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Volume Title: From New Deal Banking Reform to World War II Inflation

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Volume Publisher: Princeton University Press

Volume ISBN: 0-691-00363-7

Volume URL: <http://www.nber.org/books/frie80-1>

Publication Date: 1980

Chapter Title: Cyclical Changes, 1933–41

Chapter Author: Milton Friedman, Anna Jacobson Schwartz

Chapter URL: <http://www.nber.org/chapters/c11388>

Chapter pages in book: (p. 76 - 128)

## CHAPTER 2

### Cyclical Changes, 1933-41

As we have seen, severe contractions tend to be succeeded by vigorous rebounds. The 1929-33 contraction was no exception. Net national product rose no less than 76 per cent in current prices and 59 per cent in constant prices from 1933 to the next cyclical peak in 1937, or at average rates of growth of 14 and 12 per cent per year, respectively (see Chart 37). These are extraordinary rates of growth. Two other four-year periods show larger rises in income in current prices, but both are wartime periods, one, terminating just after World War I, the other, during World War II. No other four-year period from the time recorded annual figures start in 1869 to 1960 shows so large a rate of rise in income in constant prices.

#### 1. *Changes in Money, Income, Prices, and Velocity*

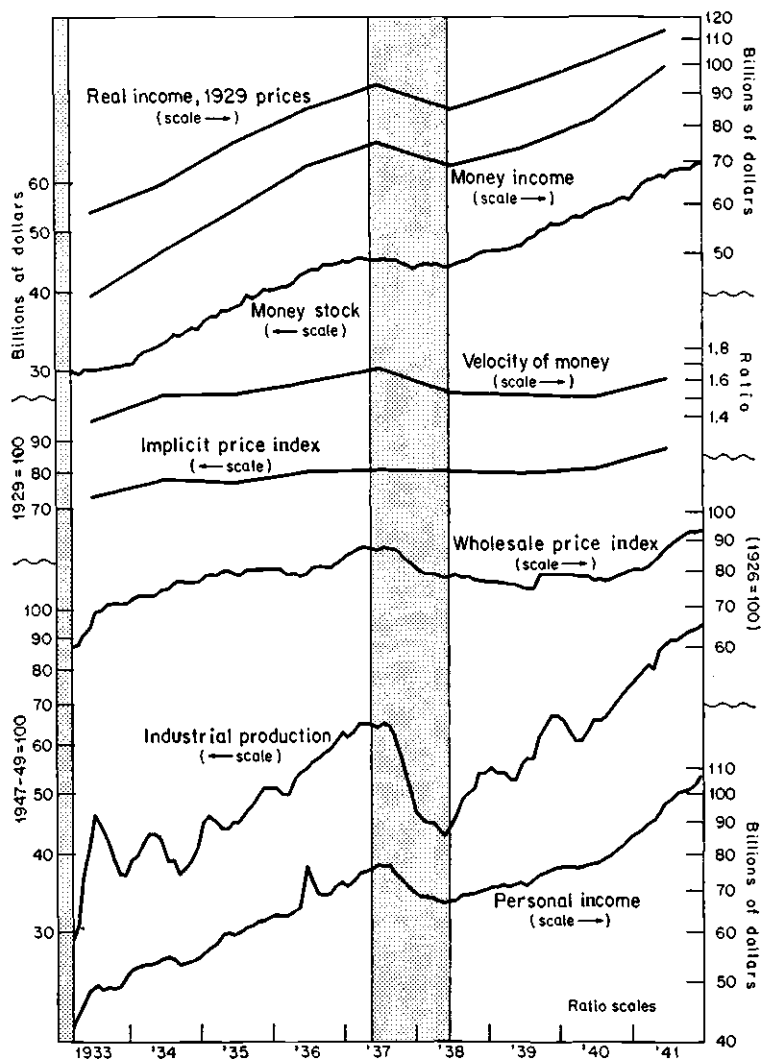
It is a measure of the severity of the preceding contraction that, despite such sharp rises, money income was 17 per cent lower in 1937 than at the preceding peak eight years earlier and real income was only 3 per cent higher. Since population had grown nearly 6 per cent in the interim, per capita output was actually lower at the cyclical peak in 1937 than at the preceding cyclical peak. There are only two earlier examples in the recorded annual figures, 1895 and 1910, when per capita output was less than it was at the preceding cyclical peaks in 1892 and 1907, respectively. Furthermore, the contraction that followed the 1937 peak, though not especially long, was unusually deep and proceeded at an extremely rapid rate, the only occasion in our record when one deep depression followed immediately on the heels of another.

In consequence, the most notable feature of the revival after 1933 was not its rapidity but its incompleteness. Throughout the revival, unemployment remained large. Even at the cyclical peak in 1937, seasonally adjusted unemployment was 5.9 million; by the trough thirteen months later, it had risen to 10.6 million out of a labor force of nearly 54 million.

The revival was initially erratic and uneven. Reopening of the banks was followed by a rapid spurt in personal income and industrial production (see Chart 37). The spurt was intensified by production in anticipation of the codes to be established under the National Industrial Recovery Act (passed June 16, 1933), which were expected to raise wage rates and

## CHART 37

Money Stock, Income, Prices, and Velocity, Personal Income and Industrial Production, in Reference Cycle Expansions and Contractions, March 1933-December 1941



NOTE: Shaded areas represent business contractions; unshaded areas, business expansions.

SOURCE: Industrial production, same as for Chart 16. Personal income, same as for Chart 28. Other data, same as for Chart 62.

prices, and did. A relapse in the second half of 1933 was followed by another spurt in early 1934 and then a further relapse. A sustained and reasonably continuous rise in income and production did not get under way until late 1934; and then it was disproportionately concentrated in the production of nondurable goods and services and of goods for government purchase as compared with previous and subsequent experience. At the cyclical peak in 1937, the nondurables component of the index of industrial production was more than 21 per cent above its value at the 1929 peak, whereas the durables component was some 6 per cent below its value at the 1929 peak. The difference reflected largely an unusually low level of private capital formation. Net private investment remained negative until 1936. When it became positive in 1936 and early 1937, an unusually large part consisted of additions to inventories.<sup>1</sup> At its highest in early 1937, private construction was only one-third of the highest level reached in the mid-twenties.

In his detailed analysis of the revival, Kenneth Roose quite plausibly attributes the unusually low level of private investment at that time mainly to the effects of governmental policies. Those policies tended to make profits relatively low. Wage rises were promoted first through the NIRA codes and then, when the codes were declared unconstitutional in 1935, through the National Labor Relations Act and the enactment of minimum wage laws. Other labor costs were raised by laws imposing a variety of new taxes, notably social security taxes, enacted in 1935 and effective in 1936-37, along with federal provision for unemployment compensation and old age security payments. The undistributed profits tax law, both enacted and effective in 1936, reduced profits net of tax. In addition, and perhaps even more important, business confidence in possibilities for future returns, already shaky because of the 1929-33 experience, was weakened still further by these and other measures: some regulating business (such as the Securities Act of 1933 and the Securities Exchange Act of 1934, the divorce of investment banking from commercial banking under the Banking Act of 1933, restrictions on public utility holding companies enacted in 1935); others expanding government activities into areas up to then reserved mostly for private enterprise (such as the creation of the Tennessee Valley Authority in 1933, the Resettlement Administration and the Rural Electrification Administration in 1935, the Social Security Board in 1935, the Home Owners Loan Corporation in 1933, and the Federal Farm Mortgage Corporation in 1934); still others seeming to threaten the sanctity of private contracts and property (such as the cancellation of gold clauses and the "nationalization" of gold and

<sup>1</sup> See K. D. Roose, *The Economics of Recession and Revival*, Yale University Press, 1954, pp. 45-47. Roose describes the inventory accumulation as unplanned (p. 186).

silver). The effects of these measures were exacerbated by the deliberate maintenance of an unbalanced budget, by attacks on "economic royalists" and "monopoly" by the President and other administration spokesmen, and by the President's proposal to reorganize the Supreme Court. Social tension was heightened by establishment of the Congress of Industrial Organizations, use of the sit-down strike, widespread labor troubles and—from the other side—establishment of the Liberty League and similar organizations by opponents of the New Deal. The result was "a highly emotional controversy as to desirable methods and goals for the political, social, and economic life," and "a bitter division of opinion over the New Deal, its measures and philosophy," hardly calculated to establish an atmosphere conducive to vigorous enterprise and confident risk taking.<sup>2</sup>

The unusually small demand for funds to engage in capital formation contributed to a fall in the level of long-term interest rates, and the low level of rates is in its turn an additional bit of evidence that there was, in fact, an unusually small demand. During the 1920's, high-grade corporate bonds yielded around 4½ to 5 per cent; in the later 1930's, such bonds yielded 3 to 3½ per cent. Lower-grade bonds also fell in yield, though the spread between lower- and higher-grade bonds widened—evidence of the unwillingness of the saver, like the entrepreneur, to undertake risk. The same phenomenon may help account for the widening spread between long- and short-term rates, which brought short-term rates to unprecedentedly low levels. The commercial paper rate fell to ¾ of 1 per cent in the second half of 1934 and remained at that level until early 1937; the Treasury bill rate fluctuated around a level of ½ of 1 per cent from April 1934 to the end of 1936 and at even lower levels after a temporary rise in 1937. As we have seen, the desire for liquidity on the part of banks played an especially important role in bringing down the short-term rates (see Chart 35).

Interest rates were not only low; in addition, they declined during the cyclical expansion of 1933-37. The reversal of the usual cyclical pattern was probably the result of the large inflow of capital from abroad, discussed in the preceding chapter, which added sharply to the supply of loanable funds, reinforcing the effect of an unusually small demand on the level of rates and more than offsetting the cyclical expansion in demand that doubtless did occur.

Like production, wholesale prices first spurted in early 1933, partly for the same reason—in anticipation of the NIRA codes—partly under the stimulus of depreciation in the foreign exchange value of the dollar. Wholesale prices then stabilized to rise again at a more moderate pace throughout most of the period to mid-1937, interrupted only by a mild decline in 1936. All told, from the 1933 trough to the 1937 peak, wholesale

<sup>2</sup> Quotations from Roose, *Economics of Recession*, p. 61.

prices rose nearly 50 per cent. Cost of living rose decidedly less, by 13 per cent. The comprehensive index implicit in Kuznets' deflation of the net national product, available only on an annual basis, was only 11 per cent higher for 1937 than for 1933. While the wholesale price index generally shows a wider amplitude than the cost-of-living index or the implicit index, the differences were much wider than usual. They reflect in part the differential impact of devaluation on goods entering international trade; those goods are more important in the wholesale price index than they are in the other indexes. But it may also be that the differences reflect in part an understatement of the price rise by the cost-of-living and implicit indexes; the recorded prices of many items included in those indexes, but not in the wholesale price index, are much more stable than the actual prices of those items.

As in the other episodes we have considered, the broad movements in the stock of money correspond with those in income. From its trough in April 1933, the recorded stock of money rose 53 per cent to its subsequent peak in March 1937, or at an average annual rate of nearly 11 per cent per year. So large a rise has occurred in a four-year period only immediately after resumption (1879-83), in reaction to the deep depression of the early 90's (1897-1901), and during the two world wars. Yet the stock of money in 1933-37, like money income, did not regain its average 1929 level. The difference was, however, much smaller for money than for income. Velocity, though it rose some 20 per cent in the four years, was still some 15 per cent below its 1929 level, so a difference between 1929 and 1937 of 2 per cent in the stock of money was converted into a 17 per cent difference in money income. The 1937 peak was followed by an unusually severe contraction in money as in income. We have seen that the stock of money generally rises during contractions in general business, though at a slower pace than during the preceding expansions. It falls in absolute level primarily during unusually severe contractions. In 1937 it fell absolutely. The fall was only 3 per cent, from specific cycle peak to specific cycle trough, yet it was the first time since the 1890's that the stock of money had fallen absolutely in two successive contractions in general business.

An extremely interesting feature of the 1933 to 1937 expansion is the relation between the rise in the stock of money and the rise in prices. We may obtain a standard of comparison from two earlier cyclical expansions, which involved a reaction to deep depressions comparable in duration to the 1929-33 contraction (1879-82 in reaction to the 1873-79 contraction, and 1896- or 1897-99 in reaction to the generally depressed years 1891-96 or -97). If we rely on annual figures for all three expansions—monthly figures are available only for the third—the stock of money rose 53 per cent from 1879 to 1882, 41 per cent from 1896 to 1899, and

46 per cent from 1933 to 1937. The rise in implicit prices was also of roughly the same order of magnitude in the three expansions: 10 per cent, 6 per cent, and 11 per cent, respectively. But the rise in wholesale prices was much larger in the third expansion: in annual averages, 20 per cent in 1879-82, 12 per cent in 1896-99, and 31 per cent in 1933-37; in terms of the change from the three months centered on the specific cycle trough to the three months centered on the specific cycle peak, 28 per cent from 1879 to 1882, 26 per cent from 1897 to 1900, and 45 per cent from 1933 to 1937.<sup>3</sup>

What accounts for the greater rise in wholesale prices in 1933-37, despite a probably higher fraction of the labor force unemployed and of physical capacity unutilized than in the two earlier expansions? One factor, already mentioned, was devaluation with its differential effect on wholesale prices. Another was almost surely the explicit measures to raise prices and wages undertaken with government encouragement and assistance, notably, NIRA, the Guffey Coal Act, the agricultural price-support program, and National Labor Relations Act. The first two were declared unconstitutional and lapsed, but they had some effect while in operation; the third was partly negated by Court decisions and then revised, but was effective throughout the expansion; the fourth, along with the general climate of opinion it reflected, became most important toward the end of the expansion.

There has been much discussion in recent years of a wage-price spiral or price-wage spiral as an explanation of post-World War II price movements. We have grave doubts that autonomous changes in wages and prices played an important role in that period. There seems to us a much stronger case for a wage-price or price-wage spiral interpretation of 1933-37—indeed this is the only period in the near-century we cover for which such an explanation seems clearly justified. During those years there were autonomous forces raising wages and prices.<sup>4</sup> The wage and

<sup>3</sup> The specific cycle dates are:

<i>Trough</i>	<i>Peak</i>
June 1879	Aug. 1882
June 1897	Mar. 1900
Feb. 1933	Apr. 1937

<sup>4</sup> The wage-price spiral or price-wage spiral is often stated as if the existence of strong unions or strong producer monopolies were sufficient to set in motion autonomous forces raising wages and prices. This is wrong and involves the confusion between "high" and "rising" that is so common a fallacy in reasoning about economic matters. Strong unions and strong producer monopolies simply imply high wages for the unionized labor and high prices for the commodities monopolized relative to the wages of other labor and the prices of other commodities; they do not imply a continuous tendency for those wages and prices to be forced still higher. Such autonomous upward pressure is to be expected only from *increasingly* strong unions, and *increasingly* strong monopoly groups in the process

price rises occurred in an environment of rapid growth in the money stock, and so they could take place without meeting a monetary barrier or producing an absolute increase in unemployment. In what is perhaps the most common version of the wage-price spiral analysis, the monetary barrier which would block a wage-price spiral is looked upon as being removed by monetary authorities committed to a full employment policy and hence willing to increase the stock of money to prevent unemployment resulting from rises in wages and prices. That was not the sequence from 1933 to 1937; the rise in the money stock was produced not by the monetary authorities but by the gold inflow. Though accidental gold inflow served the same economic function as compliant monetary authorities would have, it occurred despite rather than because of the actions of unions, business organizations, and government in pushing up prices.

If this analysis is right, it suggests that, in the absence of the wage and price push, the period 1933-37 would have been characterized by a smaller rise in prices and a larger rise in output than actually occurred. Moreover, that tendency would have been reinforced by its indirect effects on the stock of money. A smaller rise in domestic prices would have meant a still larger favorable balance of trade and hence a still larger gold inflow. The changed political and economic climate might well have evoked a greater demand for investment, a smaller decline in interest rates or perhaps even a rise instead of a decline, and a less rapid fall in the ratio of deposits to reserves desired by commercial banks. The rise in the stock of money would therefore probably have been greater on two scores: high-powered money would have risen more, and the ratio of the money stock to high-powered money would have declined less. The rise in output would also therefore probably have been greater on two scores: the fraction of the increase in money income accounted for by an increase in output would have been larger; and the increase in money income itself would have been larger.

## 2. *Factors Accounting for Changes in the Money Stock*

Chart 38 facilitates a more detailed examination of changes in the money stock and of the factors accounting for them. High-powered money was the major factor accounting arithmetically for the change in the money

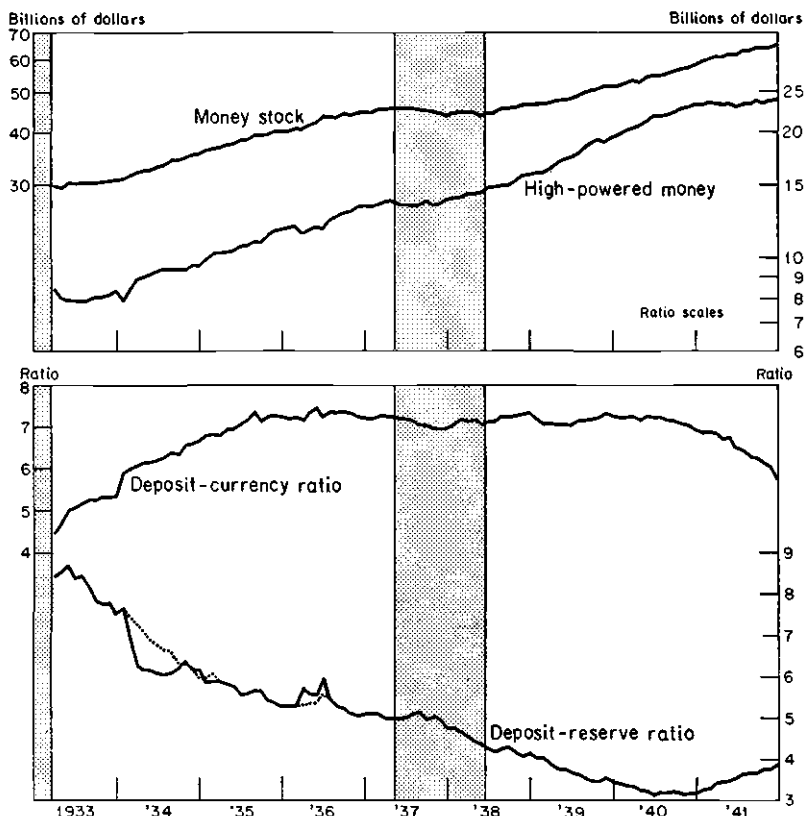
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of raising their wages and prices to levels consistent with their newly acquired monopoly power.

In 1933-37, this condition was clearly satisfied for unions. They experienced a major growth in numbers and strength. Union membership increased two and a half times, and just about doubled as a percentage of nonagricultural employment from 1933 to 1937 (*Historical Statistics of the United States, Colonial Times to 1957*, Bureau of the Census, 1960, Series D-743 and D-745, p. 98). For producer groups, the legislation referred to had the same effect, increasing their effective power to make prices approximate more closely the level that would be optimum for a monopoly.



**CHART 38**  
**The Stock of Money and Its Proximate Determinants,**  
**March 1933-December 1941**



NOTE: Shaded areas represent business contractions; unshaded areas, business expansions.

SOURCE: Tables A-1 (col. 8) and B-3. Dotted section of deposit-reserve ratio smooths deposits and reserves (see Chart 44 and the accompanying text).

stock over the period as a whole as well as for smaller fluctuations in sub-periods of 1933 to 1941. The stock of money grew by 51 per cent from March 1933 to the reference peak in May 1937, and high-powered money, by 60 per cent. The concurrent rise in the ratio of deposits to currency, which alone would have made for a more rapid rise in the money stock than in high-powered money, was more than offset by the decline in the ratio of deposits to bank reserves. The deposit-currency ratio behaved very smoothly, rising sharply from 1933 to 1935 and making its largest

contribution to the growth of the money stock in those years, then tapering off to remain roughly constant until 1940. The deposit-reserve ratio was more irregular, particularly in 1934 and in 1936. In both years, those irregularities offset corresponding irregularities in high-powered money and so left an impress on the stock of money only in much muted form.

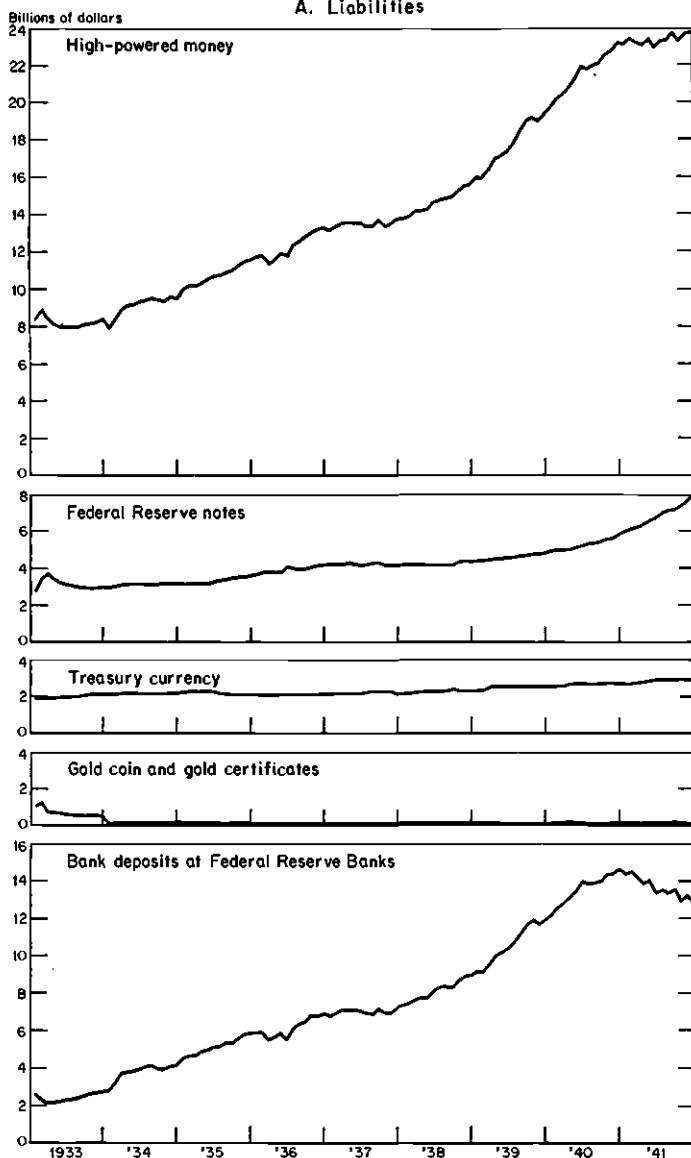
From 1937 to mid-1940, money and high-powered money, though they have the same pattern of movement, converged sharply. The convergence resulted from the continued decline, at an accelerated pace, of the deposit-reserve ratio, this time neither offset nor intensified by movements in the deposit-currency ratio. From mid-1940 to 1945 (see Chart 46), the movements of the two deposit ratios were reversed, the deposit-currency ratio falling and the deposit-reserve ratio rising, so that they again offset one another, and the stock of money moved roughly proportionately to high-powered money.

The composition of additions to high-powered money from 1933 to 1940 differed according to whether it is viewed in terms of the liabilities of the monetary authorities—which is to say, the assets of the public and the banks holding the high-powered money—or in terms of the assets carried on the books of the monetary authorities as the counterpart of those liabilities. From the point of view of the public and the banks, the increase was primarily in Federal Reserve money (Chart 39A), most of the increase being in Federal Reserve deposits. Treasury currency rose a trifle (mostly because additions to silver currency exceeded the volume of national bank notes that were retired). Recorded gold fell to zero after it became illegal to hold, though some gold was probably held illegally. On the other hand, on the consolidated books of the monetary authorities, the increase in high-powered money was matched almost entirely by an increase in gold. Federal Reserve claims on the public and the banks fell to nearly zero, as discounting went out of fashion, and the System's holdings of acceptances became negligible. The remaining category of assets—which we designate other physical assets and fiat—fluctuated within a narrow range. The major fluctuations reflected the Treasury gold sterilization and desterilization operations in 1937 and 1938, which we consider in more detail below. Sterilization corresponded to the replacement of fiat by gold (on the liability side, of noninterest-bearing obligations by interest-bearing ones if financed by borrowing, or net reduction in obligations if financed by a budget surplus), and desterilization corresponded to the opposite.

The 1933-40 relationships were in interesting contrast with those that prevailed during both the twenties and the 1929-33 contraction. In the first place, the ratio of deposits to currency receded from an active and strategic role to a largely passive and secondary role. During the twenties, the steady rise in the deposit-currency ratio was the major factor account-

**CHART 39**  
**High-Powered Money, by Assets and Liabilities of the Treasury**  
**and Federal Reserve Banks, 1933-41**

A. Liabilities

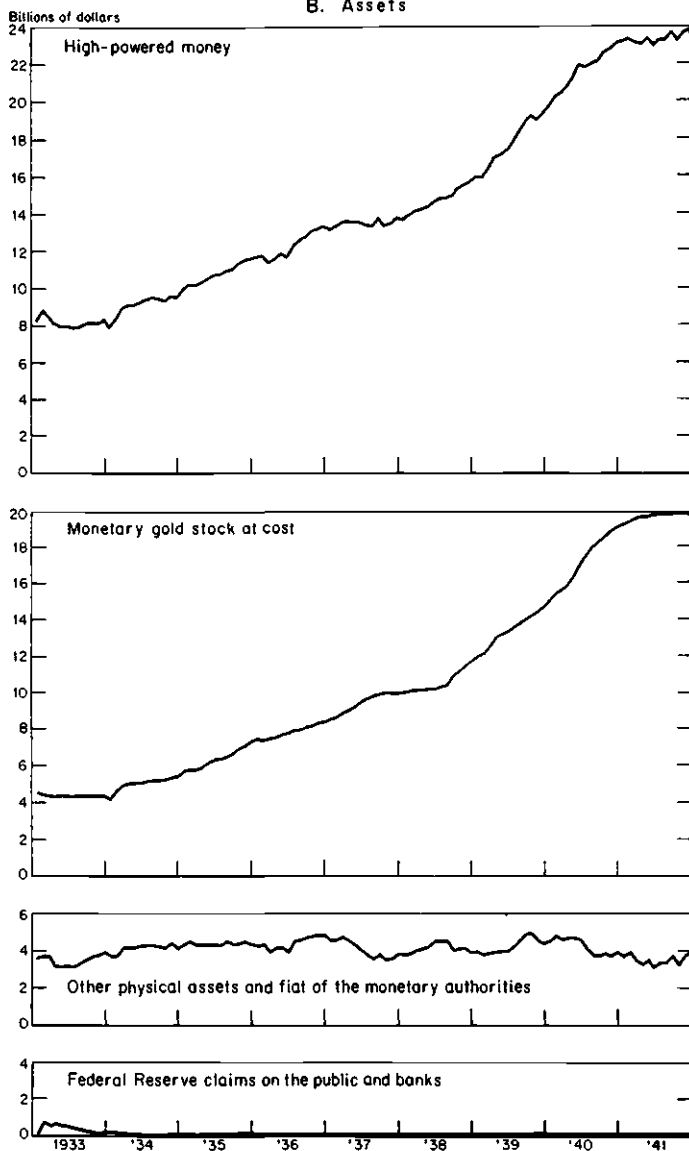


NOTE: Federal Reserve notes, Treasury currency, and gold coin and certificates are outside the Treasury and Federal Reserve Banks.

SOURCE: Same as for Chart 19, but the cumulated devaluation profit was deducted from the seasonally adjusted official gold stock. Devaluation profit as of Jan. 31, 1934, from *Banking and Monetary Statistics*, p. 538. For subsequent months, annual devaluation profit, from the *Annual Report of the Secretary of the Treasury*, 1940, pp. 634-635, and 1941, p. 428, was cumulated to the Jan. 31, 1934, figure.

CHART 39 (Concluded)

## B. Assets



ing for the concurrent rise in the stock of money; from 1930 to 1933, recurrent declines in the ratio signaled renewed liquidity crises. After 1933, the initial sharp rise in the ratio is partly spurious, reflecting the defects in our money estimates analyzed in Chapter 8 (section 1) and arising from the reclassification of deposits in unlicensed banks. The reclassification had the effect of raising the ratio of deposits to currency.<sup>5</sup> If this effect is allowed for, there remains a gradual rise in the ratio of deposits to currency from the low point reached in 1933 to mid-1935. Thereafter, the ratio was highly stable until 1940, when it began to decline. The rise from 1933 to 1935 was clearly a reaction to the prior decline. It was a sign of renewed confidence in banks, of renewed willingness to hold deposits instead of currency, just as the 1930-33 decline had been a result of a loss of confidence in bank deposits. However, the level around which the ratio fluctuated between 1935 and 1940, about 7.20, was much lower than the peak of 11.57 attained in 1929. It was about the same as the level reached in 1921, which in turn was somewhat below the level in the years immediately before World War I. Cagan's detailed analysis of the deposit-currency ratio implies that the low level between 1935 and 1940 was primarily attributable to the cost of holding deposits, which was higher than at earlier dates—interest on demand deposits was outlawed and instead service charges were imposed.<sup>6</sup> The decline after 1940 we consider in connection with wartime developments (Chapter 10).

A second and more interesting contrast is found in the tools employed by the Reserve System and in the relative roles of the Reserve System and the Treasury. During the 1920's and to a lesser extent the early 1930's, there was little connection between movements in high-powered money and in the gold stock because of a clear inverse relation between movements in the gold stock and in Federal Reserve credit outstanding (see Chart 25). The Federal Reserve System used its powers, particularly during the twenties, to sterilize gold movements and to prevent erratic short-term changes in high-powered money. After 1933, on the other hand, Federal Reserve credit outstanding was almost constant and the

<sup>5</sup> Our estimates include currency in the vaults of unlicensed banks as part of currency held by the public. The opening of a previously unlicensed bank or its merger with a licensed bank, therefore, increased the numerator of the deposit-currency ratio and reduced the denominator. The reclassification also had a lesser effect on the deposit-reserve ratio. Our estimates treat deposits of unlicensed member banks at Federal Reserve Banks as part of total member bank reserves and therefore include them in the denominator of the deposit-reserve ratio. The opening of a previously unlicensed bank or its merger with a licensed bank increased the numerator of the deposit-reserve ratio by the full amount of the released deposits, but increased the denominator only by vault cash.

<sup>6</sup> Phillip Cagan, *The Demand for Currency Relative to the Total Money Supply*, New York, NBER, Occasional Paper 62, 1958, pp. 20-22.

discount rate was not altered from early 1934 to mid-1937 (see Chart 41, below). As we have seen, the changes in high-powered money reflected mainly movements in the gold stock. Such deviations as there were between the changes in high-powered money and the gold stock reflected offsetting measures by the Treasury, which altered its cash holdings and deposits at the Federal Reserve. This contrast applies not only to year-to-year movements but equally to seasonal movements. In the 1920's and early 1930's, Federal Reserve credit outstanding had a distinct seasonal movement, corresponding to the seasonal movement in currency outside the Treasury and Reserve Banks (Chart 26). After 1933, currency had the same seasonal movement as earlier, but Federal Reserve credit outstanding had essentially no seasonal movement. The System discarded almost entirely the role it had assumed in the 1920's and along with it the tools it had developed at that time. For such actions as it engaged in it used new tools acquired in 1933-35—control over margin requirements on securities and over reserve requirements of member banks.

A third and closely related contrast appears in the connection between movements in high-powered money and in the ratio of deposits to bank reserves. In the 1920's, both rose, though the rise in high-powered money had nearly stopped by 1925, while the rise in the deposit-reserve ratio continued steadily throughout the decade; and both were highly stable in their shorter-term movements. After 1930, the two began to move inversely, high-powered money rising and the ratio of deposits to bank reserves declining, as banks sought to strengthen their liquidity position. The general inverse movement continued after 1933, with addition of a much more regular tendency for the short-term irregularities in the deposit-reserve ratio to offset corresponding irregularities in high-powered money. The distinction between the general inverse movement over a period of years, and the shorter-term, month-to-month offsetting movements deserves more attention and we shall return to it. The short-term tendency is related to the preceding contrast. The Federal Reserve was no longer smoothing minor irregularities in high-powered money, hence the banks adjusted to them. The short-term irregularities in the deposit-reserve ratio can therefore correctly be interpreted as a fairly passive response on the part of banks to the short-term irregularities in high-powered money. This has fostered the view that the longer-term decline—a manifestation of the accumulation of excess reserves, discussed above—was also a passive reaction to the growth of high-powered money, a view discussed above and rejected (Chapter 8, section 1).

The first of these contrasts requires no further discussion. In connection with the other two, we shall consider factors accounting for changes in high-powered money (section 3); policy actions of the Federal Reserve (section 4); changes in the deposit-reserve ratio (section 5); and, finally,

by way of a summary of the rest, the role of monetary measures in the 1937-38 contraction and the subsequent recovery (section 6).

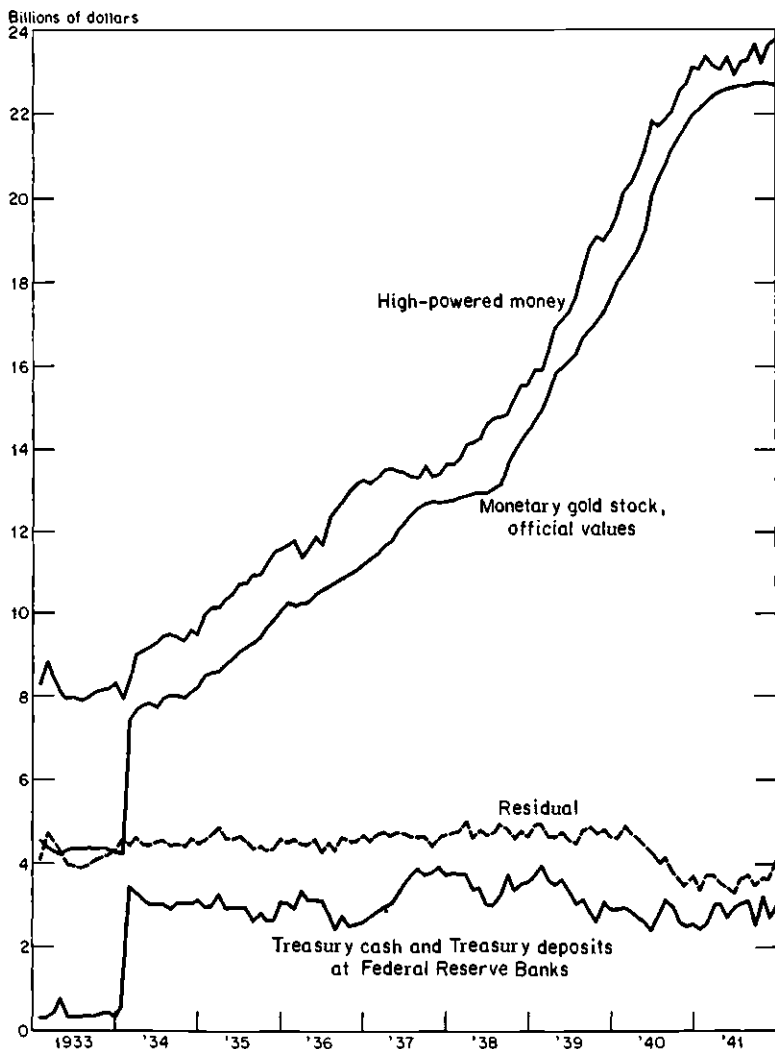
### 3. *Changes in High-Powered Money*

The breakdown of high-powered money by assets of the monetary authorities, presented in Chart 39B, consolidates the accounts of the Treasury and the Federal Reserve System. Though appropriate for analyzing the joint effect of the monetary authorities on the money stock, the consolidation conceals the relative roles of the two separate agencies and hence cannot be used to document our conclusion that the Treasury had become the active monetary authority. For this purpose, we need to separate out the items over which the Treasury had direct control: its cash and its deposits at Federal Reserve Banks. Since those deposits are a liability of the Banks, they cancel out when Treasury and Reserve accounts are consolidated.

When the Treasury bought gold, it paid with a check on its account at one of the Federal Reserve Banks. At the same time, however, it could print gold certificates of a corresponding amount and either add them to its cash balances or deposit them at the Reserve Banks. Such a transaction therefore meant a rise in high-powered money equal to the value of the gold purchase and no change in Treasury cash and deposits at Reserve Banks. As we have seen, transactions of this kind accounted for the major movements in high-powered money from 1933 to 1941. This point is demonstrated again in Chart 40 with a series on the monetary gold stock slightly different from that given at cost in Chart 39B. This one is expressed in official values, which changed abruptly at the end of January 1934 when the official price of gold was raised. We use official values in this chart in order to make the gold series comparable with the series on Treasury cash plus deposits at the Reserve Banks, also plotted on the chart.

The gold series is smoother than the high-powered money series. The main reason is that movements in Treasury cash and in deposits at Federal Reserve Banks altered the impact of the gold stock, and accounted almost entirely for the discrepancies between movements in high-powered money and the gold stock. Though changes in Treasury cash and deposits at Reserve Banks need not affect high-powered money, during that period they did. The Treasury can change its cash and deposits at Reserve Banks by various bookkeeping operations such as printing Treasury currency authorized but not issued, or destroying Treasury currency it holds, or selling securities to or buying them from the Reserve Banks. None of these operations will affect high-powered money. However, with one exception, no such transaction of any size was undertaken from 1933 to 1941. Other operations changing Treasury cash and deposits at Reserve Banks all

CHART 40  
Major Factors Accounting for Changes in High-Powered Money,  
1933-41



SOURCE: High-powered money, Table B-3. Monetary gold stock, same as for Chart 19. Treasury cash and deposits, Table A-3. Residual, see text.



change high-powered money by the same amount but in the opposite direction, since they consist of a transfer of cash or deposits at Reserve Banks from the public and banks to the Treasury, or conversely.<sup>7</sup>

We did not find it necessary in the preceding chapter to take explicit account of Treasury cash and deposits at Federal Reserve Banks, for two reasons. In the first place, Treasury cash and deposits at the Banks fluctuated much less in the twenties than they did later. In the second place, in the twenties and early thirties, the Reserve System deliberately undertook to offset seasonal changes in Treasury holdings as well as in other short-term factors tending to introduce irregularities into the total volume of high-powered money. After 1933, the System apparently gave up any attempt to smooth short-term movements. In consequence, high-powered money became more erratic in its month-to-month movements after 1933 than before (compare Chart 38 with Charts 23 and 31).

The extent to which the gold stock and changes in Treasury cash and deposits at the Reserve Banks jointly fail to account for movements in high-powered money is shown by the line in Chart 40 labeled "residual." It plots the excess of high-powered money over the sum of the gold stock and Treasury cash and deposits at Reserve Banks. It therefore reflects all other factors. The movements in the residual are small and even some of these are Treasury induced, reflecting bookkeeping transactions that make our series on Treasury cash and deposits at Reserve Banks an inexact index of the effects of Treasury operations on high-powered money. Only the movements in the residual in 1933 and early 1937 and the sharp decline in 1940 can be plausibly attributed to Federal Reserve rather than Treasury action. The first reflects Reserve System operations in the wake of the bank holiday; the second, operations accompanying the reserve requirement changes; and the third, reduction of Federal Reserve credit outstanding through open market sales (see Chapter 10).

Though the initial sharp jump in the gold stock from January to February 1934 is accounted for primarily by the revaluation of gold, part of it was produced by the substantial amount of gold imported, as foreigners took advantage of the higher buying price. The new gold price became official on January 31, 1934. Gold was almost immediately shipped

<sup>7</sup> Such operations, when they increase Treasury cash or deposits at Reserve Banks, involve the Treasury's taking in from the public and the banks, in the form of cash or checks on Reserve Banks, more from sales of securities or taxes or other receipts than it pays out in the same form to redeem securities or to meet current expenses. But this means that the public and the banks transfer part of their high-powered money to the Treasury. Since our series on high-powered money refers solely to money held outside the Treasury and the Reserve System, it follows that such a transfer reduces high-powered money by the same amount that it adds to Treasury cash and deposits at the Reserve Banks; and conversely, when the transfer is from the Treasury to the public and the banks. In practice, the initial transfer from the public is typically to Treasury accounts at commercial banks. The Treasury then transfers its deposits at commercial banks to Reserve Banks.

to the United States. In the six weeks from February 1 to March 14, more than \$0.5 billion of gold (valued at the new price) was imported. At the same time, Treasury cash and deposits at Federal Reserve Banks, excluding the profit from revaluation of gold, declined. The two factors together account for the sharp rise in high-powered money from the end of January to the end of March—a rise of \$1 billion or one-eighth of the initial level, much the largest percentage change in so short an interval during the whole period—1907 to 1960—for which monthly data on high-powered money are available.

Once the initial rush of gold imports was over, the gold stock continued to rise at a fairly steady rate to the end of 1937. Until France left gold in late 1936, roughly half of U.S. gold imports came from France. For the next year, France was a net importer of gold from the U.S. rather than a net exporter. During the last quarter of 1937, a large-scale withdrawal of foreign short-term balances followed rumors that further devaluation of the dollar was being considered as a possible counter-cyclical measure.<sup>8</sup> On net, the United States lost gold from October 1937 to February 1938. Withdrawal of European short-term funds from the United States ceased in July 1938. These counter movements roughly offset the forces making for a continued flow of gold to this country, so the total gold stock remained fairly steady from autumn 1937 to autumn 1938. Munich then led to a further flight of capital from Europe and a sudden increase in the rate of gold inflow. The outbreak of war simply maintained the rate of the gold inflow. The intensification of Britain's war effort after the fall of France in early 1940 and her attempt to tap American supplies of war material, as she had in World War I, produced a further increase. Finally, the enactment of lend-lease in early 1941, which relieved Britain and her allies of the necessity of acquiring dollars to finance war purchases, brought an end to the rapid growth of the gold stock.

Many of the minor fluctuations (Chart 40) in Treasury cash holdings

<sup>8</sup> The Gold Reserve Act of Jan. 30, 1934, empowered the President to establish the gold content of the dollar anywhere between 50 to 60 per cent of its former weight. The devaluation he proclaimed the following day established the gold content at about 59 per cent of the former weight. Hence he still had authority to change the purchase price of gold or the weight of the dollar. The power to devalue was allowed to expire in 1943 but *de facto* devaluation can still legally be effected by the Secretary of the Treasury under the power he acquired in the Gold Reserve Act to buy and sell gold, with the approval of the President, "at such rates and upon such conditions as he may deem advantageous to the public interest."

However, M. A. Kriz has pointed out that the Secretary of the Treasury's authority to change the market price of gold has been limited by the obligations assumed by the U.S. as a member of the International Monetary Fund and by the provision in the Bretton Woods Agreements Act of July 31, 1945, requiring legislative action by Congress before any change is made in the par value of the U.S. dollar ("Gold in World Monetary Affairs Today," *Political Science Quarterly*, Dec. 1960, p. 504 n.).

and deposits at Federal Reserve Banks, which are mirrored in corresponding fluctuations in high-powered money, probably reflect largely seasonal discrepancies between receipts and expenditures. Although the series plotted have been seasonally adjusted, both expenditures and receipts of the federal government changed so radically that the statistical adjustments probably have not succeeded in eliminating all seasonal effects.

There remain for comment a number of discrepancies of more moment.

(1) The marked irregularity in the first half of 1936 in high-powered money reflects an abnormal accumulation of Treasury deposits at Federal Reserve Banks from both March income- and gift-tax collections and, more important, from a large flotation of bonds and Treasury notes.

(2) The failure of high-powered money to reflect the growth of the gold stock in the first nine months of 1937 is a result of the gold-sterilization program adopted by the Treasury in December 1936. During that period, the Treasury paid for the gold it bought by borrowing rather than by using the cash balances it could create on the basis of the gold; the purchase of gold was therefore accompanied by a rise in its cash plus deposits at the Reserve Banks (see Chart 40).

The operation was economically identical with the sterilization actions of the Federal Reserve in the 1920's, when the System sold bonds on the open market to offset the increase in high-powered money that would otherwise have arisen from a gold inflow. The difference was that the Treasury rather than the System sold the bonds and took the initiative in sterilizing gold. As we shall see, the program became effective at about the same time as the second of two rises in reserve requirements imposed by the Federal Reserve. The sterilization program sharply reinforced the effect of the rise in reserve requirements in producing monetary tightness: the rise in reserve requirements increased the demand for high-powered money; simultaneously, the Treasury's action virtually brought to a halt an increase in the stock of high-powered money which had been proceeding with only minor interruptions since 1933.

(3) The more rapid increase in high-powered money than in the gold stock in the first half of 1938 reflected the reverse process: desterilization of gold by the Treasury, which is to say, its printing of gold certificates corresponding to some of the "inactive" gold in the Treasury; deposit of the certificates at the Reserve Banks, and drawing on those balances to pay government expenses or to redeem debt. Again, the operation was essentially an open market purchase of securities but one undertaken by the Treasury at its initiative.

A start toward desterilization was made in September 1937, when the Board of Governors of the Federal Reserve System requested the Treasury to release \$300 million from the inactive gold account.<sup>9</sup> There was, of

<sup>9</sup> Board of Governors of the Federal Reserve System, *Annual Report*, 1937, p. 9.

course, no technical reason the Board itself could not have taken the economic equivalent of that step by buying \$300 million of government securities. The Treasury released the amount requested by the Federal Reserve in a bookkeeping sense. However, it continued to sterilize all further gold purchases, which amounted to \$174 million in that month, so that inactive gold held by the Treasury fell only \$126 million in September 1937. The net effect of those actions as well as of other transactions affecting Treasury accounts was a decline of \$136 million in Treasury cash and deposits at the Federal Reserve. This is the amount by which high-powered money grew in September, as a result of Treasury operations, over and above the increase in the gold stock in that month.

As of January 1, 1938, the Treasury limited the addition to the inactive gold account in any one quarter to the amount by which total gold purchases exceeded \$100 million, and on April 19, 1938, discontinued the inactive gold account, which then amounted to about \$1.2 billion. Once again, that was largely a bookkeeping step, the economic effect of which can be judged only by taking into account the simultaneous changes in other Treasury accounts. Initially, the inactive gold was simply moved from Treasury cash to Treasury deposits at Federal Reserve Banks, and so had no immediate monetary effect. Effective desteralization did not occur until more than a year after formal desteralization. Over that period the sum of Treasury cash holdings and deposits at Reserve Banks fell about \$0.75 billion, then rose about \$1 billion, and only after February 1939 began to decline toward the level that had prevailed before the sterilization program (Chart 40).

(4) The marked month-to-month irregularity in high-powered money in 1941 reflects a correspondingly increased irregularity in Treasury balances in that year, arising partly from sharper fluctuations in income-tax receipts as a result of the increased taxes imposed under the Revenue Acts of June 25 and October 8, 1940, partly from a series of bond issues which about coincided in time with the seasonal peaks in tax receipts. Again, this is an example of precisely the kind of irregularity that, by the late 1920's, the Federal Reserve System had learned to smooth with great effectiveness.

#### 4. *Federal Reserve Policy*

In the period under consideration, the Federal Reserve System made essentially no attempt to alter the quantity of high-powered money by using either of the two instruments which had been its major reliance up to 1933: open market operations, which, as we saw in Chapter 6, had developed in the twenties from a means to acquire earnings into the major technique of monetary control; and rediscounting, which had initially been regarded as the primary instrument of Federal Reserve policy but

had become one blade of the scissors of which open market operations was the other. Open market purchases and sales were made continually but, with only a few exceptions, in order to maintain the total portfolio intact or to alter its composition and thereby affect the structure of rates of return, not to alter the total amount of Federal Reserve credit outstanding. As President Harrison described it in 1939, the System had, in the course of those years, shifted its attention from "credit control" to "market control."<sup>10</sup>

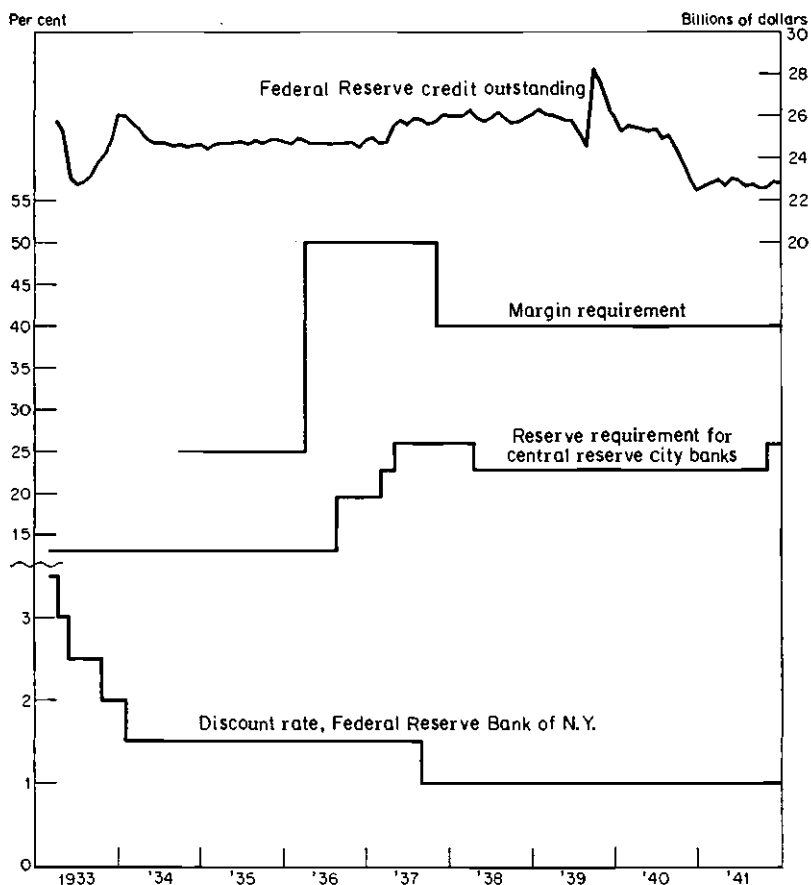
After a decline and later rise in 1933, Federal Reserve credit outstanding was almost perfectly constant from 1934 to mid-1940. (There was then a sharp decline to a new level in 1941, discussed in Chapter 10.) The only change that shows up at all noticeably on a scale the size of Chart 41 is an increase and then a decrease on the occasion of the outbreak of World War II. Comparison of Chart 41 with Charts 25 and 33 shows how sharp the contrast with earlier experience was. In the five years 1934 through 1938, taken as a whole, Federal Reserve credit outstanding varied within a range of \$177 million. In each of the seven years from 1924 through 1930, taken separately, the range is wider and in six of the seven years, more than twice as wide.

As Chart 41 shows, after a series of declines in 1933 and early 1934 following the rise in March 1933, the rediscount rate at New York remained at 1½ per cent for nearly three and one-half years and was lowered to 1 per cent in August 1937, some three months after the cyclical peak in May. It remained at that level for over five years. The longest preceding period of constancy was nineteen months—in 1915-16 and again in 1918-19.

Even this evidence understates the contrast between the use of these instruments by the Federal Reserve System in the period under consideration and in the earlier period. Whatever fluctuation occurred in Federal Reserve credit outstanding arose largely from variation in "float" (the difference between the amounts credited and debited to member bank accounts for items in the process of collection) and in bills bought and bills discounted. From January 1934 through March 1937, government securities held at month's end fluctuated within a range of \$17 million; on successive Wednesdays, within a \$4 million range; and was exactly equal to \$2,430 million in 133 out of 170 weeks. In early 1937, the System purchased \$96 million of bonds in connection with money-market tightness and a sharp flurry in short-term rates accompanying the final rise in reserve requirements. It then kept the level fixed for half a year, bought \$38 million more in November 1937 and kept the new level fixed until

<sup>10</sup> George Leslie Harrison Papers on the Federal Reserve System, Columbia University Library, Harrison, Notes, Vol. VII, Dec. 7, 1939. For a full description of the Papers, see Chap. 5, footnote 41 and the accompanying text.

CHART 41  
Use of Tools by Federal Reserve System, March 1933-December 1941



SOURCE: Federal Reserve credit outstanding, end-of-month data, from *Banking and Monetary Statistics*, pp. 376-377, seasonally adjusted by Shiskin-Eisenpress method (see source for Chart 21). Other series, *Banking and Monetary Statistics*, pp. 400, 441-442, 504.

mid-1939. Use of open market operations to influence the volume of Federal Reserve credit outstanding from day to day, week to week, and month to month ceased to be a continuous activity of the System.

Discounting, too, fell into even greater disuse than the constancy of the rate alone suggests. In the earlier period, the discount rate was seldom above short-term open market rates. For example, the New York discount rate was never above the average open market rate on 4- to 6-month

commercial paper in any week from 1919 through 1931. From 1934 on, the discount rate was seldom below short-term open market rates. The New York discount rate was never below the average 4- to 6-month commercial paper rate in any week in the eight years from 1934 through 1941. The result, of course, was negligible use of rediscounting facilities. From 1918 to August 1933, the average amount of bills discounted in any month never fell below the \$155 million of August 1931 and was generally several times that sum; from September 1933 through August 1941, it never rose above \$138 million, after June 1934, never above \$24 million, and was mostly below \$10 million.

The Federal Reserve System repeatedly referred to its policy as one of "monetary ease" and was inclined to take credit—and, even more, was given it—for the concurrent decline in interest rates, both long and short. It is hard to accept this view in terms of the traditional instruments of the System and, as we shall see, the new instruments it used—control over reserve requirements and over margin requirements on securities—were employed entirely as restrictive devices. As to open market operations, failure to reduce the System's portfolio was, it is true, an act of self-restraint which permitted gold inflows to have full effect on high-powered money. But there is no reason gold inflows should provide the appropriate growth in high-powered money month after month. Moreover, Federal Reserve officials expressed recurrent concern in meetings of the Federal Open Market Committee about the inflationary effect of the gold movements but were inclined to leave any offsetting open market operations to the Treasury. They used instead their new tool of changes in reserve requirements.

With respect to discount policy, the Federal Reserve was misled by the tendency, present recurrently throughout its history before and since, to put major emphasis on the absolute level of the discount rate rather than on its relation to market rates. The rate in the thirties was low in comparison with rates in earlier periods but, as we have seen, it was much higher compared with market rates than it had ever been. By relevant standards, the discount policy was abnormally tight, not easy. The System regarded the lack of discounting as a reflection of the large accumulation of excess reserves and hence as a lack of need for accommodation. That view no doubt had some validity, but the causal chain ran the other way as well. With discount rates so high relative to market rates, discounting was an expensive way to meet even temporary needs for liquidity. Banks, therefore, had an incentive to rely on other sources of liquidity, including the accumulation of larger than usual reserves.<sup>11</sup>

<sup>11</sup> As we have seen above, the System's belief that it was being "easy" in 1930 and 1931 reflected the same fallacy in the interpretation of discount rates, and, as we shall see in Chap. 11, so did the emphasis on "free reserves" in the policy

Given the large inflow of gold, a relatively tight discount policy was probably the correct policy for most of the period. The stock of money rose steadily throughout the period except for 1937, when the rise was interrupted by Treasury sterilization of gold and the doubling of reserve requirements. And, as we have seen, the rate of rise was large. It is by no means clear that a still larger rate of rise was desirable. And even if it were, given the attitudes of the commercial banks, it probably would have been preferable to provide them with more reserves through open market purchases than through encouragement of discounting. Our point therefore is not at all that the discount policy followed was a mistake, but only that it cannot be regarded as having contributed to monetary "ease."

Up to 1941 at least, whatever may have been the reasons for the low and declining levels of interest rates, Federal Reserve policy was clearly not one of them. The System's high discount rate relative to market rates and, as we shall see, increases in reserve requirements probably induced banks to resort to short-term paper rather than to discounting as a source of secondary reserves, and thereby helped to produce the abnormally low level of short-term rates relative to long-term rates that prevailed in the thirties. But the low level of long-term rates and its declining tendency must clearly be attributed to other factors. We have already expressed the view that the most important were probably the combination of a low demand for funds for private capital formation and an increase in the supply of funds arising out of the flight of capital from Europe to the United States. In addition, a gradual downward revision of expectations about the level of future short-term rates doubtless served to narrow the spread between short- and long-term interest rates after the mid-1930's.

One other piece of evidence of the radical change in Federal Reserve policy is the absence of any substantial pattern in the seasonal movement in Reserve credit outstanding (see Chart 42). As we saw, the seasonal movement in Reserve credit in the twenties—roughly similar in amplitude and pattern to that in currency outside the Treasury and Federal Reserve Banks—largely protected member bank deposits at the Reserve Banks from seasonal changes in the demand for currency (Chart 26). In the thirties, currency had about the same seasonal movement as before, and Treasury deposits at Reserve Banks, now at least ten times their former volume, had a very large seasonal movement. But the seasonal movement in Reserve credit in the thirties was negligible in amplitude and did little to offset those forces. Accordingly, member bank deposits at Reserve Banks were subject to wide seasonal variation.

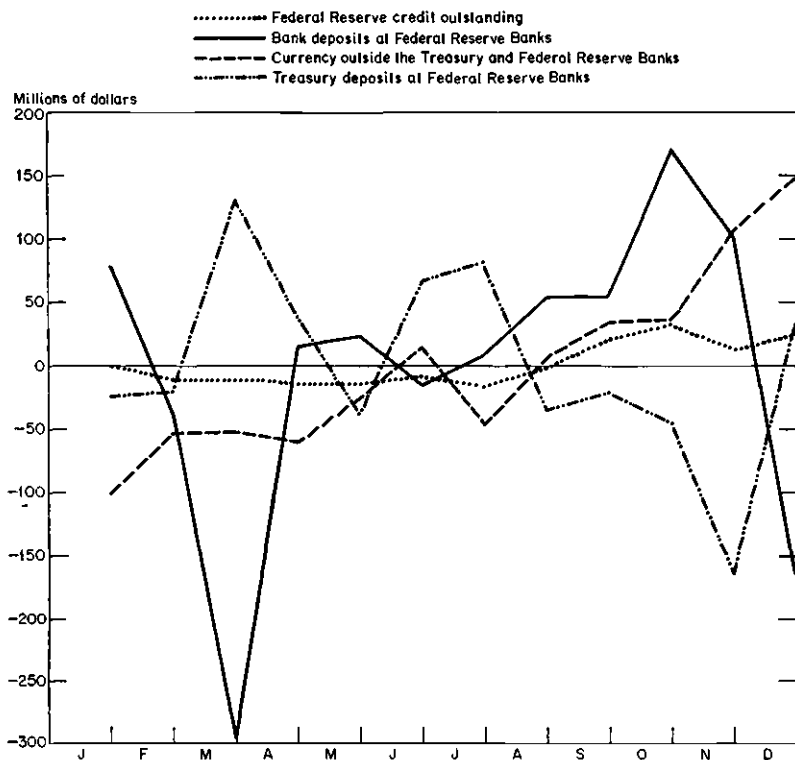
The Securities Exchange Act of 1934 and the Banking Act of 1935

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discussions of the 1950's. The fallacy is also identical with that embodied in the pegging of government security prices, which the System took so long to perceive at all fully.



CHART 42  
Seasonal Patterns Affected by Federal Reserve Policy, 1933-41



NOTE: Treasury cash is not shown because no seasonal movement was discernible after 1933.

SOURCE: Federal Reserve credit outstanding, bank deposits at Federal Reserve Banks, same as for Chart 26. Currency, same, using seasonal index computed from 1934-41 data. Treasury deposits at Federal Reserve Banks, same, using original data and 1931-43 seasonal index underlying seasonally adjusted data in Table A-3.

gave the System two permanent powers: control over margin requirements on securities, and authority to raise or lower reserve requirements of member banks between the legal level before 1933 and twice that level.<sup>12</sup> Both powers were lodged in the Board alone. Chart 41 shows the use that was made of them. Margin requirements were imposed as soon as the power was granted, then raised sharply at the beginning of 1936 when the Board was increasingly concerned with potential inflation,

<sup>12</sup> In Aug. 1948, Congress granted the Board a temporary power, terminating June 30, 1949, to raise the maximum percentages permitted under the Banking Act of 1935 by 4 points on demand deposits and by 1½ points on time deposits.

then lowered part way in late 1937 when the recession was in process. Both the granting of that power and its use were a result of the experience during the late 1920's when the Board, among many others, was concerned with the bull market in stocks and felt constrained to check "speculation." In our view, the imposition of those requirements and their variation had negligible monetary consequences and can be ignored for our purposes. The power to alter reserve requirements is a different matter. It is an extremely potent control and was used in what seems retrospectively a drastic fashion, the requirements being doubled to the maximum level permitted in three steps within a nine-month period. The System thus abandoned its old tools—open market operations and rediscounting—and applied with vigor its new tool for the earlier purpose. Yet even so drastic a use of that new power does not contradict the view that the Federal Reserve System was following a largely passive policy. The rise in reserve requirements was not imposed primarily to affect current conditions but to enable the System to control future developments it feared might be set in train by the large excess reserves.

The Reserve System's neglect of seasonal and other short-term movements, the maintenance of a constant portfolio of government securities, the absence of change in discount rates, and the doubling of reserve requirements all had common roots in the sharp rise in member bank excess reserves and in the System's interpretation of the significance of excess reserves.

Retrospectively, the initial accumulation of excess reserves, after the banking panic of 1933 and before the devaluation of the dollar, to a level of about \$800 million was welcomed in explicit recognition that the experience of prior years had altered commercial bank attitudes: a volume of reserves which would have been expansionary before 1929 might be contractionary in 1934.<sup>18</sup> However, as excess reserves accumulated in

<sup>18</sup> The retrospective view was stated in a memorandum on excess reserves, dated Dec. 13, 1935, for a Federal Open Market Committee (FOMC) meeting, and on Jan. 23, 1936, by Harrison in a meeting with his directors (Harrison, *Open Market*, Vol. II; Notes, Vol. VI). The open market purchase program which created the initial accumulation of excess reserves was not, however, voted primarily for that purpose. An Apr. 1933 Governors Conference, according to Harrison, "was not in favor of embarking on another excess reserve program," but the governors favored purchases of government securities if necessary to meet Treasury requirements; the New York Bank approved the Conference resolution to that effect (Notes, Vol. III, Apr. 24, 1933). A similar view had been expressed at the Apr. 22, 1933, meeting of the Open Market Policy Conference, which authorized the executive committee to purchase up to \$1 billion of government securities "to meet Treasury requirements." Deputy Governor McKay of Chicago voted against the resolution. The Board thought the authorization too narrow, and approved the recommendation without the limitation "to meet Treasury requirements" (*Open Market*, Vol. II, minutes of meeting; telegram, dated May 12, 1933, Board—signed Chester Morrill—to Harrison). Purchases were not made until after May 23, when Governor Black—appointed the week before to replace

amounts which dwarfed any earlier levels, attitudes changed. As an internal memorandum, dated December 13, 1935, and prepared at the New York Bank, put it: "It seems very probable that with excess reserves of such extraordinary dimensions there comes a point when further increases have no constructive effects."<sup>14</sup> The view, always held by many, that excess reserves were idle funds serving little economic function and reflecting simply absence of demand for loans or lack of supply of investments came to be accepted and taken for granted by almost all—albeit, of course, with minor qualifications expressed from time to time.

Given this interpretation, it seemed pointless to try to offset seasonal and other short-term movements. The excess reserves could and, as we shall see, did cushion their effects to a large extent. Similarly, variation in discount rates could not be expected to affect credit conditions. If the commercial banks were passive, ready and willing to make loans or purchase securities, and were being kept from doing so only by lack of demand, there was little to be gained by making it cheaper or more expensive for them to acquire still more reserves.

This interpretation also explains the reason the System engaged in no extensive purchases of government securities after November 1933. Why add to excess reserves, which were being so rapidly expanded by gold inflows and which served no current economic function? It does not explain why the System kept its security holdings constant. Certainly, after mid-1935, gold inflows were viewed as expanding excess reserves at too rapid a rate and as raising dangers of future inflation. The obvious reaction would be to sell government securities and thereby offset the gold inflow. At first, that measure was not taken because the System was unwilling to do anything that could be interpreted as contractionary at a

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Eugene Meyer as governor of the Board—met with the executive committee of the Open Market Policy Conference. The New York view was that an increase in excess reserves was desirable at the time but not beyond an accumulation of \$500 million (Open Market, Vol. II, minutes of executive committee meeting; Notes, Vol. III, May 15, July 6, 1933).

Early in Aug., when excess reserves had reached \$550 million, the executive committee of the Conference proposed to discontinue purchases, and again in Sept. and Oct., when the excess was even larger. Purchases were nevertheless continued until Nov. 15, 1933—totaling \$600 million—because of administration pressure. The committee had been warned, that cessation of purchases "might . . . precipitate immediate and definite inflation through the issue of greenbacks," on the insistence of Senator Thomas and others in Congress (Conversations, Vol. II, Sept. 16, 1933, conversation with Governor Black). Owen D. Young, however, saw no merit in increasing excess reserves beyond existing levels through open market purchases in preference to the issue of greenbacks—authorized to be issued up to \$3 billion by the Thomas amendment to the Agricultural Adjustment Act of May 12, 1933 (Notes, Vol. III, Sept. 7, 1933).

<sup>14</sup>The memorandum, a revision of an earlier version, dated Sept. 19, 1935 (Notes, Vol. VI) and Oct. 22, 1935 (Open Market, Vol. III), was circulated to the members of the FOMC before its meeting on Dec. 17-18, 1935 (*ibid.*).

time when economic conditions were extremely depressed, when there were repeated threats of legislative measures that many officials within the System regarded as "greenbackism," when the System felt itself in a delicate position vis-à-vis both the administration and Congress, and when the Treasury with its Stabilization Fund was in a position to offset any action the System might take. Later, those considerations were greatly reinforced by concern about earnings. As excess reserves mounted, sales of securities large enough to reduce reserves to levels regarded as appropriate would also have reduced the income of the Reserve Banks to negligible amounts. Governor Harrison was reported to have told his directors in September 1935 "he realized that central banks cannot give primary consideration to the question of earnings, but . . . he also realized that they must have some funds with which to stay in business."<sup>15</sup>

The result was that the System drifted into a policy of holding a rigid portfolio of government securities. It did not want to buy and felt it could not sell. Time and again, at meetings of the New York Bank's directors and of the Federal Open Market Committee, the desirability of achieving flexibility in the System's portfolio by selling some securities or letting some run off was stressed and agreed to by almost everyone present. The System felt itself in a straitjacket from which it urgently wished to be freed. Yet the considerations mentioned in the preceding paragraph repeatedly inhibited such action. And, of course, the longer the portfolio was held constant, the stronger the inhibitions against selling, because the constant portfolio became a public symbol in which a change might be interpreted as signaling a major change in policy. It should be emphasized that keeping the volume of securities constant from week to week, as securities matured and had to be replaced, was no easy task. We have described the System's policy as passive—and so it was if judged by the total volume of securities held—but it took unremitting and skilled activity to keep the total constant.

While the total was kept constant, the distribution among maturities altered from time to time. Much attention was devoted to the appro-

<sup>15</sup> Harrison, Notes, Vol. VI, Sept. 26, 1935. Listing of reasons for initial failure to sell government securities is based on: Office, Vol. IV, Oct. 16, 1935; Notes, Vol. V, memorandum, dated Mar. 15, 1934, another dated Mar. 16, 1935, on excess reserves; *ibid.*, minutes of directors' meetings, Jan. 24, Feb. 21, Mar. 7, 21, Sept. 26, Oct. 6, 1935; Open Market, Vol. III, minutes of meetings, Oct. 22-24, and memorandum, dated Dec. 13, 1935. Other reasons noted were the risk of starting a liquidation of government security holdings by banks and the public and the likelihood of Board disapproval of sales. Burgess apparently had some qualms because of the disastrous sequel to sales in Jan. 1933. He said, ". . . we had tried the idea of flexibility . . . in January 1933, and had made a mess of it" (Notes, Vol. IV, Mar. 8, 1934; also the same view in Notes, Vol. V, Jan. 24, 1935).

appropriate composition of the portfolio, and there was a persistent attempt to use changes in the composition of the portfolio to foster an "orderly market" in government securities. That objective increasingly came to the fore in the System's considerations in view of the growing importance of government securities, the large federal deficits requiring financing, and hence the growing concern of the Treasury with the bond market. Beginning in early 1935, much deliberate attention was directed toward the problem. The System uniformly agreed that it should not "rig" the market by pegging the prices of government securities; and nearly as uniformly that it should maintain an orderly market. But how to distinguish the one from the other and how to keep the one from degenerating into the other raised problems. Transactions to maintain an orderly market were of course conducted predominantly in New York, so it was the New York Bank that considered the distinction and its explicit formulation most fully. Harrison described the Bank's operating principle as "our . . . practice of putting bids in under the market just so that there would be no air pockets and no disorder," and as quite different from "putting a floor under it" or pegging.<sup>16</sup> As we shall see in Chapter 10, once the United States entered the war, there was a rapid transition from maintaining an orderly market to pegging the prices of government securities.

The 1936-37 increases in reserve requirements apparently had their origin in proposals made by the New York Bank. Beginning in early 1934, the Bank's staff prepared a series of internal memoranda, some circulated also to the Federal Open Market Committee, in which it examined the problem of excess reserves, emphasized potential dangers they raised, and considered alternative ways to control them. In the key memorandum (dated December 13, 1935, from which we have already quoted) it was concluded that open market operations would be an inefficient technique because of the size of the excess reserves, and that the discount rate would be inefficient because of the absence of borrowing. Hence, the appropriate tool was a change in reserve requirements, a discontinuous policy instrument poorly suited for continuous short-term adjustments but an appropriate means of immobilizing excess reserves and thereby establishing a situation in which the flexible instrument of open market operations could be used. Moreover, it was argued that accumulation of excess reserves was itself a consequence of a discontinuous

<sup>16</sup> Harrison, *Conversations*, Vol. III, Apr. 2, 1937; Office, Vol. V, memorandum, dated Mar. 16, 1938, Harrison to Burgess.

In addition to executing orders for the System account, the New York Bank continued to serve as the Treasury's agent in the government securities market. Harrison commented, ". . . the Treasury acts somewhat as a long-range investor, more or less always having funds to put into Government securities for various accounts, whereas the Open Market Committee acts as a market stabilizer" (Notes, Vol. VI, Feb. 4, 1937).

measure—the devaluation of the dollar. “Must we not,” to quote the memorandum, “recognize that the devaluation of the dollar carried with it, as one of the necessary conditions of its successful operation, the need for a fundamental readjustment of reserve requirements?” Or, as Harrison put it to his directors, “the larger part of the existing excess reserves is the result of government actions, and correction by government action will be necessary before control will be back in central bank hands.”<sup>17</sup>

In the December 1935 memorandum, the author recognized possible dangers in raising reserve requirements, and in taking that step too soon. It should not be taken “until production has returned to normal, or at least until the present trend toward a return to normal provides unmistakable evidence of continuing.” The operating officials were usually less cautious. At an October 31, 1935, meeting with his directors, Harrison said that if he were a dictator, he would raise reserve requirements immediately by 25 per cent; a week later, he said he would raise them by 50 per cent in two steps.<sup>18</sup> The Federal Open Market Committee at a meeting on October 22 to 24, 1935, passed a resolution urging the desirability of reducing the volume of excess reserves preferably by raising reserve requirements. The resolution continued: “There are also risks incident to . . . raising reserve requirements. This method of control is new and untried and may possibly prove at this time to be an undue and restraining influence on the desirable further extension of bank credit.” It included a recommendation that the Board of Governors make studies of the distribution of excess reserves and of the effects of a rise in requirements.<sup>19</sup>

Two months later, at the December 17-18, 1935, meeting of the Federal Open Market Committee, with the technical memorandum serving as one of the background documents, the matter again received extensive attention. A clear majority of the governors (the Federal Open Market Committee had not yet been reorganized in accordance with the Banking Act of 1935 and hence still consisted of the operating heads of all the Banks, who until March 1, 1936, retained the title governor) were in favor of action by the System to immobilize excess reserves but did not agree on the appropriate means. Some wanted to sell securities, others to

<sup>17</sup> The memorandum is in Harrison, *Open Market*, Vol. III; Harrison's remarks, in *Notes*, Vol. VI, Sept. 26, 1935; see also his remarks at the Sept. 19, 1935, meeting of directors. The dates of earlier memoranda on excess reserves are Mar. 15, 1934, and Mar. 6, 1935 (*Harrison, Notes*, Vol. V); Mar. 21, 1935 (*Open Market*, Vol. III); Sept. 19, 1935 (*Notes*, Vol. VI); Oct. 22, 1935 (*Open Market*, Vol. III); Nov. 7, 1935 (*Notes*, Vol. VI, and *Special*, no. 7).

<sup>18</sup> Harrison, *Notes*, Vol. VI. Interestingly enough, Owen D. Young, then chairman of the board of directors of the New York Bank, was opposed to an immediate rise in reserve requirements for what seems to us the correct reason: there was no point in taking such a step simply as a precautionary matter, with the danger that it might have adverse consequences; there would be ample time to take it when the need was clear (*ibid.*, Nov. 7, 1935).

<sup>19</sup> Harrison, *Open Market*, Vol. III.

urge the Board to raise reserve requirements. The result was that an initial resolution urging the Board to raise reserve requirements was voted down, 7 to 5. Harrison then drafted a revised resolution making clear that some who voted for the resolution favored open market sales rather than a rise in reserve requirements but favored the latter rather than no action. The resolution was passed by a vote of 8 to 4.

William McChesney Martin, governor of the St. Louis Bank, summarized in a statement to the FOMC the views of those opposed to action at that time. "It is true," he said, "that the System having an excess reserve of \$3,000,000,000 affords the possibility of a run-away condition, but we should not be fooled by considering a possibility as a probability . . . . [C]onditions at present do not offer signs of an immediate probability. In any action taken at the present time there is too great danger of discouraging efforts toward recovery . . . ." <sup>20</sup>

The detailed record makes clear that two factors other than those cited in the technical memorandum led Harrison and other governors to favor reserve requirement changes rather than open market operations. One, already mentioned, was the problem of earnings. The other, more subtle and less clearcut, was a consequence of the continuing conflict between the Banks and the Board. The Board alone had the power to change reserve requirements. Harrison envisaged the change as a once-for-all change which would not be reversed. Let reserve requirements rise to their legal limit, and the chief monetary power the Board alone could exercise would be immobilized along with the excess reserves. Open market operations—in which the Banks shared power with the Board—and discount rates—which the Banks established subject to Board review—would then resume their place as the continuing instruments of monetary policy. <sup>21</sup>

Technique aside, why seek to immobilize reserves at that time? Why not, in Martin's words, wait until the possibility became a probability? Granted that the proponents of the move did not expect the rise in reserve requirements to have any significant effect and hence viewed it as immediately harmless. Why not wait until the need was clearer? One reason was strictly political and accounts for any probable difference about timing between the author of the technical memorandum and Harrison. The Board was in process of reorganizing the System in accordance with

<sup>20</sup> Harrison, *Open Market*, Vol. III, statement, read by Governor Martin at Dec. 17, 1935, meeting.

<sup>21</sup> Harrison told a special meeting of his directors (Dec. 16, 1935) called to discuss excess reserves and Federal Reserve policy: "If we increase reserve requirements, we shall put the Reserve Banks in the position where they will have a chance to control the situation by open market operations and changes in discount rates. If we sell government securities first, we shall put whatever control is left in the hands of the Board of Governors which alone has power to increase or decrease reserve requirements" (Harrison, *Notes*, Vol. VI, Dec. 16, 1935).

the Banking Act of 1935. Harrison felt that if action was not taken at the end of 1935, it probably would not be taken for a full year—in his view, too long to wait.

The technical reasons for taking action were spelled out in the December 1935 memorandum. "At such a point [when further increases in excess reserves have no further constructive effects] excess reserves may contain possibilities of positive harm . . . [1] may give rise to disproportionate bank investment in government securities . . . [2] banks may acquire government and other bonds at prices which later may not be sustained . . . [3] with money so freely available, states, municipalities, and the national government, and other borrowers as well, may be tempted to over-borrow . . . [4] general fear which many people entertain that excess reserves of the present magnitude must sooner or later set in motion inflationary forces which, if not dealt with before they get strongly under way, may prove impossible to control . . . [5] the very fact of such inordinately large excess reserves may, by causing foreign expectation of favorable conditions for speculative investment, accentuate the gold inflow which is the real source of our problem."

In this list, the technical reasons we have numbered 1, 2, and 3 are inconsistent with the literal interpretation of excess reserves as idle funds accumulating because of the absence of desirable loans and investments; they clearly involve an effect of excess reserves on bank assets and hence on the rate of expansion of total bank credit. They are not, however, inconsistent with the actual somewhat mixed Reserve System interpretation which also included recognition, either implicitly as above or explicitly, that it was an oversimplification to regard excess reserves as idle funds having literally no effect. The listed reasons correctly reflect the almost exclusive preoccupation of the System with the "credit" effects of monetary policy as opposed to its effects on the stock of money. In all the discussion between 1930 and 1940 at the New York directors' meetings, as recorded in the Harrison Papers, we have noted only one explicit discussion of the quantity of money and its velocity as relevant to monetary policy—by Marriner Eccles, appointed governor of the Federal Reserve Board, November 1934, Black having resigned in August.<sup>22</sup> Otherwise, changes in the volume of demand deposits were sometimes referred to because of their relation to required reserves and as a reflection of changes in commercial bank credit; changes in currency in circulation were considered because of their effect on bank reserves and as a source of demand for Federal Reserve credit. There was no consideration—systematic or unsystematic—

<sup>22</sup>The discussion occurred in the course of a long meeting with the New York directors on the proposed Banking Act of 1935 (Harrison, Notes, Vol. V, Feb. 18, 1935). See also Chap. 7, footnote 93, above, and Chap. 11, sect. 3.



of the total stock of money as a magnitude that either was or should be controlled by the System, nor of changes in the stock as measuring the impact of the System. The System's role was seen exclusively in terms of conditions in the money market, i.e., the market for loans and investments.

Technical reason 5 is a most curious one, since it is precisely the reverse of the view repeatedly expressed during the climactic period from 1931 to 1933. Then the view had been that fear of inflation in the United States would lead foreigners to withdraw gold; now, that it would produce an inflow. A reconciliation is possible: whereas earlier foreign balances were mostly governmental and had to be held primarily in fixed dollar form, now the capital inflow was primarily private and either was channeled into equities or could be so channeled—though we have no evidence that that explanation was either true or believed to be true. More likely, the inconsistency simply reflects the fact that different people composed the System. The natural tendency to regard the System as one individual, holding consistent or at least connected views through time, is in the main correct. There does develop a System position which impresses itself on the members of the organization and which they come to accept and, of course, also to shape—almost without knowing it. But the explanation is not correct in every detail. The System's personnel had changed since 1933, and System philosophy was not all-pervasive.

Technical reason 4 is the only one publicly stated at the time in justifying the rise in reserve requirements in August 1936 and in March and May 1937. In the words of the 1937 *Annual Report*, "the Board's action was in the nature of a precautionary measure to prevent an uncontrollable expansion of credit in the future."<sup>23</sup> The Board contended at the time that the action was not a reversal of the System's easy-money policy. It made extensive studies before it took that action to assure itself that excess reserves were widely distributed geographically and among banks, so that most banks could satisfy the higher reserve requirements without mechanical difficulties. It denied then—and has continued to ever since—that the measure had any significant current influence.<sup>24</sup>

When the rise in reserve requirements was recommended by the FOMC at the end of 1935, and even when the first rise was imposed in August 1936, there was apparently no intention to exert a contractionary influence. By January 1937, when the two later rises were scheduled, the situation was somewhat different. In his briefing of the FOMC on January 26, 1937, Goldenweiser (who had been appointed its

<sup>23</sup> Board of Governors of the Federal Reserve System, *Annual Report*, 1937, p. 2.

<sup>24</sup> See Board of Governors of the Federal Reserve System, *Annual Report*, 1936, pp. 2, 14-15; 1937, p. 2; M. S. Eccles, *Beckoning Frontiers*, New York, Knopf, 1951, pp. 289-293; and E. A. Goldenweiser, *American Monetary Policy*, New York, McGraw-Hill, 1951, pp. 176-179.

economist while continuing to serve as the Board's director of research) said: "the most effective time for action to prevent the development of unsound and speculative conditions is in the early stages of such a movement when the situation is still susceptible of control, and that, as present indications were that such a time had arrived, as the technical market situation is favorable for action at the present time, and as short-term rates had been abnormally low in relation to long-term rates and some stiffening of the former would be desirable, action to absorb excess reserves should be taken at this time." John H. Williams (economic adviser to the New York Bank, 1933-52, and a vice-president, 1936-47, and in 1937 associate economist of the FOMC) said of the business and economic situation, "in certain respects it was going beyond a normal state," and joined Goldenweiser in advocating a further rise in reserve requirements.<sup>25</sup> In discussions at meetings of the New York Bank directors in January 1937, Harrison made clear his awareness that a rise in reserve requirements would have a tightening effect and his approval of such an effect; most of the directors agreed.<sup>26</sup>

The desire to tighten in early 1937 is entirely understandable. Economic expansion had been proceeding irregularly for four years and steadily for two; wholesale prices had risen nearly 50 per cent since March 1933; stock market prices had roughly doubled between 1935 and the end of 1936. Harrison and others in the System felt strongly that, in the past, the System had always been late in reacting; by their criterion of the absolute level of interest rates, the money market was abnormally easy.

<sup>25</sup> Harrison, *Open Market*, Vol. IV, minutes of meeting, Jan. 26, 1937.

<sup>26</sup> Harrison, *Notes*, Vol. VI, Jan. 7, 14, 21, 28, 1937.

Clark Warburton has noted that the extensive studies of the Board regarding the ability of banks to satisfy the higher reserve requirements (see footnote 24, above) missed an important element in the impact, namely, the loss of reserves by central reserve city banks as other banks drew on their correspondent balances ("Monetary Difficulties and the Structure of the Monetary System," *Journal of Finance*, Dec. 1952, pp. 543-544). That element was discussed at a Jan. 1937 meeting of the New York Bank directors, but did not change Harrison's views. G. W. Davison, a banker, who recommended using only half the remaining power to raise reserve requirements, pointed out that "some of the central reserve and reserve city banks would feel the shock of an increase in reserve requirements 'both ways'; in addition to having their own reserve requirements increased, they would be subject to withdrawals of funds by out-of-town banks" (Harrison, *Notes*, Vol. VI, Jan. 21, 1937). The Board had apparently been urged to make the increase in reserve requirements applicable only to central reserve and reserve city banks. Country banks, it was suggested, would give up Federal Reserve membership if reserve requirements of state banking systems were substantially lower. Goldenweiser argued, however, that reserve requirements were not an important factor in a bank's decision regarding membership and, furthermore, country banks "as a group had a large aggregate amount of excess reserves and excess balances with correspondents and could easily meet the increased requirements" (*Open Market*, Vol. IV, minutes of meeting, Jan. 26, 1937). He did not mention the impact of the withdrawal of those balances on the central reserve city banks.

What rendered the action unfortunate in retrospect was, as we shall see, that the System failed to weigh the delayed effects of the rise in reserve requirements in August 1936, and employed too blunt an instrument too vigorously; this was followed by a failure to recognize promptly that the action had misfired and that a reversal of policy was called for. All those blunders were in considerable measure a consequence of the mistaken interpretation of excess reserves and their significance.

While the desire to take restrictive action in early 1937 is understandable, it is difficult to have much sympathy with the argument in the technical memorandum, and the explicit justification of its action by the Board: it was desirable to reduce excess reserves solely as "a precautionary measure to prevent an uncontrollable expansion of credit in the future." Even if the Board had been right in its opinion that the action taken would have no immediate effects, why, if no current effects were desired, take a step that could just as readily be taken when undesirable expansion of credit started to occur? What would make such future expansion "uncontrollable"? The Board's only argument was that excess reserves were larger than the System's total government security holdings, and that the increase in reserve requirements reduced excess reserves to a level below that total. Even if the comparison were relevant, a later increase in reserve requirements would have had the same effect. Harrison's earlier argument (see above) that the reorganization of the Board would force a delay was clearly a tenable reason for advance action. But by the time the Board acted, the reorganization was completed and that reason no longer had any substance.

Our conclusion, expressed above, is that the increase in reserve requirements did have important current effects. Comparison of the timing of the increases in requirements with the timing of the behavior of the money stock documents this conclusion in detail. The decision to impose the first rise in reserve requirements was announced in July 1936, and the rise was effective in August. In the next five months, from the end of July to the end of December 1936, the ratio of deposits to bank reserves declined sharply as banks sought to restore their excess reserve position. In consequence, although high-powered money grew by decidedly more in those five months than in the prior seven months, the stock of money grew by less than half as much.<sup>27</sup> The month-to-month figures are even more impressive. They show high rates of growth of the money stock in April, May, and June 1936, and a sharp drop in the rate of growth thereafter. The second rise in reserve requirements was announced on

<sup>27</sup> And even this understates the contrast, since most of the increase in high-powered money in the prior seven months came at the very end, and hence might have been expected to have delayed effects. The increase from June 1936 to July 1936 was six-sevenths of the increase from the end of Dec. 1935 to the end of July 1936.

January 30, 1937, and became effective in two steps, on March 1 and May 1. High-powered money was at the same time held roughly constant by Treasury sterilization of gold. The money stock reached an absolute peak in March and fell with only minor interruptions to the end of the year. The cyclical expansion reached its peak in May 1937.<sup>28</sup> The March and May rises in reserve requirements were also accompanied by a general rise in market yields. Treasury bills, longer-term governments, and many private bonds fell sharply in price and, as noted, the Federal Reserve was induced to engage in minor offsetting open market purchases.

Those minor open market operations were taken only after an extensive series of discussions, which revealed wide disagreement within the System, and partly in response to pressure from the Treasury. A meeting was called by the Board, after the March rise in reserve requirements and accompanying market disturbances, to consider whether to rescind the May rise or whether to offset the rises by purchases in the open market. Harrison and most of the other Bank presidents were opposed to any action. The System policy was to reduce excess reserves, they argued, and the flurry in the bond market was insufficient reason to alter the policy. The most that should be done, in their view, was to promote an orderly market but without pegging and without preventing a decline in the price of government securities which was on the whole desirable. Governor Eccles, almost alone among the members of the FOMC, took the opposite view. He favored large-scale purchases or rescinding of the final rise in reserve requirements. His position, as summarized in a memorandum by Williams, was that "there was no inconsistency in decreasing excess reserves by a large amount, through the relatively clumsy instrument of increasing reserve requirements, and then effecting a partial increase by the elastic and adjustable instrument of open market operations, in order to facilitate an orderly process of transition." And, of course, this is the technique the Reserve System has since come to adopt. The final compromise at the time, involving purchases of a moderate amount of securities, satisfied no one. It was acceded to by the majority, not only in deference to Eccles, but also partly because of the strong views expressed

<sup>28</sup> In a first draft of a memorandum, dated Jan. 27, 1938, dealing with the question, "Did the Raising of the Reserve Requirements Cause the Depression?", Williams analyzed the change in assets and liabilities of banks and reached a negative conclusion. Looking only at the absolute changes in demand deposits—which increased substantially from June 30, 1936, to Dec. 31, 1936, and declined only \$300 million from Dec. 31, 1936, to June 30, 1937—and without reference to earlier changes, Williams arrived at his answer to the question. Apparently, he did not recognize that the significance of a given change might depend upon whether it represents a continuation or a radical departure from earlier trends. His emphasis throughout was on effects in the credit market. He mentioned changes in demand deposits only as evidence on the total earning assets of commercial banks (Harrison, Special, no. 22. The memorandum was prepared at the request of the FOMC).

by Secretary of the Treasury Morgenthau, who blamed the whole setback in the bond market on the increase in reserve requirements.<sup>29</sup>

Although the peak of the expansion is dated May 1937, and although the following contraction was one of the sharpest on record, it was apparently not until August or September that the technical staff of the System became seriously concerned about the state of business or began to suggest the desirability of expansionary action. At a September 11, 1937, FOMC meeting, Goldenweiser reported only that "there was a possibility that the uncertain situation . . . might lead to a decline in business and to a recession of indeterminable magnitude." Williams reported he was changing his mind: "there might be some recession." On the basis of these reports, the Committee decided to ask the Treasury to sterilize \$200 or \$300 million of gold and to direct the executive committee to purchase securities to meet seasonal needs.<sup>30</sup> As we have seen, the System purchased \$38 million in November 1937, and then made no further changes in the total volume of securities until mid-1939.

Reserve requirements were not reduced until April 1938, some two months before the cyclical trough in June 1938, to a level that eliminated only one-quarter of the combined effect of the earlier rises. The action was taken by the Board despite opposition to it by Harrison. Reserve requirements remained unchanged at the new level until November 1, 1941.<sup>31</sup>

Despite the close connection in time between the reserve requirement changes, the money market disturbances, and the subsequent business contraction, Harrison and the other chief proponents of the increase in reserve requirements insisted there was no connection. They regarded assertions to the contrary by economic analysts outside the System as simply ill-informed and persistently opposed expansionary monetary policies to counter the contraction. At the September 11, 1937, FOMC meeting, Harrison "expressed himself as feeling that non-monetary measures were probably the ones to be used at this time since the adverse developments in business were of a non-monetary nature." To his directors, he pointed out in December that "most of the executives of the Reserve System do not believe that monetary action would afford relief in the present business situation, regardless of whether the causes of the recession are monetary or non-monetary but rather that it was felt that improvement

<sup>29</sup> Harrison, *Conversations*, Vol. III, memorandum, dated Apr. 14, 1937, Williams to Harrison; see also *ibid.*, Harrison's reports of conversations with Morgenthau, Eccles, and other Board members, Mar. 31, Apr. 2, 9, 14, 15, 16; another memorandum, dated Apr. 14, 1937, by Williams, and one, dated Apr. 23, 1937, by Allan Sproul; and *Open Market*, Vol. IV, minutes of executive committee meetings, Mar. 13, 22, and 23, and of FOMC, Apr. 3 and 4, 1937.

<sup>30</sup> *Open Market*, Vol. IV, minutes of meetings, Sept. 11 and 12, 1937.

<sup>31</sup> *Open Market*, Vol. IV, minutes of meeting, Apr. 29, 1938.

in the business situation would be more influenced by actions of the Administration."<sup>32</sup>

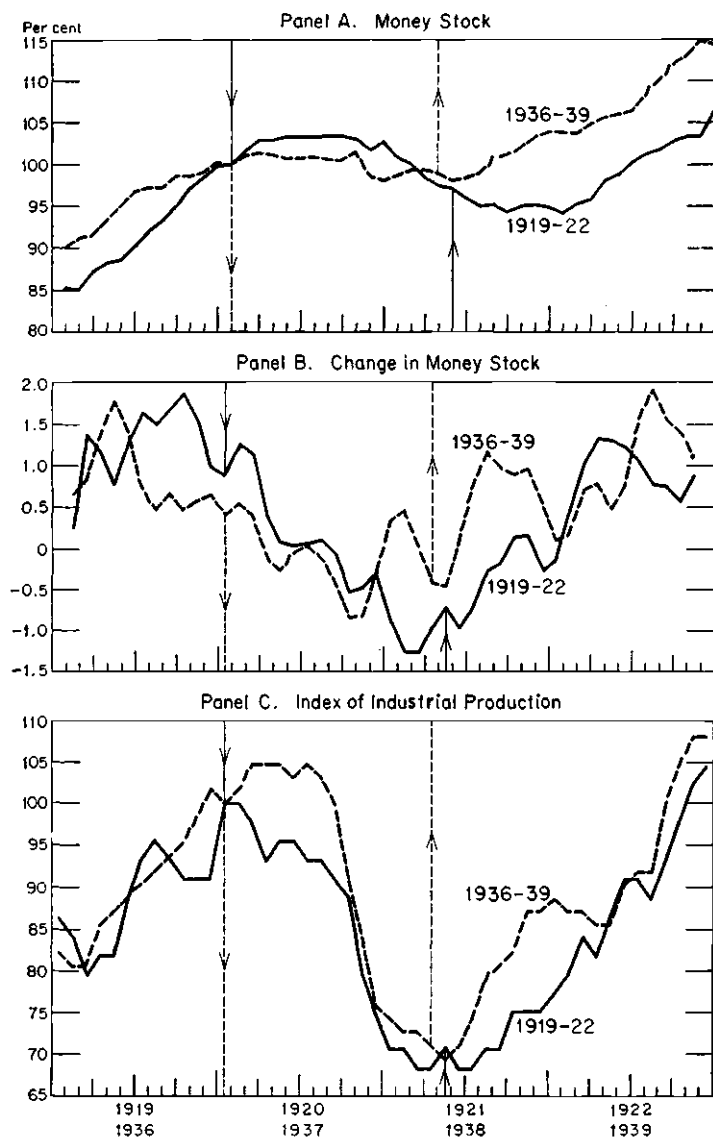
The irony is that Harrison's arguments against open market purchases at this juncture very nearly duplicated those he encountered when he urged open market purchases in 1930. He now upheld views that he then so vigorously opposed. The difference, of course, was that he was then on the offensive and was not burdened with a prior position inconsistent with purchases, whereas now he was on the defensive. For him to favor an expansion of excess reserves, when they were very large by standards he had earlier adopted, would have meant reversing a position he had espoused for years. His situation was in many respects precisely that of his opponents in 1930. His experience is a striking illustration of how difficult it is for anyone—whether in practical affairs, politics, industry, science, the arts—however able and disinterested, as Harrison was in unusual measure, to reverse a strongly held intellectual position.

In economic aspects, the years 1937-38 are strikingly reminiscent of 1920-21. On both occasions, in the course of a rapid rise in the money stock, the System took vigorous action with untried tools that produced a sharp retardation in the rate of growth of the stock, followed shortly by an absolute decline. On both occasions, the action was also accompanied by a pause in a rising tide of economic activity, followed by an exceptionally sharp but fairly brief decline. On both occasions, the System was slow to recognize the onset of contraction and, even after it did, refrained from reversing its policies for some time. On both occasions, it undertook significant expansionary action just two months before the cyclical trough, each time using the same tool it had used in its initial contractionary actions—in 1921, reducing discount rates, in 1938, reducing reserve requirements. On both occasions, it was strongly criticized for having produced or fostered a contraction, and on both it staunchly contended that the timing relation between the monetary actions and the contraction was purely coincidental and that nonmonetary factors were at fault.

The parallelism of the two periods is shown in Chart 43, which plots for both contractions the money stock, month-to-month changes in the stock, and the index of industrial production. The month of vigorous Federal Reserve restraining action in 1920 was clearly January, when discount rates were raised sharply. The counterpart in 1937 is less obvious. We have taken it to be January 1937, when the forthcoming rises in reserve requirements were announced, rather than either March or May, when they became effective. January 1937 was chosen on the grounds that the announcement gave banks an incentive to prepare for the forthcoming rises, even if not required to at once, just as the rise in discount rates in January 1920 gave banks an incentive to reduce their discounts,

<sup>32</sup> Notes, Vol. VII, Sept. 16, Dec. 9, 1937.

CHART 43  
 Money Stock, Change in Money Stock, and Industrial Production,  
 During Two Similar Episodes in Federal Reserve History:  
 1919-22 and 1936-39, Superimposed



even if not required to at once. Accordingly, we have expressed the stock of money and industrial production as 100 in January 1920 for the earlier contraction and in January 1937 for the later, and have superimposed the two months in plotting the series. The month-to-month rates of change are expressed as percentages of the money stock in the base month of January 1920 or January 1937 and are smoothed by a three-term moving average (with weights of 1,2,1). The initial downward pointing arrows mark the months of vigorous restraining action, the later upward pointing arrows, the months of reversal of monetary action.

There is certainly an extraordinary resemblance between the curves in each pair. The major difference is that the money stock was rising at a faster rate in 1919 than it was in 1936, was carried further above 100 by its momentum, and subsequently fell further and for a longer time. That difference is not reflected in the index of industrial production but is reflected in wholesale prices, which rose more rapidly in 1919 than in 1936 and fell more after 1920 than after 1937—by about 45 per cent compared with 15 per cent. In the later contraction, the initial drop in the rate of change in the money stock reflects the August 1936 rise in reserve requirements.

The 1936-37 episode is also an instructive example of how technical defects in a monetary tool may greatly enhance mistakes in policy arising from erroneous analysis and thus play an independent role.<sup>38</sup> Had the power to vary reserve requirements not been available, the System could have sought to reduce excess reserves by the same amount through open market operations instead. It might at first be supposed that, given its analysis of excess reserves, it would have done that and would also thereby have produced the same deflationary effects, i.e., that the key defect was in the analysis, not in the particular instrument used to implement the analysis. However, even a rough calculation of the orders of magnitude involved shows this supposition to be wrong, even if we put entirely to one side the System's nearly complete abandonment of open market operations as a major instrument of monetary policy. The initial reserve requirement increase, effective in August 1936, reduced

<sup>38</sup> For a discussion of the defects of variable reserve requirements as a tool of monetary policy, see Milton Friedman, *A Program for Monetary Stability*, New York, Fordham University Press, 1960, pp. 45-50.

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Notes to Chart 43.

NOTE: In Panels A and C, monthly data are expressed as percentages of the base month, Jan. 1920 or Jan. 1937—the months marking the onset of Federal Reserve pressure.

In Panel B, month-to-month changes in the money stock are expressed as percentages of the money stock in Jan. 1920 or Jan. 1937, and the percentages averaged by a weighted 3-term moving average (weights = 1,2,1).

The solid and dashed vertical lines pointing downward mark the month in each period of the onset of F.R. pressure; pointing upward, the month in each period of the start of F.R. easing measures.

SOURCE: Money stock, Table A-1, col 8. Index of industrial production, same as for Chart 16.



excess reserves by about \$1.5 billion, and the second and third increases, effective in March and May 1937, reduced them by another \$1.5 billion. On the System's analysis that the reserves were excess in the economic as well as legal sense, to achieve the same result through open market operations would have required sales of those amounts on the corresponding dates. The amounts were exceedingly large relative to other magnitudes of the time. The \$3 billion involved in the three steps together exceeded by one-fifth total holdings of government securities by the Federal Reserve System and amounted to nearly one-quarter of total high-powered money. Even if the System had had enough government securities in its portfolio, it is hardly conceivable that it would have sought to sell \$1.5 billion of securities in the course of a few weeks and then only seven months later a further \$1.5 billion in the course of two months. And even if it had begun, it would not have been committed to see the whole operation through as it virtually was, once a reserve requirement change was announced, and hence could have readily reversed course when the results became manifest. The tool used was, therefore, not simply the means whereby a defective policy was put into effect but also materially affected the outcome.

We have explained both the extreme passivity of the Federal Reserve System during the thirties and the one notable exception as resulting from its interpretation of excess reserves. But, to a large extent, this is a superficial explanation. Why was the System so ready to adopt that interpretation or, if it did, to let the interpretation condemn it to inactivity? Why, for example, did it ask the Treasury on several occasions to take actions that the System could equally well have taken?

First, the passivity reflected partly the natural tendency of individuals and, especially, official bodies to avoid responsibility for unfavorable occurrences by pleading limited power. The shattering of earlier high hopes made the tendency especially strong in the present instance. The belief that traditional instruments of monetary policy had been impotent in the decline of 1929-33—largely a rationalization of failure—strongly fostered their neglect in the later thirties.

Second, a passive policy was fostered also by the changing locus of power in the System and the changing personalities in positions of power that played such an important part in the System's performance during the contraction (see Chapter 7). In 1930, New York's commanding role in the System was reduced when the other Banks and the Board succeeded in limiting its freedom of action. The New Deal sealed the shift of power away from New York and concentrated it in Washington rather than in the other Banks. The dominant role of the Board was formalized by the Banking Act of 1935, and there were no subsequent developments to counteract the shift.

The transfer of power from a financial institution in the active financial center of the country to a political institution in the active political center fostered a shift in policy from the kind of continuous day-to-day concern with market activity, and continuous involvement in it, that is the mark of the active trader and participant in economic matters, to the discontinuous occasional pronouncement and enactment of legislation or rules, that is the mark of political activity. The difference was clearly foreshadowed in 1929 in the divergent opinions on how to deal with speculation. New York favored the quantitative impersonal technique of monetary restriction affecting directly the interests of operators in the market; Washington favored exhortation and administrative action on examination of each case by the lenders, which affected only at one remove the operators in the market. The difference, after the Board took over, is reflected more subtly in the virtual absence of continuous and day-to-day open market operations affecting the total volume of holdings, and in increased reliance on discontinuous instruments such as changes in reserve requirements and, above all, on public pronouncements.

Third, the preceding factors were reinforced by a change in the climate of intellectual and political opinion about economic matters. There developed a far readier acceptance of government intervention in the details of economic activity that fostered emphasis on such policy measures as margin requirements, bank examination and regulation, and control of security issues. More important from our point of view, emphasis shifted from monetary to fiscal measures. It was widely accepted that monetary measures had been found wanting in the twenties and the early thirties. The view that "money does not matter" became even more widely held, and intellectual study and analysis of monetary institutions and arrangements probably reached an all-time low in the study of economics as a whole. Emphasis shifted to fiscal measures, to influencing economic activity by government expenditure and taxation. Deficit spending, pump priming, and public works—not central bank policies—were widely regarded as the means to recovery. No wonder the Treasury became the active center of monetary policy as well.<sup>34</sup>

The Keynesian revolution in economic theory was a manifestation of that trend and helped to foster it. But certainly until 1937 and probably for some time thereafter, it played little role in the monetary developments we have described. Use of Keynesian ideas subsequently to promote "cheap-money" policies has led to the view that the Federal Reserve

<sup>34</sup> Harrison was critical of the Board's 1938 *Annual Report*, which stated, "Under existing conditions the Treasury's powers to influence member bank reserves outweigh those possessed by the Federal Reserve System" (p. 5). He said "he felt that the powers of the Board of Governors for credit control were belittled in the report which at the same time tended to over-emphasize the credit control powers of the Treasury" (Harrison, Notes, Vol. VII, Feb. 2, 1939).

System actively followed a cheap-money policy before 1937. We have seen that it did not. The Keynesian approach involved a shift of emphasis away from the "monetary" effects of monetary policy—that is, the effects on the stock of money—to the "credit" effects—that is, the effects on interest rates. The Federal Reserve System, as we have seen, had always emphasized interest rates and the use of credit, rather than the monetary effects. It did, however, make a different shift after 1937, from seeking to affect credit conditions indirectly through member bank reserves to seeking to affect them directly by operations in the government securities market involving changes in the composition of its portfolio.<sup>35</sup>

Marriner Eccles, who served as chairman of the Board of Governors (before 1936, governor of the Federal Reserve Board), November 1934 to April 1948, and as a member of the Board until July 1951, vividly documents some of these points in his memoirs. He stresses: (1) the Banking Act of 1935 and its importance in centering formal power in the Board—he regarded his shepherding of the act through the Congress as perhaps his major accomplishment and as comparable in importance to the establishment of the Federal Reserve System; (2) achievement of coordination in bank examination among the different regulatory agencies and adoption of an examination policy that would exert countercyclical influence; and (3) the importance of deficit spending for achieving recovery. He emphasizes that his support of deficit spending predated his acquaintance with Keynes' work, and that his policy position owed little to Keynes. He attributes the contraction of 1937-38 almost entirely to a change in the difference between government expenditures and receipts and ascribes little or no importance to the changes in reserve requirements and the stock of money.<sup>36</sup>

### 5. *Changes in the Deposit-Reserve Ratio*

Our view that the shorter-term movements in the deposit-reserve ratio require a different interpretation than the longer-term movements do

<sup>35</sup> For example, "This change [in open market policy] reflected a shift in emphasis in the use of open-market operations from their influence on member bank reserves to their direct influence on conditions in the capital market" (Board of Governors of the Federal Reserve System, *Annual Report*, 1939, p. 2).

<sup>36</sup> Eccles, *Beckoning Frontiers*, pp. 166-174; 202; 221-228; 266-268; 272-278; 130-132; 293-295; 309-320. Eccles claims (pp. 272-273) that it was upon his initiative that representatives of the Federal Deposit Insurance Corporation, the Comptroller of the Currency, and the Federal Reserve System were brought together to reach an agreement on a joint bank examination policy and ignores the impetus provided by the FDIC. He views the other agencies, as well as the Treasury Department and the state bank examiners, as obstructionist because they opposed Federal Reserve policies on examination procedures. The changes adopted in examination procedures did not in fact yield an examination policy that was countercyclical in influence, since the other supervisory agencies did not share the Federal Reserve view that the examination process should be subordinate to monetary policy (see Chap. 8, footnote 16).

was recorded above. The shorter-term movements are mostly temporary adaptations to short-term irregularities in high-powered money and deposits, reflecting, as it were, departures from the desired ratio which the banks tolerate, either because the irregularities are expected shortly to be reversed or because it takes time to adjust to unexpected changes. The inverse correlation between these irregularities in the deposit-reserve ratio and in high-powered money is an essential characteristic of the adjustment process. The long-term movements, on the other hand, represent mostly deliberate adaptation of the deposit-reserve ratio to a level desired by the banks in accordance with the interest rates at which they can lend and borrow and with the value they place on liquidity. That value, in its turn, depends on their confidence in their ability to raise cash at need from either the System or other banks. Such a deliberate adaptation by the banks does not occur instantaneously when there is a change in the desired level of the deposit-reserve ratio. Rather, it proceeds at a desired pace, just as an individual whose conception of the desirable pattern of his assets suddenly changes may take considerable time to re-adjust his portfolio. The observed inverse correlation between these longer-term movements in the deposit-reserve ratio and in high-powered money during the period under consideration is a coincidence, not an essential characteristic of the adjustment process, as the positive correlation in the twenties and again in the forties attests.

Two short-term irregularities require comment: (1) the sharp drop in the deposit-reserve ratio from January to March 1934, its mild rate of decline from March to July, and its rise from July to October; (2) the irregularities in early 1936.

The initial sharp drop in 1934, like the contemporaneous rise in high-powered money, is unprecedented in our series. There is no other two-month period since 1907, when our monthly data begin, that shows anything like so sharp a fall. The initial sharp drop seems quite clearly to reflect the large gold imports in February and March; the subsequent movements, the gradual adjustment of the banking system to that shock and the return to a desired position. Gold imports have two direct effects on the deposit-reserve ratio. First, gold raises bank deposits when it is deposited to the credit of the importer; second, it raises bank reserves when the recipient bank deposits at its Federal Reserve Bank the Treasury check it receives in payment for the gold, which it is legally required to turn over to the Treasury. The arithmetic effect of gold imports is, therefore, to raise the numerator and denominator of the deposit-reserve ratio by the same absolute amount. Since the ratio is greater than one, the numerator is raised by relatively less than the denominator and hence the ratio tends to decline. The increase in reserves encourages banks to expand. But that takes time, and the amount of time must

surely depend on the size and unexpectedness of the change, and its temporal and geographic concentration.

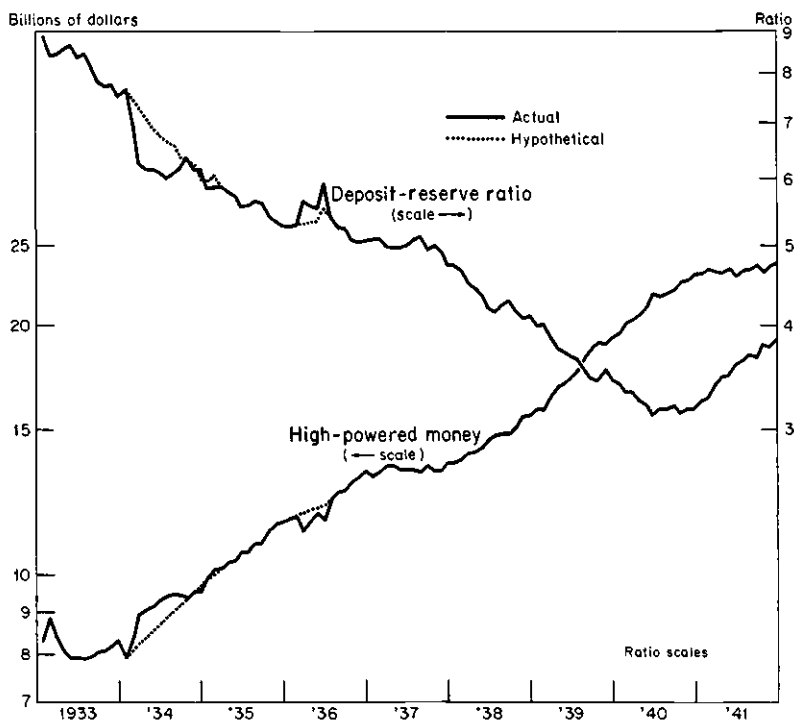
In the 1934 instance, as we have noted, the change was unprecedentedly large and both temporally and geographically concentrated, the bulk of it occurring within the course of six weeks from January 31 to March 14 in New York City. Over the six-week period, high-powered money, affected as we have seen chiefly by changes in the gold stock and in Treasury cash holdings and deposits at Federal Reserve Banks, increased by \$855 million and member bank deposits at Reserve Banks by \$800 million or by 30 per cent.<sup>37</sup> We have weekly figures on deposits owned by the public and on their breakdown between banks in New York City and outside it only for weekly reporting member banks. In the same six-week period, deposits of all weekly reporting member banks at Reserve Banks increased \$720 million and their net demand deposits \$650 million. New York banks account for roughly 60 per cent of the increase both in deposits at Reserve Banks and in net demand deposits of all weekly reporting member banks, although they held initially only 46 per cent of net demand deposits and less than 40 per cent of deposits at Reserve Banks. Deposits of New York weekly reporting banks at Reserve Banks rose by 56 per cent in the course of the six-week period, and at a time of year when both deposits and reserves tend to fall seasonally. Little wonder that the first impact was on the deposit-reserve ratio, and that it took time for the banking system to adjust to the increase in reserves.

On this interpretation, the slow decline in the deposit-reserve ratio from March to July 1934 and the subsequent rise to October reflect primarily the adjustment by banks to the accession to their reserves; secondarily, the continued increase in high-powered money to July and then its rough constancy to October. This would imply an adjustment period of something like seven months, which seems not unreasonable. The level of the deposit-reserve ratio reached at the end of October was decidedly lower than the January level. However, if our interpretation is correct, the difference was not a passive reaction to the gold inflow, like the drop from January to March, but a continuation of the declining trend of 1933, representing a process of adjusting the deposit-reserve ratio to the level desired by banks.

A rough indication of the effect on the deposit-reserve ratio of the erratic movements in high-powered money can be obtained by a hypothetical calculation distributing the increment to the gold stock more evenly. The dotted line in Chart 44 is the result of such a calculation: the growth in high-powered money from January 1934 to March 1935 was assumed to have occurred by equal absolute amounts each month;

<sup>37</sup> Weekly figures for high-powered money were derived following the same procedures described in Table B-3 for the monthly figures.

**CHART 44**  
**Deposit-Reserve Ratio, March 1933-December 1941, and**  
**Hypothetical Ratio, Assuming Even Growth of High-Powered Money,**  
**January 1934-March 1935 and February-June 1936**



SOURCE: Actual, Table B-3. Hypothetical, see text.

the difference between actual high-powered money and this hypothetical stock was subtracted from both deposits and bank reserves. The dotted line is the ratio of the two resulting hypothetical figures. It will be seen that it produces a continuation of the 1933 trend in the deposit-reserve ratio and is fairly close to the actual ratio from October 1934 on. This dotted line is, on our interpretation, an estimate of the longer-run deposit-reserve ratio that banks were seeking to achieve.

The second short-term irregularity in the deposit-reserve ratio of sufficient size to merit attention occurred in the first half of 1936. We have already noted that the fluctuation in high-powered money of which that was a reflection arose largely from an unusual accumulation of and

variation in Treasury deposits at Federal Reserve Banks. If we smooth that fluctuation by the procedure followed for 1934—substituting for actual high-powered money the values interpolated along a straight line between the actual February and July values—the result is that depicted by the dotted line in Chart 44. This computation eliminates the sharp rise in March, but not a noticeable peak in June. The latter reflects an unusual outflow of currency into circulation, as does the concurrent dip in the deposit-currency ratio (Chart 38), associated with the redemption during the latter half of June of adjusted service bonds in the amount of \$800 million.<sup>38</sup>

The longer-term movements in the deposit-reserve ratio in Chart 44 readily lend themselves to interpretation in terms of our earlier analysis (Chapter 8, section 1). In May 1933, after the immediate readjustment to the banking panic, the deposit-reserve ratio began to move downward. If the dotted lines of Chart 44 are substituted for the actual to allow for the short-term perturbations just discussed, and if attention is concentrated on the period through June 1936, the decline appears to be proceeding at a steadily decreasing rate and the ratio to have reached a fairly steady level in early 1936. In July the first increase in reserve requirements was officially announced and, coincidentally, the deposit-reserve ratio resumed its downward course but at a very mild pace. Later reserve increases left no immediate impact on the ratio, which was fairly constant to August 1937, when it started declining at a pace roughly comparable to that after mid-1933, until it leveled off again in 1940.

In our view, that behavior is to be interpreted as the result of two successive shifts in the preferences of banks for reserve funds, and the adaptation of portfolio positions to the changed preferences. The first shift occurred as a result of the experience during 1929-33, and the adaptation took about three years, from 1933 to 1936. The second occurred as a result of the successive rises in reserve requirements, reinforced by the occurrence of a severe contraction that was a stern reminder of earlier experience. The adaptation to it took about the same length of time, from 1937 to 1940.<sup>39</sup> In both cases, the adaptations occurred in an environment of generally declining interest rates which, even with stable preferences, would have induced banks to hold larger reserves. The 1933-

<sup>38</sup> Under the terms of the Adjusted Compensation Act of Jan. 27, 1936, passed over Presidential veto, more than \$1.5 billion in bonus nine-year interest-bearing bonds, convertible into cash at any time, was distributed on June 15 to World War I veterans.

<sup>39</sup> Phillip Cagan has analyzed the reserve ratio adjusted for requirement changes—in his terminology, the usable reserve ratio. By 1938, the usable ratio had returned to its 1936 level. He is doubtful that the banks desired to hold larger usable reserves than in 1936, but offers no alternative explanation for the rise in usable reserves from 1938 to 1940 (see his forthcoming monograph on the determinants and effects of changes in the U.S. money stock, a National Bureau study).

36 shift in preferences was one factor contributing to the sharp fall in the ratio of short-term to long-term rates; the reserve increases in their turn produced a temporary rise in short-term rates, as banks sought cash instead of secondary reserves in the form of short-term securities; and the 1937-40 shift in preferences contributed to a decline, even sharper after mid-1937 than from 1933 to 1936, in the ratio of rates on short-term U.S. securities to long-term rates. Throughout, the high level of the discount rate relative to market rates reinforced the banks' reluctance (bred of their 1929-33 experience) to rely on borrowing from the Federal Reserve Banks for liquidity and led them instead to rely on cash reserves in excess of legal requirements and on short-term securities.<sup>40</sup>

This interpretation dates the second shift in preferences as occurring at the end of 1936 or early in 1937. In terms of the numerical behavior of the deposit-reserve ratio itself, as recorded in Chart 44, the second shift in preferences could as readily be dated as occurring at the end of 1937 or in mid-1938. If it were, it would have to be interpreted as a reaction to the 1937-38 contraction and as unrelated to the reserve re-

\* The rise in reserve requirements in 1936 and 1937 was accompanied by a reduction in total holdings of government securities by member banks. The reduction was concentrated in bills and notes, which the banks largely replaced by deposits at the Reserve Banks. As a result, member bank holdings of government bonds rose from 45 per cent of their total holdings of government securities in 1936 to 74 per cent in 1941. The yield on 9-month Treasury bills rose from about 0.1 per cent per annum in Nov. 1936 to over 0.7 per cent on May 1, 1937, when the final rise in reserve requirements became effective, as a result of the pressure to convert from bills to cash. After the pressure subsided, banks presumably sought again to acquire bills. But the supply outside the Federal Reserve was so small that their attempt served only to reduce yields on bills to a level so close to zero—much of the time less than 0.01 per cent per annum—as to induce banks to hold cash or notes instead. Indeed, yields on Treasury bills were occasionally negative in 1940, when their price was bid up by purchasers seeking to convert cash into other assets for short periods to reduce tax liability under personal property tax laws.

At a directors' meeting of the New York Bank on Aug. 26, 1937, when the discount rate was reduced from 1½ to 1 per cent, effective the next day, Harrison reported a discussion he had had with commercial bankers, the upshot of which was agreement "that it would be better to borrow at the Federal Reserve Bank than to sell securities" if additional reserves were needed. He was interrupted by G. W. Davison, a banker, who said he "was shocked by Mr. Harrison's resumé of the views of the New York bankers because it differed so materially from his own impressions gained from contacts with certain of the bankers." Davison said bankers preferred to dispose of their holdings of bankers' acceptances and Treasury bills rather than borrow at the Reserve Bank. He had argued with the bankers that the Reserve System would not change reserve requirements every day, that they "certainly don't want the Federal Reserve to buy more Governments, and don't want the Treasury to abandon sterilization of gold, and that, consequently, borrowing at the Federal Reserve Bank was the logical way to supply needed reserves for seasonal requirements." Harrison's reply was that "if the banks want to see a return to normal banking relationships he couldn't understand why they were reluctant to conduct their affairs in such a way that borrowing at the Federal Reserve would ensue" (Harrison, Notes, Vol. VII, Aug. 26, 1937).



quirement increase. The rough constancy from late 1936 to August 1937 would have to be interpreted as the final stage of adjustment to the earlier shift in preferences. The main reason we reject this alternative interpretation is that it does not allow for the effects of the gold-sterilization program of the Treasury, which kept high-powered money roughly constant from December 1936 to late 1937. Just as the unusually rapid increase in high-powered money in early 1934 temporarily lowered the deposit-reserve ratio, with adaptation to the decline taking some seven months, the sterilization program must have had the opposite effect in 1937.

Suppose bank preferences had not been affected by the reserve changes. The abrupt cessation—as a result of gold sterilization—of a rise in high-powered money that had been proceeding for over three years would have produced a temporary bulge in the deposit-reserve ratio and a later return to the desired level. Given about the same seven-month adjustment time required in 1934, the temporary bulge would not have disappeared until about June or July of 1938, some seven months after high-powered money resumed its rise. The deposit-reserve ratio shows no such absolute bulge but it does show a flattening in 1937, such as would have been produced by the superposition of a temporary bulge lasting until mid-1938 on a declining longer-run desired level. The peak discrepancy between the bulge and the hypothetical desired level came in August 1937, when the amount of "inactive gold" in the Treasury balance reached its maximum.

Although we explain the behavior of the deposit-reserve ratio from 1937 to 1940 as an adaptation by banks to changed preferences resulting primarily from the increase in reserve requirements, and as reflecting the impact of gold sterilization, we do not exclude an effect due to the 1937-38 contraction. It must have been an additional factor inducing banks to prefer a lower deposit-reserve ratio.

If, as we argue, banks were primarily concerned about reserves in excess of legal requirements, the reduction in reserve requirements in April 1938 should have satisfied some of their desire for liquidity. But that change leaves no clear impress on the recorded deposit-reserve ratio. It is tempting to extrapolate the trend of the deposit-reserve ratio before July 1938 forward, and after September 1938 backward, and interpret the difference as a delayed reaction to the reduction in reserve requirements. But this is reading more into the data than can be justified without a much more detailed study than we have made.

The deposit-reserve ratio reached a trough in 1940 and thereafter began to rise, a rise that continued through 1946, though at a much milder pace from mid-1943 on than from 1940 to 1943. The rise from early 1942, when the Federal Reserve System officially began supporting the yield on bills and, in effect, on other government securities as well (see below, Chapter 10), raises no problem of interpretation. With fixed prices

guaranteed by the Reserve System, government securities were the equivalent of cash and yielded some return, leaving no reason to hold reserves in excess of requirements for liquidity purposes. Hence "excess reserves" quickly fell to a low level which remained relatively stable.

The more interesting question is why the ratio rose from 1940 to 1942. If the 1940 level represented the attainment of a desired liquidity position, what produced the rise after 1940? One factor was doubtless the sharp change in the behavior of high-powered money. From rapid growth, it rather suddenly shifted in early 1941 to rough constancy, as a result of a sharp decline in gold imports. This constituted another short-term irregularity which banks might be expected initially to absorb and then react to only after a considerable lag. However, we are inclined to doubt that the adaptation by banks to that irregularity can account for the whole rise in the deposit-reserve ratio, since this explanation would mean that there had been essentially no adjustment at all for the whole year 1941, whereas the earlier evidence suggests a lag of about seven months.<sup>41</sup>

A second contributing factor might have been a rise in yields on alternative investments, which would make it more expensive to hold cash and thus induce banks to hold relatively less, even with given preferences for liquidity. However, the behavior of interest rates contradicts this view. Rates on private obligations, including commercial loans by banks, remained roughly stable from 1940 to early 1942; the yield on long-term governments fell slightly; the only rates that rose were on Treasury bills, so there was a narrowing of the spread between long-term and short-term government securities (see Table 22). But the narrowing of the spread suggests that the rise in short-term rates was a consequence of a decreased preference for liquidity rather than of a movement along an unchanged liquidity preference schedule. Just as the earlier shift in preferences of banks toward a desire for greater liquidity produced a widening in the spread, a shift in the opposite direction might be expected to produce a narrowing of the spread.

Hence, we are inclined to believe that the rise in the deposit-reserve ratio from 1940 to early 1942 reflected in part a shift in the preferences of banks in the opposite direction from the shifts in 1933 and 1937. We have already suggested why such a shift seems reasonable. The accumulation of experience under FDIC and a seven-year period without serious banking difficulties might well promote a reversal of the drive for liquidity that arose from the 1929-33 experience. A similar though less drastic sequence had followed earlier and less severe banking panics.

<sup>41</sup>The same percentage growth in high-powered money from Dec. 1940 to Dec. 1941 as from Dec. 1939 to Dec. 1940 would have added \$4.5 billion to high-powered money. If this sum is added to both deposits and bank reserves in Dec. 1941, it yields a hypothetical deposit-reserve ratio almost identical with the actual ratio in Dec. 1940.

TABLE 22  
AVERAGE RATES OR YIELDS ON SELECTED ASSETS, JUNE 1940-MARCH 1942

	Prime Commercial Paper, 4- to 6-Month NBER (1)	90-Day Bankers' Acceptances (3)	Business Loans of Commercial Banks, 19 Cities Shifting Weights (4)	Constant Weights (5)	Basic Yield of 40- to 50- Year Corporate Bonds (6)	U.S. Bonds Not Due or Callable for 12 Years or More (7)	3-Month Treasury Bills (8)	(7) - (8) (9)
June 1940	0.81	0.56	2.59	1.9	2.68	2.39	0.071	2.319
June 1941	0.69	0.56	2.55	2.1	2.65	1.91	0.089	1.821
Mar. 1942	0.69	0.63	2.48	2.0	2.65	2.00	0.212	1.788

## SOURCE, BY COLUMN

(1) Same source as for Chart 35.

(2-4, 7-8)

*Banking and Monetary Statistics*, pp. 451, 460, 464; *Federal Reserve Bulletin*, Aug. 1942, p. 825. In col. 4 the rates charged are weighted according to the dollar volume of new loans made at each rate.

(5) *FREB*, Mar. 1949, p. 231. The rates charged in 4 size groups of loans are weighted according to the loans outstanding in each group on Nov. 20, 1946.

(6) Straight-line interpolation between annual (Feb.) figures in *Historical Statistics*, 1949, p. 279.

This analysis of the behavior of the deposit-reserve ratio yields, as a by-product, estimates of the reaction time of the banking system, of interest in their own right, especially for analysis of lags in the response to monetary policy measures taken by the Reserve System. We have suggested that it takes some seven months for banks to adjust to an unanticipated discrepancy between their actual and desired reserve positions produced by a change in their actual position, and some three years for banks to carry through a thoroughgoing revision of their actual reserve position as a result of a change in the desired position.

#### 6. *Role of Monetary Factors in the 1937 Contraction and Subsequent Recovery*

The preceding sections have analyzed the factors accounting for the behavior of the money stock in the period 1933-41. Before we leave that period, a few explicit comments on the effect of the changes in the money stock on economic activity are in order. Extensive controversy has arisen about this issue, particularly about the 1937 contraction. Because the final increases in reserve requirements preceded the cyclical peak in May by such a short interval, many commentators have regarded them as partly or wholly responsible for the subsequent contraction. On the other hand, the Federal Reserve System has argued that those changes could not have had such an effect since they only absorbed excess reserves. Further, the much greater importance attributed by economic analysts, during the 1930's and ever since, to government fiscal operations than to monetary changes has led students to attach more importance to the contemporaneous shift in the government's budget from a deficit toward a surplus than to monetary policy measures. In his recent exhaustive study of that episode, Kenneth Roose concludes:

In broad outline, the causation may be reduced to a relatively few important elements . . . [N]et government contribution to income was drastically reduced in January 1937 . . . .

[A]t the same time . . . the Federal Reserve action on excess reserves caused short-term governments to weaken and set up thereby a chain of reactions which resulted in increased costs of capital and the weakening of the securities markets to which business expectations are very sensitive, especially in the United States. The operation of the undistributed profits tax, in addition to its effects on business expectations, also reduced the cash position of even the large companies. The imperfect supply of capital funds and their increased cost made it more difficult for borrowers to obtain capital. Most important of all, however, was the reduced profitability of investment, beginning in the first quarter of 1937. This resulted from the increased costs, in which labor costs played a prominent part . . . . [T]he immediate decline in profit ratio, accompanied by the prospect of sharp declines in future profits, is adequate reason for the occurrence and timing of the recession.<sup>42</sup>

<sup>42</sup> Roose, *Economics of Recession*, pp. 238-239.

It is symptomatic of the change in intellectual outlook of which we have spoken that this judicious, eclectic statement should stress solely the "credit" aspects of monetary action and omit entirely the "monetary" aspects. Precisely the same is true of a draft of a memorandum prepared at the New York Federal Reserve Bank by John H. Williams in answer to the question whether the reserve requirement changes caused the 1937-38 depression. Williams emphasized essentially the same factors as Roosevelt, except that he gave even less weight to Federal Reserve action on the grounds, first, that up to June 1937, "there was no contraction of bank deposits or bank assets," and, second, "if the action on reserve requirements was in any degree responsible for the business recession, it was because of its effect on interest rates," yet "at the end of the fiscal year 1937 money rates were but little changed from the rates existing at the beginning, and were throughout the year . . . at abnormally low levels."<sup>43</sup>

Consideration of the effects of monetary policy on the stock of money certainly strengthens the case for attributing an important role to monetary changes as a factor that significantly intensified the severity of the decline and also probably caused it to occur earlier than otherwise. As we have seen, the money stock grew at a rapid rate in the three successive years from June 1933 to June 1936—at continuous annual rates of 9.5 per cent, 14.0 per cent, and 13.0 per cent. The rapid rise was a consequence of the gold inflow produced by the revaluation of gold plus the flight of capital to the United States. It was in no way a consequence of the contemporaneous business expansion: the only way the expansion could significantly have increased the money stock would have been by inducing banks to hold smaller reserves, yet they were in fact doing the opposite. And the rapid rate of rise in the money stock certainly promoted and facilitated the concurrent economic expansion.

The combined impact of the rise in reserve requirements and—no less important—the Treasury gold-sterilization program first sharply reduced the rate of increase in the money stock and then converted it into a decline. From June 1936 to June 1937, the money stock grew at the continuous annual rate of 4.2 per cent per year and then in the following year fell at the rate of 2.4 per cent. The absolute peak in the money stock came in March 1937; the trough in May 1938, though December 1937 was almost as low.<sup>44</sup> The cyclical peak is dated in May 1937; the cyclical trough, in June 1938. As we have seen, neither the retardation in the rate of rise in the money stock nor the subsequent decline in the money stock

<sup>43</sup> Harrison, Special, no. 22, draft of memorandum, dated Jan. 27, 1938.

<sup>44</sup> If we measure the changes from June 1936 to the peak in the money stock in Mar. 1937 and then to the subsequent trough in May 1938, the resultant continuous annual rates of change are +6.3 and -2.9 per cent.

—any more than the preceding rapid rise—can be attributed to the contemporaneous course of business; they were produced by deliberate policy measures that offset the expansionary influence of the continuing gold inflow. The sharp retardation in the rate of growth of the money stock must surely have been a factor curbing expansion, and the absolute decline, a factor intensifying contraction. Though the decline may not seem large in absolute amount, it was the third largest cyclical decline recorded in our figures, exceeded only by the 1920-21 and 1929-33 declines.

Recovery came after the money stock had started to rise. It rose at continuous annual rates of 7.8, 13.1, and 12.1 per cent in the three years from June 1938 to June 1941, once again mostly as a result of the continued inflow of gold, and despite a continued decline in the deposit-reserve ratio to 1940 as an aftermath of the increases in reserve requirements. Munich and the outbreak of war in Europe were the main factors determining the U.S. money stock in those years, as Hitler and the gold miners had been in 1934 to 1936. Doubtless, other factors helped to account for the onset of recovery and for its pace, but the rapid increase in the money stock certainly at the very least facilitated their operation.

The rates of growth of the money stock during the periods of expansion from 1933 to 1936 and from 1938 to 1941 were unusually high and make more credible than otherwise widespread concern with dangers of inflation in the midst of large-scale unemployment. Yet, they were so high chiefly because of the unprecedented magnitude of the preceding decline. Averaged over the dozen years from 1929 to 1941, the rate of growth of the money stock was less than  $2\frac{1}{2}$  per cent per year and of real output less than 2 per cent per year—both well below the long-time average U.S. experience. In 1941, Kuznets' implicit price index was 13 per cent below its 1929 level, and even wholesale prices were some 8 per cent below their 1929 level, despite a rise of over 10 per cent from 1940 to 1941 alone under the impact of the first stage of the wartime boom. How different the history of that fateful dozen years might have been if the money stock had grown steadily at its average rate of  $2\frac{1}{2}$  per cent per year, let alone at the higher long-term historical rate, instead of first falling by one-third from 1929 to 1933 and then doubling from 1933 to 1941.