Falling Behind the Curve: A Positive Analysis of Stop-Start Monetary Policies and the Great Inflation*

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Abstract

In this paper, we characterize the evolution of long-run inflation expectations and the stance of monetary policy over the period from 1965 to 1980, and we use this evidence to distinguish among various explanations regarding the causes of the Great Inflation. First, using survey-based measures and financial market data, we show that long-run inflation expectations rose markedly from 1965-69, remained elevated but stable through the mid-1970s, and then deteriorated at an alarming pace from 1977 to 1980. Next, analyzing the behavior of *ex ante* real interest rates, we show that the course of monetary policy over this period is not well-represented by a linear reaction function but rather as a sequence of stop-start episodes that occurred in 1968-70, 1974-76, and 1979-80. In each case, belated policy tightening induced a contraction in economic activity, but that stance of policy was not sustained long enough to bring inflation back to previous levels. Finally, we identify four factors that played a fundamental role in causing the Great Inflation, and we examine how the likelihood of a recurrence could be minimized by the use of simple rules—such as the Taylor (1993) rule—as benchmarks for the conduct of monetary policy.

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1. Introduction

U.S. consumer price inflation, which had been stable at around 1 percent in the late 1950s and early 1960s, reached double-digit levels by the late 1970s. This bout of inflation is commonly referred to as the "Great Inflation" and has been widely viewed as the most dramatic failure of U.S. monetary policy since the Great Depression. Thus, numerous analysts and commentators have sought to identify the primary causes of the Great Inflation, particularly because such lessons might help minimize the likelihood of a recurrence. Nevertheless, despite the remarkable breadth of the existing literature, relatively scant attention has been paid to the behavior of long-run inflation expectations over this period, and most of the empirical studies have focused on using linear reaction functions to represent the conduct of monetary policy.

In this paper, we characterize the evolution of long-run inflation expectations and the stance of U.S. monetary policy over the period from 1960 to 1980, and we use this evidence to distinguish among various explanations regarding the causes of the Great Inflation. We begin by considering several distinct measures of long-run inflation expectations, which indicate that such expectations rose markedly during the late 1960s, remained elevated at that plateau through the mid-1970s, and then deteriorated at an alarming pace from 1977 until mid-1980. Evidently, referring to the "Great Inflation of the 1970s" is a significant misnomer that neglects the crucial initial phase of this episode in the 1960s as well as its culmination in late 1980 (not autumn 1979).

This evidence on long-run inflation expectations is inconsistent with a number of prominent explanations for the Great Inflation. Given that inflation expectations increased most rapidly during two periods—namely, early 1966 to mid-1970, and early 1977 to mid-1979—that were *not* associated with accelerating commodity prices or particularly large mismeasurements of the output gap, neither of these factors seems plausible as a fundamental cause for the Great Inflation. Moreover, the perceived severity of Phillips curve tradeoffs may well account for policymakers'

reluctance to engage in disinflationary policies during the first half of the 1970s—hence leaving inflation expectations at a plateau of about 5 percent over that period—but *cannot* explain why policymakers allowed long-run inflation expectations to surge upwards during the latter part of that decade.

Next, we analyze the behavior of *ex ante* real interest rates and show that the course of monetary policy during the Great Inflation period is not well-represented by a linear reaction function but rather as a sequence of stop-start episodes that occurred in 1968-70, 1974-76, and 1979-80. In each case, belated policy tightening induced a contraction in economic activity, but that stance of policy was not sustained long enough to bring inflation back to previous levels. Thus, the policy response to an exogenous shock is best represented by a *nonlinear* process with three distinct phases: (1) policy remains passive while inflation begins to pick up; (2) policy suddenly shifts to a contractionary stance once the inflation rate exceeds a particular threshhold, where the value of the threshhold depends on the previous inflation peak; and (3) contracting economic activity causes the policy tightening to be reversed before inflation has converged back to its initial rate.

We then proceed to identify four fundamental causes of this recurring sequence of stop-start policies and the corresponding upward drift of long-run inflation expectations. First, while the Federal Reserve's mandate includes the goal of price stability, this goal was not defined in terms of a specific quantitative objective that would have facilitated policy strategy and communication, thereby providing a firm anchor for inflation expectations. Indeed, the absence of transparency with respect to policy objectives and strategy over this period may well have increased the extent to which the Federal Reserve's policy was susceptible to being influenced by short-run political pressures. Second, the government made persistent attempts to control inflation via other tools—including fiscal policy in the late 1960s, wage and price controls in the early 1970s, and credit

controls in 1979-80—that distracted from the need for monetary policy to take full responsibility for this task. Third, financial market regulations—most notably Regulation Q—constrained the Federal Reserve's ability to tighten policy without undermining the viability of savings & loan institutions. Fourth, in making adjustments to the stance of monetary policy, excessive weight was placed on macroeconomic projections (which often turned out to be overly optimistic) rather than on the current state of the economy.

Finally, we discuss how the likelihood of a recurrence of the Great Inflation could be minimized by the use of simple rules as benchmarks for the conduct of monetary policy. In particular, the Taylor (1993) rule specifies a quantitative inflation objective of 2 percent and clearly prescribes how the stance of policy should be adjusted to achieve this objective over time. Furthermore, this rule is specified in terms of the current inflation rate and output gap, thereby avoiding the pitfalls of relying on any given model for generating macroeconomic forecasts. On occasion, of course, policymakers might find compelling reasons to deviate from the prescriptions of any simple rule, but even in those circumstances, transparency and credibility might well be enhanced by describing policy strategy in terms of the rationale for the temporary departure from the benchmark rule.

The remainder of this paper is organized as follows. Section 2 characterizes the evolution of long-run inflation expectations. Section 3 gauges the evolving stance of monetary policy. Section 4 highlights the fundamental causes of the Great Inflation. Section 5 discusses the benefits of simple policy rules in avoiding a recurrence of this episode. Section 6 concludes.

2. The Evolution of Inflation Expectations

In this section, we characterize three stylized facts regarding the evolution of long-run inflation expectations over the Great Inflation period, and then we consider whether these stylized facts are consistent with several prominent explanations for that episode.

A. Stylized Facts

The following three characteristics of the Great Inflation are evident from surveys of inflation expectations and from time-series data on nominal bond yields and far-ahead forward nominal interest rates:

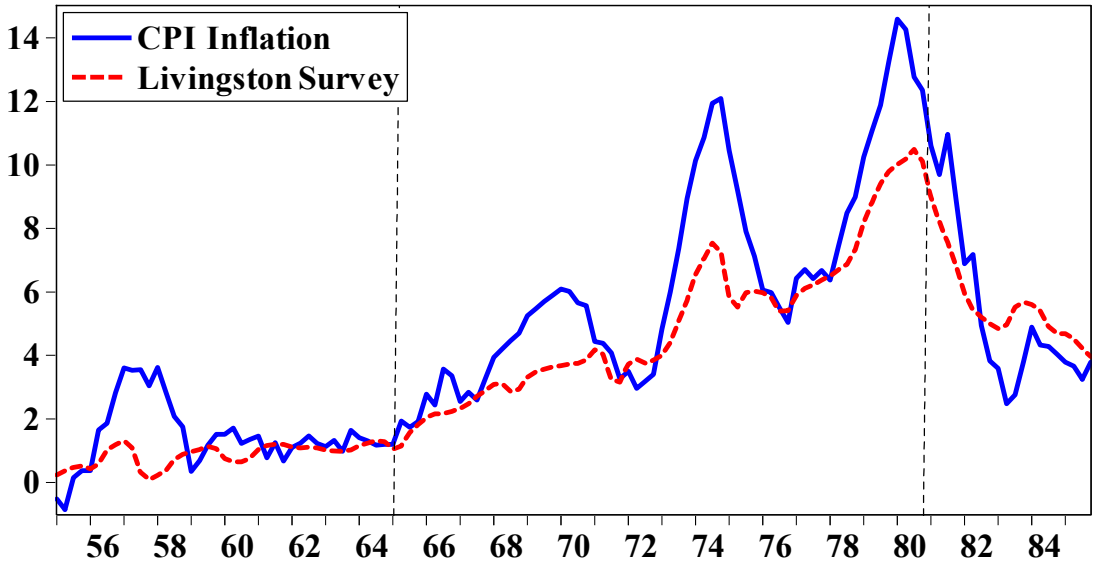
Stylized Fact #1: The Great Inflation started in the mid-1960s, not the early 1970s.

The classic measure of short-run inflation expectations is the Livingston survey of one-year-ahead projections of consumer price inflation. As recounted by Croushore (1997), this survey of business economists was initiated by Joseph Livingston in 1946 and is now conducted by the Federal Reserve Bank of Philadelphia, which began providing support for the survey in the late 1970s and assumed full responsibility in 1989. Since its inception, the survey has been conducted in May and December of each year, shortly after the release of the preceding month's consumer price index (CPI).[1] There have generally been about 50 respondents to each survey, including professional forecasters, chief economists of financial institutions and nonfinancial corporations, and a few academic and government economists.[2] Over the years, the Livingston survey has not

[1] Given this timing of the survey, the horizon of the inflation projections is not exactly one year but alternates between 10 and 14 months—this modest degree of variation in the forecast horizon can be relevant for certain types of statistical tests but is not crucial for any of the analysis presented in this paper.

[2] In the mid-1990s, the sample of respondents included economists from nonfinancial businesses (30 percent), financial institutions (50 percent), academic institutions (13 percent), and other organizations including government agencies, labor unions, and insurance companies (8 percent). For further discussion, see Croushore (1997).

Figure 1
Actual Inflation and Short-Run Inflation Expectations, 1955-1985



Note: The solid line depicts the realized four-quarter-average CPI inflation rate, and the dashed line depicts the median response to the Livingston survey regarding expected inflation over the year ahead.

only received widespread attention in the business press but has also been analyzed in numerous research papers.[3]

As shown in Figure 1, the Livingston survey indicates that short-run inflation expectations were remarkably stable at about 1 percent from 1956 until 1964, even though actual CPI inflation exhibited substantial variation over this period. In effect, business economists and professional forecasters did not expect these inflation fluctuations to be very persisistent, but instead anticipated that inflation would subside quite quickly. An inflation rate of about 1 percent was presumably viewed as consistent with the price stability objective specified in the Federal Reserve's mandate given by the Employment Act of 1946. Indeed, the firm anchoring of inflation expectations during

[3] A comprehensive bibliography is available online at http://www.philadelphiafed.org .

the late 1950s and early 1960s may well have contributed to the relatively low persistence of actual inflation over this period.[4]

Starting in 1965, however, a sharply different pattern of expectations formation becomes evident in the Livington survey: Short-run inflation expectations begin rising in parallel with actual inflation. In 1956-57, for example, realized CPI inflation reached a peak of nearly 4 percent, but one-year-ahead inflation expectations remained well-anchored, reflecting confidence that tighter monetary policy would be sufficient to bring inflation back to around 1 percent. In contrast, inflation expectations rose steadily after 1965 and reached about 4 percent by 1970, indicating that forecasters anticipated that only part of the upswing in inflation would be purely transitory. Moreover, by 1971-72, short-run inflation expectations were virtually identical to actual CPI inflation, consistent with the view that policymakers would allow inflation to stay at around 4 percent rather than taking any decisive action to return to an environment of price stability.

Yields on Treasury securities provide additional confirmation that inflation expectations began to shift markedly around 1965. In particular, Gurkaynak, Sack and Wright (2007) employed the methodology of Nelson and Siegel (1987) and Svensson (1994) to fit daily data on the entire term structure of bond yields since 1961, thereby obtaining a smoothed yield curve that can be used to compute forward interest rates at each date. During the 1960s and early 1970s, the 7-year bond was the longest maturity issue that was auctioned regularly by the U.S. Treasury, and hence for this period Gurkaynak et al. (2007) constructed daily series of one-year forward nominal interest rates for horizons up to six years ahead. Henceforth, we refer to the six- year-ahead forward interest rate as the "far-ahead forward rate;" it should be noted, however, that we have conducted sensitivity analysis which confirms that all of our conclusions are robust to the use of forward rates at even longer horizons (which are available starting in the early 1970s).

[4] For further discussion, see Bordo and Schwartz (1999), Sargent (1999), Levin and Piger (2004), and Benati (2008).

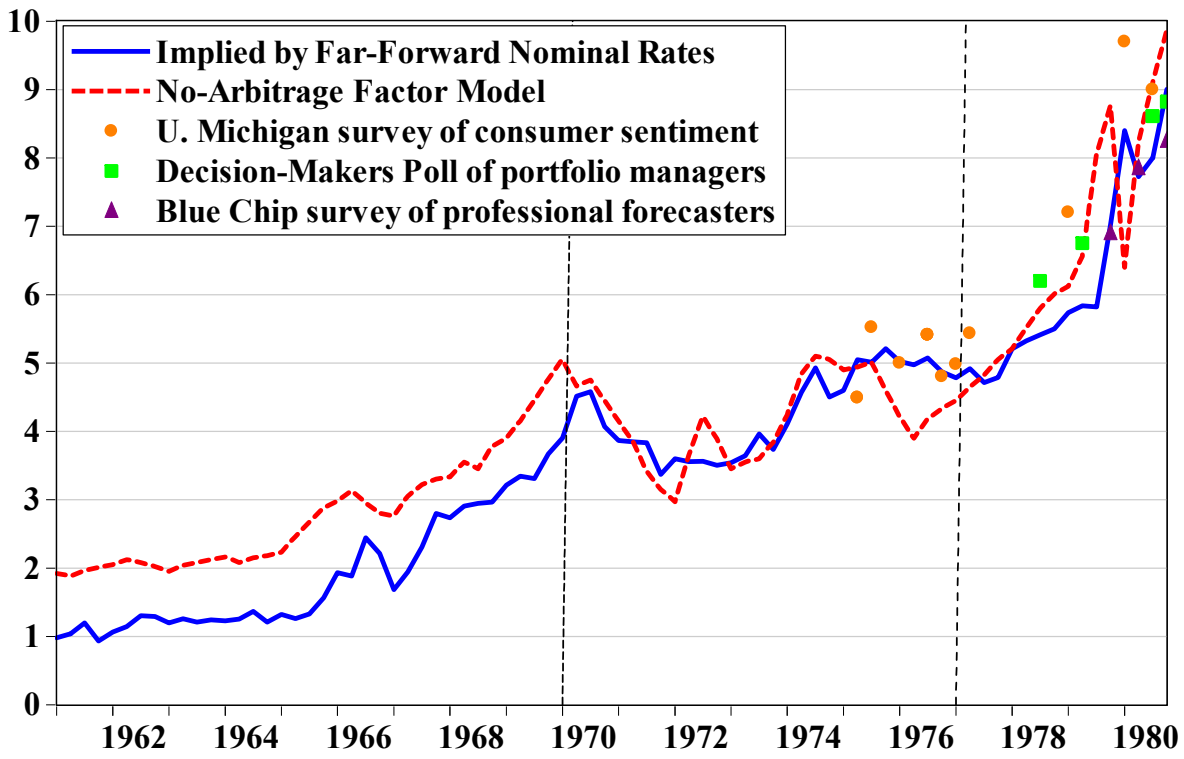
To make inferences from far-forward nominal interest rates regarding the evolution of long-run inflation expectations, we assume that the far-forward real interest rate has a constant value of 2 percent and that the term premium has a constant value of 1 percent. The constancy of the far-forward real interest rate is consistent with the view that the real economy would be expected to converge to its balanced growth path over a 7-year horizon, and the value of 2 percent for the equilibrium short-term real interest rate is the same as embedded in the Taylor (1993) rule.

Of course, investors might well perceive the equilibrium real interest rate as time-varying, especially in response to a persistent shift in productivity growth like the one that occurred during the 1970s. Moreover, a long literature has documented the extent to which term premiums are by no means time-invariant, reflecting temporal variation in the perceived distribution of returns as well as in the market price of risk. Nonetheless, as discussed further below, the magnitude of variations in the far-forward real interest rate and the term premium appear to be fairly small compared with the shifts in expected inflation that occurred during the Great Inflation, so that this measure of long-run inflation expectations may prove useful, at least as a rough gauge.

As depicted by the solid line in Figure 2, this measure indicates that long-run inflation expectations were quite stable from 1961 until early 1965 at a rates just above 1 percent, consistent with the implications from the Livingston survey. In effect, this evidence confirms that during the early 1960s inflation expectations were firmly anchored at a level broadly consistent with the Federal Reserve's mandate of price stability.

Starting in mid-1965, however, this measure exhibits a fairly dramatic kink: Far-forward inflation expectations began to drift upward steadily, reaching a peak of about 4½ percent in 1970, and then remained in the range of 3½ to 4½ percent over the next several years. Again, this pattern is consistent with the implications of the Livingston survey—not only that inflation

Figure 2
The Evolution of Long-Run Inflation Expectations, 1961-1980



Note: The solid line depicts the forward rate of expected inflation six years ahead, using nominal forward rates computed by Gürkaynak, Sack, and Wright (2006) and subtracting a constant far-forward real rate of 2 percent and a constant term peremium of 1 percent. The dashed line depicts the 5-year expected inflation rate from the no-arbitrage factor model of Ang, Bekaert, and Wei (2008). The three survey measures of long-run inflation expectations are defined in the notes to Table 1.

expectations drifted upward during 1965-70, but that these expectations remained at an elevated plateau during the early 1970s.

Importantly, these findings regarding the early stages of the Great Inflation are not sensitive to alternative assumptions about the determination of real interest rates or term premium. For example, a recent study by Ang, Bekaert, and Wei (2008) also provides a measure of long-run expected inflation implied by a no-arbitrage factor model of the term structure. Their analytical framework utilizes latent factors and allows for Markov switching among four different regimes,

and was estimated using data over the period 1952:2 to 2004:4 for CPI inflation and zero-coupon Treasury yields at four maturities (1, 4, 12, and 20 quarters).

As shown by the dashed line in Figure 2, the five-year average expected inflation rate produced by the no-arbitrage factor model of Ang, Bekaert, and Wei (2008) moves largely in parallel with the measure implied by far-forward nominal interest rates. The level of expected inflation is nearly a percentage point higher during the early 1960s, because the factor model implies that the real interest rate and the inflation risk premium were a bit below their historical averages during this period. (Of course, that implication might change if the Livingston survey were incorporated into the estimation procedure.) More broadly, however, the factor model underscores the extent to which inflation expectations were relatively low and stable during the early 1960s, began rising steadily in 1965, and reached a peak close to 5 percent by 1970.

Moreover, while no direct surveys of long-run inflation expectations were conducted during this period, the view that the Great Inflation started around 1965 is certainly corroborated by the general tenor of media reports, congressional hearings, and academic conferences through the remainder of the decade. Indeed, as shown in Figure 3, editorial cartoons provide a fairly novel source of evidence regarding growing public concerns about the upward drift in inflation from 1965 to 1969.

In summary, the evidence from the Livingston survey and from bond yield data indicates that referring to the "Great Inflation of the 1970s" is a misnomer, and that a satisfactory explanation for this episode requires careful consideration of what went wrong during the second half of the 1960s.

Figure 3
Perspectives on the Early Years of the Great Inflation (1965-69)

November 1965

"Latest paddle at the Washington woodshed"

November 1966

"Could stand some escalation."

February 1969

"He keeps getting bigger and bigger all the time."

December 1969

"Signals—hut... hut?"

Credits: Upper left: Kuekes, *Cleveland Plain Dealer*, reprinted in *New York Times (NYT)* on November 28, 1965, p.E9. Upper-right: Hesse, *St. Louis Globe-Democrat*, reprinted in *NYT* on November 27, 1966, p.E6. Lower-left: Canfield, *Newark Evening News*, reprinted in *NYT* on February 2, 1969, p.E13. Lower-right: Canfield, Newark Evening News, reprinted in *NYT* on December 7, 1969, p.E11.

Stylized Fact #2: Long-run inflation expectations remained at a plateau of about 5 percent during the first half of the 1970s but shifted upwards rapidly over the remainder of the decade.

In the mid-to-late 1970s, several surveys of inflation expectations began to include questions regarding respondents' expectations at longer horizons. In spring 1975, for example, the University of Michigan's survey of consumer sentiment started asking occasionally about the expected average CPI inflation rate over the next 5 to 10 years. In mid-1978, Richard Hoey's "Decision-Makers Poll" of institutional portfolio managers started including an occasional question about the expected average CPI inflation rate over the coming decade.[5] And in fall 1979, Blue Chip Economics Indicators began asking about the longer-run outlook in its survey of professional forecasters, including a question about the expected 10-year average inflation rate for the gross national product (GNP) deflator.[6]

Table 1 reports the median value of the long-run inflation projections from each of these three surveys over the period from 1975 through the end of 1980; these survey results are also plotted in Figure 2. Although the timing of the surveys is quite uneven over this period, the results can be directly compared in 1979 and 1980, and the degree of consistency in long-run inflation expectations across the three groups of respondents—households, institutional portfolio managers, and professional forecasters—seems particularly remarkable in light of the volatility of actual inflation over this period.

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[5] The Decision-Makers Poll was initiated when Richard B. Hoey was employed at Bache, Halsey, Stuart & Shields, and he continued to conduct the survey when he moved to Warburg, Paribus, & Becker, then to Drexel, Burnham, Lambert, and finally to Barclays de Zoete Wedd Research. The number of respondents varied between 175 and 500 and included chief investment officers, corporate financial officers, bond and stock portfolio managers, industry analysts, and economists. Although the survey was originally disseminated via proprietary newsletters, Holland (1984) received permission to publish the median survey responses for long-run inflation expectations; see also *Economic Report of the President* (1985, chapter 1), Havrilesky (1988) and Darin and Hetzel (1995).

[6] Although Blue Chip Economic Indicators is a proprietary survey, the median responses for long-run inflation expectations are publicly available for 1979 to 1991 and can be downloaded from http://www.philadelphiafed.org .

Table 1
Surveys of Long-Run Inflation Expectations, 1975-1980

	Michigan Survey (households)	*Decision-Makers Poll (portfolio managers)*	*Blue Chip Survey (professional forecasters)*
1975Q2	4.5	---	---
Q3	5.5	---	---
1976Q1	5.0	---	---
Q3	5.4	---	---
Q4	4.8	---	---
1977Q1	5.0	---	---
Q2	5.4	---	---
1978Q3	---	6.2	---
1979Q1	7.2	---	---
Q2	---	6.8	---
Q4	---	---	6.9
1980Q1	9.7	---	---
Q2	---	---	7.9
Q3	9.0	8.6	---
Q4	---	8.8	8.3

Note: This table reports the median of respondents' projections for three surveys: The University of Michigan survey of consumer sentiment asked about average CPI inflation over the next 5 to 10 years; the Decision-Makers Poll survey of institutional portfolio managers asked about average CPI inflation over the next 10 years; and the Blue Chip Economic Indicators survey of professional forecasters asked about the average GNP price inflation rate over the next 10 years.

Moreover, as shown in Figure 2 above, these survey-based measures of long-run inflation expectations line up quite closely with the two indicators derived from the term structure of nominal interest rates, further bolstering our confidence that this set of measures provides a useful gauge of the evolution of long-run inflation expectations.

The Michigan survey indicates that household expectations regarding the longer-run inflation outlook stayed in the range of 4½ to 5½ percent from mid-1975 until early 1977, a range that is very similar to that of the two expectations measures derived from bond yield data and to the levels of these two measures at the beginning of the decade. Evidently, long-run inflation expectations had remained around this plateau since about 1970; that is, policymakers were not successful in bringing down long-run inflation expectations but did at least manage to avoid any marked upward shift over the period through early 1977.

Starting in mid-1977, however, long-run inflation expectations began deteriorating at an alarming pace. The Michigan survey indicates that these expectations rose sharply from 5 percent in early 1977 to around 7 percent by early 1979 and to more than 9 percent by early 1980. The results of the Decision-Makers Poll are very similar, with long-run inflation expectations rising from about 6 percent in mid-1978 to about 7 percent in mid-1979 and to nearly 9 percent by 1980. Again, these trajectories are very close to those of the two indicators derived from term structure data, which rose from 5 percent in early 1977 to about 8½ percent by early 1980.

Stylized Fact #3: The Great Inflation ended in late 1980,* not *the fall of 1979.

In October 1979, about two months after Paul Volcker was appointed as chairman, the Federal Reserve switched operating procedures and adopted monetary aggregate targets that led to a unprecedented spike in the federal funds rate. Nonetheless, this policy tightening turned out to be fairly short-lived: the stance of policy was eased in spring 1980, and the federal funds rate quickly subsided back to its mid-1979 value and remained at that level until the fourth quarter of 1980.

Thus, while numerous papers have referred to the "Great Inflation of the 1970s", it is clear that long-run inflation expectations did not start shifting downward until after the decisive shift to

a disinflationary course of policy in late 1980. This characteristic is apparent from the survey-based measures as well as the two indicators derived from term structure data. Indeed, even the limited set of results from the Blue Chip Economic Indicators survey indicates that professional forecasters' long-run inflation expectations increased by about 1½ percentage points from October 1979 to the same month in 1980—a remarkably large shift within a 12-month period.

Finally, editorial cartoons can provide some additional sense of the public's skepticism about the anti-inflation policies that were implemented during the final phase of the Great Inflation. Indeed, as shown in Figure 4, the broad tenor of editorial cartoons in February-March 1980 was essentially unchnaged from a year earlier, exhibiting little confidence that policymakers would take decisive steps to reverse the upward drift in inflation.

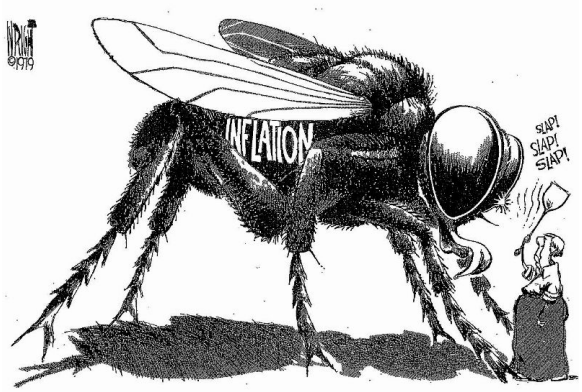
B. Implications

Now we consider whether these stylized facts are consistent with several prominent explanations for that episode. First, it is clear that the period 1965-80 is not well characterized in terms of a monetary policy regime with a stable, transparent, and credible inflation goal. Thus, the Great Inflation should not be viewed as having been caused mainly by misperceptions of potential growth or the natural unemployment rate. Such misperceptions may well have contributed to short-term inflation pressures over this period but cannot explain the rapid upward shifts in long-run inflation expectations during the late 1960s and again during the late 1970s.

Second, the rise in the Federal Reserve's implicit inflation goal during the Great Inflation (and in the private sector's perceptions of that goal) should not be characterized as having been caused mainly by aggregate supply shocks (as emphasized by Blinder, Hetzel, Mayer, and Ireland). Indeed, most of the deterioration in long-run inflation expectations occurred during periods when energy and commodity prices were relatively stable, namely, 1965-70 and 1975-78.

Figure 4
Perspectives on the Final Years of the Great Inflation (1979-80)

May 1979



"The fly vs. the flyswatter"

February 1980

"USA! USA! Is it working? USA!"

March 1980

"Stop worrying, y'all—it's guaranteed to open on impact."

March 1980

"New! Long-Range Anti-Inflation Ammo"

Credits*:* Upper-left: Wright, *NYT*, May 1979. Upper-right: *Washington Post*, February 1980. Lower-left: Oliphant, *Washington Post*, March 1980. Lower-right: *Washington Post*, March 1980.

3. Gauging the Stance of Monetary Policy

In this section, we characterize the evolution of the stance of monetary policy during the Great Inflation period. We begin by describing how the rule introduced by Taylor (1993) can serve as a useful benchmark for policy, and then we characterize several key stylized facts that have significant implications for assessing the root causes of the Great Inflation.

A. Measurement Tools

The Taylor Rule. Although the Taylor rule—and each of the numerous variants that have been considered in the subsequent literature—is typically used to obtain prescriptions for the short-term nominal interest rate, the Taylor rule can equivalently be viewed as a benchmark for gauging the current setting of the short-term real interest rate:

$$r_t = \bar{r} + \gamma_\pi (\pi_t - \pi^*) + \gamma_y (y_t - y_t^*) \tag{1}$$

where the short-term real interest rate r_t has a steady-state value of $\bar{r} = 2$, and the coefficients $\gamma_\pi = \gamma_y = 0.5$, implying that the real interest rate should be raised by 50 basis points in response to a one percentage point increase in the inflation gap—that is, the deviation of actual inflation π_t from the central bank's objective π^*—or the output gap $y_t - y_t^*$.

Measuring the Real Interest Rate. When the central bank has a transparent and credible inflation goal, and hence inflation expectations are reasonably stable, there is relatively little difference between *ex ante* vs. *ex post* measures of real interest rates. For example, the prescriptions of the Taylor (1993) rule for the past couple of decades are nearly identical whether specified in terms of the *ex ante* or *ex post* real interest rate.

In contrast, when inflation expectations are not firmly anchored or when inflation is buffetted by large aggregate supply shocks, it is crucial to gauge the stance of monetary policy

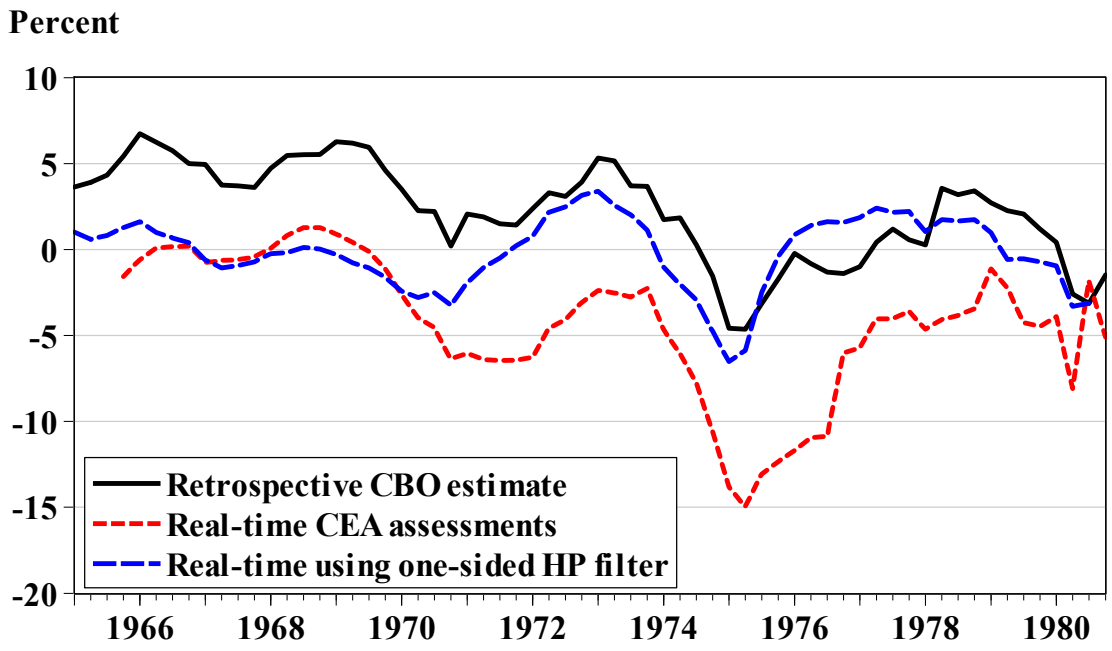
in terms of the *ex ante* real interest rate, that is, the short-term nominal interest rate less the short-term inflation expectations of the private sector. For this purpose, the Livingston survey of one-year-ahead CPI inflation projections serves as an invaluable indicator, since this survey was initiated nearly two decades prior to the onset of the Great Inflation. Thus, our analysis in this section focuses on the evolution of the *ex ante* real federal funds rate at a quarterly frequency, computed by subtracting the Livingston survey measure from the quarterly average of the nominal federal funds rate.[7]

Measuring the Output Gap. As emphasized by Orphanides (2002, 2003), the use of real-time estimates of the output gap—as opposed to retrospective estimates constructed at a much later date—can have crucial implications in making assessments of the stance of monetary policy, especially because the difference between real-time vs. retrospective estimates of the output gap may be quite large during periods in which there are substantial shifts in trend productivity growth or the natural unemployment rate.

There are no extant records from the 1960s or 1970s regarding real-time Federal Reserve staff estimates of potential output or the output gap. Thus, following Orphanides (2002, 2003), one approach is to utilize the real-time assessments of potential output and the output gap that were constructed by the Council of Economic Advisors and published annually in the *Economic Report of the President (ERP)*. And during the late 1960s, those estimates may well serve as a useful real-time proxy for the assessments that would have been relevant for policymakers at that time. Unfortunately, however, as the CEA estimates became increasingly politicized during the 1970s, neither economic analysts nor policymakers continued paying serious attention to these estimates. Therefore, following the approach of Cecchetti et al. (2007), we construct a more plausible proxy

[7] The Livingston survey is conducted semiannually, in May and November; thus, we use linear interpolation to obtain a quarterly time series of one-year-ahead inflation expectations.

Figure 5
Real-Time vs. Final Assessments of the Output Gap



Note: This figure depicts three estimates of the output gap over the period 1965:1 through 1980:4. The solid line depicts the retrospective estimates of the Congressional Budget Office, using all data available through 2007. The short-dashed line depicts the contemporaneous estimates of the Council of Economic Advisors, published annually in the Economic Report of the President. *The long-dashed line depicts the estimate obtained by applying a one-sided Hodrick-Prescott filter to each vintage of real GNP taken from the Federal Reserve Bank of Philadelphia's real-time dataset.*

for the real-time output gap by applying a one-sided Hodrick-Prescott filter to each vintage of real GNP drawn from the Philadelphia Fed's real-time dataset, using a smoothing parameter of 1600.[8]

As shown in Figure 5, the HP filtered series for the real-time output gap is very similar to the CEA series during the late 1960s, but the two measures diverge quite dramatically starting in 1970. In particular, from 1966 to 1969, both series imply that the output gap was fairly close to zero—roughly 5 percentage points below the CBO's most recent retrospective estimate, which we henceforth refer to as the "true" output gap. In contrast, the CEA estimates indicate a dramatic widening of the output gap through the mid-1970s; indeed, the trough of about -15 percent during

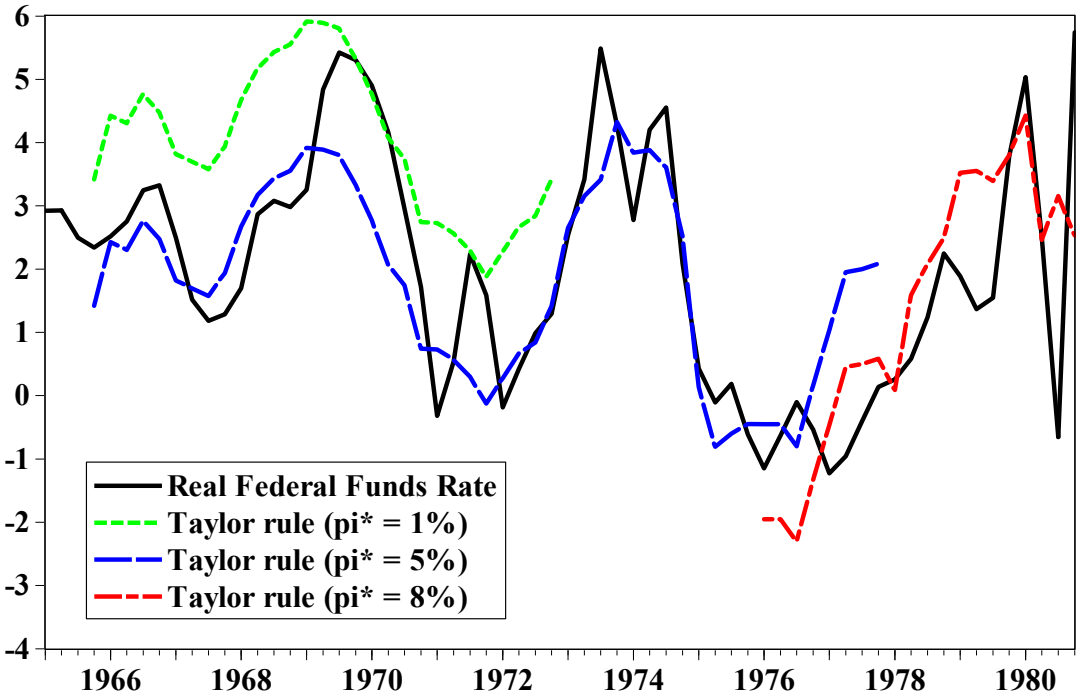
[8] We have also confirmed that the results are virtually identical for alternative values of the smoothing parameter.

1975 suggests that the magnitude of slack in the economy was approaching that of the Great Depression—an implication that underscores the pitfalls of using the CEA series as a real-time measure of the output gap. In contrast, the HP filtered measure remains only a few percentage points below the "true" output gap through the early 1970s, reaching a trough of about -6 percent in early 1975 before recovering sharply and then remaining positive from 1976 through 1979.

Measuring Actual Inflation. In evaluating the interest rate prescriptions from the Taylor rule, we measure actual inflation using the realized four-quarter average CPI inflation rate at each date, that is, the same definition of inflation as in the Livingston survey projections utilized in computing the *ex ante* short-term real interest rate. There is no distinction between real-time vs. revised vintages of data for this inflation measure, because the CPI is not subject to revision.

The Inflation Objective. To employ the Taylor rule as a benchmark for monetary policy, it is necessary to specify a particular value for the inflation objective, π^*. Of course, policymakers did not have any explicit inflation goal during the 1960s and 1970s. Thus, in analyzing the early stages of the Great Inflation, it seems reasonable to gauge the stance of policy based on an inflation objective of 1 percent; as discussed in Section 2, this value is broadly consistent with the level of inflation expectations that had prevailed from the late 1950s and early 1960s. In considering the later stages of the Great Inflation, however, we will consider whether the stance of monetary policy was consistent with a stable inflation objective or with progressively higher values of π^*.

Figure 6
Gauging the Stance of Monetary Policy, 1965-1980



Note: The solid blue line depicts the ex ante *real federal funds rate, using the Livingston survey as the measure of expected inflation. The other lines depict prescriptions of the Taylor (1993) rule for three specifications of the inflation objective: 1 percent (short-dashed), 5 percent (long-dashed), and 8 percent (dash-dotted).*

B. The Evolution of the Stance of Monetary Policy

Figure 6 depicts the evolution of the *ex ante* short-term real interest rate relative to the prescriptions of the Taylor rule under three alternative values of the inflation objective: 1 percent, 5 percent, and 8 percent. This methodology clearly reveals a sequence of three episodes of stop-start monetary policy that occurred in 1968-70, 1974-76, and 1979-80. In each case, belated policy tightening induced a contraction in economic activity, but the stance of policy was not sustained long enough to bring inflation back to previous levels or to generate any reduction in long-term inflation expectations.

Evidently, the course of monetary policy during the Great Inflation should *not* be represented in terms of a linear reaction function (as in CGG and many subsequent empirical studies). Rather, the policy response to an exogenous shock is best represented by a nonlinear process with the following three distinct phases:

(1) Policy remains passive while inflation begins to pick up.

(2) Policy suddenly shifts to a contractionary stance once the inflation rate exceeds a particular threshhold, where the value of the threshhold depends on the previous inflation peak.

(3) Contracting economic activity causes the policy tightening to be reversed before inflation has converged back to its initial rate.

4. Identifying the Fundamental Causes of the Great Inflation

We now proceed to highlight four fundamental causes of the recurring sequence of stop-start policies and the corresponding upward drift of long-run inflation expectations that occurred during the Great Inflation.

A. The Absence of a Transparent Inflation Objective

Although the Employment Act of 1946 established the goal of price stability as part of the Federal Reserve's mandate, this goal was not defined in terms of a specific quantitative objective that would have facilitated policy strategy and communication, thereby providing a firm anchor for inflation expectations. Indeed, the absence of transparency with respect to policy objectives and strategy over this period may well have increased the extent to which the Federal Reserve's policy was susceptible to being influenced by short-run political pressures:

-- Pressures on Martin from LBJ *and* Nixon

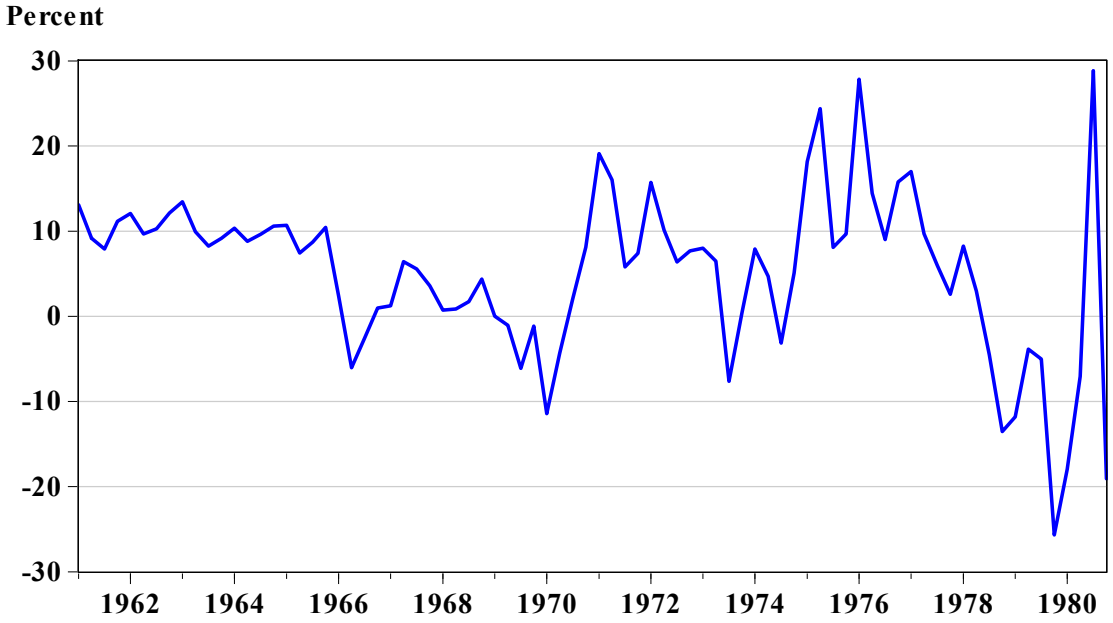
-- Pressures on Burns from Nixon *and* Carter

-- Pressures on Volcker during the election year of 1980

B. Reliance on Non-Monetary Tools for Controlling Inflation

The government made persistent attempts to control inflation via other tools—including fiscal policy in the late 1960s, wage and price controls in the early 1970s, and credit controls in 1979-80—that distracted from the need for monetary policy to take full responsibility for this task.

Figure 7
Monetary Policy and Banking Sector Disintermediation, 1961 to 1980



Note: This figure depicts the annualized quarterly growth rate of the savings deposit component of M-2 (including commercial banks and thrift institutions) over the period 1961:1 to 1980:4.

C. Conflicting Responsibilities for Financial Stability

Financial market regulations—most notably Regulation Q—constrained the Federal Reserve's ability to tighten policy without undermining the viability of savings & loan institutions.

D. Excessive Reliance on Macroeconomic Projections

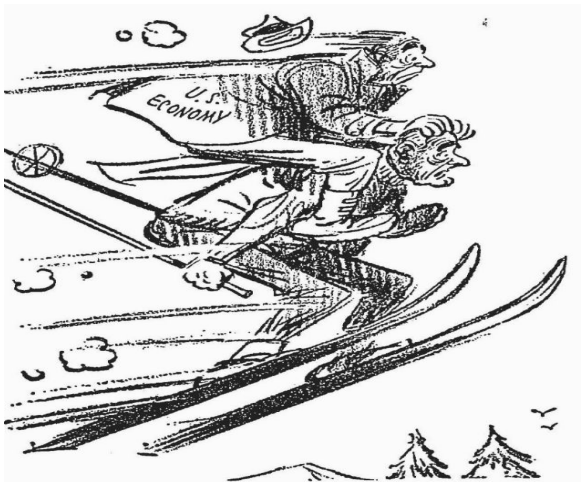
In making adjustments to the stance of monetary policy, excessive weight was placed on macroeconomic projections (which often turned out to be overly optimistic) rather than on the current state of the economy. For example, Martin was optimistic that fiscal constraint would slow the economy in 1967, but he subsequently regretted having relied too much on that assessment. Similarly, there was recurring underprediction of inflation outcomes throughout the 1970s.

Figure 8
Perspectives on the Root Causes of the Great Inflation

November 1966

"Termites at Work"

January 1968



"Don't worry—I'll find the brakes."

April 1969

"....Heel! Nice pup! Heel...?"

October 1971

"Believe me, I am sorry, Mr. Trudeau—but I am single-mindedly dedicated to winning the war on inflation, the fight against unemployment, the battle to overcome poverty—and, uh, the '72 election..."

Credits: Upper-left: Crook, *Newsday*, reprinted in the *NYT* on Nov 27, 1966, p. E6. Upper-right: Hesse, *St. Louis Globe-Democrat*, reprinted in the *NYT* on Jan 7, 1968, p. E3. Lower-left: Haynie, *Louisville Courier-Journal*, reprinted in the *NYT* on April 27, 1969, p. E17. Lower-right: Yardley Jones, *Toronto Telegram,* reprinted in the *NYT* on Oct 3, 1971, p. E12

5. The Benefits of Simple Policy Rules

We now consider how the likelihood of a recurrence of the Great Inflation might be minimized by the use of simple rules as benchmarks for the conduct of monetary policy. In particular, the Taylor (1993) rule specifies a quantitative inflation objective of 2 percent and clearly prescribes how the stance of policy should be adjusted to achieve this objective over time. Furthermore, this rule is specified in terms of the current inflation rate and output gap, thereby avoiding the pitfalls of relying on any given model for generating macroeconomic forecasts. On occasion, of course, policymakers might find compelling reasons to deviate from the prescriptions of any simple rule, but even in those circumstances, transparency and credibility might well be enhanced by describing policy strategy in terms of the rationale for the temporary departure from the benchmark rule.

6. Conclusions

In this paper, we have characterized the evolution of long-run inflation expectations and the stance of monetary policy over the period from 1965 to 1980, and we have employed this evidence to distinguish among various competing explanations regarding the causes of the Great Inflation.

Using survey-based measures and financial market data, we have shown that long-run inflation expectations rose markedly from 1965-69, remained elevated but stable through the mid-1970s, and then deteriorated at an alarming pace from 1977 to 1980. We have also shown that the course of monetary policy over this period is not well-represented by a linear reaction function but rather as a sequence of stop-start episodes that occurred in 1968-70, 1974-76, and 1979-80. In each case, belated policy tightening induced a contraction in economic activity, but that stance of policy was not sustained long enough to bring inflation back to previous levels.

Finally, we have identified several factors that played a fundamental role in causing the Great Inflation, and we have examined how the likelihood of a recurrence could be minimized by the use of simple rules—such as the Taylor (1993) rule—as benchmarks for the conduct of monetary policy.

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