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Will the pandemic bulge in money cause high inflation?

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Abstract. The monetary aggregate M2 increased from $15,473 billion in February 2020 to $19,670 billion in February 2021, or by 27.1%. Real M2 (M2 deflated by the CPI) increased similarly by 25.3%. This monetary acceleration, unprecedented outside of wartime, is apparent in a longer-run perspective. From the trough of the last business cycle in June 2009 through February 2020, annualized monthly growth rates for M2 averaged 5.9%. Over the interval March 2020 through June 2020, they averaged 65.6%. Although diminished, rapid M2 growth continued, averaging 12.9% from July 2020 through March 2021. Milton Friedman famously said that inflation is always and everywhere a monetary phenomenon. If he is right, should not this bulge in money lead to an undesirably high rate of inflation? Section 1 summarizes what the Fed must do to avoid an undesirable increase in inflation. Section 2 lays out the argument in terms of a need for procedures that ensure monetary control. Section 3 describes the Fed's new monetary policy called "flexible-average-inflation targeting" (FAIT). It highlights how radical a departure FAIT is from the policy of the Great Moderation as a consequence of making the unemployment rate an independent goal rather than using its changes as an indicator variable for whether the economy is growing unsustainably fast or slow. Section 4 draws out the parallels between FAIT and the monetary policy followed in the 1970s. It makes the argument that unless the FOMC reinstates the policy of preemptive increases in the funds rate guided by the necessity of unwinding the 2020 bulge in M2, it will inaugurate an undesirably high period of inflation. Section 5 argues that in many ways with its dismissal of money FAIT resembles modern monetary theory (MMT) adapted to exploitation of the trade-offs promised by a Phillips curve. Section 6 contends that money remains at the heart of any serious conceptual framework for discussing the powers of a central bank. An appendix provides a more formal quantity theoretic framework using the New Keynesian model.
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1. Introduction

The bulge in M2 represents a significant increase in purchasing power. That bulge in purchasing power can be reversed in one of two ways, either through a reduction in the nominal quantity of M2 or through significant inflation. The increase in M2 occurred through the bookkeeping operations of banks as the public received government transfer payments and the Fed through quantitative easing (QE) purchased government Treasuries and mortgage-backed securities (MBS). To the extent that the QE purchases matched the increase in the bank deposits in M2, the government

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did not have to issue debt to finance its transfer payments. The Fed monetized the government deficit.

Reversing the increase in the nominal quantity of M2 requires undoing the bookkeeping operations of the banks that created the deposits. For that to happen, the Fed will need to keep short-term real rates of interest (the funds rate) in line with the "natural" rate of interest, the real rate of interest that keeps savings equal to investment. That is, as the public attempts to spend down its M2 balances (dissave), interest rates must be sufficiently high that the public also pays down bank debt (saves) and thus extinguishes bank deposits. However, the Fed is communicating to markets that the funds rate is likely to rise off the zero lower bound (ZLB) only in 2024. At the same time, QE is raising asset prices and wealth and thus raising the natural rate of interest. It is likely that monetary policy will remain expansionary and that inflation will increase significantly.

Milton Friedman put the lag between monetary acceleration and increased inflation at about 2 years. With the acceleration in M2 dated to 2020Q2, the rise in inflation should be apparent by early 2022. Spokespersons for the FOMC have forecast that there will be a blip in inflation in 2021 but that inflation will return to 2% or lower by the end of 2021. There is then an experiment of the monetary view of inflation. If the latter is correct, the "blip" will turn into a sustained increase in inflation without a rapid elimination of expansionary monetary policy.

2. Price stability requires monetary control

When confidence returns with widespread immunization, households will draw down their liquid savings (bank deposits) and the service sector will rebound. An historical analogy is the way in which households in World War II accumulated money balances to spend with the end of the war and restoration of the availability of consumer goods. The FOMC looks forward to a one-time surge in prices, but what assurance is there that the surge will dissipate rather than propagate?

Everything will depend upon how the purchasing power embodied in the 2020 bulge in money (M2) is unwound. If it is unwound through a reduction in the nominal quantity of bank deposits, then any price rise will be a one-time event. However, simply spending funds in a bank deposit does not make the deposit disappear. The deposit is transferred to the recipient of the expenditure. Money is a hot potato. With no reduction in its nominal quantity, the purchasing power embodied in the bulge in M2 will have to be run down through inflation.

For the nominal quantity of money to decline, the FOMC must have procedures that cause the real funds rate to track the natural rate of interest. As defined here, the natural rate of interest is the real rate of interest that eliminates excess demand in the goods market. Alternatively, savings equal investment. With that equality, there is no excess supply of bonds for the central bank to monetize in the bond market as a consequence of defending its rate peg. Without such debt monetization, there is then no excess supply

in the market for the quantity of money requiring an increase in the prevailing price level. When households attempt to run down their excess money balances, they dissave. A sufficiently high real rate of interest causes a corresponding amount of saving in the form of paying down bank debt and extinguishing bank deposits (money). Of course, the process is aided if the Fed sells securities.

To understand how FOMC procedures can provide for this monetary control, it is necessary to understand the relationship between the FOMC's two instruments: 1) the funds rate and the associated forward guidance about the future funds rate path contingent on the evolution of the economy; and 2) quantitative easing (QE) in the form of purchases of Treasury securities and MBS. Payment of interest on reserves (IOR) separates the funds rate target from the size of the Fed's portfolio and its liabilities in the form of deposits of commercial banks with it. An open market purchase does not lower the funds rate because IOR effectively sterilizes the reserves creation by inducing banks to hold the additional reserves.

However, even with an unchanged funds rate, QE purchases of long-term securities are stimulative. The portfolios of investors became more liquid with the replacement of a Treasury bond or MBS with a bank deposit. Through portfolio rebalancing, investors then bid up the prices of assets like consumer durables, houses and equities. As a first pass, the prices of these assets must rise to reconcile investors to holding a more liquid asset portfolio. The rise in Tobin's Q, the price of an asset relative to its replacement cost, stimulates investment and the purchase of consumer durables. Although the FOMC may not change its funds rate target (the rate paid on IOR), there is an increase in the natural rate of interest required to maintain excess demand equal to zero in the goods market.[2]

No doubt there is agreement that the hyperinflation in countries like Zimbabwe and Venezuela arises from the monetization of government debt by the central bank. Is there an analogue with the monetization of the government debt that occurred through the massive QE that began in March 2020? The answer is negative but only if the FOMC demonetizes debt (reverses QE) by causing the real funds rate to track the natural rate of interest.

To make the argument specific, imagine first a counterfactual associated with a Cares Act payment made in March 2020 financed entirely by issuance of government debt. The household receives an electronic deposit, and its bank receives an equal amount of reserves at the Fed. The payment reduces the Treasury's account at the Fed (the Treasury General Account or TGA). By assumption, the Treasury issues a security to the public to replenish the account. Bank deposits and reserves then decline to their original level while

[2] The length of time required for the increase in Tobin's Q to stimulate investment accounts for the lag between initiation of an expansionary monetary policy and an increase in aggregate expenditure. Friedman (1989, 31) estimated the lag at 2 to 3 quarters for an increase in expenditure with a lag of 2 years for an increase in inflation. Transparency would require that the FOMC make public the combined influence of a funds rate at the ZLB and QE on aggregate expenditure.

the public holds more Treasury debt. When confidence returns in the post-pandemic world, households will attempt to increase their spending by selling the Treasury securities they acquired. Because there are buyers for those securities, saving accompanies dissaving, which moderates the increased post pandemic spending. However, for such sales to find buyers other than the Fed, interest rates will have to rise.

As actually happened, however, to replenish the TGA, starting in March 2020, the Treasury effectively sold securities to the Fed because of the Fed's large open market purchases. Bank deposits and reserves then increased. When confidence returns and households want to spend down their augmented deposits, the analogue to the above of households selling Treasury securities is for the Fed to sell securities from its portfolio. Some households must save to buy those securities. Again, dissaving is countered by saving, which moderates the additional spending. However, to the extent that the Fed does not unwind its portfolio, it will have to compensate by raising interest rates to a greater extent than assumed in the above counterfactual example to match an increase in the natural rate of interest. With higher interest rates, households have an incentive to save by paying down bank debt like credit card debt and, in the process, to extinguish bank deposits. The increase in purchasing power incorporated in the bulge in M2 is unwound through a reduction in the nominal quantity of M2.

In 2021, monetary policy is expansionary as evidenced by the strength in the housing market, stock market, the manufacturing sector, weakness in the dollar, and surging sales of goods. The FOMC does not worry about an uncontrolled overshoot in inflation because it organizes monetary policy around Phillips curve trade-offs rather than monetary control. From the FOMC's perspective, there will be a one-time increase in the price level in 2021 due to cost-push pressures (an upward shift in the Phillips curve). However, the increase in inflation will be transitory because slack in the economy in the form of significant unemployment will restrain inflation (keep the unemployment rate to the right of the NAIRU value on the Phillips curve). From a quantity theory perspective, however, a sustained expansionary monetary policy will produce sustained high inflation.

3. FAIT: the return of fine tuning guided by a Phillips curve

FOMC chair Powell used the term "late-breaking improvements" to refer to the way in which the prepandemic low of a 3.5% unemployment rate achieved after a long recovery reduced inequality in the labor market. These improvements included a historically low unemployment rate for African Americans, more rapid wage growth at the low end of the wage scale, and increased labor force participation among people without a college degree. As embodied in the Fed Listens outreach effort to community groups, these desirable outcomes produced by a strong labor market caused the FOMC to adopt an "inclusive" version of its maximum employment objective. In reference to the labor market just prior to the onset of the pandemic and the

prevailing existence of near price stability, Powell (2/10/2021, 3-4) said, "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."

Powell (2/10/2021, 8-9) also said, "Recognizing the economy's ability to sustain a robust job market without causing an unwanted increase in inflation, the statement [of FAIT] 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.... [W]e expect that it will be appropriate to maintain the current accommodative target range of the federal funds rate until labor market conditions have reached levels consistent with maximum employment and inflation has risen to 2 percent and is on track to moderately exceed 2 percent for some time. In addition, we will continue to increase our holdings of Treasury securities and agency mortgage-backed securities by $80 billion and $40 billion per month…"

The FOMC has defined its objective of maximum employment as inclusive maximum employment. That is, the FOMC has set as an objective an unemployment rate low enough to ensure full employment in minority communities. That level of employment relative to actual employment defines the FOMC's measure of slack in the economy. The regular reference by Powell to the existence of a Phillips curve flat down to at least the pre-pandemic unemployment rate of 3.5% conveys the message that the FOMC can run an expansionary monetary policy without achieving the desired rise in inflation for a period of time measured in years. The modifier "flexible" before "average-inflation target" derives from the fact that now the FOMC has two independent objectives—a socially desirable low rate of unemployment and inflation. If sustained inflation rises well above 2% before reaching the unemployment objective, the FOMC will trade off between the two objectives in a discretionary ("flexible") way.

FAIT represents a radical departure from the earlier policy initiated in the Volcker-Greenspan (V-G) era. With FAIT, the FOMC has restored the monetary policy anterior to V-G of alternations in the stance of monetary policy—expansionary during the pandemic and later necessarily contractionary to correct the overshoot of inflation from 2% (go-stop).[3] The intent of the alternations is to manipulate slack in the economy while at the same time producing predictable results for inflation based on an empirical Phillips curve relationship relating slack and inflation.

[3] FOMC spokespersons conjecture that periodically shocks will require a funds rate at the zero lower bound (ZLB) and inflation will decline because of an inability to lower the funds rate. Quantitative easing measure must also be presumed ineffective at the ZLB. The argument is highly conjectural.

Based on the recovery from the Great Recession, the FOMC could have drawn the conclusion that the way to achieve maximum sustainable employment is to ensure a long recovery uninterrupted by the need to counter a reemergence of inflation. Instead, everything changed when the FOMC adopted an inclusive definition of employment as an independent target rather than simply as an indicator variable with its changes showing whether the economy is growing unsustainably fast or slow. Once again willing to make inflation-output trade-offs, albeit under the optimistic premise that the trade-offs would not arise until the unemployment rate fell to at least 3.5%, the FOMC adopted an expansionary monetary policy to lower unemployment.

The issue then became how to run an expansionary monetary policy at the ZLB for the funds rate when a funds rate at the ZLB for the early years of the recovery from the Great Recession had not produced inflation. During those first years, markets, anticipating a V-shaped recovery, had kept bond rates relatively high (Hetzel 2021, Ch. 24, "Recovery from the Great Recession"). The solution was Odyssean forward guidance that committed the FOMC to keeping the funds rate at the ZLB for a period of years.[4] Making that commitment credible entailed several features. One feature was open-ended quantitative easing (QE). Although advanced to promote "market function," the purchase of MBS was hardly necessary to revive a housing market that was thriving. While stimulative in its own right, the FOMC accompanied QE with the message that markets should not consider a funds rate increase in the offing until well after the FOMC began to taper its QE purchases at some indefinite time in the future.

The FOMC adopted FAIT so that markets would not raise bond rates given an increase in inflation. Inflation would have to rise persistently above 2%. "Persistently" meant that markets should ignore an increase in inflation assumed by the FOMC to be a one-time event associated with recovery of the economy. In terms of the implementation of policy, the most dramatic change in monetary policy came with the rejection of the signal characteristic of policy in the Greenspan era, namely, preemptive increases in the funds rate during economic recovery. The FOMC did not want markets to raise bond rates in anticipation of preemptive increases in the funds rate. It then needed an excuse to abandon preemption. The excuse was the inability to use a Nairu framework to forecast inflation. The criterion for an end to QE and liftoff from the ZLB is no longer a "forecast" of inflation but rather the actual emergence of a persistent overshoot of inflation above 2% and significant progress toward inclusive maximum employment.

In her tenure as FOMC chair, after December 2015, Janet Yellen practiced the policy of preemption, albeit in a moderate form that accounted for the secular decline in the natural rate of interest and weakness in the world

[4] The term Odyssean forward guidance comes from Campbell *et al.,* (2012). The term refers to forward guidance that commits the FOMC (ties it to the mast) to behaving in a way that supersedes a more general reaction function. By committing to a liftoff of the funds rate from the ZLB only after a persistent overshoot of inflation above 2% the FOMC is telling markets not to raise bond rates as the unemployment rate declines.

economy. However, with her Keynesian background, Yellen adopted the Modigliani-Papademos (1975) framework for forecasting inflation. With this framework, changes in inflation depend upon the difference between the unemployment rate and the NAIRU (nonaccelerating inflation rate of unemployment). NAIRU, which is an acronym coined by James Tobin (1980), demarcates the unemployment rate on the Phillips curve such that values to the left cause inflation to rise and values to the right cause inflation to fall. Using the median of the long-run values in the FOMC's SEP (Summary of Economic Projections) for the unemployment rate as a proxy for NAIRU, a declining unemployment rate in the recovery from the Great Recession that pushed the unemployment rate below this proxy should have produced an increase in inflation to the FOMC's 2% target but did not. It should not have been a surprise to FOMC participants that this framework would fail to predict inflation.[5]

With the pandemic, the FOMC kept the Modigliani-Papademos (1975) Phillips curve as the conceptual framework for understanding how it controls inflation. However, the issue then became "What Phillips curve?" Chair Powell admitted that no such empirical relationship can be found in the data. At the same time, the FOMC needed a Phillips curve relationship to ensure its achievement of inclusive maximum employment with only a moderate increase in inflation. It must therefore exist. The resolution was that the Phillips curve does not appear in the data because it is "flat." Powell (1/14/2021) stated:

[W]e 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.

The FOMC gave substance to an expansionary policy of exploiting a flat Phillips curve by adopting the policy recommended by Joseph Stiglitz (1997) when he was head of the Clinton CEA. That is, the FOMC should discover

[5] The Modigliani-Papademos framework failed similarly in the long expansion after the 1990-1991 recession when the unemployment rate declined from 7.8% in June 1992 to 3.8% in April 2000 while inflation changed only minimally. Inflation, measured by the core PCE, went from 2.2% in 1992Q2 to 1.3% in 2000Q2. Measured by the headline PCE deflator, it remained unchanged over this period at 1.8%.

In a letter published in *The Wall Street* Journal, Dan Thornton (2018) wrote: "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.' "

the NAIRU through running an expansionary monetary policy to lower the unemployment rate until inflation rises. The NAIRU is then the unemployment rate at which lower values are associated with an upward sloping Phillips curve. As a necessary byproduct of the Stiglitz policy, the FOMC rejected the Greenspan policy of preemptive increases in the funds rate intended to preserve price stability. The FOMC viewed preemption as limiting the decline in unemployment. In doing so, it implicitly rejected the principle of tracking the natural rate of interest and thus ensuring a long expansion with near price stability thereby allowing labor markets time to achieve the matching required for a low rate of unemployment.

Having decided on an expansionary monetary policy, the issue arose, "How to define an expansionary monetary policy?" FOMC spokespersons talked about providing "support" for the economy without defining the word "support." Additional commentary makes clear that the FOMC understands the transmission of monetary policy in terms of the 1950s concept of the "cost and availability of credit." The purpose of the quantitative easing (QE) through the purchase of $120 billion of Treasuries and MBS each month is to "support market function," that is, the "availability" of credit. (The purpose is not to stimulate the dollar expenditure of the public by increasing the money stock.)

Commitment to maintaining the funds rate at the ZLB encourages lending through a low "cost" of credit. It also encourages an expansionary fiscal policy. In a press release issued on March 17, 2020, Speaker of the House Nancy Pelosi (2020) reported, "I spoke with Federal Reserve chairman Powell.... I was encouraged by the Chairman's perspective that with interest rates at nearly zero, Congress is enabled to think big fiscally as we craft a robust response." LHM (3/19/2020) wrote:

The new troika in D.C. is now Mnuchin-Powell-Pelosi.... Bernanke gave the most relevant speech of 2020 in 2002.... As Bernanke noted, "a pledge by the Fed to keep the Treasury's borrowing costs low ... might increase the willingness of the fiscal authorities to [provide fiscal stimulus]…." That's exactly what Powell said to Pelosi today.

4. Lessons from the stop-go policy of the 1970s for 2021 monetary policy

The characteristic of policy identified by Friedman as long and variable lags caused expansionary monetary policy in the pre-Volcker era to require a subsequent corrective contractionary monetary policy (Hetzel, 2008, 2012).[6]

[6] In terms of a metaphor, imagine a policymaker moving the faucet of a bathtub with rightward movements of the handle producing hot water and leftward movements producing cold water. With no lags, the policymaker can produce quick changes in the temperature of the incoming water. Given the amount and temperature of the water in the tub, the policymaker can produce predictable changes in the tub's water temperature. Now imagine that movements in the handle produce changes in the temperature of the incoming water, but only with a lag that is on average 6 months but is also variable. Attempts to move the handle to produce immediate or at least quick changes in the tub's water temperature will be destabilizing. The assumption of an activist policy like FAIT is that the policymaker

The Phillips curve framework misled the FOMC in two respects. First, monetary policy did not possess the required ability to control slack (excess unemployment) in the economy so as to move predictably along a Phillips curve. Expansionary monetary policy ended up being inflationary despite contemporaneous estimates of slack in the economy evidenced by an unemployment rate in excess of 4 %. Second, even if the FOMC was capable of such fine-tuning control of the economy, it overestimated the amount of slack in the economy (Orphanides 2003).

As explained by Friedman (1984), the appearance of inflation in the stop-go era meant that the accompanying reduction in unemployment was not sustainable while the reversal of inflation required a recession. The antidote to the "go" policies that had required corrective "stop" policies in the pre V-G era became in the V-G era preemptive increases in the funds rate as economic recovery proceeded to prevent the reemergence of inflation. Preemptive increases in the funds rate during an economic recovery forestalled an increase in inflation. The essence of preemption was to eliminate any attempt to trade off between a reduction in unemployment and an increase in inflation. Such a policy, disciplined by concern for inflation scares, eliminated the cycle of expansionary-contractionary policy by causing the real funds rate to track the natural rate.

Perhaps, the expansionary monetary policies that began in the second half of the 1960s and that initiated successive go-stop cycles no longer serve well as a template for the expansionary policy of 2020-21. One could argue that abandonment of the policy of preemption that characterized the Great Moderation is appropriate given the FOMC's desire to raise actual and expected inflation. However, the issue would still remain of whether the FOMC now has a much-improved ability to estimate slack in the economy. As explained by Brainard (2021), the FOMC's objective of "maximum employment" has been redefined to require a strong labor market for disadvantaged groups: "[T]he K-shaped labor market recovery remains uneven across racial groups, industries, and wage levels. The employment-to-population (EPOP) ratio for Black prime-age workers is 7.2 percentage points lower than for white workers, while the EPOP ratio is 6.2 percentage points lower for Hispanic workers than for white workers... Workers in the lowest-wage quartile continued to face staggering levels of unemployment of around 22 percent in February."[7]

can implement an alternating go-stop monetary policy without appreciable lags based on a predictable relationship between slack in the economy and inflation—the Phillips curve is "exploitable."

[7] The reason for abandoning preemption is to ensure that economic recovery continues long enough to benefit these groups. Brainard (2021) said: "By focusing on eliminating shortfalls from maximum employment rather than deviations in either direction and on the achievement of inflation that averages 2 percent over time, monetary policy can take a patient approach rather than a preemptive approach. The preemptive approach that calls for a reduction of accommodation when the unemployment rate nears estimates of its neutral rate in anticipation of high inflation risks an unwarranted loss of opportunity for many of the most economically vulnerable Americans…."

An objective for maximum employment high enough to achieve socially desirable objectives is not likely a better benchmark than the traditional U-3 unemployment rate for measuring slack in the economy. The statistics that Brainard cites above are valid but labor markets are still tight. Many workers have withdrawn from the labor market out of fear of the virus, a responsibility to supervise home schooling for children, and generous unemployment benefits. That withdrawal limits supply relative to demand. A story in *Richmond Times Dispatch* (Peifer, 2021) illustrates:

> [R]estaurants across the country and here at home are faced with a new crisis: staffing. There are nearly 5,000 open restaurant jobs in the Richmond region right now... Folks are really struggling to get staff on board… Kruger [a restaurant owner] pointed to the simple math of unemployment benefits right now: Most of the people he's talked to are receiving the maximum state benefit of $378 a week, plus $300 a week from the extended federal benefits, which works out to $678 a week... That would be about $35,000 a year... The average pay for restaurant jobs in the Richmond region, according to data from the Bureau of Labor Statistics, is $20,400 for fast-food workers...

Using a Phillips curve framework, the FOMC has interpreted the preemptive increases in the funds rate in the recovery from the Great Recession as having limited employment especially in minority communities. The view here is that those preemptive increases in the funds rate tracked the natural rate of interest as the economy began to grow persistently above potential. By providing for an extended noninflationary recovery, monetary policy allowed the labor market time to function to fulfill the goal of "maximum employment" (Hetzel, 2021, Ch. 24). It is misleading to use the recovery period as evidence that the FOMC can run an expansionary monetary policy to lower the unemployment rate to at least 3.5%, the prepandemic low, without an undesirably high increase in inflation. To support the latter claim, one must argue that expansionary monetary policies such as the FOMC pursued in the 1970s work well to produce predictable unemployment-inflation trade-offs. It must be that such policies do not in themselves become a source of instability.

In the V-G era, restoration of price stability required abandonment of an activist policy based on manipulating Phillips curve trade-offs. Implementation of William McChesney Martin's lean-against-the-wind procedures entailed using persistent changes in the unemployment rate as an indicator of whether the economy was growing (declining) at an unsustainable rate. It was not a target. Greenspan's "forecast" was that the unemployment rate could not decline continually (the economy could not grow above potential indefinitely) without inflation. Preemption preserved price stability.

5. Joining MMT and the Phillips curve

One way to understand the lack of concern for money on the part of the FOMC is through the perspective of Modern Monetary Theory (MMT). The appellation "modern" is a misnomer, however, as MMT is just a revival of

Abba Lerner's program to ensure full employment known as "functional finance." The most direct way to understand MMT is through the Keynesian IS-LM framework. The IS schedule is downward sloping and the LM schedule horizontal.[8] The responsibility of the government is to adjust the deficit to maintain aggregate spending at a level that maintains full employment. With full employment, price stability obtains.

The following excerpts from Lerner (1943) explain the rationale for the disregard by the central bank for money:

> The central idea [of functional finance] is that government fiscal policy, its spending and taxing, its borrowing and repayment of loans, its issue of new money and its withdrawal of money, shall be undertaken with an eye only to the *results* of these actions on the economy…. The first financial responsibility of the government (since nobody else can undertake that responsibility) is to keep the total rate of spending in the country on goods and services neither greater nor less than that rate at which at the current prices would buy all the goods that it is possible to produce. (p.39)
>
> [A]ny excess of money outlays over money revenue, if it cannot be met out of money hoards, must be met by printing new money…. (p.41)
>
> The almost instinctive revulsion that we have to the idea of printing money, and the tendency to identify it with inflation, can be overcome if we calm ourselves and take note that this printing does not affect the amount of money *spent*….
>
> As long as the public is willing to keep on lending to the government there is no difficulty, no matter how many zeros are added to the national debt. If the public becomes reluctant to keep on lending, it must either hoard the money or spend it. If the public hoards, the government can print the money to meet its interest and other obligations, and the only effect is that the public holds government currency instead of government bonds, and the government is saved the trouble of making interest payments. (pp. 42-3) (italics in original)

In the postwar period, it became clear that the Lerner/IS-LM framework did not provide an adequate theory of inflation. When Lerner wrote, "full employment" meant minimal unemployment. (See the critical commentary in Viner 1950). During World War II, the unemployment rate declined drastically with a low in October 1944 of .9% (St. Louis FRED, NBER Macrohistory Database, series m08292b). However, such "minimal" unemployment was not a realistic objective and countries like Britain that pursued full employment as an objective experienced inflation (see Britten, 1970).

The lack of a framework that explained inflation became urgent in the mid-1960s when the political system led by the Heller CEA under President Kennedy adopted 4% unemployment as a national objective. "Low" unemployment became a political imperative as a way of assuaging the tensions in a polarized society riven by a militant civil rights movement and

[8] The IS schedule relates the interest rate to aggregate demand. Lower interest rates produce higher investment and through a multiplier effect higher spending. The LM schedule relates the interest rate to the demand for money. The lower the interest rate, the more money balances there are that are available to finance spending. Output is determined by the intersection of the two schedules.

the war in Vietnam. To meet the demand for a low unemployment policy while assuaging critics that it would be inflationary, Keynesian economists needed to expand the IS-LM framework by adding an equation that would explain inflation. Samuelson & Solow (1960[1966]) supplied the missing equation by giving a structural interpretation to the graph in a paper of A. W. Phillips' (1958) showing an inverse correlation between unemployment and nominal wages for Great Britain. They reformulated the "Phillips curve" by substituting inflation for the nominal wage and by suggesting that the relationship offered a menu of choice for the policymaker between unemployment and inflation.

6. Money remains central to understanding central banking

The FOMC needs a conceptual framework that forces it to assess what powers it possesses as a central bank and what disciplines those powers. Henry Thornton (1802[1939]) had it right. What makes a central bank unique is its control over money creation. The need for a rule that provides for monetary control is essential, even if not conceptualized as such by policymakers. Maintenance of price stability always requires that percentage changes in nominal money equal percentage changes in real money demand. With an interest rate peg as the policy variable, that equality is provided for by the discipline that monetary policy places on the demand for real money balances. With an interest rate target, nominal money changes in response to real money demand. In the quantity theory tradition, the discipline placed on real money demand comes from a central bank rule that provides for a stable nominal anchor and that allows the price system to determine real variables. The latter condition prevails if the central bank causes the real funds rate to track the natural rate of interest. Real money demand (and nominal money) then grows in line with potential output.

There are several reasons to incorporate money into a discussion of monetary policy. As evidenced by the Great Moderation of the V-G era, tracking the natural rate of interest required preemptive increases in the funds rate. The prior Burns-Miller regime of waiting for the emergence of inflation with its prior excess money creation before initiating sustained increases in the funds rate forced the FOMC into the world of Phillips curve trade-offs. The V-G era moved policy into the Goodfriend-King (1997) New Keynesian world of maintaining price stability and by implication a rule that tracked the natural rate of interest (turning the real economy over to the operation of the real business cycle core). Money becomes a veil in that it is not an independent source of disturbance.

The FOMC formally abandoned the practice of preemptive increases in the funds rate in Chair Powell's Jackson Hole speech in August 2020 because of the desire to increase inflation. As of April 2021, labor markets are tight with labor force participation rates down and not likely to increase before children return to in-person school and the generosity of supplemental employment benefits is removed. As of May 2021, a policy of preemption

would call for an increase in the funds rate off the ZLB. Of course, the FOMC wants inflation to rise but in a moderate, controlled way unlike the uncontrolled rises in the Burns-Miller era. An indicator that would help to ensure such a controlled rise would be for the monetary aggregate M2 to start to decline thereby reversing the bulge that began in March 2021.

It is necessary to talk about money because of FOMC procedures that combine a funds rate target with QE. As explained above, QE creates a portfolio balance effect (Tobin's Q) that raises the prices of assets (houses, equities, bonds). The rise in asset prices makes investors fell wealthier and raises the natural rate of interest. The question is how much of a rise has occurred in the natural rate of interest? Evidence that the M2 bulge that began in March 2020 is reversing would help to ensure that monetary policy is not so highly stimulative as to cause a significant overshoot in desired inflation.

A focus on money would also help to clarify the FOMC's understanding of the transmission of a stimulative monetary policy to the economy. The FOMC uses the vacuous phrase "support the economy" to explain the operation of a stimulative policy. Quantitatively, the FOMC should explain how a stimulative monetary policy raises the aggregate nominal spending of the public relative to potential output. What ensures that growth in nominal spending eliminates slack in the economy with only a moderate overshoot in inflation? Unfortunately, any such judgment requires forecasting. Just looking out the window at the economy inevitably falls afoul of Friedman's curse of long and variable lags.

7. Concluding comment

At present, in 2020 and 2021, a similar political calculus exists as in the 1960s and 1970s. The political system demands a low unemployment rate to help heal a fractured society and like the earlier period the Fed supplies the policy. The same issue arises of how to ensure that the desired "low" unemployment rate will be accompanied by an acceptable inflation rate. The Phillips curve provides the assurance. A significant modification is that while the FOMC places the Phillips curve at the center of its policy framework, it no longer uses it to forecast. With its Odyssean forward guidance, the FOMC has promised to continue with QE and to keep the funds rate at the ZLB until it has observed "substantial progress" toward its goals of inclusive maximum employment and a persistent overshoot of inflation from 2%.

As a result, in 2021, monetary policy is intentionally expansionary. Monetary policy is holding the real rate of interest below the natural rate of interest as evidenced by continued high money growth, exuberant equity, commodity and housing markets, and a depreciating dollar. By making investors' portfolios ever more liquid, continued QE forces up asset prices through portfolio rebalancing. Achievement of an inflation rate persistently above 2% through a commitment by the FOMC to keep the funds rate at the

ZLB until the desired inflation occurs requires that expected inflation rise.[9] Consequently, the real rate of interest associated with the ZLB will decline and monetary policy will become more expansionary. An expansionary monetary policy will prevent the debt extinction required to reverse the 2020 bulge in M2. The purchasing power represent by that bulge will have to be run down through significant inflation.

When a large percentage of the population is vaccinated and the Covid-19 virus recedes, the economy will recover. The job market will revive. The main risk to the recovery is an uncontrolled surge in inflation. The FOMC has boxed itself in with Odyssean forward guidance to convince markets that the funds rate will remain at the ZLB until 2024 and that QE will continue for a significant further time. The FOMC will fear that any attempt to back off will cause a sharp spike in bond rates. The problem is that the FOMC has not run a strongly expansionary monetary policy since the 1970s and markets have forgotten that inflation is a monetary phenomenon. Hopefully, the kind of widespread debate over monetary policy that emerged in the 1970s will reemerge and force a fundamental evaluation of the role of the Federal Reserve System.

[9] The FOMC Statement for the March 17, 2021, meeting (Board of Governors 3/17/2021) states: "With inflation running persistently below this longer-run goal [2 percent], the Committee will aim to achieve inflation moderately above 2 percent for some time so that inflation averages 2 percent over time and longer-term inflation expectations remain well anchored at 2 percent. The Committee expects to maintain an accommodative stance of monetary policy until these outcomes are achieved."

In interpreting this statement, it is important to keep in mind that the objective that "longer-term inflation expectations remain well anchored at 2 percent" requires raising expected inflation from the lower level anchored at the expectation of near price stability.

Appendix

Using the New Keynesian Model to Exposit the Quantity Theory

An implication of the quantity theory is that price stability (alternatively, a predictable evolution of the price level) requires central bank operating procedures that impose monetary control (discipline money creation). A "monetary control rule" requires that the central bank implement a credible rule that provides a stable nominal anchor and that turns over to the price system the determination of real variables like output and employment. A stable nominal anchor requires a rule that is credible in that it shapes the price setting of firms in the sticky price sector (firms that set prices for multiple periods). Prices set in the flexible price sector pass through to headline inflation. (See Aoki, 2001)

Goodfriend & King (1997) show that in the basic New Keynesian model a monetary policy of price stability turns the determination of real variables over to the real business cycle core of the economy. There is a classical dichotomy in that price stability separates the determination of the price level from the determination of relative prices (the behavior of the real economy). A rule that gives free rein to the price system to determine real variables requires operating procedures that cause the real funds rate to track the natural rate of interest. Failure to follow such a rule entails interference by the central bank with the operation of the price system. The result is the macroeconomic equivalent of price fixing and produces monetary emissions and contractions that destabilize the price level—the classical quantity-theoretic result.

Blanchard & Gali (2007) offer an alternative vision of the world and the optimal monetary standard. The exercise of monopoly power in the private sector by large corporations and unions drives inflation through markup shocks. A policy of price stability then requires that the central bank periodically suppress output and employment. A "trade-off rule" is optimal. Monetary policy is organized around a Phillips curve that offers an exploitable (predictable) trade-off between unemployment and inflation. The issue then is whether a "monetary control" rule is optimal or whether a "trade-off" Phillips curve rule is optimal.[10]

[10] The exposition here uses the notation in 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 $E_t\pi_{t+1}$ is expected inflation. The natural rate of interest, r_t^n, equals (1).

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

where y_t^n is the (logarithm of the) natural rate of output, ρ_t is the subjective rate of time preference, s is the intertemporal elasticity of substitution in consumption, and Δ is a first-difference operator. The output gap equals $\tilde{y}_t \equiv y_t - y_t^n$ with y_t the (log of) real output. Using (1) and its counterpart for actual real values and solving forward yields (2).

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

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

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

The issue is the fundamental one raised in the monetarist-Keynesian debate. In the world in which the monetary control rule is optimal, markup shocks produce only transitory fluctuations in the price level while expected inflation remains unchanged. Those fluctuations do not disrupt the working of the price system. In the world in which the trade-off rule is optimal, the central bank is confronted with what Arthur Burns (1979) termed the anguish of central banking. The central bank is forced into trading off between increases in unemployment and price stability. The organizing spirit of the optimal rule is one of Phillips curve trade-offs not monetary control.

The equation of exchange offers an intuitive way to understand the quantity theory world in which the monetary control rule is optimal and followed by the central bank. The equation is PY=MV. The monetary control rule stabilizes the price level, P, and causes real output, Y, to grow in line with potential. The demand for money then derives from the growth in nominal output, PY, and from fluctuations in the demand for real money, (the inverse of) V. The central bank's interest rate peg allows banks to create deposits to accommodate the associated demand for money while the central bank accommodates the associated demand for reserves. Money is a veil. It exercises no independent influence and provides no predictive power.[11]

In 2021, monetary policy is following the trade-off rule and is highly expansionary. In this situation, it is useful to write the equation of exchange in its traditional form: MV=PY. The FOMC believes that expansionary monetary policy will raise PY with Y (and employment) rising to its prepandemic trend and P rising modestly to above 2%. The last time that the FOMC ran such a highly expansionary monetary policy was in the 1970s. If history is a guide, the current policy will founder for the same reasons it foundered in the 1970s—Friedman's long and variable lags and his dictum that inflation is always and everywhere a monetary phenomenon.

As shown in equation (3), a policy of price stability that keeps actual and expected inflation equal to zero makes the output gap equal to zero. As shown in equation (2), a rule that maintains the output gap equal to zero through price stability is equivalent to a rule that maintains actual and expected real rates of interest equal to their natural counterparts. As Barsky *et al* (2014, 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." Blanchard & Gali (2007) dispute this result by adding a markup shock to equation (3).

[11] Money can provide no predictive power and still be an independent source of disturbances. With passage of the Depository Institutions Deregulation and Monetary Control Act in 1980, real money demand became interest sensitive. M1 and M2 ceased to be useful as indicators of the stance of monetary policy by moving countercyclically. When the economy weakens, money market interest rates decline. Banks, however, lower the interest rates they pay on deposits only with a lag. Consequently, funds from the money market flow into bank deposits. This reintermediation causes the monetary aggregates to grow. It would of course be a mistake for the Fed to raise the funds rate.

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