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The Theory of 100 Per Cent Reserve Banking: Historical Development and Critical Analysis.

Donald Raymond Market

Louisiana State University and Agricultural & Mechanical College

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THE THEORY OF 100 PER CENT RESERVE BANKING:
HISTORICAL DEVELOPMENT AND CRITICAL ANALYSIS

A Dissertation

Submitted to the Graduate Faculty of the
Louisiana State University and
Agricultural and Mechanical College
in partial fulfillment of the
requirements for the degree of
Doctor of Philosophy

in

The Department of Economics

by
Donald Raymond Market
B.B.A., Lamar State College of Technology, 1959
M.S., Louisiana State University, 1960
May, 1967
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ABSTRACT

The purpose of this study has been (1) to present the historical development of 100 per cent reserve banking, (2) to examine the body of critical literature associated with the major 100 per cent reserve plans; and (3) to evaluate the efficacy of 100 per cent reserve banking in the context of contemporary monetary theory.

This study indicates that 100 per cent reserve banking was practiced briefly during the early history of banking. The English goldsmiths of the early 15th century and the banks chartered on the European continent around 1600 were in effect 100 per cent reserve banks that merely issued notes in exchange for specie deposits. Soon, however, the practice of issuing notes in excess of specie reserves developed. By the beginning of the 18th century, the practice of fractional reserve banking had become widespread, with commercial banks acting as major suppliers of circulating media.

By the 19th century, the principal banking question centered around the quality of bank assets rather than banks' ability to issue circulating media. In the United States, the issues were resolved
with the embodiment of the "real-bills doctrine" in the Federal Reserve Act of 1913.

There were, however, a minority of dissenters who viewed "bank-created money" as a major source of instability. During the first decade of the 20th century, two Americans, Willis E. Brooks and John R. Cummings, presented utopian schemes for social reform that relied heavily upon 100 per cent reserve banking. During the 1920's, Frederick Soddy, a Nobel Prize-winning chemist from England, also presented a scheme for social reform that included the 100 per cent reserve plan. None of these plans had any significant impact on either the political or academic community.

The American banking collapse of 1930-1933 caused the idea to gain in popularity. Such noted economists as Irving Fisher, Henry Simons, and Lauchlin Currie, among others, devised schemes for monetary reform around the idea of 100 per cent reserve banking. Also associated with these reform schemes were proposals for monetary policy based upon rules rather than discretion, and for a diminution of the monetary role of gold.

The criticisms of the plans of Fisher and Simons served to reveal their weaknesses and to suggest improving modifications. By the early 1940's interest in the plan had diminished, but around 1950 Lloyd Mints and Milton Friedman of the University of Chicago again focused attention on 100 per cent reserve banking and monetary policy
by rules. The empirical research of Friedman and others has indicated that a policy of steadily increasing the stock of money at a rate of between three to five per cent annually would be preferable to discretionary policy.

An examination of the issues indicates that stable monetary growth could be approximated under fractional reserve banking, but that 100 per cent reserve banking would provide for more precise control of the stock of money, serve to lengthen the private debt structure, prevent disturbing endogenous changes in the money supply, and mitigate against cyclical shifts between demand and time deposits. The study also indicates that discretionary monetary policy and 100 per cent reserve banking are probably incompatible.
CHAPTER I

INTRODUCTION

The contention that commercial banks should be divested of their power to create and destroy money—be it in the form of notes or of demand deposits—has been heard in the United States to a greater or lesser extent since the collapse of the banking system during the period 1931-1933. However, the concept of 100 per cent reserve banking, both in theory and in practice, is as old as banking itself. It was evident in the British bullionist-antibullionist controversy and later in the debate between the banking school and the currency school. In the early history of this country, 100 per cent money ideas were not unknown. No less a political figure than Andrew Jackson looked with grave skepticism upon the practice of banks' issuing notes.

The concern of these earlier "100 per cent reservists" was centered around the maintenance of an automatic monetary system in which all forms of circulating media were convertible into specie. So long as nations remained committed to automatic metallic systems, the essential "banking problem" was one of protecting depositors and
note holders from loss due to bank failures resulting from over-extension relative to specie reserves. That this was the central concern is evidenced by such schemes as the New York Safety Fund System and the Suffolk Plan, the redemption policies of both the First and Second Banks of the United States, and the provisions of the National Banking Acts of 1863 and 1864. So long as the quantity of circulating media remained tied to specie, any changes in the price level caused by overissuance of bank notes were subject to the discipline of international gold movements.

The monetary history of the twentieth century has been marked by three distinct, though interrelated, events: (1) the failure of the automatic gold standard; (2) the development of the art (or science) of central banking; and (3) the assumption by national governments of the task of maintaining full employment through the use of monetary and fiscal policy. These three developments, culminating within the context of the Great Depression of the 1930's, resulted in a renewed interest in 100 per cent reserve banking. While popular concern was centered around protection from losses to depositors due to bank failure, many professional economists viewed 100 per cent reserve banking as the modus vivendi to economic stability. Such eminent economists as Henry Simons and Lloyd Mints of the University of Chicago and Irving Fisher of Yale, to name but a few, viewed economic instability as a function of monetary instability to which fractional reserve banking was a prime contributor. In
their view, tying the stock of money to the volume of short-term debt resulted in vacillations between inflation during periods of expansion and deflation during contractions. Moreover, since the 1930's there has developed a substantial body of opinion that views discretionary monetary and fiscal policy as inherently dangerous. This idea, originally expressed by Henry Simons, has Milton Friedman as its most persuasive contemporary proponent.

While there are several variations of the 100 per cent reserve plan, all have this in common: (1) The money-creating powers of commercial banks would be dissolved by requiring them to maintain reserves equal to 100 per cent of demand deposits; thus (2) the stock of money would be divorced from the quantity of bank loans and investments. As a result of the above, the stock of money would be made subject to the direct control of the monetary authority. The establishment of the Federal Deposit Insurance Corporation has, for all practical purposes, removed the possibilities of losses to depositors through bank failures, but the problems of stability remain; it is to these that the contemporary 100 per cent reserve plans have been addressed.

The purpose of this thesis is to present the historical development of the theory of 100 per cent reserve banking and to evaluate it in the context of current monetary and banking theory.

In Chapter II, the concept of 100 per cent reserve banking as it existed in theory and in practice prior to 1930 will be treated.
Chapter III will contain an exposition of the 100 per cent reserve proposals that followed the banking collapse of 1931-1933—principally, those of Irving Fisher and Henry Simons. The response by contemporaries of Fisher and Simons will be examined in Chapter IV. The principal contemporary proponent of the plan, Milton Friedman, will be treated in Chapter V. Since 100 per cent reserve plans have been historically associated with proposals for monetary policy according to a rule, a treatment of the rules-versus-authorities arguments will be integrated into Chapters IV through V. Chapter VI will contain an evaluation of discretionary monetary policy under the fractional reserve system as compared with policy by rules in conjunction with 100 per cent reserve banking. The writer's summary and conclusions will be presented in Chapter VII.
CHAPTER II

THE THEORY OF 100 PER CENT RESERVE BANKING:

THE EARLY HISTORY

An examination of the history of banking reveals but few instances of 100 per cent reserve banking either in actual practice or in theoretical discussions by economists. It was not until the 1930's, in the context of the Great Depression, that the idea received serious attention at the hands of economists.

Banking in the modern sense developed in an environment of metallic standards, and while there are examples of early financial institutions that served merely as depositaries and transferers of funds, banking soon developed its modern role of "producer" of circulating media. Standard treatises on banking history trace the development of banking from dealers in foreign currencies during the thirteenth and fourteenth centuries, through operations of the English goldsmiths during the fifteenth century, and finally to the chartering of banks by national states. The latter development was usually prompted by the financial needs of monarchs or legislatures.
These early precursors of modern commercial banking may be cited as examples of 100 per cent reserve banking in actual practice. The English goldsmiths at the beginning of the fifteenth century were primarily warehousemen for specie. The banks chartered in Amsterdam, Rotterdam, Hamburg, and Stockholm (circa 1600) were established to serve as dealers in foreign exchange and as banks of deposit and transfer only. Therefore, these institutions had no impact on the quantity of circulating media. Insofar as the respective national economies were concerned, the quantity of money was determined by other factors, primarily the functioning of automatic international metallic standards.

The English goldsmiths, who are widely cited as predecessors of modern banking, evolved from their original status of jewelers, lapidaries, and custodians of gold, to become commercial bankers in the modern sense. First, they merely accepted, for a small charge, specie in trust for safekeeping and issued "warehouse receipts" that were nonassignable. As such, these amounted to demand deposits (but not means of payment) that were secured by 100 per cent specie reserves. The wealthier goldsmiths made advances to the government, but only out of their profits as jewelers and bullion merchants. Later, the goldsmith was allowed to use funds deposited with him, provided he supplied an equal amount to the depositor on demand. Notes issued in exchange for such deposits were assignable and could function as money. During the period following the
Restoration (circa 1660), the practice of accepting time deposits in exchange for a general obligatory note was developed. These did in fact circulate as money. Both types of deposits, according to Professor R. D. Richards, were fully backed by specie. \(^1\) The final stage of development came when notes were issued that were "... accepted by the public on the banker's integrity." \(^2\) These notes had no specific metallic backing and were issued "... in accordance with the banker's calculations as to the possible demand by his customers for gold and silver coins." \(^3\)

Professor Richards appraised the results of this evolution:

The banker now became a recognized purveyor of assignable instruments, and his "running cash note" payable on demand, or credited as cash in his ledgers, filled the breach in the nation's currency. Bank credit was accepted as currency, and the development of banking became closely connected with the evolution of paper money. \(^4\)

Although another historian of British banking claims that banking in England "... as distinct from money lending, begins with the Bank of England," \(^5\) the extensive researches of Richards into original records of the period in question clearly indicated that the

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\(^2\) Ibid., p. 225.  
\(^3\) Ibid.  
\(^4\) Ibid.  

goldsmith bankers were not merely intermediaries between savers and borrowers but, at their highest stage of development, commercial bankers in the modern sense, i.e., providers of their own liabilities that served as money in exchange for earning assets.

The Bank of Amsterdam serves as another example of the evolutionary process from "money warehouse" to "purveyor of assignable instruments." This institution was established, as noted earlier, by the city of Amsterdam in 1609 for the purpose of engaging in foreign exchange operations and serving as a depository of funds. According to financial historian Charles F. Dunbar, the ordinance establishing the Bank of Amsterdam required it to maintain gold reserves in its vault equal to the amount of its outstanding notes. However, around 1650 it began making loans to the city of Amsterdam, thus causing its notes outstanding to exceed its holdings of gold reserves. This practice, carried on sub rosa, was finally made known to the public in 1791, when the bank failed.

The Bank of Venice stands as another example of early 100 per cent reserve banking. It was established in 1587 and concerned itself primarily with the functions of transferring funds and acting as depository. Professor Dunbar indicated that it was an outgrowth of the thirteenth and fourteenth century development of dealers in

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7 Ibid., pp. 112-113.
foreign exchange. But, like the Bank of Amsterdam, the Bank of Venice also developed into a producer of circulating media. 8

The Bank of England

The Bank of England, which may serve as an example of outright, state-sanctioned abrogation of the pure gold standard, 9 was chartered in 1694 by Parliament with royal assent. The occasion of the bank's chartering was the financial burden of England's war with France. Unlike the Bank of Amsterdam and early banks on the European continent, the Bank of England was established as a bank of issue. Under the provisions of the Tunnage Act of 1694, the Bank was chartered for the purpose of raising £1,200,000 for the government of William and Mary. While the bank was prohibited from monopolizing commodities or trading in its own securities, it was permitted to deal in bills of exchange, to buy and sell bullion, to sell commodities deposited as collateral for loans, and to issue notes. The Bank was prohibited, however, from issuing notes in excess of its capital. 10


9The term "pure gold standard" is used here to refer to a system in which all money is either in the form of gold coin, or of paper money that is secured 100 per cent by gold.

10Richards, op. cit., p. 146.
Thus, in return for raising funds for the crown, the Bank of England was given the power to issue notes and carry on banking in the modern sense.

It appears that the development of modern banking, be it by goldsmith or chartered bank, represented an attempt to supplement and economize on the use of specie. At the time of the Bank of England's chartering, the shortage of specie was indicated by the extent to which clipping of coins occurred.\(^{11}\)

If it is accepted that the development of modern banking represented an attempt to supplement an inadequate supply of specie currency, then it follows that concern should have been focused upon the quality of all bank asset holdings rather than solely upon the extent of metallic reserves. In the context of gold standard convertibility, the maintenance of 100 per cent metallic reserves (as was the practice of fourteenth century goldsmiths) would have defeated the purpose of banking. Therefore, the nature of debate tended to be between those who opposed banking in the modern sense and those who advocated control over the quality of bank assets. The ideas associated with the latter group—usually referred to as the

\(^{11}\text{Ibid.}, \ p. \ 139f. \text{ Richards cites evidence indicating that between January 17, 1696, and March 24, 1697, £2.5 million of newly milled money was obtained by clipping from outstanding coin nominally amounting to £4.9 million.}
real-bills doctrine—have their origin, according to Lloyd Mints,

with Adam Smith:

... He is the first of a long succession of writers, extending to the present day, who have integrated into a systematic exposition certain ideas in regard to control of the quantity of bank credit, the kinds of assets banks should hold, the provision of elasticity in the currency by means of bank credit, and, finally, the provision for liquidity. He was, in fact, the first thoroughgoing exponent of the real-bills doctrine.\(^{12}\)

Forces opposing banking in the modern sense advocated reliance upon the discipline of the gold standard to determine the quantity of circulating media, the implication being that bank notes should be tied directly to the volume of bullion reserves rather than to the needs of trade. Henry Thornton stated that, if banks restricted loans to the amount of currency (presumably specie) deposited with them, the effect would be "... the same thing as if individuals were to lend to others, without the intervention of the banker."\(^{13}\) This, of course, would follow only if bank notes were secured by 100 per cent metallic reserves, and if all deposits represented non-demand liabilities.


The history of monetary debate in nineteenth-century England indicates that banking as a going concern developed faster than economists' understanding of it. A brief survey of the controversy between the bullionists and the anti-bullionists (circa 1810) and the banking and currency schools (1821-1860) indicates diverse opinion regarding the impact of bank notes and deposits on price levels, interest rates, and international gold movements. About the only areas of agreement among the parties to these debates were: (1) that notes should be convertible into specie, and (2) that there should be no discretionary control over the money supply. The currency school argued:

. . . (1) that the currency should vary precisely as would a purely specie circulation and that there should be permitted no discretionary departure from such manner of variation whatsoever; (2) that the currency should be convertible; (3) that the exchanges were the proper guide in the control of a paper currency; (4) that the rate of interest was a significant factor in determining the volume of bank issues; and (5) that the real-bills doctrine was completely invalid. 14

The banking school, on the other hand, contended that:

. . . (1) . . . the needs of business would control the volume of notes issued and that the banks could not "force" their notes into circulation; (2) . . . a bank note currency should be convertible; (3) . . . drains of specie under a metallic currency system would come from great national "hoards" of gold, not from currency in the hands of the public; and (4) . . . deposits form a significant part of the circulating medium. 15

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14 Ibid., p. 75.  
15 Ibid., p. 86.
The principles of the currency school were propositions upon which 100 per cent reserve banking (in a metallic standard context) would logically follow. That is to say, bank demand liabilities should be secured by 100 per cent specie reserves.

Members of the currency school, such as Thornton, recognized a basic fallacy of the real-bills doctrine, i.e., that the supply of notes could increase at a faster rate than the increase in the "needs of trade," as "real bills" were issued to finance various stages of commerce in the same good.\textsuperscript{16} On the other hand, the currency school (unlike the banking school) failed to recognize that deposits constituted a part of the money supply and therefore influenced the price level.\textsuperscript{17}

The passage of Peel's Act in 1844 might be considered a compromise between the two opposing views. The Bank of England was separated into two distinct departments: (1) an issue department, and (2) a banking department. Securities valued at £14 million, along with approximately £14 million in specie, were transferred to the issue department. This equalled the amount of Bank of England notes then outstanding. Thereafter, the issue department could not

\textsuperscript{16}Ibid., p. 52.

\textsuperscript{17}Ibid., pp. 42-43.
increase the volume of notes outstanding except in exchange for gold coin or bullion.\textsuperscript{18} The banking department continued to carry on the usual business of banking—accepting deposits and acquiring earning assets.\textsuperscript{19} While the separation of the Bank of England into two separate departments caused the supply of notes to vary as though they


\textsuperscript{19} Ibid., pp. 439, 440. The first statement of the Bank of England after the passage of Peel's Act was as follows:

\textbf{ACCOUNT OF THE LIABILITIES AND ASSETS OF THE BANK OF ENGLAND FOR THE WEEK ENDING 7th SEPTEMBER, 1844}

<table>
<thead>
<tr>
<th></th>
<th>Issue Department</th>
<th></th>
<th>Banking Department</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dr.</td>
<td>Cr.</td>
<td></td>
<td>Dr.</td>
</tr>
<tr>
<td>Notes Issued</td>
<td>£28,351,295</td>
<td>Govt. Debt</td>
<td>£11,015,100</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Other Securities</td>
<td>£2,984,900</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Gold Coin or</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Bullion</td>
<td>£12,657,208</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Silver Bullion</td>
<td>£1,694,087</td>
</tr>
</tbody>
</table>

£28,351,295

£28,351,295

£31,423,240

£31,423,240
were regulated by international gold movements, the volume of deposits was allowed to vary with the needs of trade along the lines of the real-bills doctrine. However, the requirement that notes issued in excess of £14 million be fully secured by specie represented an element of 100 per cent reserve banking—though a relatively insignificant one.

The American Background

In the United States, there was little dispute about the role of banks. During the colonial period, according to Harry E. Miller, banks were regarded as "... little more than the source of a form of currency." And, he added, "... virtually the whole discussion of banks turned upon the matter of securing an adequate currency."²¹

The widely held view that note issue was the unique characteristic of banks is exemplified by this statement of Daniel Webster in 1839, which is quoted by Miller:

What is that, then, without which any institution is not a bank, and with which it is a bank? It is the power to issue promissory notes with a view to their circulating as money.²²


²¹Ibid.

²²Daniel Webster as cited by Miller, Ibid., p. 12.
The colonial view was, essentially, that increasing the currency via banks of issue would increase the wealth of the nation by facilitating the growth of commerce. After 1820 this view was displaced by the view that bank notes provided inexpensive substitutes for specie, but did not influence prices. This was based upon Adam Smith's reasoning that notes simply displace specie, and that the displaced specie is then employed abroad. Alexander Hamilton expressed the view that banks of issue augmented the active capital of a country and expanded industry so that more goods would be produced for export, thus inducing an inflow of specie.

Clearly, the shortage of specie in the colonial and immediate post-colonial United States provided the incentive to develop banking as a source of currency, and the real-bills doctrine provided theoretical assurances that the amount of notes issued would never be excessive. The test of whether or not note issue was excessive was apparently the ability of banks of issue to maintain gold convertibility.

In summary, there was no tradition of banking in the United States except as a means of supplementing or economizing the supply of specie currency. While fractional reserve banking in England and the European continent evolved from earlier forms of 100 per cent reserve banking, in the United States the only banking tradition was...

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\(^{23}\)Ibid., pp. 26-29. \(^{24}\)Ibid., p. 40. \(^{25}\)Ibid., p. 51.
that of fractional reserve banking. There were only two approximations of 100 per cent reserve banking in the United States that may be cited. First, there was the Independent Treasury, but of course it was banker only for the Federal government. Second, there was the 100 per cent reserve requirement against national bank notes in the form of United States government bonds. While there were skeptics, such as Andrew Jackson, who viewed banks of issue with distrust, the essential banking problem in the United States was protecting depositors and note holders from losses due to bank failures resulting from overextension relative to specie reserves. That this was the central concern was evidenced by such schemes as the New York Safety Fund system, the Suffolk Plan, the redemption policies of both the First and Second Banks of the United States, and the reserve requirements under the National Banking Acts of 1863 and 1864. So long as the quantity of circulating media was tied to the quantity of specie (though on a fractional reserve basis), the doctrine of sound self-liquidating loans was assumed to mitigate against overextension of credit. Moreover, increases in the domestic price level caused by excessive bank credit would be subject to the discipline of international gold movements.

\[\text{26 For example, see Arthur M. Schlesinger, Jr., The Age of Jackson (New York: The New American Library of World Literature, Inc., 1949), pp. 35-64.}\]
The establishment of the Federal Reserve System, like Peel's Act of 1844 in England, represented a wedding of the basic principles of the banking and currency schools. The stock of money was ultimately limited on one hand by legal gold reserve requirements upon the central bank, while on the other hand the individual commercial banks were free to vary credit based upon the needs of trade.

Thus, the banking history of the United States has been a history of fractional reserve banking. Up to the twentieth century, the major banking reform schemes were aimed at improving the system rather than replacing it. However, at the same time that the Federal Reserve System was in the planning stages, the first plans for a return to the ancient practice of 100 per cent banking were also being offered. The remainder of this chapter will be devoted to two such plans.

John R. Cummings

One of the first proponents of 100 per cent reserve banking during the twentieth century was John R. Cummings. Cummings must be classified as an American utopian who presented simple solutions to complex problems in much the same fashion as did

George Bellamy\textsuperscript{28} and William Dean Howells.\textsuperscript{29} Yet, while *Natural Money: The Peaceful Solution* comes nearer to the classification of social protest novel than economic treatise, it does contain insights into the use of monetary and fiscal policy as a means of economic stabilization.

In the fashion of Henry George,\textsuperscript{30} Cummings advocated public ownership of utilities and land (via the single tax). His primary goal was to devise a scheme for eliminating poverty and unemployment and expanding the output of social goods, while at the same time achieving price stability. Among his proposals for attaining these most desirable ends was 100 per cent reserve banking combined with automatic monetary and fiscal policy.

His scheme may be summarized as follows: The government would increase the money supply by employing workers at a living wage\textsuperscript{31} to undertake public works projects. The government would finance these projects by issuing inconvertible paper currency.

\begin{itemize}
\item\textsuperscript{29}William Dean Howells, *A Traveler from Altruria* (New York: Sagamore Press, 1957), 211 pp.
\item\textsuperscript{31}The term "living wage" was not precisely defined by Cummings.
\end{itemize}
The increase in aggregate demand resulting from increased public spending would cause those workers to be bid back into the private sector of the economy. The problem of inflation would be solved by a reversal of this process. Increased employment in the private sector of the economy would automatically result in decreased public expenditures, and a surplus budget would ensue with contractionary effects.

Cumming's scheme was designed to function according to rules rather than discretionary authority. For example, at all times the amount of public works was to be determined by the market price of labor relative to the "living wage" offered by the government. During cyclical downturns, wages in the private sector would fall below the government wage, and employment on public works would increase. During cyclical upswings, private wages would rise, attracting labor away from public works employment. The rule of policy would be the "living wage," or social minimum. The government would buy all labor presented at this price. The marketplace would decide the relative proportions to be employed by the public and private sectors of the economy.

Cumming was strongly opposed to any discretionary manipulation of the money supply for purposes of price level

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32 Cummings was, in effect, advocating a commodity (labor) monetary standard, with the "mint" obliged to buy all labor presented to it at the statutory price (i.e., the "living wage").
stabilization. In his view, "... any exercise of official power to expand or contract the volume of money is of a piece with light-weight issues, repudiation, and confusion."\(^{33}\) The market was to be allowed to fix the value of money. "It is for us," he concluded, "to set the machinery going, and then keep hands off."\(^{34}\)

Through Cummings' scheme of automatic monetary and fiscal policy, the stock of "natural money" would increase along with population growth and the concomitant increase in government expenditures. In order to prevent the expansion and contraction of bank credit from interfering with the orderly growth of "natural money," Cummings concluded that banks should be required to hold 100 per cent reserves against demand deposits. All other financial institutions would simply serve as intermediaries between savers and borrowers.\(^{35}\)

Cummings suggested that the growth of "natural money" would put all business "... on a cash basis,"\(^ {36}\) and thus remove the need for borrowing short-term capital. It may be inferred that Cummings thought that the institution of 100 per cent reserve banking would result in lengthening the private debt structure, but he was not clear in explaining why this would occur. All that can be said with

\(^{33}\)Cummings, op. cit., p. 27.

\(^{34}\)Ibid.

\(^{35}\)Ibid., pp. 190-195.

\(^{36}\)Ibid., p. 191.
certainty is that Cummings predicted that "... there would no
longer be a need for short-term loans,"\(^{37}\) and that the shortage of
short-term securities would cause the liquidity needs of households
and firms to be satisfied by holding cash, and that borrowing and
lending would be on a long-term basis.\(^{38}\)

Natural Money was, at best, wildly visionary in its pur-
ported results. The sophisticated economist might have little
patience with a monetary scheme that purports to remake the world
so that congested cities would be replaced by "... a continuous
succession of almost contiguous villages ... "\(^{39}\) where all people
"... join in the growing of crops. ... "\(^{40}\) in the spring and
"... during the winter half-year be engaged in factories, shops,
and offices. ... "\(^{41}\) Indeed, few present-day economists would
endure the final chapter, which contains the Homeric epic of the
heroine, Labora, and her spouse, Capitulus ("... who shall work
by magic because he has no hands. "\(^{42}\)), in their struggles against
the villain, Monopolus. Yet interspersed among the melodrama and
utopian visions are glimmerings of ideas destined to become im-
portant topics of economic controversy thirty years later. In his
advocacy of 100 per cent reserve banking and a paper currency

\(^{37}\)Ibid., p. 196. \(^{38}\)Ibid., pp. 196-197.
\(^{39}\)Ibid., p. 120. \(^{40}\)Ibid.
\(^{41}\)Ibid. \(^{42}\)Ibid., p. 204.
managed by rules, along with his analysis (crude though it was) of short-term debt, Cummings anticipated the later work of Irving Fisher and Henry Simons. Also, his analysis of fiscal policy as a tool for economic stabilization bears some resemblance to the policies associated with John Maynard Keynes during the Great Depression of the 1930's.

Frederick Soddy

The other pre-1930 proponent of 100 per cent reserve banking to be considered is Frederick Soddy. Soddy may be considered a precursor of Fisher, Simons, et al., not because of the theoretical development leading to his advocacy of 100 per cent reserve banking, but because of the similarity of his reform proposals to those that were to come during the 1930's.

Frederick Soddy was a chemist by training, who, while a professor of chemistry at Oxford, was awarded the Nobel Prize in 1921 for his contributions in the field of radioactivity. His shift into economics was explained in this fashion:

The task of the scientist, as he saw it, was not only to make new discoveries, but also to point out their application. Since the most serious problems of the day seemed to him to be economic in nature, Soddy turned his attention to this field, confident that the methods which had proved so

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43 A thorough discussion of Fisher and Simons is contained in Chapter III.
successful in his chemical researches would provide a solution for the problems of economic life. 44

In 1926, Soddy first presented his scheme for monetary reform. His monetary theory rests upon the concept of virtual wealth, which in his analysis serves as an intermediary between wealth and money. He defined wealth as a form or product of energy, consisting of raw materials transformed into consumer goods and capital goods. 45 Virtual wealth was defined by Soddy in this fashion:

The individuals of a nation, in addition to owning everything . . . own also a certain quantity of promises to receive wealth on demand, or money. . . . In addition to what they possess they are owed . . . wealth [equal to the stock of money] over and above what exists. This non-existent . . . wealth, I call the Virtual Wealth (V. W.) of the nation. 46

Soddy apparently meant that, in addition to "real" wealth, the stock of money represents claims to wealth which are in fact considered to be wealth, that is, money represents that quantity of conventionally measured wealth which is counted twice. The value

44Margaret G. Myers, Monetary Proposals for Social Reform (New York: Columbia University Press, 1940), p. 73.


of the monetary unit, according to Soddy, is virtual wealth divided by the quantity of money, and the reciprocal of the value of the monetary unit is the price index. 47

Money, wealth, and virtual wealth are related as follows:

A nation's stock of money is the amount of a "particular sort of debt" that would exist under barter conditions. However, Soddy added, "It is not the only sort of debt, but it is the only sort of debt repayable in any form of purchasable wealth upon demand at the option of the owner of the debt."48 This debt, which is expressed by the sum of a nation's money, represents a deficit of real wealth, "... composed of actual things which the owners of the money are entitled to possess but voluntarily go without, or abstain from possessing..."49

47Ibid., pp. 294-295. Employing Soddy's symbols--VW is virtual wealth, £Q the quantity of money--these relationships can be expressed in the following fashion:

\[
\frac{\text{£}}{\text{Q}} = \frac{\text{VW}}{\text{Q}}
\]

\[
\frac{1}{\text{£}} = \frac{\text{Q}}{\text{VW}} = \text{Price Index}
\]

That is, virtual wealth per unit of money equals \(\frac{\text{VW}}{\text{Q}}\), and where \(\text{VW} = \text{Q}\), \(\text{£} = 1\); therefore, the price of a unit of virtual wealth \(\frac{\text{Q}}{\text{WP}} = 1\). This method of determining the price index confuses a stock (wealth) with a flow (income).

48Soddy, Wealth, Virtual Wealth and Debt, p. 204.

49Ibid.
That aggregate virtual wealth is necessarily equal to the stock of money possessed by the community "... obscures the real truth." According to Soddy, "The virtual wealth has, in fact, very little to do with the quantity of money."51

What Soddy was apparently concerned with here was the effect of liquidity preference (expressed in real terms) on the price level, given a constant stock of money. When new money (including demand deposits) is issued, claimed Soddy, there is an increase in the quantity of money without any corresponding change in virtual wealth; therefore, the price level rises and, as a consequence, "... all previously existing money becomes worth less by just what the issuers of new money get for nothing."52 If, he continued, "... nobody appears to give up anything when some one acquires other peoples' property with newly issued money, the only possible source it can come from is the Virtual Wealth. It assuredly is not created by magic. ..."53

Since he viewed virtual wealth as a "... conservative quantity incapable of sudden and violent fluctuation ... proportional to ... the prosperity and affluence of the nation, other things being

50Ibid., p. 140. 51Ibid. 52Soddy, "Wealth, Capital and Money: A Resume of My Theories," p. 296. 53Ibid.
equal growing with the growth of population, "54 he recommended that the price level be held constant by ". . . the concomitant increase in Q /quantity of money/ as virtual wealth naturally increases."55

The foregoing analysis of Soddy, when translated into modern terms, seems to imply that a nation's demand for real balances is disturbed by changes in the amount of circulating media. When banks (or government) create new money in order to finance new purchases, they inflate the price level and reduce the real value of previously existing money assets.

In order to insure price stability, Soddy wished to control the stock of money so that it would remain ". . . reasonably constant from week to week, but over a term of years increases . . . regularly as the numbers and affluence of the nation increased."56

Soddy considered the banking community and the borrower to be guilty of " . . . high treason against the nation, a monstrous cancer invading its heart. . . ."57 He apparently believed, in the most naive way, that bankers create money "out of thin air" and the borrowers get "something for nothing" by causing inflation.

54Ibid., p. 295.  
55Ibid., p. 297.  
56Ibid., p. 295.  
Soddy's plan called for requiring banks to keep reserves in the form of national money equal to 100 per cent of demand deposits. The banks would exchange "National Debt securities" for the national money needed to meet the 100 per cent reserve requirement. Banks would then be able to acquire earning assets with funds obtained in exchange for non-demand liabilities or from the sale of government securities. Variation in the stock of money could then occur through government issue or retirement of national money. 58

Under Soddy's scheme, the money supply would be varied in response to changes in the price index. 59 Interest-bearing debt would be purchased with national money in the event of a price index decline; in the event of an increase, money would be withdrawn from circulation via surplus budget taxation. 60

As will be noted in Chapter III, the actual technique of reform advocated in the 1920's by Soddy is not far removed from those advocated by Fisher, Simons, Currie, et al., during the 1930's. The theoretical underpinnings of his reform proposals

58"National money," as used by Soddy, refers to non-interest-bearing government securities.

59Soddy never specifically defined his index, but merely assumed it to be a technicality that could be worked out by experts. He advocated the establishment of a Board of Statisticians "having the status of judges" to "... ascertain the price index and detect its tendencies and other relevant statistical data." "Wealth, Capital and Money: A Résumé of My Theories," p. 298.

60Ibid., pp. 298-301.
leave much to be desired, and, therefore, it is difficult to classify Henry Simons and Lauchlin Currie as "... followers of Soddy in the United States [who] have expanded his meager details into more or less complete systems, ..." as did Margaret Myers. Rather, one tends to agree more with E. S. Shaw, who described Soddy's reform proposals as having a "... conceptual basis [that] is an indiscreet mixture of orthodoxy and lay conjecture," an indictment difficult to disprove.

While Soddy was duly concerned that lending be "genuine"—i.e., come from savings—he seemed to have little understanding of the effects of short-term debt as opposed to long-term debt, and he chose to ignore velocity as being unimportant. Only the prevention of banks' creating money seemed important to him.

However, Soddy's analysis is undoubtedly obscured by the cumbersomeness of his definitions. If virtual wealth were interpreted as command over some quantity of goods held in the form of money, his analysis would amount to nothing more than a restatement of the cash balances approach to the quantity theory of money. Were virtual wealth interpreted to mean the real income (or output of goods), then he merely restated the Fisherian quantity theory. A

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generous appraisal of his work might be that he was groping for a means of integrating a concept of real balances into the quantity theory of money. To the extent that this is true, Soddy might be considered an anticipator of the body of theory normally associated with the Chicago School. Yet Shaw's comment that Soddy's contributions amounted to a "... chemist's formula for the economic millenium. ..." must stand as the final verdict. Like Cummings before him, Soddy was a "non-economist" who envisioned unlimited results flowing from simple reforms.

Summary and Conclusions

During the first three decades of the twentieth century, the theory of 100 per cent reserve banking received little attention from professional economists. A search of the literature yields only three names connected with the plan: Cummings, Soddy, and Willis E. Brooks. The works of the first two have been examined and found to be attempts that had little, if any, impact on the existing body of knowledge. The third, Willis E. Brooks, wrote a tract in 1908 entitled Slaves of the Banks: Their Emancipation, which was

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63 Ibid.

64 The only reference to this work is found in a note by Benjamin Bromberg, "Two Neglected 100 Per Cent Reserve Economists," American Economic Review, XXX (September, 1939), 553. A search by the Interlibrary Loan Department of the Louisiana State University Library revealed that the only known copy is deposited in the New York Public Library and is not available for loan.
privately published. Though a copy of this work was not available for examination, one might speculate from the title that it is probably in the same vein as the contributions of Cummings and Soddy. Mention of it here is made in the interest of thoroughness.

The lack of interest in 100 per cent reserve banking prior to 1929 might be explained partially in this fashion: First, there was no tradition of 100 per cent reserve banking in the United States, with the exception, perhaps, of the Independent Treasury. Commercial banking in this country had from the outset tended to develop along lines developed by the "banking school" of England. The earlier concept of a bank currency based upon sound self-liquidating loans was later translated into the real-bills doctrine with the establishment of the Federal Reserve System. After 1921, relative price stability was maintained as the techniques of central banking were developed and refined. The relative success of the Federal Reserve during the 1920's, it may be conjectured, resulted in the belief that the debacles that had befallen the American monetary scene immediately after the demise of the Second Bank of the United States and periodically under the National Banking System (1863-1913) were no longer possible. It is interesting to note that, after the establishment of the Federal Reserve System, no major proposal for 100 per cent reserve banking was presented until the banking collapse of 1930-33.
During the 1920's, Soddy in England purported to have developed a scheme that would yield social reform via monetary means, but in the United States monetary reform movements of any type fell into limbo.
CHAPTER III

PROPONENTS OF 100 PER CENT RESERVE BANKING

IN THE 1930'S: FISHER, SIMONS, AND CURRIE

The banking collapse of 1930-1933 served to intensify interest in 100 per cent reserve banking. While popular and political interest was immediately aroused by the magnitude of losses resulting from the severe rash of bank failures, the attention that economists gave to 100 per cent reserves was more a part of their general solution to the problem of monetary stability and its causal relationship to general economic stability. It was in this vein that Irving Fisher and Henry Simons, particularly, advocated 100 per cent reserve banking during the decade of the 1930's. While they were not unconcerned with the losses suffered by the general public through bank failures, it might be inferred that they viewed bank

failures as advanced symptoms of the disease of monetary instability, symptoms that would disappear only as the result of a fundamental cure.

In 1934, a group of economists at the University of Chicago— including Lloyd Mints as well as Henry Simons—presented their views on monetary reform in an unpublished memorandum normally referred to as the "Chicago Memorandum." These same views were later published by Simons in A Positive Program for Laissez Faire in 1934 and in "Rules versus Authorities in Monetary Policy" in 1936.

To Simons, monetary instability was an unavoidable result of a financial system in which "... the same funds are made to serve at once as investment funds for industry and trade and as the liquid cash reserves of individuals."

Short-term lending then became the essential cause of monetary instability in Simons' view, and thus his reform proposals were not limited to the establishment of 100 per cent reserve banking, but encompassed a general reform of the financial structure with the goal of drastically curtailing the issuance of money substitutes. In

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4Simons, A Positive Program for Laissez Faire, p. 38fn.
addition to and undoubtedly more important than the particular nature
of the reform of the financial system was the establishment of mone-
tary policy by rules rather than by discretionary authorities.

Fisher, on the other hand, viewed the establishment of 100
per cent reserve banking as the reform measure both necessary and
sufficient to produce conditions conducive to monetary stability. 5

While Simons and Fisher were the major proponents of 100
per cent reserve banking during the 1930's, the concept was enhanced
by contributions from James W. Angell, 6 Lauchlin Currie, 7 Frank
Graham, 8 and Lloyd Mints (a major collaborator on the "Chicago
Memorandum"). Also, the theories of Soddy were revived, 9 though
with little impact.

5Irving Fisher, 100% Money (New York: The Adelphi Com-


7Lauchlin Currie, The Supply and Control of Money in the

8Frank Graham, "Partial Reserve Money and the 100 Per
Cent Proposal," American Economic Review, XXVI (September,
1936), 428-440; and "100 Per Cent Reserves: Comment," American
Economic Review, XXX (June, 1940), 338-340.

9Frederick Soddy, Money versus Man: A Statement of the
World Problem from the Standpoint of the New Economics (London:
George Allen & Unwin, Ltd., 1931), 121 pp.; "Wealth, Capital and
Money: A Résumé of My Theories," Economic Forum, II (1933),
291-301; and The Role of Money (New York: Harcourt, Brace &
The major task of this chapter is to present the development of the theory of 100 per cent reserve banking during the 1930's as it is represented by the works of the above-named economists.

**Irving Fisher**

That Irving Fisher should propose the adoption of 100 per cent reserve banking was logically consistent with his earlier works, a major portion of which were concerned with stabilization of the purchasing power of the dollar.\(^\text{10}\)

In *Stabilizing the Dollar*, published in 1920, he proposed that the purchasing power of the dollar be stabilized by varying its gold weight in response to the changes in a "cost of living index." In Fisher's view, the basic problem of monetary stability lay in the use of a unit of measure that was not standardized:

> The fundamental reason is that a unit of money, as at present determined, is not, as it should be, a unit of purchasing power, but a unit of weight. It is the only unstable or inconstant unit we have left in civilization--a survival of barbarism.\(^\text{11}\)


\(^{11}\)Fisher, *Stabilizing the Dollar*, p. xxvi.
Since a dollar defined as a fixed metallic weight creates an artificially fixed price of gold, the depreciation of gold is not allowed to reflect itself in lower gold prices, but manifests itself instead in the form of increased prices of goods and services. The reverse occurs with the appreciation of gold.\textsuperscript{12} Thus, by periodically adjusting the gold weight of the dollar in response to changes in the price level, according to Fisher, monetary stability would be enhanced—and also, to a large extent, the amplitude of cyclical fluctuations, which he viewed as a result of uncertainty regarding future price levels, would be dampened.\textsuperscript{13}

Under the "compensated dollar" plan, the maintenance of the purchasing power of the gold dollar would, Fisher assumed, also stabilize the purchasing power of all other types of money (including bank deposits) so long as the latter were ultimately convertible into gold dollars. With regard to bank credit, he contended that

". . . given both a stabilization of the base and any sound banking system, . . . we can secure complete stabilization."\textsuperscript{15} His reference to "any sound banking system" assumed a system which ". . . makes credit expand or contract with an expansion or contraction of reserves."\textsuperscript{16} At this stage, Fisher was content with a

\begin{itemize}
  \item \textsuperscript{12}Ibid., p. 106.
  \item \textsuperscript{13}Ibid., pp. 63-66.
  \item \textsuperscript{14}Ibid., pp. 168-169.
  \item \textsuperscript{15}Ibid., p. 172.
  \item \textsuperscript{16}Ibid.
\end{itemize}
banking system governed by a central bank that relied upon varying the rediscount rate to protect its own reserves and composed of commercial banks that were guided by the doctrine of sound, self-liquidating short-term loans. In this context, he was concerned with a stabilization plan that would be virtually automatic.

By 1928, however, he expressed the view in The Money Illusion that discretionary credit control "... when duly perfected and duly safeguarded, will greatly simplify and improve the technique of stabilization and will make gold control secondary to credit control."17

The Development of Fisher's "Debt-Deflation Theory" of Business Cycles

During the period following 1929, Fisher published several significant works germane to the economic problems extant. In 1933 he published After Reflation, What?18 in which he advocated the raising of prices (reflation) to their pre-1929 level, restated his advocacy of a "compensated dollar," and presented a simplified version of his monetary theory of cyclical fluctuations. This theory, which is centered around overexpansions and overcontractions of


18 This work, cited in footnote 10 Supra, p. 36, was also published in the United Kingdom as Mastering the Crisis (London: George Allen and Unwin, Ltd., 1934), 168 pp.
credit as the principal causes of disturbances, was completely ex-
pounded in Booms and Depressions, also published in 1933. It was
this theory which provided the theoretical underpinnings of 100%
Money, which was published in 1935.

The major concern of Fisher, as indicated by his earlier
works, was with maintenance of the purchasing power of the dollar.
In his Stabilizing the Dollar, as mentioned earlier, he proposed
periodic revaluation of the dollar in terms of gold, using a price
level index as the rule for policy. It appears that in this work he
viewed the primary monetary problem to be the fixed gold-weight
valuation of the dollar, a problem correctable by gold-weight vari-
ation in response to price index changes. In his later works he
became increasingly concerned with the role of bank credit as a
cause of price level instability, and this is reflected in his increased
attention to the role of central bank policy, particularly in The Money
Illusion (1928) and in Booms and Depressions (1933).

It might perhaps be conjectured that the demise of the gold
standard in 1934 was viewed by Fisher as fortunate, for he presented
a new plan for stabilization relying solely on a managed,

19Irving Fisher, Booms and Depressions (London: George
Allen and Unwin, Ltd., 1933), 258 pp. Fisher summarizes his
cycle theory in "The Debt-Deflation Theory of Great Depressions,"
Econometrica, 1 (October, 1933), 337-357.

20Irving Fisher, 100% Money (New York: The Adelphi
invertible paper currency. After twenty years of devising
schemes to stabilize the purchasing power of the dollar in spite
of the gold standard, the depression provided (at least partially)
what he had spoken of so wistfully in 1912:

Like the surface of the continents, the waters of the
sea contain many thousand times as much gold as
all the gold thus far extracted in the whole history
of the world. It is to be hoped that the knowledge of
how to get this hidden treasure may not be secured
. . . scarcely a worse economic calamity can be
imagined than the resulting depreciation. It may
be, however, that only by such a calamity can the
nations of the world be aroused to the necessity of
getting rid of metallic standards altogether. 21

In Booms and Depressions Fisher explained cyclical fluc-
tuations as a result of overextension of credit (overindebtedness, to
use Fisher's terminology) induced by " . . . new opportunities to
invest at a big prospective profit, as compared with ordinary profits
and interest, such as through new inventions, new industries, de-
velopment of new resources, opening of new lands or new markets. 122
The overindebtedness in response to these new opportunities, ac-
ccording to Fisher, is caused (or at least made possible) by easy
money. The "easy money" of which Fisher wrote is implicitly
said to exist when there is a substantial differential between the

(Italics in the last sentence mine.)

22 Fisher, "The Debt-Deflation Theory of Great De-
anticipated rate of profit and the bank rate. What Fisher apparently meant was that an increase in anticipated profits results in an increase in desirable investment outlets for banks. Banks are therefore induced to utilize their excess reserves by making additional loans at the current bank rate of interest. Therefore, the amount of bank lending and demand deposits are increased to finance capital expansion. This process continues until the occurrence of overindebtedness (which may be considered as the failure of investors to realize anticipated profits).

Once overindebtedness comes into existence, debt liquidation soon follows as a result of alarm by debtors, creditors, or both. The attempts to reduce indebtedness result in distress selling, a contraction of demand deposits as bank loans are paid off,

23 Ibid. The similarity may be noted between Fisher's analysis and the Keynesian analysis of the marginal efficiency of capital relative to the money rate of interest as determinants of investment. See John Maynard Keynes, The General Theory of Employment, Interest and Money (New York: Harcourt, Brace and Company, 1937), Chapters 11, 12, and 13, pp. 135-174.

24 Fisher does not present a precise definition of the term "overindebtedness;" however, he points out that it is "... always relative to other items, including national wealth and income, and the gold supply..." and that its measurement must take into account "... the distribution in time of the sums coming due." For practical purposes he concludes that a rough measure of total "national debt embarrassment" would be "... the total sum currently due... within the current year, including rent, taxes, interest, installments, sinking fund requirements, maturities and any other definite or rigid commitments for payment on principal." Fisher, "The Debt-Deflation Theory of Great Depressions," p. 345.
and a reduction of velocity. The decrease in deposits and velocity results in a falling price level; a still greater fall in the net worths of businesses, which precipitates bankruptcies; a fall in the level of profits, which in turn causes a reduction of output and employment; and finally, an increase in hoarding and a further reduction in velocity. 25

The price flexibility implicit in the above analysis does not make for self-correction. The falling price level causes debts and the interest on debts to rise in terms of their command over goods and services, thus leading to what Fisher refers to as a great paradox:

Just as a bad cold leads to pneumonia, so overindebtedness leads to deflation. And, vice versa, deflation caused by debt reacts on the debt, . . . . and if the overindebtedness with which we started was great enough, the liquidation of debts cannot keep up with the fall of prices which it causes. In that case, the liquidation defeats itself. . . . Then, the very effort of individuals to lessen their burden of debts increases it, because of the mass effect of the stampede to liquidate in swelling each dollar owed. 26

Fisher viewed this as the "chief secret" of most major depressions. Only when the magnitude of overindebtedness is small enough not to induce self-defeating liquidation will there be a

25Ibid., pp. 341-342.

26Ibid., p. 344.
tendency toward self-restoration of equilibrium. The period 1929-1933 provides Fisher's best illustration of self-defeating liquidation. By March of 1933, liquidation had reduced private debts to nominally 80 per cent of their 1929 level, but the accompanying deflation had caused their real value to increase 40 per cent.

The policy implications of the foregoing are, of course, obvious—a monetary policy that would offset the deflation resultant from attempted debt liquidation. In The Money Illusion, Fisher expressed approval of the use of Federal Reserve open market operations as a means of price level stabilization; in Mastering the Crisis, he advocated "reflating" the price level via open market purchases; and in Booms and Depressions he expressed dismay that the policy of open market purchases of May through September, 1932, was not continued because of efforts to adhere to the gold standard.

27 Fisher contended that the "debt-deflation theory" was applicable to the crises of 1837 (overinvestment in West and South-west real estate, cotton, canals, turnpikes, and steamships), and 1873 (overinvestment in railroads and western farm exploitation), as well as 1929-1933.

28 Fisher cites a 20 per cent debt reduction and 75 per cent price deflation. He translated 1933 dollars into 1929 dollars via the Wholesale Price Index. Fisher, "The Debt-Deflation Theory of Great Depressions," pp. 345fn, 346, and Chart V, p. 354. Also see his 100% Money, pp. 105-120.

Yet while, in these earlier works, he advocated expansionary monetary policy within the then-existing monetary framework as a means of arresting the deflation, in 1935 his *100% Money* presented a plan for reform that purported to insure long-run monetary stability.

**Fisher's Program for Monetary Reform**

Irving Fisher's optimism over the efficacy of 100 per cent reserve banking to achieve long-run stability is evident in the work's complete title: *100% Money: Designed to Keep Checking Accounts 100% Liquid; to Prevent Inflation and Deflation; Largely to Prevent or Cure Depressions; and to Wipe Out Much of the National Debt*.

Fisher began by presenting the fractional reserve system of banking in the same fashion currently employed by most elementary economics texts. The basis of the monetary system is the metallic reserve against which the Federal Reserve can "create" liabilities in a multiple determined by the legal reserve ratio. These liabilities in turn serve as reserves of commercial banks, who in turn "create" checkbook money, again in a multiple determined by the legal reserve requirement. This creation of checkbook money is the prime contributor to overindebtedness; the contraction
thereof results in the self-defeating liquidation expounded in his earlier works. 30

The solution logically following would be to control the stock of money with the view toward preventing both overindebtedness and self-defeating liquidation. Though Fisher in his earlier works recognized the potential of traditional monetary policy, in _100\% Money_ the Federal Reserve was viewed in the same fashion as a commercial bank because of its fractional gold reserve basis, which places it in the same position as a commercial bank when its depositors demand "cash." That is to say, when dollar balances held by foreigners are converted into gold, the Federal Reserve may be forced to contract its liabilities by a multiple determined by the gold reserve requirement ratio. Thus, the only solution consistent with Fisher's cycle theory was to place all banking on a 100 per cent reserve basis.

Fisher summarized his criticisms of the fractional reserve system (which he termed the "ten per cent system") in the following fashion:

1. The 10% system ties check-book money to bank loans (and investments).
2. This system and this tie-up results in runs and failures.
3. They also result in the inflation and deflation of our chief "money" ("check-book money")

30 Fisher, _100% Money_, pp. 27-52 and 105-120.
according as bank loans (and investments) are inflated or deflated.

(4) Inflation and deflation of bank loans and so of "check-book money" are largely responsible for great booms and depressions. 31

"Putting these four propositions together," concluded Fisher, "we are justified in saying that the 10% system of banking is a major aggravating factor in such terrible calamities as we have recently experienced." 32

The implementation of Fisher's 100 per cent reserve proposal would appear to be deceptively simple, yet as his critics were quick to point out, the effects on the entire financial system are apt to be complex. 33

**Implementation of 100 Per Cent Reserve Banking**

According to Fisher's proposal, the reserves necessary to implement the plan would be provided by a governmental agency that would become the ultimate monetary authority, the Currency Commission. This Commission should be empowered (1) to issue currency, which would have the official designation of legal tender, (2) to buy and sell United States government obligations and other

31Ibid., pp. 40-41. 32Ibid., p. 41.

33See Chapter IV, "Criticisms of the 100 Per Cent Reserve Plan by Contemporaries of Fisher, Simons, and Currie," for further discussion of this question.
obligations normally bought and sold by the Federal Reserve, (3) to 
buy gold and silver, and (4) to buy and sell foreign exchange. 34

The Currency Commission would then be required to pur-
chase securities from the twelve Federal Reserve Banks in order to
allow each to maintain reserves equal to 100 per cent of its deposit
and note liabilities. The Federal Reserve would in turn be required
to redeem its outstanding notes in Commission currency and to
retire them. The Commission would also buy sufficient assets from
commercial banks to provide each with reserves equal to 100 per cent
of demand deposits. 35

In conjunction with the reform of the structure of the mone-
tary authority, Fisher also proposed that all checking accounts be
given the legal status similar to that of trust funds; 36 that checking
account business be carried on by a separate "checking bank," or by
existing commercial banks within a separate department with a
separate corporate identification; and that necessary legal

34 Fisher, 100% Money, pp. 20-21.

35 Ibid.

36 Changing the legal status of demand deposits from the
banks' promise to furnish cash on demand (in exchange for cash),
with the actual ownership of cash being transferred to the bank, to
that of a trust fund where ownership remains with the depositor,
appears to be needless so long as 100 per cent reserves are re-
quired.
prohibitions be instituted to prevent evasion of the 100 per cent principle by such measures as checking against savings deposits. 37

The advantages of such a system would be, according to Fisher, the elimination of runs on banks, 38 the reduction of interest-bearing government debt, and the simplification of the monetary and banking systems.

The reduction of the public debt would be accomplished as the Currency Commission acquired government obligations in the process of supplying commercial banks with sufficient cash to meet the 100 per cent reserve requirement. By doing so, the Currency Commission, as an agent of the government, would, in effect, reduce the principal outstanding. Since the Currency Commission would be required, under the Fisher proposal, to transfer its earnings to the Treasury, the interest on the Commission-held debt would, in effect, be canceled. 39

The claim that the monetary system would be simplified rests upon the plan's removal of the distinction between demand

37Ibid., p. 21.

38This problem, of course, has been for the most part solved by the establishment of the Federal Deposit Insurance Corporation.

39Fisher, 100% Money, pp. 3-4. Also see his "100% Money and the Public Debt," Economic Forum, III (1935-1936), 406-420.
deposits and currency so that all circulating media would be lawful
money, or else "warehouse receipts" for lawful money.

However, the essential claims of the plan were that it would
eliminate (or at least make possible the elimination of) inflation and
deflation, and that booms and depressions would be mitigated.

100 Per Cent Reserve Banking and the Business Cycle

Assuming the validity of Fisher's debt-deflation cyclical
theory, stabilization of the stock of money would undoubtedly prevent
the rapid fluctuations in the price level that result from expansion
or contraction. Since a 100 per cent reserve requirement would
remove the monetary functions of commercial banks, price fluc-
tuations, assuming in the short run a constant stock of money, would
result only from variations in velocity, which might presumably be
lessened under 100 per cent reserves.

Under 100 per cent reserve banking, loans would be made
only out of the savings of the community, and an increase or de-
crease in loans would have no effect upon the stock of money, but
only upon the relative quantities of earning assets and cash held by
financial intermediaries and the saving community. While, as
Fisher concedes, overindebtedness can still occur, the attempts at
liquidation will not be self-defeating. His analysis implies that,
while the curtailment of loans may result in a declining velocity and
therefore falling prices, the positive "real balance effect"^40 which is thereby produced would not be negated by a comparable, or more than comparable, decrease in the stock of money.

In the debt-deflation theory, the essential problem is the self-defeating liquidation in which debtors are made worse off because a falling price level causes the real value of the debt to increase even though its nominal amount is being reduced. If, under fractional reserve banking, the most important deflationary factor is the decline in the stock of money due to contraction of bank loans, then under 100 per cent reserves, the decline in the price level would result only from declining velocity.

The Lending Function Under 100 Per Cent Reserves

Under 100 per cent reserve banking, the lending function would be completely assumed by financial intermediaries (including "loan departments" in conventional commercial banks) that exchange

^40 The term "real balances" refers to "... liquid command over real resources." That is to say, it is the amount of goods and services commanded by a given amount of money balances. The "real balance effect" refers to the change in expenditures that results from a change in real balances. A decline in money prices, for example, increases the amount of goods and services commanded by a given amount of money balances. The increase in expenditures that would result would be a "positive real balance effect." Conversely, a rise in money prices would decrease real balances, causing a decline in expenditures, or a "negative real balance effect." See Don Patinkin, Money, Interest, and Prices (White Plains, N. Y.: Row, Peterson, and Company, 1956), pp. 21, 113, 130, and 133.
their own (non-demand) obligations for the savings of the public, and in turn acquire the obligations of borrowers. 41

The source of loanable funds would then be the savings of the public deposited in time and savings accounts and the capital invested by bank owners. Under this arrangement (given the asset preferences of lending intermediaries), an increase in credit could come about only by increased saving. Should the volume of saving remain unchanged—again assuming a constant stock of money—new loans could be extended only as outstanding loans are repaid. An alternative would be for Fisher's Currency Commission to issue new currency via discounting the assets of the lending institutions through the Federal Reserve Banks, thus making possible the expansion of lending without an increase in saving. The Currency Commission, of course, would be empowered to issue currency in exchange for earning assets. Fisher also assumed that the Commission would not necessarily have to issue new currency, but instead merely reissue currency taken in upon maturity of assets acquired during original implementation of the system. 42

41 It is implicit in 100% Money that the volume of lending by commercial banks would be unchanged, but rather transferred to the separate "loan department."

42 Fisher, 100% Money, pp. 72-75.
The essence of the foregoing is that loanable funds would no longer be obtained in exchange for demand liabilities, and this would produce the stabilizing effect of reducing short-term indebtedness.

The Impact of 100 Per Cent Reserves on the Private Debt Structure

In Booms and Depressions, Fisher contended that the tendency toward overindebtedness becomes greater as the proportion of short-term debt to total debt increases. In 100% Money he claimed that an "incidental but important" effect of 100 per cent reserve requirements would be the lengthening of private debt maturities.

The tendency toward longer-term loans would come about because of two forces: (1) a long-term decline in the demand for short-term commercial loans relative to capital loans; and (2) freedom from the liquidity requirements of fractional reserve banking, thus reducing the reluctance of banks to acquire longer term, less liquid assets.

In 1936, Fisher contended that the demand for short-term commercial loans had declined because of structural changes in American enterprise, such as national integration and the increasing ability of large corporations to finance themselves. At the same time,

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44 Fisher, 100% Money, pp. 133-135.
time, the demand for long-term capital loans had increased. The effect of this had been, said Fisher, that "... there is ... no prospect of a sufficient volume of old-fashioned short-term commercial loans on which bankers have hitherto depended for the backing of their precarious demand deposits."45

Fisher further suggested that, in an attempt to reconcile their own liquidity needs with the demand for longer term loans by business, banks had engaged in the practice of extending short-term loans with the understanding that they would be renewed. Yet so long as the option of renewal rests with the lender, the probability that massive liquidation will occur remains present.46 However, with 100 per cent reserves against demand deposits, "the borrower would be better able to stipulate in advance for the length of loan he desired, because his own business requirements would not be overborne by the 'liquidity' requirements ... of the banks."47

45 Irving Fisher, "100% Money and the Public Debt," p. 418. The point that the acquisition of short-time private earning assets would provide a liquidity that was highly illusionary because it provides the conditions essential to self-defeating liquidation was perhaps best made by Henry Simons in "Rules versus Authorities in Monetary Policy" (to be discussed more thoroughly on pages 54-73 of this chapter).

46 Ibid., and Fisher, 100% Money, pp. 133-134.

47 Fisher, 100% Money, p. 134. Fisher's analysis regarding the increased demand for capital loans relative to short-term loans is substantiated to a large extent by the growth of non-bank financial intermediaries that has occurred since the 1930's. These intermediaries, which specialize in longer term assets, are essentially
Fisher concluded that the establishment of 100 per cent reserve banking would result in increased investment in preferred and common stock and that commercial banking "... would gradually tend to become investment banking in all its forms. ..." 48 However, he added, "All this does not mean that borrowing would cease or even that short term borrowing would cease; but simply that the relative importance of short term loans would decrease." 49

Henry Simons

The schemes for monetary and banking reform that are generally referred to as being in the "Chicago tradition" have their published origin with Henry Simons. Although a group of economists at the University of Chicago presented a plan for monetary reform (which included 100 per cent reserve banking) in unpublished mimeographed form in September, 1933, 50 the first general publication of the same as the "loan departments" of commercial banks envisioned by Fisher. For example, see John Gurley and E. S. Shaw, Money in a Theory of Finance (Washington, D. C.: The Brookings Institution, 1960), 371 pp.

48 Fisher, 100% Money, p. 136. 49 Ibid.

the plan was in Henry Simons' *A Positive Program for Laissez Faire* in 1934. Further elaboration was contained in his "Rules versus Authorities in Monetary Policy" in 1936. 51

Irving Fisher acknowledges the "Chicago Memorandum" as the source from which he "... originally obtained many of the ideas embodied in this book [100% Money]."52 Were it not for the fact that Professor Fisher's advocacy of 100 per cent reserve banking followed logically from his earlier work in monetary theory, it might be inferred that he was but a popularizer of Simons' ideas. However, indications are that both, being absorbed in a common problem, arrived independently at similar conclusions based upon similar, but not identical, theoretical bases.

In *A Positive Program for Laissez Faire*, Simons presented an outline of a comprehensive political program for establishing the "rules of the game" of capitalism. The program was purported to rid the American economic system of those perversions of capitalism that, in Simons' view, had caused it to cease functioning effectively. While Simons viewed the market economy as desirable--not only because it maximizes economic efficiency but because it also

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52 Fisher, 100% Money, p. ix.
maximizes individual liberty—the assigned a positive role to government. Since monopoly is the foremost threat to individual liberty, government should act to dismantle it where it exists, and to prevent its establishment. Where natural monopolies exist and competition cannot effectively work as a regulatory device, they should be taken into public ownership.

Among the "rules of the game" to be maintained by government, Simons included the regulation of the currency. He contended that fractional reserve banking should be abolished, since it allows private institutions to create circulating media (demand deposits). In its stead he offered the following monetary reform proposals:

1. Federal ownership of the Federal Reserve Banks.

2. **Annulment of existing bank charters and enactment of new legislation providing for complete separation of the deposit and lending functions of existing commercial banks.**

3. Legislation requiring that all institutions maintaining deposit liabilities and/or providing checking facilities (or any substitute therefor) shall maintain reserves equal to 100 per cent of such deposits in cash and deposits at the Federal Reserve Banks.

4. **Provision for gradual displacement of private bank credit as circulating media by credit of the Federal Reserve Banks.**

5. Displacement by Federal Reserve notes and deposits of all other forms of currency in circulation, to provide a completely homogeneous national currency.
Subsidary coin might be retained, but it might better be replaced by a metal that is cheaper and more durable than silver.

Gold would be used exclusively for settlement of international balances.

6. Prescription in legislation of an explicit, simple rule or principle of monetary policy, and establishment of an appropriate administrative body (National Monetary Authority) charged with carrying out the prescribed rule, and vested with no discretionary powers as regards the fundamental rule.

7. Abolition of reserve requirements against notes and deposits of the Federal Reserve Banks, i.e., zero reserve requirement against Federal Reserve liabilities. 53

Before turning to a further examination of Simons' proposals for banking reform, an examination of the theoretical basis of reform is in order.

Simons' Theory of Business Cycles

Simons explained the business cycle as resultant from two causal factors: (1) rigidities within crucial areas of the price structure, resulting in adjustments being made through changes in output and employment instead of in prices and wages, and

53 Adapted from Simons, A Positive Program for Laissez Faire, pp. 22-23. Also see his Economic Policy for a Free Society, pp. 62-63.
(2) perverse flexibility in the "total turnover" (quantity and velocity) of effective money. The solution to the price rigidities factor would, of course, be through the vigorous enforcement of anti-trust laws against monopolistic elements, both capital and labor. The solution to the problem of perverse elasticity of effective money entails radical reform of the entire financial system, of which 100 per cent reserve banking is but a part.

To Simons, the ideal financial system would be one in which all property was held in a residual equity or common stock form, and in which there would be no money contracts. Then, "The danger of pervasive, synchronous, cumulative maladjustments would be minimized. . . ." because, he continued, "... no one would be in a position either to create effective money substitutes . . . or to force enterprises into wholesale efforts at liquidation." Second best to the ideal would be a system in which all borrowing and lending were in the form of contracts in perpetuity, where repayment of principal cannot be demanded. Although Simons conceded that, with a large volume of such financing, there exists the possibility that fixed annuity charges might lead to extensive efforts toward gaining liquidity during downward cyclical movements,


55 Ibid., p. 165.
protection against repayment of principal would leave fixed claims relatively small and therefore prevent wholesale liquidation.\(^56\)

Next along a descending scale from Simons' ideal would be a system in which borrowing and lending were only on a long-term (50 years or more) basis. Although maturities occurring during cyclical downturns could be used to augment money hoards, only a small percentage of such debt would fall due during any one year, and again the danger of wholesale liquidation would be minimal.\(^57\)

Furthest from the ideal would be a system in which short-term debt constituted a major portion of total debt:

No real stability of production and employment is possible when short-term lenders are continuously in a position to demand conversion of their investments, amounting in the aggregate to a large multiple of the total available circulating media, into such media. Such an economy is workable only on the basis of a utopian flexibility of prices and wage rates. Short-term obligations provide abundant money substitutes during booms, thus releasing money from cash reserves; and they precipitate hopeless efforts at liquidation during depressions. The shorter the period of money contracts, the more unstable the economy will be; at worst, all money contracts would be in the form of call loans.\(^58\)

Since the development of short-term lending represents the furthest from the ideal financial system, with the development

\(^{56}\text{Ibid.}^\)

\(^{57}\text{Ibid., pp. 165-166.}^\)

\(^{58}\text{Ibid., p. 166.}^\)
of banks Simons contended "... we move rapidly out of sight of ideal or even tolerable conditions. ..."59

**Short-Term Debt and Monetary Instability**

Simons' analysis of banks as a deterrent to economic stability is similar to that of Fisher: Banks are intermediaries that finance investment commitments, that ideally should be continuous, by lending funds obtained by issuing demand or near-demand claims to original lenders (depositors). Because of the special status given banking corporations, their obligations become as good as currency; thus the banking system acquires the prerogative of currency issue. Therefore, Simons continued, demand deposits represent "... a gigantic development of call loan financing. ..."60 The result, then, is the banks' flooding the economy with "money substitutes"61 during booms and precipitating futile efforts at liquidation afterward.62

The sensitivity of the financial system to disturbances, continued Simons' analysis, is increased by (1) the maintenance by banks of relatively small cushions of owners' equity, and (2) the

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59Ibid.

60Ibid., p. 166.

61In Simons' terminology, demand deposits are apparently considered to be money substitutes rather than part of the money supply.

practice of making short-term loans that represent secondary unsecured claims. As a result, a small decline in security values leads to a widespread movement to improve the quality of bank assets.  

The banking practice of investing heavily in short-term commercial paper, which is intended to maintain a high degree of liquidity, has as an effect quite the opposite of its intentions. Since banks acquire funds by issuing demand or near-demand obligations, Simons pointed out, it is assumed that they should lend only on a short-term basis. However, the effect is only to increase the destabilizing propensities inherent in short-term financing. Banks, in an effort to maintain a sufficient degree of liquidity, in fact expose themselves to greater dangers of insolvency than they might if they concentrated on the acquisition of long-term investments.

By concentrating on long-term investments, contended Simons, industry would be less exposed to "... paralyzing withdrawals of working capital..."; banks would lose the power "... dangerous to themselves as well as the community, of precipitating chaotic liquidation;" and, finally freed from the illusion of liquidity, bankers would be required to "... face more squarely the necessity of meeting demands for cash by transferring (selling)

63 Ibid.
64 Ibid., pp. 167-168. Also see Simons, A Positive Program for Laissez Faire, pp. 34-35fn.
their investments; thus, their own judgment, . . . would probably lead them to maintain more nearly appropriate cushions of stockholder equities."65

In summary, Simons viewed the development of short-term finance in general as the essential cause of economic instability even if there were a fairly high degree of price-wage flexibility. He viewed fractional reserve banking not as the prime cause, but as an intolerable extension of an already far-from-ideal financial system.

His program for "genuine economic reconstruction" called for:

. . . (1) restoration of a maximum of competitiveness in industry (including the labor markets); (2) transition to a less preposterous structure of private money contracts; and (3) ultimate establishment of a simple, mechanical rule of monetary policy.66

He considered the first of these three points to be of paramount importance, considering, as he did, that with sufficient wage-price flexibility the system would function tolerably regardless of the financial system. However, assuming limited wage-price flexibility, then reform of the financial system toward the "ideal system" becomes crucial to economic stability.

65 Ibid., p. 328 fn.
66 Ibid., p. 170.
67 Supra, pp. 58-60.
While admitting that to abolish all forms of borrowing, or even short-term borrowing, "... is merely to dream," he did consider it feasible to undertake a gradual and systematic re-ordering of financial practices, to the end of limiting quite narrowly the amount and the possible quantity fluctuations of the generally acceptable near-moneys.

Simons' Program for Monetary Reform

In order to accomplish financial reconstruction, it would be necessary to:

1. Abolish all special institutional arrangements for large-scale short-term financing;
2. Confine demand deposit banking to warehousing and transferring of actual currency;
3. Transform savings banks into strictly mutual institutions or investment trusts;
4. Narrowly limit the borrowing power of corporations (other than banks) to prevent their taking over the prerogative of which banking corporations had been deprived; and
5. Possibly limit financing by installment sales.

The establishment of Simons' reform proposals would entail institutional reform far beyond the simple elevation of reserve

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69Ibid.
70Ibid.
requirements to 100 per cent of demand deposits. While 100 per cent reserve banking was viewed as necessary to the attainment of a financial system that tolerably approximated the ideal, it was by no means viewed by Simons as both necessary and sufficient. "Standing by itself," commented Simons, ". . . it would promise little but evasion . . . and would deserve classification as merely another crank scheme." 71

The centralization of both monetary and fiscal powers would provide the modus operandi to monetary stability. These vast administrative powers would, of course, be exercised only subject to sharply defined rules.

Implementation and Impact of 100 Per Cent Reserve Banking

Simons' techniques for implementation of 100 per cent reserve banking are essentially the same as those recommended by Professor Fisher. The Federal Reserve would acquire through open market operations the existing investments of deposit banks until Federal Reserve credit completely displaced private bank credit as circulating media. All other forms of circulating media—silver certificates, United States notes, etc.—were to be retired by Federal Reserve credit. 72

71 Ibid., p. 331.

72 Simons, A Positive Program for Laissez Faire, pp. 22-23.
As indicated above, the Simons proposal for 100 per cent reserve banking, being but a part of a comprehensive monetary reform proposal, was not considered by its author to be both necessary and sufficient to insure monetary stability. The essential defect of the existing system was the existence of an abundance of short-term assets which served as effective money substitutes. Therefore, genuine monetary reform would have to eliminate short-term lending on a wide-scale basis. Necessary to achieve this end would be the separation of existing commercial banks into two distinct units: (1) deposit banks that would be mere warehouses for money deprived of any power to create or destroy effective media by a 100 per cent reserve requirement; and (2) lending institutions which would be in the form of an investment trust, obtaining their funds by issuing stock.

The results from these reforms would represent a major step toward the establishment of Simons' "ideal financial system." With loanable funds obtained in exchange for equity instruments (rather than deposits convertible at demand or upon short notice), fluctuations in the stock of circulating media would no longer be tied to the volume of short-term debt. Expansion or contraction in the volume of lending (including short-term lending) would leave the stock of money unchanged. The primary cause of instability, in Simons' view, was a system whereby "... the same funds serve
at once as investment funds for industry and trade and as the liquid cash reserves of individuals. "73

The Simons proposal would place primary lenders in the same position as common stockholders, unable to convert into cash (and thereby cause a contraction of circulating media) except as the market for their equities would allow.

The institution of such a system, in Simons' view, would have the effect of freeing banks (lending institutions) from the "illusion of liquidity" which binds them under the existing system, in the main, to acquisition of short-term assets—-the essential cause of monetary instability—and would allow them to restrict their investments to long-term obligations. Moreover, the inability to obtain loanable funds by issue of demand or short-term assets would, in fact, force banks to meet their demands for cash by issuing equities.

Should the reformed system not entirely eliminate short-term loans, as Simons conceded probable, it would at least place short-term lending on the same basis as long-term lending insofar as its impact on the stock of money is concerned.

Yet, it must be emphasized, 100 per cent reserve banking was but the first step in the Chicago plan of monetary reform. If successful in achieving a rigid separation between warehousing and

73Ibid., p. 38fn.
transferring of funds, on the one hand, and the mobilization of funds for lending and investment on the other, the state could limit its control over financial intermediaries to ordinary safeguards against fraud, rather than the complex regulation and supervision now necessary regarding banks because of their special status among institutions. 74

**Supporting Reform Measures.** In addition to 100 per cent reserve banking, Simons viewed as necessary legal prescriptions that would narrowly limit the borrowing power of corporations. 75 He also acknowledged the possibility that limitations on financing via open book and installment sales would be necessary, since these means of financing permit corporations to offer substitutes for short-term bank credit, thereby negating to a substantial degree the alleged benefits of 100 per cent reserve banking. 76

Simons justified such sweeping controls on the grounds that they would apply essentially to powers of corporations rather than other forms of business enterprise:

> If such reforms seem fantastic, it may be pointed out that, in practice, they would require merely

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75 Ibid., p. 171.

76 Ibid.
drastic limitations upon the powers of corporations (which is eminently desirable on other, and equally important, grounds as well).

100 Per Cent Reserve Banking and Monetary Policy

With the institution of 100 per cent reserve banking, along with the other limitations placed on short-term lending, the power to issue and control the value of circulating media would revert to its constitutionally explicit base—the Federal government. With banks no longer in a position to issue money substitutes, the volume of circulating media would be directly controlled by the actions of the monetary authority.

Initially, Simons (like Fisher) would have the currency (credit of the Federal Reserve system) sufficient to initiate 100 per cent reserve banking supplied by the Federal Reserve through purchase of bank assets. It was assumed that this would have the effect of eliminating a substantial portion of the national debt. This anticipated result was based upon the assumption that the Federal Reserve would acquire a substantial part of the outstanding debt during the transition to 100 per cent reserves. Since the Federal

77Ibid. The foregoing is consistent with Simons' basic philosophy, in which concentrations of economic power and individual liberty were deemed mutually exclusive. The corporate form of enterprise, with its inherent potential for power concentration, was viewed as dangerous, and limitations thereon were considered desirable for their own sake.
Reserve is in effect a governmental agency, the interest burden of
the debt would for all practical purposes be eliminated. 78

The establishment of 100 per cent reserve banking does not
necessarily imply any particular monetary policy and might serve
equally well any number of policy goals. Regardless of the policy
associated with it, 100 per cent reserve banking would eliminate the
perverse elasticity of money inherent in a fractional reserve banking
system. In implementing any policy it would have two advantages.
First, the purchase or sale of securities by the monetary authority
would have a one-to-one effect upon the money supply. The purchase
of securities by the Federal Reserve would add to the stock of money
by precisely the exact amount of the sale. Likewise, the effect of an
open market sale would have equal precision. From this follows the
second advantage of 100 per cent reserve banking—the simplification
of policy implementation.

Simons on Monetary Policy by Rules. Simons' policy
recommendations, to be employed within his reformed monetary
framework, were first and foremost for a policy based upon rules
rather than determined by discretionary authorities. In A Positive

78Simons, A Positive Program for Laissez Faire, p. 23.
The "debt burden elimination effect" of Federal Reserve acquisition
of government securities during the transition would be negated
should a policy of paying interest on reserves be adopted. To the
extent that deprivation of earning assets caused banks to increase
service charges, the interest burden to society would be replaced by
a tax upon owners of demand deposits.
Program for Laissez Faire, Simons stated that his entire scheme for monetary reform is predicated upon an economy where the "... rules of the game as to money are definite, intelligible, and inflexible." With regard to selection of "the rule," Simons offered these two "dogmatic" observations: First, the adoption of one rule from among several rules advanced by competent students is more important than the choice itself; and second, rigid stabilization of exchange rates on other gold standard nations is "... totally inadequate and undesirable as a rule of national currency policy."  

In "Rules versus Authorities in Monetary Policy," Simons expressed his preference for constancy of the money supply as the best rule of monetary policy. It would avoid reliance upon discretion the money supply as the best rule of monetary policy. It would avoid reliance upon discretion ary action by an independent monetary authority and would provide for clearly defined statutory rule. Second, it would provide for downward adjustments of commodity prices as output expanded through technological advance. Finally, and undoubtedly the most important in Simons' philosophy, it has the advantage of being "... clear enough and reasonable enough to provide the

79 Ibid., p. 24.
80 Ibid.

81 Simons, "Rules versus Authorities in Monetary Policy," pp. 163-164. This, of course, is predicated on the assumption that the "rigidities within the price structure" are eliminated.
basis for a 'religion of money' around which might be regimented strong sentiments against tampering with the currency. "82

However, Simons conceded that with all its merits, fixity of the money supply could not be recommended because of the danger of sharp changes in velocity. 83 Ultimately he conceded that a policy of price level stabilization, though a "... poor system, it is, ... infinitely better than no system at all."84 A policy of price level stabilization, if based upon an adequate index, would have the advantages, consistent with Simons' libertarian philosophy, of defining a definite long-run rule and at the same time providing for changes in velocity. 85 The monetary authority operating under such a rule would have but the simple task of altering the money supply when the agreed-upon price index varied outside the legally prescribed tolerable limits. The beauty of such an arrangement to Simons lay in the fact that the future course of monetary policy would be known to all, thus eliminating any uncertainty that would exist whenever such matters are in the hands of an independent authority.

Simons: Summary and Conclusions

The Chicago philosophy, as presented by Simons, was based upon two assumptions from which follow two separate policy conclusions.

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82 Ibid., p. 164. 83 Ibid.
84 Ibid., p. 174. 85 Ibid., p. 331fn.
The first assumption is that widespread short-term debt makes monetary stability very difficult, if not impossible to achieve, for it makes possible wholesale attempts at liquidation, thereby causing a contraction in the stock of money and precipitating deflation. During the expansion phase of the cycle, the expansion of short-term lending provides the means to the equally undesirable inflation. The policy conclusion which follows is to restrict the volume of short-term debt, taking away commercial banks' privilege of creating circulating media by requiring that they maintain reserves equal to 100 per cent of demand deposits.

The second assumption is that a competitive economy is basically stable once the rigidities within the price system are removed. However, this intrinsic stability depends upon a high degree of certainty among the economy's participants about the "rules under which the game is played." This certainty included, in Simons' view, certainty regarding the behavior of the money supply. Therefore, it follows that monetary policy should be based upon a simple, definite rule so that business decisions would not have to be based upon predictions about what the monetary authorities might do.86

On a purely theoretical basis, 100 per cent reserve banking is not dependent upon adoption of monetary policy by rules and,

86A more comprehensive treatment of the "rules versus authorities" question will be presented in Chapter VI.
therefore, may be evaluated on its own merits. Likewise, the adoption of a rule of monetary policy does not necessarily depend upon 100 per cent reserve banking. 87

Lauchlin Currie

The third of the major 100 per cent reserve proposals of the 1930's to be considered is that of Lauchlin Currie. While Fisher and Simons were concerned with the adverse effects of a large volume of short-term debt on economic stability, Currie's primary concern was with the institutional arrangements that made difficult the control of the money supply.

In his The Supply and Control of Money in the United States, Currie contended that under the then existent institutional arrangements (circa 1934), automatic forces caused the stock to behave in a pro-cyclical fashion. Furthermore, these automatic forces "... tend on the balance to operate against the customary central bank policy, thus rendering the task of control more difficult." 88

In addition to the forces which induce banks to increase lending during the upswing of the cycle and decrease lending during the downswing, according to Currie, the institutional framework

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87 A study of the criticisms of the plan by economists during the 1930's leads to the tentative conclusion that on a policy level, 100 per cent reserve banking without rules may be wholly undesirable. For a further discussion of this question, see Chapter IV, pp. 84-117, and Chapter VI, pp. 156-203.

88 Currie, op. cit., p. 131.
causes the average aggregate required reserve ratio of the banking system and the volume of total reserves to fluctuate in a pro-cyclical fashion.

Currie identified three forces that bring about an automatic expansion of the money supply during the upswing. First, banks tend to utilize a greater proportion of their excess reserves. Second, average aggregate reserve requirements are automatically reduced. Third, the volume of total reserves is automatically increased. The first factor is a function of banks' expectations, increases in asset yields, and increased availability of investment outlets. The second and third are functions of the institutional arrangements of banking.

The automatic decrease in reserve requirements is explained by Currie as the result of (1) the differences in reserve requirements both among the three classes of Federal Reserve member banks and between member and non-member banks; and (2) the tendency for net demand deposits (upon which required reserves are calculated) to decline relative to adjusted demand deposits. These two forces will be discussed in order.

During the upswing of the business cycle, explained Currie, demand deposits in country banks tend to increase faster than those in reserve city and central reserve city banks. With member country banks having lower reserve requirements, the effect is to lower the average aggregate required reserve ratio of member banks. A relative increase of demand deposits in non-member banks also
occurs during the cyclical upswing. This follows from the relative predominance of non-member banks outside of large cities, and since non-member banks normally have lower reserve requirements than do member banks, the result is to lower the average aggregate required reserve ratio for the entire banking system. 89

The tendency for net demand deposits to fall relative to adjusted demand deposits was caused by the definition of the net demand deposits in effect at the time of Currie's investigations (circa 1934). Under the laws then in effect, required reserves were calculated as a percentage of demand deposits of individuals, business firms, etc., and governmental agencies, plus the excess of items due to other banks over items due from other banks. 90 However, items due from other banks could be subtracted only from items due to other banks, so that an excess of "due from" items over "due to" items had no effect on net demand deposits. This was the normal condition of country banks, while banks in larger cities normally had an excess of "due to" items over "due from" items. Therefore, to follow Currie's example, given a uniform reserve requirement (e.g., ten per cent) among all classes of banks, if an

89Ibid., pp. 133-134.

90Ibid., p. 71. Items "due to other banks" included demand deposits of correspondent banks, and cashiers, treasurers, and certified checks outstanding. Items "due from other banks" included cash items in the process of collection and demand balances of domestic banks.
additional primary deposit of $100,000 were made in a country bank which retained $10,000 as required reserves and then deposited $90,000 with a New York bank (which would be required to hold $9,000 as required reserves), the total of required reserves would be $19,000, while only the original $100,000 constituted means of payment. The effective required ratio would be nineteen per cent of adjusted demand deposits as opposed to ten per cent. Considering only the effect of the $100,000 primary deposit, the change in aggregate net demand deposits would be $190,000, i.e., $100,000 in the country bank and $90,000 in the New York bank. Aggregate adjusted (gross demand deposits exclusive of government and inter-bank deposits) demand deposits would be increased by only $100,000.

This defect was corrected by the Banking Act of 1935 which, for purposes of computing required reserves, changed the definition of net demand deposits to total demand deposits less cash items in the process of collection and demand balances with domestic banks. This has had the effect of allowing banks to use demand balances at other banks to offset both balances due other banks and demand deposits of individuals, business firms, etc. As a result of the

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91 Ibid., pp. 71-72. The changes in net demand deposits would be as follows: Country bank, $100,000 (demand deposits of individuals, etc.) plus 0 (items due to other banks) less $90,000 equals $100,000 (since "due from" items can only be subtracted from "due to" items); New York bank, 0 (deposits of individuals, etc.) plus $90,000 (items due other banks) less 0 (items due from other banks) equals $90,000.
revised definition, net demand deposits at the country bank would, in the above example, now be increased by only $10,000, and the aggregate changes of both net demand deposits and adjusted demand deposits would be $100,000.

During the cyclical upswing, according to Currie, country banks tend to draw down their deposits in central reserve city banks as asset yields rise relative to interest rates paid on demand deposits in New York banks. Following the example in the preceding paragraph, the country bank, by drawing down its deposit from the New York bank, would cause net demand deposits to decline by $90,000, while adjusted demand deposits remained unchanged. Unless this were offset by some other force, such as an increase of checks in the process of collection, the volume of required reserves would decline by $9,000, i.e., the aggregate average required reserve ratio would decline by nine per cent.

In addition, total reserves are expanded during the cyclical upswing because of three factors. First, there is an increase in Federal Reserve float. This would follow from an increase in the volume of checks being cleared between Federal Reserve districts. Second, rising interest rates would serve to attract gold from abroad, thus increasing the volume of reserves. Third, while Currie admitted that the foregoing might be offset by an increase in

\[92\text{Ibid., pp. 131-132. This tendency has been mitigated by the prohibition against payment of interest on demand deposits.}\]
the public's demand for currency, he contended that favorable expectations of bankers would lower their aversion to becoming indebted to the Federal Reserve. Therefore, increased use of the discounting privilege would offset the internal cash drain.\textsuperscript{93}

For somewhat similar reasons to the above, automatic forces also tend to bring about a contraction in the money supply during the downswing of the cycle. These automatic forces tend to cause an increase in the aggregate average required reserve ratio, an increase in the relative volume of excess reserves, and a decrease in the volume of total reserves. First, the tendency of country banks to build up their balances in New York banks has the effect of increasing net demand deposits relative to adjusted demand deposits, thereby causing an increase in the aggregate average required reserve ratio. The higher reserve requirements of central reserve city banks would further increase the required reserve ratio. In addition to this increase in interbank deposits, Currie also cited the relative increase in individual deposits, particularly by large corporations, in New York banks during the cyclical downturn. During the cyclical upturn, this process would be reversed. The final factor causing an increase in the aggregate average required reserve ratio was the shift of deposits to Federal Reserve member banks from non-member banks. This shift was seen as one aspect of the general

\textsuperscript{93}\textit{Ibid.}, pp. 134-135.
shift of deposits away from country banks, partly as a result of fears on the part of depositors that non-member banks might prove less solvent than member banks during recessions. 94

Currie viewed the increase in the relative volume of excess reserves during cyclical downswings to be the result of an increased desire for liquidity on the part of banks, especially as bank failures become widespread, and also the result of a decrease in the availability of desirable assets. 95 The volume of total reserves is reduced during the cyclical downturn by gold outflows, a decrease in float, and by the increased aversion of banks to borrow from the Federal Reserve. 96

Currie, while conceding that the institution of deposit insurance and the prohibition of payment of interest on demand deposits would mitigate against the perverse elasticity of bank money, viewed elimination of fractional reserve banking as necessary for establishing the ideal conditions of monetary control.

Currie's Ideal Conditions for Control of the Money Supply: 100 Per Cent Reserve Banking

In order to overcome the perverse elasticity of money and to establish conditions under which control of the stock of money might be perfected, Currie offered a solution similar to that of

94Ibid., pp. 135-136. 95Ibid., pp. 126-129. 96Ibid., pp. 136-140.
Fisher and Simons. All money, both notes and demand deposits, would be issued by the government. While Fisher and Simons advocated requiring 100 per cent reserves against demand deposits, Currie, in order to achieve the same end, advocated that checking accounts be administered by an agency of the Federal government. 97 This would require that assets of banks be transferred to the check-administering agency in exchange for the latter's assumption of the demand deposit liabilities. However, Currie cautioned that if the government chose only the best assets of commercial banks, time deposits might be inadequately secured. He suggested that it would be "... the best policy for the government to be fairly liberal in its assumption of assets. ..." 98

Under this system, the governmental agency would meet the public's demand for cash by issuing currency, with the only effect on the volume of money being the change in its composition. 99 Variations in the stock of money would be effected via purchase or sale of government securities in the same fashion as that proposed by Fisher and Simons.

Currie, like Simons and Fisher, saw this plan as rendering the additional benefit of reducing the national debt as the government

97 Ibid., p. 151.

98 Ibid., p. 153. This same point was made by Angell, "The 100 Per Cent Reserve Plan," pp. 11-13.

99 Currie, op. cit., p. 152.
acquired assets during the transition. Further, Currie anticipated that the government would acquire assets other than its own debt instruments. He recommended that, as these private assets matured, the proceeds could be used for the further liquidation of the national debt.

**Adverse Effects of Implementation and Suggested Alternatives**

Currie recognized that the establishment of the institutional reform he recommended would have the effect of curtailing bank earnings and suggested three alternative methods for reimbursing the banks. ¹⁰⁰

First, he suggested a lump sum payment to the banks; second, that the government agency administering the checking deposits lease space in the existing banks at rentals sufficient to maintain the banks' earnings at their original level. The third alternative suggested by Currie was to retain the existing organization of the Federal Reserve System and have the commercial banks maintain reserves of 100 per cent of demand deposits. Under this third alternative, Currie assumed that banks could retain their existing level of earnings by increasing their service charges to customers. ¹⁰¹

¹⁰⁰ Like Fisher and Simons, Currie apparently did not recognize that this would negate the benefits of the "cancellation of the national debt" that would result from government's original acquisition of its own debt instruments during the transitional period.

¹⁰¹ Currie, op. cit., p. 154. The third alternative rests upon the assumption that the demand for demand deposits is
Currie: Summary and Conclusions

The intended result of Currie's proposal, like those of Fisher and Simons, was to divorce the volume of demand deposits from short-term debt and to cause the banking industry to perform two distinct functions: (1) warehousing and transferring of funds for customers; and (2) serving as intermediary between ultimate lenders (savers) and borrowers. With regard to the latter function, Currie argued that reserves against time and savings deposits should be reduced to zero. However, he feared that time deposits might be developed as a means of payment, e.g., checking against time deposits. Since this would result in a de facto return of fractional reserve banking, Currie suggested that some type of legal prohibitions against such practices be established. He was not specific about the exact nature of these legal safeguards.

Currie's reform proposals were predicated upon the assumption that economic stability could be achieved if only the stock of money could be controlled with precision and certainty. His view was that, within the existing institutional framework, the task of control was made difficult because of automatic forces that worked against anti-cyclical monetary policy. Among the three proponents of unitary elasticity (or less) so that total revenue from service charges would not be reduced. As already noted, the increase in service charges would be tantamount to shifting the interest burden of the debt from taxpayers to owners of demand deposits.
of 100 per cent reserve banking considered in this chapter, Currie is the only one who looked favorably upon discretionary monetary policy.
CHAPTER IV

CRITICISMS OF THE 100 PER CENT RESERVE PLAN

BY THE CONTEMPORARIES OF FISHER,

SIMONS, AND CURRIE

Several of the defects of fractional reserve banking that 100 per cent reserve banking was purported to cure were corrected by the passage of banking reform legislation in 1933 and 1935. The problem of deposit losses resulting from run-induced bank failures was, for all practical purposes, solved by the establishment of the Federal Deposit Insurance Corporation. The pro-cyclical fluctuation in the average aggregate required reserve ratio that was induced by interbank shifts of deposits in response to interest rate changes was mitigated by the prohibition against payment of interest on demand deposits. Shifts of deposits between non-member banks and member banks of the Federal Reserve System, which also have a pro-cyclical effect upon the average aggregate required reserve ratio, would likewise be mitigated by deposit insurance, i.e., insuring deposits in non-member banks would reduce the tendency of their depositors to
shift deposits to member banks where such shifting would have otherwise resulted from doubts about non-member banks' solvency during the cyclical downturn.¹

With these problems solved, the justification of 100 per cent reserve banking would have to rest upon its ability to solve the problem of monetary instability more satisfactorily than could be accomplished under the traditional system of monetary controls, without simultaneously causing any undesirable side effects. It is in this area that the major criticisms of 100 per cent reserve banking were directed in the 1930's.

**Adverse Effects of Transition to 100 Per Cent Reserves**

Several economists expressed concern over the possible undesirable effects that might result from the generally advocated method of instituting the plan. As outlined above, the method was the monetary authority's supplying the necessary reserves by purchasing government bonds and other assets of commercial banks. This would result in the danger of depriving banks, which would be essentially savings and loan institutions, of the assets traditionally

¹That reform legislation had largely removed these defects was especially noted by Lauchlin Currie, *The Supply and Control of Money in the United States* (Cambridge, Mass.: Harvard University Press, 1934), pp. 163-183. See *Supra*, pp. 76 and 79.
held by such institutions and leaving them with short-term commercial paper and the least desirable of long-term assets. ²

Impairment of Time and Savings Deposits and Disruption of Capital Markets

James W. Angell pointed out that time and savings deposits would be secured by the least desirable assets, which would in turn cause bank customers to fear time and savings deposits and shift to demand deposits. Thus, commercial banks would be forced to liquidate assets in order to pay off such depositors. This, warned Angell, would cause a disruption of both capital and short-term credit markets. The increase in demand deposits would necessitate still further acquisition of assets by the monetary authority and further impairment of time and savings deposits. Angell concluded that the process would end with a "... vicious spiral of effects, that would cease only when all commercial-bank time and savings deposits had disappeared."³

Fritz Lehman, while agreeing that this is a difficulty associated with the institution of 100 per cent reserves, admitted that it is but a technical difficulty that could be solved by deposit insurance,


³Angell, op. cit., p. 12.
which would remove the motive for conversion of time and savings deposits into demand deposits. Yet to insure time and savings deposits, contended Albert G. Hart, would defeat the major purpose of 100 per cent reserve banking. If insurance of time and savings deposits removed the motive for their owners to convert them into cash or demand deposits, the banks would be free to acquire short-term commercial assets, thus creating conditions that both Simons and Fisher considered incompatible with monetary stability. However, an equally convincing case may be made that insurance of time deposits might free lending institutions to acquire longer term assets.

In summary, the traditional method of instituting 100 per cent reserves would leave time and savings deposits inadequately secured, thus subjecting banks to "runs" on these deposits, and at the same time induce the banks to rearrange their portfolios with disrupting effects upon both capital and short-term markets.

4Lehman, op. cit., pp. 41-42.


6The term "banks" as used here refers to those institutions that would exist after the establishment of 100 per cent reserve banking, i.e., institutions that acquire earning assets with their excess reserves against time and savings deposits.
**Alternative Methods of Transition.** In order to overcome these problems, several alternative methods of transition were offered. Angell suggested that 100 per cent reserve banking might be instituted with the least disrupting effects if the government merely loaned the commercial banks and Federal Reserve Banks the necessary reserves in exchange for a general, non-interest-bearing lien against their assets. The lien would be repaid slowly, if at all. 7

As a corollary to this, Angell suggested that time deposits be converted into negotiable, interest-bearing time obligations maturing serially. These obligations would be backed by the totality of the banks' assets, thus removing the motives for conversion into demand deposits. In the event that the time obligation holders chose to convert them into demand deposits or currency, the government would issue new currency for that purpose and the general lien would be increased accordingly. 8

This, however, would be a circuitous way of employing the transitional method suggested by Frank Knight, i.e., the government's simply making a gift of reserves to the commercial banks. 9 Other proposals included Currie's plan for a government agency to

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7Angell, op. cit., p. 30.

8Ibid., pp. 30-32.

9Hart, op. cit., p. 449.
assume the function of administering demand deposits, and Bostrom's suggestion that demand deposits be transferred to the post office, with the banks retaining their assets and issuing debentures to the post office.

Under the transitional methods suggested by Knight and Angell, the existing institutional framework would be unaltered with regard to both organization and asset holdings; thus the danger of disrupting portfolio-shifting would be eliminated. Under the post office suggestion, the same would be true but with some functional alterations being required. Under each of the alternative proposals, the stock of money would be divorced from the volume of short-term debt.

Reduction of Bank Earnings

The establishment of 100 per cent reserve banking, regardless of the technique of transition, would have the effect of raising the charges for administering checking accounts. Under the method of transition suggested by Fisher and Simons, service charges would probably rise as rapidly as the rate at which banks are forced to give up earning assets. Under the Knight alternative and the Angell alternative, the increase would be gradual and would occur only as demand deposits are increased after the system has been instituted.

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The critics of 100 per cent reserve banking pointed out that the increase in service charges would have two important effects. First, the increase in service charges, to the extent that it is necessitated by the banks' loss of government securities, would shift the burden of the public debt to owners of demand deposits; and second, the increase in service charges would encourage the development of alternative means of payment and thus defeat the purpose of 100 per cent reserve banking.

The essence of the criticisms on this point is that increased service charges would result in businesses and individuals seeking other means of payment (including attempts to make time deposits serve as a means of payment). Should this occur, the perverse elasticity that 100 per cent reserve banking was purported to correct would return, possibly in a less manageable form. Fisher no doubt had this contingency in mind when he included in his proposal for reform legislation prohibitions against "checking against savings accounts," and likewise Simons, when he suggested that narrow

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12Ibid., pp. 448-454; Angell, op. cit., pp. 15-16; Benjamin Higgins, "Comments on 100 Per Cent Reserve Money," American Economic Review, XXXI (March, 1941), 93; and Lehman, op. cit., p. 43.

13Harry Gunnison Brown, "Objections to the 100 Per Cent Reserve Plan," American Economic Review, XXX (June, 1940), 308-314; Angell, op. cit., pp. 15-16; Lehman, op. cit., p. 43; and Higgins, op. cit., p. 93.

limitations be placed on the borrowing power of corporations, and possibly on financing via open book and installment sales. 15

While a majority of the critics viewed the increased service charges as merely a shifting of the interest burden of the public debt to holders of demand deposits, Hart viewed the entire realm of earning asset losses as a tax falling "... with confiscatory force on the equity of bank stockholders and even on savings depositors." 16 The tax would equal the earnings on assets banks were forced to sell in order to acquire 100 per cent reserves. This tax could be shifted by reducing minor services to depositors and by raising service charges. 17 However, the degree to which the incidence of the tax would remain with bank stockholders would depend upon the extent to which the elasticity of demand for demand deposits is greater than unitary.

Under the Fisher-Simons method of transition, a second possible problem was pointed out by the critics of the plan. Should the volume of government securities outstanding be less than the volume of demand deposits at the time of transition, the government would be required to purchase privately issued assets. Angell feared


16 Hart, op. cit., p. 453.

17 Ibid.
that "... continuous and large investment by a government body in private business, ... will lead to charges of discrimination and manipulation; and ... political pressure and outright abuse will develop. ..."\(^{18}\)

Both Fisher and Simons intended, however, that such assets would, in any event, be held to maturity, and the proceeds used to further reduce the national debt. Under these circumstances any dangers, political or economic, would appear to be remote, and Angell's criticism would be invalid.

In summary, while many economists looked favorably upon 100 per cent reserve banking, particularly with regard to its divorcing the supply of circulating media from the volume of short-term debt, they feared that the disrupting effects of the standard method of implementation would be too great a price to pay. Therefore, alternative techniques of implementation were suggested that would minimize the need for disrupting institutional changes, but would at the same time retain the alleged advantages of 100 per cent reserve banking. If the government made an outright gift of reserves

\(^{18}\)Angell, op. cit., p. 13. While a case may perhaps be made against government acquisition of non-government assets on political grounds, the difference between such acquisition and the rediscounting privilege is negligible insofar as political control of private enterprises is concerned. The only possibility of "government intervention" would be associated with government acquisition of equity claims of private corporations, and this type of asset is not ordinarily to be found among bank assets.
to commercial banks, or lent them reserves on terms so liberal as to be tantamount to a gift, then the transition might take place without disrupting effects in the capital and short-term markets. The retention of earning assets would allow banks to continue operating as they did before, with one major exception, i.e., they would not be able to acquire new earning assets except as old assets matured. Even under such liberal terms as these, the upward pressure on service charges would not be eliminated, but merely delayed.

Assuming a policy of price stability is pursued, the monetary authority would have to increase the stock of money at a rate equal to increases in productivity and population, given a constant velocity. The cost of administering the increase in demand deposits could not be offset by banks' increasing their holdings of earning assets. Thus service charges would be subjected to upward pressure, and the propensity of demand deposit holders to seek other means of making payments would increase. The only way this could be avoided would be a direct subsidy to banks for administering checking accounts.

**Subsidization of Demand Deposit Administration.** Under Angell's alternative, the subsidy would take the form of allowing banks to retain their earning assets. In order that the subsidy be distributed among banks according to the volume of demand deposits administered, Angell recommended that each bank pay into a common
pool a proportion of its earnings equal to that bank's proportion of the original United States government lien. Each bank would receive from the pool an amount equal to the proportion of total demand deposits administered during the preceding year. Hart made a similar proposal. Fritz Lehman suggested four possible bases for subsidizing the administration of demand deposits: (1) average number of accounts, (2) average sum of deposits, (3) total turnover of demand deposits, and (4) sum total of individual transactions. He felt the last suggestion preferable, for it would provide incentive for banks to keep costs below the amount of the subsidy.

If it be judged that subsidization of banks is necessary to retain demand deposits as a means of payment, then perhaps it is also desirable to subsidize on the basis of each bank's contribution (i.e., number of transactions, volume of deposits, etc.). The various recommendations were designed to achieve a degree of equity among those banks subsidized. The recommendation that banks be subsidized via payment of interest on reserves deposited with the

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19 For example, if the United States lien against the assets of Bank X equaled one per cent of the total United States liens against all banks, then Bank X would contribute one per cent of its earnings into the common pool.


22 Lehman, *op. cit.*, p. 43.
Federal Reserve Bank\textsuperscript{23} can make no claim to such equity; it has the compensating quality of simplicity of administration. If it be granted that the cost of administering a subsidy should be minimized, then perhaps payment of interest on reserves is desirable because it would probably be less expensive than the more complex alternatives suggested.

Among the criticisms of 100 per cent reserve banking, those concerned with the problems of transition must be considered among the most valid. The criticisms and suggested alternatives discussed above serve to strengthen the 100 per cent reserve plan. However, the crucial test of 100 per cent reserve banking is whether it could provide for a more effective monetary policy than the fractional reserve system. The response to the plans of Simons, Fisher, et al., by their contemporaries will be treated in the following section.

\textbf{100 Per Cent Reserve Banking and Monetary Stability}

The most valid criticisms of 100 per cent reserve banking during the decade of the 1930's were centered around, first, adverse transitional effects, and second, the plan's claim to promote monetary stability. Both Simons and Fisher regarded the existence of a large volume of short-term debt as the chief cause of instability and

assumed that 100 per cent reserves against demand deposits would contribute to lengthening the debt structure, given the institution of legal safeguards against the adoption of other methods of payment as a means of circumvention.\textsuperscript{24}

If, however, 100 per cent reserve banking failed to reduce the relative proportion of short-term debt, credit contractions could occur in response to adverse expectations of businessmen, depositors, or lending institutions. Rollin Thomas pointed out that, during the cyclical downturn, there would be a reduction of the "effective money supply."\textsuperscript{25} This would occur as businesses (1) reduce indebtedness, and (2) reduce their inventories in the face of declining prices and accumulate idle balances. At the same time, continued Thomas, lending institutions would seek to liquidate their asset holdings in an effort to increase their liquidity position.\textsuperscript{26} The foregoing could be accompanied by large-scale conversions of time

\textsuperscript{24}\textsuperscript{Supra, pp. 40-44 and 57-63.}

\textsuperscript{25}\textsuperscript{Rollin G. Thomas, "100% Money--the Present Status of the Plan," \textit{American Economic Review}, XXX (June, 1940), 215-223. Thomas defined "the effective supply" as "that part of the stock of money in the channels of trade." Under 100 per cent reserve banking, idle demand deposits and the excess reserves of lending institutions would, by Thomas' definition, not be part of the "effective money supply."}

\textsuperscript{26}\textsuperscript{Ibid., pp. 215-219.}
deposits into demand deposits.\footnote{Demand deposits would be preferable to time deposits because they would be tantamount to currency under the 100 per cent reserve plan.} The result, according to Thomas' analysis, would be a reduced "effective money supply" and falling prices;\footnote{Lehman, op. cit., pp. 43-46, takes a similar position.} or, in more conventional terms, there would be a reduction in velocity. However, even if short-term lending were not reduced, 100 per cent reserve banking might induce automatic reversal of the process Thomas described. Under fractional reserve banking, the stock of money (defined as currency in circulation and demand deposits) would be reduced and excess reserves accumulated. Under the 100 per cent plan, the stock of money would remain unchanged but would increase in real value as prices fell. This "real balance effect"\footnote{See Don Patinkin, Money, Interest, and Prices (White Plains, N. Y.: Row, Peterson & Company, 1956), pp. 21, 113, 130, and 133; also see Supra, p. 50, footnote 40.} could possibly induce increased consumption, as well as inventory buildups, thus arresting the price decline.

Under the fractional reserve system, debt contraction would not only contribute to a falling price level but to a contraction of the stock of money as well. The one advantage of the 100 per cent reserve plan over the fractional reserve system (even if short-term lending were not reduced) is that the stock of money would not be altered, and therefore increased spending in response to falling...
prices would depend on the preferences of the money-holding public (households and firms) without regard to the willingness of liquidity-conscious bankers to extend loans. 30

Benjamin Higgins, while skeptical about the sufficiency of 100 per cent reserve banking in and of itself to eliminate business cycles, saw one advantage of the plan that was not stressed by its advocates, i.e., it would provide an automatic check to investment in excess of voluntary savings. 31 Under 100 per cent reserve banking, with the supply of currency held constant, increases in time deposits could result only from a shift from demand deposits or currency. Such increases in time deposits may be associated with decisions on the part of the community to save more. An increase in time deposits might lead to multiple expansion of loans through a return flow to banks in the form of new time deposits; however, secondary increases in time deposits would again represent decisions to save. 32 Higgins concluded:

The spread between income and expenditure on consumption (= savings) grows pari passu with

30 The validity of the foregoing paragraph rests upon the assumptions that (1) individuals will react rationally to changes in real money holdings, and that (2) the effect of positive changes in real balances will not be completely offset by possible adverse expectations that would induce an increased desire to hold real balances.

31 Higgins, op. cit., p. 91.

32 Ibid., pp. 91-92.
the loan expansion, even if consumption merely fails to keep pace with the growth of national income. Thus if equilibrium demands that savings and investment be kept equal, a banking law requiring 100 per cent reserves against demand deposits, and no reserves against time deposits, has much to commend it. 33

However, Higgins pointed out that his analysis was based upon the assumption that demand deposits are identified with money and time deposits are identified with savings. However, to some extent demand deposits are savings in the relevant sense, and such deposits not offset by investment would keep national income below the equilibrium level. If these deposits cannot be lured into time deposits by higher interest rates, they take on the characteristics of hoards and the problem becomes not one of offsetting saving by investment but rather one of increasing money. 34

Recognizing that withdrawals of time deposits before the end of an income period would necessitate credit contractions, Higgins suggested the imposition of a minimum advance withdrawal notice equal to the average length of loans extended. A second alternative suggested by Higgins was to have individuals purchase liquid assets such as commercial paper, with the banks serving merely as brokerage houses and savings accounts per se eliminated entirely. 35

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33Ibid., p. 92. 34Ibid., p. 95. 35Ibid., p. 96.
As Higgins, Angell, and others pointed out, many of the criticisms aimed at the 100 per cent reserve plan were directed at what may be called the extravagant claims of its advocates. These claims, as noted in the preceding chapter, may best be summarized by repeating the complete title of Fisher's work: 100% Money: Designed to Keep Checking Accounts 100% Liquid; to Prevent Inflation and Deflation; Largely to Cure or Prevent Depression; and to Wipe Out Much of the National Debt.

Angell and Lehman, among others, felt that the first of Fisher's litany was legitimate. The second claim depends upon the type of monetary policy pursued after the plan is established, and on this point there was no general agreement. The third claim rests, as Higgins pointed out, on the validity of a monetary theory of the business cycle, and if such validity be conceded, upon the type of policy employed. The last of the Fisher litany—public debt elimination—was strictly illusory.

Yet many of the critics of the plan—especially Angell—viewed very favorably the plan's breaking the link between the volume of debt and the volume of money. While the weaknesses of the plan were treated quite thoroughly and competently by its critics, the alleged advantages of fractional reserves over 100 per cent reserves were given equal but perhaps less convincing treatment.
Defenders of Fractional Reserve Banking

Walter E. Spahr attacked the 100 per cent reserve plan because it "... is not a proposal for 100% good money but for 100% inconvertible paper money—a thoroughly bad money."36 Spahr viewed the fractional reserve system as a means of economizing on scarce resources—namely, currency that is convertible into specie. The 100 per cent reserve plan based upon inconvertible paper was in Spahr's view "... a fire escape made of paper."37

What Spahr offered as an alternative to Fisher's "paper fire escape" were improvements on the existing fire escape—permitting the Federal Reserve, during times of emergency, to accept paper from the banks up to its limit to pay out cash.38 After this limit is reached, continued Spahr, "... the Reserve banks should be permitted to turn paper or securities over to some body, ... which could sell its debentures for cash and turn the cash over to the Reserve banks."39


37Ibid., p. 16.

38It is implicit in Spahr's analysis that this "limit to pay out cash" is determined by the gold reserve requirement against the liabilities of the Federal Reserve System.

39Spahr, op. cit., p. 16. (Italics mine.)
Spahr's criticisms of 100 per cent reserve banking may be interpreted in the light of his apparent gold standard inclinations. Should a gold standard be in effect, then his point is well taken that 100 per cent reserves would be a waste of resources. However, Spahr apparently failed to see that the major 100 per cent reserve economists, Fisher and Simons, were not merely suggesting a change in reserve requirements but were suggesting major monetary reform which included rejection of the gold standard, at least as it applies to the domestic money supply. And, paradoxically, Spahr concluded that all that would be necessary to insure the functioning of the fractional reserve system would be to make provision for the periodic abrogation of the gold standard.

A more convincing defense of the fractional reserve system vis-à-vis the 100 per cent reserve plan was made by George B. Robinson. 40 He suggested that for 100 per cent reserve banking to be justified, it must be proved: (1) that the fractional reserve principle is more than a "... rule evolved out of banking experience which negatively permits of repetitive lending by financial institutions... which receive back quickly the money which they have lent..."; 41 (2) that there are distinctions between demand and

41Ibid., p. 439.
time deposits that would ". . . justify abolishing the former while founding a new banking system on the latter. . . ."; 42 (3) that the replacement of demand deposits with government currency would prevent both banks and the public from increasing the total amount of circulating media; and (4) that the relationship between deposits and reserves is the exclusive criterion for judging the existence of excessive monetary expansion and thus is the " . . exclusive area in which to search for means to prevent its occurrence." 43

It was Robinson's contention that the distinction between time deposits and demand deposits was a false one based upon the relative speed with which funds (received by banks in exchange for demand deposits), when lent out, return and are again made available for relending. In Robinson's words:

The appearance that commercial banks 'manufacture money,' 1 and that savings banks do not, can be fully explained by the rapidity with which sums lent by commercial banks return to them for deposit (even if they journey through the savings banks), as contrasted with the slowness with which the sums lent by savings banks now return to them. 44

Since reserves are but a limitation on banks' ability to acquire earning assets, Robinson contended that 100 per cent reserve banking simply limits the fractional reserve principle to time deposits. 45 Thus, so long as lending departments (under 100 per cent

42 Ibid.
43 Ibid.
44 Ibid., p. 442.
reserve banking) continue to cater to the public's preference for lending (depositing with lenders), the principle of 100 per cent reserve banking would be violated. 46

However, under fractional reserve banking the amount of credit extended by banks does not necessarily reflect the public "preference for lending as opposed to hoarding." Banks acquire assets out of excess reserves against demand deposits because of the rapidity with which such funds expended are returned for deposit. This has no relationship to the public's preference for lending unless one accepts Harry Gunnison Brown's assertion that real lenders are those who receive checks in exchange for goods and do not convert them into cash. 47 It simply represents a preference for demand deposits over cash or time deposits. On the other hand, banks' acquisition of assets with money received in exchange for savings deposits does in fact reflect the public's preference for lending. The limitation of asset acquisition to time deposits does not represent a violation of the 100 per cent reserve plan, but to a large extent is its raison d'etre. To restrict lending to savings is exactly what Simons and Fisher had in mind. And as Higgins pointed out, the return of funds to saving institutions may be associated with

46Ibid., pp. 442-443, and 447.

47Brown, op. cit., pp. 308-309.
increased savings. This return flow into demand deposits cannot be so described.

100 Per Cent Reserves and Monetary Policy

As has been indicated above, the efficacy of 100 per cent reserve banking as a means of achieving monetary stability ultimately rests upon the nature of monetary policy employed in conjunction with it. In Currie's view, 100 per cent reserves would make any type of monetary policy more effective by eliminating those automatic forces that cause the average aggregate required reserve ratio to change in a pro-cyclical fashion.

Price Level Stabilization: Fisher and Simons. Simons viewed a policy of maintaining fixity of the money supply as the most desirable on purely theoretical grounds, but as a practical matter he conceded that a policy of varying the money supply in response to changes in an index of prices would be preferable. He suggested that the index should consist of easily definable (physically) commodities which are actively traded on highly organized exchanges, and should exclude any commodities subject to deliberate regulation. This index would still be far from satisfactory because: (1) Such commodities would be most affected by technological advance, and

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49 Supra, pp. 73-81.
therefore, the rule would be inflationary; (2) the index would be subject to foreign disturbances and indicate policy that would be undesirable domestically; and (3) the most desirable index would exclude prices of foreign goods, but this would be impossible.

Simons did not reconcile these conflicts, but merely suggested that reconciliation should assign importance in the order that they were presented. 50

Fisher viewed the proper monetary policy as one based upon stabilization of a retail price index; however, he did not define the content of the proper index. Fisher, writing in the mid-1930's, advocated that first the price level should be "realted" to its pre-depression level and then stabilized.

Angell's Alternatives. Angell challenged the validity of policy based upon stabilization of retail prices, contending that they were not sensitive enough indicators. He suggested in its stead that the stock of money be increased so as to hold per capita money income constant. This would entail increasing the money supply to offset the secular growth in population and the secular decline in circular velocity. 51


51James W. Angell, in "Monetary Control and General Business Stabilization," Economic Essays in Honour of Gustav Cassell (London: George Allen and Unwin, Ltd., 1933), pp. 53-68, defines circular velocity (C) as:
Angell viewed cyclical fluctuations as resulting from excessive increases in voluntary savings and investment beyond justifiable limits. He defined these as just the volume necessary to adapt technological improvements that will lower money costs of production; "... otherwise overproduction, a chronic state of excess plant capacity and loss must ensue."52

His analysis concluded that a major cause of excessive savings and investment is prior excessive investment that was initially financed through creation of additional money.53 Therefore, Angell recommended a policy of stabilizing money income per capita and viewed 100 per cent reserve banking as an excellent tool for effecting this policy.

However, the extent to which Angell's policy would be effective in achieving its goal would depend upon the downward flexibility of prices on one hand and the stability of money wages on the other. Should the economy be insufficiently competitive, technological

\[ C = \frac{R}{b + d} \]

where \( b \) is the total of transaction balances held by business firms and individuals, expressed as a percentage of national income, \( d \) is the average number of payment periods per production period, and \( R \) is the average number of production periods per year. Based on his computation of \( C \) from 1907 to 1930, Angell estimated a secular decline of 2.4 per cent per year.

52Ibid., p. 62. 53Ibid., p. 67.
advance would to a greater or lesser degree be reflected in increased profits rather than in falling prices. Likewise, the existence of labor unions would probably push wages upward in response to productivity increases. It was essentially those considerations that led Simons to view price level stability as the only practical rule of policy, despite its theoretical limitations.

The 100 Per Cent Plan and Nationalization of Banking

The preponderance of criticisms of the 100 per cent reserve plan were concerned with its effects on monetary stability; however, a few critics attacked the plan on the grounds that it would nationalize banking. 54 To such claims Fisher merely replied, "... nationalization of money yes, of banking, no." 55 To Simons, regulation of the issue of money was among the "rules of the game" of capitalism that government must enforce. Both were concerned with providing a monetary framework within which the free enterprise system could best function, and it may be concluded that among their ideological priorities, the right of private individuals or firms to create effective money ranked very low.


55Fisher, 100% Money, p. 18.
From a purely legalistic point of view, proponents of 100 per cent reserve banking (or of any form of public regulation of banking) may look for support to the Constitution of the United States (Article I, Section 8), wherein the right to "coin money and regulate the value thereof" is reserved to the Federal government.

Frank Graham's contribution to the 100 per cent reserve plan was his argument against fractional reserve banking on quasi-legalistic grounds.56 Fiduciary money, he argued, unlike real wealth, cannot with social advantage be increased indefinitely; thus to entrust the supply of money to the market would have chaotic results. Therefore, it becomes necessary that there exist a monopoly over the issue of fiduciary money, but such a monopoly permits the taking of seniorage profits, which are in effect a tax on the general public. Thus, "... the power to tax cannot with equity be granted as a privilege to any group of private citizens."57

In Graham's analysis, bank lending is described as a process in which both borrower and lender go into debt to each other. The bank demand debt (deposit liability) is exchanged for the debt (interest-bearing asset) of the borrower. The fractional reserve system permits the bank to exchange its non-interest-bearing


57 Ibid., p. 430.
liabilities (which circulate as money) for interest-bearing assets and thereby take seniorage. 58

Graham conceded that the "seniorage profits" of commercial banks were reduced by competition which forced short-term rates to fall relative to long-term rates, and forced banks to pay interest on a part of their liabilities (time deposits). However, his concept of justice remained violated so long as banks were able to issue non-interest-bearing liabilities in exchange for interest-bearing assets, or to the extent that increased bank lending was not justified by increased savings deposits. 59

In summary, if the power to create fiduciary money should rest with the sovereign because it carries with it the implicit power to tax, as Graham claimed, then 100 per cent reserve banking would be justified on grounds of equity, the essential test of equity being equality of interest-bearing liabilities and earning assets.

However, Graham's case is no doubt weakened by the very nature of this test. That demand deposits bear zero (or negative) interest while time deposits bear positive interest may be explained in terms of the public's relative desires for these two assets sold by banks. Should banks, as a result of changes in the public's preferences, be forced to pay interest on demand deposits, the

\[\text{\textsuperscript{58}}\text{Ibid., pp. 432-434.}\] \[\text{\textsuperscript{59}}\text{Ibid., p. 434.}\]
"money-creating" powers of banks would still remain, but Graham's case would be destroyed.60

Summary and Conclusions

Those economists who evaluated 100 per cent reserve banking in the context of discretionary monetary policy, such as Lehman, felt that fractional reserve banking was superior because small changes in bank reserves effected through open market operations would have a multiple effect on capital markets, thus reducing "... the danger of losses to the central bank resulting from buying securities at high depression prices and selling them at low inflation prices."61

Another reviewer of Fisher expressed preference for discretionary policy under a fractional reserve system because, under 100 per cent reserves, there would be the "... loss of elasticity in all markets in which borrowed money is employed."62 In the case of open market sales by the monetary authority (under a 100 per cent

60 Graham's analysis is based upon the assumption that the distinction between money and near-money is that the former bears no interest while the latter does, but as one critic pointed out, this would mean that demand deposits, prior to the establishment of a legal maximum interest of zero, would not be considered as money, but would be afterward. Lin Lin, "Professor Graham on Reserve Money and the 100 Per Cent Proposal," American Economic Review, XXVII (March, 1937), 112-113.

61 Lehman, op. cit., p. 54.

reserve system), banks' inability to create deposits would result in the sale's being limited "... to such funds as investors can be induced to lay out from balances after purchases of securities at lower prices." 63 The implication of this argument is that the inability of the financial system to avoid the immediate impact of contractionary policy would result in a more drastic fall in security prices than would occur under the traditional system. 64 R. G. H. suggested that this undesirable effect could be eliminated only by including the rediscount privilege as a part of the plan. However, this would defeat the purpose of the plan. This criticism of the 100 per cent reserve plan is significant in that it focuses attention on potential dangers of discretionary monetary policy under 100 per cent reserves. Under the traditional tools of monetary control, the banks' ability to

63 Ibid.

64 This particular argument is apparently based on two assumptions. First, under the fractional reserve system, open market sales can be offset temporarily by increased use of the discounting privilege. Second, under the fractional reserve system there is always a positive amount of excess reserves that the banks would be willing to use to offset the impact of open market sales. While the first assumption is valid, the second appears to be tenuous. That banks' demand for excess reserves (expressed as a percentage of deposit liabilities) would decline in response to contractionary monetary policy does not seem certain. It is true, however, that rising interest rates (associated with contractionary monetary policy) would increase the opportunity cost of holding excess reserves and therefore induce the banks to hold less of them. In any event, that the volume of available excess reserves would be sufficient to offset any particular open market sale seems even less certain. Such would be the case only when an open market sale had a relatively small impact on net free reserves.
temporarily avoid the impact of contractionary policy, via resort to
rediscounting, enables the Federal Reserve Board to undertake
action with minimal fear of over-correction. Under 100 per cent re-
serves, the cognizance of the direct effects of contractionary policy
might be expected to restrain the monetary authority for fear that
any action may prove to be excessive.

Thus the direct effects of monetary policy under the 100 per
cent reserve plan are claimed by its critics to be a defect and by its
proponents—especially Currie—to be an advantage. However, the
major advocates of 100 per cent reserve banking were essentially
concerned with (1) breaking the link between the volume of short-term
lending and the stock of money, and (2) controlling the stock of money
according to some rule. Neither Fisher nor Simons made a case
for discretionary monetary policy under 100 per cent reserve banking.

The implication of the critics is clear. While 100 per cent
reserve banking would have the advantage—for discretionary policy—
of a greater degree of precision, it would at the same time be such
an extremely sharp instrument that the wrong policy might con-
ceivably be more damaging than the same wrong policy under the
fractional reserve system.

During the decade of the 1930's, the theory of 100 per cent
reserve banking received the attention of some of the most eminent
It gained a modicum of popular following; and at one time a bill was introduced into both houses of Congress designed to put its precepts into law. From a theoretical point of view, the plan had much merit: It proposed to break the link between the volume of short-term debt and the volume of circulating media and to remove the perverse elasticity of money inherent in the fractional reserve system. From a legalistic point of view, it represented a means of returning to the Federal government its constitutional right and duty to issue currency and regulate its value.

However, the claims of the proponents of the plan proved in some cases to be overly optimistic. Fisher's claim that the plan would prevent inflation and deflation and largely prevent or cure depressions may be cited as a case in point. Both Fisher and Simons advocated controlling the stock of money with the view to stabilizing some index of prices. Yet, as such critics as Angell pointed out, the movement of retail prices and the stock of money

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65 For example, see "100% Reserve Plan Developing Strong Support," Wall Street Journal, February 19, 1935

66 In June, 1934, bills were introduced into both houses of Congress by Senator Cutting and Representative Wright Patman to require 100 per cent reserves against deposits subject to check.
are not proportional, and such a basis for policy would by no means assure stability. 67

That 100 per cent reserve banking would result in more precise control over the stock of money was adequately demonstrated by Fisher, Simons, and Currie. That the perverse elasticity of money would be removed was not refuted. But the question of what should be the proper rule of monetary policy was never resolved.

Those who agreed that divorcing the stock of money from the volume of short-term debt was desirable were never to arrive at any agreement as to a proper rule of policy. To Fisher, stabilization of the purchasing power of the dollar was the necessary and sufficient anti-cyclical policy. To Simons, greater stability would be achieved by removing from business decisions speculation about future monetary policy. Angell advocated a policy designed to prevent excess savings and investment. For the successful execution of any of these policies, 100 per cent reserve banking would have been desirable, but whether or not the same goals could be just as effectively achieved under fractional reserve banking was never adequately answered.

67 For example, Angell, in "The 100 Per Cent Reserve Plan," p. 21, cites the following statistics: During the period 1896-1906, retail food prices increased 25 per cent while the stock of money increased by 67 per cent. During 1906-1914 the stock of money and the wholesale price index increased less than 10 per cent, while retail food prices increased 30 per cent. During 1926-1929, retail food prices fell while the stock of money increased.
If monetary policy were to continue to be discretionary under the 100 per cent plan, then the results could possibly be to weaken rather than to strengthen the monetary authority. Policy aimed at preventing or countering inflationary movements, if executed in excessive magnitudes, could well be disastrous. This possibility could very well tie the hands of policy-makers and result in a policy by default of maintaining a fixed stock of money which, as Simons pointed out, would be effective only where perfect wage-price flexibility existed.

The theory of 100 per cent reserve banking implies monetary policy by rules rather than by authorities. The economists of the 1930's, in their debate over 100 per cent reserve banking, reopened the question of rules versus authorities, but exhaustive examination of the question was not to be undertaken until the 1940's and 1950's by such economists as Milton Friedman, Richard Selden, Lloyd Mints, and Clark Warburton.

The major contribution of the 100 per cent reservists of the 1930's was to focus attention on the defects of the monetary and banking system extant. Both Fisher and Simons were critical of the gold standard, and their reform proposals were as much schemes for divorcing the domestic money supply from international gold flows as they were schemes for divorcing the stock of money from the volume of short-term debt. Both Fisher and Simons may be
credited with focusing attention on the potentially destabilizing effects of a large volume of short-term debt, and their reserve proposals were aimed at its ultimate reduction. The crucial test of the desirability of the plan would lie in its effect upon the volume of short-term debt, and if short-term debt would in fact be reduced as a result of the plan's institution, then one—though only one—cause of cyclical disturbances would be mitigated.
CHAPTER V

CONTEMPORARY PROONENTS OF 100 PER CENT RESERVE BANKING: THE CHICAGO SCHOOL

The theory of 100 per cent reserve banking has survived into the 1960's through the efforts of those economists generally referred to as quantity theorists of the "Chicago School." The economic collapse of the early 1930's, combined with the "Keynesian revolution" in economic theory, resulted in a decline of academic interest in monetary economics. With this decline, the interest in 100 per cent reserve banking became virtually nonexistent by the early 1940's. In the words of Milton Friedman,

Chicago was one of the few academic centers at which the quantity theory continued to be a central and vigorous part of the oral tradition throughout the 1930's and 1940's. . . . The quantity theory that retained this role differed sharply from the atrophied and rigid caricature that is so frequently described by the proponents of the new income-expenditure approach. . . . At Chicago, Henry Simons and Lloyd Mints directly, Frank Knight and Jacob Viner at one remove, taught and developed a more subtle and relevant version, one in which the quantity theory was connected and integrated with general price theory and became a flexible and sensitive tool for interpreting movements in aggregate
economic activity and for developing relevant policy prescriptions. . . . It was a theoretical approach that insisted that money does matter. . . .

Professor Friedman has been foremost among the "Chicago School" economists in refocusing attention on the role of money. Through his prolific writings, his work may be considered the highest stage of development of the Chicago approach. Many of the ideas embodied in his many published works originated, as he readily admitted, with his intellectual forefathers. The basic analysis of the relationship between the volume of short-term debt and monetary stability, the inherent instability of fractional reserve banking, the undesirability of the international gold standard, and the dangers of discretionary monetary policy are all ideas which have had their origin in the works of Henry Simons and Lloyd Mints.

Furthermore, Friedman shared with Mints and Simons a philosophical conviction that competitive capitalism is both basically stable and a necessary requisite to both material well-being and


2Supra, pp. 54-73.

individual liberty. Yet Friedman has not been a mere popularizer of the ideas of his teachers; he has added significantly to their work in both the areas of theoretical and empirical research. For these reasons, the following treatment of contemporary proponents of 100 per cent reserve banking will be almost exclusively directed at the work of Milton Friedman.

Friedman's First Proposal: "A Monetary and Fiscal Framework for Economic Stability"

Professor Friedman's first published advocacy of 100 per cent reserve banking was in his 1948 article, "A Monetary and Fiscal Framework for Economic Stability." In this work Friedman attempted to "... design a framework that would be appropriate for a world in which cyclical movements, other than those introduced by 'bad' monetary and fiscal arrangements, were of no consequence."
The long-run objectives of his plan were political freedom, economic efficiency, and substantial equality of economic power, which in his view could be best attained by relying on the competitive market mechanism. However, he deemed it necessary that government "...provide a monetary framework for a competitive order since the competitive order cannot provide one for itself."\(^7\) And, he added, "This monetary framework should operate under the 'rule of law' rather than the discretionary authority of administrators."\(^8\)

**The Framework**

His plan to achieve the prescribed goals followed along lines suggested earlier by Henry Simons. First, he proposed reform of the money and banking system to "...eliminate both the private creation or destruction of money and discretionary control of the quantity of money by central bank authority."\(^9\) Second, a government expenditure policy excluding transfer payments was to be based on the community's desire and willingness to pay for government services. Changes in the level of expenditures were to be made only in response to changes in the public's demand for government services, rather than in response to cyclical fluctuations in economic activity. Third, a system of transfer payments—such as the

\(^7\)Ibid., p. 246.  
\(^8\)Ibid.  
\(^9\)Ibid., p. 247.
existing social security program—was to provide for any redistribution of income deemed desirable by society, but the volume of such payments would be determined automatically, not varied by discretionary authorities in response to cyclical fluctuations. Fourth, a predetermined program of government expenditures and transfer payments would be financed by a progressive tax system which placed primary reliance on the progressive income tax.  

Under this four-point program, both monetary and fiscal policy would operate automatically, Friedman contended, in a fashion that would tend to dampen the amplitude of cyclical fluctuations. The tax structure, he suggested, could be designed so that the yield at full employment would (1) balance the budget (including transfer payments) or (2) result in a deficit sufficient to provide for some specified secular increase in the stock of money. During periods when money income was declining, the volume of transfer payments would increase, tax revenue would fall, and a deficit budget would ensue. During periods when money income was rising, the process would be reversed. Tax revenues would increase while transfer payments decreased.

With 100 per cent reserve banking preventing the stock of money from varying with the volume of short-term debt, changes in the stock of money would occur automatically. During periods of

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10Ibid., pp. 247-248.
full employment, the stock of money would increase at a predetermined rate if the "full employment" budget provided for the necessary deficit. During cyclical contractions, the stock of money would increase more rapidly than the predetermined rate as the deficits increased. During cyclical expansions, the rate of money growth would decline as deficits were reduced. While theoretically (assuming stable prices), surplus budgets could not occur, short-run shifts in the public's demand for money could result in rising velocity and inflationary pressures. Under these circumstances, tax revenues might be expected to rise to an extent that would more than offset the built-in full employment deficit.

Friedman advocated that deficits be financed entirely by the issuance of new money (or non-interest-bearing securities). This policy, combined with a prohibition against Federal Reserve open market operations and the elimination of the rediscounting mechanism, would limit control over the stock of money to the functioning of the automatic fiscal policy. The automaticity of the fiscal arrangements would result in government's impact on aggregate demand being clearly anti-cyclical. With the quantity of money being determined by the requirements of domestic stability rather

IIIbid., p. 251.
than international gold flows, it logically followed that flexible exchange rates would be a necessary prerequisite to Friedman's proposal. 12

Institutional Limitations to Friedman's Plan

However, Friedman expressed doubts about the efficacy of his program to promote the desired economic stability under existing institutional arrangements:

... it is not at all clear that they [the four points of his program] would, without additional institutional modifications, necessarily lead either to reasonably full employment or to a reasonable degree of stability. Rigidities in prices are liable to make this proposal ... inconsistent with reasonably full employment; and, when combined with lags in other types of response, to render extremely uncertain their effectiveness in stabilizing economic activity. 13

For example, assuming a condition of full employment, a wage increase for some particular type of labor brought about by either a union monopoly or increased demand would result in that particular group's receiving a larger aggregate money income, and assuming wage rigidities downward, all other workers would receive the same aggregate money income as before. However, continued

12Professor Friedman's case for flexible exchange rates as the most desirable of international monetary arrangements is made in his Essays in Positive Economics, pp. 157-203.

Friedman, this could be sustained only at the expense of increases in the price level and aggregate money income. But under the automatic fiscal arrangements, there would be a tendency for the government to incur a surplus budget as tax revenue increased and transfer payments decreased. These inflationary effects would result in a decline in employment unless wages and prices were allowed to fall, which they would not, of course, as a result of wage-price rigidities. 14

The presence of lags in response to changes in fiscal and monetary policy would likewise deter the efficiency of Friedman's proposal. Friedman's analysis in "A Monetary and Fiscal Framework. . ." was based upon three types of lags: first, the lag between the need for action and the recognition of need; second, the lag between recognition and the taking of action; and third, the lag between the taking of action and its effects. 15

Under automatic fiscal and monetary policy arrangements, the first lag would not exist, but the second would remain because "... all taxes will not or cannot be collected at the source simultaneously with the associated payments, and transfer payments will not or cannot be made immediately without some kind of a waiting period or processing period." 16

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14 Ibid., p. 254.  15 Ibid., p. 255.  16 Ibid.
The third type of lag—between the taking of action and its effects—would be present under discretionary or automatic policy, and "... little if anything can be done about it by either legal or administrative reform of the fiscal and monetary structure." 17

**The Operation of Friedman's Plan Under Ideal Conditions**

Friedman contended, however, that implementation of his proposal in an economy where prices are flexible 18 and lags in response are minor would result in a tendency toward equilibrium characterized by reasonably full employment and a balanced budget. 19

For example, should a decline in aggregate demand occur at full employment, the resulting unemployment would lead in an increase in transfer payments, reduced government receipts, and a budget deficit, which in turn would offset the decline in aggregate demand. In addition, the decline in prices associated with the initial decline of aggregate demand would result in an increase in the real value of

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18 Friedman defined the term "flexible prices" as meaning "... a 'substantial' range of prices that are not 'rigid' because of long-term contracts or organized non-contractual agreements to maintain price and that these prices should react reasonably quickly to changes in long-run conditions of demand or supply." *Ibid.*, p. 258fn.

19 The term "balanced budget" as used here can be defined as either one in which expenditures equal revenue, or one in which expenditures equal revenues plus a deficit designed to provide for secular growth of the money supply.
the community's asset holdings. This, combined with an increase in the stock of money associated with the deficit budget, would act to increase aggregate demand via the "Pigou effect," i.e., increased asset values would reduce the need for additional savings and increase the average propensity to consume. The increase in the average propensity to consume, combined with an increase in the stock of money, would result in rising prices. The equilibrating process would end when prices had risen sufficiently to yield a balanced budget.20

Friedman warned that his proposal did not claim to provide full employment in the absence of price flexibility, nor to entirely eliminate cyclical fluctuations in output and employment. He emphasized that:

Its claim to serious consideration is that it provides a stable framework of fiscal and monetary action, that it largely eliminates the uncertainty and undesirable political implications of discretionary action by governmental authorities, that it provides for adaptation of the governmental sector to changes occurring in other sectors of the economy of a kind designed to offset the effects of these changes, and that the proposed fiscal and monetary framework is consistent with the long-run considerations stated at the outset of this paper.21

In "A Monetary and Fiscal Framework..." Friedman was primarily concerned with the presentation of the broad outlines of

20Ibid., pp. 259-261. 21Ibid., p. 263.
his proposal rather than the detailed analysis of its component parts. Therefore, his treatment of 100 per cent reserve banking was rather elementary.

Friedman viewed 100 per cent reserve banking as necessary to the complete automaticity of his proposed plan; however, he conceded that under a discretionary fractional reserve system, the same results could be obtained if the monetary authorities adopted a rule of increasing the stock of money only when there was a government deficit, and then only by the amount of the deficit, and decreased only when there was a surplus, and then only by the amount of the surplus.22

The reform objectives outlined by Friedman in "A Monetary and Fiscal Framework. . ." do not appear to depend in any technical sense upon a system of 100 per cent reserve banking. Friedman indicated that private creation and destruction of circulating media was undesirable, but he did not, as did Simons and Fisher, explain why he believed this to be true. The only advantage attributed by Friedman to the 100 per cent reserve plan was that it would make his system completely automatic, and that it would remove some of the discretionary powers of the Federal Reserve System by eliminating the rediscounting mechanism and eliminating variable reserve requirements.

22Ibid., p. 248fn.
While 100 per cent reserve banking would be consistent with Friedman's implicit criterion that completely automatic policy is preferable to policy that allows any discretionary action, it does not, in the context of "A Monetary and Fiscal Framework. . .," appear to be essential to his general reform scheme.

Friedman's Second Proposal and the Empirical Evidence

Twelve years later, Professor Friedman abandoned the rather complex, though automatic, monetary-fiscal arrangement suggested in "A Monetary and Fiscal Framework. . ." in favor of a revised monetary reform scheme, with its *modus operandi* being a four per cent annual increase in the money stock. "The System," contended Friedman, "should be instructed to keep the rate of growth as steady as it can week by week and month by month and to introduce no seasonal movement in the money stock."23 With regard to his proposals in his earlier work, Friedman concluded:

The research that I have done since this proposal was published gives me no reason to doubt that it would work well. . . . But I have become increasingly persuaded that the proposal is more sophisticated and complex than is necessary, that a much simpler rule would also produce highly satisfactory results and would have two great advantages: First, its simplicity would facilitate the public understanding and backing that is necessary if the rule is to provide an effective

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barrier to opportunistic 'tinkering;' second, it would largely separate the monetary problem from the fiscal and hence would require less far-reaching reform over a narrower area.\textsuperscript{24}

The techniques of this reform proposal included a concentration of debt management into the hands of the Federal Reserve System, the abandonment of the remaining parts of the international gold standard, and the establishment of 100 per cent reserve banking.

The basic reasons for Professor Friedman's reform proposal are three in number. First, he objected to the concentration of power to control the stock of money into a few hands for the single reason that the power may be wielded unwisely. Second, Friedman, on the basis of his empirical and theoretical research, concluded that the secular relationship between changes in the stock of money and changes in other economic variables indicated that a constant secular growth in the stock of money would be the most desirable policy. A corollary to these two propositions was his assumption that the competitive capitalistic economy is basically stable and that severe cyclical fluctuations in money income result primarily from "bad" monetary and/or fiscal policy. Third, Friedman contended that technical reforms would be necessary in order to make implementation of his policy proposals possible.

\textsuperscript{24}\emph{Ibid.}, p. 90.
Professor Friedman's attack on discretionary monetary policy, aside from the fact that it contradicted his basic political philosophy, was based upon the belief that it made possible errors of a magnitude that could not occur under monetary policy by rules.²⁵

After examining the monetary history of the United States, he concluded that monetary stability was greater during the forty years preceding the establishment of the Federal Reserve System than during the subsequent forty years. When the periods covered by World Wars I and II were excluded, Friedman estimated that the standard deviation of year-to-year percentage changes in the stock of money was 1.2 times greater for the 33 peacetime years following 1914, the year the Federal Reserve System was established, than for the 47 years prior. "These thirty-three peacetime years after World War I," he concluded, "were among the most economically unstable in our history."²⁶

In support of his thesis that monetary policy by discretionary authorities is potentially dangerous, he cited the

²⁵In a paper presented before the United States Savings and Loan League in 1962, Friedman summed up his view of the subject by paraphrasing French Premier Clemenceau: "The conclusion I have reached... is that money is too important to be left to central bankers. . . ." "A Program for Monetary Stability - I," Readings in Financial Institutions, ed. Marshall D. Ketchum and Leon T. Kendall (Boston: Houghton Mifflin Company, 1965), p. 208.

experience immediately following World War I and during the Great Depression of the 1930's as cases in point. Specifically, he called attention to the Federal Reserve's raising of rediscount rates from four to seven per cent between November, 1919, and June, 1920. That resulted in "... collapse in prices by nearly 50%, one of the most rapid ... on record, and a decline in the stock of money that is the sharpest in our record up to this date."\textsuperscript{27} He also cited the System's raising of rediscount rates in 1931 at the New York Federal Reserve Bank from 1-1/2 per cent to 2-1/2 per cent on October 9, 1931, and then to 3-1/2 per cent the following week in an effort to stem an external gold drain; its failure to prevent the banking collapse of August, 1931 - January, 1932; and its doubling of reserve requirements during 1936-1937. Each of these actions, of course, was associated with general economic downturns,\textsuperscript{28} and in retrospect it may be said that these particular policy actions were unwise and damaging.

That Professor Friedman was successful in demonstrating that men in power may, either by design or ignorance, wield their power unwisely, cannot be contested. Yet of greater significance is Friedman's hypothesis that the very nature of the economic system

\textsuperscript{27}Ibid., p. 16.

\textsuperscript{28}Ibid., pp. 18-20. For further discussion of these periods, see the Appendix, pp. 226-230.
makes wise execution of monetary power extremely difficult and, moreover, that the exercise of such powers may in fact have results quite different from the original intentions. This is the essence of the Friedman "lag hypothesis," which stands as a major empirical basis for his preference for rules over authorities in monetary policy.

In *A Program for Monetary Stability* Friedman stated, "There is much evidence that monetary changes have their effect only after a considerable lag and over a long period and that the lag is rather variable."^{29} Before the Joint Economic Committee of Congress he concluded:

... in the present state of our knowledge we cannot hope to use monetary policy as a precision instrument to offset other short-run forces making for instability. The attempt to do so is likely merely to introduce additional instability into the economy, to make the economy less rather than more stable.^{30}

In *A Program for Monetary Stability* he announced his finding that on the average, for 18 cycles between 1867 and 1960, the peaks in the rate of change of the money supply have preceded peaks in general business^{31} by approximately 16 months and troughs... 

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^{29}Ibid., p. 87.


^{31}The term "general business" was used by Friedman, apparently, as a synonym for National Income or Net National Product.
in the rate of change of the money stock preceded troughs in the level of economic activity by 12 months. For individual cycles, the lead varied from six to 29 months between peaks and from four to 22 months between troughs.\textsuperscript{32} When other techniques of measurement were employed, a shorter lag period resulted;\textsuperscript{33} however, in Friedman's view, the important factor was not the length of the lag, because "... the variability of the lag is alone a decisive obstacle to effective discretionary policy. ..."\textsuperscript{34}

If the validity of the lag hypothesis can be accepted, then grave doubts are raised regarding the continuance of discretionary monetary policy. However, if discretionary authorities are to be abandoned in favor of a rule, then what rule is to be adopted? In the two preceding chapters, several "rules of policy" were examined. Irving Fisher advocated stabilization of retail prices; Henry Simons

\textsuperscript{32}\textsuperscript{Friedman, A Program for Monetary Stability}, p. 87. These findings were derived from research by Professor Friedman and Anna J. Schwartz for the National Bureau of Economic Research. The final results were published as A Monetary History of the United States (Princeton, N. J.: Princeton University Press, 1963), 860 pp.

\textsuperscript{33}When changes in the stock of money were compared with changes in income, a lag of 12 months between peaks and nine months between troughs resulted. When peaks and troughs were approximated by a "step function," a mean lag between changes in the stock of money and changes in the level of economic activity of five months between peaks and four months between troughs resulted. See Milton Friedman, "The Lag in Effect of Monetary Policy," Journal of Political Economy, LXIX (1961), 457-460.

\textsuperscript{34}Ibid., p. 459.
advocated a fixed money supply on theoretical grounds, but favored price level stabilization as being more practical. James Angell rejected price level stabilization as a guide to policy on the grounds that prices and general economic activity were too loosely related in the short run. He suggested that the money supply should be varied in a fashion that would hold money income per capita constant. Angell suggested that this would entail a constant increase in the money supply of approximately three per cent annually to offset the secular growth of population and the secular decline of circular velocity. 35 Friedman adopted a position similar to that of Angell, i.e., that price level stabilization is not the appropriate guide to monetary policy:

Entirely aside from the technical problem of the specific index number of prices that should be used, the key difficulty is that the link between price changes and monetary changes over short periods is too loose and too imperfectly known to make price level stability an objective and reasonably unambiguous guide to policy. . . . Under these circumstances, the price level . . . could be an effective guide only if it were possible to predict, first, the effects of non-monetary factors on the price level for a considerable period of time in the future, second, the length of time it will take in each particular instance for monetary actions to have their effect, and third, the amount of effect of alternative monetary actions. 36

35 Supra, pp. 106-108.

36 Friedman, A Program for Monetary Stability, pp. 87-88.
With these considerations in mind, Friedman suggested that the monetary authority might best concern itself exclusively with control of the stock of money. Yet under existing institutional arrangements, the Federal Reserve can control directly only its holdings of earning assets, while the volume of high-powered money\textsuperscript{37} held by banks is also influenced by gold flows, changes in Treasury balances, and changes in the public's demand for hand-to-hand currency, etc. Therefore, he recommended reform proposals that would make for direct control of the money stock by the Federal Reserve.

The rule of policy that he proposed, once the organizational reforms had been completed, was a four per cent annual increase in the stock of money which Friedman defined so that it includes "... currency held by the public plus adjusted demand deposits plus time deposits in commercial banks, but excludes time deposits in mutual savings banks, shares in savings and loan associations, and the like."\textsuperscript{38} He chose this over other definitions because it

\textsuperscript{37}Friedman employed the term "high-powered money" to refer to those monies that can be used as bank reserves, i.e., Federal Reserve notes and deposit liabilities held by banks, and money issued by the United States Treasury.

\textsuperscript{38}Friedman, \textit{A Program for Monetary Stability}, pp. 90-91.
"... seems to be more closely related empirically to other economic magnitudes. ..." 39 Moreover, it was the nature of the relationship between the stock of money and other economic variables, as interpreted by Friedman, that was the _raison d'être_ of his reform proposal, i.e., that independent changes in the stock of money bear a causal relationship to changes in the level of economic activity.

While Friedman was quite clear in conceding that causality may run from changes in business activity to changes in money, 40 he emphasized his findings that the relationship between changes in the stock of money and the other economic variables had been stable over the period studied. Furthermore, and crucial to his thesis, "Monetary changes have in fact often been independent, in the sense that they

39Ibid. For example, he found the simple correlation of the logarithm of the real stock of money per capita and the logarithm of real per capita income to be 0.99 for twenty cycles measured from trough to trough between 1870 and 1954. See Friedman, _The Demand for Money: Some Theoretical and Empirical Results_, Occasional Paper 68 (New York: National Bureau of Economic Research, 1959), p. 2 and 2fn.

40For example, he stated in _A Monetary History of the United States_, p. 686:

"Despite these marked alterations in the forces affecting the stock of money, there has been... little alteration in the relation between the changes, once determined, in the stock of money and other economic variables... The close relation between changes in the stock of money and changes in other economic variables alone tells us nothing about the origin of either or the direction of the influence."
have often not been an immediate or necessary consequence of contemporaneous changes in business conditions."\(^{41}\)

In order to justify his reform proposal, it was necessary to demonstrate that the relation between money and economic activity was stable and that independent changes in the stock of money would produce predictable effects on other economic variables. If this relationship could be established, then the fact that changes in business activity can cause changes in the stock of money could be treated as the result of improper institutional arrangements and, therefore, the object of reform. Friedman's research findings bear out his hypothesis that a stable relationship exists between money and other economic variables, and that causality runs from changes in the stock of money (where such changes are exogenous) to changes in economic activity.\(^{42}\)

The experiences of 1897-1914, 1920, 1931, and 1937, especially, support the contention that independent changes in the stock of money influence the general level of economic activity. Friedman chose to treat Federal Reserve policy actions in 1920, 1931, and 1937 as "controlled experiments" that serve to test the hypothesis that

\(^{41}\)Ibid.

\(^{42}\)A summary of these findings is presented in the Appendix, pp. 226-230.
causality runs from independent changes in the stock of money to changes in economic activity. He reasoned that:

... the establishment of the System gave a small body of individuals the power, which they exercised from time to time, to alter the course of events in significant and identifiable ways through a deliberative process—a sequence parallel with the conduct of a controlled experiment. 43

The events of the period 1929-1933, when the stock of money was deliberately allowed to decline by one third, were also "... regarded as a fourth crucial experiment, making the matching of independent monetary decline and subsequent economic decline four to four." 44 Friedman's treatment of 1929-1933 as a fourth "controlled experiment" was based on the assumption that the Federal Reserve deliberately allowed the stock of money to fall when it had the means of prevention at hand.

In summary, Friedman's findings appear to encompass three main areas: First, variations in the stock of money have

43 Friedman, A Monetary History of the United States, pp. 687-688.

44 Ibid., p. 694. Friedman computed the probability of the changes in money and changes in economic activity being coincidental as being one in 120. Of ten reference cycles, three (rather than four, since 1931 and 1929-1931 cannot be considered separate observations) were associated with independent changes in the stock of money. He compared this to "... 10 married couples, 3 ill husbands, 3 ill wives. The probability that the ill husbands and wives would constitute 3 married couples if chosen at random is then 1 in 120." P. 694fn.
correlated closely with changes in other significant economic variables. Second, cyclical fluctuations in money income, real income, and prices have either been aggravated by endogenous changes in the stock of money, or initially caused by exogenous changes in the stock of money. Third, exogenous changes in the stock of money resulting from policy decisions of the Federal Reserve have been a major source of instability since 1914.

The policy implications that follow are to remove the major source of disturbing exogenous changes in the money stock—discretionary monetary authorities—replacing them with policy rules based on observed stable relationships, and to remove the sources of endogenous changes by institutional reforms.

**Banking Reform**

Friedman's analysis of the existing banking system and the nature of his reform proposals bears a close resemblance to that of the 100 per cent reserve proponents treated in the previous chapter. This, of course, was not coincidental, as Friedman acknowledged:

> As a student of Henry Simons and Lloyd Mints, I am naturally inclined to take the fractional reserve character of our commercial banking system as a focal point in a discussion of banking reform. I shall follow them also in recommending that the present system be replaced by one in which 100% reserves are required. 45

Specifically, Friedman objected to government intervention into lending and investing activities that were prompted by the system, and to the inherent instability of the system. The intervention, according to Friedman, has been occasioned by the combination of lending and investing activities with the issue of fiduciary money. This concern was first directed toward the issue of hand-to-hand currency by banks. After the establishment of the National Banking System and the taxing of state bank notes out of existence, government's concern shifted toward deposit money. Friedman did not contest the desirability of intervention, given the institutional arrangements, but rather objected to the institutional arrangements that necessitated intervention.

His analysis of the fractional reserve system's inherent instability followed along lines suggested by Currie, as well as Fisher and Simons. Changes in the public's demand for currency result in changes in the total stock of money. Shifts of deposits among banks having different reserve requirements cause similar changes, as do changes in the preference of banks for high-powered money relative to other assets. The system makes possible rapid declines in the stock of money whenever there is a widespread quest for liquidity, as exemplified in such crises as occurred in 1893, 1907, and during 1930-1933. While Friedman conceded that Federal deposit insurance has, for all practical purposes, eliminated the
possibility of a complete collapse of the system, he stressed the point that variations in the deposit-currency ratio and the reserve-deposit ratio, resulting from changes in the asset preferences of both banks and the public, remain a constant source of instability.  

Friedman further expressed doubts about the efficacy of the Federal Reserve System in offsetting these changes because, "It is never possible to know what changes are going on until after the event, so that there is inevitably a lag in reaction, and further changes take place while the system is reacting."  

Friedman's solution to these problems, as noted earlier, would be to require 100 per cent reserves in the form of high-powered money against all deposits of commercial banks. This would assimilate the issue of deposits with that of currency. He explained this point in the following fashion:

Currency is now a direct obligation of the government. It is at one and the same time money and high-powered money; for each dollar of currency there is a dollar of high-powered money; to speak figuratively, the issue of currency requires a 100% reserve in the form of high-powered money. The counterpart for deposits would be to require any institution which accepts deposits payable on demand or transferable by check to have one dollar in high-powered money for every dollar in deposit.

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46 Lauchlin Currie first criticized the fractional reserve system along these lines. Supra, pp. 73-79.

47 Friedman, A Program for Monetary Stability, p. 68.
liabilities. . . . The total of money and of high-powered money would then be the same. 48

As a result of 100 per cent reserve requirements, shifts by the public from deposits to currency would have no effect on the total stock of money, nor could banks alter the deposit-reserve ratio. Further, all money would become in effect direct government obligations, thereby eliminating the need for Federal deposit insurance. 49

Unlike the earlier 100 per cent reservists, Friedman would have required 100 per cent reserves against both demand and time deposits. One hundred per cent reserve requirements would transform banks into two institutions. One would be a literal warehouse for money having ", . . . no funds, except the capital of its proprietors, which it could lend on the market." 50 The other institution would be

. . . an investment trust or brokerage firm. It would acquire capital by selling shares or debentures and would use the capital to make loans or acquire investments. Since it would have no power to create or destroy money, monetary considerations would not demand any special control over

48Ibid., p. 69.

49It should be noted that Friedman classified deposit insurance as a form of government intervention in lending and investing activities and, therefore, deemed it undesirable.

50Friedman, A Program for Monetary Stability, p. 70.
its activities. Hence, it need be subject to no more governmental supervision than other financial institutions. 51

Friedman's suggested technique of transition to the 100 per cent reserve requirements was basically the same as the other plans treated. Required reserves were to be raised in a series of steps at dates specified in advance, "... culminating in a final rise to 100% in, say, two years."52 The Federal Reserve would supply needed additional reserves during the transitional period by open market purchases of government securities. This would have the effect of replacing marketable public debt instruments with Federal Reserve deposits in the asset structure of commercial banks.
Friedman noted that as of March, 1959, the commercial banks had, for all practical purposes, moved halfway to 100 per cent reserves since they held deposits at the Federal Reserve, vault cash, and United States government obligations totaling 50 per cent of adjusted demand and time deposits.53 Further, he pointed out, the total direct and fully guaranteed interest-bearing debt in the hands of the non-bank public totaled slightly in excess of $200 billion, of which

51Ibid. 52Ibid. 53Ibid. As of July, 1966, member banks held deposits at the Federal Reserve, vault cash, and United States government obligations equal to 27.6 per cent of adjusted demand and time deposits. U. S., Federal Reserve System, Board of Governors, Federal Reserve Bulletin, 52 (July, 1966), 937-1075.
$150 billion was in the form of marketable issues. The implementation of 100 per cent reserves in March, 1959, would have required commercial banks to add $150 billion to their reserve balances. Thus, the entire marketable government debt would have been replaced by Federal Reserve notes and deposits. 54

The growth of the public debt had, by 1959, removed one of the obstacles to 100 per cent reserve banking that existed in the 1930's, namely, insufficiency of marketable public debt that would have necessitated the Federal Reserve's buying privately issued debt instruments. 55 However, providing for long-run growth of the money stock would possibly require the Federal Reserve to acquire privately issued assets. Among the alternatives suggested was creation of additional debt to finance deficits, or acquisition of assets other than direct or fully guaranteed United States government obligations, such as debt obligations partly or fully guaranteed by the United States government, obligations of states and municipalities, acceptances, and other commercial paper. 56 Yet Friedman viewed both of these alternatives as undesirable. The creation of additional debt was deemed undesirable when considered in conjunction with his

54 Ibid., p. 71.
55 Supra, pp. 91-92.
56 Friedman, A Program for Monetary Stability, p. 71.
proposal to pay interest on reserve deposits of member banks. The alternative of the Federal Reserve's purchasing privately issued debt was rejected as a form of intervention. As he explained:

The use of this device [additional debt] then means letting the amount of interest payment [on reserve deposits], and the associated taxes to be levied, be determined by the rate at which it is desired to increase the stock of money. It is not clear that this is the relevant criterion. The purchase of other assets would avoid this problem, since they would yield income. But this involves putting the government into the banking business.57

Friedman did not, as did his predecessors, claim that the implementation of 100 per cent reserve banking would eliminate the public debt. He merely advocated monetization of the debt as a means of implementing 100 per cent reserve banking. As noted in the preceding chapter, the burden of the debt would be shifted to holders of demand deposits in the form of increased service charges. If interest were paid on the reserve balances of commercial banks, the interest burden of the debt would remain, with the public qua taxpayers.58

Friedman, unlike Simons and Fisher, argued that interest should be paid on the reserve balances of banks. In his view there were three related justifications for this. First, it would lead to a more nearly optimum real stock of money. Second, it would remove

57Ibid., p. 109fn. 58Supra, pp. 89-95.
any motive for avoiding the intent of the plan by using such near-monies as savings and loan shares as media of exchange. Third, it would be more equitable.

The optimum stock of money argument was developed along these lines: If the rate of return on money were zero, the individual would have to consider the alternative cost of holding money, i.e., the yield on other interest-bearing assets. He would be induced to devote resources—for example, on additional bookkeepers—in order to adjust cash balances so that an additional dollar of cash would be worth just under the rate of return on an alternative asset. However, since fiduciary money is essentially costless in terms of real resources, this would be wasteful. In Friedman's words:

> It need cost society essentially nothing in real resources to provide the individual with the current services of an additional dollar in cash balances. . . . If, therefore, assets that are equivalent to cash balances in respect of characteristics other than their usefulness as a medium of exchange pay a positive money rate of interest, there is a discrepancy between social and private costs that leads individuals to hold smaller than optimum cash balances and to devote more than the optimum amount of real resources to economizing cash balances.  

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While the ideal solution, to Friedman, would be payment of interest on all money, he recognized that this would be impractical as regards hand-to-hand currency. On the other hand, it would be practical with respect to deposit money under 100 per cent reserve banking. The institution of the plan would make it feasible to allow free entry into the field of deposit banking. Given sufficient competition, the interest paid by the Federal Reserve on reserve balances could be passed on to the public—to a greater or lesser degree—in the form of services rendered without charge or interest paid on deposits (provided the zero maximum interest rate on demand deposits was eliminated). In Friedman's analysis, the depositor "... would be combining lending funds to the government with holding cash balances, just as he now combines lending funds indirectly to both the government and to private bodies with holding cash balances in the form of deposits." 60

The payment of interest on reserves would avoid one of the earlier objections to 100 per cent reserve banking, i.e., that increased service charges would lead to the evasion of the plan by the public's devising means of using near-monies such as savings and loan shares as means of payment. 61 To prevent this form of

60 Ibid., p. 72.

61 For example, see the arguments of Harry Gunnison Brown, Supra, pp. 90-91.
circumvention would involve "... extensive governmental intervention into private financial arrangements." And, he added,

The incentive to evade 100% reserves arises precisely because of the discrepancy that exists between private and social costs when money bears no interest and near-monies do. If interest is paid on the 100% reserves, the incentive to evade the reserve requirement is largely if not wholly eliminated. 63

The equity argument for payment of interest on reserve balances is based on the assumption that holders of demand deposits are indirectly lending to the government at zero interest. If demand deposits yield zero interest and the commercial banks then use the cash assets acquired in exchange for deposits to purchase government securities, then this assumption is valid, whereas the payment of interest on reserves would eliminate this "inequitable arrangement." In Friedman's words:

It is not easy to see why the government should pay an annual fee for the resources it borrows from some individuals, namely, the holders of interest-bearing government securities, and nothing for the resources that it borrows from other individuals, namely, the holders of money now and under the 100% reserve arrangement. 64

Friedman was not definite about specific methods to be used in determining the amount of interest to be paid on reserve balances.

62Friedman, A Program for Monetary Stability, p. 73.
63Ibid., pp. 73-74. 64Ibid., p. 74.
He suggested that perhaps the rate could be set initially equal to the average yield on short-term government issues during the preceding six months and then adjusted periodically—e.g., quarterly or bi-annually according to average changes in yields on short-term government issues. However, he did not speak with conviction on this point and conceded that, "This problem . . . is another issue that . . . requires more attention than I have given to it." 65

Summary and Evaluation

In the construction of his 100 per cent reserve proposal, Friedman avoided many of the errors of his predecessors. His treatment of the problem of reduced bank earnings due to asset losses may be cited as a case in point. If the theory of 100 per cent reserve banking is viewed as an evolutionary process, Friedman's work may be considered the highest stage of the plan's technical development.

The Friedman case for monetary policy according to rules may also be viewed as the highest stage of an evolutionary process. However, while Friedman presented 100 per cent reserve banking as an integral part of his general reform proposals, he did not demonstrate that the abolition of fractional banking was a necessary requisite to policy by rules. In "A Monetary and Fiscal Framework for

65Ibid., p. 75.
Economic Stability, "100 per cent reserve banking was viewed as a supplementary reform measure that would insure complete automaticity of his general reform scheme. In A Program for Monetary Stability, 100 per cent reserve banking was viewed as desirable on the grounds that it would simplify the implementation of monetary policy, and that it would eliminate the need for governmental intervention into the lending and investing process. While both of these ends may be desirable, they are not sufficient to establish 100 per cent reserves as a necessary prerequisite for the implementation of policy by rules. Moreover, Friedman's testimony before Congressional committees suggested that he did not regard 100 per cent reserve banking as being essential to policy by rules. On each occasion he advocated that the Federal Reserve increase the money supply by a rate of three to five per cent annually, but did not recommend that 100 per cent reserve banking be established.

However, when all of his writings on monetary economics are considered, it appears that Friedman's advocacy of policy by rules implicitly assumes, ideally, 100 per cent reserve banking. He argued, as noted earlier, that the fractional reserve system is inherently unstable because it allows the volume of circulating media to be influenced by decisions of the public and the banks to hold high-powered money, and that the Federal Reserve's attempts to offset the effects of these decisions are hampered by lags. The result of the imperfection of the offsetting measures was, in Friedman's view, a money supply that behaves "... more irregularly than it needs to. ..." 67

Therefore, it is questionable, in the context of Friedman's writings, whether stable monetary growth could be achieved under the fractional reserve system without a substantial amount of discretionary action by the monetary authority. So long as the ratios of currency held by the public to demand deposits, reserves to deposits, etc., remain stable, 68 then open market operations could

67Friedman, A Program for Monetary Stability, p. 68.

68Perhaps Friedman assumed stability of these relationships when he stated before the Joint Economic Committee that the Federal Reserve "... has both the formal power and the actual technical capacity to control the total stock of money with a time lag measured in weeks and to a degree of precision measured in tenths of 1 per cent." Hearings, Employment, Growth, and Price Levels, Part 4, p. 609. Friedman's research indicated that the significant
be used to bring about constant monetary growth at a predetermined rate. However, shifts in the public's or the banks' demand to hold high-powered money would force the Federal Reserve to take offsetting measures if the desired growth rate were to be maintained. If these offsetting measures are inherently destabilizing, as Friedman suggested, then the problem of an erratic pattern of monetary behavior would not be completely solved. If no offsetting measures were attempted, then variations in the stock of money might be expected to continue.

For example, to the extent that open market purchases affect bank reserves, periods of cyclical contractions might be associated largely with increases in excess reserves that would later contribute to inflationary pressures during cyclical expansions. In the final analysis, under fractional reserve banking, the total stock of money (currency plus demand deposits) would be alterable by decisions of banks and the non-bank public.

Friedman's studies of the monetary history of the United States indicated that monetary instability is a function not only of exogenous changes in the money supply (associated with "bad" monetary policy), but also of endogenous changes in the money supply ratios were normally fairly constant; however, monetary reform, it seems reasonable to assume, should be concerned with mitigating the adverse effects of abnormal periods.
(associated with changes in the demand for cash assets by the public and commercial banks). If stable behavior of the money stock is essential to economic stability, as Friedman apparently believes, then policy by rules and 100 per cent reserve banking must be considered "complementary goods," to use the language of the theory of demand. The four per cent rule might eliminate the possibility of "bad" monetary policy, but without removing the sources of endogenous changes in the stock of money, the door remains open to "tinkering" with the money supply, which Friedman viewed as completely undesirable. The principal advantage of the 100 per cent reserve plan, which Friedman failed to exploit, was that it would prevent the stock of money from changing in response to cyclical variations in income.

Minor reforms of the existing institutional arrangements might simplify the task of monetary control so that stable monetary growth might be approximated. However, within the context of Friedman's analysis, the goal of stable monetary growth could not be fully achieved without the institution of 100 per cent reserve banking.

Friedman's recommendation that the Federal Reserve increase the money supply via open market operations under the fractional reserve system should perhaps be interpreted as a
pragmatic policy suggestion rather than as evidence of internal inconsistency. 69

In the context of "Friedmanian economics," discretionary monetary policy would represent the most unsatisfactory of arrangements, while the four per cent rule in conjunction with 100 per cent reserves would represent the ideal arrangement. Between these two poles would be the four per cent rule under existing institutional arrangements. This is indicated by his statement regarding implementation of the four per cent rule under existing institutions:

This is not, under our present system, an easy thing to do. It involves a great many technical difficulties and there will be some deviations from it. . . . While this is by no means necessarily an ideal gadget, it seems, in looking at the record, that it would work pretty well. It would have worked far better . . . over the last fifty years than what we actually had. . . . 70

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69 This interpretation is suggested by the following excerpt from his testimony before the Joint Economic Committee, Ibid., p. 635:

"Senator Bush: Would you favor curtailing their powers affecting the money supply, as, for instance, their open market policy powers, their power to control the discount rate, and their setting of reserve requirements? . . .
Mr. Friedman: Yes, sir; I do.
Senator Bush: To what extent, or would you abolish them?
Mr. Friedman: There are two different levels on which I can answer the question. One is what you might call minor alterations in the present structure of powers. The other is in terms of a much more fundamental reform in our whole monetary and banking structure.
Let me talk about the first."

The various 100 per cent plans that have been treated in this dissertation were usually associated with proposals aimed ultimately at general reform of the monetary and financial system. Also, the 100 per cent reserve plans have been closely associated with proposals for monetary policy by rules. The purpose of this chapter will be to examine some of the contemporary discussion about the relative merits of monetary policy by rules and by discretionary authorities, to evaluate the impact of 100 per cent reserves on bank asset preferences, and finally to consider 100 per cent reserve banking in conjunction with discretionary monetary policy.

Rules versus Authorities: the Economic Analysis

The rules advocates based their case against discretionary monetary policy on political as well as economic grounds. The basic political philosophy of the Simons-Mints-Friedman tradition viewed any concentration of power—public or private—into the hands of men
with discretionary authority as a threat to individual liberty. For example, the Federal Reserve Board's power to vary reserve requirements, margin requirements, the discount rate, etc., would be viewed as forms of coercion incompatible with a democratic society. However, the extent to which the monetary authority represents a threat to individual liberty is not clear and should, perhaps, be left to students of political philosophy. The economic grounds upon which discretionary policy has been attacked do bear examination here. The concentration of monetary powers into the hands of a group of men with discretionary authority, ran the traditional argument, makes possible errors of a grand magnitude. The possibility of errors, regardless of the good intentions of those in authority, persists because of the imperfection of forecasting ability and the presence of lags. Furthermore, the public's uncertainty about the future of monetary policy tends to create conditions of monetary instability. Thus, the rules advocates concluded that policy by some rule would remove the chance of a grand error, minimize the effects of lags, and provide the public with certainty.

**Lags and Discretionary Policy**

The Friedman argument for monetary policy by rules rests in part upon his lag hypothesis. As noted in the preceding chapter, Friedman argued that monetary policy, since its effects occur only after a lag that is both long and variable, may contribute to
instability rather than to stability. To the extent that the lag hypothesis can be discredited, the case for monetary policy by rules is weakened. Among the more valid criticisms of the lag doctrine were those made by J. M. Culbertson. His criticisms were aimed at Friedman's techniques of measuring the lag and the policy implications of the lag doctrine.

Specifically, Culbertson questioned Friedman's technique of comparing the maximum rate of increase in the money supply with the turning point of business activity. In Culbertson's words:

... in any smooth cyclical series the maximum rate of increase occurs before the absolute maximum, and if the series is at all irregular in its period or time shape, the 'lag' will be a variable one. ... What does this prove?

Friedman defended his technique on the grounds that the rate of change of the stock of money (i.e., the second derivative of the stock of money) could validly be compared with the rate of change of economic activity, which is also the derivative of a stock. As Friedman explained:

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... every item in the flow of income can be regarded as the derivative of a corresponding stock. ... From this point of view, the stock of money is comparable to the stock of housing or to the stock of durable goods, in short, to wealth rather than to income. ... Similarly, the rate of change of business is a second derivative of a stock comparable dimensionally not to the rate of change of money stock, but to the second derivative of the money stock. 3

The defense of this methodology notwithstanding, Friedman offered other evidence of a sizable and variable lag.

When the lag was measured by employing a step-function, the changes in the rate of change of the stock of money led changes in business activity by five months at peaks and four months at troughs. 4


4 Ibid., p. 458. This method of lag measurement was explained by Friedman as follows:

"Because of the difficulty of dating peaks and troughs in so choppy and erratic a series as the rate of change of the stock of money, we have also made timing comparisons on a different basis. The rate of change series often seems to shift abruptly from one level to another. This suggests approximating it by a step function consisting of alternating high and low steps. We call the date at which the high step ends, the 'step' peak, and the date at which the low step ends, the 'step' trough. ... the step dates on the average precede the National Bureau of Economic Research reference dates by five months at peaks and four months at troughs."

4
Another method employed by Friedman (with David Meiselman) also indicated the presence of a lag. From 1948 through 1958, a comparison of quarter-to-quarter percentage changes in the stock of money and the percentage deviations of consumption from a trend yielded these results: Changes in the stock of money tended to lead changes in consumption by nine to twelve months. 5

While the foregoing indicates the presence of a variable lag between the time monetary policy is implemented and the time that its effects are transmitted to other economic variables, yet the range of lags yielded by alternative methods of computation tends to cloud the issue insofar as empirical evidence is concerned.

Perhaps the most meaningful statement on the lag hypothesis regarding the empirical evidence was made by Professors Ando, Brown, Solow, and Kareken:

Our conclusion is that it [monetary policy] works neither so slowly as Friedman thinks, nor as quickly and surely as the Federal Reserve itself seems to believe. We find that the effect of monetary policy on the flow of expenditures is far from overwhelming, though it exists and is of a magnitude worth exploiting in the interest of economic stability. We also find that though the full results of policy changes on the flow of expenditures may be a long time coming, nevertheless the chain of effects is spread out over a fairly wide interval. This means that some effect comes reasonably

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quickly and that the effects build up over time so that some substantial stabilizing power results after a lapse of time of the order of six or nine months. 6

In contrast, Richard Selden expressed the view that despite the difficulties in dating of peaks and troughs, "... Friedman has probably understated, rather than overstated, the length of the lags." 7

The issue is perhaps clarified when the underlying reasons for the lag are considered. Friedman explained the length of the lag in terms of sluggish reactions to changes in the public's "balance sheet." A Federal Reserve purchase of securities results in ultimately disturbing the equilibrium relationship between cash and other assets. In order to restore the equilibrium, holders of cash will eventually seek to reduce their abnormally high cash balances by purchasing assets.

If the extra demand is initially directed at a particular class of assets... the result will be to pull the prices of such assets out of line with other assets and thus to widen the area into which the extra cash spills. The increased demand will spread, sooner or later affecting equities, houses, durable producer goods, durable consumer goods and so on... These effects can be described as


operating on 'interest rates,' if a more cosmopolitan interpretation of 'interest rates' is adopted than the usual one which refers to a small range of marketable securities. 8

This process, continued Friedman, tends to raise the price of sources of producer and consumer services, relative to the prices of the services themselves, e.g., to use Friedman's example, the price of houses would rise relative to rents. The inducement to investment would be the rising prices of sources of services and the inducement to consumption would be the indirect acquisition of services as opposed to the sources of the services. This analysis of the cause of the lag was concluded in this fashion:

. . . these reactions in their turn tend to raise the prices of services relative to the prices of sources, that is, to undo the initial effects on interest rates. The final result may be a rise in expenditures in all directions without any change in interest rates at all; interest rates and asset prices may simply be the conduit through which the effect of the monetary change is transmitted to expenditures without being altered at all, just as a greater inflow into a lake may, after an interval, simply increase the rate of outflow without altering the level of the lake itself. 9

The essence of this analysis is that changes in the money supply may have immediate effects upon financial markets, but that adjustments in the flows of income and expenditures occur over a period of time. The lag in response to monetary policy is a function

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8Friedman, "The Lag in Effect of Monetary Policy," p. 462.

9Ibid.
of sluggish reactions to changes in the public's balance sheet, and
the lag is further extended as changes in expenditures react back on
financial markets.

The foregoing, while a plausible explanation of the lag
effect, may be considered one of several explanations. The lag
effect is not only compatible with the modern quantity theory, but
with income-expenditure theory as well, the essential element being
that adjustments to policy actions and their effects do not occur si-
multaneously. The more crucial question, so far as policy is con-
cerned, is the variability of the lag. Friedman reported in his
research that the standard deviation of the intervals between changes
in the rate of change of the stock of money and in reference cycle
turning points was six to seven months, depending upon lag measure-
ment technique employed. However, he conceded that errors in
estimating the standard deviation make "... the evidence on the
variability of the lag ... less satisfactory than the evidence on the
average lag."\(^\text{10}\)

It was Culbertson's view that the only valid measurement of
the lag would be multivariate statistical analysis "... that faces
up to the complex interrelationships between changes in money and

\(^{10}\text{Ibid., p. 463.}\)
changes in income. . . . On the statistical level, the issue of length and variability was not resolved in the exchange between Friedman and Culbertson, et al. Yet other aspects of their controversy shed light on the general question of rules versus authorities in monetary policy and the desirability of 100 per cent reserve banking.

On one hand, Friedman contended that the presence of the lag between action and its effects made discretionary monetary policy a source of instability. Culbertson contended that if this be the case, then automatic policy would represent no improvement, since the impact of both discretionary and automatic monetary policy would be transmitted through the same channels. However, as Friedman pointed out earlier, discretionary policy is not only subject to lags between policy actions and the response to policy actions, but to lags between the point in time when a problem occurs and the time when the problem is recognized, and to the lags between the recognition of a problem and the implementation of corrective policy measures. While automatic monetary policy would be subject to the lag in


response to policy action, it would eliminate, insofar as institutional arrangements permit, the recognition and administrative lags.

Culbertson contended that Friedman assumed causality as running only from money to business activity.\(^\text{14}\) That Friedman did not make this assumption,\(^\text{15}\) although it may have been implicit in his statistical analysis, is perhaps less significant than Culbertson's unintentional pinpointing of a principal advantage of the 100 per cent reserve plan—that it would prevent endogenous changes in the money supply by breaking the link of causality running from business activity to the stock of money.

**Stable Monetary Growth**

In the final analysis, the case for monetary policy by rules does not rest exclusively on the validity of the Friedman lag hypothesis. The elimination of the "recognition" lag and the "action" lags are points in favor of policy by rules, while the lag in response to policy actions would apply equally to both discretionary and automatic policy. The case for policy by rules must rest ultimately on evidence that (1) "bad" monetary policy is a major cause of economic


\(^{15}\)For example, see Friedman's remarks quoted in footnote 40, Supra, p. 137.
instability, and (2) that policy by rules would yield better results than discretionary policy.

If monetary policy were carried out according to some rule, so ran the general argument, the resulting certainty imparted to the public would in and of itself contribute to monetary stability. It follows that the adoption of a rule is more important than the nature of the particular rule adopted, and that policy by any rule would be preferable to policy by discretionary authorities. However, if there are several choices of rules, it seems reasonable to assume that one would be superior. The rules mentioned most often have been (1) maintenance of a fixed money supply, (2) stabilization of some price index, and (3) providing for stable growth of the stock of money. The general consensus among students of the subject was that fixity of the stock of money is undesirable on the grounds that it would require the unattainable prerequisite of perfect wage-price flexibility. Stabilization of an index of prices was rejected generally on the grounds that the link between changes in the stock of money and changes in the price level is too loose in the short run to be an effective guide to policy.

The rule enjoying the most popularity among the rules advocates is stable monetary growth, and while all advocates of stable monetary growth are not advocates of the sweeping reforms recommended by Fisher, Simons, Friedman, et al., the arguments that
are germane to the general question under consideration bear ex-
amination.

The Friedman Tests. Several experiments have been con-
ducted comparing the results of a policy of stable monetary growth
and discretionary policy. Friedman compared the results of his
rule of increasing the stock of money by four per cent per annum
with the results of actual policy against an "objective policy cri-
terion."

In one test the criterion selected was "leaning against the
wind," i.e., increasing the stock of money at a slower than average
rate during expansions, and at a higher than average rate during
contractions. On the basis of month-to-month changes in the stock
of money, he concluded that:

... for eight complete peacetime reference cycles
from March 1919 to April 1958 (excluding the World
War II cycle ... ) actual policy was in the 'right'
direction in 155 months, in the 'wrong' direction in
226 months; so actual policy was better than the
rule in 41% of the months. 16

In a second test, the four per cent rule and actual policy
were compared against the criterion that the rate of growth of the
money supply should be above average during "below-normal
periods" (defined as the period of cycle from mid-contraction to
mid-expansion) and below normal during "above-normal periods"

16Milton Friedman, _A Program for Monetary Stability_ (New
(defined as the period of the cycle from mid-expansion to mid-contraction). "By this criterion," concluded Friedman, "actual policy scored much higher, being in the right direction in 56% of 377 peacetime months for the period as a whole."17

The third test compared the four per cent rule and actual policy against a criterion of increasing the stock of money at a greater-than-average rate during the first half of expansions and at a less-than-average rate during the second half of expansions. The results were that ". . . actual policy was in the 'right' direction 45% of 183 peacetime months for the period as a whole, 55% of 75 months since the end of World War II."18

Clark Warburton. The case for stable monetary growth is strengthened by the empirical work of Clark Warburton. In a series of articles, Warburton developed the thesis that a major cause of economic instability has been deviations of the rate of increase in the stock of money from a "reasonable" rate of growth.19 The

17Ibid., pp. 96-97.  
18Ibid., p. 97.  
principal cause of these deviations, contended Warburton, has not been decisions of the business community, but the action of monetary authorities. "The conclusion cannot be avoided that federal government agencies, particularly the Federal Reserve authorities, have been responsible for the drastic and erratic variability of the quantity of money in the United States." In another work, he argued:

The great errors in monetary policy have been excessive deviations from a reasonable rate of growth. . . . Since the . . . establishment of the Federal Reserve System, annual deviations in the quantity of money from a reasonable rate of growth have ranged from more than 30 per cent excess to nearly 20 per cent deficiency.

The foregoing implies that (1) causality might not run from business to money as Culbertson has suggested, and (2) that contraction of the stock of money might not stem from banks' scrambling for liquidity, as Fisher and Simons suggested. The second of these implications rests upon Warburton's finding that the volume of excess reserves has been small and steady except during the abnormal

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period of the mid-1930's. The first of these implications rests upon Warburton's finding that "businessmen's expectations and plans . . . tend to follow changes in monetary policy by a noticeable lag." Furthermore, he added, "It is the monetary policy which precedes businessmen's expectations which must be stabilized if the sequences of business decisions involved in production and marketing processes are not to be continually upset." 

Based upon his empirical research, Warburton estimated that the average growth rate of the money supply between 1915 and 1951 had been between six and seven per cent per annum, with year-to-year changes varying from this average by as much as +36 per cent to -14 per cent. He estimated that an average growth

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22 Clark Warburton, "Bank Reserves and Business Fluctuations," *Journal of the American Statistical Association, XLIII* (December, 1948), 547-558. Of course, Simons' and Fisher's analysis was based upon the "abnormal" period of the mid-1930's.

23 Warburton, "Rules and Implements of Monetary Policy," p. 5. In Warburton's analysis, wholesale prices, which he considers to be the best indicator of businessmen's expectations, tend to lag "... several months behind decisive changes in monetary policy—the range being from less than a month to a year, and the median nearly half a year." Ibid., pp. 6-7.

24 Ibid., p. 5.

25 Warburton, "How Much Variation in the Quantity of Money Is Needed?" p. 498. Warburton employed several definitions of money. The figures cited relate to "currency outside the banking system plus adjusted demand deposits." Also see Tables 1, 2, and 3 on pages 496, 497, and 501, respectively, of the work cited.
rate of five per cent would be consistent with "... continuous maximum production and price level stability." This assumes an average growth in real output of 3.6 per cent per annum and a decline in the "rate of use of money" of 1.33 per cent per annum. He later revised the desired money growth rate figure downward to four per cent, based on later estimates of the annual rate of growth of output.

Edward S. Shaw. While employing a slightly different approach, Shaw arrived at conclusions similar to those of Warburton and Friedman. Shaw suggested that conditions of monetary equilibrium \( M = PkT \) were "... probably rare and fleeting." At all other times, he continued, there is monetary disequilibrium.

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26 Ibid., p. 500.

27 Ibid. Also see his "Quantity and Frequency of Use of Money in the United States, 1919-1945," and "The Secular Trend in Monetary Velocity."

28 Warburton, "Rules and Implements of Monetary Policy," p. 7fn. It should be pointed out that Warburton, while taking a position similar to Friedman regarding the merits of stable economic growth relative to discretionary policy, did not feel that sweeping institutional reforms were needed. Warburton's criticisms of the 100 per cent reserve plan will be discussed on pages 182-183.

29 This referred to the "Cambridge" equation, where \( M \) is the money supply and the demand for money is \( P(kT) \), where \( P \) equals the price level, \( k \) equals desired money balances per unit of transactions, and \( T \) equals physical quantity of goods and services.

manifested as either inflation (when there is excess supply of money) or deflation (when there is excess demand for money). Discretionary control in the United States has, argued Shaw, been characterized by chronic monetary disequilibrium.

He subdivided the monetary history of the United States into periods when the stock of money was controlled by the Treasury and periods when it was controlled by the Federal Reserve Board. The "Treasury periods" were 1914-1919, 1933-1941, 1941-1945, and 1945-1951. The "Board periods" were 1919-1933 and 1951-1957. He found the "Treasury years" to be usually associated with an accelerated rate of growth in the stock of money and the "Federal Reserve Board years" to be characterized by the opposite. The Board, during its twenty years of control of the monetary mechanism, has, according to Shaw,

... presided over an absolute decrease in nominal money during nine years. There has been price deflation in eleven of its twenty years. There have

\[
\begin{array}{|c|c|c|}
\hline
 \text{Period} & \text{Change in Nominal Money ($ billions)} & \text{Annual Rate of Change} (%) \\
\hline
1896-1914 & 7.5 & 6 \\
1914-1919 & 11.4 & 15 \\
1919-1933 & -3.5 & -1 \\
1933-1941 & 27.7 & 14 \\
1941-1945 & 55.5 & 21 \\
1945-1951 & 22.2 & 3 \\
1951-1957 & 13.2 & 2 \\
\hline
\end{array}
\]

\[31\text{Ibid.}\]
\[32\text{Ibid., p. 53. Shaw cited the following data:}\]
been no more than six years in which the Board has permitted nominal money to increase at a rate comparable with growth in the nation's productive capacity. . . . With its predilection for restraint, the Board has characteristically punished a cyclical boom past its prime, aggravating ensuing depression. The notorious instances are 1919-1921 and 1929-1933, but the cyclical turning points of 1953 and 1957 are not exceptions to the rule. 33

"The Treasury . . .," he continued, "has inflated money in all but three of its twenty-three years, a record that may be saluted at least for its consistency." 34

The cause of these errors of monetary management, according to Shaw, lay in the Treasury's and Federal Reserve Board's concern with credit (which, he emphasized, was a by-product of a monetary system) rather than with money.

As they see it, the money supply is the by-product of their operations, and the monetary system should create as much or as little as is necessary for 'accommodating commerce and business' with credit and for maintaining 'sound credit conditions.' 35

In his view, the proper course for the monetary authority to follow is to "... prescribe and administer rules of growth in the amount of money balances." 36 Specifically, he recommended that the supply of nominal money should increase "... by the average rate of growth in the demand for nominal money at a stable level of commodity prices . . . the appropriate annual growth rate would be

33 Ibid., p. 59.  
34 Ibid.  
35 Ibid., pp. 63-64.  
36 Ibid., p. 63.
in the order of 3•4 per cent."37 This would result in parallel growth in both the supply and demand for money over time. Cyclic movements would then create monetary disequilibria in a direction that would tend to be cyclically corrective, i.e., excess supply of money during recession and money shortages during boom periods. He concluded, "No one has a principle for doing any better by discretionary means."38

Shaw, like Friedman, was arguing against policy by discretionary authorities and for stable monetary growth. Neither was dogmatically committed to the rate of growth that each suggested, and Shaw did not even demonstrate, as did Friedman, that his three per cent rule was "superior." His primary purpose was expressed in his concluding paragraph:

Monetary economics has been dormant for two decades. Other aspects of economic analysis have left it far behind. It is so becalmed in an intellectual doldrum that no gentle breeze of inquiry can stir it. A lively storm of controversy may raise the prestige of monetary economics as an intellectual discipline, and it can do no harm to the prestige of the Federal Reserve as an instrument of social welfare if its prestige is deserved. The present paper is a bid for the active interchange of views that may restore vitality to thinking about money.39

The Bronfenbrenner Tests. Martin Bronfenbrenner compared the results of Friedman's four per cent rule, Shaw's three per

37Ibid., p. 60.  
38Ibid., p. 65.  
39Ibid., p. 71.
cent rule, his own "lag" rule, and the "judgment rule" (actual policy), with an "ideal" pattern of monetary growth for the period 1900-1958. These tests were performed using both annual data and quarterly data.

The "judgment rule" was simply the monetary growth achieved under discretionary authorities. The "lag rule" called for adjustments in the stock of money during the current period according to prior fluctuations in growth rates of real national output and velocity. The "ideal pattern," against which the four rules were compared, was defined as a rate of monetary growth that would yield price stability.


42 Bronfenbrenner, "Statistical Tests of Rival Monetary Rules," pp. 1-2. His mathematical expression of the "lag rule" was

\[
\frac{(dM)}{(M)_t} = \frac{(dN + dO)}{(N + O)} = \frac{dV}{V} \quad t=1
\]

where M is the stock of money, N the labor force, O an index of output per employed worker, and V income velocity of circulation.

43 Ibid. Mathematically the "ideal pattern," \( \frac{(dM)}{(M)_o} \), was expressed as

\[
\frac{(dM)}{(M)_o} = \frac{dY}{Y} = \frac{dV}{V}
\]

or the rate of growth of real income minus the growth of velocity. When the rate of change in the price level \( \frac{(dP)}{(P)} \) does not equal zero,
Bronfenbrenner's tests employed two definitions of money, i.e., the conventional definition of currency outside the banking system plus adjusted demand deposits, and an expanded definition that included currency outside the banking system plus total adjusted demand deposits and time deposits. He also employed consumers' and wholesale price indexes. Using the alternative definitions of money and the alternative definitions of prices, he then compared the deviations of the four rules from the ideal pattern.

When annual data was employed, the following results were yielded: Considering absolute (unsigned) deviations, the three per cent rule proved superior over the entire period. When signed deviations were considered, all rules contained an inflationary bias. The bias was most nearly eliminated under the lag rule, with the three per cent rule only slightly inferior, and the "judgment rule" having the greatest inflationary bias. 44

In each test Bronfenbrenner graded each rule on the basis of one for best results, two for second best, etc.; the three per cent rule obtained the best (or lowest) over-all score of 93.5, followed by

then the actual money growth rate becomes

\[ \frac{dM}{M} = \frac{dY}{Y} = \frac{dV}{V} + \frac{dP}{P} \]

or

\[ (\frac{dM}{M}) = \frac{dM}{M} - \frac{dP}{M} \]

44Ibid., p. 9.
the "lag rule" with 94.5, the four per cent rule with 101.0, and the judgment rule with a score of 111.0. 45

Later, Bronfenbrenner performed the same tests (for the period 1947-1959) using quarterly rather than annual data. The lag rule in this case employed a lag of one quarter instead of one full year. These tests indicated that:

... the judgment rule ... seems to do best for the postwar years as regards absolute deviations from the ideal pattern. ... It is followed in order by the inflexible rule (3 per cent variant), the lag rule, and the inflexible rule (4 per cent variant). 46

However, he contended:

During the three episodes of sharpest inflation (1946-48, late 1950, early 1956), the lag rule led all the rest, but over the entire 12 years its record was comparable to a 3.5 per cent variant of monetary inflexibility. As in the longer-term study also, the lag rule does best by a wide margin as regards algebraic fluctuations from the ideal pattern (avoidance of inflationary bias). It is followed in order by the judgment rule and the two varieties of the inflexible rule. 47

One significant point emerging from both of Bronfenbrenner's studies, as well as Friedman's tests, is the acceptable level of performance of the "judgment rule" during the years following 1947. On one hand, this may be interpreted as evidence that discretionary


47Ibid., p. 625.
monetary management has reached a level of ability and maturity that renders groundless the fears of the "rules advocates." On the other hand, rules advocates such as Friedman chose to explain the stability of the past decade as a result of the Federal Reserve Board's following a policy that approximates his rule of stable growth. However, the evidence for the entire history of discretionary monetary policy certainly indicates that a rule of stable growth might be more desirable.

Bronfenbrenner suggested that his lag rule (employing a one-quarter lag) might be a suitable compromise "... between the rigidity of the Friedman-Shaw proposals and complete reliance on that combination of forecasting ability, political pressure, and administrative routine which passes as 'judgment' or 'discretion.'"48 However, Bronfenbrenner cautioned that the lag rule should be subjected to more extensive testing before serious consideration was given it as a guide to policy.

Some Objections to Stable Monetary Growth. The evidence examined points toward the conclusion that stable monetary growth would be preferable to discretionary policy. However, critics have contended that, under a rule of stable monetary growth, sudden shifts in velocity would cause either inflation or deflation that could not be

48Ibid., pp. 625-626.
counteracted by anti-cyclical monetary policy, and that the rate at
which the money supply is increased might turn out to be inconsistent
with the rate of growth of real output, thus resulting in secular in-
flation or deflation. 49

The secular inflation-deflation criticism is perhaps the
easier for the rules advocates to answer. None of the proponents of
stable monetary growth have suggested that the rate of growth, once
established, should remain fixed for all time. Changes in the trends
of the determinants of the appropriate rate of growth would be a
valid reason for changing the "rule" of monetary policy. However,
as Richard Selden pointed out, unless some period were established
during which the rule could not be changed, the results might be a
de facto return to discretionary monetary policy. 50 Selden suggested,
as an alternative to periodic review, that the trends in output and ve-
locity be recomputed annually, based upon data for the preceding 20
years. 51

While the possibility of short-run variations in velocity
presents the most serious challenge to the efficacy of a policy of
stable monetary growth, there are some reasons explaining why

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49For example, see Lawrence Ritter, "Review of A Pro-
gram for Monetary Stability," American Economic Review, V (Sep-

50Selden, op. cit., p. 339.

51Ibid.
stable monetary growth might be expected to dampen short-run variations in velocity. For example, Warburton contended that short-run variations in velocity are caused by "... the impact on business and personal expenditures of expected changes in the quantity of money." If this is true, a policy of stable monetary growth, by stabilizing expectations, might be expected to have a stabilizing effect on short-run velocity movements.

Friedman's permanent income hypothesis, assuming that it is valid, also indicates that a policy of stable growth would dampen short-run velocity variations. For example, if a policy of stable monetary growth resulted in less severe variations in money

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52 Warburton, "How Much Variation in the Stock of Money Is Needed?" p. 506. Warburton cited as examples the rise in velocity in the summer of 1933 when departure from the gold standard and other monetary developments led to expectations that the monetary contraction had come to an end.

53 Milton Friedman, A Theory of the Consumption Function (Princeton: Princeton University Press, 1957), 243 pp. In his The Demand for Money: Some Theoretical and Empirical Results, Occasional Paper No. 68 (New York: National Bureau of Economic Research, 1959), 25 pp. (especially, see pp. 2-9), this hypothesis was employed to explain both cyclical and secular movements in income velocity. If the quantity of money balances demanded is adapted to permanent income, a decline in measured income below permanent income would result in an increase in money balances demanded per unit of output, and a decline in velocity would follow. The opposite would occur during cyclical movements in measured income above permanent income, causing an increase in velocity. Secularly, assuming real balances to be a luxury good (with a computed income elasticity of 1.8), long-run growth of real income would result in a decline in secular velocity.
income, the result would be a smaller cyclical discrepancy between measured and permanent income. The permanent income hypothesis indicates that short-run velocity variations are caused primarily by these discrepancies between permanent and measured income, thus the diminution of these discrepancies should significantly reduce short-run velocity variations.

Thus, to the extent that the amplitude of cyclical variations in money income has been caused by improper monetary policy, and to the extent that stable monetary growth would result in "better" monetary policy, it might very well follow that cyclical variations in money income would be reduced.

Stable Monetary Growth and 100 Per Cent Reserve Banking

If the goal of stable monetary growth were deemed desirable, would 100 per cent reserve banking be a necessary (or even a

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54 The assumption here is that, while cyclical movements (resulting from non-monetary causes) would continue, they would at least not be aggravated by "bad" monetary policy.

55 Two recent studies lend support to this relationship between permanent income and velocity. David Laidler, in "Some Evidence on the Demand for Money," *Journal of Political Economy*, LXXIV (February, 1966), 55-68, found permanent income a better explanatory variable for the demand for money than measured income and the rate of interest. Gregory C. Chow, in "On the Long-Run and Short-Run Demand for Money," *Journal of Political Economy*, LXXIV (April, 1966), 111-131, found that permanent income is the best explanatory variable of the demand for money in the long run, but that measured income is the better explanatory variable in the short run,
desirable) requisite to the goal's attainment? Since monetary policy by rules and 100 per cent reserve banking have been linked together in the various reform schemes treated in this thesis, an analysis of this question is necessary.

Critics of the 100 per cent reserve plan have viewed it as undesirable, unnecessary, or at least offering insufficient benefits to justify its costs. In Lawrence Ritter's view, the only benefits to be derived would be the removal of the necessity of the Federal Reserve's engaging in constant actions to offset currency movements, and the abolition of the need for the Federal Deposit Insurance Corporation. His criticisms were not unlike some of those levied against Fisher and Simons during the 1930's:

In order to reap these bounties, we would have to completely overhaul the present structure of the money and capital markets and establish a financial system that would contain within it any number of unexplored problems. Prominent among these would be the source of short-term business financing, now largely provided by the commercial banks, and the problem of evasion in the classification of deposits in order to avoid the 100 per cent reserve requirement. 56

Clark Warburton, an advocate of stable monetary growth, was equally critical of 100 per cent reserve banking, maintaining that it "... does not solve any real monetary problem. ... Introduction

56 Ritter, op. cit., p. 767.
of the 100 per cent reserve system would not, taken by itself, make any change in the kind of assets to be held by the monetary system.\footnote{Warburton, "Rules and Implements of Monetary Policy," p. 9.}

Stable monetary growth could certainly be approximated under the fractional reserve system and, of course, the task of monetary control could be simplified by minor reforms in the existing system. Among such reforms are: (1) fixed reserve requirements in order to remove an element of uncertainty on the part of banks; (2) uniform reserve requirements among all classes of banks (including state-chartered banks);\footnote{Lauchlin Currie, The Supply and Control of Money in the United States (Cambridge, Mass.: Harvard University Press, 1934), pp. 163-179; and Warburton, "Rules and Implements for Monetary Policy," p. 17fn.} and (3) payment of interest on reserve balances and allowing banks to pay interest on demand deposits, as suggested by Friedman,\footnote{This suggestion was made by Friedman with respect to a system of 100 per cent reserve banking, but it may be expected to enhance control of the stock of money under a fractional reserve system. Supra, pp. 147-150.} or payment of interest on excess reserves.\footnote{This suggestion has been made by James Tobin, "Toward Improving the Efficiency of the Monetary Mechanism," \textit{Review of Economics and Statistics}, XLII (August, 1960), 277. Earlier, Charles R. Whittlesey, in "Old and New Ideas on Reserve Requirements," \textit{Journal of Finance}, VIII (May, 1953), 190-195, suggested payment of interest on reserves as a means of restricting credit without adding to the banks' burden of non-earning assets.}
Yet the contemporary critics of 100 per cent reserve banking, such as Ritter, have apparently viewed only the more superficial advantages of the plan. The fundamental advantage of the plan would be its divorcing the volume of money from the volume of short-term debt and its impact on the character of assets held by financial intermediaries. It was this purported advantage that was viewed as being most important by the earlier advocates of the 100 per cent reserve plan, Irving Fisher and Henry Simons. They both viewed monetary stability and a large volume of short-term debt as mutually exclusive.

It is implicit in their writing that stabilizing the stock of money alone would be insufficient to achieve complete "monetary stability." A large volume of short-term debt places banks in a position to rapidly withdraw capital funds from business firms, which of course would have adverse effects upon the level of economic activity. However, these adverse effects are compounded as the volume of circulating media contracts in response to debt contraction. 61 Therefore, "genuine financial reconstruction," to use Simons' terminology, requires both the lengthening of the private debt structure and divorcing the volume of money from the volume of short-term debt. Achieving either of these goals independently would be considered desirable in the context of the economics of

61 Supra, pp. 52-54, 60-63, and 66-68.
Fisher and Simons; 100 per cent reserve banking was viewed by them as the one reform measure which would contribute significantly to achieving both goals.

If 100 per cent reserve banking was devised as a means of promoting a lengthening of the structure of private debt, then two questions are raised. First, would lengthening of the private debt structure promote monetary stability? And second, would this lengthening be promoted by 100 per cent reserve banking?

The Influence of 100 Per Cent Reserves on Bank Asset Preferences

Under existing institutional arrangements, the risk-taking propensities of commercial banks are influenced by liquidity needs emanating from the relatively large share of their "working capital" that is obtained in exchange for demand deposit liabilities. The hypothesis implicit in the writings of Fisher and Simons was that the requirements of 100 per cent reserves, by reducing banks' demand for liquidity, would result in increasing the proportion of long-term assets in bank portfolios. 62

Under the existing system, the willingness of banks to extend long-term loans may be considered as varying inversely with

62 This analysis refers to a system in which banks have been separated into two distinct institutions, one a warehouse for money, the other a financial intermediary that acquires funds by selling non-demand obligations.
the proportion of their deposit liabilities consisting of demand deposits, other things remaining constant. The probability of reserve losses induces banks to maintain a stock of highly liquid assets--government securities, prime commercial paper, and cash assets, including deposits with other banks and excess reserves. Under 100 per cent reserves, deposit losses would be of insignificant importance, and since earning assets would be obtained with funds received in exchange for non-demand liabilities (including equities), it could be expected that banks' aversion to long-term assets would decline.

Studies of bank asset preferences tend to confirm this hypothesis. Stanley M. Besen, in a study of 500 banks, found that as the ratio of demand deposits to total deposits decreased, the ratio of loans to deposits tended to increase. While loans were not classified by maturity, this indicates that risk-taking propensities are increased as the proportion of demand deposits is decreased.

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63 Stanley M. Besen, "An Empirical Analysis of Commercial Bank Lending Behavior," Yale Economic Essays, V (Fall, 1965), 283-315. The coefficient of correlation between first differences in the ratio of demand deposits to total deposits and the ratio of loans to deposits was -.556 (significant at the .05 level). See Table 4, page 307, of the work cited.

64 A model indicating the same conclusions was developed by Richard C. Porter, "A Model of Bank Portfolio Selection," Yale Economic Essays, I (Fall, 1961), 323-359.
The findings of Ira Scott and Deane Carson support the finding of Besen. For example, they found a positive coefficient of correlation between the ratio of time deposits to total deposits and the ratio of real estate loans to total assets. Also, they found a negative correlation between the ratio of cash plus United States government securities to total assets and the ratio of time deposits to total deposits. These findings indicate that banks' aversion to long-term assets decreases as the proportion of demand deposits to total liabilities decreases. This inference is indicated by the relatively high positive correlation between real estate loans and the time/total deposit ratio, and is reinforced by the negative correlation between the time/total deposit ratio and ratio of such highly liquid

65Ira O. Scott and Deane Carson, "Commercial Bank Attributes and Aversion to Risk," in Comptroller of the Currency, Banking and Monetary Studies, ed. Deane Carson (Homewood, Ill.: Richard D. Irwin, 1963), pp. 420-433. Scott and Carson correlated bank size, rate of bank growth, ratio of time deposits to total deposits, and the ratio of capital to total deposits with the following variables: cash assets plus United States government securities/total assets, government securities maturing within one year/total assets, demand balances with other banks/total assets, net loans and discounts/total assets, commercial and industrial loans/total assets, real estate loans/total assets, consumer loans/total assets, and state and local obligations/total assets. The study covered 4,053 banks.

66Ibid., pp. 425-426. The coefficients of correlation were .57777 for reserve city banks and .74791 for country banks, respectively.

67Ibid. The coefficients were -.41776 and -.30260 for reserve city and country banks, respectively.
assets as cash assets and United States government securities to total assets. 68

The foregoing findings are consistent with a model developed by Karl Brunner 69 which indicated that banks' demand for cash assets increased more with an expansion of demand deposits than with an expansion of time deposits. 70 Since the marginal propensity to hold

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68 Ibid. Other correlations between the time/total deposit ratio and other "liquidity ratios" included government securities maturing within one year/total assets, - .54493 and -.51109; and demand balances with other banks/total assets, -.31140 and -.42972. Coefficients cited are for reserve city banks and country banks, respectively.


70 Ibid., pp. 80-88. In its most elementary form, Brunner's model stated banks' demand for cash assets (in excess of required reserves) as

\[ v^d = w_0 + w_1 d_1 + w_2 d_2 \]

where \( v^d \) is the desired amount of cash assets; \( d_1 \) and \( d_2 \) are net demand deposits and time deposits, respectively; \( w_1 \) and \( w_2 \) are the marginal propensities to hold cash assets relative to \( d_1 \) and \( d_2 \). The term \( w_0 \) is the demand for cash assets relative to \( r \), an index of loan rates and bond yields; \( b \), the amount borrowed from the Federal Reserve Bank; and \( a \), the portfolio loan-investment ratio.

Brunner stipulated that the first derivative of \( w_0 \) with respect to \( r \) would be negative, and positive with respect to \( b \) and \( a \).

Brunner postulated that \( w_1 > w_2 > 0 \) and \( v^d > 0 \) for all positive values of \( r \). See pages 80-81 of the work cited.

The term \( w_0 \) may be considered a speculative demand for cash assets with respect to \( r \) and \( a \), and, in a sense, a precautionary demand with respect to \( b \).
cash assets relative to demand deposits exceeds the marginal pro-
pensity to hold cash assets relative to time deposits, the following
possible effects may be noted. If both demand and time deposits in-
creased, of course the total amount of cash assets demanded would
increase, other things remaining constant. Of more significance
to this dissertation are the effects of shifts between demand and time
deposits. A shift of a given dollar amount from demand deposits to
time deposits would result in an absolute decline in the amount of
cash assets (beyond the legal requirements) demanded by banks.

The findings of Scott and Carson, along with those of Besen,
would indicate that the excess cash assets would be employed in the
acquisition of more risky (including long-term) assets.

If the transition to 100 per cent reserve banking were accom-
plished by the technique suggested by James Angell, i.e., that re-
serves would be supplied by the Federal Reserve in exchange for a
non-interest-bearing lien that would be repaid slowly, if at all, the
foregoing studies indicate that the following results might be

71 For further discussion on bank portfolio selection, see
Donald P. Hester, "An Empirical Examination of a Commercial
Bank Loan Offer Function," Yale Economic Essays, I (Spring, 1962),
3-58; David A. and Charlotte P. Alhadeff, "An Integrated Model for
Commercial Banks," Journal of Finance, XII (March, 1957), 24-43;
David A. and Charlotte P. Alhadeff, "The Struggle for Commercial
Bank Savings," Quarterly Journal of Economics, LXXII (February,
1958), 1-22; and Raymond H. McEvoy, "Variations in Bank Asset
expected: First, the loan-investment portfolio would not be initially disturbed, 72 and at the same time banks' marginal propensity to hold cash assets (beyond the legal requirement) relative to demand deposits would become zero. 73 The surplus cash assets that would be generated as assets matured would be in one sense similar to funds attained through the sale of stock, i.e., they would have no debt claims against them in the form of demand or time deposits. Therefore, banks would be free to use these funds to obtain the most profitable assets without being encumbered by liquidity considerations stemming from demand or time deposit liabilities. This, in the light of the aforementioned studies, indicates that 100 per cent reserve banking would result in an increase in banks' demand for long-term assets.

If the transition occurred via central bank purchase of commercial bank assets, a rapid freeing of cash assets would not occur and would immediately place bankers on the same footing as other financial intermediaries. Although this is the ultimate goal of 100 per cent reserve banking, a more gradual technique of transition might be desirable for other reasons. A gradual increasing of

72 Under most transitional schemes suggested, banks would be required to dispose of assets in order to meet the 100 per cent reserve requirement.

73 In the context of Brunner's model, Supra, p. 188, footnote 70, \( w_1 d_1 \) would become 0 and the demand for cash assets would become \( v^d = w_o + w_2 v_2 \), or surplus cash assets equal \( w_1 d_1 \).
reserves to 100 per cent, as suggested by Friedman, might result in less transitional problems. Another alternative might be for the central bank to supply reserves by purchasing the commercial banking system's holdings of United States government securities and then supplying the remainder in exchange for a non-interest-bearing lien. This would avoid the occasion for objection to the Federal Reserve's purchasing of private debt instruments.\(^74\)

That the supply of longer term assets would increase depends upon other factors. The Fisher-Simons argument is that the demand for short-term funds is to some extent a demand for long-term funds that is frustrated by banks' desire for liquidity. Banks are unwilling to lend at long term, but will lend at short term with an understanding, implicit or overt, that renewals will be forthcoming. Freed from the liquidity demands imposed by demand deposits, banks might be expected to grant outright the long-term loans that are currently disguised as short-term loans.\(^75\)

\(^{74}\)For example, this objection was raised by Angell. Supra, p. 86.

\(^{75}\)The extent of long-term loans in disguise has not been determined, but the proposition might be accepted on a priori grounds. Allusions to disguised long-term lending are found in the literature of finance, but empirical evidence is not currently available. For example, see George Budzeika, "Turnover of Business Loans at New York Banks," Federal Reserve Bank of New York, Monthly Review, 44 (January, 1962), 10-15; Budzeika, "Commercial Banks as Suppliers of Capital Funds to Business," Federal Reserve Bank of New York, Monthly Review, 45 (December, 1963), 185-189; and Jack W. Cox, "Developments in the Commercial Bank Loan-Deposit Ratio," Federal Reserve Bank of New York, Monthly Review, 48 (March, 1966), 65-70.
result, the demand for permanent working capital could be supplied by long-term funds advanced by banks. This would probably be true especially for small business firms that must rely almost exclusively on banks as a source of funds.

While the 100 per cent reserve requirement might induce an increase in both the demand and supply of long-term assets, it does not follow that it would remove all sources of short-term credit. Post-transitional banks, as well as other institutions, would probably continue to acquire short-term securities and to grant direct short-term loans; only the relative quantity of such loans would be altered.

**Time Deposits—a Complicating Factor.** The requirement of 100 per cent reserves against demand deposits would alter the existing relationship between demand and time deposits as it affects banks' demand for cash assets beyond those required by law. The Brunner model in its most elementary form may be employed to analyze these effects.

Banks' demand for cash assets is expressed as

\[(1) \quad v^d = w_0 + w_1 d_1 + w_2 d_2. \quad 76\]

The difference between total available reserves \(v\) and reserves demand \(v^d\) is surplus reserves \(s\) and may be expressed as

\[(2) \quad s = v - v^d\]

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76Supra, p. 188, footnote 70.
and for the bank to be in equilibrium, the following condition must exist:

\( s = 0 \)

Should changes occur in the total amount of deposits or the ratio of demand to time deposits, causing \( s \) to become greater than 0, banks will acquire additional earning assets. Should changing conditions cause \( s \) to become less than 0, banks will sell earning assets.

Assuming \( w_0 = 0 \) in order to isolate the effects of the altered reserve requirements, the effects of shift by the public from demand to time deposits may be analyzed in the following fashion:

\[
(4) \quad \Delta v^d = -w_1 \Delta d_1 + w_2 \Delta d_2
\]

Since \( -d_1 + d_2 = 0 \), equation (4) can be expressed as

\[
(5) \quad \Delta v^d = \Delta d(w_2 - w_1)
\]

If, under fractional reserve banking, \( w_1 > w_2 > 0 \), from equation (4), \( \Delta v^d < 0 \), indicating a decreased demand by banks for cash assets, thus creating an increase in surplus reserves by the amount of \( \Delta v^d \).

Since the equilibrium condition is \( s = 0 \), from equations (2) and (3), additional earning assets will be acquired by the banks, thus increasing the money supply.

The additional earning assets acquired (\( \Delta E_f \))\(^{77} \) may be expressed as

\(^{77}\)The subscript "f" indicates a fractional reserve banking system.
(6) $\Delta E_f = \sqrt{\Delta d_2} - \Delta d_2(w_2 + R_2) - Ed_1 - (\Delta v^d)$.

In equation (6), $R_2$ is required reserve ratio against time deposits and $Ed_1$ is earning assets acquired with funds previously received in exchange for demand deposits in the amount $\Delta d_1$.

Since, from equation (5), $\Delta v^d$ is less than zero, the increase in earning assets acquired will be equal to $\Delta v^d$ and will also be the amount by which the money supply may be expanded, or

(7) $- (\Delta v^d) = \Delta E_f = \Delta M$

Under the fractional reserve system, banks are induced to hold excess reserves in order to meet customers' demand for cash and to avoid reserve deficiencies caused by adverse clearing balances. However, under the 100 per cent reserve plan there would be no similar inducement (with regard to demand deposits), since every dollar of demand deposits would be secured by a dollar of "high-powered money." The loss of cash assets due to an increase in the public's demand for currency, etc., would leave unaltered the ratio of reserves to demand deposits. Therefore, under 100 per cent reserve banking, conversion of demand deposits into time deposits would yield a different result. Since $w_2 > w_1 = 0$, from equation (5) it is seen that $v^d > 0$, and the additional earning assets demanded would be

(8) $\Delta E_o^{78} = \sqrt{\Delta d_2} - \Delta d_2(w_2 + R_2) - Ed_1 - (\Delta v^d)$

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78 The subscript "o" indicates a 100 per cent reserve system.
A comparison of the effects of conversion of demand deposits into time deposits may be made by subtracting equation (8) from equation (6):

\[
\begin{align*}
(6) \quad \Delta E_f &= \frac{\Delta d_2}{(w_2 + R_2)} - Ed_1 + \Delta v_d \\
(8) \text{less } \Delta E_o &= \frac{\Delta d_2}{(w_2 + R_2)} - Ed_1 - \Delta v_d \\
(9) \quad \Delta E_f - \Delta E_o &= 2\Delta v_d \quad \text{or} \\
(10) \quad \Delta M_f - \Delta M_o &= 2\Delta v_d
\end{align*}
\]

That is to say, equation (9) indicates that under fractional reserve banking, a given shift by the public from demand to time deposits will make possible an expansion of the money supply \(2\Delta v_d\) greater than would be the case under 100 per cent reserve banking. Stated differently, a shift from demand to time deposits would make possible a \(\Delta v_d\) increase in the stock of money under fractional reserve arrangements, but would induce a \(\Delta v_d\) decrease under 100 per cent reserve requirements.\(^79\)

To analyze the effects of a shift by the public from time to demand deposits, the same techniques may be applied, and the results would be the opposite of those yielded by the foregoing

\(^79\)Since this analysis is intended to isolate only the effects of changes in banks' demand for cash assets beyond the legal requirements, equation (6) does not take into account the increase in available reserves (\(v\)) that results from a lowered total required reserve, since legal reserve requirements are higher for demand deposits than for time deposits. When this is considered, \(\Delta E_f\) would be greater. It should also be noted that Ed_l will always equal 0 under 100 per cent reserve banking.
demonstration. Under fractional reserve banking, with \( w_1 > w_2 > 0 \), a conversion of time deposits into demand deposits would result in a positive \( \Delta v^d \) indicating that banks would reduce their holdings of earning assets and thus cause a contraction of the money supply by \( \Delta v^d \). Under 100 per cent reserve banking, since \( w_2 > w_1 = 0 \), a conversion of time deposits into demand deposits would result in a negative \( \Delta v^d \) indicating that the money supply could be increased by \( \Delta v^d \).

Under 100 per cent reserve banking, a shift by the public from time to demand deposits would cause banks to dispose of earning assets in order to meet the 100 per cent reserve requirement against demand deposits, but the reduction in time deposits would free cash assets making possible a partial offsetting acquisition of new earning assets.

Therefore, under 100 per cent reserve banking, the following results might be expected, assuming abolition of legal ceilings on the rate of interest payable on time deposits. During cyclical expansions, the increased demand for funds would make it profitable for banks to attract additional time deposits by offering higher interest rates. This, of course, is the current practice of non-bank financial intermediaries. The increased holdings of time deposits would reflect an increased desire by the public to save and the additional acquisition of assets on the part of banks would not result in an increase in the money supply. However, to the extent that new
time deposits were acquired with demand deposits that had technically been hoards, the result would be an increase in velocity. This tendency toward a cyclically rising velocity would be countered to some extent by the increased demand by banks for cash assets. Under currently existing arrangements, increases in the public's holdings of time relative to demand deposits have the effect of lowering banks' demand for cash assets, thus resulting in a greater increase in money supply than would occur under 100 per cent reserve banking.

During cyclical contractions, a decline in velocity might be expected to occur under 100 per cent reserve banking as the supply of assets declines and the banks' demand for cash assets increases. However, to the extent that the 100 per cent reserve banking results in a lengthening of the private debt structure, the amount of assets maturing during any interval of time would be less than under fractional reserves, which would result in a less rapid decline in velocity. Further, assuming that the declining velocity resulted in declining prices, the increase in the real value of time deposits and demand deposits might be expected to have some positive effect on consumption and, therefore, velocity.

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80 Brunner, op. cit., p. 81, suggested that the demand for cash assets varies inversely with the yield on banks' loan-investment portfolio.
In summary, under 100 per cent reserve banking, the lending operations of commercial banks would be placed under the same conditions as other financial intermediaries. Yet under current institutional arrangements, a shift from demand to time deposits (or savings and loan shares, etc.) has the effect of lowering the demand for cash assets for all intermediaries taken as a whole, and the result is an increase in velocity. The institution of 100 per cent reserve banking would mitigate these effects and contribute to stabilizing cyclical movements in velocity.

100 Per Cent Reserve Banking and Discretionary Monetary Policy

The effects of 100 per cent reserve banking that have been considered could be expected under either discretionary policy or policy according to some rule. Yet it is not clear that discretionary policy under the 100 per cent reserve plan would be desirable. Points in favor of 100 per cent reserves in conjunction with discretionary policy are as follows: First, as mentioned earlier, most of the forces that automatically militate against monetary policy would be eliminated. Second, the divorce of the stock of money from the volume of short-term debt would build into the monetary system an anti-deflationary bias that would possibly reduce the need for discretionary policy decisions in response to deflationary movements. Under current institutional arrangements, a decline in the general
level of economic activity, and the associated reduction of the money stock caused by reduction of private debt, would indicate the need for an expansionary monetary policy, i.e., open market purchases, etc. The efficacy of such actions would be limited by (1) the lag between the beginning of the downturn and the recognition that expansionary policy actions were indicated, (2) the lag between recognition and the implementation of policy, and (3) the lag between the implementation of policy and its effects. Under 100 per cent reserve banking, the first two of these lags would not exist. Since no decline in the stock of money would occur (i.e., deflation could result only from a decline in velocity), the discretionary authority would, in a sense, be "taking action" before it even became obvious that a problem requiring attention existed. If it is assumed that, regardless of the institutional arrangements, the task of the monetary authority is to counteract inflationary and deflationary movements in the economy, then the task of the monetary authority would be to a large extent performed automatically under the 100 per cent reserve plan. While severe deflationary movements might eventually require positive expansionary action, the likelihood would be reduced by the "automatic" expansionary policy that would have initially occurred.

81 Holding the stock of money constant is here deemed "expansionary" relative to a decline that could possibly occur under the fractional reserve system before policy action was initiated. Furthermore, holding the money stock constant during a period of declining prices may be considered expansionary in an absolute sense.
This line of reasoning leads to the conclusion that 100 per cent reserve banking, even in conjunction with monetary policy by discretionary authorities, would reduce the dangers of "bad" monetary policy feared by Simons, Friedman, et al., since the occasions that invite "tinkering" with the money supply would be reduced. Moreover, under these conditions no policy action would in fact be policy in the right direction, though not necessarily of the proper magnitude. 82

The same line of reasoning, however, does not necessarily yield the same conclusions when anti-inflationary policy is considered. The stock of money could not increase in response to business conditions under the 100 per cent plan, and "doing nothing" would be a "policy action" in the right direction, but it could well be an inadequate policy, since inflation results not only from increases in the stock of money, but from rising velocity as well. 83 Under

82 For example, the results of the "bad" policy actions which Friedman accused the Federal Reserve Board of committing during 1929-1932—i.e., a decline of the stock of money by one-third—could not have occurred unless the Board had undertaken positive action to cause them to happen. It appears reasonable to assume that no group of men would have taken such action. This conclusion is based on the assumption that the Board allowed the stock of money to fall, i.e., that they committed a "sin of omission." A like decline in the stock of money under 100 per cent reserve banking would have required a "sin of commission."

83 For example, see Richard Selden's analysis of the period 1955-1957, which attributed to increasing velocity the greater part of the price increases. During this period real Gross National Product
conditions of inflation, regardless of its cause, the monetary au-

thority would probably take corrective action. Such action under 100

per cent reserve banking would be direct and certain in its impact.

The stock of money would be reduced by one dollar for every dollar

of government securities sold by the Federal Reserve. Yet the
dangers of over-correction would be far greater under 100 per cent
reserve banking than under the existing system.84

One characteristic of fractional reserve banking makes it
especially compatible with discretionary policy, i.e., the system
contains mechanisms that make possible temporary avoidance of
policy actions. For example, contractionary open market sales or
increases in the required reserve ratio can be offset temporarily by
increased discounting. Under the variant of the 100 per cent reserve

rose by 12.1 per cent, and the stock of money per unit of output fell
by 3.5 per cent, while velocity increased by 10.4 per cent. Selden,
"Cost-Push Versus Demand-Pull Inflation, 1955-57," _Journal of
Political Economy_, LXVII (February, 1959), 1-20, especially pp. 2-7.

84 A case may be made that other aspects of the general re-
form scheme (of which 100 per cent reserves is but a part) would have
a stabilizing effect on velocity. For example, if government deficits
were financed by direct sale of securities by the Treasury to the
Federal Reserve, the volume of short-term government debt held by
the public would very shortly be reduced to zero. Short-term
Treasury obligations, in their capacity as money substitutes, release
cash balances (held for other than transactions purposes) and serve
to increase velocity, especially during expansionary periods. There-
fore, the elimination of short-term Treasury obligations would make
velocity less volatile, and the self-corrective features of 100 per cent
reserve banking would be more effective, reducing the occasions
when positive policy actions would be required in response to in-
flation.
plan that would abolish discounting, the effect of policy actions—especially contractionary policy actions—would be immediate and perhaps harmful if carried out too vigorously. These dangers are increased if the Friedman lag hypothesis is considered valid. The nub of this argument is that 100 per cent reserve banking would, perhaps, make monetary policy too powerful to be entrusted to any independent authority.\(^5\)

Therefore, in all probability, those who argued most persuasively for 100 per cent reserve banking would have argued with equal persuasion against implementation of the plan under discretionary authorities. While the 100 per cent reserve plan might minimize the possibility of errors associated with deflationary periods, it would appear to magnify the danger of errors associated with inflationary periods. That the positive aspect would compensate for the negative is not certain. And though the plan by its very nature would tend toward "automaticity," the fact that it would be subject to the manipulations of discretionary authorities, combined with the absence of "shock absorbers" of the fractional reserve

\(^5\) Considered differently, this argument might be turned in favor of 100 per cent reserves. If 100 per cent reserve banking made monetary policy too powerful to use during periods of expansion, and if the monetary authority acted accordingly, then probably only very mild, if any, contractions of the money supply would occur. The results would be a lessening of the possibility that tight money would be employed after a cyclical peak had been reached.
system, points toward a tentative conclusion that monetary policy by discretionary authorities and 100 per cent reserve banking are mutually exclusive.
CHAPTER VII

SUMMARY AND CONCLUSIONS

The twentieth century development of the theory of 100 per cent reserve banking was stimulated by periods of monetary crisis and carried out by economists who were adherents to monetary theories of the business cycle. While those who advocated the plan prior to the 1930's—John R. Cummings, Willis Brooks, and Frederick Soddy—were not noted economists, since 1930, the plan has been treated by more competent economists—Fisher, Simons, Mints, Friedman, et al. Historically, the plan has been a plank in the platform of a definitely minority party of scholars, and in the view of some, the plan was considered the rantings of a lunatic fringe.

In terms of academic and public popularity, the plan reached its apogee during the depths of the Great Depression. To the public, the plan offered insurance against a recurrence of the banking collapse of 1930-1933. Moreover, it offered as lagniappe a painless way to pay off the public debt. To economists, the plan represented everything from panacea to Pandora's box. Between these two poles
of opinion there emerged some meaningful insights into the defects of the monetary mechanism extant. Many of the claims of one of the plan's most ardent advocates, Irving Fisher, were unable to stand before rigorous examination. Economists such as James Angell, Fritz Lehman, Albert G. Hart, and Rollin G. Thomas, among others, demonstrated that implementation of the plan would not in any meaningful sense result in elimination of the national debt, nor would it necessarily prevent inflation and depression. Furthermore, as the critics pointed out, the plan would create new problems, particularly in its effect on bank earnings.

While many of the plan's alleged advantages were illusory, many of the criticisms of it during the 1930's were technical rather than fundamental. For example, several transitional methods were devised to overcome the shortcomings of the methods suggested by Simons and Fisher. The ultimate contributions of 100 per cent reserve banking, in the view of its authors, were its overcoming of the "historical accident" that tied the stock of money to the volume of short-term debt, its purported impact on the private debt structure, and, as Benjamin Higgins pointed out, its insuring a closer relationship between investment and saving. Of equal importance, in the history of monetary economics, was the general area of reform with which the plan was associated—monetary policy based on some rule other than the rule of international gold standard.
Though these issues may have been deserving of more serious consideration, the amount of attention devoted to them declined in the late 1930's; this decline was probably due to the dramatic course of events after 1933. The problem of bank failures diminished and was, by 1937, replaced by the problem of excessive reserves, in the view of policy-makers. The coming of World War II completely absorbed the problem of unemployment and deflation, and by the early 1940's the economic problem of the day became inflationary pressures. And perhaps the 100 per cent reserve plan attracted no more attention than it did during the 1930's because it flew in the face of approximately 400 years of firmly rooted banking tradition. With the magnitude of the economic problems demanding attention, perhaps many economists felt that it would be useless to devote time and energy to a reform scheme that, regardless of any merits it possessed, was apparently a political impossibility.

The case for rules vis-à-vis authorities and the case for 100 per cent reserve banking remain today the causes of a minority party. Yet, unlike the 1930's, the case has been substantiated by a number of empirical investigations which have thrown considerable light on the defects of discretionary monetary policy. The works of Friedman and Warburton, to name but two, are significant in this respect. However, the advocates of policy by rules are of divided opinion about the desirability of 100 per cent reserve banking.
Even though 100 per cent reserve banking may not be a necessary prerequisite for monetary policy by rules, the examination of the issues carried out in this thesis points toward the conclusion that 100 per cent reserve banking would contribute to the effectiveness of a policy by rules by (1) preventing changes in the level of economic activity from causing changes in the stock of money, and (2) causing certain changes in bank asset preferences. Even though cyclical fluctuations in the demand for loans and the liquidity preferences of society would continue to cause variations in velocity, the stock of money would remain unchanged (except in the case of a policy of stable monetary growth), thus automatically generating corrective forces. For example, a cyclical downturn (resulting from non-monetary causes) could be expected to be associated with a decline in velocity through a decline in the volume of loans demanded and an increase in liquidity preference by lenders. However, since the stock of money would remain unchanged, the real stock of money (nominal money/price level) would increase. Inflationary tendencies associated with expansionary periods would be counteracted in a like fashion. A rise in prices associated with an increase in velocity would result in a decline in real money balances, thus discouraging consumption.

The effect of 100 per cent reserve banking on bank asset preferences might also be expected to promote stability. Studies
of bank asset preferences that have been examined in this thesis indicate that the liquidity needs associated with demand deposit liabilities influence, in a positive fashion, banks' demand for cash assets and highly liquid securities. As the ratio of demand deposits to total deposits decreases, banks tend to acquire longer term assets, as well as more risky short-term assets. It would follow that, by removing liquidity considerations associated with demand deposits, 100 per cent reserve banking would induce a lengthening of the private debt structure. As the average maturity of private debt increased, the amount maturing at any point in time would likewise be reduced. As Simons and Fisher pointed out, the anti-cyclical effects of this would be to reduce the adverse effects on business of a sudden withdrawal of capital.

During cyclical expansions the 100 per cent reserve system would not, of course, prevent the expansion of loans, but the expansion of loans would not result in an increase in demand deposits held by the public. The expansion of loans and investment would be limited by the willingness of the public to forego current consumption. These decisions to save would be implemented by direct acquisition of assets from ultimate borrowers or indirectly through financial intermediaries.

The effects of an increased desire by the public to hold non-demand liabilities—time deposits, savings and loan shares,
etc. --causes, under existing arrangements, a decline in the demand for cash assets by financial intermediaries (bank and non-bank) in the aggregate. The result is an increased willingness to acquire assets and an increase in velocity. However, the analysis in Chapter VI points to the conclusion that, under 100 per cent reserve banking, the tendency toward increased velocity would be mitigated to some extent, because a shift from demand deposits to non-demand instruments would result in an increased demand by financial intermediaries (bank and non-bank), in the aggregate, for cash assets.

Even though 100 per cent reserve banking might contribute to monetary stability, the final issue centers around the social benefits of the plan relative to its social costs. This issue was virtually ignored by the advocates of the plan during the 1930's. Fisher implied that the plan would have no adverse effects on the existing financial institutions. Yet critics pointed out that the plan's establishment would exact certain social costs. Measuring these costs would be difficult, but they would be felt as traditional means of carrying out transactions were altered. Social costs would be at a maximum if, to take an extreme example, 100 per cent reserve banking were instituted in a fashion that resulted in an abrupt deprivation of short-term funds and at the same time made the cost of making payments by check economically prohibitive. The social costs would be minimized if its effects came gradually, to allow
sufficient time for the public to make necessary adjustments, and if it did not affect the cost of the traditional payment mechanism. Furthermore, the psychological impact of the plan would probably be minimized if the existing (superficial) structure of the commercial banking system were not altered drastically.

Thus it appears that the social costs associated with such a basic institutional reform would be minimized if the transition occurred slowly, with reserve requirements being raised in a series of steps according to an announced timetable, as Friedman suggested, or by the Federal Reserve's supplying the reserves in exchange for a long-term interest-free lien, as Angell suggested. This would result in a gradual rather than an abrupt change in banks' earning asset portfolios. The payment of interest by the Federal Reserve on commercial bank reserves would remove upward pressures on the cost to the public of maintaining demand deposit accounts and thus avoid altering the traditional means by which the transactions are made. If the 100 per cent reserve plan were implemented in this fashion, its ultimate goals could be attained with a minimum of adverse effects. The lending function of commercial banks would in fact be on the same basis as savings and loan associations, etc., but as going concerns, banks would remain intact.

In conclusion, our completed analysis indicates that 100 per cent reserve banking offers some positive effects that would
contribute to monetary stability. To label the plan, as have many, as useless or at best not justifying its cost, appears to be unwarranted. The desirability of the general area of reform of which 100 per cent reserve banking was but a part is perhaps evidenced by the extent to which some parts have been successfully integrated into the monetary system extant. For example, Simons' suggestion that the gold reserve requirement against Federal Reserve liabilities be abolished has been adopted to a large extent, as has his suggestion to demonetize silver. Realistically, the plan would not, even in conjunction with a policy by rules, insure the abolition of economic fluctuations. The plan would make a contribution to stability by eliminating, to a greater or lesser degree, the adverse effects of a perversely elastic money supply.

Perhaps, as the body of knowledge about the relationship between money and economic activity develops, other less radical institutional reforms may be developed which would achieve everything 100 per cent reserve banking and monetary policy by rules are purported to achieve. In the meantime, it may be profitable to give the plan serious consideration. However, the advocate of monetary reform should perhaps temper his enthusiasm by bearing in mind the very accurate statement of Lauchlin Currie: "Monetary reform
proceeds slowly, each step being taken only to meet some real or fancied defect.¹

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APPENDIX

The following is an outline summary of the research findings presented in Milton Friedman and Anna J. Schwartz, *A Monetary History of the United States.*

I. Relationships between changes in the stock of money and changes in economic activity:

A. Major price inflations:


2. Peacetime price inflations: 1897-1914: Average increase in the stock of money was higher than any comparable peacetime period; price level rose by 40 to 50 per cent.

B. Peacetime periods characterized by economic stability:

1. 1882-1892, 1903-1913, 1923-1929, and 1948-1960: Year-to-year changes showed high degree of stability relative to other periods considered.

C. Severe economic contractions:

1. 1873-1879, 1893-1894, 1907-1908, 1920-1921, 1929-1933, 1937-1938: Each severe contraction associated with severe contractions in the stock of money. Of these, four were characterized by major monetary disturbances:

   a. 1873-1879: Greenback controversy and banking crisis of 1873.
b. 1893-1894: Silver controversy and banking crisis of 1873.

c. 1907-1908: Banking panic.

d. 1929-1933: Collapse of banking system.

2. Two contractions of money resulting directly from adverse policy decisions of the Federal Reserve System:


b. 1937-1938: Doubling of reserve requirements.

II. Stability of monetary relations:

A. Relationship between the money stock and velocity

\[
\text{velocity} = \frac{\text{money income}}{\text{money stock}}
\]

1. Secular relationship: 1870-1960 average steady decline of slightly over one per cent per year; more rapid decline during periods of falling prices (1880's and early 1890's); more slowly during periods of rising prices (1897-1914).

a. Major exceptions: Major declines of velocity during 1930's, followed by a rebound; and during World War II, followed by rebound.

2. Cyclical behavior:

a. During contractions, velocity declined by more than the secular rate and by less than secular rate during expansions.

b. Statistical evidence:

1. Observed year-to-year changes in velocity were less than 10 per cent during 78 out of 91 years from 1869 to 1960.

2. Of 13 changes in excess of 10 per cent, seven occurred during the 1930's or during the two world wars.
(3) Changes in velocity expressed as a percentage of secular trend:

(a) 90-110 in 53 years.

(b) 85-115 in 66 years.

(c) Twenty-six remaining years include 12 years during 1869-1894 when income figures were defective, and seven during Great Contraction, and the two world wars.

B. Relationship between changes in the stock of money and cyclical movements in economic activity.

1. On the average, the stock of money increased at a higher rate than money income, with the increase being more rapid than the average during expansions and less rapid during contractions.

2. The rate of increase in the stock of money tended to reach its peak "well before the peak" of business expansions and to "speed up well before troughs."

C. Relationship between the stock of money and its determinants.

1. Stock of high-powered money: A fairly stable relationship noted (approximately four-to-one ratio) between high-powered money and the total stock of money, even though the stock of high-powered money has been determined by differing institutional arrangements, e.g.:

   a. 1867-1879: By changes in government fiduciary issues.

   b. 1879-1914: By changes in gold flows and changes in national bank note issues and silver purchases.

   c. 1914-1960: Changes in Federal Reserve credit outstanding (except 1934-1940, when gold flows dominated).
2. Deposit currency ratio: Most important during periods when the public's loss of confidence led to an attempt to convert deposits into currency, thus producing strong downward pressure on the stock of money, i.e., 1873, 1893, 1907, and most notably, 1930-1933.

   a. The deposit-currency ratio rose fairly steadily from approximately 1.20-1 in 1867 to approximately 12-1 in 1930, then declined rapidly to approximately 4.5-1 in 1933.

3. Ratio of deposits to reserves: Like the currency deposit ratio, the ratio of deposits to reserves has been significant during periods of financial crisis when attempts by banks to lower the ratio resulted in a strong downward pressure on the total stock of money. Normally it increased during expansions and decreased during contractions of economic activity.

III. Independence of monetary changes:

   A. Changes in the stock of money have occurred that were not an immediate or necessary consequence of contemporaneous changes in business activity.

   B. Exogenous changes in the stock of money and associated changes in economic activity:

      1. Period 1897-1914: Increases of world production of gold (resulting from development of the cyanide process of separating gold from ore and new gold discoveries in Yukon territory and South Africa), associated with more than doubling of prices and a comparable rise in money income.

      2. World Wars I and II: Increases in stock of money resulted from deliberate policy decisions regarding wartime finance.

      3. Deliberate policy actions by the Federal Reserve "... which cannot be regarded as necessary or
inevitable economic consequences of contemporary changes in money income and prices.\(^1\)

a. January-June, 1920: Rediscount rates rose from four to seven per cent at a time when member banks were borrowing from Reserve banks more than the total of their reserve balances.

b. October, 1931: Rediscount rates increased from 1-1/2 per cent to 3-1/2 per cent in a two-week period at a time when "... a wave of failures was engulfing commercial banks ... and indebtedness to the System was growing."\(^2\)

c. July, 1936, and January, 1937: Announcement of doubling of reserve requirements at a time when Treasury was engaged in gold sterilization.

d. Each of the contractionary actions was followed by declines in the stock of money, the price level, industrial production, money income and real income.\(^3\)


\(^2\)Ibid.

\(^3\)The foregoing outline summary was adapted from Chapter 13, "A Summing Up," Ibid., pp. 676-700.
VITA

Donald R. Market, son of Mr. and Mrs. W. H. Market, was born in Gueydan, Louisiana, on November 10, 1933. He graduated from Port Neches High School, Port Neches, Texas, in 1952. From September, 1952, to July, 1956, he served in the United States Air Force as a personnel specialist, with assignments in Anchorage, Alaska, and Washington, D. C. Between February, 1955, and May, 1956, he was a part-time student at George Washington University.

In July, 1956, he enrolled at Lamar State College of Technology, Beaumont, Texas, where he received the degree of Bachelor of Business Administration with a major in economics in January, 1959.

He enrolled in the Graduate School at Louisiana State University in February, 1959. In June, 1959, he married Jean Tribble of Beaumont, Texas. During the 1959-1960 academic year he was a Graduate Assistant in the Division of Research. In August, 1960, he received the degree of Master of Science in economics.

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Between September, 1960, and August, 1962, he was an Instructor of Economics at Arlington State College, Arlington, Texas. In February of 1961 his first child, Jan Marie, was born.

He returned to Louisiana State University in September, 1962, to pursue the degree of Doctor of Philosophy in economics. He remained in residence until August, 1965; in September, 1963, his second child, John Andrew, was born. During this period he served as a Graduate Teaching Assistant (1962-63) and as a Special Lecturer (1964-65). He held an Earhart Fellowship during 1963-64 and a National Science Foundation Fellowship during the summer of 1965. He completed general examinations and was admitted to candidacy for the degree of Doctor of Philosophy in January, 1965.

During the 1965-66 academic year, he was an Assistant Professor of Economics at Texas Christian University, Fort Worth, Texas; and in January of 1966 his last child, David Patrick, was born. Currently, he is an Assistant Professor of Finance at the University of Arkansas, Fayetteville, Arkansas.
EXAMINATION AND THESIS REPORT

Candidate: Donald Raymond Market

Major Field: Economics

Title of Thesis: THE THEORY OF 100 PER CENT RESERVE BANKING: HISTORICAL DEVELOPMENT AND CRITICAL ANALYSIS

Approved:

[Signatures]

EXAMINING COMMITTEE:

[Signatures]

Date of Examination: April 28, 1967