a policy of disinflation was far from assured. It was uncertain whether Jimmy Carter and then Ronald Reagan would tolerate a serious recession, much less Congress and the public. Also, the Keynesian consensus in academia held that price stability would require recurrent recourse to socially unacceptable high rates of unemployment. The commentary of Paul Samuelson (1979 [1986], p. 972) with its obvious reference to Milton Friedman and the latter's trip to Chile expressed the consensus:

> Today's inflation is chronic. Its roots are deep in the very nature of the welfare state. [Establishment of price stability through monetary policy would require] abolishing the humane society [and would] reimpose inequality and suffering not tolerated under democracy. A fascist political state would be required to impose such a regime and preserve it. Short of a military junta that imprisons trade union activists and terrorizes intellectuals, this solution to inflation is unrealistic—and, to most of us, undesirable.

Instead, the Volcker-Greenspan policy restored price stability and produced the Great Moderation.[9]

Given his commitment to a disinflationary monetary policy, Volcker had to convince markets that it was not a repeat of the stop phase of a continued go-stop monetary policy. Initially, he attempted to do so by giving substance to money targets, which the FOMC had vitiated in the 1970s by changing

9. See the articles in Federal Reserve Bank of St. Louis Review (2005) and Hetzel (2022b), who summarizes Goodfriend's account of the change in the monetary standard that occurred with Volcker.

the base for targeted growth rates each quarter to incorporate the misses in money. When the velocity of M1 fell in 1982, the Fed gave up on money as an operational target. (Greenspan continued to follow M2 until FDICIA; the FDIC Improvement Act, passed in December 1991, caused velocity to rise as banks pushed out interest-sensitive deposits to limit required capital.) Volcker then returned to LAW procedures but with a focus on forestalling an increase in inflationary expectations, which would propagate into higher inflation.

The bond market vigilantes, who had been burned by the inflation of the 1970s, held the Volcker FOMC's feet to the fire. Sensitive to any evidence of the reemergence of an expansionary go phase in monetary policy, they raised bond rates at any sign that the FOMC would allow a trade-off of strong growth and low unemployment for increased inflation. To discipline inflationary expectations, Volcker restored the preemptive increases in the funds rate favored by Martin. Volcker's successor, Alan Greenspan, would continue the campaign to restore genuine price stability rather than the 4 percent inflation he inherited. Greenspan, a disciple of Ayn Rand, worked to restore the expectation of price stability that had characterized the gold standard. He used signs of overheating in labor markets (not "low" unemployment) as a signal of the need for preemptive increases in the funds rate to forestall the reemergence of inflation. When in 2003 Greenspan (2004, p. 35) expressed satisfaction at the restoration of price stability, he commented "Unstinting and largely preemptive efforts over two decades had finally paid off" (cited in Orphanides 2006, p. 178). The period after the initial Volcker disinflation earned the moniker of the Great Moderation for its real and nominal stability.

Athanasios Orphanides summarized how the Volcker-Greenspan monetary standard concentrated on the objective of price stability implemented with preemptive increases in the funds rate. Orphanides (2006, p. 178) wrote: "One of the most significant improvements in monetary policy since 1979 can be identified with the reaffirmation of the unique role of price stability as an operational objective for monetary policy. . . . Both chairmen also identified the value of preempting destabilizing forces, when possible." Orphanides (2006, p. 179) excerpted the commentary of Greenspan (1989) on the bill of Rep. Neal (D. NC) to change the Federal Reserve Act to make price stability the unique goal of monetary policy:

> The Zero-Inflation Resolution represents a constructive effort to provide congressional guidance to the Federal Reserve... Legislative direction as to the appropriate goals for macroeconomic policy in general and monetary policy in particular have been provided before. Unfortunately, the instructions have defined multiple objectives for policy, which have not always been entirely consistent—at least over the near term. The current resolution is laudable, in part because it directs monetary policy toward a single goal, price stability, that monetary policy is uniquely suited to pursue.

The discipline of restoring a stable nominal anchor in the form of the expectation of price stability required that monetary policy abandon pursuit of low unemployment as an independent objective. The emphasis changed to LAW with credibility with its focus on the elimination of growth gaps (stabilization of the economy's rate of resource utilization) rather than on achievement of a "low" rate of unemployment deemed socially desirable. Greenspan (U.S. Cong. 1999, p. 19) testified to Congress: "We cannot tell... what the actual potential [growth rate] is... but it shouldn't be our concern. Our concern should be the imbalances that emerge." Greenspan (U.S. Cong. 2000, p. 14) reiterated the point in rejecting criticism that raising interest rates limited growth in the economy.

> The question of how fast this economy grows is not something the central bank should be involved in... What we are looking at is basically the indications that demand chronically exceeds supply... The best way to measure that is to look at what is happening to the total number of people who... are unemployed... What... we are concerned about is not the rate of increase in demand or the rate of increase in supply, but only the difference between the two... We don't know whether the potential growth rate is 4, 5, 6, or 8 percent. What we need to focus on... is solely the difference between the two.

LAW with credibility ignores Phillips curve trade-offs and leaves the behavior of the real economy and the determination of unemployment to the unfettered operation of the price system.

The Great Moderation ended with the Great Recession. Although popularly attributed to a disruption in bank lending produced by the housing bust, contractionary monetary policy offers an explanation in line with earlier recessions. A characteristic of postwar recessions is that, in the recovery after the past recession, the FOMC had failed to implement the preemptive increases in the funds rate required to maintain low inflation. When inflation rose, the FOMC initiated sustained increases in the funds rate until the economy weakened. Despite the weakness in the economy, the FOMC limited reductions in the funds rate out of concern that it would be sending the signal to financial markets that it was resigned to a higher rate of inflation.

The Great Recession diverged from this pattern in two respects. First, inflation came from an inflation shock powered by an increase in commodity prices due to the integration of the BRICs (Brazil, Russia, India, and China) into the world economy. From $20 per barrel in January 2002, the price of a barrel of oil (WTI) rose from $20 to $134 in June 2008. Headline PCE inflation rose from 0.8 percent in 2002:Q1 to almost 4 percent in 2008:Q3. With some passthrough from headline inflation, core PCE inflation (four quarter percentage changes) rose from 1.3 percent in 2003:Q3 to 2.2 percent over the interval 2006:Q2 to 2008:Q3.

Second, initially, the FOMC did lower the funds rate in response to the recession, which began in December 2007. By its April 30, 2008, meeting, the FOMC had lowered the funds rate to 2 percent. After the April meeting, however, the FOMC remained focused on high headline inflation for fear that it would raise the inflationary expectations of the public. The FOMC sent the message to markets that the next change in the funds rate would likely be an increase. The consensus was that the zero realized real funds rate (a 2 percent funds rate and underlying inflation of 2 percent) made monetary policy undesirably stimulative in an environ*ment of high inflation. The June 24-25, 2008, FOMC minutes (Board of Governors,* FOMC Minutes 6/24-25/2008, pp. 6-8) released in the inter-meeting period after an FOMC meeting captured the consensus:

Participants continued to see significant downside risks to growth. At the same time, however, the outlook for inflation had deteriorated. Recent increases in energy and some other commodity prices would boost inflation sharply in coming months... [P]articipants had become more concerned about upside risks to the inflation outlook—including the possibility that persistent advances in energy and food prices could spur increases in long-run inflation expectations... Participants agreed that the possibilities of greater pass through of cost increases into prices, higher long-run inflation expectations feeding into labor costs and other prices, and further increases in energy prices all posed upside risks to inflation that had intensified since the time of the April FOMC meeting.

The FOMC had steadily raised the funds rate from mid-2004 to mid-2006. Well before the peak in the business cycle in December 2007, the economy had begun to weaken with real disposable personal income failing to grow after March 2007 until increased by the Bush Administration rebates in May 2008. The average of annualized, monthly real personal consumption expenditures was –5.4 percent for July, August, and September 2008; the decline was slightly less, at –5.0 percent, for the months of October, November, and December 2008. Payroll employment declined by 267,000 and 424,000 in the months of August and September, respectively. Annualized monthly changes in nonfarm payrolls averaged only 0.5 percent from June 2007 through December 2007. By September 2008, they were declining at an annualized rate of –3.9 percent. (The September numbers were recorded in the survey conducted before the Lehman bankruptcy on September 15.) However, after its April 2008 meeting, the FOMC ceased lowering the funds rate as the economy continued weakening.

Given the concern for inflation, the FOMC became willing to allow the magnitude of a projected negative output gap to grow to restrain inflation. The unemployment rate, which is a lagging indicator,

rose steadily from 4.7 percent in November 2007 to 6.1 percent in August 2008. (For the Board staff estimate of the output gap, see Board of Governors *Current Economic and Financial Conditions*, "Outlook and Summary," "Other Macroeconomic Indicators," 7/30/2008, I-30). Governor Kohn (Board of Governors *FOMC Transcript* 8/5/2008, p. 76) stated, "About the output gap, the incoming information strongly suggests that we are on a trajectory that at least for some time will have the economy growing appreciably below the growth rate of its potential. The most obvious evidence is the persistence of a soft labor market." Although Bernanke recommended a reduction in the funds rate from 2 percent to 1 ½ percent on October 7, 2008, he did so to accommodate the ECB, which needed to assuage its hawks that it was following the FOMC (Hetzel 2022a, p. 460). The FOMC did not lower the funds rate to the zero lower bound (ZLB) until its December 15-16, 2008, meeting.

The mistaken belief that monetary policy was expansionary came from observing the near-zero real funds rate, which the FOMC interpreted as expansionary monetary policy. From January 2008 through August 2008, core PCE inflation (compounded annual monthly changes, chain-weighted price index) averaged 1.9 percent. With a 2 percent funds rate, the real funds rate was near zero. Only later did it become clear that the natural rate of interest was negative—an unprecedented occurrence. That fact can be inferred from two observations. First, over the period from January 2009 through December 2016, the real funds rate averaged –1.24 percent.[10] Over the same interval, inflation (12-month percentage changes in the core PCE, chain-weighted deflator) remained steady at 1.5 percent. If monetary policy had been expansionary because the real funds rate lay below the natural rate of interest, inflation would have risen instead of remaining stable. Second, with the funds rate at the ZLB, economic recovery required both forward guidance and quantitative easing.

The severe recession of 2008-2009 began before the turmoil in financial markets with the Lehman bankruptcy on September 15, 2008. A dramatic increase in the inventory/sales ratio began in July 2008. The severe drops in GDP in 2008:Q4 and 2009:Q1 were baked in by 2008:Q3. The economies of the OECD countries other than the United States began sharp downturns in 2008:Q2.

Confusion as to the source of the Great Recession also came from the post hoc ergo propter hoc association of the recession with the turbulence in financial markets that arose with the Lehman failure on September 15, 2008. What had been a moderate recession turned into a severe recession in summer 2008, however, when the business inventory/sales ratio shot up and businesses had to work off significant excess inventories (Hetzel, 2022a, Figure 21.3). The payroll employment number for September 2008, for which the survey was conducted early in the month before the Lehman bankruptcy, declined at an annualized rate of -3.9 percent. The economy of the industrialized world went into recession in summer 2008 (Hetzel, 2022, Figure 21.7). However, because of the lag in data reporting, that fact was only reported in early October 2008, coincidentally shortly after the Lehman bankruptcy. The disruption in financial markets, however, likely contributed to the recession by making the natural rate of interest even more negative.[11]

What should the FOMC have done in fall 2008? First, it should have addressed its concern over the unanchoring of inflationary expectations by announcing an inflation target, something it did not do until January 2012. Second, it should have undertaken QE to maintain the aggregate spending of the public (Sumner, 2021). The emergency lending of the Fed after the Lehman failure provided liquidity but failed to stimulate demand. The reason was that the Fed loans were short term and had to be repaid

10. See Hetzel (2022a, Figure 18.5). The series for expected inflation is from Board of Governors staff forecasts of inflation.

11. The investment company Lehman Brothers was a victim of its holding of subprime mortgages. With the Lehman failure, shocked cash investors, who had assumed that the financial safety net would prevent the failure of any significant financial institution (too-indebted-to-fail), had no way of knowing to what extent the Fed and the FDIC had retracted the financial safety net. Investors who had been buying the short-term debt of financial companies heavily invested in subprime mortgages therefore fled to the large too-big-to-fail banks like JPMorgan Chase, which were undoubtedly protected by the Fed's safety net.

with interest. It was the QE undertaken starting in early 2009 that demonstrated the power of the portfolio balance effect, which began with purchases of federal agency debt and MBS and continued with Treasury securities after March 2009.

On the statement date September 9, 2008, just before the Lehman bankruptcy, reserve bank credit amounted to $888 billion with $480 billion in securities held outright. As of November 5, 2008, reserve bank credit had jumped to about $2 trillion because of the Fed's emergency lending programs with almost no change in securities held outright. As of June 4, 2009, the month the recovery began, with no change in reserve bank credit, securities held outright (mainly Treasuries and MBS) amounted to half the total of reserve bank credit. By January 6, 2010, again with little change in reserve bank credit, securities held outright had basically replaced emergency lending and amounted to almost all reserve bank credit.[12]

Only at its December 15, 2008, meeting did the FOMC lower the funds rate to the ZLB. The economy began the recovery from the Great Recession in June 2009. With the disruption to financial intermediation after the Lehman bankruptcy, the demand for liquidity increased. The credit programs initiated by the Fed provided the desired reserves, but only through borrowing from the Fed at market interest rates. When QE replaced those reserves and allowed repayment of the borrowing while the demand for additional liquidity abated, the economy recovered. Nevertheless, initially in the recovery monetary policy remained moderately contractionary even with the funds rate at the ZLB. The reason was because the yield curve sloped steeply upward. That behavior reflected the fact that in the past strong recoveries had always followed deep recessions. Initially, markets as well as the FOMC anticipated a rise in interest rates in the recovery.

Janet Yellen succeeded Ben Bernanke as FOMC chair in February 2014. In the recovery from the Great Recession, the Yellen FOMC acted on the lessons of the Great Inflation incorporated by Volcker and Greenspan in the policy of preemptive increases in the funds rate to forestall a rise in inflation. In defense of such increases, Yellen (2017b, p. 16) said

> We should also be wary of moving too gradually. Job gains continue to run well ahead of the longer-run pace we estimate would be sufficient, on average, to provide jobs for new entrants to the labor force. Thus, without further modest increases in the federal funds rate over time, there is a risk that the labor market could eventually become overheated, potentially creating an inflationary problem down the road that might be difficult to overcome without triggering a recession. Persistently easy monetary policy might also eventually lead to increased leverage and other developments, with adverse implications for financial stability. For these reasons, and given that monetary policy affects economic activity and inflation with a substantial lag, it would be imprudent to keep monetary policy on hold until inflation is back to 2 percent.

Yellen (2017a) summarized, "[I]f the economy ends up over heating and inflation threatens to rise well above our target, we don't want to be in a position where we have to raise rates rapidly, which could conceivably cause another recession. So we want to be ahead of the curve and not behind it."

6. THE POWELL FOMC PANDEMIC MONETARY POLICY

Jerome Powell became a governor on the Board of Governors in May 2012 and became FOMC chair in March 2018. In March 2020, he and the FOMC had to confront the reality of a severe pandemic. Even though it was a negative productivity shock to output, the FOMC responded with an expansionary monetary policy to stimulate demand. Although the public stayed away from restaurants out of fear of COVID-19 and supply-chain disruptions reduced the supply of goods, presumably stimulative monetary policy would offset any reduction in demand. Even though the recovery from the Great Recession

12. Data from Federal Reserve Statistics, statistical release H.4.1. For a graphical overview, see Hetzel (2022a, Figure 21.5).

was a time of remarkable stability in inflation and the unemployment rate declined steadily to near historic lows, the FOMC designed its stimulative policy based on the presumed failures of policy in the earlier period. With the Yellen FOMC, policy in the recovery had followed in the Volcker-Greenspan tradition of concentrating on price stability through preemptive increases in the funds rate. However, after lying dormant since Volcker's accession to FOMC chair in August 1979, the Powell FOMC revived aggregate-demand management based on presumed Phillips curve trade-offs and greatly amplified the credit market interventions first initiated by the Bernanke FOMC.

When the pandemic unfurled in March 2020 and the unemployment rate rose to 14.7 percent in April 2020, the issue became how to design a monetary policy expansionary enough to return unemployment to the pre-pandemic low of 3.5 percent in a time frame greatly accelerated from the recoveries in the past 3 recessions. Monetary policy would have to be highly expansionary despite the FOMC's unwillingness to make the funds rate negative.

The challenge was to convince financial markets that the FOMC was abandoning the Volcker-Greenspan-Yellen policy of preemptive increases in the funds rate. The FOMC met that challenge with a policy called "flexible-average-inflation-targeting" (FAIT). In a historic first, with FAIT, the FOMC *purposefully* directed policy at raising inflation. Policy aimed at raising inflation above 2 percent for an unspecified period of time and by an unspecified amount. In that way, the FOMC hoped to convince bond markets that it had abandoned the earlier policy of preemptive increases in the funds rate.

In doing so, the FOMC was giving up on the desideratum of Volcker and Greenspan in establishing credibility for price stability such that price setters would simply ignore inflation in setting dollar prices. Greenspan (2002, p. 6) had said "Price stability is best thought of as an environment in which inflation is so low and stable over time that it does not materially enter into the decisions of households and firms." Earlier, Volcker (1983, p. 5) had said

> A workable definition of reasonable "price stability" would seem to me to be a situation in which expectations of generally rising (or falling) prices over a considerable period are not a pervasive influence on economic and financial behavior. Stated more positively, "stability" would imply that decision-making should be able to proceed on the basis that "real" and "nominal" values are substantially the same over the planning horizon—and that planning horizons should be suitably long. (Greenspan and Volcker citations from Orphanides 2006, pp. 179-80).

With core PCE inflation (annualized quarterly) averaging 1.6 percent in the recovery from 2009:Q2 to 2020:Q1, the Fed had achieved the goal of Volcker and Greenspan. Although not strictly price stability, inflation was low enough that firms setting prices for multiple periods could adjust on an ad hoc basis without building-in an explicit allowance for inflation.

The objective of FAIT was to raise inflation above 2 percent and then return it to 2 percent at some unspecified later time. However, nothing in its history suggested that the FOMC could manipulate inflation with that kind of precision. Powell (2020) claimed that "inflation that is persistently too low can pose serious risks to the economy. Inflation that runs below its desired level can lead to an unwelcome fall in longer-term inflation expectations, which, in turn, can pull actual inflation even lower, resulting in an adverse cycle of ever-lower inflation and inflation expectations." However, the argument appears opportunistic. Nothing suggested such unmoored inflation. Inflation (12-month percentage changes in monthly data for core CPI) reached a low after the Great Recession of 0.6 percent, but then recovered. Beginning in fall 2011 and continuing through February 2020, core CPI inflation barely departed from 2 percent. The maximum departures were 1.6 percent in February 2014 and 2.4 percent in February 2020.

One way for the Powell FOMC to make credible abandonment of the policy of preemption that had restored price stability was to criticize policy in the recovery from the Great Recession. The FOMC faulted the practice of the prior Yellen FOMC of raising the funds rate preemptively to prevent the emergence of inflation. The assumption was that, without the preemptive increases, the FOMC could

have achieved an even lower unemployment rate than the February 2020 cyclical low of 3.5 percent with a minimal increase in inflation. Given its Keynesian temperament, the FOMC considered irrelevant the stability of underlying inflation during the recovery.

That criticism represented an opportunistic defense of a return to a policy of aggregate demand management to speed greatly a return to the pre-pandemic low unemployment. The FOMC also revived the Phillips curve—the centerpiece of a policy of aggregate demand management presumed to offer predictable forecasts of the relationship between the two target variables of inflation and unemployment. The claim was that the Phillips curve was flat so that an expansionary monetary policy could push the unemployment rate down to at least the pre-pandemic low of 3.5 percent with no increase in inflation.

Powell (2020) explained the change by arguing that the economy had evolved. "Because the economy is always evolving, the FOMC's strategy for achieving its goals—our policy framework—must adapt to meet the new challenges that arise." Powell then mentioned how, in the recovery from the Great Recession,

> the historically strong labor market did not trigger a significant rise in inflation... The muted responsiveness of inflation to labor market tightness, which we refer to as the flattening of the Phillips curve, also contributed to low inflation outcomes... Our policy decision will be informed by our assessments of the *shortfalls* of employment from its maximum level rather than by *deviations* from its maximum level... In earlier decades when the Phillips curve was steeper, inflation tended to rise noticeably in response to a strengthening labor market. It was sometimes appropriate for the Fed to tighten monetary policy as employment rose toward its estimated maximum level in order to stave off an unwelcome rise in inflation... Going forward, employment can run at or above real-time estimates of its maximum level without causing concern. [italics in original]

The convoluted language expressed how with the new policy the FOMC would no longer make preemptive increases in the funds rate to prevent the emergence of inflation based on signs of overheating in the labor market.

It is instructive to conjecture what policy would have looked like if the FOMC had retained the Volcker-Greenspan-Yellen policy of price stability in March 2020. The Fed would still fulfill its lender-of-last-resort function to meet unusual liquidity needs. However, it would have done so by buying short-term Treasuries to supply markets with additional reserves. Those reserves would then be allowed to run off when the "dash for cash" abated.

With the funds rate at the ZLB, the FOMC would have observed whether the labor market was recovering steadily. If employment growth stalled, the FOMC would have undertaken open market purchases of long-term Treasury securities to initiate a portfolio balance effect to stimulate spending and raise the natural rate of interest. The FOMC would also have watched TIPS breakevens (5-year and 5-year, 5-year forward breakevens) for evidence that markets continued to expect price stability rather than deflation. The FOMC would have followed the Volcker-Greenspan-Yellen policy of preemptive increases in the funds rate to prevent the emergence of inflation. In doing so, it would have begun raising the funds rate and started quantitative tightening (sold Treasuries and MBS) in early 2021.

Powell (2021a) explained why the FOMC ignored the increase in underlying inflation in 2021 in a speech at the Economic Club of New York:

> We need only look to February of last year [2020] to see how beneficial a strong labor market can be. The overall unemployment rate was 3.5 percent, the lowest level in a half-century. The unemployment rate for African Americans had also reached historical lows... These late-breaking improvements in the labor market did not result in unwanted upward pressures on inflation, as might have been expected; in fact, inflation did not even rise to 2 percent on a sustained basis. There was every reason to expect that the labor market could have strengthened even further without causing a worrisome increase in inflation were it not for the onset of the pandemic.

The revised statement [Review of Monetary Policy Strategy, Tools, and Communications] emphasizes that maximum employment is a broad and inclusive goal. This change reflects our appreciation for the benefits of a strong labor market, particularly for many in low- and moderate-income communities. Recognizing the economy's ability to sustain a robust job market without causing an unwanted increase in inflation, the statement says that our policy decisions will be informed by our "assessments of the *shortfalls* of employment from its maximum level" rather than by "*deviations* from its maximum level." This means that we will not tighten monetary policy solely in response to a strong labor market. [italics in original]

Powell (2021b) also stated that

> We have a flat Phillips curve, meaning there's still a small connection ["between slack in the labor market and inflation"] but you need a microscope to find it. We've also got low persistence of inflation, so that if inflation were to go up for any reason it [inflation]... doesn't stay up... Remember, we're a long way from maximum employment. There's plenty of slack in the labor market.

However, in 2022, it became evident that underlying inflation had risen well above the FOMC's 2 percent target and was persistent. Policy then repeated the stop phase of the go-stop pattern of the 1970s.

The QE undertaken by the FOMC starting in March 2020 reflected the traditional Keynesian view of the transmission process as working though financial intermediation. As reported in *The Wall Street Journal* (2020), Richard Clarida, governor on the FOMC, said, "The Fed last week announced an expansion of nine different programs it has unveiled to support lending to U.S. states and businesses. It has said those programs will enable $2.3 trillion in new lending." (The number is from the Board of Governors Press Release, Board of Governors, 2020).

That interpretation of QE also reflected chair Powell's belief in the irrelevance of money. In congressional testimony, Sen. Kennedy (R. LA) posed this question: "M2, the money supply... over the past year... is up 26 percent, the highest amount since 1943. What does that tell you?" Powell (2021c, 24) responded as follows:

> When you and I studied economics a million years ago, M2 and monetary aggregates generally seemed to have a relationship to economic growth. Right now, I would say the growth of M2, which is quite substantial, does not really have important implications for the economic outlook... That classic relationship between monetary aggregates and economic growth and the size of the economy, it just no longer holds. We have had big growth of monetary aggregates at various times without inflation, so something we have to unlearn.

This view contrasts with an earlier view expressed by Bernanke (2000, p. 158) in the context of Japanese deflation: "The monetary authorities can issue as much money as they like. Hence, if the price level were truly independent of money issuance, then the monetary authorities could use the money they create to acquire indefinite quantities of goods and assets. This is manifestly impossible."

Powell's understanding of QE also reflected the way in which at an earlier date Bernanke had reconceptualized the role of the FOMC as a combination central bank and GSE. Bernanke was a student of the Depression and had read the Milton Friedman and Anna Schwartz (1963a) classic work on the Depression, *A Monetary History of the United States*. Friedman and Schwartz emphasized how in the Depression the contraction of the banking system had forced a contraction of the money stock by 33 percent. In a fundamental departure from Friedman and Schwartz, in his earlier published work, Bernanke (1983) had focused instead on how the contraction of the banking system had disrupted financial intermediation.

Based on that understanding, the Bernanke FOMC attempted to undo the flight of the cash investors precipitated by the unanticipated retraction of the financial safety net with the Lehman bankruptcy. Through a variety of programs, the Bernanke Fed became heavily involved in credit markets. Bernanke's

perspective on the stabilizing role of the Fed as centered on the allocation of credit to underserved areas rather than on its role as creator of money set the Fed on a course that it had studiously avoided since gaining its independence with the 1951 Treasury-Fed Accord. Although Bernanke initiated quantitative easing (QE) with purchases of mortgages (MBS), which started in early 2009, he did so to allocate credit to the housing market. Effectively, the Fed became a hybrid central bank and a housing GSE like Fannie Mae. In fall 2008, M2 grew but only because of the flight to safety out of money market instruments and into the deposits of the too-big-to-fail banks. The FOMC avoided a policy of stimulating aggregate demand through QE and the purposeful money creation it entailed. (See also Sumner, 2021.)

In the spirit of the credit channel, Bernanke reoriented policy toward the allocation of credit. Bernanke (2009) commented:

> The provision of ample liquidity to banks and primary dealers is no panacea. Today, concerns about capital, asset quality, and credit risk continue to limit the willingness of many intermediaries to extend credit, even when liquidity is ample. Moreover, providing liquidity to financial institutions does not address directly instability or declining credit availability in critical nonbank markets, such as the commercial paper market or the market for asset-backed securities, both of which normally play major roles in the extension of credit in the United States. To address these issues, the Federal Reserve has developed a second set of policy tools, which involve the provision of liquidity directly to borrowers and investors in key credit markets.

In evaluating Bernanke's reorientation of the Fed, it is important to distinguish the two roles a central bank can serve. It can conduct monetary policy, which has to do with having a rule that causes markets to move the risk-free yield curve in a way that stabilizes the economy in response to incoming information about strength or weakness in the economy. It can also serve as a financial intermediary allocating credit.

Bernanke's switch from the first understanding of the role of monetary policy to the second role can be seen in his earlier characterization of monetary policy in which he does not mention the Fed's role as a financial intermediary. Bernanke (2005) explained:

> The Fed controls very short-term interest rates quite effectively, but the long-term rates that really matter for the economy depend not on the current short-term rate but on the whole trajectory of future short-term rates expected by market participants. Thus, to affect long-term rates, the FOMC must somehow signal to the financial markets its plans for setting future short-term rates... FOMC talk probably has the greatest influence on expectations of short-term rates a year or so into the future, as beyond that point the FOMC has very little, if any, advantage over market participants in forecasting the economy or even its own policy actions... First, to the extent practical, the FOMC strives to be consistent in how it responds to particular configurations of economic conditions and transparent in explaining the reasons for its response. By building a consistent track record, the FOMC increases its own predictability as well as public confidence in its policies. Second, more generally, comments by FOMC officials about the Committee's general policy framework, including the Committee's economic objectives and members' views about the channels of monetary policy transmission and the structure of the economy, help the public deduce how policy is likely to respond to future economic circumstances.

Michael Woodford (2004, p. 16) also expressed this view, which was standard at the time.

> Not only do expectations about policy matter, but, at least under current conditions, very little *else* matters. Few central banks of major industrial nations still make much use of credit controls or other attempts to directly regulate the flow of funds through financial markets and institutions. Increases in the sophistication of the financial system have made it more difficult for such controls to be effective. And, in any event, the goal of improving the efficiency of the sectoral allocation of resources stressed above hardly would be served by such controls, which (if successful) inevitably create inefficient distortions in the relative cost of funds to different parts of the economy. [italics in original]

It is important to highlight the experiment that the FOMC delivered with its monetization of a significant fraction of the government pandemic payments. The rise in underlying inflation in early 2021

is evidence in favor of the monetary character of inflation and the transmission of monetary policy through a portfolio balance effect. As Friedman (1963 [1968], p. 39) said, "Inflation is always and everywhere a monetary phenomenon." In "The Lag in Effect of Monetary Policy," Friedman (1961 [1969], p. 255-6) outlined the monetary view:

> Suppose the monetary authorities increase the stock of money by open-market purchases... Holders of cash will seek to purchase assets... If the extra demand is initially directed at a particular class of assets, say government securities, or commercial paper, or the like, the result will be to pull the prices of such assets out of line with other assets and thus to widen the area into which the extra cash spills. The increased demand will spread, sooner or later affecting equities, houses, durable producer goods, durable consumer goods, and so on... The key feature of this process is that it tends to raise the prices of sources of both producer and consumer services relative to the prices of the services themselves... It therefore encourages the production of such sources (this is the stimulus to "investment" conceived broadly as including a much wider range of items than are ordinarily included in that term) and, at the same time, the direct acquisition of services rather than of the source (this is the stimulus to "consumption" relative to "savings.")

Specifically, the QE undertaken by the FOMC starting in March 2020 replaced illiquid assets (long-term Treasuries and MBS) in the public's asset portfolio with liquid bank deposits. To reconcile the public to holding a more-liquid asset portfolio, the price of illiquid assets (equities, houses, consumer durables, commodities) had to rise. As Friedman noted, the rise in the price of assets relative to their service flows initially produces an increase in investment and real output. Later, inflation rises to restore the amount of real cash balances (liquidity) desired by the public. This process takes time to unfold and unwind and is affected by extraneous forces.

Friedman (1960) used the resulting "long and variable lag" critique to explain the economic instability introduced with the FOMC's 1970s policy of activist aggregate-demand management. Friedman and Schwartz (1963b [1969], p. 234) wrote that "The central element in the transmission mechanism... is the concept of cyclical fluctuations as the outcome of balance sheet adjustments, as the effects on flows of adjustment between desired and actual stocks. It is this interconnection of stocks and flows that stretches the effect of shocks out in time."[13] Despite the power of the portfolio balance effect, these lags make monetary policy an inappropriate tool for fine tuning the economy. Friedman (1970, p. 13) wrote that "Our present understanding of the relation between money, output, and prices is so meager, that there is so much leeway in these relations, that... discretionary changes do more harm than good."

7. REORGANIZING FOMC DEBATE

What would the FOMC have to do to articulate the nature of the monetary standard? It would need to start by organizing its debate over how it pursues its objectives and how well its monetary policy is working to achieve those objectives. The required debate would necessitate a reorganization of the Tealbook. The reason is that the Tealbook, which provides detailed forecasts of the evolution of the economy, organizes FOMC debate. It would not be possible for 19 participants sitting around the table at the Board of Governors to start from scratch each meeting to come up with a forecast of the economy and a statement outlining the associated behavior of the funds rate.

The Tealbook forecasts, which include a path for the funds rate, are judgmental. That is, they provide no clarification of the structure of the economy that underlies the funds rate path and the forecasts of the economy. Moreover, the Tealbook provides only half of the background required for full FOMC debate. The missing half should explain how the economy evolved to its present position. As an example, on April 28, 2023, the Bureau of Economic Analysis (BEA) announced that the core personal consumption

13. See also Friedman and Schwartz (1963b [1969]), "Money and Business Cycles," pp. 231-32.

expenditure (PCE) index rose 4.6 percent from March 2022 through March 2023. The Board staff, which constructs the Tealbook, should offer its explanation for how inflation rose at a rate well above the FOMC's 2 percent target.

Tealbook forecasts should be made subject to FOMC specification of a rule. For example, a Taylor rule contains both objectives for unemployment and inflation (Taylor, 1999). The Board model FRBUS, which serves as an input to the Tealbook forecast, could use a loss function like that in Svensson (2009). The rule would reflect the FOMC's choice about the basic structure of the economy. The two possibilities offered here are traditional Keynesianism and Wicksellian monetarism. Tealbooks contain a forecast of the inflation rate and the unemployment rate. If traditional Keynesianism captures the structure chosen by the FOMC, the current Tealbook would contain a table of these dual forecasts made at FOMC meetings for the past 5 years. The Board staff would then evaluate how well monetary policy has balanced these dual objectives along with measurement of how close inflation has come to averaging 2 percent.

If instead Wicksellian monetarism captures the structure of the economy chosen by the FOMC, each Tealbook would contain a graph showing a forecast of a path for nominal output and an estimated path of potential output. The difference in growth rates is the inflation rate. To achieve its inflation objective, the FOMC would choose its funds rate target based on a forecast consistent with the growth rate in the path for nominal output that converged to an excess in a range of 1 ½ to 2 percentage points over the growth rate in the path of potential output (Hetzel, 2023). The single objective of price stability implied by these procedures would turn the determination of unemployment over to market forces. Tealbooks would evaluate how well the procedures have worked to maintain price stability in underlying measures of inflation.

The reason for the 1½ to 2 percentage point range is that prior to 2020 inflation averaged somewhat less than 2 percent. The record shows that the FOMC can maintain economic stability with a monetary policy that maintains the expectation of price stability as recommended by Volcker (1983) and Greenspan (2002) in the quotations cited above. The measured inflation associated with the expectation of price stability is somewhat less than 2 percent. There is no evidence in the historical record that the FOMC can choose an arbitrary positive inflation rate and maintain it. The FOMC need not worry that a policy of price stability would be impeded by occasional periods of interest rates at the ZLB. One reason is the strength of QE as evidenced with the post March 2020 open market purchases. The other reason is the ability to implement a negative funds rate as evidenced by such a policy with the European central banks.

One stumbling block to the widespread public debate required for transparency is the complexity of monetary policy. The Tealbook should be released with only a six-month lag rather than at present with a delay of five calendar years. Such transparency would greatly facilitate public discussion of monetary policy.

8. WHY FOMC TRANSPARENCY IS ESPECIALLY IMPORTANT GIVEN THE POLICY OF DISINFLATION

The FOMC's current policy of disinflation raises several questions whose answer requires articulation of the longer-run strategy. How does the FOMC ensure that the reduction in inflation stops at 2 percent? How does it ensure that inflation then remains at 2 percent? Can the FOMC avoid a serious recession? In the post-World War II recessions undertaken to lower inflation, the FOMC has maintained the funds rate at its cyclical high when the economy weakened to avoid sending the signal to financial markets that it was willing to accept the elevated level of inflation. What happens if later in 2023 it becomes evident that the economy is entering into a recession, but underlying inflation remains well above the 2 percent target? Marvin Goodfriend (2004) argued that a benefit of an inflation target was

that it would allow the FOMC to lower the funds rate in such a situation without raising inflationary expectations

However, such an outcome is less certain now since the FOMC has focused on targeting unemployment. The argument here is that the FOMC needs to go beyond articulating an inflation target and its current forward guidance and make explicit the rule that will guide policy in the long run. Such a rule must necessarily emerge from specification of the FOMC's view of the optimal monetary standard.

There are a number of reasons why the current contractionary monetary policy could cause a repetition of the earlier severe recessions. The Fed is focusing on labor market tightness and wage growth as the underlying causes of inflation in the services sector. They are lagging indicators as the unemployment rate rises and wage pressures abate only with the onset of recession. Moreover, the earlier expansionary monetary policy caused the labor market to become overly tight. As a result, firms are reluctant to lay off workers when it has been so hard to hire them. Labor market tightness may then persist even longer beyond the start of a recession. Given the Fed's reaction function for setting the funds rate, these factors are likely to support its current Summary of Economic Projections (SEP) forecasts of a funds rate kept at a cyclical high through the end of 2023.

An unusual feature of the current situation is the existence of a significant monetary overhang. The continued spending supported by the monetary overhang may obscure the reality that monetary policy is extremely tight. That is, while the level of the funds rate causes an unwinding of the earlier positive portfolio balance effect by depressing expenditure in interest-rate-sensitive sectors such as housing and consumer durables, the monetary overhang could maintain spending on services for some time. Different approaches to estimating the overhang point to a magnitude high enough to prevent its unwinding until the end of the year.

Abdelrahman and Oliveira (2023) wrote:

> We examine how household saving patterns since the onset of the pandemic recession compare with previous recessions. We show that households rapidly accumulated unprecedented levels of excess savings—defined as the difference between actual savings and the pre-recession trend— relative to previous recessions. Moreover, despite a rapid drawdown of savings in recent months, there is still a large stock of aggregate excess savings in the economy—some $500 billion... We expect that these excess savings could continue to support consumer spending at least into the fourth quarter of 2023.

Stanley (2023) uses "household liquid assets" reported in the Board of Governors statistical release Z.1 (formerly called Flow of Funds), Table B. 101, which includes currency and checkable deposits, time deposits, and money market shares. These data give a similar estimate of excess savings to that of Abdelrahman and Oliveira. Hetzel (2023, p. 19) looks at real M2 and also finds a significant monetary overhang. (The last series is available from the St. Louis Fed FRED database.)

The market's forecast of the future funds rate path, which indicates a pivot to reductions in 2023, could be evidence that the Fed is overdoing tightness. Depletion of the monetary overhang could precipitate a serious recession in the absence of a significant reduction in the funds rate. If so, without an explicit strategy committing the FOMC to maintaining price stability, the FOMC could face a difficult dilemma. Given that core inflation is a lagging indicator, underlying inflation could still be significantly above 2 percent when that weakening becomes evident. Does the FOMC then lower the funds rate and risk being accused of giving up on restoring 2 percent inflation? Does it delay lowering the funds rate and set off a serious recession?

9. CONCLUDING COMMENT

It is true that, with the Powell FOMC, participants have become actively involved in offering their own forward guidance about the future path of the funds rate (not an FOMC consensus forecast). How-

ever, real transparency would require specification of the FOMC's strategy, that is, a reaction function. Bernanke (2005) made this point indirectly. Because the FOMC possesses a limited ability to forecast, what matters is how news about the economy alters the FOMC's consensus over the future path of the funds rate. Greenspan made the point directly (Board of Governors, 2004, p. 78) when he told the FOMC that, "When it comes to policy... we have to acknowledge to ourselves that our forecast is going to be wrong. It always is. We expect it to be wrong." The reaction function derives from the FOMC's articulation of the monetary standard that it has chosen.

Part of Fed rhetoric is that the structure of the economy evolves and the Fed adjusts monetary policy accordingly. Specifically, in an ongoing way, the Fed adapts the monetary standard that it constructs, where the monetary standard captures how the monetary policy of the Fed interacts with the price system to achieve its objectives. Specifically, the monetary standard explains how monetary policy gives the price level a well-defined value and whether that policy rests on the stabilizing properties of the price system or overrides them. The FOMC should supply examples of how such evaluation of the structure of the economy has worked successfully in the past.

The ability of FOMC participants to describe in detail the state of the economy gives the impression that the FOMC understands the structure of the economy and how its actions work to achieve the dual mandate. However, that detailed knowledge about the economy does not provide a framework for understanding causation. That is, how do the actions of the FOMC in setting the funds rate interact with the price system to achieve its objectives? The FOMC chair should be able to not only articulate an FOMC consensus over such a framework but also defend that framework based on how past frameworks have worked. In sum, the chair should articulate the nature of the monetary standard the FOMC has created.

A public and professional debate over the optimal monetary standard needs to accompany this FOMC transparency. Is inflation a nonmonetary or a monetary phenomenon? Is economic instability an inherent feature of a market economy or does it result from FOMC interference with the operation of the price system? Based on the outcome of such a debate, what is the optimal monetary policy (rule)? Should such a rule be organized around the competing goals of low unemployment and low inflation with the trade-offs given by the Phillips curve? Alternatively, should the rule be organized around maintaining the expectation of stable prices and maintaining stability in the economy's rate of resource utilization? The intensity of the debate should reflect the extraordinary importance of putting in place a stable framework that supports the operation of a market economy.

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