

Powell vs. the Pandemic: Some Simple Monetary Arithmetic*

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Abstract

The lack of inflation in 2020 despite the fastest money growth rates since World War II at first seems puzzling for anyone believing that money still matters. The monetary expansion merely offset the effects of declining velocity of money and reduced spending associated with the lockdowns, however, making the scale of the 2020 monetary expansion both appropriate and justified. The subsequent uptick in inflation in 2021 that accelerated in 2022 was caused not by the rapid money growth in 2020 but rather by the Federal Reserve's failure to sufficiently adjust policy in 2021 as the environment changed. The need to adjust policy in 2021 is clearly demonstrated in the monetary data analyzed in this paper. It took far too long for the Federal Reserve to recognize the problems inherent in continuing its 2020 policy bent into 2022.

Keywords

Monetary Policy, Coronavirus, Money, Inflation, Asset Bubbles

“Inflation has increased notably in recent months. This reflects, in part, the very low readings from early in the pandemic falling out of the calculation; the pass-through of past increases in oil prices to consumer energy prices; the rebound in spending as the economy continues to reopen; and the exacerbating factor of supply bottlenecks, which have limited how quickly production in some sectors can respond in the near term. As these transitory supply effects abate, inflation is expected to drop back toward our longer-run goal.”

(Federal Reserve Chair Jerome H. Powell, June 22, 2021)

1. Introduction

The Federal Reserve's initial response to the coronavirus pandemic was larger in

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absolute size than its response to the Global Financial Crisis and had dramatically greater effects on money in circulation, both in terms of M1 and M2 (Burdekin, 2020).¹ A fuller examination of the monetary data, taking into account the declining velocity of money and reduced spending associated with the lockdowns, shows that the 2020 monetary expansion was both appropriate and justified, however. It is not at all surprising that inflation remained quiescent in 2020. The uptick in inflation in 2021 that accelerated in 2022 was caused not by the rapid money growth in 2020 but rather by the Federal Reserve's failure to sufficiently adjust policy in 2021 as the environment changed. The monetary data analyzed in this paper are clear on this point. It took far too long for the Federal Reserve to recognize the problems inherent in continuing its 2020 policy bent after the return to normalcy had begun. For example, in June 2021 Federal Reserve Chair Jerome Powell still sought to explain rising inflation solely on the basis of "transitory supply effects", making no mention whatsoever of the role played by the Federal Reserve itself (Powell, 2021).

2. The Emergency Monetary Policy Measures of 2020 and the Money Multiplier

In addition to swiftly reintroducing a zero-interest rate policy, the Federal Reserve's March 2020 policy moves included the reinstatement of facilities previously created to address the Global Financial Crisis, such as the Commercial Paper Funding Facility and the Primary Dealer Credit Facility (Cachanosky et al., 2021). The Federal Reserve also expanded its US dollar liquidity swaps and created a repurchase facility to aid dollar-denominated lending by international monetary authorities (Grasselli, 2022). Even Treasury market liquidity was threatened in the early days of the crisis, improving only after the Federal Reserve's March 15, 2020 announcement that it would purchase at least \$500 billion in Treasuries and at least \$200 billion in agency mortgage-backed securities. Fleming et al. (2022) nevertheless point out that the Treasury market remained unusually illiquid until the Federal Reserve removed any explicit quantity limits on its purchases on March 23, 2020. Federal Reserve purchases averaged over \$100 billion *per day* in late March 2020, before dropping back to approximately \$80 billion per month in Treasuries and approximately \$40 billion per month in agency mortgage-backed securities by June 2020.²

A potentially troubling development was the introduction of direct, and targeted, lending to non-bank businesses and municipalities, seemingly in violation of Section 13(3) of the Federal Reserve Act which states that its lending should be "broad based" and based on "providing liquidity to the financial system" (Cachanosky et al., 2021: p. 1166). The Federal Reserve was not the only central bank to enter uncharted territory during the pandemic, with the Bank of Eng-

¹M1 is a narrower definition of the money supply composed of currency, coins, checking accounts and travelers' checks, whereas M2 adds savings accounts (including money market deposit accounts), small time deposits under \$100,000, and shares in non-institutional money market mutual funds.

²See also Romer (2021) on the accompanying massive fiscal stimulus.

land, for example, working in conjunction with Her Majesty's Treasury to create a new financing facility aimed at supporting the United Kingdom's largest firms (Grasselli, 2022). More positively, unlike in 2008-2009, the barrage of Federal Reserve quantitative easing measures was accompanied by policies designed to increase bank lending. On March 15, 2020, the Federal Reserve eliminated reserve requirements and encouraged banks to use capital and liquidity buffers to lend to households and businesses. This stands in stark contrast to the introduction of interest payments on bank reserves in 2008 that contributed to the soaring excess reserve ratios seen at that time, with bank reserves quickly rising from \$10 billion in 2008 to over \$1 trillion after 2009.³ These rising excess reserves drastically lowered the money multiplier in 2008-2009, whereas the elimination of required reserves in 2020 served to raise it.

Federal Reserve open market operations directly impact the monetary base, with purchases of securities creating new funds that increase bank reserves insofar as they are deposited in the banking system. In 2008-2009 most of these new funds never left the banking system as banks drastically cut back their lending activities. This led to the M1 money multiplier in 2008-2009 falling by even more than it had during the bank runs of 1930-1933. By contrast, following the elimination of reserve requirements, the rise in the M1 money multiplier in 2020 meant that the M1 money supply rose more than in proportion with the increases in the monetary base, accompanied by a more modest increase in the M2 money supply that also increased in tandem with the monetary base after the initial impact of the pandemic (see **Figure 1**). While initially declining from 1.2 to 1.0 between January and April 2020, the M1 multiplier then soared to 3.6 in July 2020, and subsequently trended higher again in 2022 to exceed 3.7 in the second half of the year. Meanwhile, the M2 multiplier dipped from 4.5 to 3.5 between January 2020 and May 2020 before initially recovering to 3.9 in July 2020 and then rising back above 4.0 by October 2022. The acceleration of the M1 multiplier relative to the M2 multiplier suggests that funds were being held proportionately more in checking accounts than in the savings and time deposit accounts included in M2.

Due to the very different behavior of the money multiplier in 2020, the Federal Reserve's open market purchases had proportionately greater effects on the amount of money in circulation (whether measured by M1 or M2) than in 2008-2009. Negative effects on spending were compounded in 2020 by involuntary savings, however, due to the unavailability of most leisure and entertainment activities, combined with the temporary closure of many shops and associated income losses for those employed in the sectors being shut down (Goodhart, 2020). Nevertheless, fears of sustained deflation, as opposed to temporary price declines of the type seen in the aftermath of the Global Financial Crisis,

³This not only lowered the money multiplier but also entailed a move from a "corridor system" to a "floor system" for interbank rates. The post-2008 framework eliminates any incentive for banks to lend in the interbank market below the rate of interest paid by the Federal Reserve on their reserve deposits, in line with similar moves being undertaken by other central banks in the 2000s (Terzi, 2015).

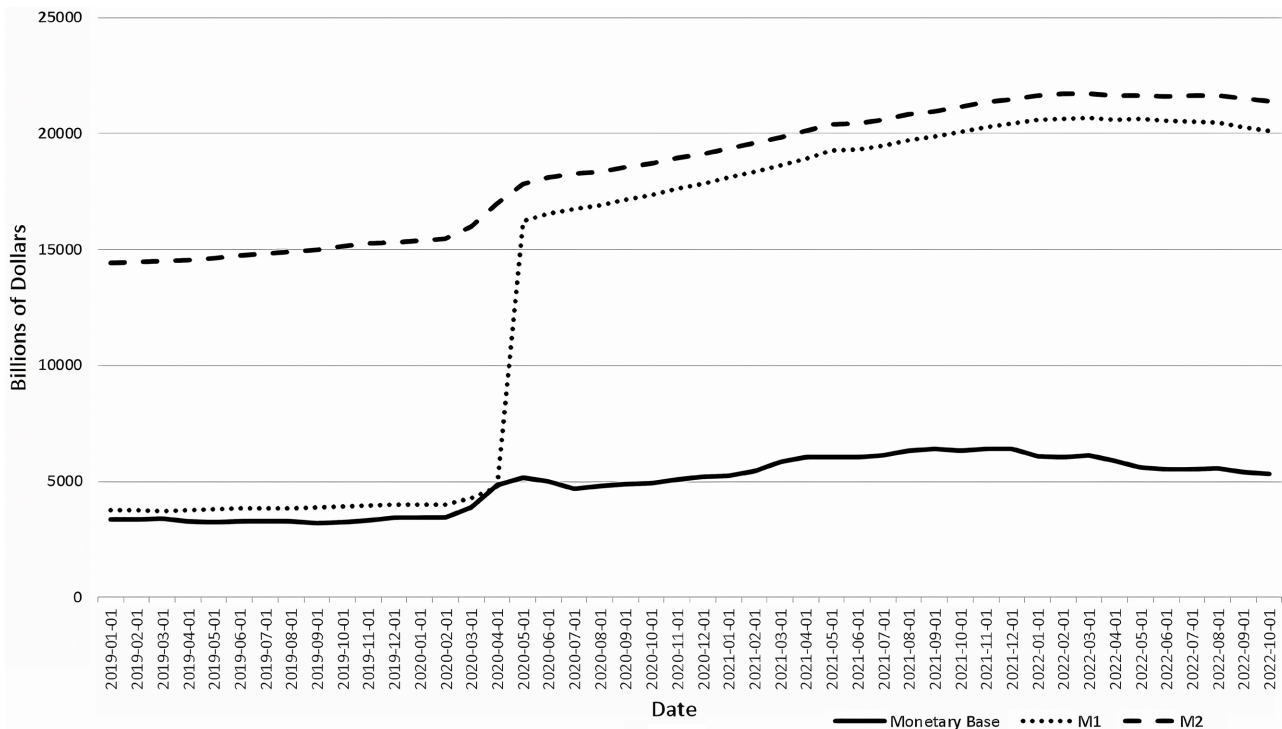


Figure 1. Monetary base vs. M1 and M2, 2019-2022. Source: Federal Reserve Bank of St. Louis (2020-2022) (FRED).

appear to have remained low even at the height of the panic in early 2020. [Christensen et al. \(2020\)](#)'s analysis of the information contained in nominal and real government bond yields suggested that perceived deflation risks remained essentially unchanged through the end of March 2020, not only in the United States but also in Canada, France, and Japan. Meanwhile, [Apergis & Apergis \(2021\)](#)'s analysis of daily swap inflation rates from January-July 2020 indicated that US inflation expectations rose, not fell, following the onset of the pandemic. Although supply shortages undoubtedly played some role in this, such positive inflation expectations remain consistent with observers seeing that deflationary pressures were being effectively countered by monetary expansion.

3. Countering Velocity Declines under the McCallum Rule

Whereas monetary policy analysis has become dominated by the Taylor rule, problems arise in settings like 2020, with highly negative output and/or inflation gaps, because it calls for negative interest rates that cannot be delivered in practice. In such cases, [McCallum \(1999\)](#)'s alternative rule focused on targeting the growth in monetary aggregates becomes more appropriate (see also [Burdekin & Siklos, 2008](#)), for an application to China). The McCallum rule has nominal GDP growth as the objective variable, thereby multiplicatively combining the inflation and real GDP targets included in the Taylor rule. Unlike the fixed rate of money growth implied under Friedman's famous $x\%$ rule for monetary policy, the McCallum rule allows for monetary policy adjustments in the face of sustained velocity movements and/or deviations from the long-run target rate of

nominal GDP growth. The velocity term in Equation (1) below allows money supply growth to adjust upward in the face of any money demand expansion implied by declining velocity of circulation:

$$\Delta m_t = \Delta x^* - \Delta v_t + 0.5(\Delta x^* - \Delta x_{t-1}) \quad (1)$$

where Δm_t is the percentage growth of the monetary aggregate, Δx_t is the growth rate of nominal GDP, Δx^* is the target growth rate of nominal GDP, and Δv_t is the average growth rate of velocity over the same period.

Velocity movements played a critical role in 2020. Both M1 and M2 velocity fell sharply with the onset of the pandemic, with M1 velocity featuring a staggering 70% drop between the first quarter and second quarter of 2020 alone (see [Figure 2](#)). After initially falling from 5.3 to 1.6, M1 velocity then declined to 1.2 at the end of 2020 (and remained around that level through the third quarter of 2022). Although the decline in M2 velocity was less drastic, it fell from 1.4 in the first quarter of 2020 to 1.1 in the second quarter (or approximately 20%). This means that, even though the longer-run relationship between money growth and inflation may have survived the pandemic ([Hanke et al., 2022](#)), the 2020 case had plunging velocity offsetting the normal impact of monetary expansion on output and inflation.

The income version of the classic quantity theory of money states:

$$MV = PY \quad (2)$$

where M is the money supply, V is velocity, and PY is nominal GDP (price level times real GDP, or output). In essence, the McCallum rule focuses on stabilizing nominal GDP growth by stabilizing MV growth. As V falls, M must be adjusted upward to maintain nominal GDP growth. Although much has been made of the fact that 2020 money growth rates were the highest since World War II, the inflationary effects were effectively cancelled out by the velocity drop.

[Figure 3](#) displays MV during 2020-2022 (in terms of both M1 and M2) alongside the consumer price index (CPI). By the end of 2020, based on either measure, we see MV returning to near pre-pandemic levels. This implies that the massive monetary stimulus still ended up being largely neutral in terms of its effect on nominal GDP. This is consistent with the flat trajectory of the consumer price index in 2020. Had the Fed *not* delivered such extraordinarily high money growth in 2020, it is almost certain that plunging velocity would have unleashed deflation in the US economy. And, wittingly or unwittingly, the Fed achieved the stabilizing effects called for by the McCallum rule. It is only in 2021 that we see any significant upward trend in CPI. The rising inflation that occurs over 2021-2022 is accompanied by similarly persistent upward trends in MV. The Fed is certainly to blame for this inflation. Its mistakes were not made in 2020, however. It is the subsequent failure to adjust in 2021 that forced the much more drastic corrective action belatedly undertaken in the second half of 2022.

One factor in the delay in tightening appears to have been the belief that the Federal Open Market Committee (FOMC) had removed accommodation too

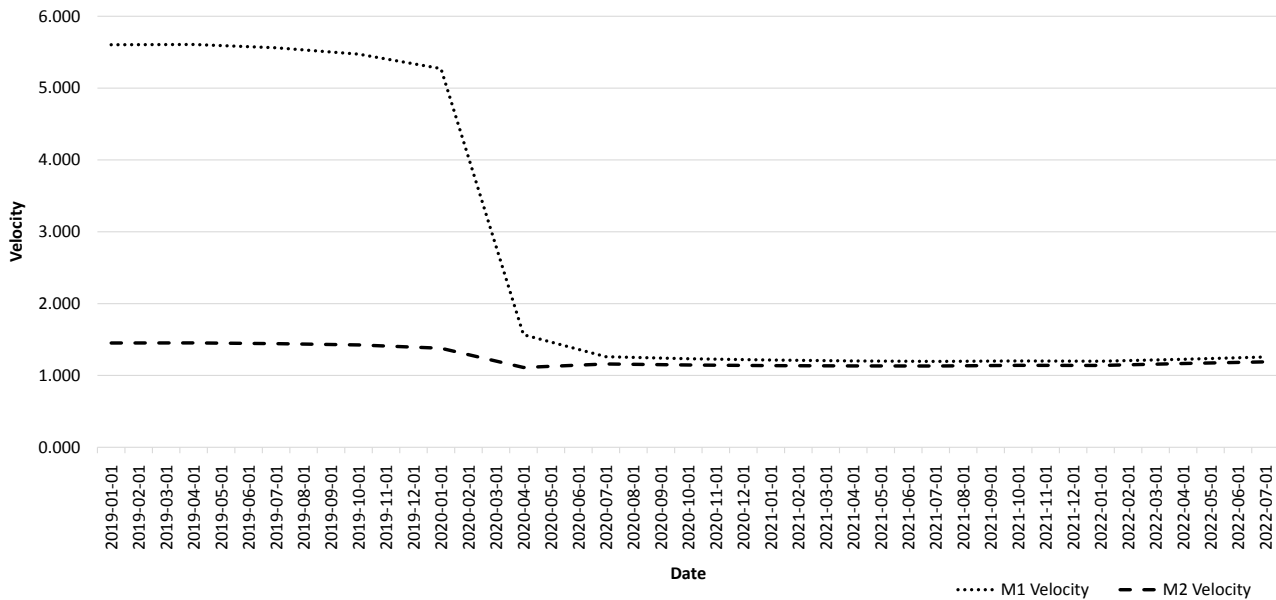


Figure 2. Velocity for M1 and M2, 2019-2022. Source: Federal Reserve Bank of St. Louis (2020-2022) (FRED).

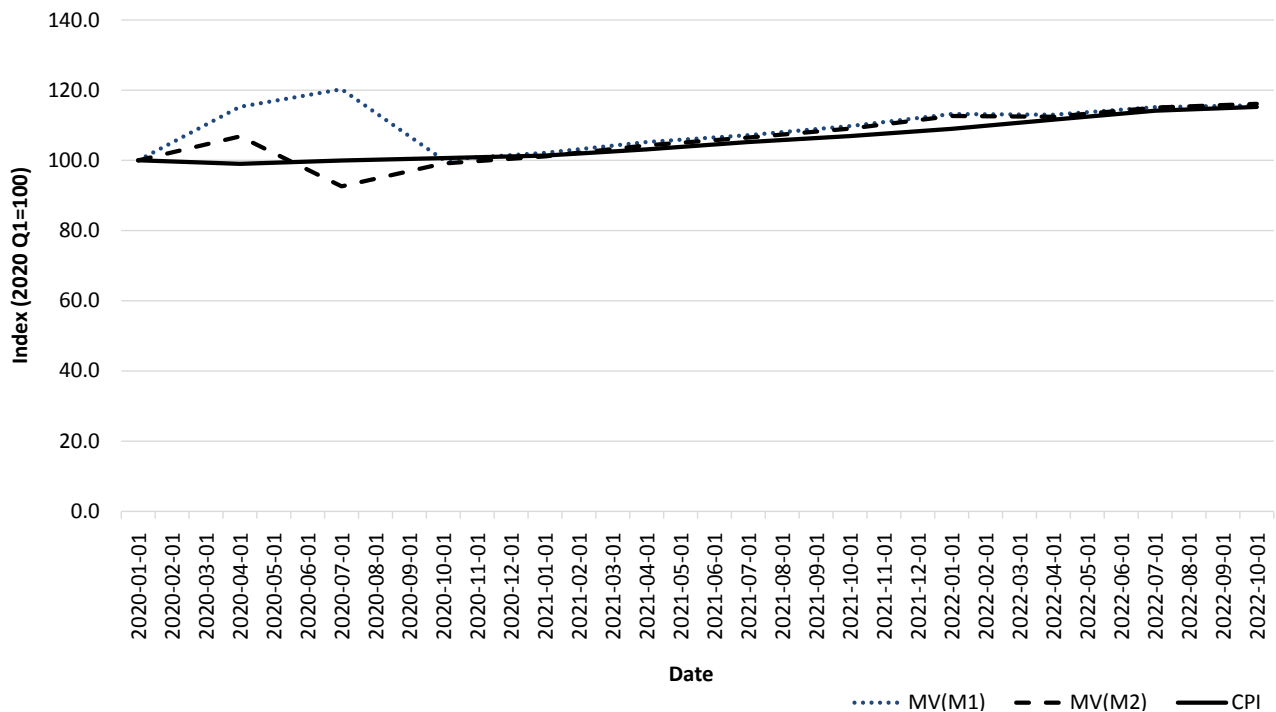


Figure 3. MV for M1 and M2 vs. consumer price index, 2020-2022. Note: Data converted by author to index form; Source: Federal Reserve Bank of St. Louis (2020-2022) (FRED).

quickly back in 2016. In this respect, Federal Reserve Bank of Chicago President Charles Evans emphasized the need to wait for inflation to actually rise above 2% “rather than tightening on a forecast” (Evans, 2021: p. 6). Evans (2021: p. 7) went on to argue that inflation should be “confidently on track for overshooting” before making any move to raise rates. This was by no means an unreasonable position to take in 2020. The problem is the subsequent Federal Reserve inaction.

The changing landscape was reflected not just in the easing conditions for the pandemic itself in 2021 but also by a net loosening of bank standards for commercial and industrial loans. This loosening trend peaked in the third quarter of 2021, in contrast to the tightened standards being applied in 2020 (Board of Governors of the Federal Reserve System, 2022).

The speed of the 2021 rebound simply does not appear to have been reflected in the Federal Reserve's assessment of inflationary risks. Gharehgozli & Lee (2022)'s modeling suggests that the need for a policy change, and ratcheting down of the unprecedented money supply increases, was well evident by mid-2021 based on the relationship between M2 money growth, M2 velocity, inflation, unemployment and core inflation. Nevertheless, the Federal Reserve kept the pace of its asset purchases essentially unchanged from June 2020 through most of 2021. Only at the November 2021 FOMC meeting was it announced that the Federal Reserve would even begin to reduce the scale of its massive Treasury and mortgage-backed security purchases (Fleming et al., 2022). And the policy committee's own underestimate of the required amount of tightening persisted well into 2022. At the time of the March 16, 2022 FOMC meeting, the median projection of the 2023 year-end federal funds rate was still just 2.8% (Fair, 2022).

4. What about Asset Price Inflation?

Although the velocity drops ensured that the 2020 monetary expansion did not immediately threaten goods price inflation, the extra liquidity created not only by the Federal Reserve but also the variety of government support programs was accompanied by a dramatic stock market recovery from the lows of March 2020.⁴ Stocks surged higher even while major portions of the economy were shut down and without immediate prospects of a vaccine. Although innumerable indices can be used to capture financial market excesses, the Bloomberg Financial Conditions Index+ provides a broad-based summary measure. This index includes 1) the US TED spread (Libor vs. the Treasury bill rate); 2) the Libor/OIS spread; 3) the commercial paper/T-bill spread; 4) the high yield/10 year Treasury spread; 5) the municipal bond/10 year Treasury spread; 6) a swaption volatility index; 7) the S&P500 index; 8) the VIX measure of spot option volatility on the S&P500; 9) indicators of asset prices bubbles that include tech-share prices, the housing market and deviations from equilibrium levels.

Figure 4 plots the M1 and M2 money supply against the Bloomberg index over 2020-2022 (with each series presented in index form to yield a comparable starting point). The monetary expansion beginning in March 2020 is indeed accompanied by a sharp upward movement in the Bloomberg index. However, the Bloomberg index remains below its January 2020 level until March 2021. Only after this point does it surge beyond pre-pandemic levels, therefore again suggesting that Federal Reserve actions in 2020 primarily served to offset the original negative effects of the shutdowns, employment losses and economic uncertainty.

⁴The negative stock market effects of the prior Spanish Flu pandemic are assessed in Burdekin (2021).

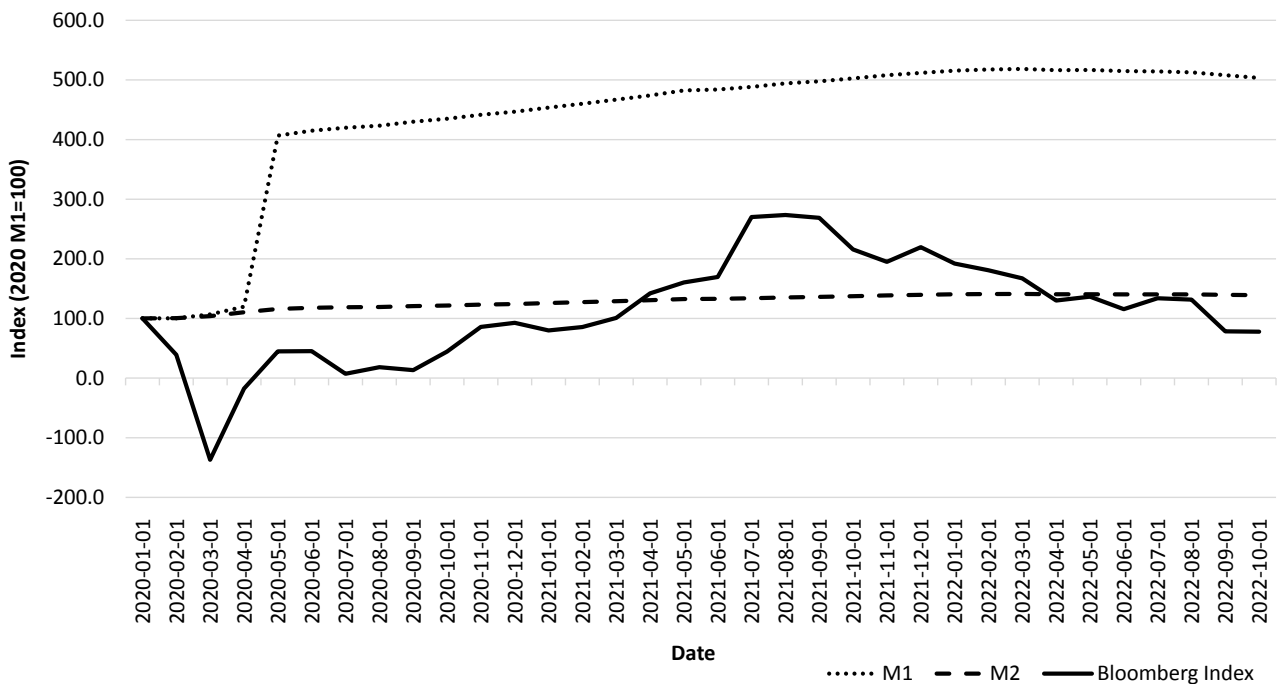


Figure 4. M1 and M2 vs. Bloomberg index, 2020-2022. Note: Data converted by author to index form; Sources: [Federal Reserve Bank of St. Louis \(2020-2022\)](#) (FRED) and the Bloomberg Terminal (Computer Software System).

In this regard, [Feldkircher et al. \(2021\)](#) find that, whereas the Federal Reserve's monetary stimulus did significantly aid equity returns (as well as output growth) in the early months of the pandemic, its stimulus had no significant inflationary effects through June 2020. The Bloomberg index subsequently peaked in August 2021 and then entered a steady decline that began well in advance of the 2022 rate hikes. This decline did coincide with a slackening of the rate of increase in M1 and M2, however, and in this sense remains consistent with this paper's monetary explanation.

5. Conclusion

The lack of inflation in 2020 despite the fastest money growth rates since World War II is readily explicable in terms of this monetary expansion merely offsetting the effects of declining velocity of money and reduced spending associated with the lockdowns. The scale of the 2020 monetary expansion is not excessive in light of the need to offset the plunging velocity of circulation in 2020. Whereas steady money growth rates are appropriate when the velocity of circulation is stable, the McCallum rule draws attention to the need to expand money growth rates to avoid deflation when velocity is falling. And velocity may never have fallen as much as it did after the pandemic hit in March 2020. Although asset prices were indeed major beneficiaries of the Federal Reserve's expansionary measures, this primarily involved countering existing negative trends associated with the pandemic. This is reflected in the Bloomberg Financial Conditions Index+ remaining below its January 2020 level until March 2021. The subsequent

inflation problems were caused not by the rapid money growth in 2020 but rather by the Federal Reserve's failure to sufficiently adjust policy in 2021 as the environment changed. The need for an earlier policy shift is clearly demonstrated in the monetary data analyzed in this paper.

Conflicts of Interest

The author declares no conflicts of interest regarding the publication of this paper.

References

- Apergis, E., & Apergis, N. (2021). Inflation Expectations, Volatility and Covid-19: Evidence from the US Inflation Swap Rates. *Applied Economics Letters*, 28, 1327-1331. <https://doi.org/10.1080/13504851.2020.1813245>
- Board of Governors of the Federal Reserve System (2022). *October 2022 Senior Loan Officer Opinion Survey on Bank Lending Practices*. <https://www.federalreserve.gov/data/documents/sloos-202210-fullreport.pdf>
- Burdekin, R. C. K. (2020). The US Money Explosion of 2020, Monetarism and Inflation: Plagued by History? *Modern Economy*, 11, 1887-1900. <https://doi.org/10.4236/me.2020.1111126>
- Burdekin, R. C. K. (2021). Death and the Stock Market: International Evidence from the Spanish Flu. *Applied Economics Letters*, 28, 1512-1520. <https://doi.org/10.1080/13504851.2020.1828802>
- Burdekin, R. C. K., & Siklos, P. L. (2008). What Has Driven Chinese Monetary Policy since 1990? Investigating the People's Bank's Policy Rule. *Journal of International Money and Finance*, 27, 847-859. <https://doi.org/10.1016/j.jimonfin.2008.04.006>
- Cachanosky, N., Cutsinger, B. P., Hogan, T. L., Luther, W. J., & Salter, A. W. (2021). The Federal Reserve's Response to the COVID-19 Contraction: An Initial Appraisal. *Southern Economic Journal*, 87, 1152-1174. <https://doi.org/10.1002/soej.12498>
- Christensen, J. H. E., Gamble IV, J. M., & Zhu, S. (2020). *Coronavirus and the Risk of Deflation*. Federal Reserve Bank of San Francisco (pp. 1-5). FRBSF Economic Letter 2020-11, Federal Reserve Bank of San Francisco.
- Evans, C. L. (2021). What Does the New Long-Run Monetary Policy Framework Imply for the Path Ahead? *Business Economics*, 56, 2-7. <https://doi.org/10.1057/s11369-020-00197-x>
- Fair, R. C. (2022). A Note on the Fed's Power to Lower Inflation. *Business Economics*, 57, 56-63. <https://doi.org/10.1057/s11369-022-00254-7>
- Federal Reserve Bank of St. Louis (2020-2022). *Federal Reserve Economic Data (FRED)*. <https://fred.stlouisfed.org/>
- Feldkircher, M., Huber, F., & Pfarrhofer, M. (2021). Measuring the Effectiveness of US Monetary Policy during the COVID-19 Recession. *Scottish Journal of Political Economy*, 68, 287-297. <https://doi.org/10.1111/sjpe.12275>
- Fleming, M. J., Liu, H., Podjasek, R., & Schurmeier, J. (2022). The Federal Reserve's Market Functioning Purchases. *Economic Policy Review*, 28, 210-241. <https://doi.org/10.2139/ssrn.4155654>
- Gharehgozli, O., & Lee, S. (2022). Money Supply and Inflation after COVID-19. *Economics*, 10, Article No. 101. <https://doi.org/10.3390/economics10050101>
- Goodhart, C. (2020). *Inflation after the Pandemic: Theory and Practice*. VOX, CEPR Pol-

- icy Portal. <https://voxeu.org/article/inflation-after-pandemic-theory-and-practice>
- Grasselli, M. R. (2022). Monetary Policy Responses to Covid-19: A Comparison with the 2008 Crisis and Implications for the Future of Central Banking. *Review of Political Economy*, 34, 420-445. <https://doi.org/10.1080/09538259.2021.1908778>
- Hanke, S. H., Ma, Z., & Cheng, R. (2022). *On the Quantity Theory of Money: Some Monetary Facts*. Johns Hopkins Institute for Applied Economics, Global Health, and the Study of Business Enterprise. <https://sites.krieger.jhu.edu/iae/files/2022/12/On-the-Quantity-Theory-of-Money.pdf>
- McCallum, B. T. (1999). Recent Developments in the Analysis of Policy Rules. *Federal Reserve Bank of St. Louis Review*, 81, 3-11. <https://doi.org/10.20955/r.81.3-13>
- Powell, J. H. (2021). *The Federal Reserve's Response to the Coronavirus Pandemic*. <https://www.federalreserve.gov/newsevents/testimony/powell20210622a.htm>
- Romer, C. D. (2021). *The Fiscal Policy Response to the Pandemic* (pp. 89-110). Brookings Papers on Economic Activity, Brookings Institution Press. <https://doi.org/10.1353/eca.2021.0009>
- Terzi, A. (2015). Corridor and Floor Systems. In L.-P. Rochon, & S. Rossi (Eds.), *The Encyclopedia of Central Banking*. Edward Elgar Publishing.