Resuscitating the Monetarist-Keynesian Debate to Predict the Consequences of the Federal Reserve's Pandemic Monetary Policy

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The dramatic change in Federal Reserve policy announced in Chair Powell's August 2020 Jackson Hole speech offers an extraordinary opportunity to distinguish between competing views of the optimal monetary policy.[1] Those contrasting views trace their ancestry to the monetarist-Keynesian debate of the 1970s. The Powell policy is Keynesian in that it is organized around seeking a favorable trade-off between a socially desirable, inclusive low rate of unemployment and low inflation of 2 percent.[2] The monetarist policy is organized around price stability and allowing the working of the price system to determine the unemployment rate.

A key distinguishing feature for these alternatives is the policy toward preemptive increases in the funds rate during economic recoveries. The Powell policy rejected preemptive increases in favor of reducing unemployment until inflation rose. The monetarist policy, pioneered in the Volcker-Greenspan era, implemented preemptive increases in order to maintain price stability. As of March 10, 2022, year-over-year CPI inflation through February was 7.9 percent (6.4 percent for core CPI). The Powell policy will be vindicated if inflation returns to the Federal Reserve's goal of 2 percent without a recession. The monetarist policy will be vindicated if a recession is required.

Section 1 distinguishes between the two contrasting views of optimal monetary policy. Section 2 summarizes the departure of the monetary policy adopted by the Federal Reserve in response to the pandemic in favor of a Keynesian policy. Section 3 associates the monetary policy in the Volcker-Greenspan era with a Wicksellian version of monetarism. Section 4 discusses how Greenspan dealt with the control of inflation while rejecting the Phillips curve as a useful concept. Section 5 explains how abandonment of preemptive funds rate delayed tightening by a year. Section 6 summarizes evidence for the continued importance of money in explaining inflation. Section 7 argues for a revival of the Keynesian-monetarist debate. Section 8 argues for a return to the debate over rules versus discretion.

1. The monetarist-Keynesian debate redux

The Keynesian view starts with two independent targets – low unemployment and low inflation. There must then be a structural relationship that predicts how the Federal Reserve can trade off between the two targets. That relationship, expressed as a graph with the unemployment rate (more generally slack in the economy) on the horizontal axis and inflation (or changes in inflation) on the vertical axis is the Phillips curve. A structural (exploitable) Phillips curve also embodies a nonmonetary theory of inflation. That is, the Federal Reserve controls inflation through its control of slack in the economy.

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[1] Powell, Jerome H. "New Economic Challenges and the Fed's Monetary Policy Review." Speech given at "Navigating the Decade Ahead: Implications for Monetary Policy," an economic policy symposium sponsored by the Federal Reserve Bank of Kansas City, Jackson Hole, Wyoming, August 27, 2020.

[2] See ch. 26 (Covid.19 and the Fed's Monetary Policy: Flexible-Average-Inflation-Targeting) in Hetzel (2022, University of Chicago Press, forthcoming). The chapter is taken from Hetzel, Robert L."Covid-19 and the Fed's Credit Policy." Mercatus Center Working Paper, Mercatus Center at George Mason University, Arlington, VA, July 28, 2020, and Hetzel, Robert L. "Covid-19 and the Fed's Monetary Policy." Mercatus Center Working Paper, Mercatus Center at George Mason University, Arlington, VA, October 5, 2020.

The challenge for monetary policy arises from upward shifts in the Phillips curve in the form of cost-push shocks that raise inflation for a given level of unemployment. The Federal Reserve must then make a judgment of how much to increase unemployment to restrain inflation. Because that trade-off requires a judgment call, Keynesian policy inevitably entails significant discretion. Implementation of such a policy is necessarily activist. The Federal Reserve at various times engineers an expansionary or a contractionary policy, respectively, to expand or contract the growth of aggregate demand according to whether the primary concern is with lowering unemployment or lowering inflation.

The framework for organizing such a Keynesian monetary policy is Modigliani and Papademos (1975 and 1976), which makes changes in inflation depend upon the difference between the unemployment rate and a value known as the NAIRU (nonaccelerating inflation rate of unemployment).[3] The NAIRU is different from the "natural rate of unemployment," used by Milton Friedman (1968 [1969]) to represent full employment.[4] Within the Keynesian framework, cost-push inflation could make it higher than the natural rate of unemployment.

Friedman (1960) expressed the original monetarist policy in the form of a rule that would provide for steady growth in the money stock (3 percent for M2).[5] Given the contemporaneous stability in money demand and steady growth in potential output when Friedman wrote, the resulting growth in nominal GDP would have provided for near price stability, that is, a stable nominal anchor. Just as important, the rule would have provided for the determination of real variables (output and employment) through the unfettered operation of the price system. Phillips curve trade-offs would be eliminated in favor of a classical dichotomy giving free rein to the price system to determine unemployment independently of the behavior of the price level.

After 1980, the predictive power of the measured monetary aggregates disappeared because of flows in and out of them from money market instruments used mainly for savings not transactions purposes. The monetary aggregates ceased to offer a reliable measure of the liquidity of the public's asset portfolio. The Friedman money growth rule then lost relevance. Nevertheless, one can retain the basic insights of the Friedman monetarist program by constructing a Wicksellian monetarism, which incorporates the Federal Reserve's use of the funds rate as its instrument. This adaptation builds on the Goodfriend and King (1997) new neoclassical synthesis version of the New Keynesian model and Aoki (2003), which divides firms into two classes.[6] There is a sticky-price sector in

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[3] Modigliani, Franco and Lucas Papademos. "Targets for Monetary Policy in the Coming Year." *Brookings Papers on Economic Activity* 1 (1975), 141-63 and "Monetary Policy for the Coming Quarters: The Conflicting Views." Federal Reserve Bank of Boston and *The New England Economic Review* 76 (March/April 1976), 2-35.

[4] Friedman, Milton. "The Role of Monetary Policy (1968)" in Milton Friedman, ed., *The Optimum Quantity of Money*. Chicago: Aldine, 1969, pp. 95-110.

[5] Friedman, Milton. *A* Program *for Monetary Stability*. New York: Fordham University Press, 1960.

[6] Goodfriend, Marvin and Robert G. King. "The New Neoclassical Synthesis." NBER *Macroeconomics Annual*, eds. Ben S. Bernanke and Julio Rotemberg, 1997" and Aoki, Kosuke. "Optimal Monetary Policy Responses to Relative-Price Changes." *Journal of Monetary Economics* 48 (2001), 55-80.

which firms set prices for multiple periods and a flexible-price sector in which firms set prices in auction markets.

With Wicksellian monetarism, the Federal Reserve achieves its dual objective of price stability and maximum employment through a rule that provides for price stability. As in Goodfriend and King (1997), price stability turns over to the real business cycle core of the economy the determination of real variables. However, the nature of the rule for achieving price stability works indirectly. Friedman (1960) rejected a rule for targeting the price level directly using a feedback rule based on changing the Federal Reserve's instrument in response to target misses. Such a rule would founder on the phenomenon of long and variable lags.

With Aoki (2003), assuming a credible target for price stability, a stable nominal anchor takes the form of the expectation of price stability. All firms in the sticky-price sector coordinate on that same value in setting dollar prices for multiple periods, in this case price stability. The Federal Reserve is then free to implement a rule that causes the real funds rate to track its counterpart, the natural rate of interest. The latter is the real interest rate that causes contemporaneous aggregate demand to equal potential output.

To understand the nature of such a rule, it is necessary to understand the underlying general rule developed by William McChesney Martin known as lean-against-the-wind (LAW). With this rule, the FOMC raises the funds rate above its prevailing value in response to sustained growth in real output above potential. Credibility, determined by the behavior of long-term bond rates, requires that bond markets believe that such increases will cumulate to whatever level required to maintain price stability. The FOMC does not know potential output, but it observes various measures of excess capacity, especially, changes in the unemployment rate. (There are analogous statements for output growth below potential.)

With LAW and starting from the economy growing at trend, in response to new information on the economy that affects the behavior of resource utilization, the term structure of interest rates moves continually to keep output growing around trend. Effectively, LAW with credibility causes the real funds rate to track its natural rate counterpart. Such procedures implicitly provide for monetary control. In the spirit of Wicksell, keeping the real rate of interest equal to the natural rate of interest prevents excess supplies of bonds that will require purchases of bonds and their monetization by the Federal Reserve. Similarly, it prevents excess demands for bonds that will require sales of bonds by the Federal Reserve and monetary contraction.

2. Adopting a Keynesian monetary policy in response to the pandemic

The Powell monetary policy adopted by the FOMC in response to the pandemic, which unfurled with great force in March 2020, possessed a strongly Keynesian character. It resuscitated much of the character of policy in the 1970s with the Arthur Burns and G. William Miller FOMC chairmanships. As such, the Powell policy represented a dramatic departure from the Great Moderation policy followed in the Volcker-Greenspan era. The success or failure of the pandemic experiment should guide which of these two alternative policies the FOMC adopts in the future.

In 1970, the consensus within the economics profession was firmly Keynesian. The view of inflation as a nonmonetary phenomenon conditioned the assumption that the Fed should organize monetary policy around Phillips curve trade-offs, which made control of inflation depend upon FOMC manipulation of the amount of slack in the economy. The earlier experience of the 1960s had

appeared to validate that view. CPI inflation averaged 1.3 percent in the years 1960 through 1965 and then rose to 5.5 percent in 1969. From a cyclical high of 6.7 percent in 1961, the unemployment rate fell to 3.5 percent in 1969. It appeared as though the economy was moving leftward along a rising Phillips curve with unemployment falling and inflation rising.

The Keynesian assumption behind the soft-landing strategy of the Nixon Administration was that reducing inflation from its elevated 1969 level would work through reversing this movement along the Phillips curve. With the universal assumption that 4 percent unemployment represented full employment, the belief was that a somewhat higher unemployment rate would lower inflation. However, to the consternation of the economics profession and policy makers, in 1970 despite an unemployment rate of 5 percent, inflation remained high at about 6 percent. Consistent with the Keynesian consensus, economists and policy makers attributed the apparent breakdown in the Phillips curve to cost-push inflation that raised the level of the curve.

In March 2020, when the scale of the pandemic became evident, the FOMC made two fundamental decisions. First, even though the shock to the economy was a negative productivity shock that adversely affected the service sector, especially in sectors requiring face to face contact, the FOMC decided that without a highly stimulative monetary policy aggregate demand would be insufficient to sustain a vigorous recovery. Second, financial markets would cease to assess risk and would shut down unless the Fed adopted a panoply of credit programs that removed risk from the private sector and placed it on the Fed's (Treasury's) balance sheet.[7]

With the articulation of this policy by Chair Powell in August 2020 at the Jackson Hole Conference, the FOMC adopted as an independent target a low, socially inclusive value of the unemployment rate. With two independent targets, low unemployment and low inflation, the FOMC needed a way of forecasting their joint movements. Necessarily, it began to organize the conduct of monetary policy around a structural Phillips curve. Such a focus comes with implicit assumptions. First, inflation is a nonmonetary phenomenon. That is, the FOMC controls inflation through its control of the excess capacity in the economy (generally measured as the difference between the unemployment rate and a benchmark number termed the NAIRU). Second, the FOMC can exercise predictable control over the economy's excess capacity.

The Powell FOMC inferred the behavior of the Phillips curve from the behavior of the economy during the recovery from the 2008-2009 Great Recession. The absence of an empirical correlation between inflation and unemployment in this period presumably implied a flat Phillips curve. The prepandemic low in unemployment of 3.5 percent combined with inflation slightly below the 2 percent target implied that the upward sloping section of the Phillips curve had to start at an unemployment rate lower than 3.5 percent. Moreover, an "accommodative" monetary policy in the recovery from the Great Recession evidenced by a near zero funds rate for about seven years and three quantitative easing (QE) programs in which the FOMC bought government securities and mortgage backed securities implied that powerful "cost-pull" forces due to globalization were pulling down the Phillips curve and limiting inflation.[8]

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[7] For a more thorough discussion, see the references in footnote 2.

[8] For an alternative view, see ch. 26 (Covid.19 and the Fed's Monetary Policy: Flexible-Average-Inflation-Targeting) referenced in footnote 2.

With an unemployment rate of 14.7 percent in April 2020, assuming the Phillips curve framework described above, the FOMC believed that it could pursue an expansionary monetary policy to lower unemployment (restore an inclusive measure of employment) without fear of inflation. Moreover, the assumption that the accommodative actions in the last recovery had failed to raise inflation to the 2 percent target motivated a policy of Odyssean forward guidance to ensure a highly expansionary policy. The spirit was that relative to past stimulative policy, a policy of "lower for longer" was required. A key feature of this committed forward guidance was renunciation of the preemptive increases in the funds rate that had been the hallmark of the Volcker-Greenspan era and that had continued in the prior recovery with Janet Yellen as FOMC chair. "Flexible average inflation targeting" (FAIT) expressed this rejection of preemptive increases by targeting an overshoot of inflation above 2 percent rather than maintaining near price stability.

Another characteristic of the FOMC's Keynesian framework is the assumed transmission of monetary policy through the influence exerted on financial intermediation. That is, monetary policy works through its influence on the "cost and availability" of credit. A funds rate at the zero lower bound (ZLB) would keep the cost of funds low while quantitative easing (QE) would improve market functioning and increase the availability of credit. With this framework, the FOMC communicated monetary policy to the public using the vague term of "supporting the economy" rather than in terms of the growth rate of aggregate nominal demand.

When over the course of 2021 inflation rose steadily, until fall 2021, the FOMC dismissed the rise as transitory. With significant excess capacity (unemployment above the assumed NAIRU of 3.5 percent or lower) and room for the labor force participation rate to rise to its prepandemic level, inflation had to arise from pandemic induced shortages. As inflation persisted and the labor force participation rate failed to increase to prevent a steady reduction in unemployment, in early 2022, the FOMC signaled an end to quantitative easing and an increase in the funds rate at the March 2022 FOMC meeting. The Phillips curve framework offered the promise of a soft landing. By tightening conditions in financial markets, increases in market interest rates would prevent further declines in the unemployment rate until the alleviation of pandemic shortages caused cost-push pressures to unwind with a lowering of inflation to 2 percent.

In the recovery from the Great Recession, the Yellen FOMC had preserved near price stability and had promoted a steady recovery by following the policy of preemption that characterized the Great Moderation. However, the Keynesian language Yellen used left a legacy that supported the Keynesian pandemic monetary policy. With the Yellen FOMC, during the recovery from the Great Recession, policy makers often discussed monetary policy in terms of raising the funds rate toward a presumed higher "neutral" rate of interest or NAIRU, taken by financial markets as the median long-term funds rate forecast in the FOMC's Summary of Projections (SEP). Within a Keynesian framework, this communication substituted for the politically charged language of a policy intended to prevent the unemployment rate from declining below the NAIRU.

In the recovery from the Great Recession, inflation remained just below the FOMC's two percent target. Interpreted within a Keynesian framework in which the FOMC controls inflation by controlling slack in the economy, the Powell FOMC concluded that it had maintained too much slack, that is, kept the unemployment rate too high. With FAIT implemented by Odyssean forward guidance in the pandemic monetary policy, the FOMC was fighting the last war (the recovery from

the Great Recession). That is, raising the funds rate in response to above trend growth in output with no increase in inflation had depressed employment in the earlier recovery.[9]

3. Monetary policy in the Great Moderation

The signal feature of the FOMC's adoption of a Keynesian framework was abandonment of preemptive increases in the funds rate to preserve price stability. In doing so, the FOMC intended to lower the unemployment rate sufficiently to move into the upward sloping section of the Phillips curve and raise inflation. This characteristic of policy harks back to the activist policy of the 1970s.

In the stop-go era of the1970s, in the go phases in economic recoveries, out of a concern not to "abort the recovery," the FOMC raised the funds rate only tentatively until expansionary monetary policy raised inflation. In reaction, in the stop phases, the FOMC raised the funds rate steadily. Out of a concern that reductions in the funds rate would signal a tolerance of inflation and raise expected inflation, the FOMC resisted reductions in the funds rate as the economy went into recession. This policy of cyclical inertia in the funds rate effectively entailed a policy of Phillips curve trade-offs. By the end of the 1970s, the Federal Reserve lost a stable nominal anchor. First, bond markets began to associate the expansionary monetary policy of go phases with a rise in inflation. Second, they raised the expectation of future inflation with increases in actual inflation.

The overriding objective in the subsequent Volcker-Greenspan era became restoration of a stable nominal anchor through restoring nominal expectational stability. That objective required recourse to preemptive increases in the funds rate during economic recoveries. The resulting elimination of the expansionary policy of the go phases prevented the emergence of inflation.[10] The necessary rejection of Phillips curve trade-offs by a policy focused on the restoration of price stability enforced a discipline that required the FOMC to allow the price system to work freely to determine real variables—real output and employment. Instead of manipulating the growth of aggregate nominal demand to achieve a trade-off between low inflation and a socially desirable low rate of unemployment, the spirit became to maintain a growth rate of aggregate nominal demand compatible with price stability. The unemployment rate ceased to be an independent target while reductions in the unemployment rate became solely an indicator of whether the economy was growing at an unsustainably rapid rate.

With a funds rate instrument, maintenance of price stability requires a neutral monetary policy in which the FOMC implements procedures that track the natural rate of interest. In contrast, allowing inequality over time between the real rate of interest and its natural rate counterpart creates

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[9] For a critical view, see ch. 24 ("Recovery from the Great Recession") in Hetzel (2022, forthcoming). This chapter appears as Mercatus Center (George Mason University) working paper "The Recovery from the Great Recession: Did the FOMC Learn the Right Lessons?" February 18, 2021.

[10] Hetzel, Robert L. *The Federal Reserve System*. *A New History*, University of Chicago Press, forthcoming 2022, chs. 18, 19, and 20. _____. *The Monetary Policy of the Federal Reserve: A History*. Cambridge: Cambridge University Press, 2008. _____. *The Great Recession: Market Failure or Policy Failure?* Cambridge: Cambridge University Press, 2012.

the monetary emissions and absorptions that destabilize the price level (the macroeconomic equivalent of price fixing).

With FAIT, moving the funds rate only in response to realized inflation rather than preemptively recreates the practice of the 1970s. The FOMC then is always playing catchup to the natural rate of interest because of the Friedman long-and-variable lag phenomenon. In the Volcker-Greenspan era, the FOMC concentrated on moving expected inflation down to a value near price stability and then moved the funds rate away from its prevailing value to keep output growing at potential. The term structure of interest rates then moved responsively to incoming information bearing on whether growth was unsustainably weak or strong (rates of resource utilization were rising or falling). Effectively, the FOMC managed a search procedure by the bond markets for the natural rate of interest. Such procedures required abandoning activist aggregate demand policy with its alternations of stimulative and restrictive monetary policy.

4. How did Greenspan understand the control of inflation?

Greenspan did not use the models of economists to articulate the character of monetary policy. Nevertheless, it is useful to examine his statements to understand how he continued the Volcker policy of moving the Federal Reserve from a policy of activist aggregate demand management to one concentrated on price stability. In particular, Greenspan rejected the Keynesian Modigliani-Papademos framework adopted by the Powell FOMC in summer 2020.

That framework had failed in the long expansion after the 1990-1991 recession when the unemployment rate declined from 7.8 percent in June 1992 to 3.8 percent in April 2000 while inflation changed only minimally. Inflation, measured by the core PCE deflator, went from 2.2 percent in 1992Q2 to 1.3 percent in 2000Q2. Measured by the headline PCE deflator, it remained unchanged over this period at 1.8 percent. Unlike the Powell FOMC, Greenspan rejected the Modigliani-Papademos framework and invented his own explanation for the failure of inflation to rise as the unemployment rate declined.

In a letter published in *The Wall Street* Journal, Dan Thornton commented: "Prof. Blinder suggests nobody knows what the nonaccelerating rate of unemployment (Nairu), the neutral (natural) rate of interest (aka r-star or r*) and the Phillips curve are today. This is hardly new. Estimates of Nairu and the Phillips curve have changed constantly over the last 50 years. Alan Greenspan noted this fact at the December 1995 Federal Open Market Committee meeting: 'saying that the Nairu has fallen, which is what we tend to do, is not very helpful. That's because whenever we miss the inflation forecast, we say the Nairu fell.' Other FOMC participants made similar comments at other meetings, e.g., at the February 1999 meeting William Poole, president of the St. Louis Fed, said, 'the Phillips curve is an unreliable policy guide;' Edward Boehne, president of the Philadelphia Fed, said 'Nairu … has about zero value in terms of making policy.' "[11]

What lessons should one learn from the recoveries from the 1990-1991 and 2008-2009 recessions? The argument here is that Greenspan was right to reject the Modigliani-Papademos framework and that he followed the right policy to control inflation. Like Volcker, Greenspan wanted to reestablish and then maintain the stable nominal anchor lost in the stop-go era. As a business forecaster, however, he interpreted the task through that lens. For Greenspan, achievement

[11] Thornton, Daniel L. "Comment on Alan S. Blinder." *Wall Street Journal*, May 4, 2018, A15.

of price stability did not entail a target for inflation and a feedback rule in which the Fed changed its instrument in response to misses of target. Like Friedman, Greenspan believed that such a procedure would be destabilizing.[12] The newspaper reporter and author Bob Woodward explained:[13]

> Greenspan had come to believe that inflation numbers for the past year were basically irrelevant. Their [FOMC members] job was to deal with the future—with inflation expectations. They wanted stable prices in the next six months, not the past six months, so targeting an inflation number would be meaningless. He wanted inflation expectations to be benign, so consumers and businesses did *not* factor inflation into purchasing or investing decisions. (italics in original)

Suppressing inflation after it had already appeared rather than preventing its emergence required disruptive contractionary monetary policy. Greenspan testified:[14]

> History suggests . . . that higher price inflation tends to surface rather late in the business cycle and, hence, is not a good leading indicator of emerging troubles. By the time inflation pressures are evident, many imbalances that are costly to rectify have already developed, and only harsh monetary therapy can restore the financial stability necessary to sustain growth. This situation regrettably has arisen too often in the past.

With the sensitivity of the bond market vigilantes to expansionary monetary policy and inflation, Greenspan's concentration on taming inflationary expectations eliminated any attempt to exploit a Phillips curve trade-off. Greenspan testified:[15]

> In the twenty years after World War II, most economists gave short shrift to expectations as a key determinant of inflation. Unemployment and inflation were considered simple tradeoffs. A lower rate of unemployment was thought to be associated with a higher, though constant, rate of inflation, conversely, a higher rate of unemployment was associated with a lower rate of inflation.
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> But the experience of the past three decades has demonstrated that what appears as a tradeoff between unemployment and inflation is quite ephemeral and misleading. Over the longer run, no such tradeoff is evident. Attempts to force-feed the economy beyond its potential have led in the past to higher inflation and, ultimately, not to lower unemployment, but to higher unemployment, as destabilizing forces and uncertainties associated with inflation induced economic contraction. In that regard, experience both here and abroad suggests that lower levels of inflation are conducive to the achievement of greater productivity and efficiency and, therefore, higher standards of living.

As a business forecaster, Greenspan focused on the control of unit labor costs as the central variable for controlling the price setting of businesses. Control of unit labor costs required that the economy grow at a sustainable rate so that labor markets did not overheat. Controlling inflation

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[12] Friedman, Milton. *A Program for Monetary Stability*. New York: Fordham University Press, 1960.

[13] Woodward, Bob. *Maestro: Greenspan's Fed and the American Boom.* New York: Simon & Schuster, 2000, 170.

[14] Greenspan, Alan. Testimony before the Joint Economic Committee, January 31, 1994, 6.

[15] Greenspan, ibid., 7.

therefore required preemptive increases in the funds rate, which maintained growth at potential. Greenspan testified:[16]

> Short-term interest rates are currently abnormally low in real terms. At some point, absent an unexpected and prolonged weakening of economic activity, we will need to move them to a more neutral stance. Such an action would not be taken in order to cut off or limit the economic expansion, but rather to sustain and enhance it.

Expectations were important for controlling the markup over unit labor costs. If businesses expected price stability, they would respond to pressure on markups not by raising prices but rather by increasing productivity. As evident in the Greenspan testimony (2nd paragraph of excerpt prior to immediately preceding excerpt), Greenspan was already thinking about productivity growth in the early 1990s.

Internal FOMC debate over how to control inflation heated up in 1996 when the economy recovered from the lull in 1995 and unemployment continued to decline. Woodward recounts the Keynesian sentiment within the FOMC to raise the funds rate. However, the Modigliani-Papademos model was not working to predict inflation. Woodward wrote, "The old economic model that most economists held sacred included the NAIRU, the non-accelerating rate of unemployment. If unemployment dipped below the NAIRU, which was then commonly thought to be around 6 percent, economic theory held that inflation would start up. But unemployment was in the 5 ½ percent range. Why was there no burst of inflation?"[17]

Greenspan resisted efforts to raise the funds rate and carried the FOMC. As noted above, Greenspan forecast inflation based on the behavior of unit labor costs plus a markup and profits. Woodward (2000, 167) wrote, "Greenspan … saw little or no increase in prices, no real increases in labor costs, but simultaneous giant profit increases. Again, the only explanation was rising labor efficiency, more productivity. Workers were making more goods per hour." Strong growth in productivity had to be holding down the growth in until labor costs. Greenspan concluded that moderation in the growth of unit labor costs would for the time being obviate the need to raise the funds rate.

The statistical problem was that the productivity numbers from the Commerce Department were declining not increasing. Greenspan argued that they had to be wrong. He had the Board staff disaggregate the numbers by sector. The Board work showed that the declines in productivity originated in the service sector. Woodward wrote:[18]

> Greenspan had been questioning the official productivity numbers for almost three years. The numbers could not be right. The problem in part was that disputing them was almost like arguing with the reports of yesterday's temperature range in the newspaper. . . . When they looked at the results, the stunner was that the service businesses, from the gas stations to the sole proprietorships and partnerships—roughly one-third of business in the country—showed a ½ percent *decline* in productivity over the last two decades. The service numbers, which were

[16] Greenspan, ibid., 8.

[17] Woodward, ibid., 168.

[18] Woodward, ibid. 167, 172, and 174)

> negative, had to be wrong. . . . These wrong numbers were dragging down the aggregate productivity numbers for the economy as a whole. (italics in original)

Greenspan was right. Despite an unemployment rate below the presumed NAIRU in 1996, labor markets were not stressed. High productivity growth made workers productive, and firms did not feel that they had to raise wages to deal with a shortage of labor. Although Greenspan remained willing to raise the funds rate preemptively based on signs of an overheating labor market, the recovery had not yet advanced to the point at which output exceeded potential output.

5. What would a preemptive monetary policy have looked like in the pandemic?

What would a preemptive monetary policy, that is, a policy that relied solely on market forces instead of monetary stimulus to restore full employment, have looked like during the pandemic? In March 2020 when the amplitude of the Covid-19 shock became evident, the FOMC needed to maintain aggregate nominal demand to allow markets time to assess the likely extent of the virus. That task had two components. First, because of the uncertainty over the extent of the disruption, there was a tremendous demand for liquidity (the dash for cash). The Fed was right to have bought large amounts of government securities (not mortgage backed securities) to meet the demand for that liquidity but with short-term maturities so that when calm returned the reserves would be absorbed.[19]

Second, even with the funds rate lowered to the ZLB, the natural rate of interest could have been significantly negative. The FOMC could have followed the policy it pioneered in the recovery from the Great Recession.[20] As the recovery from the Great Recession progressed, the FOMC initiated QE programs when the recovery faltered. The portfolio balance effect described in section 6 below countered an environment of extreme risk to the world economy from the Euro Crisis, Brexit, and possible recession in China combined with a negative natural rate of interest. (The Figure "Estimates of the Short-Run Real Natural Rate of Interest" in the December 7, 2016, Tealbook show the real rate of interest averaging around -2 percent from 2009 through 2014.)[21] Figure 1, which shows payroll employment benchmarked to its prepandemic level of January 2020, offers one guide to the recovery of the economy.[22] If the recovery appeared to be faltering, the FOMC could have initiated a QE program in addition to keeping the funds rate at the ZLB.

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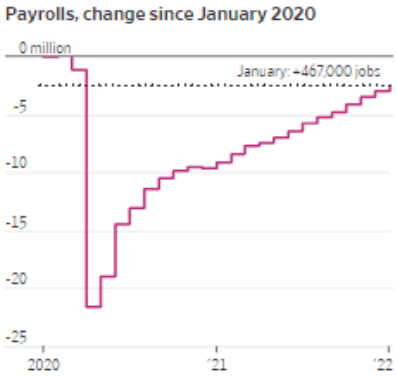
[19] The hedge funds arbitraging the difference in yield between on the run and off the run Treasuries disgorged significant amounts of Treasury securities. Given the supplementary leverage ratio (SLR), dealers in government securities could not arbitrage away the rise in the Treasury yield (Hetzel 2022, forthcoming, ch. 25) and references in footnote 2. Regulators should have suspended the SLR.

[20] Hetzel (2022, forthcoming, ch. 24) and reference in footnote 9.

[21] Board of Governors "Report to the FOMC on Economic Conditions and Monetary Policy," Book A, "Economic and Financial Conditions: Current Situation and Outlook," December 7, 2016, 81.

[22] Chaney, Sarah Cambon and Gabriel T. Rubin. "U.S. Jobs Surged by 467,000 in January as Economy Weathered Omicron." *Wall Street Journal*, February 4, 2022. U.S. Jobs Surged by 467,000 in January as Economy Weathered Omicron - WSJ

Figure 1



As part of its Odyssean forward guidance in response to the pandemic, however, the FOMC renounced the policy of preemptive increases in the funds rate to preserve price stability. Premption was the key disguishing feature that set the Volcker-Greenspan policy apart from the prior stop-go policy. When inflation scares ceased with Fed acquisition of credibility after 1994, signs of overheating in labor markets triggered preemptive increases in the funds rate. If the FOMC had retained the policy of preemption, it would have followed some combination of raising the funds rate and reducing the size of its asset portfolio starting in spring 2021.

The labor market strengthened in spring 2021. Until fall 2021, the FOMC assumed that returning workers who had left the labor force because of the pandemic would increase the labor force participation rate and limit reductions in the unemployment rate. However, starting in early 2021, the number of unemployed workers declined strongly without bringing into the labor force workers who had left. In January 2021, the number of unemployed persons was 10,180,000. The number then declined steadily and was 6,513,000 in January 2022. Persons not in the labor force, in contrast remained steady. In June 2020, the number was 100,370,000 and in February 2022 only slightly lower at 99,333,000.

Labor market strength appeared in the ratio of job openings (total nonfarm) to the number of unemployed. In February 2020, before the pandemic, the ratio was 1.23. It fell to .71 in January 2021, but then rose steadily reaching a high of 1.73 in January 2022. (Data from St. Louis FRED.) Two San Francisco Fed economists concluded: "Overall, our analysis shows that proxies constructed to measure labor market tightness, particularly the vacancy-to-unemployment ratio and the job-switching rate, provide the most accurate forecasts of future price and wage pressures among the measures we test."[23] The Atlanta Fed wage growth tracker (three-month moving average of median wage growth) was at 3.4 percent in January 2021 and then rose steadily and reached 5.8 percent in February 2022. The Cleveland Fed 16% trimmed mean CPI inflation measure rose sharply in spring 2021. In January 2021, the 12-month figure was 2.0 percent and 3.0 percent in July 2021. (It was 5.75 percent in February 2022.)[24]

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[23] Barnichon, Regis and Adam Hale Shapiro. "What's the Best Measure of ?Economic Slack?" *FRBSF Economic Letter*, February 22, 2022.

[24] https://www.atlantafed.org/chcs/wage-growth-tracker and https://www.clevelandfed.org/en/our-research/indicators-and-data/median-cpi.aspx.

To control inflation, the FOMC must control the growth rate of nominal GDP relative to the growth rate of potential real GDP. Figures on GDP are available only with a long lag and are subject to revision. One proxy for growth in nominal GDP is "aggregate weekly payrolls of all employees, total private," which is calculated as the product of average hourly wages and aggregate weekly hours." It is one measure of the income available to support spending. In the recovery from the Great Recession, it grew moderately at 4.5 percent from January 2010 to January 2020. Indicative of the high degree of monetary stimulus, it grew at 10.4 percent from January 2021 to February 2022 (St. Louis FRED).

Moving the funds rate only in response to an increase in realized inflation rather than preemptively recreates the practice of the 1970s. The FOMC then is always playing catchup to the natural rate of interest because of the Friedman long-and-variable lag phenomenon.[25] In the Volcker-Greenspan era, the FOMC concentrated on moving expected inflation down to a value near price stability and then moved the funds rate away from its prevailing value to keep output growing at potential. The term structure of interest rates then moved responsively to incoming information bearing on whether growth was unsustainably weak or strong (rates of resource utilization were falling or rising). Effectively, the FOMC managed a search procedure by the bond markets for the natural rate of interest. Such procedures required abandoning activist aggregate demand policy with its alternations of stimulative and restrictive monetary policy.

6. Money and inflation

The Volcker-Greenspan policy described in section 3 effectively provided for monetary control. With an interest rate instrument, the Federal Reserve accommodates the demand for money. By providing a stable nominal anchor in the form of the expectation of price stability and by tracking the natural rate of interest, real money demand grows in line with potential output. Nominal money then grows in line with potential output and maintains price stability. The question then arises of whether the FOMC's current Keynesian policy combined with large purchases of government debt with the funds rate at the ZLB will create the classic inflation seen in countries in which the central bank cedes dominance to the needs of the Treasury to finance government debt.

Figure 2 shows the post-pandemic surge in real M2, the purchasing power represented by M2. When the pandemic abates, the public will attempt to draw down that purchasing power. Adding to the amount of purchasing power that the public will attempt to run down possibly is the significant accumulation in real M2 in the recovery from the Great Recession (shown by the relatively steep slope of the line in Figure 2 starting in 2011) when the long period of near zero interest rates made holding liquid balances inexpensive. From 2011 through 2021, real M2 nearly doubled from $4 trillion to almost $8 trillion (St. Louis FRED).[26]

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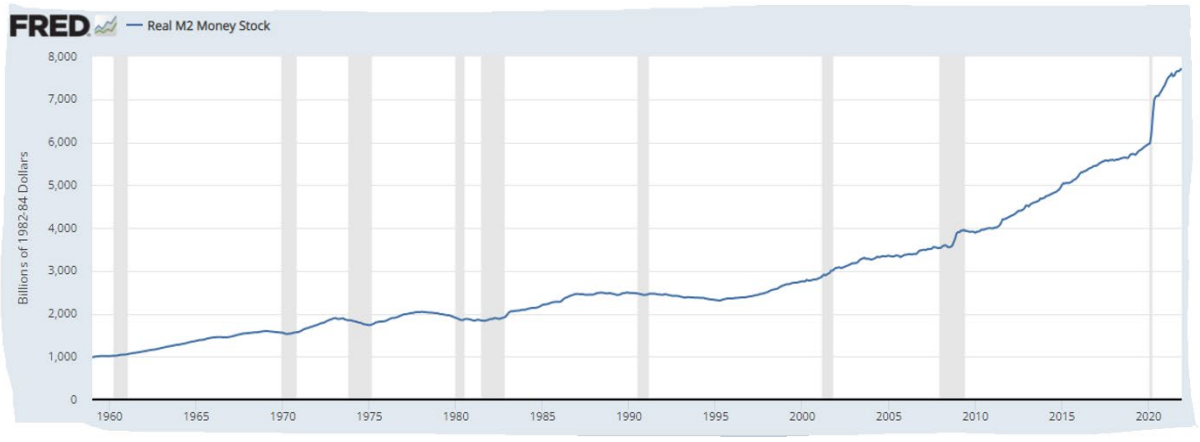
[25] Friedman argued for a lag of two years between changes in the thrust of monetary policy and inflation. Friedman, Milton. "The Quantity Theory of Money." in John Eatwell, Murray Milgate, and Peter Newman, eds., *The New Palgrave Money*. New York: W. W. Norton, 1989, 1-40, p. 31.

[26] From 2020Q4 through 2021Q4, quarterly annualized growth of nominal GDP averaged 10.7% while the comparable figure for M2 was 12.8%. That is, M2 velocity declined moderately. However, in the earlier period, from 2020Q1 through 2020Q3, quarterly annualized growth of nominal GDP averaged only .8% while the comparable figure for M2 was 30.9%. There is then a large monetary overhang of real M2 balances.

Figure 2



News articles talk about the accumulation of liquid assets by the public during the pandemic. What is missing from these accounts is the degree to which those liquid assets represent the bank deposits created by QE from the monetization of illiquid debt (government bonds or mortgage backed securities). With the helicopter money created by the monetization of illiquid debt, each individual believes that they can reduce their cash balances by spending them. However, spending simply transfers them to another party. As shown in Figure 2, in the Great Inflation of the 1970s with its high rates of money growth, inflation kept the real purchasing power of M2 relatively stable. Why will not the buildup in purchasing power represented by the increase in real M2 during the pandemic also be reduced by inflation when the pandemic passes?

Inflation need not occur if the FOMC follows some combination of raising interest rates and reducing the size of its asset portfolio through quantitative tightening. Raising rates provides the public with an incentive to repay debt owed to banks thereby extinguishing deposits. Quantitative tightening (selling assets) reduces the bank deposits of the public directly. The bulge shown in real M2 in Figure 2 then will disappear through a reduction in the nominal quantity of M2. The common assumption is that a moderate increase in the funds rate and a gradual reduction in the FOMC's asset portfolio will eliminate monetary stimulus and lower inflation to the FOMC's 2 percent target. However, the tightening required to eliminate the monetary overhang could well be an order of magnitude above what markets are forecasting.

The magnitude of the required increase in the funds rate depends upon how quickly the FOMC reduces the helicopter money it created through debt monetization by reducing the size of its asset portfolio. It is correct that with the funds rate at the ZLB or with payment of interest on reserves, the FOMC can change the size of its asset portfolio without an alteration in the value of the funds rate. However, the larger is the FOMC's asset portfolio the higher is the funds rate required to maintain a given stance of monetary policy. To understand this fact, note that quantitative easing works through a portfolio balance effect.

When the FOMC expands the size of its asset portfolio by buying long-term, illiquid assets, it makes the asset portfolio of the public more liquid. In particular, QE purchases of MBS and long-term Treasuries make the public's asset portfolio more liquid by replacing these illiquid assets with

liquid bank deposits.[27] In order to reconcile the public to holding a more liquid asset portfolio, the price of illiquid assets must rise. The power of this money creation appeared after March 2020 in the increase in the price of equities, houses, commodities, and consumer durables. The increase in the value of assets relative to their income streams, stimulates expenditure (Tobin's Q).[28] The "long and variable" lags highlighted by Milton Friedman reflect the time required for this process to work.[29] The more aggressive is QE, the higher is the required funds rate to maintain aggregate nominal demand growing at a noninflationary rate.

An alternative way to look at the tightening required to restore 2% inflation is to posit that the portfolio balance effect described above has raised the wealth of the public to an unsustainable level. The elevated level of wealth in early 2022 created by QE is then consistent with growth in real output above the rate of growth of potential output. Policy will have to tighten sufficiently to force a deflation of asset prices. Such a situation occurred in Japan after the 1987 Louvre Accord. In an environment of expected price stability, an expansionary monetary policy by the Bank of Japan raised asset prices, especially, land and equities. Japan then had to go through a period of restrictive monetary policy and asset price deflation.[30]

Finally, the recent experience with the recovery from the Great Recession has created the impression that historically low interest rates will be a common feature going forward. However, even if the real rate of interest remains near zero or negative, the nominal interest rate can rise if expected inflation increases. Moreover, if expected inflation rises significantly, for a given funds rate, the real funds rate can decline and make monetary policy more expansionary unless the FOMC tightens significantly.

7. Reviving the monetarist-Keynesian debate

The pandemic monetary policy offers a replay of the experiment with the activist aggregate demand policy of the 1970s. An activist (Keynesian) policy requires controlling slack in the economy through manipulation of the stance of monetary policy, at times expansionary and at times contractionary. With this direct control over slack in the economy, the FOMC attempts to control inflation through a Phillips curve trade-off. With an interest rate instrument, money adjusts passively to the real money demand determined by the FOMC's selection of the desired pair of output (employment) and inflation given by the Phillips curve. Chair Powell dismissed the relevance of money: "That classic relationship between monetary aggregates and economic growth and the size of

[27] From the week ending January 1, 2020, to the week ending January 26, 2022, commercial bank deposits increased by $4.8 trillion, or 36.4% (St. Louis FRED, Deposits: All Commercial banks).

[28] Friedman, Milton. "The Lag in Effect of Monetary Policy" (1961) in Milton Friedman, ed., *The Optimum Quantity of Money and Other Essays*. Chicago: Aldine Publishing Company, 1969, 255-6.

[29] Friedman, Milton. *A Program for Monetary Stability*. New York: Fordham University Press, 1960.

[30] Hetzel, Robert L. "Japanese Monetary Policy and Deflation." Federal Reserve Bank of Richmond *Economic Quarterly* 89 (Summer 2003), 21-52.

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."[31]

The Great Moderation rule distilled here from the Volcker-Greenspan era is that the FOMC restored a stable nominal anchor in the form of the expectation of low inflation (near price stability of just below 2% inflation). To defend that expectation, the FOMC moved the funds rate preemptively first in response to inflation scares and then in response to evidence of overheating in labor markets as in 1999. Policy was nonactivist in that it tracked the natural rate of interest and thus allowed the price system to eliminate slack in the economy by keeping output growing around potential. The prior instability of the 1970s is consistent with the premise that an attempt to control slack in the economy to exploit a Phillips curve trade-off interferes with the operation of the price system. The resulting macroeconomic price fixing creates destabilizing monetary emissions and absorptions and disrupts the economy.

Of course, this judgment is controversial. The pandemic monetary policy offers an extraordinary opportunity to learn about what kind of monetary policy stabilizes or destabilizes the economy. The opportunity arises not only because of the reversion to an activist policy of aggregate demand management but also because of the different policies followed by different central banks. Measured by money growth, monetary policy was far more stimulative in the United States than in other countries. In the United States, year-over-year M2 growth was 19.0% in 2020 and 16.4% in 2021 (St. Louis FRED). In contrast, for Japan year-over-year M2 growth was 6.5% in 2020 and 6.4% in 2021. For Switzerland, December through December, annual M2 growth was 6.0% in 2020 and 1.5% in 2021.[32]

Moreover, there were differences in that not all central banks attempted to allocate credit but rather confined themselves to the classical role of supplying liquidity in a period of financial stress. Georg Rich, former director and chief economist at the Swiss National Bank, offered the following description of policy in Switzerland during the pandemic (personal communication).

> In Switzerland the SNB [Swiss National Bank] did not play any role in the current COVID-19 crisis, aside from supplying adequate liquidity to the banks and trying to prevent undesirable changes in the exchange rate. The task of supporting the economy undisputedly rested with the government, whose assistance was based on three pillars: uncomplicated low-interest banks loans, largely guaranteed by the government, to firms suffering from losses above a certain percentage of their sales; a government-financed furlough scheme, inducing firms to retain their employees despite a decline in sales; and a program supporting firms and individuals not covered by the first two pillars (e.g. artists and other individuals in the cultural areas, self-employed physiotherapists and similar individuals in the health sector). The program was successful in the sense that our economy is now recovering quickly (more quickly than those of our neighbors), with inflation, at least until now, not rising above 2%.

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[31] U.S. Cong. "The Semiannual Monetary Policy Report to the Congress." Hearing before the Committee on Banking, Housing, and Urban Affairs. United States Senate. 107th Cong. 1st session, February 23, 2021, 24.

[32] Research and Statistics Department, Bank of Japan, https://www.boj.or.jp/en/statistics/money/ms/ms2202.pdf and Swiss National Bank, Monetary Aggregates, https://data.snb.ch/en/topics/snb/cube.

It would be reassuring if it were known that the FOMC is debating the issue of how it controls inflation. Given that 19 individuals sit around the table at FOMC meetings (when the Board of Governors is at full strength), the background for such a debate would have to be included in the Tealbook circulated before FOMC meetings. Chair Powell spoke for the FOMC when he articulated the Keynesian approach to controlling inflation at his August 2020 Jackson Hole speech. To structure this approach, the Tealbook should estimate the output gap and make explicit the Phillips curve that uses it to forecast inflation.[33]

An advantage of such explicitness is that the Tealbook would make clear the strategy the FOMC uses to target inflation. For example, as noted by the Dallas Fed, in "the statement of longer-run goals and policy strategy . . . the Fed changed its language on inflation, replacing its 2 percent inflation target commitment, and instead said it will '[seek] to achieve inflation that averages 2 percent over time. . . .' Monetary policy under inflation targeting . . . lets 'bygones be bygones,' since it does not attempt to make up for past inflation deviations from target. By comparison, average inflation targeting means that policymakers would consider those deviations and can allow inflation to modestly and temporarily run above target to make up for past shortfalls, or *vice versa.*" (italics in original)[34] Nevertheless, Chair Powell apparently changed the policy of average inflation targeting to eliminate below average inflation in response to overshoots of inflation. In a press conference, Michael McKee asked, "Do you want to go below 2 percent so that, on average, you get a 2 percent inflation rate?" Powell responded, "There's nothing in our framework about having inflation run below 2 percent. . . . So the answer to that is, is 'no.' "[35]

An alternative in the monetarist and market monetarist tradition emphasizes the FOMC's control over nominal expenditure.[36] The Tealbook provides estimates of nominal GDP growth and potential output growth in tables "Changes in GDP, Prices, and Unemployment" and "Decomposition of Potential GDP," respectively.[37] The difference is inflation measured by the deflator for dollar GDP. In its forecast tables, the Tealbook could provide information on how the Board staff estimates these variables. To provide for public debate and transparency, the FOMC would make the Tealbook available after FOMC meetings.

8. Reviving the rules versus discretion debate

The United States suffers from the absence of an institutional framework that disciplines the extent to which the Fed can intervene in the operation of a market economy. To be effective, such a

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[33] The table "Decomposition of Potential GDP," p. 32," estimates the GDP gap. The figure on the same page plots the unemployment rate and the natural rate of unemployment. See footnote 21 for the reference.

[34] Martinez-Garcia, Enrique, Jarod Coulter, and Valerie Grossman. "Fed's New Inflation Targeting Policy Seeks to Maintain Well-Anchored Expectations," Federal Reserve Bank of Dallas, April 6, 2021.

[35] Board of Governors, transcript of Chair Powell's Press Conference, January 26, 2022, p. 23.

[36] As an example of the latter, see, for example, Sumner, Scott. "Nominal GDP Targeting: A Simple Rule to Improve Fed Performance." *The Cato Journal* 34 (Spring/Summer 2014), 315-337.

[37] In the December 7, 2016, Tealbook the tables are on pages 87 and 32, respectively. See footnote 21 for full reference.

framework would have to be widely understood. It would also need to be illustrated through a recounting of how the framework worked in historical episodes. For example, in the Volcker-Greenspan era, restoration of a stable nominal anchor by creating the expectation of price stability, required abandonment of the alternation of expansionary and contractionary monetary policy known as stop-go in favor of a neutral policy that effectively allowed the price system the unfettered ability to determine real variables—output and employment.

There are three aspects to this discipline. One aspect concerns the moral hazard created by intervening to prevent markets from closing indebted financial institutions in the way that market forces can close an insolvent business. Should the United States have a financial safety net run by the Federal Reserve that prevents hedge funds and institutions like AIG from failing with losses to their debt holders?

The second aspect concerns whether the Fed should allocate credit in an emergency. That is, should it concentrate on monetary policy and avoid credit policy. For example, when the pandemic unfurled in March 2020, without waiting for any evidence of market failure, the FOMC simply assumed that private markets could no longer evaluate risk and allocate resources. To maintain "market function," the Fed assumed the need for a panoply of programs that put tail risk onto its (the Treasury's) portfolio removing it from investors' portfolios.

The third aspect concerns whether the Fed should follow a rule that allows the price system to maintain full employment. In normal times, such a rule requires operating procedures that cause the real funds rate to track the natural rate of interest. In times of extreme pessimism, with the funds rate at the ZLB, it can create helicopter money through purchases of long-term treasuries (not mortgage backed securities, MBS). This quantitative easing works through a portfolio balance effect to stimulate expenditure and effectively raises the natural rate of interest by making the public's asset portfolio more liquid.

9. Concluding comment

The holy grail of monetary economics is to identify a rule for monetary policy that stabilizes the economy. However, identifying such a rule is inherently controversial. The reason is that one has to assess the nature of the shock that accompanies periods of instability. The Keynesian tradition assumes that such shocks originate in the private sector and overwhelm the stabilizing properties of the price system. The role of the Federal Reserve is to offset these shocks through expansionary monetary policy. Inflation arises from cost-push shocks that present the Federal Reserve with a dilemma of how to balance off reducing inflation with increases in unemployment. Policy should be activist.

In contrast, the monetarist tradition attributes the shocks that destabilize the economy to interference by the Federal Reserve with the operation of the price system. Inflation arises from excess money creation. The role of the Federal Reserve is to implement a rule that provides for a stable nominal anchor and allows the price system free rein to determine the behavior of the real economy. Policy should be nonactivist.

The pandemic policy of the Federal Reserve offers an extraordinary opportunity to distinguish between these two views. The initial shock was clearly the Covid-19 virus. Just as clearly, the Federal Reserve responded with a highly expansionary monetary policy supported by significant money creation. The future behavior of the economy will provide evidence on the

optimal policy. If the activist policy was appropriate, by year end 2022, inflation will be on the way back down to 2 percent with an unemployment rate remaining near 4 percent. If the nonactivist policy would have been better, inflation will remain near double digits and will recede only with a recession.