Penitence after accusations of error: 100 Years of Monetary Policy at the U.S. Federal Reserve

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July 2, 2013

Abstract

This paper considers some of the large changes in the Federal Reserve's approach to monetary policy. It shows that, in some important cases, critics who were successful in arguing that past Fed approaches were responsible for mistakes that caused harm succeeded in making the Fed averse to these approaches. This can explain why the Fed stopped basing monetary policy on the quality of new bank loans, why it stopped being willing to cause recessions to deal with inflation, and why it was temporarily unwilling to maintain stable interest rates in the period 1979-1982. It can also contribute to explaining why monetary policy was tight during the Great Depression. The paper shows that the evolution of policy was much more gradual and flexible after the Volcker disinflation, when the Fed was not generally deemed to have made an error.

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As the United States Federal Reserve turns 100 years old, it seems appropriate to reflect on the evolution of its approach to stabilizing the economy. This paper is focused, particularly, on an explanation for some of the changes in this approach over time. For that reason, and also for reasons of space, my description of each of the different approaches that the Fed has employed is relatively cursory, and relies heavily on the vast volume of existing research including, notably, Friedman and Schwartz (1963) and Meltzer (2003, 2009). Following this work, and particularly Romer and Romer (2002), I largely attribute changes in Fed policy approaches to changes in the ideas that Fed officials had about appropriate policy. Where this paper seeks to break new ground is in its discussion of the way these ideas evolved over time.

The plots of a short term interest rate, an inflation rate, and the NBER recessions in Figure 1 allow one to separate the 100 year history of monetary policy-making at the Fed into some fairly distinct subperiods, and this paper focuses on the differences among some of these. The Fed's first action after World War I was to raise interest rates to tame inflation. In the first substantial subperiod that I comment on below, the "roaring 20's" (i.e. after 1921), inflation was insignificant so that the four peaks in interest rates we observe in this period must have been due to something else. Interest rates then fell during the Great Depression and, heavily influenced by the Treasury, stayed stuck at very low levels until the Accord of 1951.

The period that followed is one of inflation intolerance. The Fed raised interest rates to combat inflation in 1951, though the amount by which interest rates rose was modest, and again, more aggressively, in 1957. In this period of inflation intolerance, the two recessions of 1953 and 1960 were also preceded by increases in interest rates, though not by significant run-ups in inflation itself. Next, the period covering the 60's and 70's was a period of inflation tolerance that is often referred to as the Great Inflation. This tolerance first becomes apparent at the end of 1966, when the Fed started lowering interest rates even though inflation was higher than it had been for some time. This period ends with the famous Volcker disinflation of 1979-1982, which deserves its own special treatment because it is a period of unparalleled interest rate volatility.

The period 1982-2007 is a second period of inflation intolerance, and it is also known as the "Great Moderation." If an overview paper of this sort had been written in early 2007, it might well have treated this period as involving an apotheosis of central banking. Unfortunately, the Great Recession followed and its difficulties are not entirely over even though the Fed has lowered interest rates and raised money supply measures dramatically.

This paper focuses on a particular force that may help account for the qualitative changes in monetary policy across these periods. This force is the tendency of the Fed to act as if it were penitent when critics successfully argue that "bad outcomes" are a product of Fed "mistakes." The description of past policy as having involved mistakes is a staple in the literature discussing Federal Reserve actions.[1] Critics who seek to blame the Fed for bad outcomes typically go beyond saying that a particular policy move was unwise. Rather, they tend to argue that a particular pattern of Fed behavior is responsible for a series of unwise policy moves, and it is this pattern that they paint as being mistaken. The Fed then tends to become averse to this, now successfully vilified, pattern of behavior.

For lack of a better word, I use the word penitence to denote this response. One reason this word seems evocative is that penitence typically requires sinners to avoid repeating their sin. The word penitence is also associated with feelings of remorse. Since I am treating penitence as applying to the institution as a whole, and institutions need not have feelings, this association is less relevant. Still, for an institution like the Fed to change, the attitudes of their members have to change as well. Whether Fed members experience remorse is very difficult to ascertain, though there has been one famous example of a Fed official apologizing for the Fed's past actions (Bernanke 2002). When individual Federal Reserve officials drastically change their professed ideal for monetary policy, however, there is at least the possibility that they may have regrets about the approach they embraced in the past. Regardless of whether this is true, or even whether any Fed officials were conscious of the extent to which they had changed their mind, the avoidance of actions that have been criticized for having led to poor outcomes in the past is enough for me to use the word penitence.[2]

So far, there have been at least four Fed objectives that the Fed has become averse to after bad outcomes, and these are listed in Table 1. First, during the Great Depression, the Fed became averse to open market purchases that raised banks excess reserves. Then, after the Great Depression, the Fed became averse to making monetary policy decisions based on whether banks were extending credit for "speculative" purposes or not. Third, after 1960, the Fed became averse to creating recessions to fight inflation. This changed in 1979, when the Fed became averse to smoothing interest rates.

The process I have described can be thought of as involving learning, in that information arrives and Fed decisions change as a result. However, learning and forgetting are usually treated as antonyms, whereas here there is the possibility that they are complements. To see

this, consider an extreme example of a system that can only be in two states and suppose that it changes state every time an external impulse is applied. Such a system is responding to information, but is not meaningfully learning. Moreover, in the economics literature, the word learning is associated with a particular process of rational information processing and Sargent (1999) pioneered a literature that uses this perspective on learning to analyze monetary policy. My approach is very different from this. I discuss some of these differences in Section 2.3.

The paper discusses occasions in which the Fed abandoned its past approaches in the order that they are listed in Table 1. Section 1 considers the 1927 episode in which the Fed first gave up its aim to grant only "productive credit," and assigns penitence for this abandonment a role in explaining the severity of the Great Depression. While some aspects of this argument are new, the empirical evidence on the links and contrasts between 1927 and the Great Depression is largely drawn from the secondary literature, particularly Meltzer (2003) and Friedman and Schwartz (1963). This section also illustrates how criticism of the behavior of the Fed during the Great Depression itself can explain the subsequent aversion to using "productive credit" as a criterion for monetary policy.

Section 2 focuses on the Great Inflation, a period in which the Fed gave up its long standing intolerance of inflation, and links it to the recessions that came just before. This argument, and some of the evidence I adduce, is new. The sources of the Great Inflation are the subject of a large literature. I briefly discuss this literature, with an emphasis on closely related papers in section 2.3.

Section 3 considers the approach that Volcker took to end the Great Inflation. This famously involved abandoning the objective of stable interest rates. It has been noted before, for example by McCallum (1985), that the procedures adopted by Volcker were similar to those suggested by some of the Fed's critics. What is new here is my argument for why these critics succeeded in this way at that particular time. Section 4 overviews some features of the Great Moderation that followed. An interesting aspect of this episode is that, while money growth targets showed themselves to be a problematic mechanism in the period 1979-1982, the fact that the Fed was not accused of error allowed the Fed to extricate itself from these targets very gradually. Section 5 offers some conclusions.

1 The two abandonments of the quality of bank lending as an objective

The Tenth Annual Report of the Federal Reserve Board said that the Fed was supposed to extend credit only for "productive" and not for "speculative" purposes.[3] This implied, of course, that the Fed should only discount loans that banks had made for industry, agriculture, and so on. The Report noticed, however, that this would not be sufficient for its purposes because "paper offered by a member bank when it rediscounts with a Federal reserve bank may disclose the purpose for which the loan evidenced by that paper was made, but it does not disclose what use is to be made by the proceeds of the rediscount."[4] To deal with this problem, regional Federal Reserve banks were supposed to keep tabs on the overall lending portfolio of the banks borrowing from them.

In addition, the Fed was supposed to use a "quantitative" criterion to limit "the volume of credit within the field of its appropriate uses to such amounts as may be economically justified - that is justified by a commensurate increase in the Nation's aggregate productivity."[5] According to Wicker (1966, p. 98), the Fed's tightening in late 1925 was due to concern with the fact that loans for purchases of securities had risen in the previous nine months. This moment represents the high-water mark of the concern for the quality of new bank loans in the conduct of U.S. monetary policy. It does not seem to have been accompanied by controversy, the resulting recession was mild, and there were no loud complaints afterwards.

By contrast, the expansionary turn of monetary policy in 1927 was extremely contentious. It was championed by Benjamin Strong, the president of the New York Federal Reserve. It is widely accepted that Strong was motivated at least in part by a desire to help England get back on the gold standard (Wicker, 1966, p. 112). Wicker (1966 p. 106) reports that Governor "Adolph Miller bitterly opposed [this] . . . on the ground that purchases of securities would fan the flames of stock market speculation." James McDougal and George Norris, the heads of the Federal Reserve Bank of Chicago and Philadelphia, respectively, actually wanted to raise rates at the time(Meltzer 2003, p. 226). McDougal famously resisted lowering his own discount rate in line with the requirements of Strong's policy, though the Federal Reserve Bank of Chicago was ultimately brought to heel, a move that centralized Federal Reserve power considerably. It thus seems fair to say that 1927 represented the first time that the Fed perceived itself as having given up on its objective of stabilizing the quality of new bank loans.

Partly in response to gold outflows, the Fed started raising discount rates in early 1928.[6] In

spite of gold inflows in 1929, the tight policy was continued, and even somewhat strengthened. A key reason for this was that the Fed was unhappy about the substantial increase in speculative lending that took place in 1928, while the stock market was booming. Even with this policy, the Fed felt it was in a predicament. As it said in its 1929 Annual Report, “The problem was to find suitable means by which the growing volume of security credit could be brought under orderly restraint without occasioning avoidable pressure on commercial credit and business.” The Board sought to solve this dilemma by asking regional banks to limit credit to banks that engaged in speculative lending. Friedman and Schwartz (1963, p. 257) report that several Regional Banks, the New York Federal Reserve in particular, resisted this pressure for “direct action.” Certainly, George Harrison of the New York Federal Reserve wished to curb speculation by raising rates further. Nonetheless, the 1929 Annual Report claimed to be pleased with the results.

The tight monetary policy in this period was likely responsible for the initial declines in industrial production that began in August 1929. The role of monetary policy in the more dramatic declines in industrial production from October 1929 to September 1930 is more uncertain.[7] The Fed lowered interest rates consistently during this period, and, while it found itself lending less to banks, it engaged in modest open market purchases so that M1 fell by only modestly.

Friedman and Schwartz (1963) stressed instead the substantial declines in the money supply that followed. These were, in part, the result of the Fed’s refusal to lend to banks subject to runs. In addition, and in spite of the exhortations of various Federal Reserve officials at various times, the Fed resisted embarking in large-scale open-market purchases to offset the declines in banking.[8] Under pressure of Congress, such a program was started in April 1932, though it quickly ended in August of the same year. This was rationalized on the ground that conditions were “easy” since there were ample excess reserves. Some officials thought the increase in excess reserves (and reduction in borrowing from the Fed) proved that the program was ineffective.[9]

Given subsequent developments, it seems likely that some members also viewed excess reserves with fear. As excess reserves accumulated in the mid-1930s these fears were openly discussed, and Friedman and Schwartz (1963, p. 523) quote extensively from a 1935 memo that clarifies their nature. In effect, the Fed worried that banks would use these funds for speculative purposes that would ultimately be costly. Or, as the 1937 Annual Report put it, the Board feared “an uncontrollable increase in credit in the future.”[10] These concerns were sufficiently intense that the Fed raised reserve requirements by 50% in August 1936. Further increases in 1937 left them at double their 1935 values (Meltzer 2003, p. 509).

The underlying logic of the tightness of monetary policy in this period has been extensively discussed. Meltzer (2003, p. 400) argues that an important factor was the continued adherence of the Fed to the approach it had used in the 1920, which he calls the "real bills doctrine", and according to which policy in the 1930s was "easy." Calomiris and Wheelock (1999) also blame the continuing use of a method used in the 1920s, though they put more stress on the Fed's use of an indicator, free reserves, that they regard as unfounded. One difficulty with these approaches stressing continuity is that, as Friedman and Schwartz (1963, p. 411), argue, the Fed's response in 1926-27 was much more vigorous than in the 30s. Indeed, open market purchases in 1927 were extremely large by the standards of the Great Depression. Moreover, while Norris and McDougal continued to oppose those purchases in the 1930s, Miller changed his attitude so that he favored purchases in the 30s even though he had been an adamant opponent in 1927. Lastly, Eugene Meyer became Chairman of the Board in 1930, and he advocated large scale purchases throughout. To be fair, the regional banks preserved a great deal of power until 1935.[11] Still, the Board had won its showdown with them in 1927, and it did not attempt another in the early 1930s.

Friedman and Schwartz (1963, p. 412) famously concluded that the difference between the two periods was that Benjamin Strong was able to exercise strong leadership in 1927, and that he would have done so had he remained alive during the Great Depression. Meltzer (2003, p. 409) gives a reason to be skeptical of this hypothesis. This is that the heads of the regional Federal Reserve Banks that most strongly opposed expansionary open market operations in the 1930s blamed Strong for the purchases of 1927. Moreover, since these purchases were now held responsible for the post 1929 contraction itself, the passage of time had made these purchases an ever clearer lesson in what not to do.

As an example of this interpretation of the 1927 purchases consider Governor Miller's congressional testimony in January 1931. In this testimony, he depicted the breakdown of the autumn of 1929 as an "inevitable" consequence of the increase in asset prices, and linked these directly to the 1927 monetary expansion. After noting that the Fed had purchased a great many securities at the time, he said "Coupled with the heavy purchases of acceptances it was the greatest and boldest operation ever undertaken by the Federal reserve system, and, in my judgment, resulted in one of the most costly errors committed by it or any other banking system in the last 75 years."[12] Treasury Secretary Glass, who had a direct role in the Federal Reserve at the time, was also convinced that the 1929–30 collapse was due to the abandonment of the

doctrine that lending should only be directed to "productive uses" (Meltzer 2003, p. 470).

The penitence I stress should have led the Fed to redouble the seriousness with which it took account of the quality of the loans made by banks in the 1930s. This was a force for contraction because it was difficult to make the argument that additional credit by the Federal Reserve would be deployed in additional productive lending given that banks had little appetite for additional lending. Excess reserves were not themselves "productive" uses of funds. And, since they had the potential to be converted into speculative credit, it makes sense that aversion to speculative credit (what I label penitence) would also involve antipathy to excess reserves in general.

This is not to say that penitence for the "mistaken" expansionary policy of 1927 should be seen as the only basis for the depth of the Great Depression. Indeed, the literature convincingly demonstrates that other factors played a role as well. The 1931 increase in discount rates was clearly designed to stem gold outflows, for instance, so faithfulness to the ideals of the gold standard must have mattered too.[13] Hsieh and Romer (2006) argue, however, that the U.S. did not endanger the credibility of its commitment to the gold standard when it engaged in open market purchases in 1932. They thus suggest that it had ample room for more expansionary policies even before Roosevelt devalued the dollar in 1933.

Romer and Romer (2013) stress that one reason the Fed officials increased reserve requirements while being unwilling to engage in open market purchases was that they saw excess reserves as useless. However, given that some officials actually wanted to pursue expansionary policies, a response that they would be of limited use would not normally have been enough to stop these policies from being instituted. When coupled with an aversion to such policies for reasons such as the one I stress, however, the argument that these policies would not have a great deal of benefit might well have made it harder for the advocates of these policies to triumph.

Because the Great Depression deepened while the individuals who were preoccupied with productive credit maintained the upper hand, their approach was ripe to be interpreted as a mistake, and this, together with the lack of attention that this approach paid to monetary aggregates, was one of the central messages of Friedman and Schwartz (1963). Until their message became widely accepted, the Fed continued to be intensely interested in the composition of new bank loans. In 1953, for example, New York Federal Reserve President Allen Sproul told the FOMC that "bank credit, except for consumer credit and perhaps mortgage credit, has not

moved out of line with a balanced situation" so that the evolution of several classes of bank loans was still followed closely. Even later, in 1964, Friedman complained that independent central banks inevitably fell under the influence of bankers and thus "put altogether too much emphasis on the credit effects of their policies and too little emphasis on the monetary effects."[14]

Eventually, however, Friedman and Schwartz (1963)'s narrative of the Great Depression did become the dominant one. And, as this happened, penitence should have led to an abandonment of the quality of bank lending as a guide to monetary policy. Consistent with this, discussion of this issue faded at FOMC meetings, In the detailed transcripts[15] of the first three meetings of 1970, for example, there is no substantive discussion concerning the composition of bank lending. The aggregate behavior of the banking sector, and total bank credit in particular, were still discussed, though some members explicitly said that they thought monetary aggregates were more relevant. As Volcker (1989, p. 39) noted, the Fed did have to deal with several problematic financial institutions and markets in the 1970s. But, it appears to have acted only after problems materialized (rather than when loans were granted) and did so, as Volcker put it, "through a variety of techniques, more or less of an ad hoc nature."

Critics who blamed the Fed for allowing the subprime lending that they saw as having led to the 2007 crisis have complained that monetary policy was insufficiently focused on financial stability. One way of making sense of this criticism is by appealing to the common sense intuition that monetary policy can respond flexibly to changes in the quality of loans made by financial institutions, and that these should be of concern to the institution charged with economic stabilization. Some formal models with this implication exist as well. In Stein (2012), for example, downturns force banks to sell assets at fire sales prices so that increases in one bank's risky lending impose an externality on other banks by reducing the fire sale prices of their own assets.[16] Of course, accepting that such externalities exist is not sufficient to conclude that monetary policy (as opposed to regulatory policy) should be set exclusively on the basis of the productivity of borrowers as suggested by the Fed's Tenth Annual Report. But, equally, it seems unlikely that the Fed's would have become so averse to relating monetary policy to the composition of credit by liquidity-providing institutions if its earlier concern for this composition could not be blamed for the Great Depression.

Here, the tactics of Fed critics probably played a role. Critics of the Fed's behavior in the 1930s were not content to explain that outcomes would have been superior if the Fed had paid some attention to monetary aggregates also. Rather, they wanted the Fed to stop paying

attention to other variables altogether. Milton Friedman, in particular, said "Monetary policy ought to be concerned with the quantity of money and not with the credit market."[17] Similarly, Currie (1968) reviewed several arguments that might be used to justify the "theory ... underlying the Federal Reserve Act," which he terms the Commercial Loan Theory of Banking (Currie 1968, p. 34-39). His conclusion from this review was that "there exists no valid theoretical justification for the Commercial Loan Theory." Academic critics of the Fed may have succeeded in making Fed officials feel that they faced an either-or choice between the earlier focus on the composition of new loans and the focus on monetary aggregates.

Two additional facts suggest that Friedman and Schwartz's (1963) made the Fed penitent about its behavior during the Great Depression. First, while already a governor, Ben Bernanke apologized on the Fed's behalf (Bernanke 2002). Second, the financial crisis that started in 2007 was accompanied by heroic efforts to prevent broker-dealers and money market mutual funds from failing as well as by dramatic increases in excess reserves. Both of these policies were opposite those that that Friedman and Schwartz (1963) blamed for the Great Depression.

2 The tolerance for inflation

2.1 The beginning under Martin

Until the Treasury-Fed Accord of 1951, and in spite of two war-related inflationary episodes in the 1940s, the Fed maintained the low short and long term interest rates desired by the rest of the U.S. government. As inflation took off in 1950-51, the Fed became less submissive and the negotiations leading to the Accord commenced.[18] In these negotiations, William McChestney Martin represented the Treasury. Once the negotiations were concluded, Martin was appointed Fed chairman so that, while the Accord recognized the Fed's independence, it was widely expected to continue to respect Truman's wishes. Instead, Martin's inaugural statement (Martin 1951) painted inflation as a dangerous enemy, and the Fed fought inflation with vigor in the early years of his chairmanship. Hetzel and Leach (2001) demonstrate that the Truman administration regarded the policies that accomplished this as a betrayal. They note in particular that CEA chairman Leon Keyserling thought that Martin had "double-crossed" Truman.

The FOMC Minutes make it clear that Martin was willing to be personally responsible for politically unpopular increases in interest rates. A particularly good example of this took place at the FOMC meeting of July 30, 1957. While interest rates had been rising since 1955, several participants at the meeting continued to be concerned with inflation and with "the inflationary

psychology." At the meeting, several members supported raising the discount rate further from 3 to 3.5 percent and, while this increase was not decided at this meeting, it was instituted by most regional banks between the end of this meeting and the beginning of the next one. As the July 30 meeting ended, Martin noted that the discount rate increase might "create . . . difficulties . . . from the standpoint of relations with the Treasury." Nonetheless, he added that "as far as he was concerned personally, he would want to assume the risk of being charged with precipitating a downturn rather than to take any action except one that was believed to be correct."[19] The downturn was not long in coming. According to the NBER, a recession began in August 1957.

As has been fairly standard practice, the Fed responded by letting interest rates fall rapidly. Soon thereafter, the FOMC became concerned with inflation and raised rates once again. Even though the August 1958 CPI was actually .5% lower than the one in February 1958, several participants at the FOMC meeting of August 19, 1958 worried about the possibility of inflation. In closing the meeting, Martin agreed with the Federal Reserve Bank of San Francisco's recent increase in the discount rate as well as with a participant that "the System was dealing with . . . an inflationary psychosis as well as inflationary psychology." Noting that the Treasury had not always done its part in fighting inflation, Martin added "that the System had to stand up and be counted in these things."[20]

By September 1967, he had become a much less forceful inflation fighter. At that point, the CPI had risen by 2.6% in the last year, the unemployment rate was considerably lower than in August 1958, the Fed had been lowering interest rates since November 1966, and several FOMC members had expressed concern about inflation for several months. Martin recognized that "the simple logic of the economic situation implied the desirability of changing monetary policy, as it probably had as much as two months ago." However, he added "But the overriding need at this point was to get some restraint from fiscal policy through a tax increase, and in his judgment that would be less likely if Congress came to believe that adequate restraint was being exercised by monetary policy."[21] Not surprisingly given this statement, easing continued, and the federal funds rate actually fell somewhat in October. It seems difficult to believe that Martin had become more convinced of Congress's willingness to raise taxes between 1958 and 1967, which raises the question of how Martin lost his desire to "be counted in these things."

The penitence view advanced here is that it is not a coincidence that this change of views took place after the 1960 recession. This recession is easily attributable to the interest rate increases of 1958-59. As we saw, these interest rate increases were motivated by fear of inflation.

However, inflation never came, while the recession did. Needless to say, the Fed was roundly criticized, with Paul Samuelson complaining about the "disastrously biased tight-money capers of 1956-60."[22] The intensity and breadth of this criticism was on display during the hearings that Congressman Wright Patman conducted in 1963 on the occasion of the Fed's 50th anniversary. Samuelson, Harry Johnson, Milton Friedman, and many others, agreed that the Fed was too concerned with inflation, and that monetary policy would be improved if the Fed lost some of its independence. Dudley Johnson opined "that we have been paying a very dear price in terms of foregone production and unemployment to fight a nonexistent inflation" while Harry Johnson concurred saying that "in peacetime they have displayed a pronounced tendency to allow deflationary policies on the average." Similarly, Friedman testified that "Contrary to widely held views, the major mistakes of this kind in peacetime have all been in a deflationary direction."[23]

Martin testified as well, and explained that in the "1957-58 period we are talking about, we then had an inflation psychology. And I think it was essential that we stop it."[24] Nonetheless, he also said that "I am not willing to concede that the Federal Reserve, by its policy in 1957, brought on [the 1957-58] downturn." The Patman subcommittee report noted also that Martin did not discuss the 1960 recession.[25] While Martin refused to take responsibility for the downturns that he was widely perceived to have generated, he may nonetheless have been affected by this criticism, and become averse to creating recessions in the interest of fighting inflation. This is consistent with his statement in August 1968, when 12-month CPI inflation had already climbed to 4.5%, that "the objective should be disinflation without recession."[26]

As Romer and Romer (1989) report, the FOMC meeting of December 1968 set the course for tighter policy. While Martin was absent from this meeting, he endorsed tight policy from then on.[27] The result was that M1 growth from December 1968 to December 1969 equaled 3.3%, whereas it had equaled 7.7% in the previous 12 months. In December 1969, Milton Friedman called this policy "unduly restrictive" and predicted it would create a recession (Friedman 1969, p. 75). A short while later, in his February 2, 1970 Newsweek column, Friedman expressed satisfaction that his "close friend and former teacher Arthur Burns" would become chair, and urged the Fed to "shift promptly to a less restrictive policy" (Friedman 1970, p. 68).

2.2 The flourishing of inflation under Burns

Not surprisingly, Burns sought a more expansionary policy in his first meeting of the FOMC. In fact, Burns shared many beliefs with Friedman. Burns had, for example, criticized the actions

that led to the 1960 recession by writing "The abrupt shift in policy proved more restrictive than government officials planned or expected. Largely as a result of their actions, the economic expansion that started in April 1958 came to a premature end (Burns 1978, p. 261). More generally, he agreed with Friedman that Fed policy had been too unstable. Whereas Friedman had said "The chief defect in Federal Reserve policy has been a tendency to go too far in one direction or the other, and then to be slow to recognize its mistake and correct it,"[28] Burns had written "we need to make necessary shifts of economic policy more promptly, so that they may be gradual instead of abrupt" (Burns 1978, p. 284-5).

Burns' desire for gradual changes made him, if anything, even more averse to creating recessions than Martin. In 1973, for example, Burns told the FOMC that "it was attempting to achieve an objective that had never been accomplished before - that of keeping the economy from developing an inflationary boom but without releasing forces of a new recession."[29] At a much later FOMC meeting, in July 1977, Burns said similarly "We've enunciated a policy and repeated it on every occasion, namely, that we will gradually move our longer-range [money supply] targets down so that, several years from now, the monetary basis for general price stability may be restored. We've been proceeding slowly, perhaps too slowly, but that is a debatable point."[30] The second phrase in this quote suggests that Burns was satisfied with his approach. And, he did indeed sound quite optimistic when, a year earlier, he had said at an FOMC meeting that "I think that over the longer run, over the next few years, we should get our monetary growth ranges down to a level where they are consistent with general price stability." [31]

A complication in describing Burns's views is that he also said and did things that seem inconsistent with the simple picture of him I have drawn above. For starters, the Fed not only raised interest rates enough in 1973 to help trigger a recession, it continued raising them in 1974 while the recession was in progress. Burns's gradualism may thus have lapsed temporarily at this time. It is well to recall, though, that inflation was in double digits in 1974, so that the entire FOMC became worried about rising prices. According to Wells (1994, p. 178), the ensuing disinflation brought Burns a great deal of notoriety and prestige.

Other authors have stressed statements by Burns in which he spoke as if he were helpless against inflation. In an example of such a statement, Burns declared at the FOMC meeting of April 7, 1970 that "the inflation that was occurring - and that was now being accentuated, how far he could not say - was of the cost-push variety. That type of inflation, he believed, could not be dealt with successfully from the monetary side and it would be a great mistake to try to do

so."[32] Governor George Mitchell replied that he was "disturbed" by this remark and "thought [monetary policy] could slow inflation by maintaining a climate of slow growth."[33]

At later dates, Burns made many comments that agreed with Mitchell. But, until July 1971, Burns persisted in trumpeting the Fed's impotence and some of his (and his staff's) statements in this vein have been quoted by Romer and Romer (2002) and Nelson (2005). In July 1971, Burns's testimony before Congress contained a similar observation together with the idea that price controls might be necessary to control inflation (Burns 1978, p. 127). As Wells (1994, p. 72) notes, this testimony was promptly used by Democratic Senator Proxmire whom he quotes as saying "The Administration's do-nothing attitude with respect to incomes policy is a costly mistake ... Dr. Burns testimony ... makes the Administration's position on incomes policy inexcusable." Less than a month later, Nixon imposed wage and price controls. Romer and Romer (2002) treat these statements as representing Burns's actual opinions and regard them as a reason the majority of the FOMC allowed inflation to soar. An alternative view is that Burns uttered these statements because they could help bring about wage and price controls which, as Hetzel (1998) shows, Burns favored. This alternative view is corroborated somewhat by the fact that Burns stopped talking about the Fed's impotence in August 1971.

However, he continued to make a related argument, namely that "cost-push" shocks had to be accommodated to some extent. In his July 1974 testimony, for example, he said "From a purely theoretical point of view, it would have been possible for monetary policy to offset the influence that lax fiscal policies and the special factors have exerted on the general level of prices. ... But an effort to use harsh policies of monetary restraint to offset the exceptionally powerful inflationary forces of recent years would have caused serious financial disorder and dislocation."[34] Chari, Christiano and Eichenbaum (1998) rely on this quote to motivate their model of multiple equilibria. In one equilibrium of their model, people expect low inflation and the central bank finds it cheap to keep inflation low while, in the other, high inflation is expected and the central bank accommodates this because disinflation is costly. They suggest that the quote above shows that Burns thought of himself in the latter kind of equilibrium.

Elsewhere in his July 1974 testimony, Burns says the Fed has adopted a "middle course" and states that "we shall need to stay with a moderately restrictive monetary policy long enough to let the fires of inflation burn themselves out.... We are determined to reduce, over time, the rate of monetary and credit expansion to a pace consistent with a stable price level."[35] This testimony can thus be seen not as a sign that Burns felt trapped but as a reiteration of his

gradualist approach to reducing inflation without causing recessions.

It should be noted, however, that this testimony also contains sentences bracing the country for pain. Burns said "Government should not try to compensate fully for all the inconvenience or actual hardship that may ensue from its struggle against inflation. Public policy must not negate with one hand what it is doing with the other,"[36] In Wells (1994, p. 136) these remarks are quoted as evidence that Burns had become a serious inflation fighter at this point. At the very least, these sentences reflect the tightness of policy at the time; the federal funds rate peaked when this testimony was given.

2.3 Alternative Sources of the Great Inflation

One view to which I return below is that inflation was the result of faulty operating procedures employed by the Fed. A second idea, which Burns embraced after his retirement (Burns 1979). is that the Great Inflation was the result of pressure for expansionary policy from outside the Fed. That such pressure was sometimes applied, as when Nixon wished to be reelected in 1972, is not in doubt.[37] Even when it was not applied, Federal Reserve officials may have wished to ingratiate themselves with politicians who desired expansionary policies, as Greider (1987, p. 346) accused Burns of having done during the Carter administration.

These accusations are hard to either prove or disprove, though there is little concrete evidence in their favor.[38] Moreover, a complication with this argument is that Congress was sometimes extremely critical of the Fed for having caused inflation. In particular, when opening the July 1974 hearings that were mentioned above, Congressman Patman declared that they would validate his opinion that "the Federal Reserve has been the engine of our current inflation, and not the number one fighter against inflation."[39]

It should be noted, also, that the central hypothesis of this paper is perfectly compatible with having outsiders agree that, after a "mistake," the Fed should behave as if it were penitent and desist from the approach that led to the mistake. The hypothesis focuses on the behavior of the institution, and predicts that the institution will act as if it were penitent, but does not say much about which individuals will be critical in leading the institution to change. In principle, these individuals could be insiders or outsiders. Indeed, Fed insiders often start out on the outside (sometimes even as critics) so that the distinction between the two is not always relevant. For example, Wells (1994, p. 34) reports that Burns himself had organized a "Task Force on Inflation" when Nixon first became President, and this task force explained that

inflation should be contained gradually. It is thus not surprising that Burns maintained this approach as Chairman.

A third view regarding the Great Inflation is that, while it was due to the influence of ideas, the ideas that mattered were those of Samuelson and Robert Solow when they touted the relevance of the Phillips curve for macroeconomic policy. As Romer and Romer (2002, p. 20) show, analyses based on Phillips curves were common in the Kennedy White House. Before that, Taylor (1992, p. 13) said that "models popular in the 1960s claimed that there was a permanent trade-off between the level of unemployment and the level of inflation" and went on to say that the "increase of inflation in the 1960s and the 1970s could have been due to these faulty inflation-unemployment models." DeLong (1997) expands on this analysis and argues that the Great Depression may have convinced academics that unemployment was often excessive so that it should be reduced by raising inflation. As noted above, Samuelson was a critic of the Fed in 1963, so a critique of its 1950s policies based on the Phillips curve should perhaps have been a viable mechanism for inducing change in the Fed's behavior.

In fact, the Fed proved singularly immune to these ideas. As far as I know, no one has found a Fed official arguing for higher inflation on the ground that this would lower long-term unemployment. On the contrary, Martin testified in January 1963 that he thought the Phillips curve was a "fallacy."[40] In December 1965, he further testified that unemployment was low only because inflationary expectations were contained and that, if "labor had had reason to fear a persistent substantial rise in the cost of living," an "inflationary spiral" would ensue.[41] Burns, too, spent a good part of his July 1974 testimony explaining why the correlations between inflation and unemployment embodied in long-run Phillips curves were "misleading."[42] Even though Martin gave no credence to the long-run Phillips curve, he was by no means an inflation hawk in the late 1960s. At the October 1967 FOMC meeting, and consistent with his desire not to cause recessions, he said "with due respect to those who felt that a shift toward a less easy monetary policy should have been begun some time ago, he thought the Committee had been following the proper course."[43]

In spite of the Fed's skepticism, Samuelson and Solow's ideas might have influenced the Fed's behavior indirectly through their effect on Congress and the Administration. This would be true, particularly, if one accepted Reinhart and Rogoff's (2013) view that this was an era of "fiscal dominance" over the Fed. One problem with this view is that, as illustrated above, there are many signs throughout the period both of Fed independence and of Congress' desire to hold

the Fed accountable for inflation.

A final literature that seeks to explain the Great Inflation relies on imperfect information and learning by the Fed. Notable examples of papers in this literature include Sargent (1999), Bullard and Eusepi (2005), and Primiceri (2006).[44] At least formally, this literature seems to be of a different character than this paper in at least two ways. First, it does not consider changes in the way monetary policy is conducted, such as changing from one intermediate target to another. On the other hand, this literature is well designed to consider changes in the extent to which the Fed is willing to tighten policy to reduce inflation. Second, this literature considers a single decision maker who is responding optimally to the flow of information she receives. Critics thus play no role. One obvious question for these models is whether they can be extended so that different people obtain different pieces of information, and discussions among policymakers represent attempts at combining these disparate information sources.

In Sargent (1999) and Primiceri (2006) the decision maker learns about parameters governing the cost of disinflation, and inflation stops when these estimated parameters fall inside a particular region of parameter space. If individual Fed officials learned in this manner, one might expect them to discuss these parameters as they try to change each others' votes. Interestingly, FOMC discussions rarely involve differences of opinion about conditional forecasts.[45]

As documented by Mayer (1999, p. 104) and Orphanides and Williams (2013), one does observe FOMC discussions of the unemployment rate that is likely to trigger rises in inflation (NAIRU), and this fits with the idea in Orphanides (2002) and Orphanides and Williams (2013) that the Fed was poorly informed about the possibilities for noninflationary expansion. As these papers note, the Fed would rationally have pursued an excessively expansionary policy and driven up inflation when it had an overoptimistic assessment of potential output or the NAIRU. With sufficiently slow learning from the inflation process itself, this overoptimism might well be able to explain the increase in inflation in the 60s and 70s, though it is less clear how it can account for the rapid reduction in inflation in the early 80s.[46]

3 The abandonment of stable interest rates

A key objective of the Federal Reserve from the moment of its inception was the stabilization of interest rates. As Benjamin Strong explained in 1922 "Now you will observe that under the old System we experienced these periods of reserve deficiency and extremely high rates for money and reserve surpluses and extremely low rates for money, but under the present System all that

has changed. ...When business expansion or new loans cause impaired reserves, the member banks borrow from us; when surplus reserves arise for one reason or another, they repay to us. The consequence of this is, of course, that we have no such extraordinarily high or low interest rates as sometimes obtained." Consistent with this, Mankiw et al. (1987) show that the creation of the Fed stabilized seasonal fluctuations in interest rates.

An inspection of Figure 1 shows that interest rates became substantially more volatile when the Fed changed its operating procedures in October 1979. The average of the absolute value of changes in the federal funds rate from October 1979 to November 1980 was 145 basis points. For the twelve monthly changes from September 1978 to October 1979, it was only 42 basis points. An obvious question is what led to this dramatic change in interest rate volatility. It turns out that, once again, this change can be interpreted as an abandonment by the Fed of a practice that critics linked to a "mistake," where the mistake in this case was the use of an operating procedure in which meetings of Fed officials essentially fixed the level of interest rates between meetings. A vast fraction of Fed decisions had indeed taken this form.

Meanwhile, the idea that inflation was intimately linked to growth in the quantity of money gained wider acceptance in the 1960s and 1970s. Together with this came the view that the Fed's mismanagement had caused inflation and that a scheme needed to be found to prevent the Fed from continuing on this path. Congress, in particular, required the Fed to announce its projections for money growth in 1975. Friedman saw this as a very positive development and commented in Newsweek "Even if the Fed chooses precisely the same objectives under the new procedure as it would have chosen under the old, the requirement that it state them publicly in advance and justify failure to achieve them makes it far more likely that they will be achieved" (Friedman 1975a).

Between 1975 and 1979, the Fed gave itself a 2.5% target range for M1 and a 2% target range for M2. It consistently overshot its M2 upper limit from the fourth quarter of 1976 until the third quarter of 1977, at which point it consistently started overshooting its M1 upper limit. This was intensely criticized as fueling inflation, which duly rose in the period. Even before these periods of consistent overshooting, growth in M1 and M2 was volatile. Milton Friedman's explanation for the failure of the Fed to meet its money growth targets was that "bureaucratic inertia" had led the Fed to continue to use an "anachronistic procedure" in which it continued to meet its interest rate targets. To Friedman this led to "self-reinforcing" errors in money growth rates. A mistake that set the interest rate too low would lead to high money growth rates and

high inflation, which would then be self-perpetuating.

Mayer (1999, p. 45) notes that a logically more powerful criticism of the Fed at the time is that, as emphasized in Clarida, et al. (2000), the federal funds rate did not respond sufficiently to inflation and output. Friedman's criticism of the use of interest rates as an intermediate target may have been based on an intuition that a central bank focused on such a target would necessarily end up with excessively sluggish interest rate responses. In any event, he focused his fire on the intermediate target itself, and argued that the FOMC should target the growth of reserves (or the monetary base) and let all interest rates be determined by the market (Friedman 1975b).

Insofar as the Fed accepted that its operating procedure led to excessive money growth, the penitence I have emphasized would lead the Fed to become averse to setting interest rates at levels that would lead money growth to exceed its target. This aversion is quite consistent with the Fed's October 6, 1979 change in operating procedures. At this point, it stopped setting a particular desired level of interest rates and allowed rates to take values in a wide range. It also started instructing its trading operation to set a target for nonborrowed reserves with the aim of keeping the growth of money aggregates within ranges chosen at FOMC meetings. These short-term ranges would, in principle, be consistent with the announced long-term targets for the aggregates. Since interest rates were determined by the market, the Fed could no longer be blamed for setting them at a level that led to excessive money growth.

Some proof that these procedures mattered is provided by the minutes of the meeting of October 5, 1982 when, three years after the procedures were instituted, Volcker declared that M1 targets had to be discarded, at least temporarily. He said, in particular, "What we did last time was unacceptable to me. I just want to make that plain. I think we made a mistake last time . . . [I]t's unfortunate that we ended up at this meeting with the federal funds rate and private rates about 1 percentage point higher than they were at the time of the last meeting because we had a high M1 figure in September. That was the only reason it happened."[47]

The procedures that the Fed adopted were not identical to those recommended by its critics. Indeed, the focus on nonborrowed as opposed to total reserves or the monetary base was deemed by Allan Meltzer to lead to excessively volatile money growth (Axilrod at al. 1982). Penitence does not require that the proposals of critics be embraced as a whole, however, and Fed officials believed that focusing on nonborrowed rather than total reserves would stabilize interest rates somewhat by allowing bank borrowing to respond to interest rates. By letting the FOMC choose

the level of borrowing that it expected banks to request, the procedure also allowed the FOMC some leeway in setting short-term monetary policy.

Volcker seemed an unlikely champion for these new procedures because he had stated, for example in Volcker (1978), that the demand for money was sufficiently unstable in both the short run and the long run that fixing money growth rates would lead to undesirable movements in interest rates.[48] In Volcker (1978), he also seemed somewhat uncertain of the Fed's ability to hit its money growth targets by setting the level of reserves. It thus seems quite likely that he was not sufficiently persuaded by the critics to move to these procedures on his own.

As suggested by Lindsey et al. (2005), one reason Volcker may have opted for the new procedures is that, to various degrees, Governors Charles Partee, Emmett Rice and Nancy Teeters, as well as Boston Federal Reserve President Frank Morris and Philadelphia Federal Reserve President David Eastburn were sufficiently concerned about the possibility of a recession that they were reluctant to raise interest rates at the preceding meeting of September 18, 1979.[49] Volcker himself was sympathetic to the idea that a recession was needed to lower inflation but this point of view need not have been universally held at the FOMC.[50]

The new procedures, which led to substantially higher rates as soon as they were instituted, thus served to make Volcker's anti-inflation stance more acceptable to some FOMC members. An obvious question at this point is whether aversion to overshooting the money targets was an important reason, as I suggest, or whether other reasons were more important. That the former played *some* role is demonstrated by Partee's declaration at the September 18, 1979 meeting that "I've been concerned over the last 4 to 6 weeks, as Nancy [Teeters] has, about the possibility of overshooting. I think it's important, very important, that we try to keep the aggregates within the ranges that we specify."

As alternative reasons, Lindsey et al. (2005) quotes the arguments that Teeters, Rice and Partee gave when they were interviewed in Greider (1987). These alternative rationales are not inconsistent with the one I stress, though they have different emphases. One problem is that some of these arguments should quickly have lost force. Rice, for example, said that he was attracted by the fact that "you were not directly responsible for what happened to interest rates."[51] In fact, the Fed was criticized as if it were responsible not only for the high interest rates that prevailed in the 1979–82 period but also for its occasionally spectacular failures to meets its money targets. Note that, if people had understood the new procedures and forgiven the Fed for the resulting high interest rates, the reason could have been that they were sympathetic to

the Fed's aversion to setting interest rates that led to departures from their money targets.

In his interview in Greider (1987, p. 112), Partee argued that the new procedures dealt with the fact that the Fed had a tendency to stick "stubbornly with a strong position too long and causing more damage to the economy than it had intended" and that in recessions, particularly in the 1974-75 recession "there [was] also a hesitancy to reduce interest rates once they have been raised." As it happens, this may have proven too much of a good thing. Interest rates declined so dramatically when the 1980 recession started that the recession was over almost immediately, and the reduction in inflation to acceptable levels had to wait until the arrival of the 1981–82 recession. Partee did not mention any concern he might have had with "sticking stubbornly" to the 1979 procedures themselves if velocity shifted. Velocity shifts did, in fact, cause difficulties soon after the procedures were instituted.

At the October 1979 meeting, Volcker argued that the shift to the new procedures would have a strong and favorable psychological effect.[52] Several members concurred and President of the San Francisco Federal Reserve John Balles argued that it would enhance the Fed's credibility with markets.[53] As Volcker put it in Greider (1987, p. 111), "What I hoped was that there would be a strong reaction in the markets. . . . The sign of psychological success was whether long-term rates would stabilize and start coming down." This did not happen right away; long term rates rose alongside short term rates immediately after the meeting.

Nonetheless, there was little sentiment for abandoning the new procedures at the subsequent meeting of January 8, 1980, when these procedures had to be reconsidered. The fact that money targets had been met over the period since October 6 was deemed to have been a success and Partee said "Shifting back from a very successful experiment certainly would be hard to explain." to which Morris added "The reaction would be devastating," and Balles said "Unthinkable."[54] Since markets had not reacted particularly favorably to the new procedures, what these FOMC members may have had in mind was that returning to the old procedures would be seen as a sign that they did not care about money growth targets at all.

As time went by, monthly money growth rates proved quite volatile under the new procedures. The standard deviation of monthly M1 growth rates was 9.3% from November 1979 to November 1981 inclusive whereas it had been only 4.6% from September 1977 to September 1979 inclusive.[55] Not surprisingly, Volcker complained that "we got criticized by the bankers when they were here the other day for having too much volatility in the money supply growth and too much volatility in interest rates."[56] The growth in M1 was also exceedingly high in the 11 months from May

1980 to April 1981, when it equaled 11%.[57]

These developments did not weaken the Fed's resolve to stick to its new procedures, even though Morris pointed out that innovation in banking services implied that "we simply don't have any basis for measuring what transactions balances are anymore."[58] One factor that may have led the procedures to survive at this time may have been Volcker's belief that any stabilization of interest rates would destabilize money growth still further or, as he put it, "I don't know what mechanism gets rid of the volatility in the one without increasing [the volatility in] the other."[59]

If penitence was at play, the main reason to stick to the new procedures was the aversion to the uncontrolled money growth that would be expected to follow if the Fed returned to its pre-79 procedures. This aversion appeared to be on display when, on July 1, 1982 Partee suggested that the federal funds rate should not be allowed to go above 15%. Because the federal funds rate that day was equal to 14.73%, this cap was perceived as being potentially binding. At the same time, it is worth recalling the context. The unemployment rate was 9.8% and the CPI growth rate over the last 12 months had been 6.5%, so a 15% federal funds rate would have been likely to be associated with a high real interest rate.

Nonetheless, Partee was asked by Wallich "But if it got there, we would provide unlimited reserves?" and by President of the Federal Reserve Bank of St. Louis Lawrence Roos "how would that differ from the pre-1979 practices of our Committee?" When Partee answered it would be "similar on the top side," Federal Reserve Bank of Atlanta President William Ford said "Are you implying that there wasn't a change in October '79? If I understood you, you said it would be similar to pre-October '79 - that there is precedent for it."[60]

The press release for this meeting did suggest the Fed would try to keep the federal funds rate below 15% and, after this, the suggested ranges for the federal funds rate narrowed. A further move towards weakening the October 1979 procedures took place at the October 1982 meeting where it was officially declared that M1 would be given less weight because of "special circumstances."[61] Roos argued that this would be "misconstrued by the market" in a manner that "could conceivably destroy much of the progress that we've made."[62] This statement suggests that Roos may have expected a widespread fear within the FOMC fthat abandoning the procedures would lead expectations of inflation to rise dramatically. Volcker saw this risk as smaller than the risk to the economy itself if rates were not lowered.[63] In fact, long and short rates fell together after this meeting.

Interestingly, Meltzer (2009, p. 1040, 1064, 1075, and 1093) suggests that the 1979 procedures

themselves had only a modest effect on inflation expectations, and that these fell mainly when economic activity slowed. After the procedures had been operating for a year, Volcker himself seemed to doubt that they mattered for inflation expectations. In December 1980, he said "If we, in effect, go to the brink or let some of these things happen that we have not allowed to happen during the entire postwar period, people are not expecting that and they are not going to be very happy if and when it happens. And I'm not at all sure that we can change inflationary expectations without it happening." [64]

4 The "Great Moderation"

By late 1982, with inflation down, the economy in recession and M1 growth rates above target, criticism of the Fed's approach became loud again. Paul Samuelson, for example, said "It inflames apprehensions [in the money markets] if it departs from the letter of monetarism, yet it can't be effective if it doesn't. The Fed cannot pursue rational policy" (Thomas 1982). However, once interest rates declined, the Volcker disinflation was widely seen as a success, and thus not at all as a mistake. The reason, obviously, was that the Fed was able to trumpet its effectiveness against inflation. For example, Federal Reserve Governor Partee declared at the time that the Fed's approach "is proving hard on the economy but even better in curing inflation than we expected" (Thomas 1982). Because this blunted the Fed's critics, the logic of this paper did not require the Fed to immediately become averse to its existing approach. Thus, even though monetary targeting had caused difficulties, the Fed changed its approach bit-by-bit during the 1983-2007 period that is often referred to as the Great Moderation.

Such gradual changes are observed both in the way that policy was discussed inside the FOMC and in the way the Fed communicated with the public. I illustrate this gradualism in this section, so as to clarify how it differs from the changes discussed in earlier sections and, particularly, from the dramatic change of October 1979.

The discussion within the FOMC slowly shifted towards a focus on the federal funds rate. However, these discussions continued to emphasize the assumed level of discount window borrowings for a long time after October 1982, and these assumed borrowings were central in the policy options laid out in the Bluebook that members received before the meeting. In the FOMC language of the era, a higher level of assumed borrowings implied that the System would supply fewer nonborrowed reserves (which were the intermediate target under the October 1979 procedures). As a result, overnight interest rates would be higher (as banks scrambled for reserves)

and the money supply would be lower. Since the increase in interest rates created an incentive for banks to borrow, actual borrowings could be expected to be higher as well.

One has to wait until October 1989 to find a Bluebook that lays out policy alternatives in terms of levels of the federal funds rate and *expected* levels of borrowings rather than doing the reverse (i.e. alternative assumptions about borrowings combined with implications for expected federal funds rates). And, even at the October 1989 meeting, some members preferred to discuss policy in terms of borrowings. As time went on, this ceased. So, one can safely say that policy shifted slightly in October 1989.[65]

Unlike what happened in October 1979, the public was not told that a change had taken place. Rather, just as had been true since 1983, the press releases continued to suggest that the federal funds rate would remain withing a four percent range until the next FOMC meeting. Meanwhile, the Fed continued to publish its expected ranges for the growth in aggregates, though it softened its commitment to these ranges.

Even in February 1993, many members of the FOMC expressed apprehension about releasing their federal funds target.[66] The trouble was that, by then, movements in velocity were so large and ubiquitous that the Fed's plans regarding money growth were not very informative.[67] After this point, its statements started explaining the federal funds rate changes that the FOMC had instituted in the past. Still, as late as March 1997, when FOMC members explicitly voted to raise the federal funds rate from 5.25 to 5.5%, the official Minutes only commented on the past rate of 5.25%. This lack of transparency would finally end in August of that year, when the intended federal funds rates started to be published in the public minutes.[68] After this, as detailed in Woodford (2005), the Fed continued expanding the amount of information it released.

One of the most striking aspects of U.S. monetary policy in this period is that the very simple "rule" proposed by Taylor (1993) in which the suggested federal funds rate is a function of CPI inflation over the last year and of the distance between current real GDP and trend GDP leads to a federal funds rate that is remarkably close to the actual one for the period 1987 to 1992. Figure 2 in Judd and Treahan (1995) makes it clear that this fit is better in the Greenspan than in the Volcker years. Still, the relatively fast rise in the federal funds rate in 1983 and early 1984, as well as its subsequent decline are implied by the Taylor rule as well. Thus, the evolution of interest rates towards the Taylor rule may have been gradual also.[69]

As Kahn (2012) demonstrates, discussion of the implications of variants of the Taylor rule for the federal funds rate quickly became part of the fabric of FOMC meetings. Nonetheless,

Poole (2007) shows that the actual federal funds rate fell below that implied by the Taylor rule starting around 2000, and particularly after 2003. Taylor (2012) regards these low post-2003 interest rates as an important source of the housing bubble that created the financial crisis of 2007-2008. On the other hand, Bernanke (2010) argues that the housing bubble started before and that the federal funds rate at the time was close to that implied by the Taylor formula if internal forecasts rather than actual values are used for inflation. As it happens, various FOMC members (including Bernanke) suggested at the time that Taylor rules based on internal forecasts were superior to those based on past values.[70]

5 Conclusion

Taylor (2012) was not alone in blaming the Fed's policies during the Great Moderation for the financial crisis that led to the Great Recession. It is too early to know, however, whether a consensus will form that views a particular action or approach of the Fed as notably blameworthy. This could take some time since a consensus developed about the Great Depression only after several decades had past. The findings of this paper suggest that, were such a consensus to develop, the Fed might find itself developing a new aversion to an approach that it regarded as attractive in the past. If, for example, a consensus developed that the Fed's mistake was to abandon a backward looking Taylor rule for one that was based on Fed projections, the Fed could become temporarily averse to using its forecasts in setting policy.

At the December 2003 meeting, Governor Donald Kohn described monetary policy as "quite easy, quite stimulative" though he also opined that "we should continue to take our risks on the easy side of policy." He seems to have been influenced somewhat by the fact that, worried about deflation, the Fed had introduced a sentence in its August 2003 statement stating a belief "that policy accommodation can be maintained for a considerable period." [71] This raises the possibility that the Fed's use of "forward guidance" concerning its future policies could come to be seen as a mistake. In penitence, the Fed might then abandon communications with the potential of affecting expectations.

The papers in Reichlin and Baldwin (2013) mostly suggest that, in response to the financial crisis, the Fed's policy framework needs tweaks rather than wholesale abandonment of methods. If my reading of the evidence is correct, such tweaking will be possible only if no one successfully pins the crisis on the Fed itself. Then, the Fed will be free to change its policies gradually as it did after 1982.

A financial crisis is a complex phenomenon and determining its true causes is hard. One question that is left open is whether it is easier to determine how successful any particular criticism of the Fed is likely to be. One consideration that may simplify this problem is that, at least in the past, the success that has mattered has been the success among Federal Reserve officials themselves.

As emphasized by DeLong (1997) and Romer and Romer (2002), there were economists in the 1960s who believed that the Fed's mistake in the 1950s was to have set too low an inflation target. According to this view, unemployment could have been permanently lower if the Fed had sought to stabilize inflation at a higher level, and that would have been a good thing. In my reading of the record, this criticism of the Fed was unsuccessful. Fed officials remained opposed to inflation even when they found themselves allowing it to rise.

Rather, it was a different criticism that found fertile soil at the Fed, and which was just as effective at leading Fed officials to tolerate inflation. This was that recessions were unnecessary to control inflation, and that good management involved keeping aggregate demand steadily short of the level that would induce inflation. This raises the question of why this second interpretation was more convincing than the first. One possibility is that the Fed was too steeped in economic data to have ever believed in a stable Phillips curve. A second one is that opposition to inflation is too ingrained in the Fed's history and culture for a theory that favors inflation to be acceptable to the institution.

What is certain is that changing what the Fed does by successfully convincing its officials that they have made a mistake is not easy. Many of those who have tried this have failed. Among the successful ones, Milton Friedman has an outsize role. At various times, he succeeded in getting the Fed to stop paying attention to whether "credit" was being devoted to productive uses, in ensuring that the money supply would not fall in a financial crisis, in abandoning the idea that "harsh" recessions were necessary to deal with inflation, and to give up on smooth interest rate changes. Interestingly, unalloyed versions of his proposals to set a constant growth rate for a monetary aggregate were never adopted, though some critics believe that the Volcker disinflation demonstrated that this program was not implementable. In any event, and as I have stressed, it proved easier to get the Fed to stop doing something than to get it to adopt Friedman's own ideas.

Notes

[1] Meltzer (2003, p. 728), for example, says "Failure to act during the Great Depression was the Federal Reserve's largest error but far from the only one."

[2] For some individuals the word penitence can also connote self-castigation. This connotation is not intended here.

[3] Federal Reserve Board (1924, p. 33).

[4] Ibid. p. 35.

[5] Ibid. p. 33.

[6] See Friedman and Schwartz (1963, p. 289) and Hamilton (1987).

[7] See Hamilton (1987) and Romer and Romer (1989) for a discussion.

[8] According to Meltzer (2003, p. 319), Miller argued for these in September 1930. Chairman Meyer was also a strong advocate throughout (Meltzer, 2003, p. 335, 341, 363, and 481).

[9] Meltzer (2003, p. 327-328, p. 341, and, especially, p 364) and Romer and Romer (2013).

[10] 1937 Annual Report of the Federal Reserve, p. 2.

[11] Hsieh and Romer (2006) emphasize this point.

[12]U.S. Senate, 1931, p. 134.

[13] See Eichengreen (1992) for a discussion of the role of the gold standard in the Great Depression, not only in the U.S., but globally.

[14]U.S. House of Representatives, 1964, p. 73.

[15] I refer to the detailed transcripts of the FOMC discussion as the FOMC Minutes in what follows.

[16]Stein (2013)'s analysis seems even closer to that of the Fed's Tenth Report in that it emphasizes the danger of having institutions that issue demandable liabilities acquire excessively risky assets.

[17] U.S. House of Representatives (1964, p. 74).

[18] See Hetzel and Leach (2001) for a description of how the Fed found a way to reassert its independent basis of power.

[19] FOMC Minutes, July 30, 1957, p. 37-38.

[20] FOMC transcript, August 19, 1958, p. 54.

[21] FOMC transcript, September 12, 1967, p. 78.

[22] Cited in U.S. House of Representatives (1964, p. 50)

[23] U.S. House of Representatives (1964, p. 47 and 24).

[24] U.S. House of Representatives (1964, p. 47).

[25] U.S. House of Representatives (1964, p. 36–37).

[26] FOMC Minutes, August 13, 1968, p. 81. For comparison, consider this statement by Volcker, which draws a contrast between his own and previous approaches, "We are in completely new territory for the Federal Reserve or for economic policy. An implicit assumption that we are just avoiding excess demand is not the present policy. We . . . have taken the position . . . that we are going to do something about inflation maybe not regardless of the state of economic activity but certainly more than we did before." See FOMC Minutes December 18–19, 1980, p. 61.

[27] In the January 14, 1969 FOMC meeting, in particular, he said that "he thought monetary policy was now on the right track" and that, in his judgment, "it would be better to risk overstaying, rather than understaying, a policy of restraint." See FOMC Minutes, January 14, 1969, p. 73.

[28] U.S. House of Representatives (1964, p. 27).

[29] FOMC transcript, March 20. 1973, p. 108, cited in Meltzer (2009, p. 818).

[30] FOMC transcript, July, 19, 1977, p. 32.

[31]FOMC Minutes, July 19-20, 1976, p. 44, quoted in Meltzer (2009, p. 899).

[32] FOMC Minutes, April 7, 1970, p. 49.

[33] FOMC Minutes, April 7, 1970, p. 61. See Mayer (1999, p. 99-100) for additional views of FOMC members.

[34] See U.S. house of Representatives (1974, p. 257).

[35] U.S. House of Representatives (1974, p. 253 and 258).

[36] U.S. House of Representatives (1974, p. 258).

[37] See Meltzer (2009, p. 638) for example.

[38] See Mayer (1999, p. 64–82) for a discussion. In a very interesting article, Weise (2012) shows that FOMC discussions were more likely to mention politicians who desired looser conditions in meetings in which the committee chose to loosen monetary policy. Note, however, that this correlation may reflect less the effect of outside pressure than the desire to present all the arguments that come to mind in favor of one's desired course of action.

[39] U.S. House of Representatives (1974, p. 3). One reason Patman may have been keen to devolve responsibility for inflation on the Fed is that Burns often suggested that inflation had fiscal origins.

[40] Federal Reserve Bulletin, February 1963, p. 124.

[41] Federal Reserve Bulletin, February 1963, p. 124.
[42] U.S. House of Representatives (1974, p. 252).
[43] FOMC Minutes, October 24, 1967, p. 65.
[44] See Carboni and Ellison (2009) for a more recent example and additional references.
[45] While it is not obvious how the information exchange at FOMC meetings relates to these models, FOMC members almost certainly do differ in their estimates of the cost of disinflation. U.S. Senate (1979 p. 7) shows that, at his confirmation hearings, Volcker was skeptical of the disinflation costs computed in Okun (1978).
[46] See Bullard and Eusepi (2005), who construct a formal model along these lines and show its difficulties in explaining this disinflation.
[47] FOMC Minutes, October 5, 1982, p. 32.
[48] When he sat at the FOMC meeting in his capacity of president of the New York Federal Reserve on March 16, 1976, he advocated keeping the federal funds rate at 4.75% and argued for setting wide bands for money growth so as not to interfere with his interest rate target. See page 64 of the corresponding minutes.
[49] See FOMC Minutes, September 18, 1979, p. 19, 24, 26, and 28.
[50] At the meeting of March 18, 1980, Governor Frederick Schultz said "I doubt that we can get out of this situation without a recession, and I think the unkindest thing we can do is to drag this on." Volcker followed with "I share the thoughts that some people have expressed, most recently Governor Schultz, that we better get this over with in terms of minimizing the total pain over a period of time." See corresponding Minutes, p. 35–36. For further evidence that Volcker thought a recession was ultimately needed to lower inflation, see footnote 26.
[51] Greider (1987, p. 111.)
[52] FOMC Minutes, October 6, 1979, p. 8.
[53] FOMC Minutes, October 6, 1979, p. 16.
[54] FOMC Minutes, January 8, 1980, p. 14.
[55] These figures and those below are based on current measures of seasonally adjusted M1.
[56] FOMC Minutes, September 16, 1980, p. 9.
[57] In December 1980, before all these data became available, two Federal Reserve economists presented a paper at the AEA saying that money growth over longer periods of time was close to its targets under the new procedures. See Axilrod and Lindsey (1981).
[58] FOMC Minutes, July 7, 1981, p. 24.
[59] FOMC Minutes, September 16, 1980, p. 9.
[60] FOMC Minutes, July 1, 1982, p. 55.
[61] FOMC Record of Policy Actions, October 5, 1982, p. 12.
[62] FOMC Minutes, October 5, 1982, p. 48.
[63] FOMC Minutes, October 5, 1982, p. 50.
[64] FOMC Minutes, December 19, 1980, p. 62.
[65] My focus here is on the FOMC. Between meetings, the Chairman may well have focused on the federal funds rate much earlier. An intimation of this is provided by Morris at the May 17, 1988 FOMC meeting when he suggested they should meet more often "if we are really on an interest rate control system." See p. 3 of the Minutes.
[66] FOMC Minutes, February 2, 1993, p. 62–67.
[67] It managed to stop supplying any targets whatsoever when the legislation requiring these expired in 2000.
[68] The corresponding statement clarified that the operating procedures of the Fed would not change.
[69] Clarida et al. (2000) estimate a relationship between the federal funds rate, inflation and a measure of the output gap. For their specifications, they find only modest differences between the estimates for the Volcker and Greenspan periods.
[70] See Laurence Meyer's remarks in the FOMC Minutes, March 25, 1997, p. 54 and Ben Bernanke's remarks in the FOMC Minutes, January 28, 2004, p. 76–77.
[71] FOMC minutes, December 9, 2003, p. 67.

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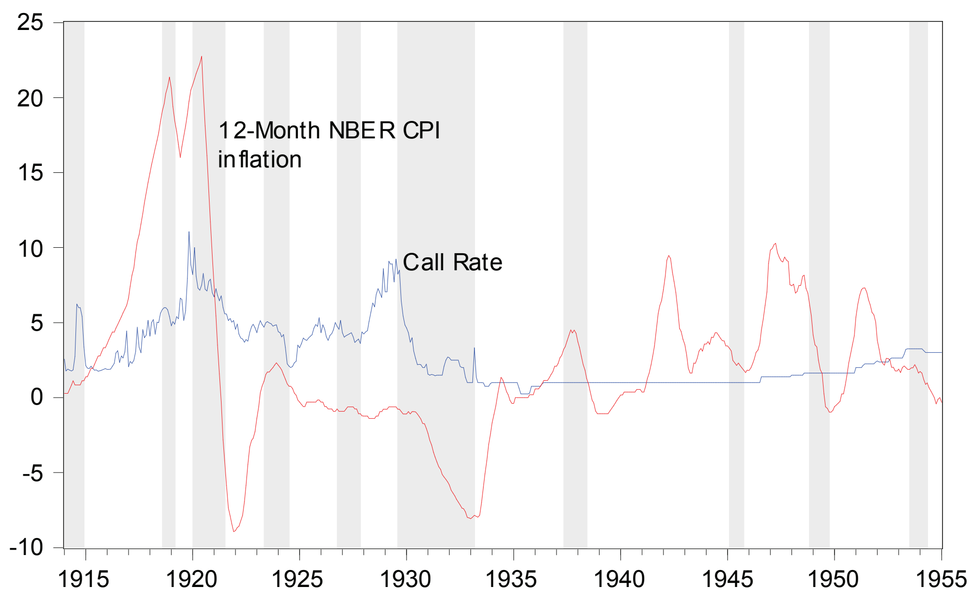
Figure 1
Interest Rate Policy, Inflation, and NBER Recessions (shaded)



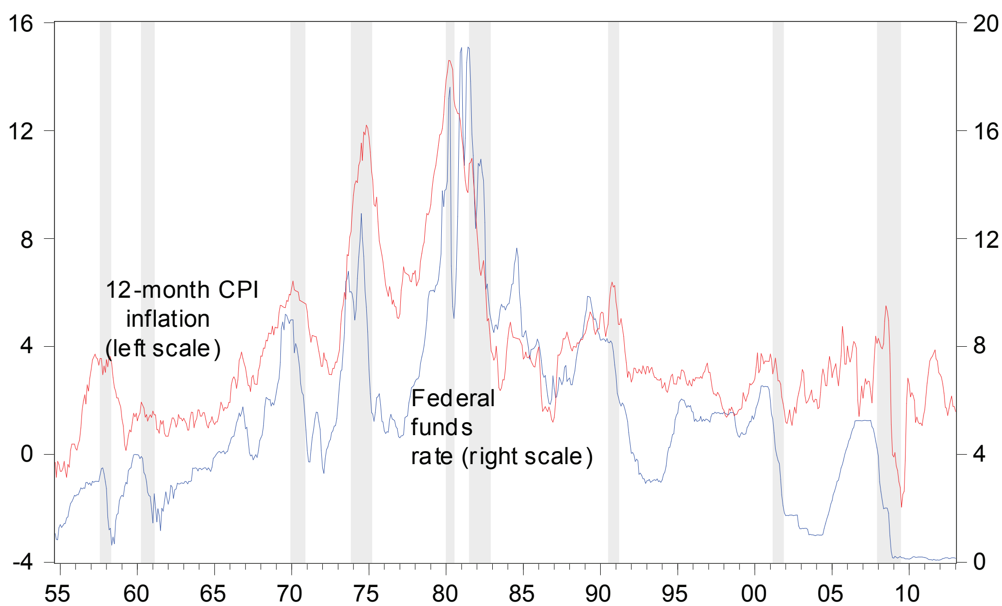


Table 1
The Sources of Penitence

Criticized outcome	**"Mistake" interpretation**	**Penitence = aversion to:**
1929-1931 output decline.	Allowing speculative lending in 1927.	Trusting banks with extra funds to lend.
Great Depression.	Being focused on "productive lending" rather than monetary aggregates.	Gearing monetary policy to the riskiness of new loans by money-providing institutions.
1957 & 1960 recessions.	Swinging to excessive tightness at the smallest whiff of inflation.	Creating sharp recessions to fight inflation.
Great Inflation.	Exceeding money targets as a direct consequence of using interest rate targets.	Smoothing interest rates.
Great Recession.	?	?