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## **U.S. Monetary Policy and the Financial Crisis**

James R. Lothian

CenFIS Working Paper 09-01  
December 2009

**Working Paper Series**

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**Abstract:** This paper reviews U.S. Federal Reserve policy prior to and during the course of the recession that began in December 2007. It compares those policies to monetary policy during the Great Depression of the 1930s, with which this recession has been likened. The paper then discusses what policymakers will need to do in future to avoid a surge in inflation and the difficulties they are apt to face in implementing the necessary shift in policy.

JEL classification: E32, E51, E52, N12

Key words: macroeconomics, money, monetary policy, business cycles, Great Depression

### Working Paper Series

The author thanks John Devereux, Cornelia H. McCarthy, and Gerald P. Dwyer for helpful comments. The views expressed here are the author's and not necessarily those of the Federal Reserve Bank of Atlanta or the Federal Reserve System. Any remaining errors are the author's responsibility.

Please address questions regarding content to James R. Lothian, Distinguished Professor of Finance, Fordham University, 113 West 60th Street, New York, NY 10023, 212-636-6147, 212-765-5573 (fax), jrmllothian@aol.com, lothian@fordham.edu.

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# U.S. Monetary Policy and the Financial Crisis

## 1. Introduction

Richard Posner has written a new book entitled “A Failure of Capitalism: The Crisis of '08 and the Descent into Depression” (2009). In viewing the 1930’s debacle and the current recession as similar, Posner is certainly not the odd man out.<sup>2</sup> As other commentators have pointed out, both episodes were characterized by crises in the financial system. Both were preceded by substantial run-ups in asset prices. Both have been worldwide in scope.

There are, however, fundamental differences between the two. One difference should be obvious but often is ignored – the very much milder declines in real income and increases in unemployment in the current episode than during the 1930s.<sup>3</sup> A second, which is less obvious but, I believe, is directly related to the first, is monetary policy. Here I focus in particular on money-supply behavior. Doing so is somewhat counter to the current emphasis on real interest rates and Taylor-type rules as a gauges of monetary policy, but imposing that framework on analysis of policy in the Depression era would not only be anachronistic but would lead to nonsensical inferences.<sup>4</sup>

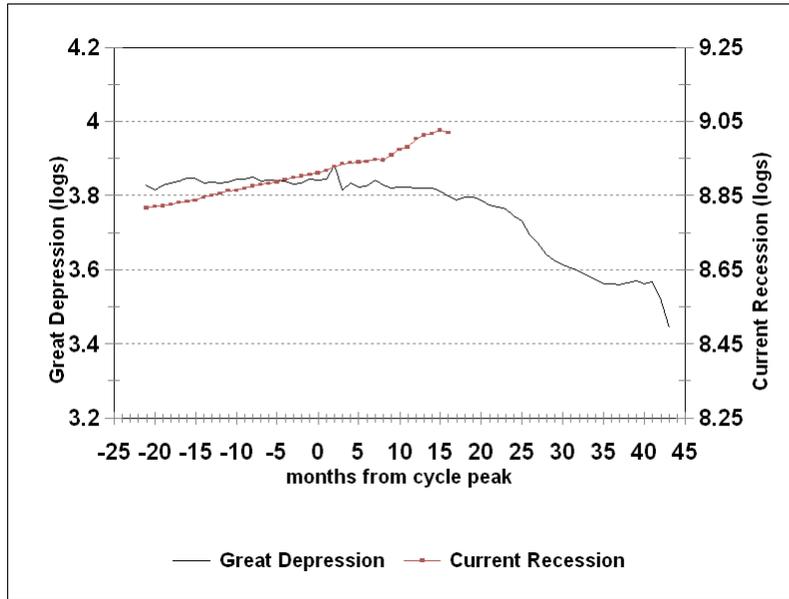
Unlike the Great Depression in which the money supply in the United States plummeted in the wake of widespread bank failures, money supply in this episode has continued to increase and in the course of this year has accelerated. In the next section of this paper I document this difference. I then go on to discuss the role of policy in the years preceding the current crisis. Here the data are more ambiguous, but point to an overly excessively expansive policy on the part of the Federal Reserve as a factor fueling the increase in housing prices prior to the onset of the current U.S. recession. I conclude with a discussion of the dangers posed by the Federal Reserve's policy stance during the course of the period since late 2008, the “exit strategy” that the Fed will need to pursue and the possible impediments to its implementation.

## 2. Money in the Great Depression and the Current Recession

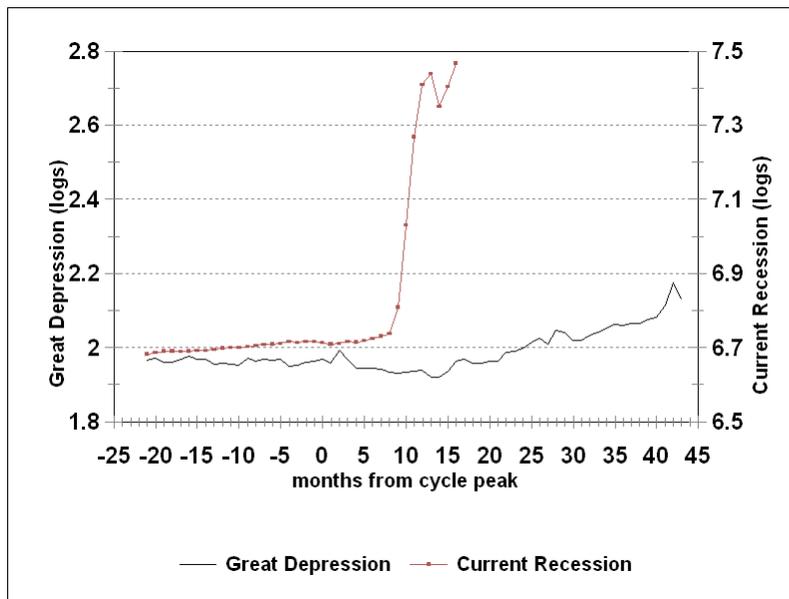
In Figure 1, I have plotted the logarithms of money supply for periods preceding and following the respective NBER-defined business cycle peaks of August 1929 and December 2007. The point of reference in choosing the periods over which to plot the data is the Great Depression, the 21 months from the previous cycle trough in November 1927 until August 1929 and the 43

months from then until the trough in March 1933. The M2 series for the Depression is that of Milton Friedman and Anna J. Schwartz (1970) and for the current recession that of the Federal Reserve. In Figure 2, I provide a similar chart of the data for measures of the monetary base. The sources of these data are Friedman and Schwartz (1963a) and the Federal Reserve Board. In Figure 3, I plot the ratio of M2 to the monetary base, the money multiplier, for the two periods.

**Figure 1. M2 in Two Cycles**



**Figure 2. The Monetary Base in Two Cycles**



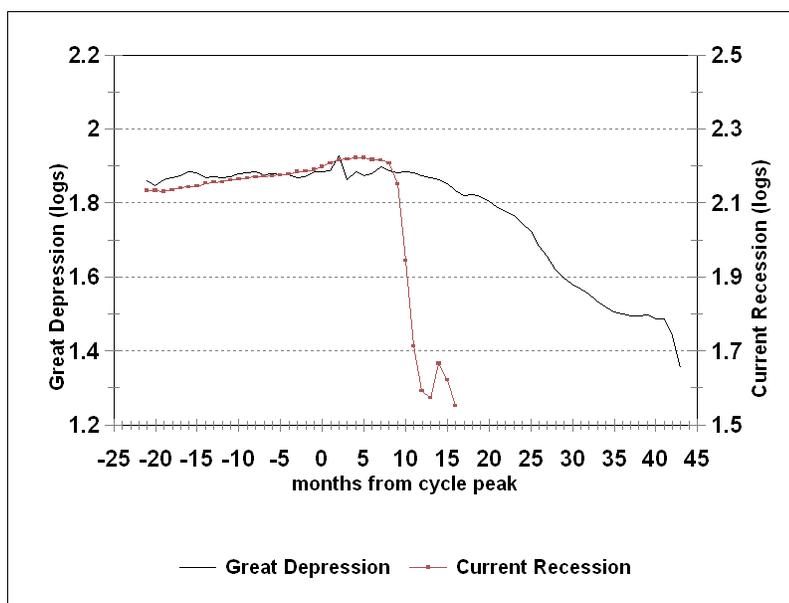
The contrast between the behavior of both M2 and the monetary base in these two episodes is readily apparent from a glance at the charts. In the Depression, M2 fell progressively, driven

downward by three waves of banking panics and the decreases in the public's preferences for deposits relative to currency and of banks' preferences for deposits relative to reserves that the panics engendered. Friedman and Schwartz argued, convincingly I believe, that this succession of monetary shocks and the Federal Reserve's failure to offset them is what made the 1930's depression "great."

Ben Bernanke, the current Fed chairman, has expressed full agreement with Friedman and Schwartz's conclusions. In a paper (2002) that he delivered at a conference honoring Milton Friedman on his ninetieth birthday, Bernanke stated: "Let me end my talk by abusing slightly my status as an official representative of the Federal Reserve. I would like to say to Milton and Anna: 'Regarding the Great Depression. You're right, we did it. We're very sorry. But thanks to you, we won't do it again.'"

Bernanke in this regard has been a man of his word. Whether he should have demonstrated that by taking the particular actions that he has in this episode is another question. Schwartz in a recent interview argues that he should not have, that Bernanke has, in fact, greatly misjudged the nature of the crisis. "The Fed," Schwartz said "has gone about as if the problem is a shortage of liquidity. That is not

**Figure 3. The Money Multiplier in Two Cycles**



the basic problem. The basic problem for the markets is that [uncertainty] that the balance sheets of financial firms are credible." (Carney, 2008).<sup>5</sup>

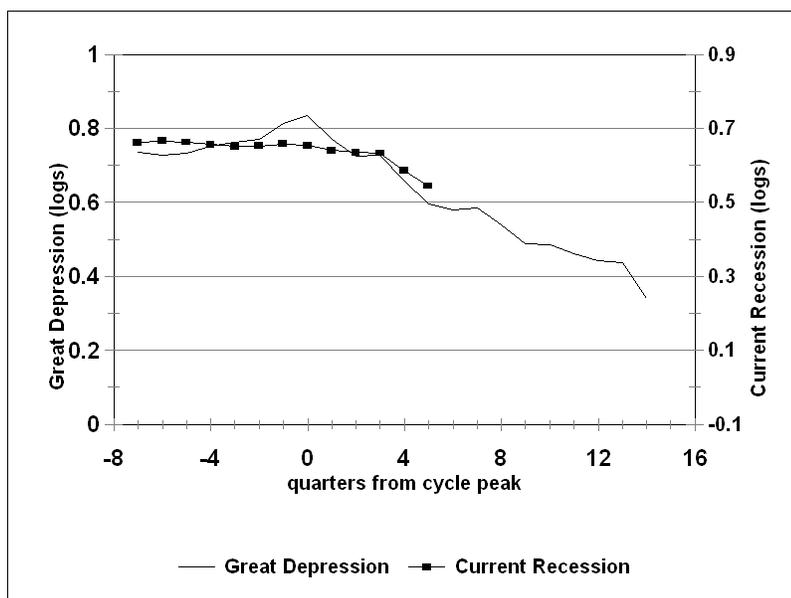
In any event, monetary policy, far from being contractionary, has been expansive since December 2007 when the U.S. economy peaked and entered recession. The money supply has increased by 11 per cent, and with the base having more than doubled since fall 2008, it is highly doubtful that M2's course will reverse. In the Great Depression, over the comparable period from August 1929 to February 1931, M2 already had decreased by 5 per cent, and that was before the onset of the second wave of banking failures in October 1931. By the time the trough finally was reached in March 1933, M2 had fallen by 33 per cent.

The point is that there simply has been no monetary shock during the course of this recession. That is I believe, is very important. Historically, such shocks have been *the* major

factor producing *severe* contractions in the United States, as both Friedman and Schwartz (1963a, 1963b) and Phillip Cagan (1965) have documented. Similar evidence of the key role played by money supply in major cyclical fluctuations exists for Britain and of a monetary transmission mechanism linking cyclical fluctuations in that country with those in the United States (Huffman and Lothian, 1983). In this regard, the Great Depression stands out in degree, but not in kind. Evidence for milder cyclical declines in both countries is more mixed, with both real and monetary factors appearing to play a role.

Now let me turn attention to two related developments that require comment. The first is a comparison of movements in the money multiplier in the two episodes. As Figure 3 shows, by April 2009, the latest month for which data are available, the money multiplier already has fallen by as much as it did during the entire Great Depression. The second is brought out in Figure 4 in which I have plotted quarterly data for the income velocity of M2 in the two episodes. As the chart shows, the paths followed by velocity up until the same point in the respective cyclical appear very nearly identical.<sup>6</sup>

**Figure 4. Velocity in Two Cycles**



This steep decline in the money multiplier in recent months and its similarity to the decline in the money multiplier during the course of the Great Depression, at first glance, are unsettling. There is, however, less here than meets the eye. The two declines, though similar in magnitude were manifestations of two very different types of underlying behavior. In the Depression, the decline came after the fact, as response to the banking failures. Individuals and businesses altered the mix between their holdings of deposits and currency because of their distrust of banks. Banks faced with deposit drains, called in loans attempting to build up reserves. In this episode, in contrast, the decline appears to be the first-round result of the massive injections of base money by the Fed. Bank deposits and loans have continued to grow, just not at anything close to the same extremely rapid pace as the base.<sup>7</sup>

The genesis of the current decline in velocity could be due to either of two things, or perhaps some combination of the two. On the one hand, it could be a short-run transient phenomenon, produced in the first instance by the acceleration in M2 growth and the inevitable

lag before that monetary acceleration finds its way into increased spending. That would be consistent with buffer-stock models of money demand (e.g. Carr and Darby, 1981) and other similar short-run monetary models (Gandolfi and Lothian, 1983; Lothian, Darby and Tindall, 1990). Alternatively it may reflect an increase in desired real money balances on the part of the public, the result either of declines in the opportunity cost of holding money as interest rates have fallen, or of increased uncertainty with regard to the economic outlook. An increase resulting from uncertainty is somewhat more troubling, but not at all surprising given the unprecedented problems in the credit markets and the haphazard government policy responses to them.

The severe decline in velocity during the course of the Great Depression and associated increase in the public's holdings of real money balances have been widely described as the result of a liquidity trap. The basic notion here is that in situations in which short-term interest rates are near zero, the demand for money balances becomes metastable. Increases in the nominal stock of money, regardless of their size are willingly held and hence have no effect on spending either nominal or real. Monetary policy becomes impotent.

If it was the case the 1930s, could the United States be in the early stages of such an episode now as Paul Krugman (2008) has argued?<sup>8</sup> There are two very good reasons to believe not. The first is empirical. The demand for money function did not in fact change in such a way during the Great Depression or in the years thereafter in which short-term interest rates continued to be low, contra the myths and legends surrounding the Depression era. It remained stable: The evidence both from studies using time-series data (Meltzer, 1963; Gandolfi and Lothian, 1977) and from studies using cross-state panel data (Gandolfi, 1974; Gandolfi and Lothian, 1976) is quite clear in this regard. The second reason is theoretical. Underlying the notion of the liquidity trap is a narrow view of the transmission mechanism for monetary policy in which short-term credit instruments are the only substitute for money. That, however, is completely unrealistic – the range of substitutes is much broader, including other types of securities, real assets, non-durable goods and services. Incipient excess supplies of money will result in a portfolio adjustment process involving increases in nominal spending on this entire range of substitutes.<sup>9</sup>

### **3. Monetary Policy Prior to the Cycle Peak**

The question that I now want to address is the stance of policy in the years leading up to the current crisis. Was it overly expansive and thus a precipitating factor in the crisis? A number of commentators, arguing from rather different perspectives, have claimed that it was. Some pointed to incipient problems before the event, though writing when they did, could not have foreseen the details of what ultimately transpired (Shadow Open Market Committee, Statements of April 15, 2002 and November 10, 2003). Others, like John B. Taylor (2007, 2009), who have written while the crisis has been underway and hence have had the advantage of a bit of hindsight have been more specific in their analyses.

The story that has now emerged is the following.<sup>10</sup> At the heart of the financial crisis – the *sine qua non*, if you will – were the subprime mortgages that banks in the United States made at the urging of the U.S. Congress and that the banks subsequently securitized. Much of this securitization took the form of collateralized debt obligations (CDOs). Unlike the conventional residential mortgage-backed bonds (RMBs) that banks had been issuing for several decades, there was nothing “plain vanilla” about CDOs. CDOs are hybrid instruments – heterogeneous and rather opaque combinations of RMBs of varying quality. They are traded over the counter and they are much more difficult to value than RMBs.

When housing prices peaked and then began to fall, sometime between mid-2006 and early 2007 depending upon the particular index, defaults on subprime mortgages began to increase dramatically. This, in turn, had adverse effects on the market for CDOs. Counterparty risk increased. Via a variety of channels, and as a result of some of the policies subsequently pursued, the problems in the CDO market spilled over to the rest of the U.S. credit market and to credit markets abroad. (See Dwyer and Tkac, 2009).

What role did monetary policy play in the crisis? In Figure 5, I present data on the monthly rate of growth of M2 measured on a year- over-year basis and the estimated monthly level of the real federal funds rate, alternative measures of the Fed’s policy stance. The latter is defined as the nominal effective federal funds rate minus the continuously compounded year-over-year rate of growth of the personal consumption expenditure deflator. Table 1 presents averages of these data for various subperiods.

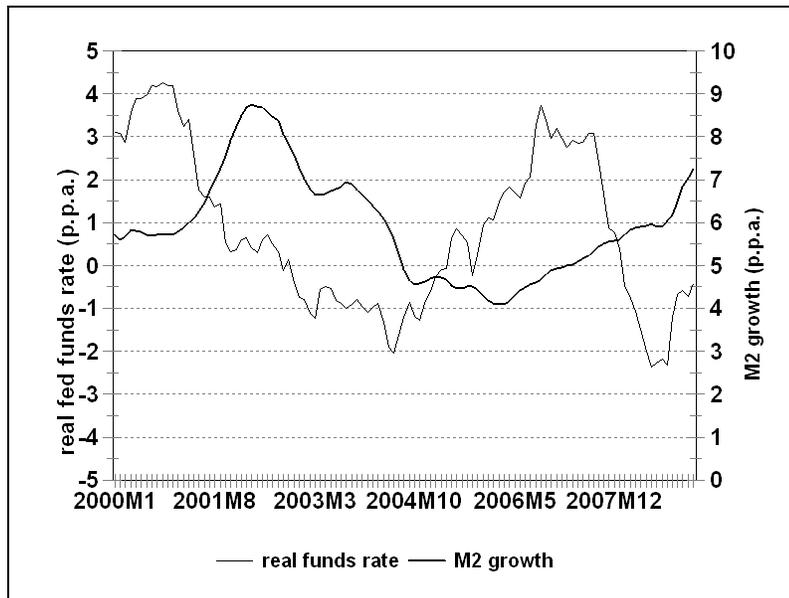
**Table 1. Period averages of the real federal funds rate and year-over-year growth in M2**

<b>Period</b>	<b>Real funds rate</b>	<b>M2 growth</b>
2000	3.78	5.86
2001-2003	-0.14	6.99
2004-2005	-0.47	4.76
2006-2007	2.34	5.38
2008-2009	-1.21	8.13

The stories told in the chart and the table by the two policy indicators are largely, though not completely, the same. For most of the period, the two provide similar readings of Fed policy. Viewed on the basis either of M2 growth or the level of the real federal funds, monetary policy was clearly quite expansive in 2001-2003, was more restrictive in both 2000 and in 2006-2007 and turned more expansive again in 2008 and 2009. The one period in which the two measures differ as gauges of policy is 2004-2005. The real funds rate on average was negative, suggesting substantial monetary ease, while M2 growth was relatively restrained 4.8 per cent per annum on average.

Maintained over the longer run, such a rate of M2 growth normally would be consistent with roughly the same rate of growth of nominal income and, given a long-run rate of real income growth of three per cent per annum or more, a two per cent or lower rate of inflation. The -.5 per cent average level of the real federal funds rate, in contrast, implies a much higher average rate of inflation. That, in any event, is the story told by the Taylor-Rule equations. We can see this clearly in Figure 6, which I have taken from the June 2009 issue of *Monetary Trends* published by the Federal Reserve Bank of St. Louis. Shown in that chart are plots of the actual nominal federal funds rate and the implied federal funds rates for target inflation rates ranging from 0 to 4 per cent per annum over the period 2000 to the present.

**Figure 5. The Real Federal Funds Rate and M2 Growth**

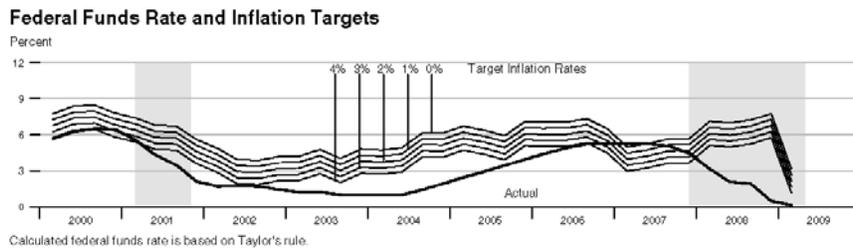


The calculations in the chart are based on the following equation:

$$R^*_t = 2.5 + \pi_{t-1} + .5 (\pi_{t-1} - \pi^*) + .5 [100 \times (y_{t-1} - y^*_{t-1})], \quad (1)$$

where  $R^*_t$  is the implied federal funds rate,  $\pi_{t-1}$  is the a year-over-year inflation rate in the previous period as measured by the personal consumption expenditures price index,  $\pi^*$  is the target inflation rate,  $y_{t-1}$  is the log of the real gross domestic product in the rate in the previous period, and  $y^*_{t-1}$  is the log of an estimated level of potential output in the previous period.

**Figure 6.**



**Source:** *Monetary Trends*, Federal Reserve Bank of St. Louis, June 2009.

Using that equation, the data in Table 1 and assuming that actual and potential output are equal, which was approximately the case in 2004-2005, we can derive a point estimate of the average rate of inflation in that period. This works out to be just under 6 per cent per annum.

The actual inflation rate, however, averaged 2.8 per cent per annum, roughly three percentage points lower than the Taylor-Rule would imply and a percentage point or more higher than M2 growth would imply. Neither policy measure, therefore, accurately depicts the average

behavior of prices during this two-year period. Inflation did rise, as a focus on real interest rates as a policy measure would suggest, but not soon enough and for a long enough period to substantially affect the average.

Nevertheless, there is some evidence that housing was affected by the Fed's maintenance of a low funds rate. Taylor (2009) finds an inverse relationship between house prices and interest rates.<sup>11</sup> His counterfactual simulation suggests further that the run-up in house prices would have been much more muted had the Fed raised its funds-rate target much earlier than it did.

Finally, let me address the question of Fed policy in the period immediately preceding the crisis. Here the chart and table tell the same story – policy was a good deal tighter when viewed on either basis than in the two or so years before that. It thus appears to have been a catalyst for the declines in house prices and home sales that did ultimately materialize.

#### **4. Monetary Policy: The Task Ahead**

In the short period from August 2008 until April 2009, the Federal Reserve's own monetary liabilities, the monetary base, have more than doubled. To date, these increases have not spilled over in a major way to money-supply growth, and the increases in M2 growth that we have seen have been offset by declines in velocity. All of this is clear from the charts presented earlier. Nominal aggregate demand, therefore, does not appear to have been affected. Even if it had been, moreover, it is quite arguably the case that in current conditions of unemployment, there would be little if any immediate effect on inflation. That of course is the logic underlying the Phillips Curve. The unadorned Phillips Curve, however, is a short-run relationship.

In the long run, inflation is a monetary phenomenon. The evidence in this regard is both ubiquitous and incontrovertible. Something, therefore, will have to give: At some point, the Fed either will have to engage in a massive drain of reserves or be willing to suffer the inflationary consequences.<sup>12</sup>

In a narrow mechanical sense, the mission to drain reserves and thus put monetary policy on a less potentially inflationary track is doable, for the most part simply a bigger version of the reserve drains that the Fed effected after the much-ballyhooed Y2K crisis that never materialized and after the 9-11 terrorist attacks.

When the Fed does try to drain reserves, however, it will face several problems that it did not encounter in those two earlier episodes. The first is one of timing, of picking the right point in time to shift its stance. It will have to do so before the event. That will not be at all easy in the current, still quite uncertain, environment. Fed officials not only will have to accurately gauge how rapidly the economy is approaching full employment, they also will also have to gauge inflation expectations and how they are changing. They will also be selling different assets than usual, since the Fed's balance sheet now includes a host of different securities, many of longer maturity and lower quality than the U.S treasury bills that have been the standard stuff of open-market operations. Finally, because the Federal Reserve now is paying interest on banks' deposits at the Fed, desired excess reserves will have changed. The Fed will, therefore, need to estimate the magnitude of this effect.

Though not necessarily inconsequential, these problems are purely technical. The potentially more serious problems are political.

When the Fed sells securities to remove reserves from the system, their prices will fall and interest rates across the maturity spectrum will rise. That is always a difficult sell politically. In the current environment in the United States, it will be even more so. Put simply, there is precious little evidence that inflation is of any concern at the moment to either the majority of

Congress or the current administration. The rhetoric from Washington and the actions that the government has taken have been totally focused on the recession. Fed officials, therefore, are likely come under substantial political pressure to reverse their tightening course.

Adding to the problem are the sizable government budget deficits being projected for the years ahead, which will themselves be a source of incipient upward pressure on rates across the maturity spectrum. Estimates by the Congressional Budget Office show deficits of 8.3, 4.9 and 3.3 per cent of nominal GDP in the years 2009 to 2011 respectively. Their estimates of debt held by the public as a ratio to nominal GDP are 50.5, 54.2, and 54.4 for the same years, figures not seen since the aftermath of World War II.

Fed officials are aware of the potential problems, as a recent statement by Richard Fisher, President of The Federal Reserve Bank of Dallas attests (O'Grady, 2009). And in what is almost a parody of game theory, members of Congress seem aware of the attitude of Fed officials. Some members of Congress have, in fact, already begun to make noises about reigning in the power of the regional bank presidents over policy.

In the environment of the late 1970s and early 1980, when the Bank of England under Sir Gordon Richardson and the Federal Reserve under Paul Volcker took action to break the inflationary cycles of the preceding decade and a half, the two central bankers had the strong political backing of Prime Minister Margaret Thatcher and President Ronald Reagan, respectively. That is not the case now.

Allan H. Meltzer has recently (2009) voiced a similar opinion:

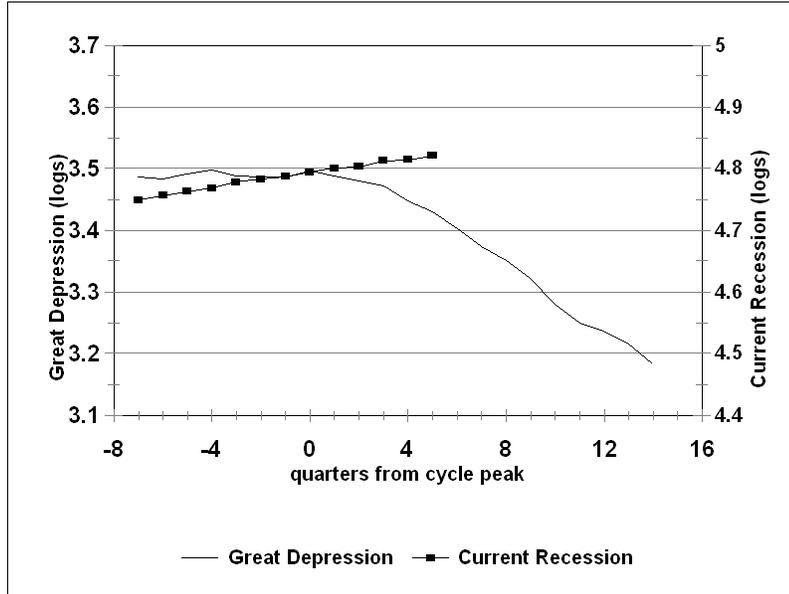
Paul Volcker is now the head of President Obama's Economic Recovery Advisory Board. Mr. Volcker and the administration's many economic advisers are all fully aware of the inflationary dangers ahead. So is the current Fed chairman, Ben Bernanke. ... I do not doubt their knowledge or technical ability. What I doubt is the commitment of the administration and the autonomy of the Federal Reserve. Mr. Volcker was a very independent chairman. But under Mr. Bernanke, the Fed has sacrificed its independence and become the monetary arm of the Treasury: bailing out A.I.G., taking on illiquid securities from Bear Stearns and promising to provide as much as \$700 billion of reserves to buy mortgages.

Other commentators, however, disagree. Krugman, for example, argues that deflation, rather than inflation, is the problem that has to be avoided. In a column in the New York Times entitled "Falling Wage Syndrome," he stated:

Credit where credit is due: President Obama and his economic advisers seem to have steered the economy away from the abyss. But the risk that America will turn into Japan — that we'll face years of deflation and stagnation — seems, if anything, to be rising.

In this connection, I think it is useful to make one more comparison with the Great-Depression period, this time of price behavior. To this end I have plotted the quarterly GNP deflator for the current episode and the Depression on a similar scale to that used earlier. The two series are shown in Figure 7. The contrast between the two episodes is readily apparent — a continued large decline throughout the Depression period — 27 per cent from peak to trough — and an upward trend in this one. If deflation is in the offing, it certainly is not apparent in these data.

**Figure 7. GNP Deflators in Two Cycles**



#### **4. Concluding Remarks**

The focus of this paper has been on Federal Reserve policy prior to and during the course of the recession that began in the United States in December 2007. It compared those policies to monetary policy during the Great Depression of the 1930s with which this recession has been likened. The conclusion here is that policy in these two episodes differed greatly. In the Depression, money was the principal player, the series of monetary shocks resulting from the recurrent banking crises turning an otherwise severe recession into a debacle of unprecedented proportions. In the current recession money has played a bit role.

The issue going forward is what the Federal Reserve will do for an encore. Its own monetary liabilities, the monetary base, have more than doubled. Much – but not all – of that increase has gone into banks' excess reserves. At some point, as the uncertainty surrounding both policy and the condition of the economy dissipates, that will change and bank lending and bank deposits will begin to increase more rapidly. To avoid a surge in inflation, the Fed will then have to reverse course and drain reserves from the banking system. It will face two problems in doing so, the first technical in nature and the second political. How adept it will be in overcoming the technical problems, and perhaps more important, whether it can withstand the political pressures, are the key questions and themselves a source of continued uncertainty.

## Notes

<sup>1</sup> James R. Lothian is Distinguished Professor of Finance at Fordham University, 113 West 60<sup>th</sup> Street, New York, NY 10023, USA, tel. 1 212 636-6147; fax 1 212 765-5573; emails [jrmlothian@aol.com](mailto:jrmlothian@aol.com) [lothian@fordham.edu](mailto:lothian@fordham.edu). I would like to thank John Devereux, Cornelia H. McCarthy and Gerald P. Dwyer, Jr. for their comments.

<sup>2</sup> See, for example, Barry Eichengreen and Kevin H. O'Rourke (2009).

<sup>3</sup> Real GNP from the cycle peak in 2007 fourth quarter to 2009 first quarter has declined 2.4 per cent. During the comparable period in the Great Depression it declined 12.9 per cent. The U.S. unemployment rate in May 2009 was 9.4 per cent. In 1931, it was 15.9 per cent and two years later reached close to 25 per cent.

<sup>4</sup> See the critique by Gandolfi and Lothian (1977) of one attempt to apply this framework to the Great Depression.

<sup>5</sup> In this regard see Bordo (2009).

<sup>6</sup> The quarterly data for nominal GNP in the two episodes were taken from Balke and Gordon (1990) and the website of the Bureau of Economic Analysis of the U.S. Department of Commerce, respectively.

<sup>7</sup> See Gavin (2009) for an analysis of the Federal Reserve's balance sheet during the current episode. He shows, among other things, that the bulk of the increase in the base has gone into holdings of excess reserve by banks. Also see Thornton (2009).

<sup>8</sup> Krugman writes: "Here's one way to think about the liquidity trap — a situation in which conventional monetary policy loses all traction. When short-term interest rates are close to zero, open-market operations in which the central bank prints money and buys government debt don't do anything, because you're just swapping one more or less zero-interest rate asset for another. Alternatively, you can say that there's no incentive to lend out any increase, in the monetary base, because the interest rate you get isn't enough to make it worth bothering. ... As of 10:38 this morning [March 17, 2008], the one-month Treasury rate was 0.57; the three-month rate was 0.825. Are we there yet? Pretty close."

Note that Krugman confuses two things here – effects on the demand for money and effects on the supply of money. The concept of the liquidity trap only applies to the demand for money.

<sup>9</sup> See Brunner and Meltzer (1963) and Friedman and Schwartz (1963b) and, for a more recent discussion and interesting empirical evidence, Meltzer (2001).

<sup>10</sup> In addition to Taylor (2009), see the detailed discussions of various aspects of the current episode by Gerald P. Dwyer, Jr. and Paula Tkac (2009) and Michael T. Melvin and Mark P. Taylor (2009) in papers presented at the conference on "The Global Financial Crisis: Causes, Threats and Opportunities," held at the Warwick Business School and sponsored by that institution and the *Journal of International Money and Finance*.

<sup>11</sup> Arend, et al. (2008) present somewhat similar evidence for EU and other OECD countries.

<sup>12</sup> One possible mitigating factor here is the move by the Federal Reserve in October 2008 to pay interest on reserves. This doubtless led to increases in desired holdings of reserves by banks.

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