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The Future of Monetarism after Milton Friedman

Michael D. Bordo*

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HOOVER INSTITUTION
434 GALVEZ MALL
STANFORD UNIVERSITY
STANFORD, CA 94305-6010

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On the fiftieth anniversary of Milton Friedman receiving the Nobel Prize in economics, I reflect on the legacy of monetarism—his revolutionary idea. Friedman developed the modern quantity of money in 1956 as a challenge to the prevailing Keynesian view that "money did not matter. Friedman's empirical and historical research made a strong case that changes in the money supply, largely instituted by the monetary authorities, account for much of the macro instability in the twentieth century including the Great Recession 1929–1933 and the Great Inflation 1965–1982. Friedman's ideas were at the base of the creation of modern macroeconomics, and of the adoption by many central banks of rules based monetary policy as a guidepost to maintain credibility for low inflation. His emphasis on monetary aggregates as the key monetary policy tool has been superseded by the use of policy interest rates, but the monetary aggregates are still useful as a crosscheck against incipient high inflation.

Keywords: monetarism, monetary aggregates, quantity theory of money, monetary rules, discretion, inflation, deflation, depression.
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* Rutgers University, The Hoover Institution, Stanford University, the Griswold Center, Princeton University and the NBER

The Future of Monetarism after Milton Friedman

Michael D Bordo, Rutgers University, The Hoover Institution, Stanford University, the Griswold Center, Princeton University and the NBER

On the fiftieth anniversary of Milton Friedman receiving the Nobel Prize in economics, it seems a good time to reflect on the legacy of monetarism—his idea that revolutionized monetary policy making at a time of great crisis—double digit inflation in the US and abroad. This led in the 1960s and 1970s to a new paradigm in money/macroeconomics and in the conduct of monetary policy.

I survey Friedman's genius in reviving the centuries old quantity theory of money—making it a useful empirical apparatus that challenged and defeated the prevailing Keynesian orthodoxy that "money didn't matter" Monetarism vanquished the Great Inflation in the 1970s but, faced with unforeseen developments that destabilized its core tenet-- the demand for money-- many of its elements became integrated into a new theoretical approach based on rational expectations.

Friedman's insights on the influence of monetary aggregates on the macro economy, in his case for monetary rules over discretion, and the importance of inflationary expectations led to the development of modern macroeconomics. It also led central banks to attach primary importance to the use of systematic policy to achieve credibility for low inflation as its nominal anchor.

Friedman's monetarism has carried forward with the Shadow Open Market Committee, founded in 1973 by his followers as an external watchdog over the Fed's tendency to follow discretionary policies. The SOMC, as well as the hard currency European central banks

,,following Friedman in his emphasis on outsized increases in money growth as a predictor of inflation, view continuing monitoring of monetary aggregates as a key cross check for interest rate based monetary policy.

I. Friedman's Monetarism

Milton Friedman was the pioneer of monetarism, a term first coined by Karl Brunner, one of his collaborators. Following a long tradition in the study of the Quantity Theory of Money at the University of Chicago (See Tavlas 2023), Friedman revived it in a new form called "*the Modern Quantity Theory of Money a Restatement"* in his 1956 Chicago Press book*, Essays in the Modern Quantity Theory of Money.* In Friedman (1956) he developed the modern quantity theory as a theory of income determination in opposition to the prevailing Keynesian view.

According to Friedman, the core of the MQT is a stable long run demand for money as a function of a limited number of salient variables (including wealth, permanent income, and various rates of return of key assets). The interaction between the stock of money, predominantly determined by the monetary authorities' actions, and the demand for money, would determine the level of nominal income. With real income determined by market forces, and a stable demand for money (alternatively velocity), the price level would be determined by the quantity of money. Friedman posed the MQT as an alternative to the prevailing Keynesian approach which posited that national income was determined by autonomous expenditures (especially investment and fiscal policy) in the face of an unstable demand for money (absolute liquidity preference and impotent monetary policy).

Milton Friedman and his principal co-author Anna Jacobson Schwartz, along with Phillip Cagan and several others, provided a massive amount of evidence (both empirical and historical) in favor of the MQT. Their key findings were that changes in the quantity of money, as the leading cause of business cycle disturbance, would first impact real output with a one to two quarters lag and then over a longer period of 6 to 8 quarters, the monetary impulse would be fully reflected in changes in the price level, i.e. in monetary neutrality.

The most enduring evidence for the Modern QT was in *A Monetary History of the United States* (1963b) when Friedman and Schwartz (FS) developed their narrative approach to identify unique natural experiments of monetary changes under varying historical and institutional circumstances (e.g., the classical gold standard, greenbacks, free silver, the national banking system, and the Federal Reserve). They did this to make the case that monetary forces were primarily the key causes of the turbulent monetary and financial history of the United States since the nineteenth century with its frequent recessions, financial crises and episodes of inflation and deflation (Bordo and Rockoff, 2013).

The dismal historical record after the establishment in 1913 of the Federal Reserve System led Friedman to eschew the Fed's fine-tuning approach to countercyclical stabilization (Friedman, 1953). The Fed's worst unforced policy error was the Great Contraction of 1929-1933 which Friedman and Schwartz attributed largely to failures by the central bank to follow its mandate as a Lender of Last Resort to prevent four serious banking panics. The Fed's record led Friedman (1960) to revive the classical case, going back to the British Currency School-Banking School debate of the early nineteenth century, for 'monetary rules" rather than discretion. Friedman is famous for his (1960) k% rule which

would have the Fed expand the money supply sufficient to finance real growth adjusted for the long run trend in velocity (money demand) to maintain price stability. During the 1960s and 70s Friedman heavily criticized the Fed for generating and exacerbating the Great Inflation. Eventually his (and other monetarists', see below) lessons were heeded starting with Paul Volcker's tight money shock of 1979-82, when severely slowing money growth was adopted to successfully achieve disinflation.

Friedman's (1968) AEA presidential address severely challenged the then-prevailing Keynesian belief in a stable Phillips curve tradeoff between inflation and unemployment. Friedman argued that the Fed could not use its monetary policies to permanently reduce unemployment below its natural rate (determined by market forces) nor to reduce the real interest rate below the natural (Wicksellian) rate. Both policies would be stymied by the adjustment of inflationary expectations.

Friedman's views led to major changes in Fed policy making in the 1970s with the Congressional mandate of money growth targeting, and the Fed (and other central banks) using a (short run) demand for money function to operationalize hitting their monetary targets. However, financial innovation and deregulation of financial markets in response to the Great Inflation and subsequent disinflation, destabilized the money demand function used by the Fed (and other central banks) leading to significant misses of their money growth targets. Moreover, mistaken predictions in the mid-1980s of a return to high inflation by Friedman, based on his monetarist model, led the mainstream economics profession as well as the central banks to turn away from monetarism. The Fed (and others) abandoned monetary targeting and returned to using interest rates as their policy tool.

II. Friedman's legacy fifty years later

Friedman's monetarism of 50 years ago has been forgotten by the mainstream. However, I argue, his views have prevailed and are still very much relevant. His monetarist legacy has two channels: a theoretical channel through the development of modern macroeconomics by his student Robert Lucas and colleagues. This has led to the now dominant New Keynesian (NK) model which incorporates many of Friedman's key tenets; and a policy channel through his influence on the Shadow Open Market Committee in the United States and on the hard currency central banks of Europe (the German Bundesbank and the Swiss National bank).

II.1 The Theoretical Channel

Friedman and Schwartz's (1963a and 1963b)) evidence that monetary policy affects real output in the short-run reflecting nominal rigidities and in the long-run money neutrality, carried forward into modern macro developments in the 1970s. Also, a key legacy to modern macro was Friedman's (1968) AEA address, which posited that monetary policy cannot permanently alter real variables because economic agents would always adjust their expectations of inflation. Also, of great impact was his case for a monetary rule over discretion. These ideas became the bedrock for the prevailing NK macro model used by central banks and macro economists in which systematic rules for conducting monetary policy are crucial for controlling inflation.

Friedman's student Robert Lucas (1972) and Thomas Sargent (1971) extended Friedman's natural rate hypothesis to what became known as the" policy invariance

hypothesis" (Hall and Sargent 2013). Under rational expectations, monetary policy actions would have no influence on the real economy because economic agents understanding the model the Fed uses, and having full information, would completely adjust their expectations incorporating the new policy. This classical approach was extended to incorporate nominal rigidities via staggered wage and price contracts in models developed by Fischer, Taylor and Calvo. Moreover Friedman's case for rules over discretion was superseded in an environment of rational expectations by the approaches of Kydland and Prescott (1977) and Barro and Gordon (1982) under the assumption that central banks would be prevented by rational agents from following time inconsistent discretionary policies to alter the Phillips curve tradeoff, and that only by following a credible commitment device like adhering to the gold standard or some other type of rule would inflation be anchored.

A key building block for such a rule was developed by John Taylor (1993) whose rule took the policy interest rate as the Fed's policy instrument (rather than a monetary aggregate). The central bank would react to a function incorporating the Fed's dual mandate of both stable prices and full employment output. The Taylor rule, accompanied by the Taylor Principle, that the central bank would need to alter its nominal policy rate more than the rate of expected inflation in order to change the real interest rate and influence the real economy, was another building block. Following the Taylor principle would anchor credibility for low inflation. These modern tools encompassing ideas from Friedman's monetarism are incorporated in the 3 equation New Keynesian model (encompassing a Taylor rule, an IS curve and a Phillips curve relationship), which became

the workhorse for both policymakers and academic economists (Gali 2015). Of note, and very different from monetarism, money does not appear directly in the model but is buried in the cash in advance assumption underlying this framework.

II.2 The Policy Channel: The Shadow Open Market Committee

The Shadow Open Market Committee (SOMC) was created by Karl Brunner, of the University of Rochester, Alan Meltzer of Carnegie Mellon and Anna Schwartz of the NBER, to serve as an outside watchdog of the Fed. These three leading contemporaries of Milton Friedman were highly critical of the pattern of ever rising inflation in the 1970s. Following Friedman's solution to inflation they proffered a gradual decline in the monetary base to reduce inflation. Under the tutelage of Alan Meltzer, the SOMC was very successful ln engaging the media in proselytizing their white papers and announcements. They were also successful in influencing Congress in 1977 and 1978 to require that the Fed present and report to the Congress, semiannual paths for its monetary aggregate targets. They, along with Friedman, influenced the Volcker Fed to institute policies to finally break the back of inflation in 1979 (Bordo and Levy 2025).

During the advent of the Great Moderation in the 1980s, while the Fed and the economics profession were shifting towards using interest rates as the monetary policy tool, along with the adoption of new rational expectations based macroeconomic policy models, the SOMC still emphasized targeting the monetary base as the way to maintain price stability and like Friedman, wrongly forecast a return of inflation, This reduced its standing in the mainstream economics and central banking worlds.

In the 1990s and early 2000's new SOMC members, who had been key players in developing the new rational expectations-based macro models joined the SOMC. Ben McCallum and Charles Plosser changed the thrust of the SOMC's approach towards the paradigm. Plosser was a pioneer in developing the Real Business Cycle model which became embedded in the New Keynesian model, while McCallum was an early pioneer in incorporating rational expectations into macro modeling. He also advocated his own monetary base rule relating to the Fed's dual mandate reaction function, as an alternative to the Taylor rule. These scholars advocated the importance of the Fed's adherence to systematic interest rate rather than money policy rules in its policy framework. Lee Hoskins (former President of the Cleveland Fed), a member in that period, was one of the very first effective advocates for inflation targeting. Marvin Goodfriend, who joined the SOMC in 2007 made a strong case for a transparent, accountable rules based independent central bank to maintain credibility for low inflation.

Later, two former Fed Presidents (Jeffrey Lacker and Jim Bullard), as well as other prominent economists (Michael Bordo, Peter Ireland, Charles Calomiris, Athanasios Orphanides, Andrew Levin and Deborah Lucas) joined the committee to make the present SOMC an effective constructive critic of Fed policy. The SOMC, following its successful analysis of the Great Inflation, also was prescient in predicting and criticizing the Fed's role ("too low for too long") in the debt financed housing boom leading to the Great Financial Crisis of 2007-2008 and more recently the Fed's role in generating the recent post pandemic ('team transitory") 2020-2021 inflation and its 'behind the curve' resolution

Bordo and Levy(2022). In sum, the Shadow has effectively carried forward a modern rendition of Milton Friedman's monetarist message.

II.3 The Policy Channel: The Hard Currency European Central Banks

Another direct successor to Friedman's monetarism were the two European hard currency central banks; the German Bundesbank and the Swiss National Bank (SNB). Both monetary authorities, in the post war (and in the case of the SNB since its founding in 1907, see Bordo and James 2008) followed the "stability culture" of the crucial importance of sound money and price stability. In the case of Germany, the memory of the hyperinflations following both World Wars was deep (Beyer, et al. 2013). Both countries avoided the Great inflation of the 1970s and kept targeting monetary aggregates (the Bundesbank targeted broad money ,while the SNB targeted the monetary base) after the Fed, the Bank of England and other central banks had abandoned the practice, until the end of the twentieth century, and since have maintained a role for them (Issing 2025, Rich 2025).

The European Central Bank (ECB), established in 1999, kept a strong role for the monetary aggregates. Otmar Issing, former chief economist of the Bundesbank and a close colleague of Allan Meltzer, took on that role with the ECB. Issing was instrumental in instituting the ECB's two pillar strategy for it to follow its mandate of price stability. Pillar one was to monitor monetary aggregates to ensure long-run price stability, especially in periods of incipient high inflation. While pillar two was to use real and financial analysis (conventional macro modelling) to ensure stable prices in the short to medium term. The pillars were later reversed in 2003. Issing,(2006) argued that the long successful and credible post-World War II record of the Bundesbank in targeting money to achieve price

stability justified continuing using the aggregates as a cross check to the central bank's policies.

III. What about the M's?

Anna Schwartz, just before she died in 2012 asked me a question. "Michael, what about the Ms? Will they ever be given attention to by the Fed?" To answer her, several SOMC members and others have continued to do research on the monetary aggregates in the spirit of Friedman and Schwartz. Much of this work is focused on the Center for Financial Stability's (CFS) Divisia indexes of monetary services. Friedman and Schwartz (1970) argued that the choice of the correct monetary aggregate to use in quantitative theoretic analysis was the combination of monetary assets that provided the best flow of monetary services. In this tradition, Barnett (1980) developed the Divisia aggregate index which weights the growth rates of the different components in a monetary aggregate by its flow of what Friedman called nonpecuniary services or what is also called the convenience yield of money. Barnett constructed a weighted average of monetary components where the weights represented the difference between the interest rate on a safe asset like a Treasury bill and the return paid on the different components of money (currency, demand deposits, time deposits, money market funds etc) as a share of the monetary aggregate. The CFS has created a database of various Divisia monetary aggregates which has been used in this research.

Peter Ireland with co-author Michael Belongia (2016) has used the CFS data on Divisia M2 to revisit Friedman and Schwartz's (FS, 1963a) original work on Money and Business

cycles. In their work FS showed that monetary changes preceded changes in real output at business cycle turning points by 1 to 2 quarters. They also showed that monetary changes then led to changes in the price level with a 9 to 12 quarter lag. The FS results held up until the early 1980s and then broke down, reflecting Great Inflation induced financial innovation and changes in regulation. Belongia and Ireland (2016) find that by redoing the calculations with more modern methods and using Divisia M2 instead of simple sum M2, that the original FS pattern is restored to the present.

John Duca and I (2024), using CFS Divisia M3 data have developed a stable long run demand for money (velocity) function from 1984 to 2023 which corrects for both the changes in financial innovation and in financial regulation that derailed earlier work. We find that our model clearly tracks the path of actual Divisia M3 velocity. When we interact our money demand (velocity) function with the growth in the Divisia M3 money supply that occurred, our analysis tracks closely the path of nominal GDP growth from the 1980s through the recent pandemic recession and inflation. **See Figure 1.**

Furthermore, in work with Barry Jones (2025), when we combine our Divisia M3 money demand (velocity) analysis into the P-star model, that was earlier developed by Federal Reserve Board economists Hallman, Porter and Small(1991), based on the quantity theory of money, that we can quite closely track the recent post pandemic inflation episode. **See Figure 2.**

This analysis suggests that monetary aggregates, when properly measured to reflect the flow of monetary services, can be a very useful cross check to the Fed's interest rate policy

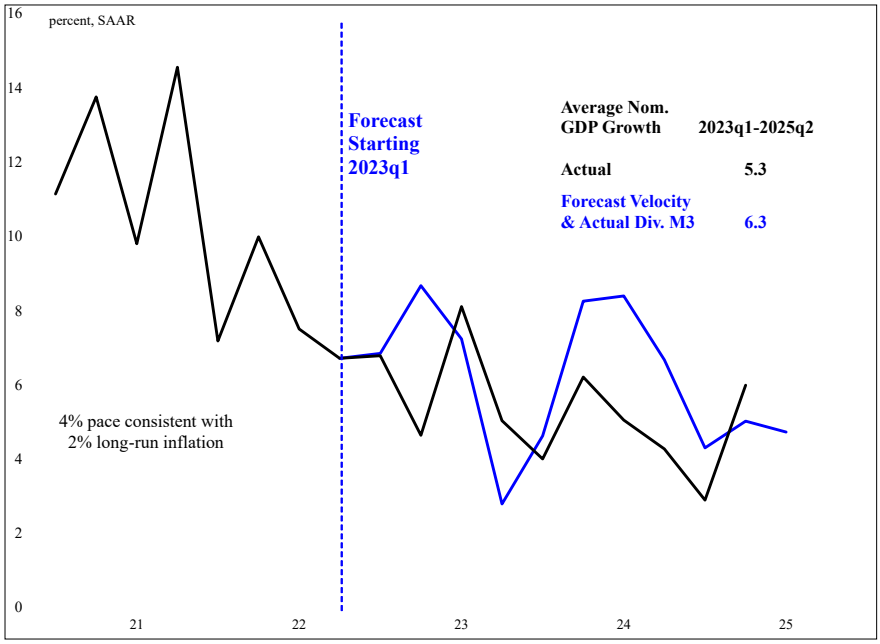

Figure 1: Bordo-Duca Model Forecasted Somewhat Higher Nominal GDP Growth Since the COVID-19 Pandemic

(Sources: BEA, Federal Reserve, CFS, Oxford's Blavatnik Center, and authors' calculations)

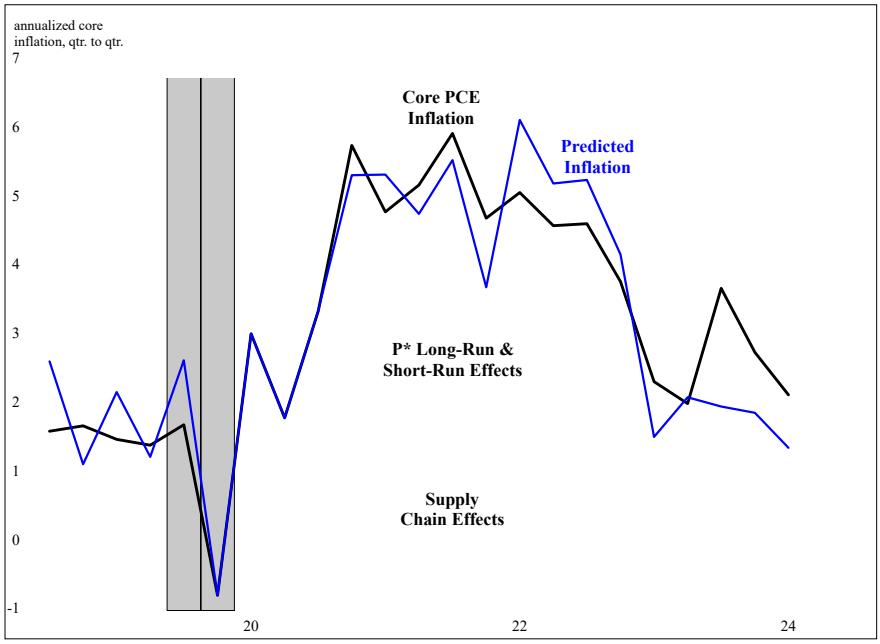

Figure 2: Bordo-Duca-Jones Core PCE Inflation Predictions

(Sources: BEA, Federal Reserve, CFS, Oxford's Blavatnik Center, and authors' calculations)

making based on the NK and other non-monetarist models. This supplements the cross-checking approaches taken in Europe.

IV. Conclusion

The legacy of Milton Friedman is very much present in the modern macro models used by today's economists. The need to follow Taylor-like rules to achieve low and stable inflation has its roots in Friedman's insistence that central banks should focus on containing inflation in the long-run and avoid destabilizing the business cycle with discretionary policy, while acting as a lender of last resort in the short-run. Moreover, the SOMC keeps the monetarist approach to monetary policy very much alive in its ongoing assessment of the Fed's policies. Although the monetary aggregates no longer play a direct role in modern central banking, monitoring them as a cross check, especially to keep central banks honest as Otmar Issing long ago suggested, is crucial to avoid overstimulating an economy and feeding inflation. Indeed, every measure of monetary aggregate ballooned in 2020 to 2021 was a clear red flag of an impending inflation surge, yet the Fed and other central banks ignored them.

References

Barro, Robert J., and David B. Gordon. 1983. "Rules, Discretion and Reputation in a Model of Monetary Policy" *Journal of Monetary Economics* 12(1) 101-21.

Barnett, William A. 1980. "Economic Monetary Aggregates: An Application of Index Number and Aggregation Theory." Journal of Econometrics 14: 11-4.

Belongia, Michael and Peter N. Ireland. 2016. "Money and Output: Friedman and Schwartz Revisited." *Journal of Money, Credit and Banking*, 48 (6) (September).

Beyer, Andreas, Vitor Gaspar, Christina Gerberding, and Otmar Issing. 2013. “Opting Out of the Great inflation; German Monetary Policy after the Breakdown of Bretton Woods.” In Michael D Bordo and Athanasios Orphanides (eds*) The Great Inflation: The Rebirth of Modern Central Banking*. NBER. University of Chicago Press.

Bordo, Michael D. and Harold James. 2007. “ From 1907 to 1946; A Happy Childhood or a Troubled Adolescence “in The Swiss National Bank 1907 to 2007. SNB Zurich.

Bordo, Michael D. and Hugh Rockoff. 2013. “Not Just the Great Contraction: Friedman and Schwartz’s A Monetary History of the United States 1867 to 1960.” *American Economic Association Papers and Proceedings*, May 2013.

Bordo, Michael and Mickey D Levy. 2022.” The Fed’s Delayed Exits from Monetary Ease: The Fed Rarely learns from History.” SOMC Position Paper. February.

Bordo, Michael D. and Mickey D. Levy. 2025. “The Fifty-Year History of the SOMC and the Evolution of Monetary Policy.” chapter 2 in *Fifty Years of the Shadow Open Market Committee: A Retrospective on its Role in Monetary Policy*. (eds) Michael D Bordo, Jeffrey M. Lacker, Mickey D. Levy and John B. Taylor. Hoover Press.

Bordo, Michael D. and John V. Duca. 2025. “Money Matters: Broad Divisia Money and the Recovery of U.S. Nominal GDP from the COVID-19 Recession.” *Journal of Forecasting* 44: 1071-1096. https://doi.org/10.1002/for.3242.

Bordo, Michael D., John V. Duca, and Barry E. Jones. 2025." Broad Divisia Money, Supply Pressures, and U.S. Inflation Following the COVID-19 Recession." *Macroeconomic Dynamics* 29: 1-35.

Friedman Milton. *1953*. “ The Effects of a Full Employment Policy on Economic Stability ; A Formal Analysis.*”* In *Essays in Positive Economics*. University of Chicago Press.

Friedman, Milton. *1956*. *“*The Modern Quantity Theory of Money.” In *Essays in The Modern Quantity Theory of Money*. University of Chicago Press.

Friedman, Milton. *1960*. *A Program for Monetary Stability.* Fordham University Press.

Friedman, Milton and Anna J Schwartz. 1963a. “ Money and Business Cycles.” *Review of Economics and Statistics* 45: 32-64.

Friedman, Milton and Anna J Schwartz. 1963b. *A Monetary History of the United States, 1867 to 1960*. Princeton University Press.

Gali, Jordi. 2015. *Monetary Policy, Inflation, and the Business Cycle: An Introduction to the New Keynesian Framework and Its Applications*. Second Edition. Princeton University Press.

Hall, Robert E. and Thomas Sargent. 2018. " Short-Run and Long-Run Effects of Milton Friedman's Presidential Address" Journal of Economic Perspectives 32 (1) (winter): 121-134.

Hallman, Jeffrey J, Richard D. Porter, and David Small. 1991. "Is the Price Level Tied to the M2 Monetary Aggregate in the Long-Run" *American Economic Review* 81(4): 841-858.

Issing, Otmar. 2006. "The ECB's Monetary Policy Strategy: Why Did We choose a two Pillar Approach? Fourth ECB Central Banking Conference. Frankfurt.

Issing, Otmar. 2025. " Bundesbank and ECB-Monetarist Strategies" in Bordo et al *Fifty Years of the Shadow Open Market Committee: A Retrospective on its Role in Monetary Policy.* Hoover Press.

Kydland, Finn E., and Edward C. Prescott 1977. " Rules Rather Than Discretion: The Inconsistency of Optimal Plans" *Journal of Political Economy* 85 (3): 473-92.

Lucas. Robert E. Jr. 1972. " Expectations and the Neutrality of Money" *Journal of Economic Theory,* 4 (2): 103-124.

Rich, Georg. 2025. "The Genesis and Performance of Swiss Monetary Targeting" in Bordo et al. *Fifty Years of the Shadow Open Market Committee; A Retrospective on its Role in Monetary Policy.* Hoover Press.

Sargent, Thomas J. 1971. "A note on the 'Accelerationist Controversy.'" *Journal of Money, Credit and Banking* 3 (3): 721-725.

Tavlas, George S., 2023. *The Monetarists: The Making of the Chicago Monetary Tradition, 1927-1960*. University of Chicago Press.

Taylor, John B. 1993. "Discretion versus Policy Rules in Practice." Carnegie Rochester Conference Series on Public Policy. 39 (December):195-214.