GETTING GLOBAL MONETARY POLICY ON TRACK

EDITED BY

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MILTON FRIEDMAN AND THE SECOND WAVE OF THE GREAT INFLATION

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INTRODUCTORY REMARKS

John B. Taylor

I am very pleased to introduce my good friend and monetary expert Edward Nelson, who has written much about the contribution of Milton Friedman. His lecture tonight is a sequel to the two-volume study *Milton Friedman and Economic Debate in the United States, 1932–1972*. The objective of his work is to provide an account of Milton Friedman's role in a succession of major economic debates from the start of 1973 through his death in November 2006.

As Ed will make clear in his discussion this evening, Milton Friedman did much to instill a rule-like approach to monetary policy. The title of Ed's talk is "Milton Friedman and the Second Wave of the Great Inflation, 1976–1980." There are many fascinating quotations and references to Friedman, his critics, and his followers. Thank you.

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24

Milton Friedman and the Second Wave of the Great Inflation, 1976–1980

Edward Nelson

The discussion that follows draws on the author's book (a complete draft of which is available online), *Milton Friedman and Economic Debate in the United States, 1973–2006*.[1] The book, consisting of two volumes, is a continuation of my previous two-volume study, *Milton Friedman and Economic Debate in the United States, 1932–1972* (Nelson 2020a and 2020b; see figure 24.1). The focus of these books is on Milton Friedman's economic framework and how he applied it in his contributions to debates in research and public policy forums. It is an account written from the perspective of someone in Friedman's own research field of monetary analysis and macroeconomics.

The 2020 volumes consider the pre-monetarist years of Friedman's activity in economics, the changes in his thinking (and the impetus for those changes) that turned him into a monetarist, the details of his economic framework, and his engagement in research and policy debates during the first twenty-two years of the period (1951 onward) in which he was a monetarist. The book ends on the eve of the severe inflation breakout of early 1973. The continuation volume covers the period from 1973 to 2006.

The coverage of both the study covering 1932 to 1972 and that covering 1973 to 2006 spans Friedman's research contributions and

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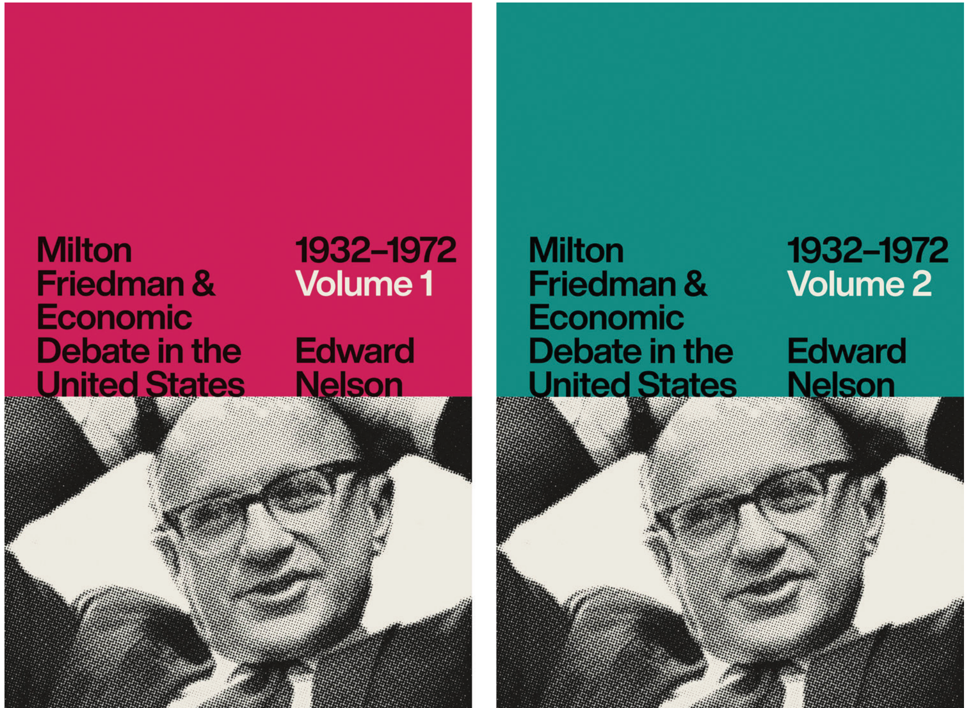

FIGURE 24.1. Edward Nelson, *Milton Friedman and Economic Debate in the United States, 1932–1972* (2 vol.; University of Chicago Press, 2020).

his interventions in the public square—for example, his *Newsweek* columns and other op-eds, his many appearances on television and in other media, and his books coauthored with Rose Friedman. In the 1973–2006 study, this public policy activity absorbs an increased proportion of the coverage. This tilt in the coverage reflects Friedman's concentration in this period on public policy rather than research. In addition, in light of Friedman's move to California at the turn of 1976/1977, the continuation volumes predominantly concern Friedman's years at the Hoover Institution rather than at the University of Chicago.

In the present discussion, I will focus on a single item in Friedman's public policy activity—one that spanned the period

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surrounding his move to California and the Hoover Institution. I consider his prediction and analysis of the second wave of the United States' Great Inflation. I define that second wave as the rise in the inflation rate from its trough of 4.8% (the December 1976 twelve-month rate)—a rise that culminated in double-digit inflation rates in 1979, 1980, and 1981.

The discussion of this episode will not primarily involve considering Friedman's research publications. His relevant statements on inflation appeared in nonresearch outlets. These statements are revealing, however, about the monetary framework *underlying* Friedman's research—including the body of work produced with Anna Schwartz. A look at this episode will also shed light on how his viewpoint contrasted with—but helped reshape—thinking in policy circles and the economics profession during the late 1970s, in the lead-up to the Volcker disinflation.

The Second Wave of the Great Inflation

The United States had so-called twin peaks of inflation during the Great Inflation—with double-digit rates recorded in the mid-1970s and in the period starting in 1979 and continuing into the early 1980s. It is the second wave of the Great Inflation, which featured the second of the twin peaks, that will be the concern here.

Over the years, some skepticism has been expressed about the genuineness of the second peak. In particular, the fact that the Consumer Price Index (CPI) rate was pushed up by the second oil shock and by the statistical treatment at the time of mortgage costs has been used as a basis for doubting whether this second period had double-digit inflation that could be attributed to the creation of excess demand. But, although the peak of CPI inflation in 1980 was undoubtedly boosted by special factors, the Personal Consumption Expenditures (PCE) inflation rate also shows a double-digit rate. The GDP deflator inflation rate likewise reached

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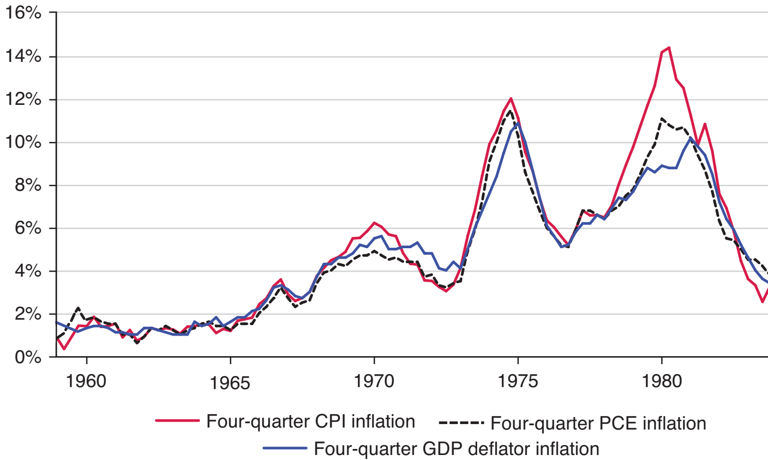

FIGURE 24.2. US inflation rates, 1960 Q1 to 1983 Q4.
Source: FRED portal (Federal Reserve Bank of St. Louis).

double digits in the early 1980s (see figure 24.2). Furthermore, the notion that the second wave of the Great Inflation was at least as serious and insidious as the first wave is reinforced by considering the four-year average of a series considerably focused on at the time—the GNP deflator inflation rate (figure 24.3). This average shows a higher peak in the early 1980s than that in the mid-1970s.[2] So the case for viewing the second wave as having a severity comparable with the first, and as reflecting sustained forces put in place by aggregate demand policy, seems quite sound.

As background for the discussion of this second wave, table 24.1 gives the names and positions of several key personnel in US economic policymaking over this period.

The Second Wave of the Great Inflation—Expected or Not?

In the mid-1970s, US Treasury bond pricing suggested that the mid-1970s inflation would not be repeated and that a further

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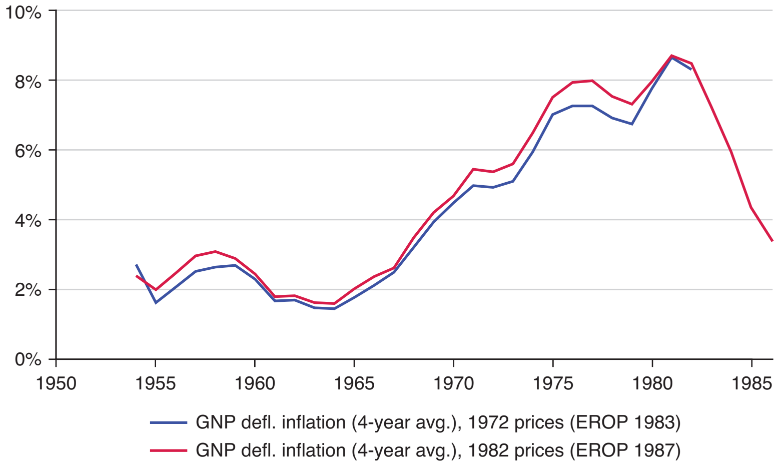

FIGURE 24.3. Four-year averages of inflation rates in the GNP deflator.
Source: Council of Economic Advisers, *Economic Report of the President* (EROP), 1983 and 1987.

TABLE 24.1. Selected key figures in US government, 1976–1980.

Gerald R. Ford	US president, 1974–1977
Jimmy Carter	US president, 1977–1981
W. Michael Blumenthal	US Treasury secretary, 1977–1979
Charles Schultze	Council of Economic Advisers (CEA) chair, 1977–1981
Bert Lance	Office of Management and Budget director, 1977
Alice M. Rivlin	Congressional Budget Office (CBO) director, 1975–1983
Arthur F. Burns	Federal Reserve chair, 1970–1978
G. William Miller	Federal Reserve chair, 1978–1979; US Treasury secretary, 1979–1981
Paul A. Volcker	Federal Open Market Committee vice chair, 1975–1979; Federal Reserve chair, 1979–1987

decline in inflation to lower rates was likely. A *Business Week* article noted in early 1975, "It is highly unlikely that double-digit inflation will recur in this decade." And testifying in 1981 about US budget forecasts submitted at the end of 1977, a government official stated, "Nobody predicted the double-digit inflation that actually occurred in the 1979–80 timeframe. Those were not predicted to occur."[3] This

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characterization neglected Milton Friedman's public interventions. A friend of his pointed this out to the *Wall Street Journal* at the end of the 1970s (Brunie 1979): "In your ongoing 'debate' about econometric models, it was particularly disturbing to read Michael Evans' comment . . . that no one correctly forecast inflation for 1978 and 1979. He's wrong, because Milton Friedman did."

Friedman made a sequence of predictions from 1976 to 1978, initially forecasting the turnaround in inflation, then indicating that inflation would reach double digits, and then suggesting a peak in the 10% to 13% range.[4] In the first half of December 1976, he stated that inflation would trough around February 1977. With respect to twelve-month CPI inflation, the actual trough was 4.8% in December 1976, as already indicated. Also in his December 1976 commentary, Friedman predicted a 7% to 9% average inflation rate over the February 1977 to mid-1979 period. On television in April 1977, he said: "I expect it's going to step up in the next year or two to 7% or 8%." Then, in the fall of 1977, in the wake of double-digit M2 growth during 1976 having continued in 1977, he predicted in his *Newsweek* column and in public talks that there would be a return of double-digit inflation in 1979 or 1980. A *Chicago Tribune* report on one of these sets of remarks was titled "10% Inflation in 1980?" With regard to 1978 specifically, Friedman in a briefing to a financial firm in October 1977 stated that he saw 1978 inflation as being 7% to 10% (this was when US economists' consensus forecast was 6%).

In his *Newsweek* column of April 24, 1978, Friedman indicated that he saw February 1977 to October 1979 average inflation as being 7% to 10%. He went on to remark during a mid-1978 briefing, "It would be a miracle if inflation peaked below 10%, and 10 to 12% or 10 to 13% would be more likely." He assessed that peak as likely to occur in 1979 Q4. Like his other inflation predictions in the 1976-to-1978 period, this closely anticipated the actual outcomes, as the peak occurred in 1980 Q1.

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The Contrast with the Professional Consensus on Inflation and Stabilization Policy

In making these predictions, Friedman was again marking himself out from mainstream macroeconomic views. In fact, in the second half of the 1970s, Friedman's views on inflation—not just in their focus on monetary growth, but also more generally in their tracing the decade's inflation-to-aggregate-demand developments—were still encountering strong resistance, notwithstanding his recent Nobel Prize in economics in October 1976 and occasional generous remarks made about his influence, such as the statement made by the Federal Reserve Bank of San Francisco's president John Balles in January 1977: "Milton Friedman has altered the course of economic thinking."

In fact, resistance (in practical, policy-oriented discussions) to Friedman's views on inflation in fact went *up* over the years 1977 and 1978. In these years, he diverged from policymakers and many economists in the perspective that he took on the analysis and control of inflation.

The contrast between Friedman's views and the mainstream was brought out in discussions of stabilization policy during 1977. Across government agencies, there was a consensus that a very considerable resource slack existed. The director of the CBO, Alice Rivlin, suggested in January 1977: "With excess capacity and high unemployment continuing, demand pressures do not seem likely to lead to an acceleration of inflation. . . . [Aggregate demand] stimulus to get the rate of [real GNP] growth up to 5 or 6 percent would probably not add greatly to the problem of inflation."[5] Similarly in the new Carter administration, economic officials Bert Lance and Charles Schultze wrote in a joint statement in January 1977, "The overwhelming majority of 'serious macroeconomists' have called for expansionary economic policies," while Schultze remarked the following September, "Ample resources are available to permit further

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expansion."[6] Among Federal Reserve governors, Chair Arthur Burns remarked in February and March 1977 that "there is now considerable slack in the economy" and "substantial amounts of idle capacity and manpower," while board member Charles Partee stated in October, "Sizable unused resources exist."

As of the first quarter of 1977, the reported US output gap estimate stood at about minus 9%. This severely overestimated slack, as the research of Athanasios Orphanides and his coauthors would document.[7] Also, slack was rapidly diminishing in 1977. Friedman did not present his own estimates of resource gaps, but he emphasized the fragility of outstanding estimates (notably that of the full-employment, or natural, rate of unemployment) and eschewed the usage of them in his own analysis of ongoing US economic developments.

In 1977, James Tobin criticized a Friedman *Newsweek* column on monetary policy being too loose, dated early October, with Tobin suggesting that the column's analysis implied an extreme view that there was now zero slack. Whether Friedman had that view or not, it ultimately became mainstream. The CBO now sees US output as crossing US potential GDP around 1977 Q3.

Though his prescriptions were consistent with an augmented Phillips curve framework, Friedman relied principally in his quantitative analysis on reduced-form linkages between nominal series (notably, monetary growth, nominal income growth, and inflation). This approach led him to believe in late 1976 that there was already considerable stimulus in the pipeline and that monetary policy settings should become less, not more, expansionary. In his December 6, 1976, *Newsweek* column, he offered this policy prescription: "Take it easy. Hold down government spending. Hold down the rate of monetary growth. Let the recovery proceed as it then would, at a moderate pace. As the recovery proceeds, reduce the rate of monetary growth still further, so that we can force down the rate of inflation gradually over a few years."

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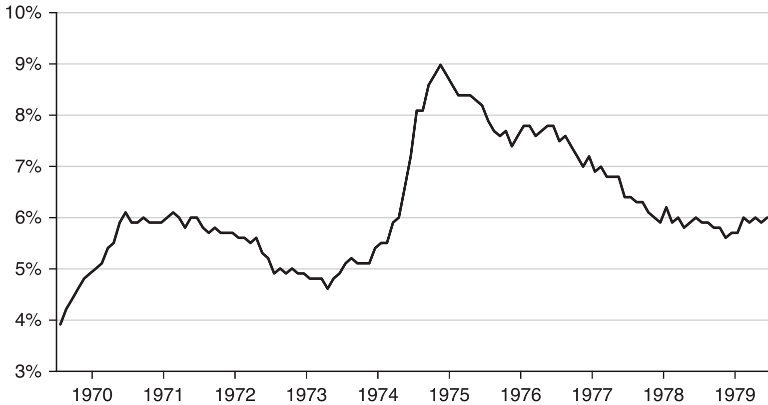

FIGURE 24.4. Aggregate rate of unemployment, January 1970 to December 1979.
Source: FRED portal (Federal Reserve Bank of St. Louis).

This was not a widely shared prescription. In part, it reflected the fact that many other economists did not see the first-half 1970s experience as an instance of monetary policy generating high inflation—or even of expectational Phillips curve dynamics in action. Although it partially underlay his 1976 Nobel award, in many circles in the late 1970s the Friedman-Phelps story was seen as mainly useful in understanding *the decade of the 1960s*. The 1970s inflation was seen as different—as being overwhelmingly cost-push. Despite often being portrayed as a nuanced and modern way of looking at inflation, the cost-push perspective on inflation is, as Friedman often stressed, nothing new. It is also very mechanical: an approach in which the behavior of the aggregate inflation rate is traced, as though adding up items in a spreadsheet, to the behavior of particular cost and price categories—with these items in turn seen as having a life of their own, rather than as depending on the aggregate-demand/aggregate-supply balance.

According to this mind-set, the rise in inflation through 1976 was attributable mainly to autonomous forces, and the mid-decade rise in the unemployment rate (see figure 24.4) had little to do with

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the 1975 and 1976 disinflation. Alice Rivlin, for example, remarked in January 1977: "If we get double-digit inflation in the next year or so, it is much more likely to be from extraneous causes that have nothing to do with excess demand. We are not in an excess demand situation now. We have a great deal of unused capacity." She added: "The output gap and its attendant higher levels of unemployment and excess capacity explain relatively little of this reduction in inflation. The principal factors . . . have been the ending of the effects of the one-time shocks which hit the economy in 1972–74."[8] Likewise, in the Carter administration, Secretary of the Treasury Michael Blumenthal observed in January 1977: "Much of the acceleration of inflation during the first half of this decade was due to such outside shocks as the higher energy price imposed by the OPEC countries and severe weather."[9] Arthur Burns, during his tenure through 1978, and his successor as Federal Reserve chair, G. William Miller, made many statements along the same lines.

Who Was Most Responsible for the Second Wave?

As already indicated, ahead of the second wave of the Great Inflation, inflation troughed in the last full month of the Ford administration (December 1976). Furthermore, after its rise during 1977, inflation's further major surge in 1978 and 1979 largely occurred under Federal Reserve Chair Miller, who had been nominated by President Jimmy Carter. But, in contrast to accounts that associated the rise in inflation with the change in administration or in the Federal Reserve leadership, Friedman attributed the second wave of the Great Inflation overwhelmingly to actions taken by the Burns Federal Reserve, which had presided over the 1970s' second monetary explosion in 1976 and 1977—that is, renewed double-digit growth rates of M2. This rapid monetary growth had taken place in the context of real federal funds rates that, although less negative than had been the case in 1975, had been allowed

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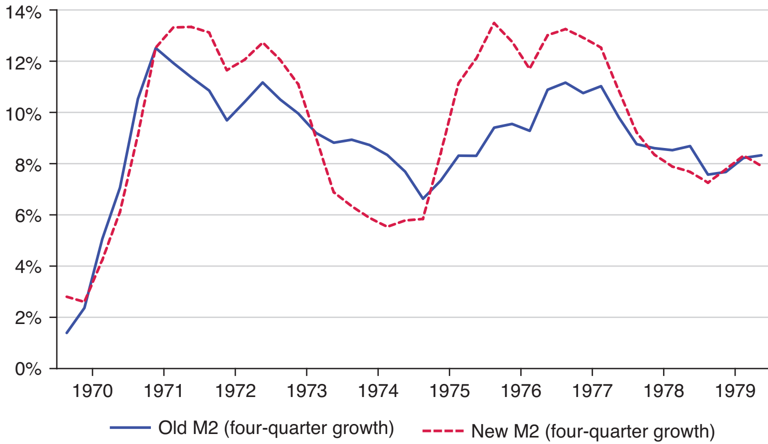

FIGURE 24.5. Percentage growth in M2, 1970 Q1 to 1979 Q4.
Source: FRED portal (Federal Reserve Bank of St. Louis); Nelson (2024).

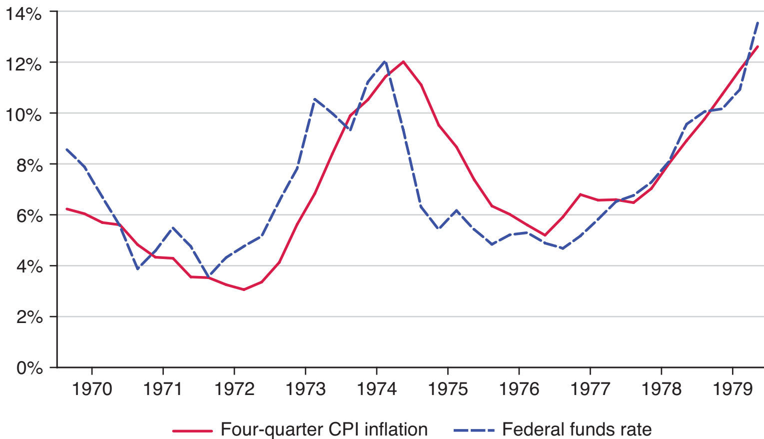

FIGURE 24.6. The federal funds rate and CPI inflation, 1970 Q1 to 1979 Q4.
Source: FRED portal (Federal Reserve Bank of St. Louis).

to remain negative (and by a widening amount in 1977). See figures 24.5, 24.6, and 24.7.[10]

But although he viewed high inflation in 1978 and 1979 as having been locked in by the policies of the later Burns years, Friedman became critical of the Miller Federal Reserve. Like others, he

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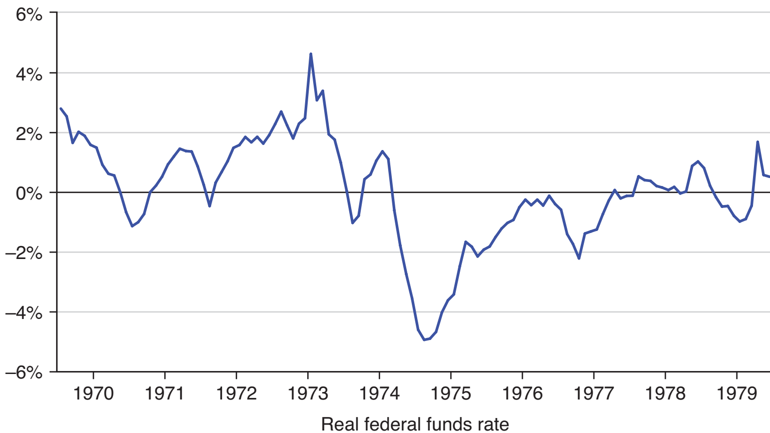

FIGURE 24.7. The real federal funds rate, January 1970 to December 1979.
Source: Calculated using data in FRED portal (Federal Reserve Bank of St. Louis).

criticized its tightening of monetary policy (which certainly did occur) as being mostly too leisurely. Furthermore, as already suggested, Miller also had a cost-push outlook on inflation. For example, in January 1979 he wrote: "In sum, our arsenal of weapons against inflation is somewhat restricted."[11]

This outlook put Miller at odds with Friedman. The difference between them was not on the need to disinflate, but on the degree to which monetary policy tightening could deliver disinflation. Reflecting this difference, Miller in May 1978 reacted to a Friedman *Newsweek* commentary by observing: "In the last section of his article, Dr. Friedman asserts that 'We need a long-term program dedicated to eliminating inflation.' I agree wholeheartedly." The divergence with Friedman was brought out by Miller's next observation: "Monetary policy has a critical role to play, but it cannot alone bear the whole burden of combating inflation."

Friedman believed that it was the Federal Reserve, rather than the executive branch, that made the decisions that most mattered for the course of inflation. But Friedman was critical of the Carter administration on inflation, in good part because that administration

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articulated a nonmonetary, cost-push perspective. He believed that the administration, by advancing this perspective, hindered public appreciation of the demand-restriction steps that would be needed to produce disinflation.

Like Miller, the administration was explicit in viewing price stability as a desirable goal. This was reflected in Treasury secretary Blumenthal's remark early in his tenure: "Reduction in the rate of inflation is one of the goals of this administration."[12] When, over the subsequent years, the administration propounded a cost-push view of inflation, Friedman at times expressed incredulity, such as in April 1978 when he remarked: "Secretary Blumenthal knows as well as you and I do that inflation does not come from trade unions." On numerous occasions, however, the administration made clear that it indeed *did* view inflation in these and similar terms. For example, CEA chair Schultze observed in March 1978: "We can't wring this inflation out of the economy through measures which promote unemployment and economic slack. Such policies have only a limited impact on the kind of inflation from which we now suffer."[13]

Especially before 1979, the Carter administration diagnosed inflation in terms of special factors. These included rises in specific prices: those associated with US exchange rate depreciation (especially in 1978), weather (notably in 1977), rising world food prices (in 1978), and then food plus oil (in 1979). And, throughout these years, it put much emphasis on wage-push: pressures on prices associated with pay demands of US labor unions. The administration's nonmonetary outlook was reflected in its series of anti-inflation measures. These included a call in January 1977 by President Carter for prenotification of private sector price increases; an April 1977 Carter announcement of a set of specific measures designed to bring inflation to 4% by mid-1979; his attempts in February and April 1978 to revive the wage-price guidelines of the 1960s; and the October 1978 modification of these efforts—a package consisting of voluntary wage guidelines, voluntary price guidelines, and proposed

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real wage insurance via a tax-based incomes policy (specifically, tax-based rewards for wage and price restraint). The president conveyed his outlook in April 1978 when he remarked: "Reducing the inflation rate will not be easy. . . . We will not solve inflation by increasing unemployment. We will not impose wage and price controls. We will work with measures that avoid both extremes."

And in the face of such endurance of cost-push views, Friedman reiterated his criticisms of them. He was a long-standing critic of wage-push ideas. He would sum up his position in April 1981: "To say that wages are a cause of inflation is somewhat like saying that wet streets are a cause of rain. Wage rises are a manifestation of inflation."[14]

In April 1978, Friedman observed: "President Carter's [anti-] inflationary package is like Hamlet without the Prince of Denmark. . . . Inflation is not caused by trade unions, business interests, consumers, or oil. . . . [It] has been around 1,000 years and, in all that period, only one medicine to cure inflation has been found: to hold down the rate of monetary growth and hold down governmental spending."

In a November 1978 television appearance, Friedman added: "The great confusion in this area is to confuse particular prices with prices in general. Why is it that people point to food prices as a cause of inflation, but I have seen nobody point to the sharp decline in the cost of computers, or handheld computers, or computing services? Has somebody been pointing to that as a cause of deflation?"

By this point, President Carter had made Alfred Kahn, known for his deregulation initiatives, the administration's "anti-inflation czar." Carter indicated that Kahn would be "my new partner in controlling inflation in this country." Friedman reacted by observing that Kahn had done a "remarkable job" on deregulation but that it was "sheer delusion" to see deregulation as key to disinflation. He feared that this was the direction in which the administration was going with the Kahn appointment. That fear was partially borne out by the

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president's remark in mid-1979: "The best anti-inflation medicine, in my opinion, is real competition under the American free enterprise system."

Friedman was also concerned that Kahn's new job would involve him in stifling market forces, as propounding the administration's incomes policy would, in effect, consist of trying to prevent US wages and prices from being market determined. This concern was consistent with an early news report on Kahn's views, which stated that if he was forced to choose, Kahn favored mandatory wage and price controls over a recession.

The Tidal Year of 1979

In 1979, in drafting the book version of *Free to Choose*, Milton and Rose Friedman titled their final chapter "The Tide Is Turning."[15] This referred principally to public opinion on the role of government. But 1979 also proved to be a tidal year regarding views in policy circles in 1979 on the causes and control of inflation—with this change in views rapidly reflected in policy stance.

The *Economic Report of the President* for 1987 noted that the 1975–79 expansion "ended in a double crescendo of rising inflation and interest rates and falling economic activity."[16] As this process unfolded, Friedman wrote in August 1979: "The problem is not, as President Carter asserts, a lack of confidence. The problem is rather that the public is very confident that the government will produce inflation and will mismanage the economy. We do not need more confidence in bad policies. We need better policies."[17]

By the time Friedman was writing these words, major changes were afoot in policymaker thinking, as well as in the consensus perspective of the economics profession, regarding inflation. Far-reaching revisions in official estimates of the output gap at the start of the year, together with increasing recognition of a rising natural rate of unemployment, helped reconcile the decade's Great Inflation—including

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the ongoing second wave—with an excess-demand account. By 1982, Ben Bernanke, then at Stanford University, could refer to the "excess-supply bias of earlier estimates" and a "growing consensus that aggregate demand was overstimulated in the late 1970s."[18] In policymaking, Paul Volcker became Federal Reserve chair in July 1979 and viewed inflation as monetary in nature.

There were many divergences between Friedman's prescriptions and the monetary policy of the Volcker Federal Reserve. But a lasting break in officialdom occurred in 1979, reflected in Volcker's perspective and consistent with Friedman's position: monetary policy now had special responsibility for controlling inflation. This change would be clear in Volcker's observation in August 1983: "We have to be particularly sensitive to inflation: that is a monetary phenomenon; that's more directly in our bailiwick."[19] And with regard to the second wave of the Great Inflation, Volcker—who had been vice chair of the Federal Open Market Committee in the second half of the 1970s—articulated a retrospective judgment that lined up with Friedman's. In an appearance in 1982 alongside Anna Schwartz at an event in New York City, Volcker gave a negative verdict on monetary policy in 1976 and 1977. He observed that in the United States, noninflationary economic expansion "went on in the early sixties: and [then] the Vietnam War came along and all the rest, but we did have a five-year period where that happened. It began to happen [again], in my judgment, in '75 and '76, coming out of the recession. And then, for a variety of reasons, we blew it."[20]

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Notes

These remarks were also presented at a seminar at the Federal Reserve Board. The author is grateful to conference and seminar participants for comments.

1. More details on the events, quotations, and data referred to below are provided in that book manuscript (Nelson 2024). In particular, the manuscript provides details on the interviews, speeches, and other outlets in which Friedman made key statements that the discussion below references.
2. See also Dornbusch and Fischer (1984), 436. The GNP deflator inflation rates are obtained from the *Economic Report of the President* (EROP) for 1983 and 1987 (Council of Economic Advisers 1983 and 1987).
3. From the testimony of September 24, 1981, given by Colonel Joseph G. Rutter, as published in Committee on Armed Services, US House of Representatives (1982), 562.
4. Unless otherwise indicated, the sources regarding the Friedman quotations and other attributions in the remainder of this section and in the next section can be found in Nelson (2024).

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5. In Committee on the Budget, US House of Representatives (1977), 45.
6. In Committee on the Budget (1977), 255.
7. See, for example, Orphanides et al. (2000), Orphanides (2003), and Orphanides and Williams (2005).
8. In Committee on the Budget (1977), 43.
9. In Committee on the Budget (1977), 254.
10. In figure 24.7, the real federal funds rate is defined as the nominal funds rate minus twelve-month CPI inflation. Real interest rates computed using other methods also show negative values in the mid-1970s and notably in 1977 (see, especially, Clarida, Galí, and Gertler 2000, 168).
11. Quoted in López-Salido, Markowitz, and Nelson (2024), table 1. Unless otherwise indicated, the remaining quotations of Friedman, Miller, and others given in the rest of this section are sourced in Nelson (2024).
12. In Committee on the Budget (1977), 254.
13. See Associated Press (1978).
14. Friedman (1981), 13.
15. See Friedman and Friedman (1980), chapter 10.
16. See Council of Economic Advisers (1987), 30.
17. See Friedman (1979).
18. Bernanke (1982), 219.
19. Testimony of August 3, 1983, in Committee on Banking, Finance and Urban Affairs, US House of Representatives (1983), 246.
20. Volcker (1982), 21.

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GENERAL DISCUSSION

MICHAEL BORDO: Ed, that was really great, but there's one thing I wanted to ask you about. The St. Louis Fed was a monetarist reserve bank in those years, in contrast to the other banks and the Board. They promoted Milton Friedman's agenda from the early sixties. How much traction did the presidents in those years have at the debate at the FOMC [Federal Open Market Committee]? In a sense, you give the impression that the Fed was this monolithic institution, and they just got it wrong. But the St. Louis Reserve Bank was on the mark in predicting the Great Inflation. How do you reconcile that?

EDWARD NELSON: Well, I discussed this a bit in the published volumes, as I have a section on the St. Louis Fed in volume 2. And I think there was a very important low-frequency influence on policymaking on the part of the St. Louis Fed, which in the Federal Reserve System was regarded as a resident critic of the consensus position. And so, it's perfectly consistent to say that there were voices in policy circles in the 1970s that were articulating to a much greater degree what we can now consider orthodox views of inflation but that those voices weren't underlaying the consensus.

Noting here, of course, that consensus is not the same as unanimity. There wasn't unanimity in the Federal Reserve System or in Federal Reserve policymaking circles on the validity of nonmonetary views of inflation, but belief in the validity of those views prevailed at the leadership level. And Paul Volcker was an interesting case of somebody who was at the leadership level who changed his view about inflation. But the St. Louis Fed certainly made a very useful contribution to the process in the 1960s and 1970s by keeping the ideas aired, keeping the critique

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going. And your work with Ned Prescott emphasizes that the reserve banks have been a very vibrant source of ideas in the Federal Reserve System—and a leading indicator, sometimes, of trends in the Federal Reserve. And I'm happy to say that at the Federal Reserve, I've worked at both, at the St. Louis Fed and at the Board, so I have seen both sides of this nice arrangement.

ROBERT KING: I wanted to ask you about one specific set of mechanisms. Arthur Burns in famous remarks was extremely skeptical about the ability of the central bank to affect inflation expectations. He basically viewed these as completely beyond the control of the central bank. By the time that Volcker came in, he was beginning to discuss how policy could affect expectations. [G. William] Miller, I don't know. I haven't read statements by Miller about expectations per se, but one vision then would be that the seventies were a period in which the central bank largely took expectations as given and chose policy. And the later period was one in which there was a move toward managing expectations. And if we think about the kind of model that Emi Nakamura was talking about earlier today, where you have a kind of a flat Phillips curve, if you're a central bank and you think expectations are beyond your control, and there are relative price shocks that are important, you might behave a lot like the way you're describing the Burns and Miller regimes.

NELSON: I agree that a flat Phillips curve, defined as a low-output-gap elasticity, gets you in the direction of having a lot of short-term looseness in the relationship between monetary policy actions and inflation. But there is still a contrast with the case of a zero elasticity, when there is no dependence at all of inflation on the output gap. And the nonmonetary view of inflation is essentially saying that the output-gap elasticity is zero. If you have a low, but positive, output-gap elasticity, you as a policymaker still ultimately control inflation through influencing aggregate demand, and ultimately you control inflation through monetary policy.

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But one thing I'll say about the issue that really dovetails well with what you're describing: the contrast in views between Burns and Volcker conforms well with the notion that Burns had a nonmonetary view of inflation in which inflation is basically an autonomous process. And expectations of inflation are, in that setting, likewise an autonomous process. And so, they as policymakers could happily concede or actively assert that inflation expectations were very important drivers of inflation and yet not see that in terms of a Phillips curve mechanism in which monetary policy ultimately steered inflation. Burns saw both inflation and inflation expectations as given from the point of view of monetary policy, whereas Volcker saw them both as endogenous with respect to monetary policy. And as you shift from one view to another, that's really going from a nonmonetary view of inflation to a monetary view of inflation.

One of the most egregious instances in which Burns obviously saw expectations of inflation as important, but was not really acknowledging monetary policy's effect on them, was when the Nixon wage-price controls were imposed in 1971, because Burns said, in effect, "Okay, these wage-price controls have lowered inflation expectations; therefore, we don't need to have nominal interest rates as high as they used to be in order to secure any given real interest rate." So that is really taking the expected-inflation term as an external variable to monetary policy. Having that perspective can lead to a worse monetary policy than you would have had if you hadn't acknowledged the importance of expectations at all.

BRIAN SACK: Hi, thanks. So this question I think dovetails with the last one. If you go back to the mid-seventies and you look at the "Greenbook," there's very little discussion of inflation expectations, and there are no measures of inflation expectations. By contrast, today there are, I think, on average forty-some references to inflation expectations in every FOMC meeting in the

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transcripts, and there are many measures of inflation expectations. So, I guess I was wondering, if Milton Friedman had the measures that we have today of inflation expectations, to what degree would that be a substitute for focusing on lagged nominal variables like M2 growth? It is a nominal variable, it's just forward-looking as opposed to lagging.

NELSON: Well, any answer's going to be speculative, but I think, Brian, one thing that is consistent with the notion that Friedman would be very receptive to looking at and analyzing inflation in those terms is that he wrote a little piece, I think in 1984, in the *JPE* [*Journal of Political Economy*]. The background was that he was frustrated at the fact that the US Treasury, after expressing interest in the early seventies under George Shultz in indexed securities markets, was sort of dragging its feet on indexed securities markets, and they'd been introduced in the UK by 1984. And Friedman in 1984 was saying that one advantage of an indexed bond market is that you'll have a self-contained measure of long-term inflation expectations coming from financial markets. And so that obviously was a very astute statement and underlies a lot of what people do today. And so, yes, I think that he would be receptive to that general direction of looking at things. Thank you.

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