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A Story of Money, Inflation, and the CFS

Lawrence Goodman

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At the Center for Financial Stability (CFS), we see the world differently. We see the world through monetary goggles – not at the exclusion of other variables, but from a different perspective.

Since **inflation proved to not be transitory** and **stress in the banking system** surfaced, our perspective offers officials the opportunity to strengthen the financial system while more effectively promoting growth. This approach is also essential for investors, who seek to safeguard assets, manage financial institutions, or seek profits.

Crucially, the addition of better data and analytics – such as CFS Divisia money supply metrics – would help develop a more reliable and accountable data-dependent framework for policy design. An added benefit would be clearer communication with the public on a framework between decision elements and the triple mandate – with the addition of financial stability.

It is now time to:

- **Examine lessons from why relatively few people – such as the CFS – knew that the big money supply increases of 2008-2010 were <u>not</u> going to lead to inflation, whereas, in contrast, the policy response to Covid <u>did</u> lead to higher inflation.**

- **Map the transmission of Fed policy actions through financial institutions and markets into the real economy. CFS Divisia money supply aggregates and components serve as an essential first step.**

- **Measure and monitor Fed actions and achievements versus its core mission – as clearly defined in Section 2A of the Federal Reserve Act.**

- **Answer, in an honest and unbiased way, three nagging questions about the efficacy of Fed policy.**

With thanks to Sheila Bair, William A. Barnett, Charles Goodhart, Randal K. Quarles, Kurt Schuler, and Yubo Wang for comments. The views expressed are those of the author.

This paper illustrates how and why we saw the post-Global Financial Crisis and post-Covid worlds differently. Five pillars of our worldview include:

- The Challenge,
- Bill Barnett and Advances in Monetary and Financial Measurement,
- Successful Predictions Meet the Challenge by Incorporating Money Supply,
- Answers to Three Nagging Questions are Essential to Improve Policy Design and Implementation, and
- Wrapping it Up.

A piece "Empirical Lessons for the Fed from Banking Instability" will follow next week.

The Challenge

Tyler Cowen frames today's inflation challenge perfectly.[1] He states that "plenty of people like to say that they knew at the time that the big money supply increases of 2008-2009 were ***not*** going to lead to high inflation. There are also people who like to say that they knew at the time that the combined monetary and fiscal response from the pandemic ***would*** lead to much higher rates of price inflation. **But relatively few people can gloat about getting it right both times**."

We nailed it, but there is no need to gloat. There is a critical need to examine the evidence, learn from mistakes, and realize that the use of a wide range of money supply measures in the policy calculus would have led to different economic and financial market outcomes. **Intelligent use of money supply metrics would have capped inflation well below its recent peak of 9.1% and reduced the recent damage to regional banks by limiting excessive swings in U.S. Treasury bond prices.**[2, 3]

Today, technological progress accelerates the pace of adjustments in the financial system as well as the creation of new non-bank financial institutions and their liabilities. **To incorporate these developments into policy, the Fed must map the transmission of its policy actions through financial institutions and markets into the real economy. Money supply aggregates and components serve as an essential first step.**

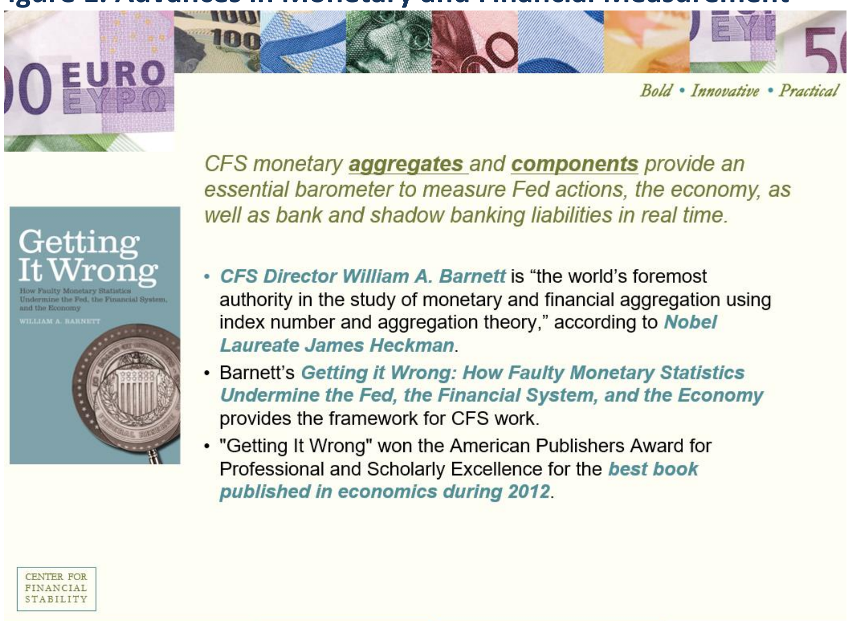
Bill Barnett and Advances in Monetary Measurement

At the CFS, we have learned much over more than 10 years by producing and delivering money supply and financial system data to the public on a monthly basis (see Figure 1). The CFS data and reports bring to life, Professor William A. Barnett's monetary and financial

[1] Tyler Cowen, "Fischer Black May Have Been Right About Inflation," Bloomberg L.P., February 15, 2022.
[2] Lawrence Goodman, How the Fed Rigs the Bond Market, The Wall Street Journal, November 18, 2021.
[3] Our forthcoming "Empirical Lessons for the Fed from Banking Instability" will delve deeply into these issues.

Measures, which are rigorously grounded in economic aggregation and index-number theory. Details can be found in Bill's book, *Getting It Wrong*,[4] published by the MIT Press. The American Association of Publishers named it the best economics book of 2012. More details are also available on the CFS website in the Advances in Monetary and Financial Measurement (AMFM) section.[5]

Figure 1. Advances in Monetary and Financial Measurement



Source: MIT Press and Center for Financial Stability.

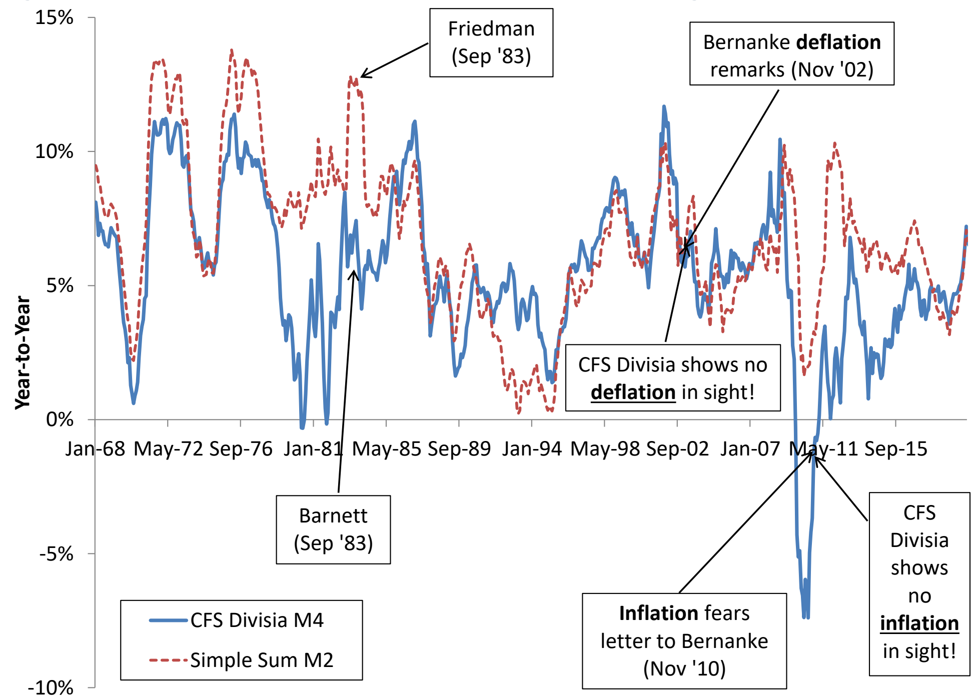
Some background: CFS Divisia aggregates are broad (DM4, DM4-, and DM3). They measure activity in banks as well as shadow banking institutions. They are also narrow (DM2 and DM1).[6,7,8] Second, Divisia is an index rather than a value in currency. The index is created by adjusting different types of financial liabilities by their "moneyness," the service value that they provide to the real economy. For instance, the moneyness of a repurchase agreement transaction is much lower than a dollar bill. It is much easier to buy a cup of coffee with cash than a repo.[9]

[4] William A. Barnett, "Getting It Wrong: How Faulty Monetary Statistics Undermine the Fed, the Financial System, and the Economy," MIT Press, 2012.
[5] See http://www.centerforfinancialstability.org/amfm.php.
[6] CFS also produces Credit Card-Augmented Divisia aggregates at seven levels of aggregation, DM1, DMZM, DM2M, DM2, DALL, DM3, and DM4-. All of the inside money aggregates are augmented by inclusion of the services of credit cards.
[7] William A. Barnett and Liting Su, "Financial Firm Production of Inside Monetary and Credit Card Services: An Aggregation Theoretic Approach," Macroeconomic Dynamics, Cambridge University Press, November 13, 2018.
[8] See https://centerforfinancialstability.org/amfm_augmented.php
[9] See http://www.centerforfinancialstability.org/amfm_library.php.

Successful Predictions Meet the Challenge by Incorporating Money Supply

CFS Divisia money supply data helped meet Cowen's inflation challenge. Specifically, CFS Divisia money supply successfully illustrated 1) why there would be **no inflation** after quantitative easing in 2008 and 2010 and 2) why there would be **inflation** after the needed Covid policy response kept monetary policy far too loose for far too long, and how the assessment of "transitory" inflation was not just wrong but myopic.

Figure 2. CFS Divisia M4: Inflation was nowhere in sight after QE1 and QE2



Source: Federal Reserve Bank of St. Louis and Center for Financial Stability.

1. Surprise to Many… No Inflation after Quantitative Easing in 2008 and 2010 (QE1 and QE2)

In 2010, a group of prominent economists wrote an open letter to then-Chairman Bernanke urging reconsideration of quantitative easing and other experimental monetary policies.[10] The letter made many important arguments regarding the dangers of quantitative easing. However, an incautious claim that "planned asset purchases risk currency debasement and inflation" ultimately met with sharp criticism and unfortunately diminished the impact of the economists' message.[11]

Had CFS Divisia been part of the dashboard of these economists, they would have

[10] "An Open Letter to Ben Bernanke," Economics 21 (e21), November 15, 2010.
[11] Floyd Norris, "Predictions on Fed Strategy That Did Not Come to Pass," *The New York Times,* June 28, 2013.

muted their emphasis on inflation and currency debasement, or at a minimum seen the threat as not imminent. At the time, CFS Divisia M4 had collapsed, falling 3.7% year-over-year when the letter was released after a 7.4% collapse just 3 months earlier (see Figure 2). **Inflation was nowhere in sight.**

2. Surprise to Many… A Rebirth of Inflation after Covid

The rebirth of inflation in the aftermath of the Covid policy was clear theoretically[12] and empirically – well before the Fed acted.[13]

Monetary measures provided clear evidence of misdiagnosis by many and the need for a tightened policy stance in April 2021 (see Figure 3). Most importantly, CFS Divisia monetary and financial indicators, along with traditional inflation measures, provided essential data for the Fed to pursue an alternative policy path.[14,15] Evidence and data triggers were all knowable and available for officials and market participants. We also actively wrote about them at the time (see Appendix 1).

Our analytics during the post-Covid period followed five phases. Details will be discussed in the forthcoming **"Empirical Lessons for the Fed from Banking Instability."**

Phases included:

I. Unnecessary Ease before Covid.
II. Needed Policy Response; But Early Inflation Signals
III. Warning Lights and "Transitory"
IV. Monetary Policy is Just Right!
V. Overtightening Risks and Misread January 2023 Data

Here too, Claudio Borio, Boris Hofmann, and Egon Zakrajšek at the Bank for International Settlements (BIS) noted that **"looking at money growth would have helped to improve the post-pandemic inflation forecasts, suggesting that its information value may have been neglected."**[16]

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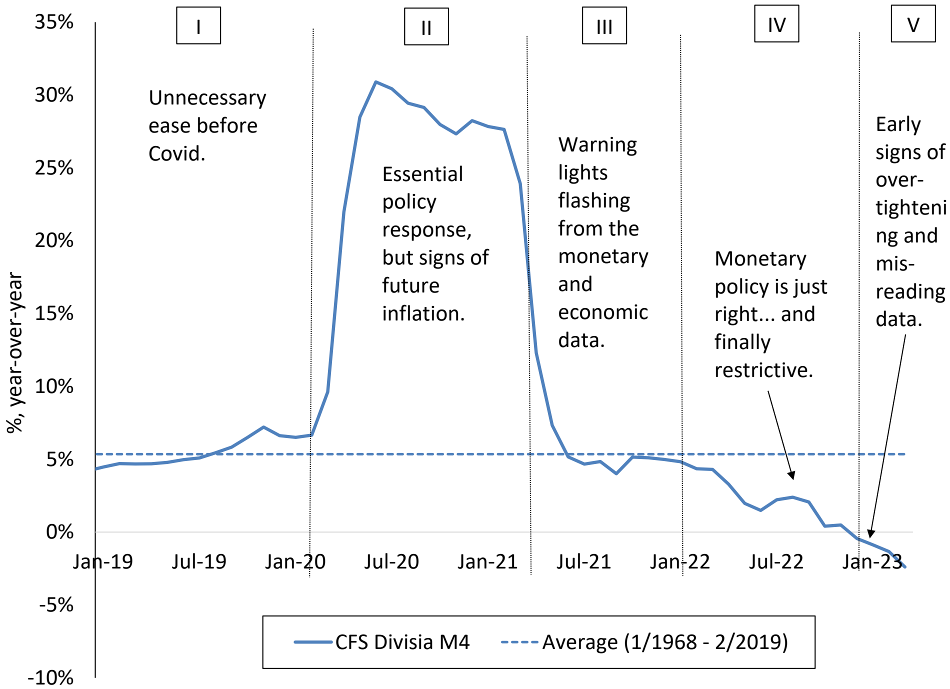
[12] William A. Barnett, "Post-Pandemic Economic Risks," Center for Financial Stability, May 5, 2021
[13] See Appendix 1 for CFS post-pandemic papers and communiqués.
[14] William A. Barnett, *Getting It Wrong: How Faulty Monetary Statistics Undermine the Fed, the Financial System, and the Economy,* MIT Press, 2012.
[15] See Advances in Monetary and Financial Measurement, https://centerforfinancialstability.org/amfm_data.php.
[16] Claudio Borio, Boris Hofmann, and Egon Zakrajšek, "Does money growth help explain the recent inflation surge?", BIS Bulletin No 67, January 26, 2023.

Figure 3. The Rise and Fall of Inflation: Five Phases



Source: Center for Financial Stability

Answers to Three Nagging Questions are Essential to Improve Policy Design and Implementation

In the years working with Bill Barnett and creating the CFS Divisia money supply aggregates and components, three nagging questions keep surfacing. Answers to these questions are essential to help guide future thinking about policy implementation. I will answer these questions based on what we have learned at the CFS.

First, why does the Fed no longer even look at money?

Many believe that monetary measures are useless, because velocity (V in the equation of exchange) is unstable.[17]

Yes, velocity can be unstable. However, the demand for money itself is not unstable. Our empirical work highlights tremendous informational content in monetary aggregates (M) regardless of variability in velocity.[18] Even so, Michael Bordo and John Duca show how **velocities of broader CFS Divisia monetary aggregates are "more stable and can be [more]**

[17] Recall, MV = PY or Money * Velocity = Prices * real GDP.
[18] Also, velocity is just an insignificant property of the demand for money function, and is little more than a tautology.

reasonably empirically modeled in both the short and long run" than the Fed's simply sum and rarely used M2.[19]

In our early days, Bill insisted that I meet with one of the top monetary economists in the world, Mike Woodford at Columbia University, to explain what we were doing. I explained and then listened. He got it instantly. "You are measuring the financial system. Fantastic." He then wondered whether the new measures might be a useful input to Nowcasting models for possible use in nominal GDP targeting. They are.[20,21]

CFS Divisia money helps map the financial system.

A second reason that the Fed and many economists no longer look at money is a belief that proponents will advocate using monetary quantities as policy targets. The fear is that a monetary target would meaningfully reduce Fed discretion in policy in favor of data or an algorithm. These fears are not completely unfounded, as evidenced by the growth in bitcoin and the Blockchain monetary mechanism over the last 10 years.

Here, the Fed's policy counterbalance should be a strategy to integrate money supply metrics into its policy calculus – not a money supply target. Charles Goodhart's "Goodhart's law" warned in the 1970s that any measure used as a target would ultimately be rendered useless.[22] Charles was prophetic: after the quantity target helped successfully reduce inflation and restore central bank credibility in the early 1980s, that is indeed what happened.[23]

So, the answer is clear: Use money supply measures, but don't target them. Don't throw out the baby with the bathwater, which is precisely what is happening now.

Second, how does Congress manage the Fed and evaluate its results and achievements? After all, corporations are constantly evaluated by investors, their boards, and their stakeholders based on the quality of their deliverables and results.

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[19] Michael D. Bordo and John V. Duca, "Money Matters: Broad Divisia Money and the Recovery of Nominal GDP from the COVID-19 Recession," Federal Reserve Bank of Dallas, Working Paper 2306, May 2023.
[20] William A. Barnett, Marcelle Chauvet, and Danilo Leiva-Leonx, "Real-Time Nowcasting Nominal GDP with Structural Breaks," *Journal of Econometrics,* Volume 191, Issue 2, April 2016, pages 312-324.
[21] William A. Barnett, Marcelle Chauvet, Danilo Leiva-Leonx, and Liting Su, "The Credit-Card-Services Augmented Divisia Monetary Aggregates," Journal of Money, Credit, and Banking (forthcoming).
[22] Goodhart, Charles (1975). "Problems of Monetary Management: The U.K. Experience." In Anthony S. Courakis (ed.). *Inflation, Depression, and Economic Policy in the West,* Totowa, New Jersey: Barnes and Noble Books, 1981, p. 116.
[23] Goodhart's "law" is not relevant to measures produced from index number and aggregation theory, which directly measure something that exists in the economy. Still, we do not suggest a Divisia target.

Section 2A of the Federal Reserve Act is clear. Here, Congress says that

> *"The Board of Governors of the Federal Reserve System and the Federal Open Market Committee shall* ***maintain long run growth of the monetary and credit aggregates commensurate with the economy's long run potential*** *to increase production, so as to promote effectively the goals of* ***maximum employment***, ***stable prices***, *and* ***moderate long-term interest rates.***"[24]

Unfortunately, the Fed is focused solely on measures of **employment** and **inflation**. There has been an excessive and overly simplistic reliance on the "dual mandate" or seesawing back-and-forth between two poles. Why? This approach is easy to explain and absorb. Yet the world is more complex. Hence the simplistic approach has led to trouble.

Congress is very specific in saying the Fed needs to "maintain long run growth of the monetary and credit aggregates commensurate with the economy's long run potential." **Money is absent from the Fed's policy calculus as well as its communications with market participants and the broader public.**

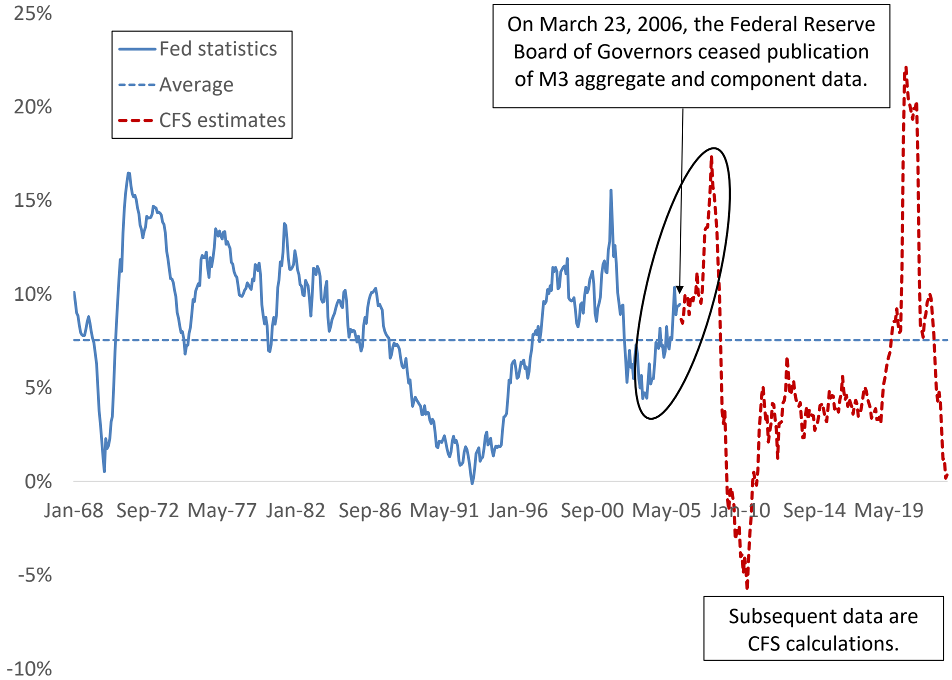
Again, the use of money supply in conjunction with measures of employment and inflation would help the performance of the dual (or more accurately, triple) mandate, reduce monetary and financial volatility, and more successfully meet the economy's long run potential.

Unfortunately, the Fed has moved in the opposite direction from the spirit of its Congressional mandate.

In 2006, the Fed downgraded money as an indicator by halting publication of its broadest monetary aggregate (M3) in 2006. The timing was terrible (see Figure 4). The Fed's M3 included repurchase agreements – financing vehicles at the epicenter of the Global Financial Crisis in 2008. Hence, critical data were no longer available for the public or the Federal Reserve itself. Our calculations show that M3 growth accelerated in a nearly linear fashion between 2003 and 2008 from 5% to over 15% year-to-year. Warning lights were flashing! It is no wonder that the Fed missed the 2007-08 financial crisis.

[24] Section 2A. Monetary policy objectives, Federal Reserve Board, [12 USC 225a. As added by act of November 16, 1977 (91 Stat. 1387) and amended by acts of October 27, 1978 (92 Stat. 1897); Aug. 23, 1988 (102 Stat. 1375); and Dec. 27, 2000 (114 Stat. 3028).]

Figure 4. The Fed may have been more sensitive to market risks; but it halted M3 production



Source: Federal Reserve Bank of St. Louis and Center for Financial Stability.

Third, what is data dependence?

Here the Fed has been highly inconsistent – hiding behind a seemingly precise yet imprecisely defined "data dependence." In April 2021, a supposedly data-dependent stance took over eight months for a reaction. In contrast, in January 2023, it took the Fed a week to respond, which led to shockwaves throughout the Treasury market and into other markets. This likely accelerated Silicon Valley Bank's slide into failure. This will be developed further in the forthcoming **"Empirical Lessons for the Fed from Banking Instability."**

The Fed needs to define data dependence through greater clarity on two key pillars: 1) analytics and 2) policy process.[25]

Crucially, the addition of better data and analytics – such as CFS Divisia money supply metrics – would help develop a more reliable and accountable data-dependent framework for policy design. An added benefit would be clearer communication with the public on a framework and transparency between decision elements and the triple mandate – with the addition of financial stability.

[25] Lawrence Goodman, Empirical Lessons for the Fed from the ARKK Fund of Banks, May xx, 2023.

Wrapping It Up

In the early stages of Covid, Charles Goodhart contrasted two strongly held, but competing views regarding the future path of inflation following recovery.

- A **mainstream position** suggested that **inflationary pressures would remain muted** for the foreseeable future.
- In contrast, a **contrary view** believed that **expansionary monetary and fiscal policies would generate inflation**.

He concluded that "apart from the important practical implications of finding out which of these positions is more nearly correct, it will affect macroeconomic theory and teaching, perhaps forever."[26]

The experiment is over. It is now time to:

- **Examine lessons from why relatively few people – such as the CFS – knew that the big money supply increases of 2008-2010 were not going to lead to inflation, whereas, in contrast, the policy response to Covid did lead to higher inflation.**

- **Map the transmission of Fed policy actions through financial institutions and markets into the real economy. CFS Divisia money supply aggregates and components serve as an essential first step.**

- **Measure and monitor Fed actions and achievements versus its core mission – as clearly defined in Section 2A of the Federal Reserve Act.**

- **Answer, in an honest and unbiased way, three nagging questions about the efficacy of Fed policy.**

[26] Charles Goodhart, "After Coronavirus: Deflation or Inflation?," Center for Financial Stability, August 14, 2020.

Appendix 1. Select CFS Publications on Money Supply and Policy

1/31/23	Falling Money and the Fed CFS Lawrence Goodman
7/22/22	The Fed must emulate the tactics of Volcker's fight against inflation Financial Times Sheila Bair
5/4/22	Why were the Fed's inflation forecasts so wrong? It's not just the pandemic and greed. The Kansas City Star William A. Barnett
11/18/21	Sales by 'vigilantes' used to serve as a warning of inflationary policies. The signal has been muted. The Wall Street Journal Lawrence Goodman
11/2/21	Two Measures for the Fed and Investors CFS Lawrence Goodman
8/8/21	Inflation was inevitable after the Fed fuelled monetary growth The Financial Times Lawrence Goodman
7/14/21	Now, Inflation is Clear and Global CFS Lawrence Goodman
6/4/21	New Money Growth and Inflation CFS Lawrence Goodman
5/5/21	Post-Pandemic Economic Risks CFS William A. Barnett
4/26/21	Inflation Fears Offers the Fed a Chance to Modernize with Money CFS Lawrence Goodman

Appendix 1. Select CFS Publications on Money Supply and Policy, Cont'd

2/4/21 Robinhood and GameStop: Essential Issues and Next Steps for Regulators and Investors
CFS
Lawrence Goodman, Steven Lofchie, Robin L. Lumsdaine, John D. Feldmann, Diane Glossman, Jack Malvey and Yubo Wang

8/14/20 After Coronavirus: Deflation or Inflation?
CFS
Charles Goodhart

6/30/20 Value Investing and Monetary Policy
CFS
Lawrence Goodman

4/22/20 CFS Money Growth Soars: Expect Deflation then Inflation
CFS
Lawrence Goodman

12/16/19 Inequality Perils from Lower Interest Rates
CFS
Robert Hormats and Yves-Andre Istel

11/25/19 The Monetary Policy Challenge
CFS
Jacques de Larosière

7/8/16 Why CFS Divisia Money Matters, Now!
CFS
Lawrence Goodman