Monetary and Other Explanations of the Start of the Great Depression

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Monetary and Other Explanations of the Start of the Great Depression

by

Allan H. Meltzer

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MONETARY AND OTHER EXPLANATIONS OF THE START
OF THE GREAT DEPRESSION

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1. Introduction

Homer Jones' most important contributions have been to the practice of monetary policy. The research work that he directed at the Federal Reserve Bank of St. Louis and the positions he took and encouraged others to take contributed to the remarkable change that has occurred in the conduct of monetary policy during the past few years. Jones and his colleagues at St. Louis played a major role in shifting monetary policy from exclusive concern with short-term interest rates toward control of the stock of 'money.' If in the future, we are able to look back on a permanent shift from concern for interest rates to control of money by the Federal Reserve, the contributions of Jones, Darryl Francis and their colleagues will, I believe, be recognized widely.

Dominating most internal discussions of monetary policy is the view that central banks must control market rates of interest. Central bankers' concern about market interest rates is itself a consequence of the real bills doctrine that dominated thinking about monetary policy at the Federal Reserve during most of its history. The main idea emphasized by proponents of the real bills doctrine is that monetary policy should be conducted to provide credit in response to the 'needs of trade.' In practice, the central banker monitored the movement of interest rates an member bank borrowing. If market interest rates rose and the rise was accompanied by an increase in loans eligible for discount at the central bank – real bills – a central bank operating according to the doctrine permitted borrowing to increase. The stocks of money and bank credit rose in periods of economic expansion and declined in recessions.

Within the academic community, the real bills doctrine became entangled

*I am indebted to the National Science Foundation for their support of my work, to the Columbia University Department of Special Collections for permission to read and quote from the George L. Harrison Papers, to Milton Friedman and Anna J. Schwartz for making available a microfilm of many of the Harrison papers and to the Board of Governors of the Federal Reserve System for permission to read material from the records of the Federal Reserve Board. The material reported here is part of the exploration of the relation of money to economic activity and prices in which Karl Brunner and I have been engaged for several decades. It draws on our (1964) analysis of Federal Reserve policy.
with the proposition, improperly attributed to Keynes of the General theory (1936), that monetary policy should mainly seek to control market interest rates so as to influence investment. 1 Much of the academic support for this proposition neglects the distinction between real and market rates of interest. The neglect became apparent in recent years when the attempt to keep interest rates from rising produced the highest peacetime growth rate of the money stock and the highest market interest rates in more than one hundred years.

In the case that Jones and others made for control of money, evidence from past inflations, expansions, deflations and contractions carries much weight. Major recessions or depressions are seen as a consequence of prior reduction in money, and inflations or deflations are interpreted as mainly the consequences of earlier contraction or expansion in the rate of monetary growth. The demonstration in Friedman and Schwartz's Monetary history (1963) that a substantial part of the history of past fluctuations could be interpreted as the effect of prior changes in rate of monetary growth is an important part of the intellectual support for the policy positions Jones and others took and for the importance assigned to control of monetary growth in the conduct of monetary policy.

Although no single episode can be regarded as conclusive, the consequences of the decline in the money stock from 1929 to 1933 were so pervasive that the period has acquired special importance in monetary history. Recently, the period has been reexamined by scholars who have reached different conclusions about the role of money in the contraction. Haberler (1976) assigns great importance to the reduction in money stock and discusses the reduction in money as a cause of the secondary contraction that changed a mild recession into a catastrophe. He speaks of 'the overwhelming importance of the monetary factor' (pp. 33 and 39) while recognizing the contributions of nonmonetary factors. Temin (1976, p. 170) reaches a different conclusion: 'The proposition that monetary forces caused the Depression must be rejected.' Much of the evidence on which Temin relies comes from comparison of levels and changes in market interest rates. 3

The difference in conclusion and the importance of the period for the theory of monetary policy encourages reconsideration. In the remainder of this essay,
I reopen the discussion of the causes of the decline in the United States. First, I make explicit the meaning I assign to the term monetary contraction and present some evidence that I regard as support for the proposition that the initial decline was, in part, monetary. Then, I review the evidence showing that monetary policy caused a moderate recession to become a deep depression. My conclusions differ in most important respects from Temin's, so I indicate some reasons for the differences and also explain why the Federal Reserve allowed the money stock to fall.

2. The start of the decline

Many attempts to analyze the start of the depression treat the beginning of the decline as the result of some autonomous change. The decline in stock prices, monetary policy, or weather acting on agricultural prices are three traditional explanations. Other common alternative explanations rely on long lags that bring to fruition the effect of some structural change resulting from World War I. Haberler (1976) provides a recent, readable summary of these explanations.

One plausible explanation is mentioned infrequently. The start of the recession may have been an expected result of economic policies in the United States and other countries operating under the rules of the interwar gold standard. The operation of monetary policy, working under the gold standard and perhaps supplemented by random forces, produced an expansion in the United States from the 1927 recession. Real output rose in 1928 and accelerated in 1929 to a 6% rate of (real) expansion. The 6% rate of increase in real output for the year understates the pace of expansion in early 1929. The economy reached a peak in August, according to the National Bureau's dating, so a more revealing measure of the pace and expansion is the 17% rate of increase in industrial production in the year ending July 1929.

The pace of expansion was much more rapid in the United States than in other leading industrial countries. Under the price-specie flow mechanism, more rapid expansion in the United States was expected to produce a rise in U.S. prices relative to prices in the rest of the world, a fall in net exports, an outflow of gold and, therefore, a reduction in the stock of money.

The relatively rapid expansion in the United States did not produce inflation. The GNP deflator rose about 1% for the two year period, 1927–29 [see Department of Commerce (1966, p. 61)]. We do not have data for the GNP deflator in most countries, but we can compare the rates of change of the wholesale price index for leading countries. The indexes show a fall in prices for all countries during the two year period, but the decline is smallest in the United States and

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9 The Maddison indexes (1913 = 100) show increases in output between 0 and 2.5% for Japan, U.K., Italy, and Canada, a slight decline in Germany and a nearly 10% increase in France. Data are from the Department of Commerce (1966, D2–D7).
A.H. Meltzer, The Great Depression

in most cases, the differences appear to be economically meaningful, two percentage points or more. Taking 1929 alone, the differences are smaller but the decline in prices in the United States is smaller than in other countries. Table 1 shows these data.

Table 1
Rates of change of wholesale prices (1928, 1929, 1930, selected countries).*

<table>
<thead>
<tr>
<th>Year</th>
<th>U.S.</th>
<th>U.K.</th>
<th>Canada</th>
<th>Japan</th>
<th>Germany</th>
<th>Italy</th>
<th>France</th>
</tr>
</thead>
<tbody>
<tr>
<td>1928</td>
<td>+1.3</td>
<td>-1.2</td>
<td>-1.3</td>
<td>+0.6</td>
<td>+1.4</td>
<td>-6.5</td>
<td>+0.6</td>
</tr>
<tr>
<td>1929</td>
<td>-1.7</td>
<td>-2.2</td>
<td>-1.3</td>
<td>-2.8</td>
<td>-2.0</td>
<td>-3.7</td>
<td>-2.9</td>
</tr>
<tr>
<td>Two year sum</td>
<td>-0.4</td>
<td>-3.4</td>
<td>-2.6</td>
<td>-2.2</td>
<td>-0.6</td>
<td>-10.2</td>
<td>-2.3</td>
</tr>
<tr>
<td>1930</td>
<td>-9.2</td>
<td>-12.6</td>
<td>-9.4</td>
<td>-17.6</td>
<td>-8.9</td>
<td>-14.0</td>
<td>-11.6</td>
</tr>
</tbody>
</table>


Under the price-specie flow mechanism, a recession can be induced by the changes in relative prices that occurred in 1928 and 1929. A recession induced by changes of this kind is a response to monetary policy if we include in monetary policy a commitment to operate under the rules of the gold standard. It seems entirely appropriate to do so and to investigate the degree to which the subsequent change in prices at the start of the Great Depression can be explained by monetary forces.

To determine how much the rate of price change would have fallen after 1929 in the absence of any factors unique to the period, we require a theory of price changes. In recent work on anticipated and actual rates of price change, I (1977) have estimated the anticipated rate of price change from past monetary growth rates and used the estimates as one of the determinants of actual rates of price change. My hypothesis states that the rate of inflation anticipated at the start of the year depends on the average rate of monetary growth in the preceding three years relative to the rate of monetary expansion in the most recent year. Under the gold standard, the recent rate of monetary expansion - acceleration from the maintained average - has much larger effect than the average rate of expansion. 4

The predicted rate of price change in each year depends on the events that occurred up to the start of the year, summarized mainly by the anticipated rate of price change, and on events that occurred during the year, shown by changes

4 Under the dollar standard following World War II, the opposite is true. The maintained average growth rate dominates my estimates of the anticipated rate of price change. The $R^2$ of the equation used to estimate the relative rate of price change is 0.84 for the years 1901-74 omitting 1941 to 1952. For the details of the equation, see Meltzer (1977).
in current monetary and fiscal policy, and in differences between anticipated and actual rates of change of output [Meltzer (1977, eq. 9.14)]. A comparison of predicted and actual rates of change using this hypothesis implies that prices should have fallen from 1930 to 1933. Table 2 shows actual and predicted rates of price change for the years 1930–33.

### Table 2
Rate of change of GNP deflator, 1930–33.

<table>
<thead>
<tr>
<th>Year</th>
<th>Predicted*</th>
<th>Actual</th>
</tr>
</thead>
<tbody>
<tr>
<td>1930</td>
<td>-3.4</td>
<td>-2.6</td>
</tr>
<tr>
<td>1931</td>
<td>-7.0</td>
<td>-9.6</td>
</tr>
<tr>
<td>1932</td>
<td>-5.2</td>
<td>-10.8</td>
</tr>
<tr>
<td>1933</td>
<td>-4.3</td>
<td>-2.3</td>
</tr>
</tbody>
</table>

*The predicted values are obtained from eq. (9.14) in Meltzer (1977).

If the evidence in the table is indicative of the working of monetary and other forces, we can draw some tentative conclusions. The predicted rates of price change for 1930, 1931 and 1933 are not substantially different from the actual rates of price change. A decline in the rate of price change of about the magnitude that occurred was in this sense ‘expected.’ Moreover, the predicted rate of change for the four years, −19.9%, is relatively close to the actual decline, 25.3%.

In 1932, the ‘predicted’ rate of price decline is much smaller than the reported rate of decline. The recession appears to have developed deflationary force in 1932 much greater than predicted by the hypothesis. There is evidence, then, that some of the decline in prices in 1932 cannot be explained by the price-specie flow mechanism and the expected response to monetary contraction.  

The decline in real output poses a more difficult problem since none of our models predict changes in output reliably. At the start of the contraction, 1929–30, real output declined by 9%, much larger than in the first year of most recessions. One reason for the steep decline receives little attention from Friedman and Schwartz (1963) and Temin (1976) but is mentioned by Haberler (1976). After a year of debate, the Hawley–Smoot tariff was approved in June 1930. The tariff raised U.S. duties substantially, particularly for agricultural goods.

*Gandolfi’s (1974) study of the demand for money suggests that banking failures may have a nonlinear effect on the demand for bank deposits. His results are consistent with my findings. Temin (1976) discusses bank failures in considerable detail but does not mention the study by Gandolfi that reaches conclusions opposite to his own.
products, and was quickly followed by higher duties in many countries – Canada, Cuba, Mexico, France, Italy, Spain, Australia and New Zealand [see League of Nations (1932, p. 281)].

The tariffs restricted the operation of the price-specie flow mechanism and the adjustment of the U.S. and the world economy. In the absence of the tariff, prices in the U.S. would have fallen relative to prices abroad, and the change in relative prices would have increased foreign demand and net exports. With the tariff in effect during 1930, the U.S. balance of payments shifted from deficit to surplus; the trade balance declined very little; the monetary gold stock increased, and prices in the U.S. fell by less than prices in other industrial countries (table 1). It was not until 1931 that the decline in U.S. wholesale prices exceeded the declines abroad.

This argument assigns a large role to the Hawley-Smoot tariff and subsequent tariff retaliation in explaining why the 1929 recession did not follow the path of previous monetary contractions but became the Great Depression. A principal reason for the importance given to the Hawley-Smoot tariff and to retaliation is that the magnitude of the increase in duties and the subsequent fall in imports of semi-finished goods and exports of food is very large. Table 3 attempts to

Table 3

<table>
<thead>
<tr>
<th>Year</th>
<th>Duties paid, durable imports (percent)</th>
<th>Quantity of imports (percent)</th>
<th>Imports of semi-manuf. (index)</th>
<th>Quantity of exports (index)</th>
<th>Exports of food (index)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1928</td>
<td>38.8</td>
<td>115</td>
<td>113</td>
<td>128</td>
<td>98</td>
</tr>
<tr>
<td>1929</td>
<td>40.1</td>
<td>131</td>
<td>127</td>
<td>132</td>
<td>94</td>
</tr>
<tr>
<td>1930</td>
<td>44.7</td>
<td>111</td>
<td>102</td>
<td>109</td>
<td>69</td>
</tr>
<tr>
<td>1931</td>
<td>53.2</td>
<td>98</td>
<td>79</td>
<td>89</td>
<td>71</td>
</tr>
<tr>
<td>1932</td>
<td>59.1</td>
<td>79</td>
<td>57</td>
<td>69</td>
<td>59</td>
</tr>
<tr>
<td>1933</td>
<td>53.6</td>
<td>86</td>
<td>73</td>
<td>69</td>
<td>32</td>
</tr>
</tbody>
</table>

*Source: Data from cols. U19, U33, U41, U21, U25, Historical statistics, 1960. Index numbers base 100, 1923–25.

represent the size of the duties by the change in the ratio of duties paid to dutiable imports, a crude measure that does not allow for changes in the mix of imports and for that reason may understated the rise in duties under the tariff. The table also shows index numbers, base 1923–25, for the quantity of all imports and exports and for imports of semi-manufactured goods and exports of food. The indexes show the changes in the quantity of goods and services, not the market values. Hence they are measures of the decline in real flows.

Table 3 shows a 20% decline in the quantities of imports of semi-finished goods and a 27% decline in exports of farm products in 1930. The market value
of exports and imports, in current prices, fell by approximately 30% in the single year 1930. The reductions in trade and prices were partly a result of the increases in tariffs and partly an adjustment to the world wide deflation. The size of changes in food exports relative to total exports suggests that relative prices did not remain constant. Given the size of the decline in food exports and in agricultural prices, it is not surprising that many of the U.S. banks that failed in 1930 and in 1931 were in agricultural regions.

3. Some alternative explanations

In his recent book, Temin concludes that bank failures in 1930 were a result of the prior contraction, not a cause of subsequent deflation. His argument is flawed, however, in two respects. He fails to recognize the effect of the price-specie flow mechanism and the tariff changes as deflationary forces. And his alternative explanation is incorrect. Temin (1976, p. 137) writes:

We conclude, therefore, that there is no evidence that the banking panic of 1930 had a deflationary impact on the economy. Instead, the data are consistent with the hypothesis that the demand for money was falling more rapidly than the supply during 1930 and the first three quarters of 1931. [The data] are consistent with the spending hypothesis, not the money hypothesis about the cause of the Depression.

There are two problems with Temin’s conclusion. First, his statement implies that there was an excess supply of money in 1930 and 1931 and that the decline in the money stock was a result of the public’s attempt to remove the excess supply. This statement cannot be reconciled with behavior expected under the gold standard. The fall in prices is inconsistent with an excess supply of money. An excess demand for real money balances, and an excess supply of output, seems more consistent with the decline in prices in 1930 and the much larger decline that followed. Temin rejects this explanation.

Second, the hypothesis that an autonomous reduction in spending initiated and continued the decline – Temin calls this the ‘spending hypothesis’ – is neither a valid alternative nor a complete explanation. It is not a valid alternative because a reduction in spending relative to output should be accompanied by an increase in the demand for money as firms and households shift from goods to money and securities. The spending hypothesis is not consistent with ‘the demand for money falling more rapidly than the supply.’ To obtain a consistent explanation of a decline in spending relative to output and a decline in the demand for money relative to the stock, a shift must occur either in the labor market or the securities market. I have not seen an argument claiming that there was a shift in the labor market, and Temin does not discuss the labor market. He devotes much attention to interest rates, risks and return, and the market for securities.
An autonomous increase in the demand for securities could, in principle, explain simultaneous reductions in the demand for goods and in the demand for money and a fall in market rates of interest and the price level. An argument of this kind might begin by treating the stock market collapse as an autonomous event that shifted wealth owners preferences for risk. An increase in the demand for short-term assets and a reduction in the demands for money and goods is not a ‘spending hypothesis,’ and it is not the argument that Temin makes. On the contrary, his investigation leads him to minimize the effect of the decline in stock prices on spending.

One problem with any explanation relying on the decline in stock prices is that the recession began before the stock market crash. Seasonally adjusted industrial production declined by more than 3% from the peak in July to October implying an initial decline in production at an annual rate of 13% by the time of the stock market crash. This rate of decline was comparable to the decline at the start of the 1920 recession and much steeper than the initial decline in the 1926 recession. Moreover, the decline in stock prices slowed and reversed in early 1930. The decline in output accelerated.

Suppose that the start of the recession can be explained by the price-specie flow mechanism and random or autonomous, nonmonetary events. Further, suppose that the recession was made severe by the shift from money and goods to securities following the stock market crash. The question remains: why did the recession continue for 42 months and increase in severity? To answer the question, we require some detail about monetary policy in the first half of the recession. Consideration of the detail will show the sense in which the length and severity of the recession is attributable to monetary forces operating under the gold standard and the framework for policy decisions that dominated thinking and action throughout the period. The Federal Reserve’s reliance on a particular framework, the resulting misinterpretation of events, and the failure to act provide key elements in the monetary explanation of the contraction.

4. Policy in the first half of the contraction

There is one point on which there can be little dispute. Failure to recognize the start of the decline or its continuation does not explain the failure to act. The minutes of the Federal Reserve Board and the papers and notes of George L. Harrison, Governor of the Federal Reserve Bank of New York, leave no doubt that the start of the recession was recognized promptly. At the first meeting following the peak of the expansion, on September 24, 1929, the Open Market Investment Committee voted to purchase up to $25 million dollars of securities weekly to act against an impending recession, to lower market interest rates, and to provide for a seasonal expansion of credit. During the following month, bill purchased increased by $100 million and short-term interest rates and member bank borrowing declined.
Recognition of the decline can be followed in the minutes of the Federal Reserve. In November 1929, the minutes describe the liquidation of securities as 'a threat to business stability at a time when there were already indications of a business recession.' In late January 1930, the minutes discuss a business recession 'the extent or duration of which is not yet possible to determine.' By March, a memorandum prepared for the meeting of the Federal Reserve described the recession as more severe than the recessions of 1924 and 1927. In September, the decline is compared to the depression of the 1880s and is recognized as one of the worst in the country's history.

The decline in industrial production followed a large increase. Seasonally adjusted industrial production rose at an annual rate of 24% in the last three months of the expansion, so the very steep decline at the start of the recession may overstate the welfare loss as seen at the time. By January, however, industrial production was 7% below the previous January level, so recognition of the recession was not difficult. Table 4 shows the decline in seasonally adjusted industrial production.

To follow the development of Federal Reserve policy in relation to the events in the economy, table 4 also shows some indicators of economic activity and some monetary and financial variables. Data are shown to the end of month nearest a meeting of the Open Market Policy Conference, OMPC, or the smaller Executive Committee of OMPC. Most of the data, or equivalent data, were available at the time. The principal exception is the change in the monetary base. I have used the base, instead of money, to exclude the decisions of banks and the public about currency and the decisions of banks about excess reserves.

The table shows all decisions to purchase or sell made at the meetings of the OMPC or its Executive Committee. A reader familiar with current policy must be surprised at the low frequency and small size of operations, but the table shows the full set of decisions and the sum is very close to the total purchases made during the first twenty months of the Depression. Between August 1929 and April 1931, the Federal Reserve purchased (net) $500 million in bills and securities despite a $900 million reduction in member bank borrowing. The monetary base declined, net, by only $91 million, mainly because an inflow of gold offset a considerable part of the reduction in other sources. The money

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4Quotations are from George L. Harrison Papers, 'Open Market Investment Committee' and 'Open Market Policy Conference' containing a transcript for each meeting or from the memoranda prepared for the meeting. Temin (1976) does not mention this important source of evidence.

7Data on interest rates, borrowing and gold are from Banking and monetary statistics, Washington, 1943. Industrial production is from Industrial production 1957-59 base, Washington, (undated) adjusted to a base 100 at the peak in August 1929. These data are seasonally adjusted. The monetary base is the sum of total currency and reserves outstanding adjusted for the sum of reserves liberated or impounded by redistribution of deposits between classes of banks, seasonally adjusted. These data are from Brunner and Meltzer's data base. The decision or action is taken from the minutes of the Federal Reserve or the Harrison Papers.
stock—currency and demand deposits—declined substantially more than the base, by more than $2 billion, approximately 8%.

### Table 4
Policy in the first half of the contraction.

<table>
<thead>
<tr>
<th>End of</th>
<th>Ind. production Base 100, Aug. 1929</th>
<th>Change in monetary base from Aug. 1929 (millions)</th>
<th>Member bank borrowing (millions)</th>
<th>Change in gold stock from Aug. 1929 (millions)</th>
<th>3 to 6 month treasury notes</th>
<th>Decision or action (millions)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sept. 1929 98.9</td>
<td>+8 969</td>
<td>-56 4.57</td>
<td>buy $25/week</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oct. 1929 97.4</td>
<td>+1 885</td>
<td>+30 4.70</td>
<td>buy*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nov. 1929 92.7</td>
<td>+41 953</td>
<td>+23 4.26</td>
<td>buy $200 maximum</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jan. 1930 88.7</td>
<td>-180 501</td>
<td>-68 3.39</td>
<td>none</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mar. 1930 86.7</td>
<td>-265 274</td>
<td>+43 2.95</td>
<td>none</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>May 1930 84.9</td>
<td>-248 247</td>
<td>+154 2.41</td>
<td>none</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>June 1930 82.4</td>
<td>-222 251</td>
<td>+177 1.89</td>
<td>buy $50</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sept. 1930 75.6</td>
<td>-279 189</td>
<td>+152 1.77</td>
<td>none</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dec. 1930 70.1</td>
<td>-87 338</td>
<td>+232 1.48</td>
<td>buy $100</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jan. 1931 69.8</td>
<td>-91 253</td>
<td>+271 1.24</td>
<td>sell $20</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Apr. 1931 71.6</td>
<td>-91 155</td>
<td>+360 1.49</td>
<td>buy $100</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*No amount was specified. Net purchases of $120 million were made.

A principal question about the period is why the Federal Reserve did so little to stem the decline. Even if the decline was entirely the result of real shocks that produced an increase in the demand for securities, the Federal Reserve could have purchased securities, reducing interest rates and the quantity of securities demanded. We know from the minutes that a world wide depression was discussed as early as May 1930. The minutes and records of the period contain many statements about the severity of the decline and few predictions of an early recovery. Why did the Federal Reserve fail to act?

The records of the Federal Reserve contain a clear answer. In the early twenties, under the leadership of Winfield Riefler, Rudolph Burgess, Benjamin Strong and others in the system, the Federal Reserve developed a framework for analyzing policy. A main reason for developing the framework was to avoid exclusive reliance on the use of the discount rate to control member borrowing. Open market operations became the principal tool of monetary policy.

The central points of the Riefler–Burgess–Strong analysis, as described at the time, were:

1. member banks borrowed only in case of 'need' and with reluctance;
2. borrowing from the Federal Reserve made banks reluctant to expand, so they raised lending rates and reduced the volume of bank credit;

*The explanation offered is an elaboration of some earlier work. See Brunner and Meltzer (1964). The positions are stated in Riefler (1930), Burgess (1927) and Strong (1930).
(3) open market purchases encouraged banks to repay borrowing and therefore made banks more willing to lend to customers; open market sales forced banks to borrow from the Federal Reserve, so banks reduced loans to customers;

(4) reductions in short-term rates were followed by reductions in long-term rates.

The framework developed under the gold standard and presupposed some gold outflow when interest rates fell and some gold inflow when interest rates rose in the New York money market. The more important role assigned to the gold standard was keeping prices stable, on average.

Since prices were expected to fluctuate slightly around a stable level, no distinction was made between real rates and market rates of interest. The decline in prices by 2.6% in 1930 and 9.6% in 1931, shown in table 2, never affected the interpretation of monetary policy. Monetary policy was ‘easy’ when short-term market rates fell and member bank borrowing declined.

In the Riefler-Burgess-Strong framework, the main purpose of open market purchases and their main effect was to reduce member bank borrowing. The emphasis on borrowing reflects the real bills doctrine since borrowing meant discounts of ‘real bills.’ Thus, the framework combined a failure to distinguish real and nominal rates of interest with a reliance on a demand by banks to discount real bills representing loans to finance commerce or trade. If high real rates produced by deflation reduced the supply of real bills, all members of the OMPC could generally agree not to act. Some thought action was inappropriate; others believed the timing was inappropriate.

Table 4 shows that six decisions were made to purchase securities during the first half of the contraction and one decision was made to sell. If the Federal Reserve used the level of borrowing and the change in borrowing (or short-term interest rates) to determine the appropriate time for purchases, decisions to purchase and to refrain from purchases are explained. The sole exception is the decision, in June 1930, to buy with borrowing unchanged and interest rates lower than at the previous meeting. The records of the Federal Reserve explain the purchase and indicate the climate of opinion and the type of reasoning prevalent at the time.

The first suggestion I have found that purchases should be made came at a meeting of the directors of the Federal Reserve Bank of New York held on May 8, 1930 [see Harrison (undated)]. Long-term interest rates had not responded to the decline in short-term rates. Moody’s index of rates on industrial bonds at 5.15% to 5.20% was only 0.30% below the rates in late August 1929. Some directors in New York believed the problem arose because of Treasury and foreign bond sales and expected rates to decline once the sales were completed. Some expressed concern about the possible inflationary effect of an open market purchase, but others supported the purchase as an expansive action.

Following the meeting of New York’s directors, Harrison discussed the
proposal to purchase with members of the Federal Reserve Board. A meeting of
Governors was called for May 21 to discuss "the program which the New York
Bank seems to have in mind." Five suggestions were presented to the Governors
Conference. Two called for open market sales; two called for purchases; one
wanted to maintain the prevailing policy but to provide from $350 to $400 million
for seasonal requirements by purchasing securities and short-term bills during
the fall.

Those favoring sales argued that sales would "check speculation" by encouraging
liquidation of security loans. The evidence of speculation was the increase in
broker and dealer loans that accompanied the rise in prices on the stock exchange
in the early spring. Others wanted to lower discount rates and sell securities
to force the banks to borrow on "real bills."

Of the two banks proposing purchases, one expressed concern about recession
and the other wanted to purchase so as to increase earnings of the reserve banks.
Earnings had declined with the decline in interest rates.

The OMPC could not agree on a reason for engaging in purchases or sales.
It was too early to provide for seasonal demand that would not arise until fall.
The minutes report that agreement was reached "to act promptly in the event
that conditions develop in such a way as to make action seem advisable."

Harrison reported the results of the meeting to the directors at New York.
On May 29, the directors approved the report, then seized on the section that
permitted reconsideration. Although only a week had passed, the directors
voted to undertake purchases in moderate amounts.

Harrison and his deputy, Randolph Burgess, telephoned the members of
OMPC. By narrow margins, the Governors and the Federal Reserve Board
voted to purchase $25 million per week for two weeks.

Three main reasons appear to have changed the decision between May and
June. First, long-term bond yields increased in April at the time of foreign bond
sales and had not fallen when the sales were completed. Second, discounts at the
reserve banks rose during the week ending May 28. Purchases were proper under
the Riefler-Burgess-Strong framework to prevent an increase in discounts from
raising short-term rates during a recession. Third, none of the opponents of
expansive policies believed that purchases, if limited, would be inflationary under
the conditions prevailing in the money market, represented by the increase in
member bank borrowing. The June purchases were made in response to money
market conditions and do not conflict with the policy framework.

Less than a month later, money market conditions had changed. Member
bank borrowing had declined. At the June 23 meeting of the Executive Com-
mittee, opponents of purchases, Governors McDougal of Chicago and Norris
of Philadelphia argued that "credit is cheap;" nothing could be gained by making
it cheaper.

*The quote is from the minutes of the Federal Reserve Board for May 15, 1930, in Harrison's
Papers.
Reliance on the Riefler–Burgess–Strong framework provided a common approach to policy but not a basis for resolving all disputes. The Governors could agree to purchase whenever interest rates and member bank borrowing rose, and they generally could agree to do nothing when market rates and borrowing fell to low levels. The minutes leave no doubt however, that there were alternative interpretations of the framework.

One difference was expressed in a policy statement prepared at the January 1930 meeting [Harrison (undated)]. After referring to the purchases made during the fall, the committee expressed the belief that there was a lag before the full effect on market rates would be felt. The empirical basis for the stated position was set out in a memo Harrison read to a meeting of the Governors.\(^\text{10}\)

The memo contained two charts. One showed the relation between member bank borrowing and market interest rates. The other compared the rate of increase in bank credit to the volume of member bank borrowing.

Harrison interpreted the charts as showing that ‘generally speaking the trade and business of the country require an increase in bank credit somewhere in the neighborhood of 4 to 5\% a year and the chart indicates that the rate of increase in bank credit has usually exceeded this rate when the Federal Reserve discounts were under 400 to 500 million dollars, and usually falls under this rate when discounts are over 500 to 600 million dollars.’ When borrowing is about 500 million dollars, it ‘may be considered a normal at which commercial paper rates have tended to average 4\% and at which the volume of bank credit has tended to increase at the rate generally proportionate to the needs of business.’

The opposite view was expressed in a memorandum read by Governor Norris of Philadelphia at the September 1930 meeting of the OMPC [Harrison (undated)]:

> We have always believed that the proper function of the System was well expressed in the phrase used in the Tenth Annual Report of the Federal Reserve Board — “The Federal Reserve supplies needed additions to credit and takes up the slack in times of business recession.” We have, therefore, necessarily found ourselves out of harmony with the policy recently followed [sic] of supplying unneeded additions to credit at a time of business recession, which is the exact antithesis of the rules stated above... We have been putting out credit in a period of depression, when it is not wanted and cannot be used, and we will have to withdraw credit when it is wanted and can be used.

When interest rates rose and member bank borrowing increased, the two views were reconciled temporarily. Harrison favored purchases because borrowings rose; Norris favored purchases if businesses supplied real bills. When rates fell and borrowings declined, one would argue that the time for expansion was not right, the other that the additions were not needed. On a few occasions, a

\(^{10}\)Report of the Chairman of the Open Market Committee to the Governor’s Conference, December 11, 1929 [Harrison’s Papers (OMIC, v. 1)].
New York director, or a member of the Federal Reserve Board, or a member of the staff questioned the policy. The questioners were never able to alter the interpretation that low rates and little borrowing by member banks showed that policy was easy.

The principal errors made by the Federal Reserve in the early thirties resulted from the reliance on the level of market rates of interest and member bank borrowing to indicate ease and restraint. The use of market rates neglects the distinction between real rates and market rates, so despite the severe deflation, there was no mention of the real returns available to holding short-term securities. Failure to invest in real assets or to borrow at low market rates was puzzling to the Governors. The conclusions drawn were that credit was easy; monetary policy was not a cause of the depression. The cause of the decline and its continuation for 42 months was inexplicable.

Temin reaches similar conclusions because he, too, generally fails to distinguish real and nominal rates of interest. His argument is not very different from the reasoning within the Federal Reserve at the time. Market rates were low because demand had declined. The fall in the money stock was a consequence of low demand for credit and other real forces.

There is one exception. A short section, near the end, recognizes that most of Temin's analysis is carried out without recognition of the effects of deflation (1976, pp. 160–168). Temin argues that recognizing the deflation does not improve the monetary explanation of the depression. He gives three main reasons.

1. Bank failures were the result of the deflation not the cause.
2. If the demand for real money balances is written as a function of real income, it could not have been the cause of deflation because real money balances did not fall during the period.
3. Economists routinely make the distinction between nominal and real interest rates, but it is hard to find even a mention of this distinction outside the professional literature.

The first argument neglects to ask what would have happened to real rates of interest, to prices, money and output if the Federal Reserve had prevented the bank failures or prevented their deflationary consequences. The Harrison Papers make clear that the effects were predicted. The number of future bank failures was estimated, and the amount of currency 'hoarding' was calculated. Yet, no action was taken to prevent or offset the effects.

11'The money hypothesis does not appear to be consistent with either the interest rate or the price data.' (Temin (1976, p. 166)).

12Two sources of these data are: 'Miscellaneous letters and reports,' memo prepared for the October 4, 1931 meeting with President Hoover and Secretary Mellon (Harrison's Papers). The meeting was called to discuss bank failures. Hoover proposed a National Monetary Commission with capital subscribed by banks and the government to buy some of the marketable assets of insolvent banks. The proposal was adopted but had little effect because the Federal Reserve refused to accept the new commission's notes as eligible paper. The proposal was revived as the Reconstruction Finance Corporation in 1932. At a December 24, 1931 meeting with the New York directors Harrison showed a table estimating the capital impairment of banks in the Second Federal Reserve District. The discussion makes clear that at least 300 of the 800 banks were considered likely to fail.
Temin's second argument neglects entirely the effect of the deflation on the quantity of securities demanded. With ten percent deflation, the return to short-term securities is relatively high. The quantity demanded increased as the real rate rose. An increase in money that raised prices and reduced the deflation would have lowered the real return. If the real return to real balances and Treasury notes had been reduced, spending would have increased.

The third argument is not very different from the arguments made during the depression. Nominal rates were low, so nothing could be done by monetary means. Those who use nominal rates as an indicator of monetary policy have no difficulty reaching the conclusion that the depression was not a consequence of failure by the Federal Reserve to reduce real rates and expand the money stock. That failure was the main reason the 1929 recession became the Great Depression. It is not surprising that, neglecting the distinction, Temin is unable to find a causal role for money.

5. Conclusion

One of the main contributions of recent economic theory to economic policy has been renewed insistence on the distinction between real and nominal magnitudes. The Federal Reserve ignored the distinction in the thirties. Policy was judged to be easy when nominal rates on short-term assets and the nominal stock of member bank borrowing was lower than past averages.

In the 1960s, the Federal Reserve made a similar mistake. When nominal rates rose above past peaks, the Federal Reserve regarded monetary policy as restrictive. The consequence of the error was the inflation of the sixties and seventies.

Temin’s recent (1976) analysis of the causes of the depression reaches the conclusion that the causes of the depression were nonmonetary. His analysis neglects the operation of the price-specie flow mechanism that produced deflation and recession through the gold standard mechanism and neglects the influence of the Hawley-Smoot tariff that worked to convert a sizeable recession into a severe depression. Neglected also is the policy of the Federal Reserve and the reasons used to justify inaction.

I attempt to show that the recession that began in 1929 was, at least in part, a result of the operation of the gold standard and the increase of U.S. prices relative to prices in other countries. Traditionally, reduction of the rate of price change under the gold standard would be achieved by a fall in U.S. exports and domestic output and a gold outflow that reduced the monetary base and money. The Federal Reserve did not use monetary policy to encourage a gold outflow in 1930, and the Hawley-Smoot tariff reduced imports after midyear.

An expected and predictable fall in prices occurred in 1930, but net exports declined very little, and prices abroad fell more than U.S. prices. The combined effect of the gold standard and the higher tariffs increased the deflationary
impulse. Deflationary impulses were transmitted to the rest of the world and particularly to countries exporting raw materials and semi-finished goods.

Federal Reserve policy remained deflationary, mainly because of the use of market interest rates and member bank borrowing to indicate ease and restraint. I show that the timing of open market purchases can be explained using the principal relations of a theory of monetary policy developed by Federal Reserve officials at the time. Purchases were made only when policy was regarded as tight or 'tighter.'

The same policy rule, applied in the sixties, produced an acceleration of money and prices. Homer Jones, Darryl Francis and their colleagues at the Federal Reserve Bank of St. Louis predicted the consequences of controlling interest rates and ignoring money at meetings of the Federal Open Market Committee throughout the period. Although the majority of the Committee rejected their views at the time, the predictions of inflation were generally correct.

Federal Reserve policymaking appears to have changed in the recent past. If the Federal Reserve has abandoned real bills and learned to distinguish real and nominal magnitudes, more was learned from inflation than from depression. If so, a principal reason is that Jones and others were quicker to learn the main reason for past policy failures and tried to prevent repetition.

Seymour Harris' account, written shortly after the events described, reaches similar conclusions about the reasons for inaction in 1930 and 1931 but accepts the Federal Reserve arguments as correct [Harris (1933, pp. 628–630)].

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