

The Fed's Monetary Policy Exit Once Again Behind the Curve

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1. Introduction

Every business cycle has different characteristics that economic policymakers influence and respond to. The 2020 pandemic posed a negative shock to aggregate supply and aggregate demand. Pent up demand and unprecedented fiscal stimulus and sustained aggressive monetary ease fueled a V-shaped recovery involving strong demand amid ongoing supply constraints. The Federal Reserve now finds itself in an uncomfortable situation that it failed to anticipate, but one that has occurred before in its modern history: it faces undesired high and rising inflation and is behind the curve, and must tighten monetary policy just enough to reduce inflation but not so much as to generate a recession.

This paper assesses the current situation through the lens of history, comparing the current inflation and the conduct of monetary policy to the recovery phase of prior business cycles. Focusing primarily on cycles since World War II, we highlight a persistent pattern of the Fed extending its monetary policy easing too long and delaying its tightening exits. Most frequently, this has led to rising inflation and then catch-up tightening that led to a recession more frequently than to a soft economic landing. While countercyclical monetary policy is a difficult task, the Fed does not seem to take away the appropriate lessons from history (Bordo and Levy 2022).

Prior to World War II, the Fed's focus on price stability under the gold standard and adherence to the real bills doctrine led it to prevent inflation but at the expense of depression and financial instability. The evolving policy anchors and the Fed's developing objectives resulted in major policy errors that contributed to the Great Inflation of 1965 to 1982. The current high inflation has some key differences

that distinguish it from the 1970s, but the Fed's extended denial of any similarities between the two periods has allowed some of the more troubling characteristics of the Great Inflation to reemerge and threaten sustained economic growth. We provide empirical evidence that shows how the recent pervasiveness of inflation has begun to mirror the 1970s while intermediate-term inflationary expectations have risen but remain below the upward ratcheting of inflationary expectations during the Great Inflation found by Levin and Taylor (2013).

The Fed's current monetary policy mistakes did not just occur out of the blue. Rather, the Fed's new strategic framework and delayed exit from its emergency policy responses to the pandemic are a culmination of the evolution of its objectives and discretionary policy deliberations. The Fed's earlier anchor of price stability evolved into a low inflation target and more recently toward favoring higher inflation as a vehicle for avoiding the Effective Lower Bound (ELB) while its long-standing tilt toward prioritizing low unemployment has become more pronounced. These asymmetries, which have been institutionalized in its new strategic framework (Levy and Plosser 2020), have contributed to its current dilemma.

The recent rise in inflation has been predictable, based on the expected excess demand that would be generated by the unprecedented expansive monetary and fiscal policy responses and the nature of the pandemic (Bordo and Levy 2020 and 2021; and Levy 2021).

Section II provides a historical perspective on business cycles, including a description and measures of the Fed's earlier delayed exits. Section III analyzes the similarities and differences between the current situation and the Great Inflation of 1965-1982. Section IV considers factors that explain why the Fed has tended to be behind. Section V provides a recap of lessons from history and makes recommendations that would help avoid future policy mistakes.

2. Behind the Curve in Historical perspective

The Federal Reserve has long had difficulty in timing its exits from countercyclical expansionary monetary policy. Bordo and Landon-Lane (2013) examined the historical and empirical record on the timing of the Fed's exits from recessions following the business cycles approach taken earlier by Milton Friedman, Karl Brunner and Allan Meltzer.² In general, they found that since the Fed was founded in

² Friedman (1953) first laid out the difficulty of using discretionary monetary policy to stabilize the business cycle,

1913 it has followed a pattern of waiting too long to tighten. The pattern has evolved over time. After WW I, the Fed under the leadership of Benjamin Strong focused on stabilizing the real economy and maintaining price stability, leading to the development in the U.S. of countercyclical monetary policy. It did so within the frameworks of the gold standard and the real bills doctrine. Under this strategy once the economy began recovering the Fed usually tightened when the price level increased, as adhering to the gold standard would require. It paid less attention to the real economy.

After World War II and the Employment Act of 1946, the Fed began pursuing its dual mandate which attached importance to maintaining full employment and stabilizing the real economy along with the continued connection to the fixed dollar peg of the gold standard under Bretton Woods. Price level stability remained important until the mid-1960s. The Fed's exits were similar with those of the mid-1920s.

After 1965 the Fed began jettisoning the gold peg under pressure to accommodate expansionary fiscal policy and fully abandoned it in the Nixon Shock of August 1971. The Fed's focus shifted towards full employment at the expense of rising inflation. During the Great Inflation, the Fed's exits from recessions became subsumed by higher inflation, tightening when inflation went up but never enough to stamp out inflationary expectations. The government's misguided wage and price controls failed to contain inflation and the Arab oil embargo imposed a negative supply shock. The upward ratcheting of inflation and inflationary expectations enabled by accommodative monetary policy undercut the Fed's credibility, leading to the US dollar currency crisis in 1978.

The Volcker disinflation shock in 1979-1982 led to a new regime of low inflation and ushered in The Great Moderation during which the Fed's more balanced approach to inflation and employment resulted in more timely exits. The Fed's aggressive monetary tightening in 1994 lowered inflationary expectations and resulted in a stronger economic expansion – a picture-perfect soft landing. In the early 2000s, the foundations of the Great Moderation eroded as the Fed's fears of the risks of deflation led it to delay its exit from easy monetary policy. Its policies facilitated the debt-financed housing bubble and financial instability that resulted in the Financial Crisis (GFC) of 2008-2009. Following the GFC, inflation

i.e., of fine tuning. He showed that when the Fed used its policy tools to offset exogenous shocks in most cases it aggravated the business cycle. It mistimed policy actions because of long and variable lags between policy changes and its effects on output and prices. Friedman and Schwartz (1963) and others (Nelson 2019) supported this with their historical analysis. Brunner and Meltzer (1964) published a report for the US Congress documenting episodes in the post-World War II era when the Fed fell behind the curve. They criticized the Fed for following an incorrect policy doctrine, the Burgess Rieffler Strong Doctrine --an extension of real bills (Bordo 2022). This monetarist evidence was used in their case against discretion and in favor of a monetary rule.

stayed low and the Fed sustained zero interest rates and used quantitative easing to keep bond yields low and reduce unemployment. Its concern about a downward spiral in inflationary expectations and the Effective Lower Bound (ELB) led it to reassess its strategy that resulted in a new strategic framework in 2020. That framework institutionalized its asymmetric prioritization of maximum inclusive employment over inflation and de-emphasized preemptive monetary tightening. The Fed's delayed exit from its emergency policy responses to the pandemic has allowed a surge in inflation and inflationary expectations that poses a serious challenge to sustained economic expansion.

The Historical record. Bordo and Landon Lane (2013) examined the Fed's exits from 1920 to 2007, comparing the timing of changes in policy (policy rate, monetary base and money supply (in nominal and real terms) with the timing of changes in macro variables (real GDP, prices, inflation, output gap and unemployment). They measured the turning points in these variables compared to NBER business cycle troughs³. Table 1 presents some salient variables pertaining to the Fed's exits.

For seven NBER cycles from 1920-1960, the table shows the turning points around the cyclical troughs in the price level (Column 2) and the unemployment rate (Column 3) compared with the turning points in monetary policy representing tightening measured by the nominal and real discount rate until 1953 and the federal funds rate thereafter (Columns 4 and 5) and the nominal and real rate of growth of the monetary base (Columns 6 and 7). When the Fed tightened, the policy rate would increase and the rate of growth of the monetary base would decline. The last column of the table ascertains the timing of the policy measures whether on time, too soon, or too late) and the economic outcome.

Pre-World War II: 1918-1941. In general, the timing and narrative evidence suggest that the Fed waited until the price level (CPI or GDP deflator) rose before tightening, but in two cycles in the mid-1920s the exit involved timely responses to both real and nominal variables. Friedman and Schwartz referred to these episodes as 'The High Tide of the Federal Reserve'. In sharp contrast, Friedman and Schwartz viewed the Fed's responses in three other business cycles in this period as policy failures.

³ Regression analysis was used to measure the timing of policy changes relative to the trough of a set of real variables and price variables. The results suggest that in the post WWII era, especially after 1965, the Fed's tightening was more responsive to the level of unemployment than to inflation. Pre-WWII period the Fed was more responsive to the price level than the real economy.

Table 1: Cyclical Turning Points in Monetary Policy 1920 – 1960^b

(1) Cycle Peak to Trough (Trough)	(2) Price Level: CPI ^c (Inflation)	(3) Unemployment ^d	(4) Discount Rate ^e (Fed Funds Rate)	(5) Real Discount Rate (Real Fed Funds Rate)	(6) Monetary Base Growth ^f	(7) Real Monetary Base Growth	(8) Comments and Result
1. 1920Q1 – 1923Q2 (1921Q3) ^a	1922Q1	1921Q1	3, 7 ^g	-	3, 7	-1, 3	Too late, serious recession
2. 1923Q2 – 1926Q3 (1924Q3)	1924Q1	1924Q1	3, 3	4, 4	2, 2	4, 4	Too late, mild recession
3. 1926Q3 – 1929Q3 (1927Q4)	1928Q1	1928Q1	-1, -1	-1, -1	0, 0	-1, -1	On time, mild recession
4. 1929Q3 – 1937Q2 (1933Q1)	1933Q1	1932Q1	-6, -5	-6, -5	3, 4	3, 4	Too soon, real bills mistake, Great Contraction
5. 1948Q4 – 1953Q2 (1949Q4)	1950Q1	1949Q4	1, 2	4, 5	-3, -2	-3, -2	Too late, mild recession
6. 1953Q2 – 1957Q3 (1954Q2)	1954Q4	1954Q3	(0, 1)	(-1, 0)	-1, 0	-1, 0	On time, mild recession
7. 1957Q3 – 1960Q2 (1958Q2)	(1958Q2)	1958Q2	(0, 0)	(0, 0)	-1, -1	-1, -1	On time, mild recession

Source: Bordo and Landon-Lane (2013). Tables 1a, 1b, 2a, 2b. ^a

NBER trough dates for each cycle.

^b We omitted 2 cycles containing WWII years: 1937Q2-1944Q4 and 1945Q1 – 1948Q3.

^c The turning point was determined by visual inspection for the first quarter after the start of the recession when the price level changes from having a negative slope to a positive slope.

^d The turning point was determined as the first quarter after the start of the recession when the derivative of the unemployment series changes from positive to negative.

^e The turning point was determined as the first quarter after the start of the recession when the interest rate started to increase from a period of falling or relatively level rates.

^f The turning point was determined as the first quarter after the start of the recession when the monetary base growth rate started to fall from a time of increasing or relatively constant growth rates.

^g In each cell the first number represents the number of quarters after the price level trough, and the second number represents the number of quarters after the unemployment peak. Missing value represents a cycle in which no definitive turning point was identified.

In the first cycle (1920-23 peak to peak), the Fed waited until inflation reached 15% per year before commencing tightening in late-1919. The mistiming is generally blamed on pressure from the Treasury on the Fed to keep interest rates low to support bond prices. When the Fed finally tightened it led to the second deepest recession in U.S. monetary history. The Fed's largest policy mistake was during the Great Contraction from 1929 to 1933. Its tightening cycle began in early 1928, not because prices were rising, but because of fears based on the Real Bills doctrine that the Wall Street boom in stock prices would lead to inflation. The ensuing recession that began in July 1929 turned into the Great Contraction when the Fed failed to appropriately address the four banking panics from 1930 to 1933 and allowed the money supply to collapse. The Fed's third mistake unfolded in 1936 when it doubled reserve requirements on commercial banks because it feared that banks would monetize their excess reserves that would lead to high inflation. This 'too soon' tightening led to the recession of 1937-1938, the third deepest in U.S. history.⁴ These episodes provide valuable cautionary tales of the risks of misguided monetary policy.

1945 to 1965. World War II was financed by a combination of taxes, bond issue and the inflation tax of money issue. M1 and M2 surged during 1940-1945. Compared to World War I, inflation during WW II was quite constrained by extensive price controls. Following the War, it was widely agreed that managing aggregate demand was an important role of the government, and the biggest concern was that aggregate demand would collapse and recession and deflation would follow, like the post-WW I period.

Instead, pent-up demand surged, fueled by the lagged impact of monetary ease and sustained low interest rates, as the Fed was constrained from rising interest rates under the fiscal dominance of the Treasury (Bordo-Levy 2020). Consumption, housing and business investment spending boomed. The excess demand strained the transition from wartime to civilian production, and inflation surged after the wartime wage-price controls were lifted. The inflation of 1945-1948 was temporary but intense, exceeding 10% following the removal of wartime price controls.

The Fed belatedly tightened monetary policy in 1948 through higher bank capital and reserve requirements while the government's fiscal policy turned restrictive as defense spending fell faster than anticipated. This generated a mild recession and deflation in 1949.

⁴ This cycle is not shown because the recovery phase from 1938 Q2 to 1945Q1 was dominated by World War II and the Fed, under the control, of the Treasury did not conduct countercyclical monetary policy.

The Fed regained its independence with the Accord of February 1951 and under Chairman William McChesney Martin followed a balanced approach to inflation and employment during the 1950s and early 1960s, with relatively successful exit policies (Meltzer 2010). The business cycles and recessions of 1953-1954⁵, 1957-1958 and 1960-1961 were relatively mild, similar to those in the mid-1920s. Like the 1920s, inflation was anchored by the gold standard constraint so that when the exits were delayed they did not lead to inflation but to a rise in the price level which then declined with recessions (see Table 1).

Cyclical Episodes since the 1960s. Table 2 provides a description of the NBER business cycles since the 1960s and conduct of monetary policy around them. Reflecting the modern monetary policy regime, it includes for each expansion the trend in inflation and the unemployment rate (Column 2 and 3) and monetary policy reflected by the real Fed funds rate and money supply (Column 4). For an early and late stage of each cycle it measures in percentage points the deviation of the Fed funds rate to an estimate of the Taylor Rule (Column 5). Column 6 describes the economic result of the Fed tightening.

Following Table 2, Chart 1 shows a comparison of the actual Fed funds rate with estimates of several variations of the Taylor Rule.⁶ The gaps between the Taylor Rule and Fed funds rate are consistent with the descriptions of the business cycles provided below.

1965-1970: The Beginning of the Great Inflation. During the first half of the 1960s, the Fed under Chairman Martin was dedicated to both price stability based on its indirect link to the gold standard under Bretton woods (Bordo and Eichengreen 2013) and full employment. But the policymaking environment was evolving. The historical objective of price stability was replaced by the view that moderate inflation was good for economic performance, and the anchor provided by the gold standard eroded. Keynesian policy prescriptions advocated activist macroeconomic policies that attempted to

⁵ The Korean war from June 1950 to July 1953 was largely financed by taxation unlike other wars (Ohanian 1997). In the first year of the war prices rose at over a 10% annual rate, driven by government expenditures and by rapid consumption in anticipation of the kind of shortages seen in WWII (seen in a rise in velocity). The price jump ended with the imposition of price, wage and credit controls which prevailed until 1953. The Fed began raising rates in late 1952 to stem a perceived rise in inflation (Meltzer 2010 chapter 2, page 99) contributing to the recession of 1953-1954 although Friedman and Schwartz (1963 page 61) describe how the Fed shifted to ease before the business cycle trough.

⁶Both variations use the Congressional Budget Office's estimate of the GDP Gap and core PCE inflation rather than the GDP deflator used in the original Taylor Rule (1993). Our second variation uses Laubach-Williams (2003) estimates of r^* in place of Taylor's $r^*=2.0\%$ in his 1993 version. See footnotes to Chart 1.

Table 2. Cyclical Episodes of the Federal Reserve's Exits from Monetary Ease, 1961 to Present

Cyclical Episodes of Federal Reserve Exits from Policy Ease after World War II

(1)	(2)	(3)	(4)		(5)	(6)
Cyclical Expansion	Inflation ¹	Unemployment rate ²	Fed Policy		Comments	
	Start → End	Start → End	Real FFR ³	Money	Fed Funds Rate minus Taylor Rate ⁴	Result
1961 Q2 - 1969 Q4	1.2% → 5.5%	6.4% → 3.5%	0.9% - 3.7%	↓ real MB & M2	1966 - 1969: -2.4pp	1970 recession
Note: 1965 Q4 -1967 Q1	1.6% → 3.2%	4.5% → 3.8%	credit tightening (Reg Q ceilings)		1971 - 1973: -1.6pp	sharp slowdown, sustained expansion
1971 Q1- 1973 Q4	5.6% → 6.2%	5.4% → 4.9%	1.5% - 3.4%	↓ real MB & M2	1975 - 1979: -4.0pp	Oil price shock & deep recession
1975 Q2 - 1980 Q1	11.1% → 12.4%	7.3% → 6.0%	-2.1% - 2.8%	↓ real MB & M2	1983 - 1987: +2.3pp	oil price spike & recession
1980 Q4 - 1981 Q3	13.6% → 11.1%	7.2% → 7.4%	2.6% - 7.2%	↓ real MB, M2 unchanged	1988 - 1989: +1.1pp	recession
1983 Q1 - 1990 Q3	5.2% → 5.0%	10.1% → 5.4%	5.7% - 4.2%	↓ real MB & M2	1991 - 1993: -0.3pp	mild recession
Note: 1987 Q1 - 1987 Q4	1.7% → 3.7%	6.9% - 6.2%	Fed hikes until Oct '87 stock market crash then eases (↑ MB & M2)		1994 - 1999: +1.4pp	extended expansion
1991 Q2 - 2001 Q1	4.3% → 2.5%	6.3% → 4.0%	2.7% - 3.7%	↓ real MB, ↑ M2	2001 - 2006: -0.9pp	recession in 2001
Note: 1994 Q1 - 1995 Q1	2.4% → 2.1%	6.8% → 5.8%	0.7% - 2.7%	↓ real MB & M2	2007 - 2008: -0.7pp	extended expansion
2002 Q1 - 2007 Q4	1.6% → 2.6%	5.1% → 4.6%	1.3% - 2.5%	↑ real MB & M2		GFC recession
2009 Q3 - 2019 Q4	-0.3% → 1.5%	8.5% → 3.7%	0.5% - 0.7%	decline in 2018-19	2009 - 2019: -1.7pp	pandemic recession
Note: 2015 Q4 -2018 Q4	0.2% → 2.1%	5.3% → 3.9%	-0.1% to -0.3%	↓ real MB, ↑ M2	2015 - 2018: - 2.0pp	extended expansion
2020 Q1 - present	1.6% → 6.3%	3.7% → 3.6% ⁵	0.3% to -6.3% ⁶	surge in MB & M2	2022 Q1 ⁷ : - 8.1pp; Modified TR = -6.5pp	?

Source: Bureau of Labor Statistics, Bureau of Economic Analysis, Federal Reserve Board, Haver Analytics, author's calculations

1. CPI before 1991, PCE after 1991, 4-Quarter average of yr/yr inflation

2. 4-Quarter average unemployment rate

3. 4-Quarter average of Real Fed Funds rate

4. Fed Funds Rate minus Taylor Rule estimate, average measured in percentage points.

Taylor Rule: $r^* + \pi^* + 1.5 (\pi_t - \pi^*) + 0.5 \text{CBO GDP Gap}_t$, where $r^* = 2\%$, $\pi^* = 2\%$ and π is core PCE. See Chart 1.

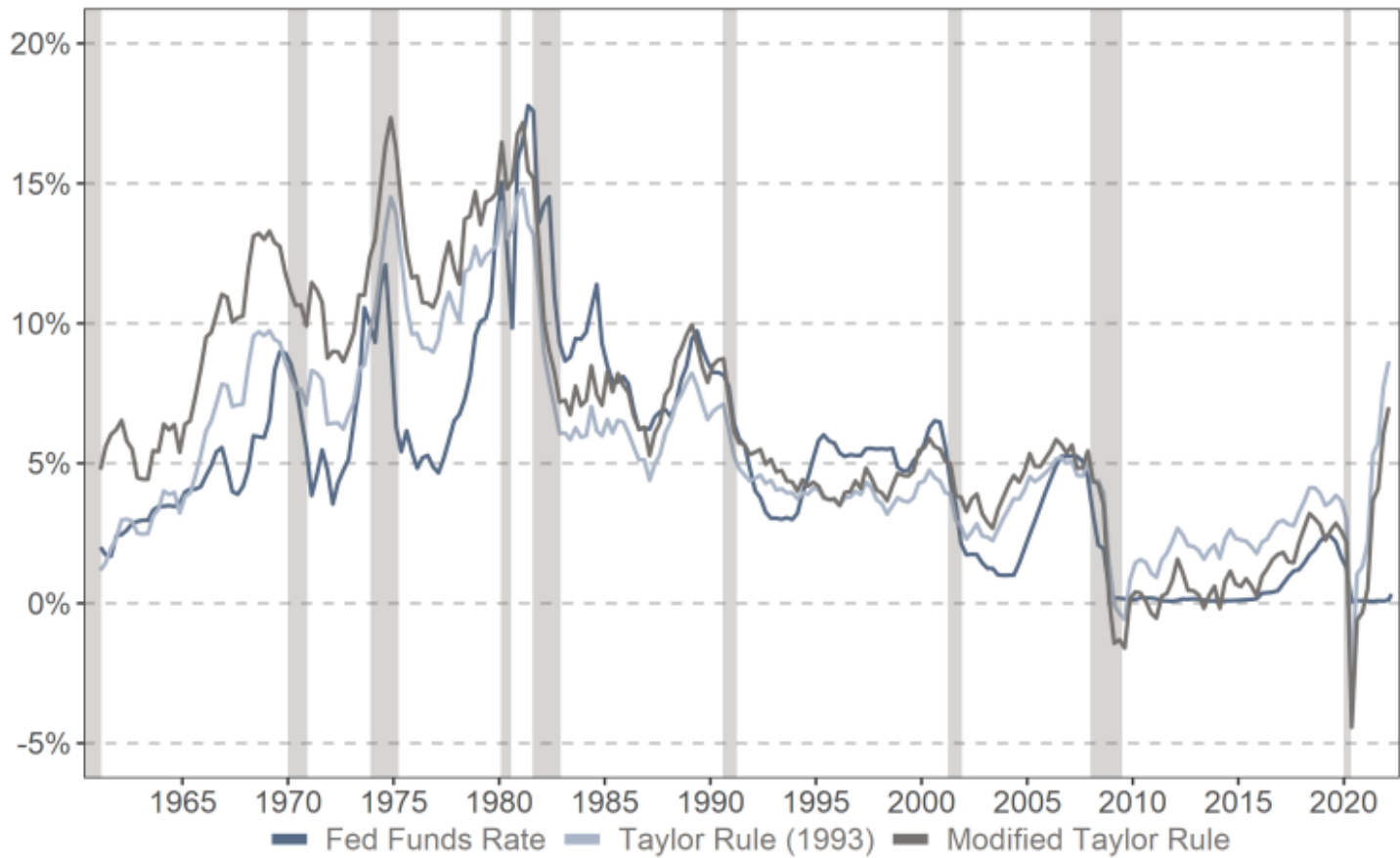
5. March 2022 unemployment rate

6: As of February 2022

7: Based on Q1 core PCE inflation of 5.2% and Q1 effective Fed funds rate of 0.12%.

See Chart 1 for modified Taylor Rule equations and assumptions

Chart 1. Taylor Rule Estimate and Actual Federal Funds Rate



Source: Federal Reserve Bank of Atlanta, authors' calculations

Taylor Rule (1993):

$$\widehat{FFR}_t = r^* + \pi^* + 1.5(\pi_t - \pi^*) + 0.5Gap_t$$

$r^* = 2\%$, $\pi^* = 2\%$, π_t is measured using annual Core PCE inflation, and Gap_t is the CBO's estimate of the real GDP gap

Modified Taylor Rule:

$$\widehat{FFR}_t = r_t^* + \pi^* + 1.5(\pi_t - \pi^*) + 0.5Gap_t$$

r_t^* uses Laubach-Williams 1-sided estimate of r^* (Laubach and Williams, 2003 and Federal Reserve Bank of Atlanta 2022). Note: r^* from Q3 2020 onward is assumed to be equal to Q2 2020 level (0.36%); $\pi^* = 2\%$, π_t is measured using annual Core PCE inflation, and Gap_t is the CBO's estimate of the real GDP gap

exploit what was perceived to be a reliable and stable Phillips Curve tradeoff between unemployment and inflation.

Beginning in 1965, under pressure from the LBJ administration the Fed began accommodating the fiscal imperatives of the Vietnam War and Great Society. This generated excess demand and higher inflation (Levin and Taylor 2013). Inflation accelerated from 1.6% in 1965 to 5.9% in 1970. The Fed attempted to tighten credit in Summer 1966 through higher bank capital requirements and not lifting Regulation Q on interest rates. This resulted in a “Credit Crunch” that slowed economic growth but did not cause recession, forcing the Fed to step back.⁷ Accelerating Vietnam War spending and renewed monetary accommodation generated rising inflation. Inflationary expectations and bond yields rose. The Fed’s delayed exit began only after LBJ announced he would not seek re-election. The Fed’s sharp tightening in 1969 involved a rise in real interest rates and a decline in the real monetary base and M2. Coupled with the extension of the Vietnam War surtax, a recession unfolded in 1970.

The 1970s: Upward-Ratcheting Inflation. Arthur Burns became Chair of the Federal Reserve in February 1970. He blamed inflation on non-monetary (cost-push) factors including strong labor unions and greedy businesses and advocated wage and price controls to stem it. In response to the mild recession of 1969Q4-1970Q4, although inflation was nearly 6%, the Burns-led Fed lowered interest rates aggressively, below inflation by early 1971, which resulted in rapid growth in money. The Fed then raised the discount rate to slow credit and then eased rates. In 1972, the Fed kept rates too low, allowing a sharp expansion in money aimed at supporting Richard Nixon’s election bid (Meltzer 2010). At the same time there was significant fiscal stimulus. Although the Fed raised rates from 5% to 10% in the 12 months between the November 1972 election and the November 1973 Arab Oil Embargo, the lagged impacts of stimulus coupled with an acceleration in money velocity associated with the higher interest rates generated a surge in nominal GDP growth, to 9.8% in 1972 and 11.4% in 1973. This excess demand overwhelmed the wage and price controls, and CPI inflation rose from 3.3% in 1973 to 8% even before the Arab Oil Embargo generated soaring oil prices in November 1973. The Arab oil embargo contributed to a deep recession from 1973Q4 to 1975Q1 with real GDP declining by 4.7% while inflation rose to 11% in 1974 when the wage and wage price controls were lifted.

While inflation fell sharply following the recession, it troughed at 5.2% in late 1976, far above its mid-1973 low, while the unemployment rate was very slow to recede. The unemployment rate rose from

⁷ The NBER originally designated the Credit Crunch as a recession but later revised it away.

4.8% to a peak of 9% in 1975Q2 and drifted only gradually lower to 7.8% at year-end 1976 even as the economy recovered.

The Fed lowered rates aggressively from an average of 10.5% in 1974 to 5.4% in 1975Q4 and kept them below inflation through September 1977. It belatedly raised rates faster, but only enough to keep pace with the sharply accelerating inflation, which rose to 6.6% in the fourth quarter of 1977, 9% in 1978 and 10.75% before the second oil price shock in mid-1979. Despite accelerating inflation, the high unemployment rate remained the top priority of Congress, and Burns did not attempt to stamp out inflation because he feared the implications of higher unemployment (Burns 1979). The Humphrey-Hawkins legislation that focused on jobs creation evolved into the Full Employment and Balanced Growth Act of 1978 that established employment and inflation mandates for the Fed.

The ratcheting up of inflation during the Great Inflation took a heavy toll. From late-1965 to mid-1982, the CPI rose over 300%. Damage to the Fed's credibility culminated in a US dollar crisis in 1978. Higher inflationary expectations and bond yields generated sustained real declines in financial asset values, and the rising real costs of capital and depressed investment and potential growth. The higher inflation distorted the tax system that was not indexed to inflation at the time.

Volcker's aggressive disinflationary monetary policies and The Great Moderation. In August 1979 President Carter appointed Paul Volcker, a well-known inflation hawk, as Fed Chairman. Two months after taking office, Volcker announced a major shift in policy aimed at rapidly lowering inflation. He desired the policy change to be interpreted as a decisive break from the past policies. The Fed imposed a series of sizable hikes in the federal funds rate. The roughly 7 percentage point rise in the nominal funds rate between October 1979 and April 1980 was the largest, most rapid increase in the Fed's history.

Although Volcker tightened monetary policy aggressively, because inflationary expectations were embedded and the Fed lacked credibility, the exit was costly, with back-to-back recessions in 1980 and 1981-1982, and it took until 1983 to definitively lower inflationary expectations (Bordo, Erceg and Levin 2017 and Sargent and Silber 2022).

Volcker's successful disinflationary policies ushered in The Great Moderation. During this period the Fed took a more balanced response to inflation and employment, with more timely exits following monetary easing. The result was moderate inflation and virtually sustained economic expansion. The Fed began raising rates soon after the 1983 expansion began and well before inflation pressures ensued in mid-1983. It began raising rates before inflation turned up in late-1986 but eased in response to the Stock

Market Crash of October 1987. Soon after the Crash, the Fed began raising rates in nominal and real terms when sustained economic growth lowered the unemployment rate and inflation picked up. It raised rates aggressively from 6.6% in March 1988 to 9.9% in March 1989, and the yield curve inverted. Economic growth slowed sharply in 1990Q2-Q3, and a mild recession unfolded in 1990Q4-1991Q1 associated with the Gulf War spike in oil prices.

The Fed's most noted preemptive exit was in 1994. Following the so-called "jobless recovery" of 1991-1993, the Fed raised rates sharply, from 3% to 6% during February 1994-February 1995 in response to declining unemployment and signs of overheating labor markets when there no signs of rising inflation. The Fed's tightening dampened inflationary expectations and successfully orchestrated an economic soft-landing and ushered in strong performance in the second half of the decade. While Fed research touted this successful preemptive tightening, Fed Chair Greenspan expressed concerns about its negative impacts on the mortgage market and housing. The Fed delayed monetary response to strong economic and financial performance and rising inflation and worries about liquidity needs around Y2K led it to raise rates gradually in 1999. Following the collapse of the dot.com bubble, business investment fell and consumption growth slowed. In this environment, the Fed tightened too much in 2000, raising rates to 6.5%, far above the 2.6% inflation. The collapse in capital spending contributed to a recession that was accentuated by the shock of 9/11.

The 2000s: Worries about deflation contribute to a delayed exit. Following the bursting of the dot.com bubble and the 9/11 shock that extended the recession, inflation fell to 1%, and a new fear gripped the Fed: based on observations of Japan's bouts with mild deflation following the bursting of its equity bubble in 1990, the Fed began to fear the downside economic risks of deflation. Even though Japan's economic performance was far different than U.S.'s, its experience resonated with the Fed, which feared that if deflation were to unfold, aggregate demand would spiral down and would be hard to reverse through monetary stimulus. The Fed thought that the risks of the costs of deflation far outweighed the risks of higher inflation, which it believed it could address through monetary tightening, so it strived to avoid any probability of deflation. This led the Fed to delay its exit from monetary ease, even as inflation moved back up. The Fed delayed raising rates and then raised them gradually, trying to avoid harming financial markets, in sharp contrast to the aggressive tightening of 1994. Keeping rates too low

for too long facilitated the debt-financed housing boom that contributed to financial instability that later evolved into the Financial Crisis of 2008-2009 (Taylor 2007 and Bordo and Landon-Lane 2014).

Post-Great Financial Crisis. In direct response to the extreme financial market dysfunction that centered on the mortgage market, the Fed engaged in large-scale purchases of mortgage-backed securities (MBS), so-called QEI. Fed Chairman Bernanke emphasized that QEI was credit policy, not broad-based quantitative easing, and said the Fed would unwind its holdings on a timely basis (Bernanke 2008). The Fed subsequently extended its zero rate policy and ramped up its quantitative easing with purchases of Treasury and MBS securities well after the financial crisis had ended and self-sustaining economic recovery had ensued. The low inflation allowed the Fed to focus on employment and extend its unprecedented monetary ease.

Inflation stayed low during the post-GFC expansion primarily because the expansive monetary and fiscal policies (the American Recovery and Investment Act of 2009) did not stimulate sustained acceleration in aggregate demand. Nominal GDP growth remained below 4%, providing little support for higher prices or wages (Levy 2017). The Fed's QEs boosted bank reserves and the monetary base, but they did not translate into increased M2 or credit expansion that generated stronger economic activity (Column 4 of Table 2). Changes in the Fed's operating procedures, including paying interest on excess reserves (IOER), and tighter capital and liquidity requirements, along with a shift to tighter controls and bank supervision imposed by stress tests, constrained credit (Ireland and Levy 2021). While the low interest rates boosted home prices and equity markets, the damages imposed by the financial crisis on the banking system, consumer finances and the housing sector took years to repair. The Fed may have taken away the wrong lessons from this period, attributing the low inflation to the *ex-post* observation that the Phillips Curve had flattened. It subsequently presumed that inflation would stay low.⁸

The Fed raised rates very gradually beginning in late 2015 and began unwinding a portion of its bloated balance sheet beginning in 2017. By 2018Q3, the Fed had raised rates to a range of 2.25%-2.5%, modestly above PCE inflation of 2.4%. Following the Fed's delayed exit, the economy continued to grow at a moderate pace and inflation receded to 1.5%, close to its average of 1.4% since 2012.

⁸ There were no cautionary voices within the Federal Reserve System to point out that historically, fiscal stimulus financed by monetary accommodation led to inflation.

Although inflationary expectations remained fairly well anchored to 2% and the Fed continued to forecast that inflation would rise to 2%, the Fed harbored mounting worries that if inflation persisted below its 2% target, there was a risk of a downward spiral in inflationary expectations that would lower interest rates to the ELB and constrain the Fed's ability to respond to the next cyclical downturn. These concerns led the Fed to conduct a strategic review beginning in 2018. Underlying its strategic review, the Fed focused on the risks of lower inflation, and the more focus was directed at the goal of maximizing employment for all groups of people. The new strategic framework that was rolled out in August 2020 (Powell 2020) introduced a flexible average inflation targeting regime that incorporated an asymmetry that favored higher inflation, and dialed down the Fed's historic reliance on preemptive tightening to control inflation, and prioritized the Fed's employment mandate and broadened its employment mandate to "maximum inclusive employment". It was a structurally flawed strategy (Levy and Plosser 2020).

The Pandemic and Subsequent Recovery. The negative shock to aggregate supply and aggregate demand and government shutdowns generated a short but massive decline of 9% in real GDP in 2020Q1-2020Q1. The Fed's response was purposely more aggressive and expansive than its response to the GFC. It quickly lowered rates to zero and conducting massive purchases of Treasuries and MBS, and additionally established an array of direct business lending and grants programs coordinated with and capitalized by the Treasury and Congress (Bordo and Duca 2022). The Fed's asset purchases generated a surge in the monetary base. At the same time M2 surged, reflecting primarily government income support initiatives. Fiscal policy authorized over \$5 trillion in deficit spending, more than 25% of GDP, largely in the form of checks distributed to individuals and small businesses, beginning with the CARES Act of March 2020. A sizable portion of the government's fiscal transfers in the ensuing 12 months were saved and deposited in banks. Associated with the decline in economic activity consequent upon the pandemic and government-imposed shutdowns, M2 money velocity declined.

A strong V-shaped economic recovery and sharp rise in inflation surprised the Fed. Nevertheless, the pandemic crisis had encouraged the Fed to be more interventionist, and its policies had helped lift the economy out of a deep contraction and were considered successful. The Fed maintained its emergency monetary policies of zero rates and ongoing purchases of Treasury and MBS until March 2022. Its exit began long after inflation and inflationary expectations had risen sharply, and labor markets were characterized by accelerating wages and signs of extreme tightness. Measured against any inflation or

employment benchmark, the Fed's exit has been more delayed than any in history. Most strikingly, as inflation rose sharply and the labor market recovery of all groups far exceeded expectations and exhibited clear signs of tightness and stress, the Fed ignored the data and insisted that tapering its asset purchases and raising rates would be delayed until "substantial progress" had been made toward its new employment mandate. By March 2022, the Fed funds rate was 6.3% below PCE inflation (5.4% below core PCE inflation), the unemployment rate had fallen to 3.6%, and Chair Powell termed the extreme tightness of labor markets "unhealthy".

3. The Current Situation: Similarities and Differences from the Great Inflation

As the economy recovered from its 2020Q2 trough, Fed officials presumed that there would be a repeat of low inflation the post-GFC conditions. When inflation began accelerating, the Fed said it was transitory, attributing it to the base adjustments following the decline in the CPI and PCE indexes in March-April 2020 and temporary supply shortages, and dismissed any comparisons to the 1970s as inappropriate and uninformative. The Fed's extended denial that inflation had anything to do with strong demand that was generated by monetary policy and unprecedented deficit spending contributed to the persistent acceleration of inflation and allowed some current conditions to become uncomfortably similar to the 1970s.

So far, the rise in inflation in 2021-2022 has been similar in magnitude to the inflation of the late-1960s and early 1970s, but below levels during 1978-1982. Through March 2022, CPI inflation had risen to 8.5% from 2.2% in 2019 while PCE Inflation has risen to 6.6% from 1.5% in 2019 (their core measures excluding food and energy have risen to 6.4% and 5.2%, respectively). These increases are similar to the rise in CPI inflation to 5.9% in 1970 from 1.5% in 1965.⁹ Both inflation episodes were generated by a surge in government spending and accommodative monetary policy.

A detailed analysis of price increases of components of both the CPI and PCE price index show that current inflation has been pervasive across a wide array of goods and services, similar to the inflation of the late 1960s and early 1970s. Charts 2 and 3 show the acceleration of inflation in a growing number of components of the CPI and PCE. Through much of 2021, the rightward movement of the shares of

⁹ The CPI measures inflation for out-of-pocket consumer expenditures (it excludes expenditures that are paid for by employer-financed health insurance, Medicare, Medicaid) and its components are not weighted by expenditure shares. The PCE components capture all personal consumption expenditures including those that are financed by third parties and are weighted by shares of spending.

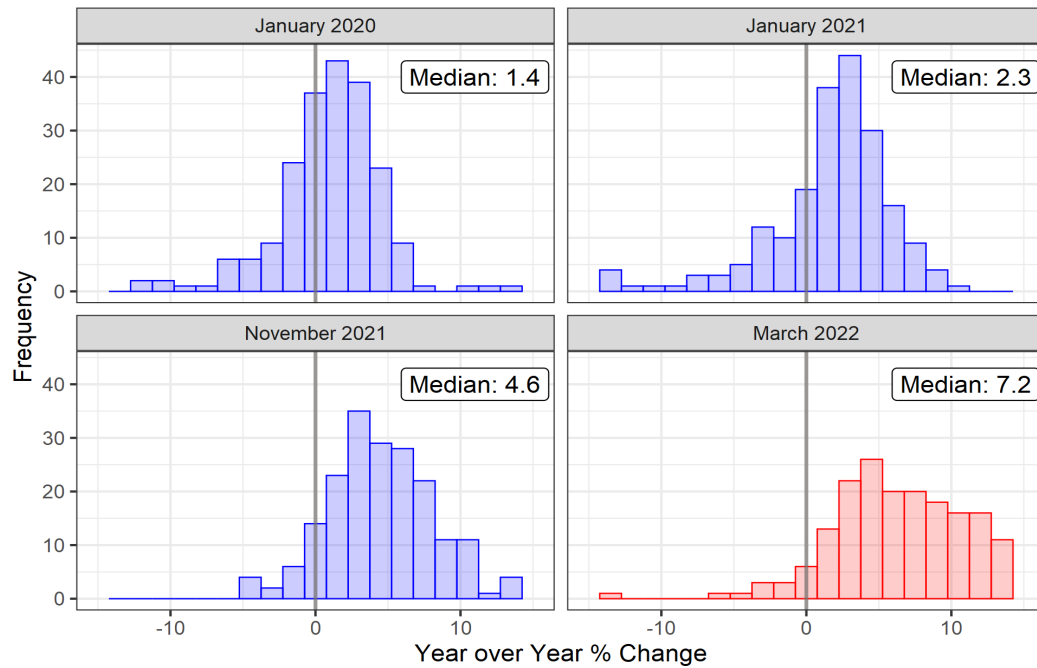
components indexes experiencing rising inflation was inconsistent with statements by Fed officials (Powell 2021) and the Biden Administration that the inflation was attributable to sharply rising prices of select goods and services.

The growing pervasiveness of inflation and similarities to the 1970s are striking. Chart 4 shows the portion of CPI components that experience inflation exceeding 3% and 5%, while Chart 5 shows similar shares of components of PCE inflation. Through February 2022, the shares of CPI components experiencing inflation exceeding 3% and 5% have risen to 82% and 65% respectively, while the shares of PCE components with inflation exceeding 3% and 5% have risen to 68% and 48%. These shares are as high as in the late 1960s and early 1970s but remain below the late-1970s. Of note, while the shares of the PCE components experiencing high inflation are less than the CPI shares and below the shares experienced in the 1970s, the CPI measures out-of-pocket expenditures, which may influence inflationary expectations.

The Fed's misreads of the economy and inflation have been disturbingly similar to the rhetoric of the 1970s. The Fed placed blame on special factors even when measures of aggregate demand including final sales to domestic purchasers had accelerated to their fastest pace in history. The Biden Administration, similar with the Nixon Administration, has blamed the inflation on greedy businesses (but not labor unions!). Fortunately, the Fed has acknowledged that wage and price controls failed. Instead of a blanket controls, the Biden Administration is attempting to lower prices of select goods by providing financial incentives to specific industries to increase supply and imposing regulations on others aimed at controlling their prices. It is also releasing oil from the Strategic Petroleum Reserve.

Inflationary expectations have risen significantly in 2021-2022, but they remain well below those of the 1970s. Short-term and intermediate term expectations have risen markedly, while longer-run expectations have risen only modestly, suggesting that at least so far, the Fed's long-run inflation fighting credibility remains intact. Expectations of inflation in the next year have risen dramatically, to 5.4% (University of Michigan) and 6.6% (Federal Reserve Bank of New York Consumer expectations), while 3-year expectations have risen to 3.7% (FRBNY). Market-based measures of inflationary expectations for 5 years have risen to 3.4% while inflation is expected to average 2.6% in years six through ten (based on the 5-year, 5-year forward curve).

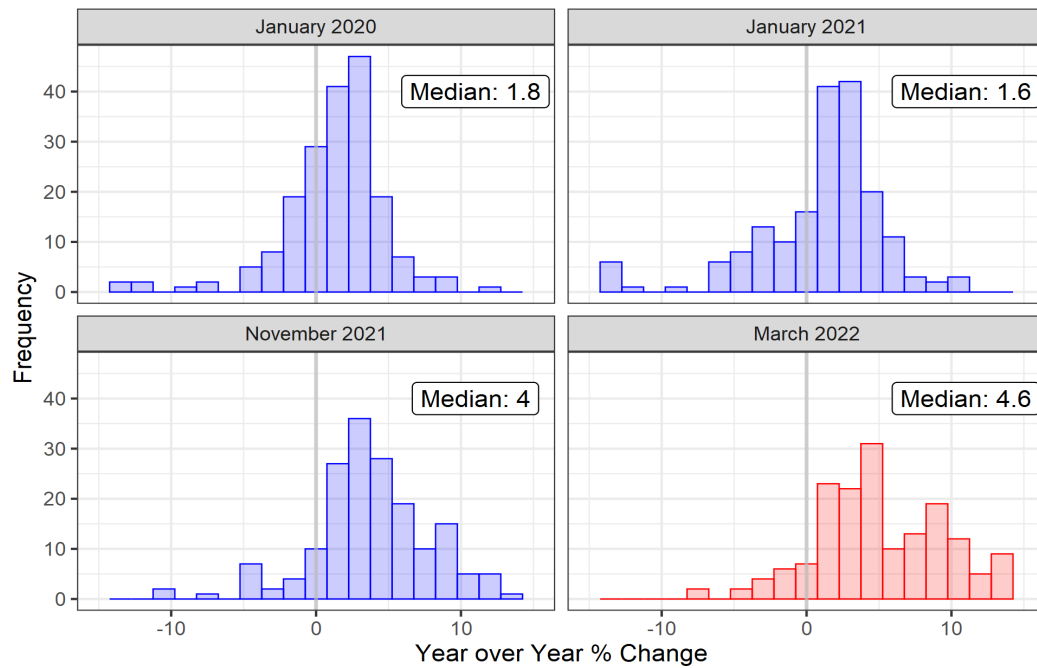
Chart 2. The distribution of Inflation across 200+ CPI Expenditure Categories



Source: Bureau of Labor Statistics, Berenberg Capital Markets

Note: expenditure categories with yr/yr changes greater than 15% in magnitude dropped from chart

Chart 3. Distribution of Inflation across 191 PCE Expenditure Categories



Source: Bureau of Economic Analysis, Berenberg Capital Markets

Note: expenditure categories with yr/yr changes greater than 15% in magnitude dropped from chart

Chart 4. Portion of CPI Components Experiencing Inflation Exceeding 3% and 5%

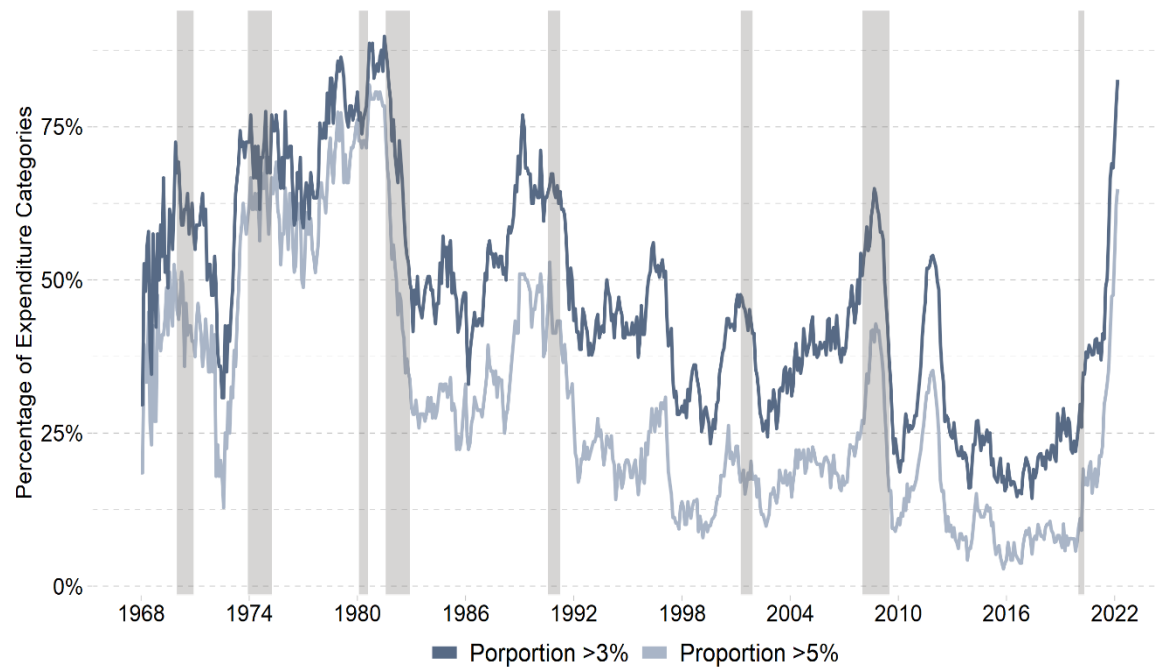
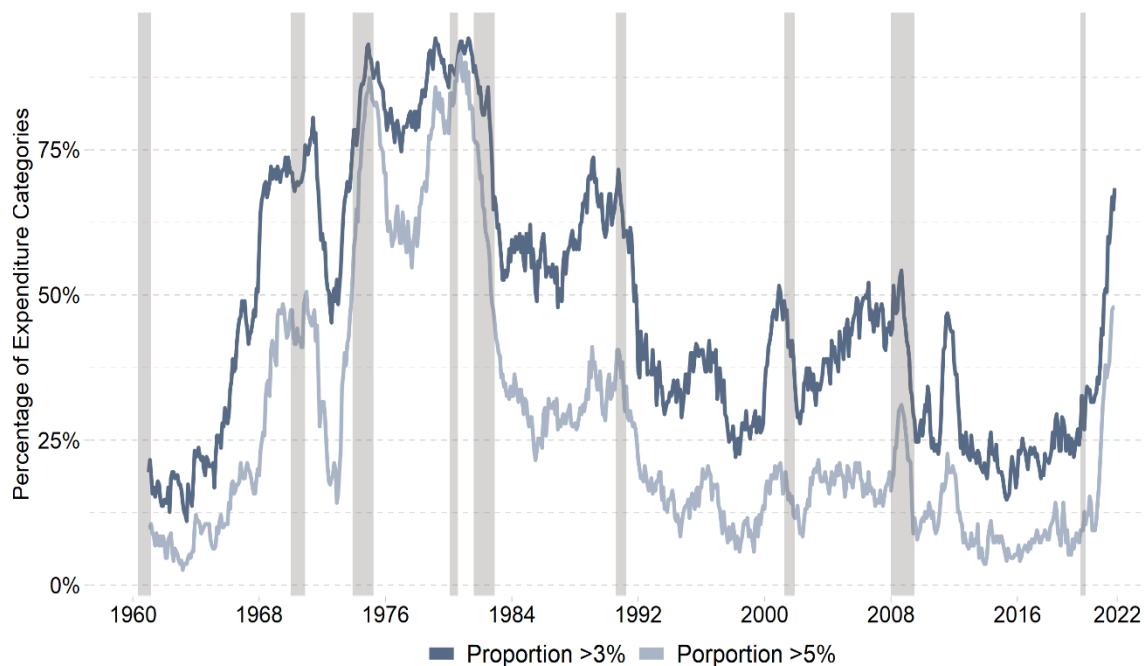


Chart 5. Portion of PCE Components Experiencing Inflation Exceeding 3% and 5%



The Fed's unwillingness to acknowledge the persistence of inflation is illustrated in its Summary of Economic Projections (Table 3). In each succeeding quarterly SEP in 2021, the Fed raised its projection of inflation for 2021 to reflect inflation that had already occurred, but forecast inflation would fall sharply in 2022-2023, despite assuming that it would be most appropriate that the Fed would not raise rates from zero until 2023. That forecast changed materially in March 2022.

Table 3. The Fed's Summary of Economic Projections of Inflation

Inflation forecast made in:	2021		2022		2023	
	PCE	Core PCE	PCE	Core PCE	PCE	Core PCE
December 2020	1.8	1.8	1.9	1.9	2.0	2.0
March 2021	2.4	2.2	2.0	2.0	2.1	2.1
June 2021	3.4	3.0	2.1	2.1	2.1	2.1
September 2021	4.2	3.7	2.2	2.3	2.2	2.2
December 2021	5.3	4.4	2.6	2.7	2.3	2.3
March 2022	-	-	4.3	4.1	2.7	2.6

Note: *Measured Q4/Q4

Source: *Summary of Economic Projections, Board of Governors of the Federal Reserve System*

Direct comparisons of inflationary expectations with the 1970s are limited by data availability. However, derived estimates of inflationary expectations during the Great Inflation by Levin and Taylor (2013) are materially higher than current levels. Current survey-based measures of inflationary expectations are higher than market-based measures, and may have a bigger influence on wage and price-setting behavior. Whereas market-based measures are determined by factors that influence yields on US Treasury securities and the TIPs markets, including changes in the Fed's holdings of these securities, commercial bank holdings, foreign central bank policies and the US dollar exchange rate and foreign demand, consumer expectations may be more closely linked to household and business decisions that affect the inflation process (Reis 2021).

In sharp contrast to the upward ratcheting of bond yields between 1965-1982, bond yields have remained far below inflation since the pandemic began. Yields on 10-year Treasury bonds were 1.5% in February 2020 and fell to 0.7% in October 2020. They have now risen to 3%. Ten-year Treasury yields rose from 4.2% in 1965 to 7.8% in early 1970. During the 1970s, they ratcheted up with higher lows and higher highs. Between June 1978 to June 1982, yields rose from a low of 8.6% and 15.3%.

The higher yields during 1966-1982 pushed down stock valuations, and real total returns on stocks were negative over the entire period. In contrast, low bond yields since early 2020 have supported high stock valuations, although this now may be changing. Whereas the high rates during the Great Inflation raised the government's debt service costs and heightened concerns about persistent budget deficits, recent low interest rates have reduced government debt service costs and diluted concerns about rising government debt. Of note, nominal GDP growth was persistently high in the 1970s, rising to average 11.3% per year in 1978-1981. This environment of persistent excess demand fueled the wage price spiral.¹⁰

Inflation seems likely to persist at elevated levels, reflecting excess demand even after supply bottlenecks ease. Monetary and fiscal policy responses may have elongated lagged stimulative effects, reflecting the character of the pandemic, government shutdowns and the magnitude of the policy excesses. The Fed's policy rate will likely remain well below inflation and an appropriate level estimated by a Taylor Rule.

The current backlog of fiscal stimulus is sizable. A portion of the \$5 trillion in deficit spending authorized has not been spent, and through year-end 2021 personal savings is an estimated \$2.5 trillion (13.6% of disposable income) higher than pre-pandemic. An added wrinkle is that state and local governments saved virtually all of the \$500 billion in Federal grants received through fiscal legislation in 2020-2021. Their excess savings eventually will be spent or used to finance tax cuts, effectively providing lagged fiscal stimulus even as Federal budget deficits recede. Another \$1 trillion of government spending has been authorized by the Infrastructure Investment and Jobs Act enacted in November 2021. Such investment is expected to have a higher fiscal multiplier than transfer payments. In addition, national

¹⁰ While the oil price shocks and other negative shocks aggravated inflation, the rapid growth of nominal GDP could not have persisted without accommodative monetary policy. The high interest rates that reflected the upward ratcheting inflationary expectations raised the opportunity costs of holding money boosted money velocity that contributed to the excessive aggregate demand.

defense spending is likely to rise. These sources point toward sustained excess demand even if supply chain disruptions dissipate.¹¹

Through March 2022, the robust recovery of goods demand and oil price spike has generated PCE inflation of 10.6% while PCE inflation of services have risen to 4.5%, as the recovery of spending on services has lagged. Services activities are now catching up, which points to continued inflation acceleration. Services sectors are labor intensive, pushing up operating costs. In addition, the largest component of services inflation is shelter costs, and inflation of its two biggest components, owner-occupied rental equivalent (OER) and rental costs, is accelerating and may remain elevated, based on the historic lags following rising home prices (Levy 2022).

Tight labor markets and higher expected inflation may combine to put upward pressure on nominal wages. The unemployment rate at 3.6% is below the Fed's estimates of its natural rate of 4%, and job openings of 11.5 million exceed job hires of 6.7 million, reflecting an unprecedented gap between labor demand and available supply. The job quits rate of 3.0% hovers near an all-time high. Real wages have been declining, as 8.5% CPI inflation has exceeded the 6.75% rise in average hourly earnings of private sector production and nonsupervisory workers. Higher inflation is influencing wages and a growing number of wage contracts at large corporations now include cost of living adjustments (COLAs). Nominal wages are expected to catch up to inflation, reflecting the tight labor market conditions, the pickup in labor productivity and the feedback loop between wages and inflation.

In sum, the persistence and pervasiveness of inflation have begun to take on some of the negative characteristics of the 1970s.

4. Why Has the Fed Been Consistently Behind?

The Federal Reserve's track record of delayed exits stems from a confluence of factors. Economic theories have evolved and become more conducive to activist macroeconomic policymaking and the Fed's reliance on discretion has been prone to misjudgments. The Fed's interpretation of its dual mandate has evolved toward prioritizing maximum inclusive employment over inflation and has introduced asymmetries that require discretion in interpreting how to achieve its objectives. The Fed has expanded

¹¹ Money velocity should recover from its abrupt pandemic collapse as the economy returns to normal and interest rates rise. Similarly, money velocity rebounded following World War II as the lagged impact of monetary stimulus during the War and pent-up demand generated a surge in spending as normal civilian life resumed.

its set of monetary tools, including its heightened reliance on forward guidance to manage expectations and an expanded balance sheet, in ways that have confused its policy deliberations and introduced delays. It has complicated and muddled the Fed's communications. The Fed's assessments and forecasts of the economy and inflation occasionally have led to monetary policy mistakes. In addition, the Fed faces constant political pressures from elected officials to facilitate their short-term objectives. These political pressures have affected the Fed in significant ways during some critical periods.

Evolving doctrines. Even following World War II when the government assumed the role of managing aggregate demand and the Employment Act of 1946 mandated the Fed to pursue maximum employment, monetary policy was grounded in price stability and a longer-run balanced budget anchored fiscal policymakers.

Replacing price stability as an anchor for monetary policy in the 1960s with the goal of moderate inflation and the Keynesian revolution, popularized by the Phillips Curve that used inflation as a tool for reducing unemployment, fueled discretionary activist monetary policy. These new analytical frameworks promoted the role of the Federal Reserve Board staff that advocated the Phillips Curve framework and activist countercyclical policymaking. The prospects that the Fed could use actively monetary policy to achieve desired tradeoffs between inflation and unemployment attracted policymakers of like mind. The realities of higher inflationary expectations in the 1970s and the Fed's loss of credibility unhinged the relationship between the unemployment rate and inflation and undercut any notion of a permanent stable Phillips Curve. In response, the Phillips Curve was modified and has remained as the Fed's benchmark, despite its analytical flaws and unreliability.¹²

The trauma of the high inflation of the 1970s and Volcker's jarring disinflationary monetary policy ushered in The Great Moderation. During this period, the basic premise of the Volcker-Greenspan regimes was that low inflation was the foundation for achieving maximum employment, a clear departure from the doctrine of the 1970s. The Fed was quicker to reduce monetary accommodation at signs of inflation pressures. During this period, scholarly research focused on the benefits of rules that targeted low inflation and eventually settled on 2% (Taylor 1993). Others advocated the benefits of a

¹² While new ideas by the monetarists in the 1960s and 1970s and the rational expectations school in the 1980s and 1990s and research conducted at several Federal Reserve Banks, particularly St Louis and Minneapolis, influenced thinking in the Federal Reserve System, the Phillips Curve remained as the dominant framework for conducting monetary policy (Bordo and Prescott 2019)

framework for targeting low inflation without rules (Bernanke, et al 1999), also centering on 2%. Inflation targeting and guiding inflationary expectations toward the inflation target became the dominant anchor guiding monetary policy, operating as a constraint on the pursuit of full employment.

An ensuing pivot in the System's thinking at the turn of the twenty first century had a significant impact on monetary policy that remains central to monetary policy. The Greenspan-led Fed's concerns about deflation and its perception that the risks of deflation and the stagnation that would result were a far bigger concern than the risks of high inflation, became influential.¹³ This new asymmetric view of risks around inflation resulted in the Fed's delayed exit from its 2001-2002 countercyclical easing that proved costly for economic performance and financial stability. This asymmetric concern re-emerged as a dominant theme in the decade following the GFC.

Subdued inflation following the GFC allowed the Fed to aggressively pursue maximizing employment. In 2012, Fed Chair Bernanke stated that a key objective of QEIII was to lower the unemployment rate (Bernanke 2012), a noted departure for then-unconventional monetary policy. Fed Chair Yellen was even more aggressive in pursuing low unemployment and posted a new Labor Market Dashboard on the Fed's website. The persistently sub-2% inflation fueled Fed's worries about the risks of a downward spiral in inflationary expectations and asymmetries imposed by the ELB.

These ELB concerns along with the prospects that sustained monetary ease could promote maximum inclusive employment became a cornerstone of its new strategic plan. The new strategic framework institutionalized the Fed's asymmetries, including prioritization of its enhanced maximum employment mandate and flexible average inflation targeting that favored inflation above 2%.¹⁴ Underlying its new strategy, the Fed acknowledged that the Phillips Curve was flat which allowed it to eschew the pre-

¹³ Chairman Greenspan referred to "low probability but high-cost outcomes" (Greenspan 2003) and argued that while deflation would create a downward spiral in aggregate demand that would be hard to escape from, while higher inflation posed fewer risks because the Fed "would know how to address the problem". Then-Governor Bernanke articulated how the Fed could resort to quantitative easing at the zero-lower bound (Bernanke 2002).

¹⁴ Fed Chair Powell's description of the Fed's new strategic plan in his August 2020 Jackson Hole speech emphasized its enhanced maximum inclusive employment. "The stories we heard [at the *Fed Listens*] events became a potent vehicle for us to connect with the people and communities that our policies are intended to benefit." "With regard to the employment side of our mandate, our revised statement emphasizes that maximum inclusive employment is a broad-based and inclusive goal. The change reflects our appreciation for the benefits of a strong labor market, particularly for many of the low-and moderate-income communities. In addition, our revised statements says that our policy decision will be informed by our 'assessments of shortfalls of employment from its maximum level' as in our previous statement. This change may appear subtle, but it reflects our view that a robust job market can be sustained without causing an outbreak of inflation." Vice Chair Clarida restated these points and concluded "This is a robust evolution in the Federal Reserve's policy framework" (Clarida 2020).

emptive monetary tightening that had been critical to its high priority of managing inflationary expectations. The strategy's tenuous theoretical foundations, including heavy reliance on forward guidance and precise management of expectations, and the absence of any numeric targets was impractical for conducting sound monetary policy (Plosser 2022). It contributed to the Fed's excessive extension of its crisis management policies.

Misreads and unreliable forecasts. Forecasting is very difficult and fraught with challenges. The Fed's models do not seem to have captured critical variables that have driven important shifts in the economy. They largely ignore money supply and the monetary transmission channels in its forecasting. The Fed, presumably for political reasons, has not forecast prior recessions. Nor have the senior Fed staff who manage the Fed's macroeconomic models, according to the minutes of FOMC meetings that are released with a 5-year lag. Prior to the GFC, the Fed's macro models did not capture the economic implications of failing credit conditions and the spreading of financial instability and the precarious nature of the short-term funding market. As the housing and mortgage market unraveled, the Fed's forecasts were consistent with its assertion that the problems facing the housing sector would not spill into the economy.

The Fed's misread of the sharply rising inflation in 2021-2022 was not its first. In the 1970s, the Fed attributed the upward ratcheting of inflation to special factors rather than to monetary accommodation and did not account for the mounting negative impacts of rising inflationary expectations. Following the GFC, the Fed's senior staff model and SEPs significantly over-estimated inflation. When inflation remained low, the Fed attributed it to a flatter Phillips Curve, while it paid insufficient attention to factors and policies that may have bottlenecked the monetary policy transmission mechanism and inhibited the impact on nominal GDP.

As the economy recovered from the pandemic, the Fed presumed that inflation would stay low as it did post-GFC. When inflation rose, the Fed attributed it to supply shortages, and stuck to a forecast that it would decline back toward the Fed's target. In doing so, it understated any stimulative impacts of an increasingly negative real Fed funds rate and the surge in M2, and the unprecedented increase in fiscal deficit spending. The Fed did not acknowledge the fastest growth of aggregate demand in modern history. It is uncertain whether the Fed's models estimated that the trillions of dollars of fiscal stimulus financed by the Fed's monetary ease would have no impact on the economy or inflation, or used judgment and overrode its models. The oversight of readily available data raises more questions. In

light of the challenges facing forecasting and the sizable uncertainties posed by the pandemic, incorporating into policy deliberations more rigorous use of scenario and probability analyses of forecasts would be wise (Bordo, Levin and Levy 2020).

Political pressures and the Fed. Political pressure on the System has been a constant influencer. As William McChestney Martin's stated, the Fed is "independent within the government". Elected officials—The White House and Members of Congress--try to impose their own personal interests on the Fed and clearly influence monetary policy. Congress chartered the Federal Reserve and is charged with supervising it. The Fed's history is replete with a series of powerful Members of Congress's House and Senate banking committees with unfavorable views of the Fed and lack of knowledge about how monetary policy affects the economy who tried steer the Fed in pursuit of their own political agendas. These politicians have affected the Fed in many ways. Populist Wright Patman, a decades-long member of the House Banking Committee, exerted constant pressure on the Fed to keep rates low on the belief that higher rates were inflationary and benefited commercial banks at the expense of workers. Others preceded and followed with their own agendas.

In the 1960s, Fed Chair Martin was a fiscal conservative whose instincts were to tighten monetary policy in response to the expansive "guns and butter" government spending that began in 1965, but he was bullied by President Johnson to delay raising rates. This proved costly, as higher inflationary expectations became embedded and set the stage for the 1970s. Burns direct involvement in President Nixon's policy agenda influenced the Fed in the 1970s. Burns was intimately involved with President Nixon's strategies for dealing with labor unions, and the lengthy GM strike in 1970 reinforced Burns' views and led him to team up with Treasury Secretary John Connolly and Nixon to impose the wage and price controls. Following Burns' assistance to Nixon's re-election in 1972, in 1976-1978 he was heavily influenced by the heated political debate on the Humphrey Hawkins legislation and did not exit policy accommodation.

Political impacts on the Fed are pervasive. Choices of Fed Governors nominated by the President are driven by politics and Congressional members have influenced the choice of Federal Reserve Bank Presidents. Congressional initiatives have forced Fed governance changes. The Dodd-Frank legislation significantly affected the Fed's operations and constrained its lender of last resort facility. The Fed has been forced to adjust its communications and accountability to meet Congressional demands. The Fed is frequently expected and called on to do more to boost the economy and lower unemployment. In the

past, when budget deficit concerns constrained Congress from pursuing fiscal stimulus, the Fed was expected to be more accommodative. Since the pandemic began, the Fed's stimulative stance has paralleled the desires of the Trump and Biden Administration and Congress. Now, as the Fed begins to raise rates, it may come under intense pressure on several fronts. As the Fed removes monetary accommodation, it may get blamed for the slower growth and weaker labor markets. The higher rates and bond yields will drive up the government's debt service costs, for which the White House and Congress may blame the Fed instead of accepting blame for their fiscal profligacy. Higher consumer debt costs and mortgage rates will hit household pocketbooks. History suggests that pressures may mount to limit its rate increases and not allow unemployment to rise.

5. Lessons from History and the Path Forward

Throughout its history, the Fed has learned from several monumental mistakes. The Great Depression taught how monetary policy based on the wrong doctrine and neglect turned a modest recession into a deep contraction. Following WW II, the Fed learned its important role in aggregate demand management. The 1970s taught the costly mistakes of persistently accommodative monetary policy that allowed high inflation and a de-anchoring of inflationary expectations. But the Fed has not heeded many other important lessons. One reoccurring source of Fed's lapses that have led to undesired outcomes—high inflation resulting from extended monetary ease followed by delayed exits and more frequently than not recessions-- is its discretionary approach to the conduct of monetary policy. The Fed has continued to eschew systematic rules as policy guidelines, instead favoring discretion and relying on its judgment.

In many spectator sports, professional analysts measure unforced errors and often refer to them as game-breakers. An unforced error is a mistake of one's own doing that is frequently based on bad judgment. "If (s)he would have only followed the rules and lessons learned from years of experience and practice..." Our analysis of modern business cycles and the Fed's monetary policies describes a series of unforced errors, some large that led to recessions and a few that resulted in economic soft landings. The Fed's current challenge is difficult. While there have been episodes of delayed exits in which the Fed raised rates and lowered inflation without interrupting the expansion—the best examples are 1966, 1987 and 1994—the Fed has never been put into a position like the current one in which it must reverse monetary accommodation when inflation is so high, except for the late 1970s. This is highlighted in Chart 1 by the current historically wide gap between the Taylor Rule estimate and the

actual Fed funds rate. History has taught that the Fed must raise its policy rate above the underlying rate of inflation. But under current circumstances, the Fed must distinguish between the underlying inflation generated by excessive monetary and fiscal policy and the inflation that has resulted from supply shortages. The Fed must be even-handed in its assessment (Bordo and Levy 2022).

Whether or not the Fed is successful in managing a soft-landing, the number of the Fed's unforced errors—in which the Fed's discretion led to poor judgment and costly errors—strongly suggests the need for a policy reset. Were the Fed to adopt more systematic rule-based guidelines—or behave in a more rule-like manner as it did the Great Moderation—it would avoid big mistakes and have a useful framework for conducting monetary policy under abnormal circumstances. Secondly, the Fed needs to correct the flaws of its strategic framework, eliminate its asymmetries and adopt a balanced approach to interpreting and achieving its dual mandate. Forecasting will always be a challenge, but the Fed should reassess its mistakes and analyze why it has been prone to occasional sizable mistakes. Finally, the Fed must pay attention to history and absorb the appropriate lessons.

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