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Journal of Policy Modeling 45 (2023) 669–676

www.elsevier.com/locate/jpm

Fed's monetary policy mistake and the US post-COVID economic recovery

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Received 19 September 2022; Received in revised form 9 February 2023; Accepted 10 April 2023
Available online 29 May 2023

Abstract

This paper argues that the persistent inflation in the U.S. during the post-COVID economic recovery was mainly the result of the Fed's policy mistake caused by an overestimation of the negative output gap. The paper shows that after a two-quarter contraction, the U.S. economy quickly rebounded and outpaced its potential output, thus remaining in overheating territory. However, policymakers prolonged the monetary expansion beyond the necessary, which contributed to fuel inflation for a more prolonged time. The policy mistake was the result of an inaccurate estimation of potential output. Based on an alternative estimation that uses full employment as a condition, this paper shows that the U.S. economy has been running with a positive output gap since mid-2021. The results illustrate that the Federal Reserve was well-behind the curve in an economy in overexpansion and with a galloping inflation escalating well-above the target.

JEL classification: E23; E31; E32; E52; E58; J21; O51

Keywords: Monetary policy; Central banking; Federal Reserve System; Output gap; Full employment; Inflation

1. Persistent post-covid inflation

Inflation showed a well-defined upward trend through 2021 despite policymakers' argument that price increases were transitory. All four main price indexes (CPI, core CPI, PCE and core PCE) rose steadily to their highest rates in nearly four decades. The general inflation index that

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https://doi.org/10.1016/j.jpolmod.2023.05.004

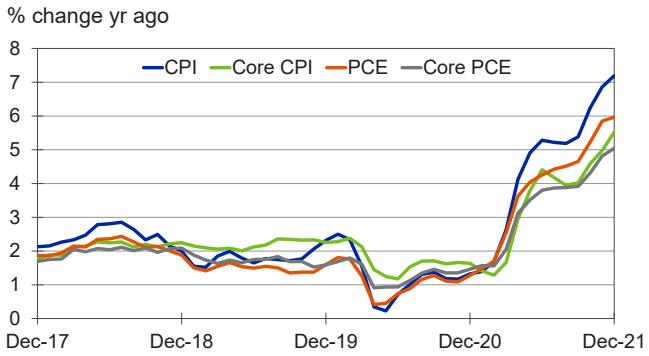

Chart 1. U.S. Inflation Rates,
Source: Bureau of Labor Statistics.

includes all urban items surpassed 7% at the end of 2021 compared with 1.3% a year earlier; core CPI rose to 5.5% from 1.6%; PCE reached 6% from 1.3%; and core PCE jumped to 5% from 1.5%. After the price disinflation caused by the pandemic outbreak in 2020, it was reasonable to believe that inflation was going to trend upward and reach or outpace pre-pandemic rates before starting to normalize. But by June 2021 both CPI and PCE were surprising to the upside with annual rates more than twice the Fed's 2% target. And both measures then continued to escalate (Chart 1).

Prices everywhere were fueled by diverse factors including high costs for energy and other commodities, interruptions of domestic activities caused by the recurrent pandemic, and shortages of intermediate inputs caused by disruptions in global supply chains. But excessive monetary liquidity was also involved. All these factors contributed to a growing imbalance between supply and demand of final goods and services, and excess domestic demand persisted with no sign of receding. If monetary liquidity props them up, price increases can be sustained for extended periods; this is well known.[1] Given the prolonged supply shortages, monetary measures were needed to address the persistent excess demand but they were absent.

There is reason to believe that the prolonged ultra-expansive monetary policy conducted by the Fed during the COVID pandemic is a factor behind the persistent inflation. If the U.S. economy runs at full capacity, any demand pressure caused by extra money supply constitutes additional fuel for inflation. If so, estimates indicating that the U.S. ended 2021 still running with a negative output gap might have overestimated the economy's slack.[2] During the first half of 2021, the Fed clearly stated that would it maintain accommodative monetary conditions until the goals of inflation around target and full employment were achieved, implying that the economy was not there yet. In September the Fed stated that the economy had made some progress but was not at full employment yet, implying that the output gap was still negative. In December, it stated that conditions remained accommodative to support the economy and it would be appropriate to maintain that stance until labor market conditions reached levels

[1] Friedman and Friedman (1980).
[2] Congressional Budget Office (2021), Federal Reserve Bank: FRED St. Louis (2023). IMF (2021), Goldman Sachs (2021).

consistent with maximum employment.[3] Obviously, the Fed implied that the economy was close but still below full employment.

2. Full-employment condition

Full employment is a situation where the economy performs at a speed such that the unemployment rate does not cause an acceleration of inflation and holds inflation around its structural rate for a prolonged time.[4] This implies that the economy functions at full capacity and uses available resources efficiently. In theory, if the economy performs at its steady state, no macroeconomic imbalance is generated, and there is no deviation of real output from potential output; thus, the output gap is zero. In practice, the economy performs at full employment when it reaches an employment rate that allows the rate of inflation to stay around its target for a prolonged time.

An economy functions at full employment when the following two conditions are met:

$$Y\text{-}Y^* = 0$$

$$\pi\text{-}\pi^* = 0$$

where Y stands for real GDP and Y* for potential output, and π is the rate of inflation and π^* is the structural inflation rate (usually the inflation target). The conditions imply that the full employment is reached when the output and inflation gaps are non-existent.

Alternatively, we can say,

If $Y\text{-}Y^* > 0$, there exists an inflationary gap, implying that $\pi\text{-}\pi^* > 0$

If $Y\text{-}Y^* < 0$, there exists a deflationary gap, implying that $\pi\text{-}\pi^* < 0$

A policy shock can jolt the economy from its steady state.[5] In fact, economic policy is a powerful instrument to moderate the ups and downs of the business cycle. On one hand, policy stimulus can help to mitigate the adverse impact of a crisis and move the economy back toward its potential. On the other hand, policy restriction can help to cool the economy when it is overexpanding and bring it back to potential. The proper size of the policy stimulus or restriction depends on how far the economy is from its full-employment trajectory. Therefore, the accuracy and stability of the estimates of the output gap are essential to determine the right size of the policy stimulus or restriction. Hence, inaccurate and unstable estimates of the output gap can lead policymakers to push the economy to either underperform or overheat.

The size of the monetary stimulus implemented by the Fed in the past two recessions (2009, 2020) was different, as was the duration of the economy's contraction. During the 2009 global financial crisis, the U.S. economy contracted 4% for four consecutive quarters (2008Q3 to 2009Q2), but during the 2020 pandemic crisis the economy fell 10.1% for two consecutive quarters (2020Q1 to 2020Q2). However, the quantity of primary money per unit of output was much bigger during 2009 than in 2020 (Chart 2). In both crises the nominal federal funds rate

[3] Federal Reserve (2021).

[4] More references in Bureau of Labor Statistics (2017). Dornbusch, R. & S. Fisher (1994). Samuelson, P., & W. Nordhaus (1985).

[5] See Jones (1998) and Romer (1996).

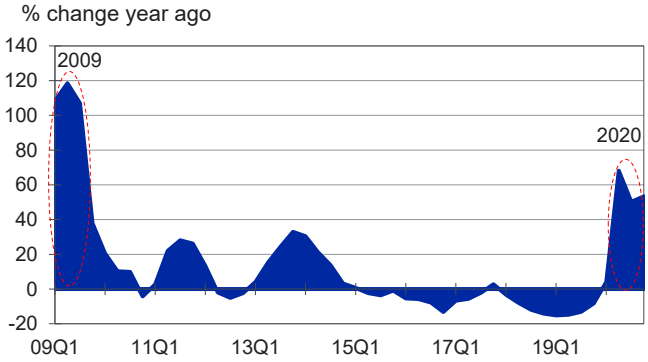

Chart 2. Quantity of Money per Unit of Output,Sources: Author's calculations, Fred St. Louis.

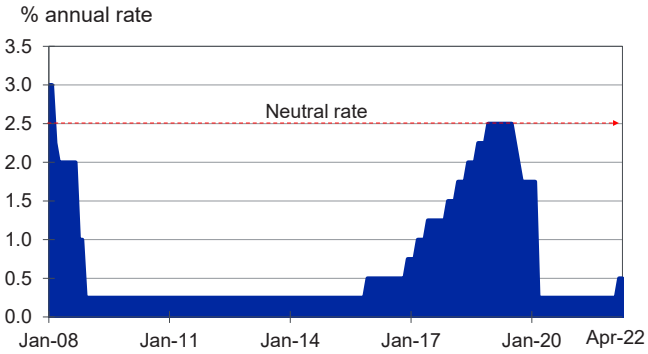

Chart 3. Federal Funds Target Rate,
Source: Federal Reserve System.

fell to the 0–0.25% lower bound, but in the first case the rate remained unchanged for 7 years (2009–2015), while in the second case it was unchanged for only 2 years (Chart 3). One difference is that, in the 2009 crisis the economy took two and a half years to recover the pre-crisis level of output, while in the 2020 case the output recovery took less than a year. One explanation is that the destruction of businesses and employments was much lower in the most recent crisis; consequently, the damage to production capacity was less severe, and the economy rebounded quickly and strongly. The short-lived recession in 2020 could have given the impression that potential output was not reduced significantly, thus leading to an overestimation of the negative output gap and therefore to a prolonged monetary expansion.

3. Output gap based on full employment

As explained in a previous paper,[6] most estimations of the output gap are obtained using statistical methods (estimation without theory)[7] and production functions. Beyond the inherent

[6] Coutino (2021).
[7] Coutino (2016).

statistical bias, those estimates are subject to a variability factor generated by the nature of the inputs used to estimate the potential output, such as cyclical fluctuations of time series, the usual statistical revisions to preliminary figures, and even methodological changes. To avoid that variability issue, we use a more stable input and apply the full-employment condition as defined before. We use the prime-age employment population ratio as the main input to estimate the output gap, since it is a time series less subject to cyclical fluctuations and historical revisions.[8] The method proposed, based on the full-employment condition, includes the following steps:

1) We select a historical sample covering the past two decades and including the two most recent crises, with the purpose of finding at least one complete business cycle: peak-trough-peak. The main series to analyze include real GDP, prime-age population, and the inflation rate defined by the personal consumption expenditure.
2) We look for two consecutive periods during which the economy performed under a non-accelerating inflation and with inflation holding around target for a relatively prolonged period (at least four quarters). This period usually coincides with employment at a rate such that further increases push inflation above target, and any decline pushes inflation below target.
3) The first period of a relatively stable inflation rate at around the 2% target was found from the end of 2006 to the third quarter of 2007. The second period was found in 2018, when inflation reported a marginal variation around 2% from the first to the fourth quarters of the year.
4) We match these two periods with the corresponding levels of prime-age employment, which are considered the periods in which the economy experienced full employment. Implicitly, these levels of employment correspond to the situation in which the economy performed at potential with stable inflation around target, and consequently with a non-existent output gap.
5) We calculate the implicit potential growth rate for the period between these two points in order to estimate the level of potential output for each year.
6) We estimate the implicit output gap for the entire period, which is based on the definition of the full-employment condition.

4. Main results

The first result obtained is the implicit potential growth rate of 1.6%, for the period that includes a complete business cycle (2007–2021). This rate is a little lower than the 1.8% estimated by the CBO for 2018—the very year in which the economy reached the previous full-employment situation, according to our findings.

The second interesting result is that the level of full employment (represented by the prime-age employment population ratio) that matches the economy's performance at potential in the two periods (2006–2007 and 2018) reduced from a rate of 87.20 in the first period to 86.10 in the second. This employment reduction can be attributed to an increase in labor productivity generated by technological progress along the past two decades. In other words, the gain in labor efficiency allowed the economy to perform at its steady state using less but more qualified employment.

The third result is that when we extrapolate the estimated potential growth, we found that the economy ended 2020 with a negative output gap of around 2% after reaching −9% in the

[8] A similar idea was explored in Goldman Sachs (2021).

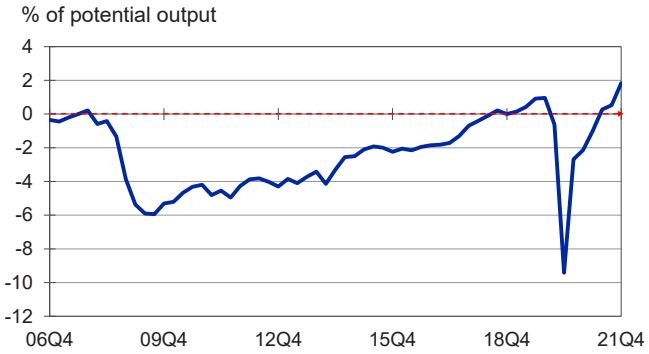

Chart 4. U.S. Output Gap Sources: Author's estimates, Bureau of Labor Statistics, Bureau of Economic Analysis.

second quarter when the economy hit the bottom of the pandemic-induced recession. The strength of the post-recession rebound allowed the economy to recover the output lost by the second quarter of 2021, when the output gap turned slightly positive. At the end of 2021 the positive output gap had widened and ended the year close to 2% (Chart 4). This indicates that the economy was already in expansion in the fourth quarter of 2021 and was performing at above its own production capacity.

Our results show that the U.S. economy was already running with an excess demand at the end of 2021, when the Fed was still maintaining the monetary expansion with the policy rate close to zero and the assets purchase program still operating. Since the economy had already recovered its lost output by midyear, policy normalization should have started by then. Hence, prolonging expansion of the money supply was a policy mistake, since the economy no longer needed the extra fuel. But it also created the conditions for accommodating price increases. Given that inflation had shown a very clear and persistent upward trend in the first half of 2021, prolonging the money expansion also created the perception of a Fed complacent with inflation.

One of the main factors behind the Fed's misperception of transitory inflation was precisely the overestimation of the negative output gap and the underestimation of the strength of the economy's recovery. Believing that the economy was still running with a significant negative output gap in 2021 supported the idea of extending the expansionary policy through the year and until the economy had reached the full employment. Obviously, the problem behind this belief was the inaccuracy of the estimate of the output gap, which led the Fed to a policy mistake that created inflation with some monetary roots.

5. Conclusions and policy implications

Using our results as a reference, it is clear that policymakers overestimated the negative output gap and were in no hurry to normalize monetary conditions. As a result, the Federal Reserve Board prolonged its expansionary monetary policy even beyond the point at which inflation, escalating above the 2% target, required monetary intervention. The overestimation of the negative output gap also made the Fed believe that higher inflation was a transitory phenomenon since the economy was apparently performing with significant slack. Overextending the money expansion constituted a policy mistake that unleashed inflation.

The policy mistake also had further implications. At the end of 2021 inflation had reached a rate twice higher the 2% target, as measured by the PCE index, and the economy was

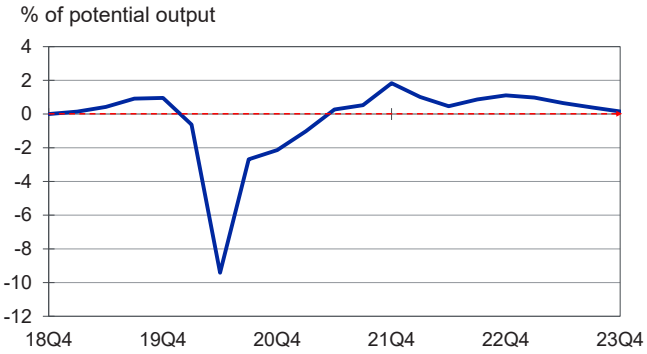

Chart 5. U.S. Positive Output Gap in 2022 Sources: Author's estimates, Bureau of Labor Statistics, Bureau of Economic Analysis.

overperforming, but the Fed was well-behind the curve since the policy rate was still stuck at the minimum of 0.25% and far from the nominal neutral rate estimated at around 2.5%. Clearly, the Fed's delay in starting the rate normalization was a consequence of the overestimation of the economy's slack. The Fed funds rate did not reach the neutral level until July of 2022, just after inflation reached the peak of 7%.

Then, the magic started. The policy correction was introduced six months after recognizing that inflation was not definitely a transitory event. In June of 2022 the Fed started to act more aggressively by accelerating the rate hikes and inflation started to recede as monetary conditions entered restrictive territory. The inflation mandate took priority one year after the full employment was attained and the economy was running at overheating speed.

Given that the economy moderated in 2022, posting a growth rate of 2.1%, then the positive output gap also moderated and ended the year just around 1% (Chart 5). In the first quarter of 2023, the ex-ante real federal funds rate stayed above the real neutral real, thus making monetary conditions mildly restrictive. However, to continue abating inflation, the policy rate must stay restrictive along 2023, which will bring the economy closer to its potential and eliminate demand pressures.

A prospective exercise indicates that to close the positive output gap the economy does not need to go into recession, but only to decelerate further in 2023 to a rate around 1%. This implies that the federal funds rate must reach at least 5.50% and stay unchanged until the end of 2023. Under this condition, the economy will be performing around potential and inflation will not be fueled by the economy's overperformance. However, to accelerate the inflation convergence requires that the federal funds rate goes up further, but this will imply a greater trade off in terms of the economy's growth.

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