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Conception and Birth of the Federal Reserve System, 1896–1914

Prologue

As a result of the long and painful Civil War, the slavery issue was resolved and national unity assured, setting the stage for economic growth on a grand scale. In the remaining third of the nineteenth century, industrial and agricultural growth were rapid, the railroad network was greatly extended, urbanization accelerated, and the population grew rapidly and spread across the country. While the outcome of the war provided a firm political basis for the march of economic development, it did not solve the problem of how to provide the nation with a satisfactory monetary system. Americans could build and run something solid or earthy, like a railroad, a steel mill, or a farm, but found a satisfactory monetary system to be elusive. Money seemed to be a perpetual national problem; it had been intractable before the Civil War and it defied satisfactory solution during the three decades (the "Gilded Age") that followed.

The National Bank Act of 1863, adopted as both a war measure and a reform of banking, provided a fresh approach to the banking problem by authorizing the federal government to grant charters to "national banks." These privately owned commercial banks could create a limited amount of national bank notes as circulating paper money, but the arrangement failed to provide an amount of currency appropriate to the nation's needs. During the Civil War the convertibility of paper currency into specie by the federal government was suspended, and the government issued irredeemable paper money in the form of United States notes, or "greenbacks." The country remained on a fiduciary or paper money standard until January 1, 1879, when the greenbacks were made convertible into specie as the gold standard was restored.

Despite the return to the gold standard, the question of the monetary standard remained unsettled as the advocates of silver money pressed for the

adoption of a bimetallic (gold and silver) standard. They failed to achieve the goal of making silver a standard metal, but they succeeded in getting the government to add to the money supply by purchasing considerable amounts of silver. Finally in 1896 a showdown battle occurred between the defenders of the gold standard and the silverites in the presidential election between McKinley and Bryan. A review of this epic contest provides a good, as well as dramatic, point of departure for the events of the early part of the twentieth century.

Money—*The Issue of the Presidential Election of 1896*

The political storm over money began to build early in President Grover Cleveland's second term as the Panic of 1893 swept across the country, driving farm prices down drastically, closing thousands of banks and businesses, and causing severe unemployment. Groups favoring free silver and currency expansion, in existence since the 1880s, were joined by new converts to their cause. The demand for "inflation" to relieve the heavy burden of debt and revive the economy spread to others besides Populists; a swelling chorus of voices in the West and South joined in to make money the primary issue before the nation.

In 1893 and 1894 the government had to take emergency measures to keep the country on the gold standard. Under the Sherman Silver Purchase Act of 1890, federal purchases of silver bullion were paid for by the issuance of treasury notes legally redeemable in specie. The government could redeem them by paying out either gold or silver, but in order to adhere to the gold standard it paid out only gold, thereby reducing the gold stock by April 1893 to less than the \$100 million considered as the necessary reserve. Cleveland, determined to preserve the gold standard, called Congress into special session in August, and at the end of October the Silver Purchase Act was repealed as the administration wished, although in the process the president's own Democratic party was badly split. The country at large also was split as westerners and southerners by the millions opposed repeal. They saw their sections of the country, largely agricultural and with heavy debts owed to the eastern financial and business interests, as suffering exploitation at the hands of the wealthy creditor classes of the East. In 1894, when the gold reserve again was deemed excessively low, Cleveland's secretary of the treasury, John G. Carlisle, acquired gold from private bankers by the sale of government bonds. The cost to Cleveland was high in terms of the bitter opposition of those favoring free silver; to many, Cleveland was a puppet of Wall Street. Economic conditions in 1894 were extremely bad in agricul-

ture and in industry, with investment spending, consumption, and employment at low levels.

By 1895 the issue of free silver had become a great emotional issue, perhaps the most profound national question since the Civil War. Advocates of silver presented it as the monetary cure for the acute problems of the mass of farmers and workers, whereas gold was viewed by them as benefitting the rich bondholders and other creditors whose claims were worth more in purchasing power as prices fell. By 1895 many Republicans and Democrats were becoming sympathetic to the free-silver forces, thereby causing disaffection and dispute within the two major parties, both of which were led by supporters of the gold standard. A young Democratic congressman from Nebraska, William Jennings Bryan, who was soon to vault into prominence as a result of his role concerning the money question, took the view that his party did not owe much gratitude to its president; in fact, he observed that the Democrats should feel toward Cleveland as "toward the trainman who has opened a switch and precipitated a wreck."

By the time the Democratic national convention was held in Chicago during July 1896, the supporters of silver, with the 36-year-old Bryan as their leader, had gained control of the party. Bryan's famous Cross of Gold speech is credited with winning the presidential nomination for him. In it he gave eloquent expression to the frustration felt by large segments of the population. It is interesting that the concept now referred to as "trickle down"¹ was described by Bryan as the "leak through" approach of his opponents.

Upon which side will the Democratic party fight; upon the side of "the idle holders of idle capital" or upon the side of "the struggling masses"? That is the question which the party must answer first, and then it must be answered by each individual hereafter. . . . There are two ideas of government. There are those who believe that, if you will only legislate to make the well-to-do prosperous, their prosperity will leak through on those below. The Democratic idea, however, has been that if you legislate to make the masses prosperous, their prosperity will find its way up through every class which rests upon them.

You come to us and tell us that the great cities are in favor of the gold standard; we reply that the great cities rest upon our broad and fertile prairies. Burn down your cities and leave our farms, and your cities will spring up again as if by magic; but destroy our farms and the grass will grow in the streets of every city in the country.

. . . If they dare to come out in the open field and defend the gold standard as a good thing, we will fight them to the uttermost. . . .

[W]e will answer their demand for a gold standard by saying to them: You shall not press down upon the brow of labor this crown of thorns, you shall not crucify mankind upon a cross of gold.²

Following Bryan's peroration there was momentary silence followed by a great roar and a tremendous emotional demonstration. The enthusiasm was contagious, and gave the campaign an evangelical flavor.

The following excerpt from the "money plank" of the Democratic platform of 1896 shows precisely one of the alternatives offered to the country on this chief issue of the campaign.

We are unalterably opposed to monometallism which has locked fast the prosperity of an industrial people in the paralysis of hard times. Gold monometallism is a British policy, and its adoption has brought other nations into financial servitude to London. It is not only un-American but anti-American. . . .

We demand the free and unlimited coinage of both silver and gold at the present legal ratio of 16 to 1 without waiting for the aid or consent of any other nation. We demand that the standard silver dollar shall be a full legal tender, equally with gold, for all debts, public and private, and we favor such legislation as will prevent for the future the demonetization of any kind of legal-tender money by private contract.

We are opposed to the policy and practice of surrendering to the holders of the obligations of the United States the option reserved by law to the Government of redeeming such obligations in either silver coin or gold coin.³

The split over the money question was less serious for the Republicans than for the Democrats, although there were defections from their party ranks also. The Republican party approached the electorate as the party that had put the country on the gold standard in 1879, was proud of having done so, and would defend the gold standard against the reckless and divisive Democrats. In his acceptance speech, William McKinley stressed both the money and tariff problems and asked the nation to unite behind the twin pillars of the gold standard and protective tariffs.

For the first time since 1868, if ever before, there is presented to the American people this year a clear and direct issue as to our monetary system, of vast importance in its effects, and upon the right settlement of which rests largely the financial honor and prosperity of the country. It is proposed by one wing of the Democratic party and its allies, the People's and Silver parties, to inaugurate the free and unlimited coinage of silver by independent action on the part of the United States at a ratio of 16 ounces of silver to 1 ounce of gold.

The mere declaration of this purpose is a menace to our financial and industrial interests, and has already created universal alarm. It involves great peril to the credit and business of the country, a peril so grave that conservative men everywhere are breaking away from their old party associations and uniting with other patriotic citizens in emphatic protest against the

platform of the Democratic National Convention as an assault upon the faith and honor of the Government and the welfare of the people. We have had few questions in the lifetime of the Republic more serious than the one which is thus presented.⁴

The Republican party platform, diametrically opposed to that of the Democrats but equally fervent and unequivocal, had this to say in its section dealing with money:

The Republican party is unreservedly for sound money. It caused the enactment of a law providing for the redemption (resumption) of specie payments in 1879. Since then every dollar has been as good as gold. We are unalterably opposed to every measure calculated to debase our currency or impair the credit of our country. We are therefore opposed to the free coinage of silver, except by international agreement with the leading commercial nations of the earth, which agreement we pledge ourselves to promote, and until such agreement can be obtained the existing gold standard must be maintained. All of our silver and paper currency must be maintained at parity with gold.⁵

The election of 1896 resulted in victory for McKinley and the gold standard. McKinley received 7.1 million popular votes and 271 electoral votes to Bryan's 6.5 million and 176. Along with the ballots, the monetary die had apparently been cast in the shape of the gold standard; "apparently" because it took an exogenous development in the form of increased production from gold discoveries in the years that followed the election to eliminate serious doubt about the gold standard and so draw the teeth at last from the silver movement. That movement, having challenged the gold standard so passionately but unsuccessfully, virtually disappeared until its revival briefly in the 1930s.

The Gold Standard Act of 1900

Money, which represents the prose of life, and which is hardly spoken of in parlors without an apology, is, in its effects and laws, as beautiful as roses.

—Ralph Waldo Emerson⁶

As noted above, the country had been on a de facto monometallic gold standard since 1879, but it had not yet embraced the gold standard clearly and unambiguously. Under the Resumption Act (1875) which was effective January 1, 1879, the secretary of the treasury was required to redeem United States legal-tender notes in coin. As a practical matter this meant gold coin,

because in 1873 silver ceased to be standard money; few silver dollars were in use, so Congress discontinued the free coinage of silver at that time. Still, the law did not unequivocally set the country on a gold basis, and the agitation for silver as well as the actual purchase of silver during the eighties and nineties raised some doubt as to the permanence of our adherence to gold.

On March 14, 1900, definitive legal recognition was given to the gold standard by the Currency Act of 1900, usually referred to as the Gold Standard Act. Two fundamental provisions of the act were:

1. The U.S. dollar was defined as 23.22 grains of pure gold and declared to be the standard unit of value. All money issued or coined by the United States was to be maintained at parity with this standard. Since there are 480 grains in an ounce, the price of gold was set at $480/23.22 = \$20.67$ per ounce.
2. The secretary of the treasury was directed to set up a separate reserve in gold coin and bullion of \$150 million for use in redeeming greenbacks and treasury notes of 1890.

The act also provided for the withdrawal of the treasury notes of 1890 from circulation.

In 1900 Bryan and McKinley met in a rematch of the epic contest of 1896, with McKinley again triumphant, his popular and electoral vote margins larger than in 1896. The Democratic platform retained its 1896 position on money but gave it much less prominence. By 1900 the price level had risen from its trough of the mid-nineties, and the economy was vigorous. The Republicans were able to claim credit for prosperity and took pride in having made the gold standard secure. The two successive defeats of Bryan mark the end of the silver movement of the late nineteenth century. The basic reason for the triumph of the gold standard was the huge increase in the world supply of monetary gold after 1897. It is ironic that the gold standard was viewed as successful, because fortuitous increases in gold production resulting from gold strikes achieved the same results that the inflationist silverites had so ardently intended to bring about by the monetization of silver. In keeping with Emerson's simile, it appeared that money, whether gold or silver, could have beautiful effects provided it was sufficiently abundant.

The Heyday of the Gold Standard

The commercial world has become more and more committed to the gold standard through a series of historical events having little if any

connection with the fitness of that or any other metal to serve as a *stable* standard. So far as the question of monetary stability is concerned, it is not too much to say that we have hit upon the gold standard by accident just as we hit on the present railway gauge by the accident of previous custom as to road carriages; and just as we hit upon the decimal notation by the accident of having had ten fingers. . . . Now that we have adopted a gold standard, it is about as difficult to substitute another as it would be to establish the Russian railway gauge or the duodecimal system of numeration.

—Irving Fisher⁷

In the three decades before 1897 the economy experienced a basically deflationary trend. The fall in prices is attributable in the early part of the period to a slower rate of increase in the money stock than in real income; after 1880 a fall in the velocity of money was important. During the period of pronounced distress from mid-1892 to mid-1896 the money stock failed to grow at all. In contrast, from 1897 to 1914 the money stock grew at a rate of about 7.5 percent per year, and wholesale prices increased at a rate of 2.5 percent per year. The gold stock of the United States, to which the money stock was closely linked, rose at an average rate of 6.8 percent per year.⁸

World gold production increased dramatically from the 1890s until World War I as a result of major discoveries (chiefly in South Africa, but also in Alaska and Colorado) and improved techniques of mining and refining. The gold stock of the United States grew more rapidly than did the world total; by 1914 almost a quarter of the total world gold stock was in the United States.

Today the basic money supply is most often defined as the public's holdings of currency plus demand deposits and other "transactions balances" in depository institutions. Several definitions of money are now in use, and in recent years their contents have been subject to change. For the early years of the century the definition is straightforward: prior to 1914, separate data for demand deposits and other (time) deposits are not available; the distinction between them was not then significant. The money supply for this period may be taken to be currency plus total deposits in commercial banks. From 1900 to 1914 the gold stock rose from \$916 million to \$1.9 billion, or by slightly more than 100 percent. The money stock rose from \$6.4 billion to \$16.1 billion, an increase of more than 150 percent. Thus the ratio of money to gold was about 7 to 1 in 1900 and 8.5 to 1 in 1914.

Let's examine the glittering standard more carefully. Gold provided the chief basis for the international monetary system from the 1870s to World War I, roughly forty years. Its remarkable prestige before 1914 would be quite understandable if based on a long and glorious history of success, but in fact the gold standard was something of a flash in the pan from a historical

perspective. Great Britain adopted the gold standard in 1821 shortly after the Napoleonic wars. About fifty years later, other leading countries, including France, Germany, and the United States, followed suit, making gold the common monetary denominator and regulator of exchange rates and national money supplies. It is of the essence of the system that it be international, the participating countries being interdependent, with their prices and incomes linked through the gold standard mechanism.

Each country on the gold standard defined its monetary unit as a fixed quantity of gold, and then undertook to keep all of its money at parity with the gold monetary unit. For the system to function, the nations had to accept certain rules of behavior (the "rules of the gold standard game"). Gold could be coined freely, nongold types of money could be redeemed in gold, and gold could be imported and exported without restriction. The value of each currency in terms of another gold standard currency, that is, the rate of exchange, resulted (within narrow limits) from the relative gold contents of the currencies. Such stability of exchange rates is conducive to international trade and capital flows and thus to an expanding world economy. When imbalances in payments between nations occur, they are automatically eliminated by international flows of capital and gold. Modified versions of the gold standard developed later in which gold coinage was omitted, but the essential monetary control features of the system remained intact.

From the point of view of the domestic effects of the gold standard, which are of particular concern here, the central function of the gold standard is that it *controls the creation of money*. The quantity of gold *automatically* determines the money stock of the country, not with precision but within fairly definite limits. The money supply is tethered to the amount of gold. There is some give to the rope, but in practical terms an expanding money supply will normally reach the end of its tether in time to prevent an excessively large growth of money.

From 1879 to 1914 gold could be taken to the American mints and exchanged for gold coin without limit. Gold moved in and out of the country without restriction. In addition to gold coin, gold certificates (yellowbacks), that is, paper money issued by the Treasury representing gold coin or bullion held in the Treasury's vaults, also circulated. Unlike gold itself, however, the gold certificates (warehouse receipts) were not legal tender. Most of the country's gold was outside the Treasury, held by the general public and the banks. Of the \$916 million total gold stock in 1900, 75 percent was outside the Treasury; of the \$1.9 billion in 1914, 87 percent was outside the Treasury.

The amount of currency outside the Treasury grew by about \$1.5 billion from 1900 to 1914. Of this increase, about \$950 million or 64 percent was gold (coin and certificates) and some \$400 million or 28 percent consisted of national bank notes. The other types of money, in particular silver and greenbacks, were essentially unchanged except for fractional coins that were

only a minor part of the total. The Gold Standard Act of 1900 required the government to keep all of the nongold types of money at parity with gold, and all of the different types of money were in fact interchangeable at par with gold throughout the country. What stands out is that over 90 percent of the additional money came from either additional gold (the prime source) or additional paper money issued by the privately owned commercial banks with federally granted charters.

As noted earlier, the linkage of a nation's money supply to its stock of monetary gold under the gold standard is a cardinal feature of that system. To be more explicit about how total money and gold are related, it is useful to employ the concept of the monetary base or, alternatively, high-powered money. Before 1914 it consisted of currency held by the public plus vault cash held by the banks. It is called high-powered because every dollar of such money that is held as bank reserves can support several dollars of bank deposits, or is the base upon which the debt money of the banks (bank deposits) is built. The size of the multiple depends upon what ratio commercial bank deposits are to bank reserves, and what ratio bank deposits are to the amount of currency in the hands of the public. Changes in these ratios were of some significance during the years from 1900 to 1914, but it is clear that the growth of the money stock was due predominantly to the rise of high-powered money. We have noted that the lion's share of the rise of high-powered money was in the form of gold. Gold was the central core of the currency and thus of the total money stock. Since deposits were convertible by depositors into currency, and since currency was convertible into gold, the amount of gold was the foundation of the monetary structure. It follows that the larger the foundation, the larger the superstructure of total money.

Some Terminology and Institutional Features of the Period

"Scorecard here—you can't tell the players without a scorecard" was the traditional call of vendors in ballparks in the days when players had only numbers on the backs of their jerseys. This section identifies terms used on the monetary field of play early in the twentieth century.

Bank deposits were not considered by economists to be money, although the importance of bank deposits, via checks, to serve as means of payment was clearly recognized. A broader concept, *circulating media*, was used for the things that served as a means of exchange or payment. Money was one form of circulating medium, and bank deposits were another. The distinction lay in the extent of acceptability: money was *generally* acceptable, that is, acceptable by everyone, whereas a check required the consent of the payee.

The definition of money was very narrow; bank deposits had not yet received the respect or status attached to the term money.⁹

The money stock was classified into two groups, primary and fiduciary. Primary money consisted of a commodity which had as much value in non-money form as it did as money, gold coins being the quintessential example and the only type in use in the United States. Fiduciary money lacked inherent value, or at any rate full value, and got its value from confidence that it could either be exchanged for primary money or else be used directly to pay debts or buy goods and services.

From 1900 to 1914 commercial bank deposits plus national bank notes nearly tripled from \$5.5 billion to \$15.0 billion, while the number of banks doubled. With some 28,000 commercial banks by 1914, the United States had a great many more banks than any other country. Compared with banks in other major countries, ours were much smaller on average. They were mostly independent units doing mainly a local business and owned by residents of the communities where they were located. Another distinctive characteristic stemmed from the constitutional division of powers between the federal government and the states. It is usual to describe the U.S. commercial banking business as dual, because bank charters of incorporation are issued by the federal government to national banks and by state government to state banks. It would be more accurate to describe the scene in the early part of the twentieth century as a triad, since private or unincorporated banks constituted 37 percent of the banks in 1900. Between 1900 and 1914 the number of state banks more than tripled, national banks doubled, and the private banks declined by 40 percent.

Trust companies were a very important financial species in the period 1900–1914, although they were not new and had a track record in the panics of 1857 and 1873 that failed to inspire confidence in their longevity. The term comes from the function of trustee, fiduciary, or agent in various capacities, such as administering trust funds and serving as custodian for property held in trust. The financing of industry, especially the railroads, provided lucrative trust opportunities in connection with corporate securities. In addition, with the rise of a super-rich class, the families of mortal tycoons could ease the burden of protecting their gigantic nest eggs by engaging a professional financial curator. Of particular importance is the fact that the trust companies were also able to carry on a general banking business; they were in fact commercial banks in most cases and were so recognized in banking statistics, although technically they were not commercial banks.

For decades the trust companies, all of them under state charter, escaped government regulation for the most part. From the viewpoint of commercial banks, and especially national banks, they constituted unfair competition, because no reserve requirements were imposed on them in most states, they

had tax advantages, and they could make mortgage loans not permitted by national banks. Some of the trust companies outside large cities were primarily engaged in banking, with trust business a fringe activity. National banks, prohibited from trust business, sometimes slipped the leash by forming separate affiliates, for example, the Bankers Trust Company in New York in 1903. With their greater freedom and high profit opportunities, the trust companies particularly, and the state-chartered banks also, grew rapidly. The trust companies proved to be a weak link in the chain during the Panic of 1907 when the Knickerbocker Trust Company fell and there were heavy runs on others. The shock of 1907 induced greater state regulation of trust companies, with the result that they gradually came to be treated on a par with state-chartered banks.

Private banks, or banks owned by individuals and partnerships, operated without a corporate charter from either the federal or a state government. In 1900 they were slightly more numerous than state banks and considerably more numerous than national banks. Their number declined substantially by 1914, and this process of gradual elimination continued until they became a negligible element by the 1930s.

Some of the private banks were large and impressive, but there were many small private banks that are a fascinating part of the country's development. A bank would appear in a new town as an offshoot of a shopkeeper's or a merchant's business because it was the safest place in town to store money. The "bank" might be a small part of the store. Some fifteen hundred or so of such small-scale banks were in existence by 1909. Usually as they grew they graduated into chartered banks in order to gain limited liability and additional owners. Banks too small to meet the minimum capital requirements for national banks could operate with state charters or as private banks. As Trescott points out, the private banks and trust companies filled roles that were proscribed for national banks.¹⁰

The Panic of 1907

Panics, in some cases, have their uses; they produce as much good as hurt. Their duration is always short; the mind soon grows through them and acquires a firmer habit than before. But their peculiar advantage is, that they are the touchstone of sincerity and hypocrisy, and bring things and men to light, which might otherwise have lain forever undiscovered.

—Thomas Paine¹¹

In 1907 a blow usually described as either a panic or a crisis stunned the American economy. The two terms have been used interchangeably, but it

seems helpful to differentiate between them and then to conclude that the country experienced both a panic and a crisis. A *crisis* connotes great danger or trouble with a decisive or crucial time or event which sooner or later resolves the difficulty; the outcome may range from highly satisfactory to disastrous. History is notched by crises: the Cuban missile crisis, the dollar crisis, the oil crisis, and so forth. *Panic* refers to a type of behavior at a time of crisis. The derivation of the word is quite lighthearted: the Greek god Pan, with human torso and the legs, ears, and horns of a goat, dashes from the underbrush playing pipes and startles passers-by. The modern connotation, hysterical fear, is deadly serious, and it is doubtful that many have Paine's view of its advantages. The phrase "hit the panic button" is associated with World War II when aircraft on bombing missions used a warning system by which crew members were notified of damage so extensive as to make abandonment imminent. A pilot who overreacted to a given situation could cause the crew to bail out unnecessarily by hitting the panic button. In a financial panic, fear of a collapse of the financial system leads to sudden huge withdrawals of deposits and a wave of selling various assets for cash. People bail out of a financial structure they fear will crash, and by doing so either cause the disaster or enlarge it.

The decade prior to 1907 was generally very prosperous. A mild two-year contraction that ended in 1904 interrupted the advance, but it was followed by an impressively strong and long expansion that featured industrial growth and was accompanied by rapid growth of the money stock as well as stock market speculation. By May 1907 the economy reached a cyclical upper turning point, and business activity entered a period of contraction of about a year's duration. The decline was gentle until October, when panic seized the banks, with the result that payments were restricted, that is, banks generally refused to pay out currency or specie to depositors on demand. Not only did banks fail but, of greater importance, the contraction of the economy greatly intensified. From 1907 to 1908 the net national product fell by 11 percent in real terms. The depression ranks among the more severe contractions experienced by the economy over the past century.

From May until September there was some decline in the money stock, but the public did not yet distrust the banks. In October banks came under severe pressure; the public ran on the banks, demanding currency in exchange for deposits, and the banks sought to increase their currency holdings so as to be able to meet their depositors' demands. With both public and banks scrambling for liquidity, the total money stock declined by 5 percent in five months. Prices collapsed on the stock market as banks called in loans used to finance security holdings. Interest rates on call money soared as high as 125 percent. Banks throughout the country withdrew currency from their balances in New York banks. The New York banks, fearing a greater drain

on their reserves, may have panicked by prematurely restricting the convertibility of deposits into currency.

Among the financiers of the era, one towered above all the others, the Great Pierpont Morgan, as Frederick Lewis Allen called him. An image emerges of a financial Paul Bunyan, a vision not inconsistent with that of the greatest of the robber barons. Morgan was the embodiment of financial power, and whatever degree of justification (or lack thereof) might attach to his personal power, it was recognized as a fact.

For the first three weeks of October 1907 Morgan was in Richmond, Virginia, attending the triennial Episcopal Convention. He received numerous messages from New York as the panic developed but decided to stay in Richmond until the conclusion of the convention to avoid adding to a sense of alarm by an early departure. Upon returning to New York, Morgan devised a strategy to halt the financial collapse, and then directed a series of difficult and exhausting actions of implementation. The saying that "Wherever Macgregor sits, there is the head of the table" applied; wherever Morgan was, often in his opulent library, was the command center for the strategy by which this private individual dealt with a most urgent national problem. As self-appointed but generally recognized commander-in-chief, Morgan had his trusted banking subordinates bring him intelligence and provide help in evaluating the condition of financial institutions under attack, thereby enabling him to decide which units were too vulnerable to be defended, and when and where to effect a rescue. At critical times he called on financial allies and rallied them to the common cause. Morgan's outlook is indicated by an alleged incident in which a banker came to his office at 23 Wall Street and confessed he was disturbed by being below his legal reserve. Morgan replied, "You ought to be ashamed of yourself to be anywhere near your legal reserve. What is your reserve for at a time like this except to use?"¹² There were two weeks of chaos: loans were being called in large amounts, banks were suffering runs, and the stock exchange was demoralized.

Some major developments:

A run developed at the Knickerbocker Trust Company, a large bank whose investments were considered questionable. Morgan's men, including Benjamin Strong, who later became governor of the Federal Reserve Bank of New York, examined Knickerbocker's condition and found it too far gone for resuscitation. Its cash ran out, and it failed.

A run at the Trust Company of America was met successfully after Strong advised that the bank appeared to be solvent. Morgan, together with allies from the First National and National City banks, provided cash in the nick of time to avoid closure.

U.S. government funds were transferred to banks in New York by Sec-

retary of the Treasury George B. Cortelyou to be available to the hard-pressed trust companies, and John D. Rockefeller made \$10 million available for this purpose also.

The rush to sell securities to get cash caused stock prices to plummet. When the president of the Stock Exchange reported that the exchange faced closing as the result of a lack of money to buy stock, Morgan got the large banks and the Treasury to lend money, and the Stock Exchange stayed open.

Morgan himself bought bonds from the City of New York which required \$30 million to pay off obligations coming due at a time when it could not raise the funds in the money market.

The uniquely powerful role of Morgan probably rested on the widespread belief that if his leadership failed, so would the whole financial world. Six years later the country set up a central bank to provide the kind of ultimate lending function that Morgan tried to provide as an individual. "He had been, as it were, a one-man Federal Reserve Bank."¹³

The restriction of payments by the New York banks was quickly emulated by banks throughout the country. Some states gave legal sanction to the restriction by declaring holidays, but in most cases the situation was simply accepted. During the last two months of 1907, substitutes for currency were issued, such as clearinghouse loan certificates used for interbank settlements, and banks usually supplied cash for payrolls. The restriction period ended in January 1908. Friedman and Schwartz, while recognizing that the bigger and stronger New York banks might conceivably have fended off restriction by heavy and prompt lending to their weaker brethren and by supplying the currency needs of outside banks, defend the relatively early restriction of payments. Weak banks failed, but such failures did not cause a domino effect, and few banks failed because of temporary illiquidity. "Restriction of payments thus protected the banking system and gave time for the immediate panic to wear off, as well as for additional currency to be made available."¹⁴

The shock of the events of late 1907 led to much reflection and eventually to major reform. One immediate response was a series of addresses at Columbia University designed to explain the crisis and to suggest principles on the basis of which the currency system might be reconstructed. The papers were published in a volume entitled *The Currency Problem and the Present Financial Situation*. Professor Edwin R.A. Seligman, a prominent Columbia economist (seventh president of the American Economic Association), discussed the crisis in historical perspective. Seligman reviewed eight U.S. crises of the nineteenth century and found their general features to be similar. During periods of expansion there developed an overcapitalization of anticipated

earnings of growth industries through expansion of bank credit and new stock issues. This process went on until the high capitalization of assets was recognized as clearly excessive relative to actual earnings. A readjustment of values involving losses had to take place. If the financial world acted carefully and skillfully, the adjustment of values might be gradual and the economy could pass through its depressed period without the trauma of panic. But if confidence was shaken by some occurrence, a bank refusing credit, the failure of a prominent firm—even a rumor might be sufficient—then a crisis occurred. Seligman vividly summed up his explanation of the recent events.

When we come particularly to the crisis of 1907, we find that the general causes were very much the same. The last decade has been characterized by the most unexampled prosperity in our history. The most striking initial cause is the prodigious increase in the gold supply. . . . The rapid accumulation of gold, much of which went into the bank reserves, enabled the financial institutions to expand their credit facilities manyfold, and as a consequence enterprise flourished in every direction. . . . Values were pushed up on all sides and the hopes of a prosperous community were capitalized with a recklessness born of unbounded faith. The pace was too rapid; the reaction was bound to ensue. In the late autumn of 1907 the revulsion was precipitated, with all the familiar accompaniments of an acute panic such as the collapse of several financial institutions, the sudden curtailment of loans, leading to the failures of some prominent business concerns.¹⁵

Seligman compared the American experience very unfavorably with that of Europe, where acute financial crises had been virtually eliminated. The lesson, on which all speakers agreed, was that legislative reform of our currency system was needed.

For a banker's view we have the observation of Frank A. Vanderlip of the National City Bank, later president of that institution. Having just been under the gun of the crisis, he understandably considered it "by whatever standard you choose, measured either by the direct financial losses, by the disorganization of industry, by the destruction of confidence . . . one of the great calamities of history."¹⁶ Such overstatement reveals the distraught state of mind of (in Veblen's term) a "captain of finance." Vanderlip had some important insights to offer on the nature of the system. His comments on the psychology and behavior of the public and the bankers provide a remarkably frank explanation of how everyone looked out for himself. Even the most underdeveloped imagination would have little difficulty divining what happened to the hindmost.

In a time of crisis two things are likely to happen. The public becomes suspicious of the banks and resorts to money as a store of value, converting

its bank credits into cash and hoarding the cash. At the same time, the bankers are likely to become suspicious of one another as well as apprehensive of the probable demands on the part of their customers, and there begins a scramble for reserve money. Each institution stands alone, concerned first for its own safety, and using every endeavor to pile up reserves without regard to what the effort may cost the financial situation at large.

The result is an absolute immobility of reserves, and the effect upon the general situation is probably far more disastrous than that produced by all the private hoarding. . . . Many banks are carrying reserves far in excess of their needs. They will neither increase loans and thus build up their deposit credits to a normal ratio to the reserve they hold, nor will they remit their surplus reserve to their reserve agents in the financial centers, for fear that they might be unable to get the money back again promptly if they should need it.¹⁷

The Reformation

America's leading manufacturing, transportation and commercial concerns years ago attained heights of economic efficiency which made them the envy of foreigners. None, however, envied us our banking system.

—Edwin Walter Kemmerer¹⁸

It was clear from the Panic of 1907 that reform was overdue, but agreement on need did not extend to the means required to achieve it. A stopgap remedy was quickly provided by the Aldrich–Vreeland Act (May 30, 1908), but more lasting reform came years later after much careful study, discussion, and debate, in the form of the Federal Reserve Act (December 23, 1913).

The Aldrich–Vreeland Act, named for Senator Nelson W. Aldrich and Representative Edward B. Vreeland, dealt with the problem of how to provide enough currency quickly to satisfy the demands of the public when it wanted to convert large amounts of deposits into cash. To do so was critical for the system, because if total currency (high-powered money) could not be expanded rapidly, the withdrawal of it from the banks would deplete their reserves and by a sort of reflex action make them reduce their liabilities and so reduce the total means of payment (deposits plus currency) by a multiple amount. “Short-period ‘elasticity’ in one component of the money stock—currency—was therefore desirable in order to prevent undesired ‘elasticity’ in the total money stock.”¹⁹

Aldrich–Vreeland permitted banks to join together in groups to form National Currency Associations which were empowered to issue emergency currency. The banks would deposit certain approved assets (commercial paper and bonds) with the association; limits would be placed on the amounts

of currency that could be created. The notes were to be retired promptly once the emergency ended, a process to be encouraged by taxes on the notes. Aldrich-Vreeland was used only once. When the outbreak of World War I set off a run on the banks, a large amount of emergency currency was pumped out, very likely scotching a panic. A year later (June 30, 1915), Aldrich-Vreeland, no longer deemed necessary, expired.

A provision of the Aldrich-Vreeland Act authorized the creation of a National Monetary Commission which served as the incubator for the Federal Reserve Act. Aldrich and Vreeland were chairman and vice-chairman respectively of the eighteen-member congressional body. Through hearings and many special studies, the commission undertook an exhaustive examination of the monetary system and possible remedies for its deficiencies, and in 1912 issued a report recommending a plan of reform. Proposals for a central banking institution were highly contentious politically. A bill by Senator Aldrich that would have placed control of a National Reserve Association in the hands of bankers was rejected, although many of its features were later included in the Federal Reserve Act. Soon after his election, President Woodrow Wilson took an active interest in the preparation of a banking reform bill and called a special session of Congress in the spring of 1913 largely to deal with banking legislation. Fear of control by Wall Street on the one hand and too much government control on the other required reconciliation. Eventually the bill of Representative Carter Glass and a Senate version of it resulted in a compromise that received Wilson's signature on December 23, 1913, as the Federal Reserve Act. The legislative process was complicated and involved numerous political leaders, bankers, and academicians.

This major law established a new banking structure under the supervision of the Federal Reserve Board and twelve Federal Reserve Banks. It created a new system of bank reserves and a new form of paper money. It also improved the check clearing system, provided fiscal assistance to the Treasury, and served to mitigate the impact of Treasury revenue and expenditure flows on the banking system. The changes made by the Federal Reserve Act were varied and comprehensive, but taken as a whole, and as the considered national response to the urgent monetary problems of the time, its central function was, in the words of the Act, "to furnish an elastic currency."

Analyses of the monetary system typically focused on the related problems of an inelastic currency and a defective set of bank reserve requirements. The two are so intermingled that it seems best to consider them simultaneously. The problem of inelasticity was discussed in two main contexts, that of hand-to-hand currency and the broader concept of the money stock or supply (deposits plus currency). The inelasticity of currency was the more acute as well as the more clearly understood issue. Our earlier reference to

the problem dealt with the matter in terms of the demand by the public for currency in exchange for deposits during a time of panic. A less serious but more frequent heavy demand for currency occurred annually with the autumn harvest and its shipment to market. The banking system had very little capacity to respond to either of these demands. The ratio of deposits to currency in the banks' vaults was high; more important, there was no feasible way of creating more currency when it might be required. It was obvious that currency needed to be made expansible or elastic to compensate for the relatively little currency available to be paid out by the banks to redeem their deposits.

Banks under the National Banking System were classified by the size of the community in which they were located, and their reserve requirements depended on their classification.

Banks in the large financial centers designated as central reserve cities had a reserve requirement of 25 percent in cash. Each \$1,000 in deposits required a cash reserve of \$250.

Banks in cities classified as reserve cities had a reserve requirement of 25 percent; half had to be in cash and the other half could be on deposit in central reserve city banks. Each \$1,000 in deposits required a cash reserve of \$125 plus $(.25 \times \$125) = \156.25 .

Banks in small communities (country banks) had a reserve requirement of 15 percent; 6 percent had to be in cash and 9 percent could be on deposit in reserve city banks. Each \$1,000 in deposits required a cash reserve of \$60 plus $(.125 \times \$90)$ plus $(.25 \times \$11.25) = \74.06 .

On the basis of these legal requirements, the ratio of deposits to cash reserves ranged from 4 to 1 for central reserve city banks to 13.5 to 1 for deposits in country banks, assuming that banks conformed exactly to the legal prescriptions. In fact, banks often held somewhat more cash and/or total reserves than the legal minimum, so that the stated ratios of deposits to cash reserves represent limits rather than rigid realities. For the entire system the ratio of deposits to cash reserves averaged about 6 to 1. For every dollar that depositors in a country bank wished to withdraw in cash, the bank legally had to have only 6 cents on hand. If it needed more cash it had to turn to its deposits in reserve city banks, which in turn would draw down deposits in central reserve city banks. The latter would need to sell securities, call in loans from stock market investors, and clamp down on new loans. For sheer perversity, the loans made on the stock exchange as "call loans" deserved a blue ribbon. Considered almost perfectly liquid because they could be called, when a large number were actually called simultaneously by many

banks they might in fact be highly illiquid as a result of distress selling of securities and possibly the closing of the stock market.

The system had no outside resources on which to draw. The National Banking Act required banks to hold reserves, but the term was really a misnomer. Banks were legally prohibited from going below the average minimum reserve levels calculated over a week or two depending on the classification of the bank, and could be closed by the comptroller of the currency for violating the requirements. To gain liquidity in a time of stringency they could not avoid the necessity of contracting loans.²⁰ With deposits some six times cash reserves, when called on to convert \$6 of deposits into currency the banks could readily enough pay out \$1 from reserves, but they could not part with the remaining \$5. The bulk of reserves were legally required to be held, and the money that constituted them therefore was not really available "in reserve." A military analogy illustrates the dilemma. If a general enters a battle with 100,000 men in the line and 25,000 in reserve, but then is prohibited by the commander-in-chief from committing them, they are not actually available to affect the outcome of the battle. The reserves did serve the function of limiting the total deposits that the banks could create but they did not, except marginally, provide a reserve available to meet extraordinary demands for cash.

Given the amount of currency in existence, it was impossible for the banks to satisfy the demand for currency during a panic. Could not *more* currency be created to fill the need? Before the passage of the Federal Reserve Act (and apart from the provisions of the Aldrich-Vreeland Act referred to earlier), the type of paper money theoretically capable of expansion was the national bank note. But national bank notes, "which should have furnished the elastic element in the country's hand to hand money, were notoriously inelastic."²¹ To issue them the national banks had to deposit U.S. government bonds with the Treasury. Often the bonds were not available on terms profitable to the banks, and in addition the delay involved in depositing them and obtaining bank notes rendered this process quite impracticable. Apart from the question of favorable terms and the time element, linking the supply of currency to the amount of government debt was a primitive way of determining the amount of currency and was without justification in terms of the financial ends to be served. A link might more logically have been made to the national goat population which, according to a 1975 article in *The Wall Street Journal*, was closely related over many decades to the trend of the general economy! The point of course is that the size of the national debt was determined separately from and without regard for the currency needs of the nation.

The Federal Reserve System introduced new paper money in the form of Federal Reserve notes. The Federal Reserve Banks were required to hold a gold reserve of 40 percent against the notes, as well as collateral in the

form of commercial paper, but the important point is that ordinarily (there were exceptions) these requirements would not constitute an effective restraint on the ability of the Federal Reserve Banks to augment the amount of Federal Reserve notes in circulation. The Federal Reserve Banks, unlike commercial banks, would not be motivated to expand their credit to the limit of their reserves. Commercial banks that were members of the Federal Reserve System were required to keep deposits in the Federal Reserve Banks which could be converted into Federal Reserve notes. Here then is how the way was opened to an elastic currency: member banks could borrow from the Federal Reserve Banks and could use the proceeds as their reserve deposits, or they could withdraw them in Federal Reserve notes at any time. Federal Reserve Banks were expected to be able and willing to create the amount of currency needed to satisfy the demands of the public and the banks. The fundamental new element, as compared with the old arrangement, was that now the banks had a place to get currency, and the Federal Reserve Banks would be the fount from which a refreshing currency flow would pour as needed.

The second problem of inelasticity referred to above pertains to the total money stock or the means of payment, consisting of bank deposits plus currency in the hands of the public. The size of the money stock changes as a result of the expansion (or contraction) of the banking system as it acquires assets from the public by lending or buying securities (or by reducing such assets), given of course the reserve ratio(s) and deposit-currency ratio. Thus the money stock depends on the amount of bank credit. The ability of commercial banks to extend credit is based primarily on the amount of reserves they hold. The new element under the Federal Reserve System, as compared with the old arrangement, was that the Federal Reserve Banks, as a central banking system, could provide reserves to the banks, gradually over time or suddenly in an emergency as a "lender of last resort." In addition to currency, the Federal Reserve would create the means for elasticity of the total money stock. As originally designed, the Federal Reserve Banks would do this by lending to the member banks through the process of rediscounting commercial paper presented to them for this purpose by the banks.

To sum up, the Federal Reserve Act gave the United States a fresh monetary start by creating a brand new mechanism, a central banking system, intended to remedy the weaknesses of the existing system. The new institutional arrangements were designed principally to give the country the total money stock and hand-to-hand currency it required, and to do so in a timely manner. Beyond that, the central bank would supervise the commercial banks and improve the efficiency and operating procedures of the banks and the Treasury. The underlying ideas on which the writers, bankers, businessmen, and legislators relied in constructing this new set of arrangements are of particular interest in understanding the monetary development of the United

States. It is to these ideas that we turn next, and, in reviewing the theories, take note also of some of the leading thinkers responsible for advancing them.

The Theoretical Foundation

If any one has ever really imagined that the price level depends solely on the quantity of money, he should certainly be corrected. But the really important matter is that students of economics should appreciate the existence of a *law* of direct proportion between quantity of money and price level—a law as real, as important, and as fundamental in the economic theory of money as Boyle's law of direct proportion between density and pressure is real, is important, and is fundamental in the physical theory of gases.

—Irving Fisher²²

By *theoretical foundation* I mean a few fundamental concepts which were accepted by those considered to be the informed interpreters of the financial system in the 1900–1914 period. Such theories served to guide policy. Three concepts or doctrines are of concern: quantity theory of money; real bills doctrine; and gold standard.

The quantity theory of money was a cornerstone of orthodox economic thought early in the twentieth century. It was one of the most venerable economic doctrines, with roots going back to David Hume's classic exposition in "Of Money" (1752) and even earlier. With no rival theory in the field against it, "until the 1930s, the quantity theory of money may be said to have been everybody's theory of money."²³ The quantity theory was best known for explaining long-run changes in the general price level: changes in the quantity of money were the primary cause. While the quantity theorists emphasized changes in the money stock, they recognized that velocity of circulation of money could also vary. They believed that velocity was independent of the quantity of money; while velocity could change autonomously, changes in money were of overwhelming importance in explaining long-run price level changes. The high ground of the quantity theorists was in explaining long-run price level changes, but they addressed themselves to short-run fluctuations also, and in the latter context acknowledged instability of the velocity of spending as a significant factor.

Before turning to the contribution of Irving Fisher on this topic, it is pertinent to tie the quantity theory to the attitudes and policies that have been discussed up to this point. In the late nineteenth century the proponents of silver wanted more money so as to raise prices and output. Although silver was not adopted as a standard money, the increase in gold production, and thus in gold money, served to raise the money supply and so fueled the

economic expansion that made the gold standard so acceptable. But the good times were prone to turn into the dust and ashes of recession or depression, even crisis and panic. Money might suddenly become scarce and people might wish to hang on to it or hoard it. The quantity theory provided a north star for policymakers with respect to the journey over long periods of time, but the economy did not stay on course. Under the gold standard the money supply depended on the size of the gold stock together with fractional reserve banking. In the short-run the system could spin out of control. The quantity theory was a basic underlying concept, something that was part of the standard intellectual kit of tools, like the law of gravity, but it would take the application of human ingenuity to keep the economy from suffering dizzy spells. By 1914 it was hoped that the monetary policymakers had imbued the Federal Reserve System with the required ingenuity as well as the technical means to cure the economy's occasional vertigo.

Joseph A. Schumpeter's evaluation of Irving Fisher as "the greatest of America's scientific economists up to our own day"²⁴ does not seem extravagant. Certainly few would deny that he was among the top two or three American economists of the early twentieth century in terms of his lasting influence. He was unusual in the range of his career, which encompassed, in addition to teaching, not only prolific scholarly work in economics, mathematics, and statistics, but also business activities, a lucrative invention (visible card index file), and writing, as well as campaigning for improved health practices and world peace—a "public figure" actively promoting the public welfare as he understood it. Because he often attributed problems of the economy to monetary factors, Fisher advocated public intervention or management in monetary affairs. In particular he was a tireless proponent of ways to stabilize the purchasing power of money, that is, to maintain a stable price level.

In *The Purchasing Power of Money* (1911), Fisher lucidly and fully explained the forces that determine the price level. His framework of analysis was the equation of exchange, a formulation used earlier by another American, Simon Newcomb, to whom Fisher dedicated the book. The price level depends on five factors related in the following way:

$$MV + M'V' = PQ$$

M = Quantity of money (that is, currency) in circulation

V = Velocity of circulation of M

M' = Quantity of deposits outstanding

V' = Velocity of circulation of M'

Q = Volume of transactions

P = Price level

The traditional quantity theory of money had come under attack, something that Fisher attributed to conflicting financial and political interests. His own view was that the quantity theory was sound, sound in the sense of an exact law. He took the traditional theory and, by examining and developing it fully, provided valuable insights into the operation of the economic system. Because Fisher argued for the quantity theory as a scientific law, his position has frequently been viewed as rigid, as if he meant that there was an ironclad law which kept the price level and the money stock in lockstep. His discussion of transition periods makes clear that this is a gross oversimplification of his position. Yet in setting out to demonstrate the validity of the quantity theory as a logical proposition with important application to economic life, Fisher appeared to understate the significance of changes in the velocity of spending and in the volume of goods and services transactions. In the words of a prominent French economist and admirer of Fisher, Maurice Allais, Fisher was unable "to free himself from the trammels of the *ceteris paribus* assumption, which Bishop Berkeley had introduced in the eighteenth century,"²⁵ that is, Fisher's scientific method permitted him to draw logically correct conclusions by suspending disturbing influences under the rubric of "other things being equal."

Fisher's position is that the quantity theory is causally true in the sense that a normal effect of more money is a proportional rise in the price level. He is emphatic that this proportional effect is the *ultimate* effect that occurs following transition periods. The ultimate effect applies *after* a new equilibrium has been reached. Now, the term *transition period* might suggest a short-lived interval between periods of long-run stability or equilibrium. Normally a 767 jetliner is either in equilibrium on the ground or flying at (say) 25,000 feet; the take-off and landing transition periods are vital, but they are quite brief. This is the usual idea of a transition, a relatively short period of change to a new position. But to Fisher, "periods of transition are the rule and those of equilibrium the exception."²⁶ He regarded equilibrium in real life as distinguished from what he called an imaginary period, as so elusive as to question whether "such a condition as equilibrium may be said ever to be established."²⁷ In other words the economy is virtually always in a dynamic condition, in a state of transition.

In explaining transition periods, Fisher presents his theory of the business cycle. During the expansion phase the money stock and prices rise, with the rate of interest rising more slowly. As prices continue to rise, and therefore the purchasing power of money continues to fall, the velocity of spending accelerates. "We all hasten to get rid of any commodity which, like ripe

fruit, is spoiling on our hands." But the expansion is bound to end. Banks cannot continue to expand loans indefinitely, interest rates begin to rise faster than prices, then faster still, until the higher interest rates overtake prices and "the whole situation is changed."²⁸ The higher interest rates mean lower prices of securities, such as bonds used as collateral for loans. Firms find it more expensive and more difficult to renew their loans, causing some business failures. Soon banks come under suspicion of holding loans that have gone sour, they become tightfisted and curtail loans to conserve their reserves, and the rate of interest skyrockets. In such circumstances, interest rates for call loans might range from 50 percent to 100 percent.²⁹ The banks face runs which deplete their reserves. The collapse of bank credit due to loss of confidence is familiar, says Fisher, but what is not well recognized and needs to be understood is that the loss of confidence is the result of the catching-up of the interest rate. The complete credit cycle of expansion, upper turning point, contraction, lower turning point—Fisher used a pendulum for a simile—was a matter of about ten years.

What happens to M and V after the economy has crested? In the gloom of poor business conditions, lenders hesitate to lend and borrowers hesitate to borrow. The money supply contracts, with interest rates now lagging prices downward. Eventually interest rates fall enough so that, together with other slowly emerging encouraging conditions, the stage is set for a revival. But, and Fisher is very explicit, during the depression—a period of months or even years— V is abnormally low.

The next theory to be considered, the real bills doctrine, is not easy to pin down, but was a pivotal idea behind the establishment of the Federal Reserve System. While the concept goes back to the eighteenth century in Great Britain, and was a highly contentious issue in nineteenth century British banking theory, our concern is with its emergence and influence in the United States. It is hard to get it clearly into focus because it was not stated with precision and because its content was altered during the American banking reform discussion. Yet despite its ambiguities and difficulties of practical application, the fraternity of bankers and financial experts generally accepted the real bills doctrine during the two or three decades leading up to the passage of the Federal Reserve Act. Banking reform revolved around this theory.

In view of the widespread front-burner worry concerning the problem of the note issue, it is not surprising that the real bills doctrine gained credence first in relation thereto. Clearly national bank notes could not readily be expanded under the prevailing bond security requirements, so how could hand-to-hand currency be quickly yet safely provided? It was proposed to develop a system of "asset currency," that is, currency issued by commercial banks based upon or backed by the general assets of the banks. The experience of Canada, where bank notes were based on bank assets and where

bank failures were not a problem, was cited as a model. There were, however, basic differences in the banking structures of the two countries which made it unlikely that the Canadian practice could be imported by the United States with satisfactory results. In particular, Canada had a system of relatively few banks doing nationwide business and consequently holding diversified assets, whereas the atomistic United States banking structure consisted of many thousands of banks, each typically dealing mainly in its locality with one economic sector. United States banks were inherently more vulnerable as a result of difficulty in particular industries or regions. The logic behind the proposed change to an asset currency was that bank assets (mainly loans) would expand and contract with the economy; if trade increased, the ability of the banks to create currency would increase also, and thus currency elasticity would be built into the system. With the passage of time and the progress of the debate, two important developments occurred. One was that the narrow context of note issues gave way to bank credit; that is, the doctrine was expanded to apply to the *total* money supply. The other development, deserving of close attention, was the narrowing of the asset currency approach, which had been applied to bank assets in general, to one particular type of asset, namely short-term commercial paper.

By the time it was incorporated into the Federal Reserve Act, the real bills doctrine had come to mean that "banks should invest primarily in short-term commercial bills (bills which represent actual production), and . . . that such a practice will allow the needs of trade to regulate the supply of credit without causing inflation or deflation."³⁰ Such a theory has great appeal, for it purports to show how changes in the money stock can be kept in proportion with changes in real output; that is, M and Q will automatically be kept in step so that just the right amount of money will exist to purchase the output at prevailing prices. The danger of inflation due to excess creation of money is pronounced over—the dragon has been slain. To achieve this, the banks must limit their lending to short-term commercial paper used to finance real transactions. This doctrine held great charm for the banking community, for under it bankers were absolved from blame for the vicissitudes of inflation or deflation. They could present themselves as providing nourishment to the business community by responding to the needs of trade; as long as they made legitimate loans, avoiding loans for speculative purposes or for more than a short time, they had clean hands. The banks and the community would live in mutually beneficial symbiotic relationship. The popularity of the real bills doctrine was great; to many reformers it provided the remedy the American banking system needed.

J. Laurence Laughlin of the University of Chicago was a leading advocate of and, through the National Citizens' League, a business-supported group, propagandist for the real bills doctrine. One of his students, H. Parker Willis, a dedicated real bills man, was involved in drafting the Federal Re-

serve Act as an expert for a committee of the House of Representatives. Later he served as secretary of the Federal Reserve Board, and afterwards became a professor of banking at Columbia University. The two leading congressional figures responsible for the Federal Reserve Act, Senator Nelson W. Aldrich and Representative Carter Glass, obviously were influenced by the real bills theory.

Having recognized the force of the real bills doctrine, it is essential to note that some of the banking reformers who advocated the key idea of the discounting of real bills by a new central banking system nevertheless rejected the concept of self-regulation. In other words, an important alternative approach parted company with the real bills doctrine on a vital point: since bank credit was not self-regulating, policymakers would have to use their judgment to control it. Instead of being an automatic mechanism, the system needed to be managed. As we shall observe later, this view eventually triumphed after the Federal Reserve System became a going concern. At least two influential academicians pointed out forcefully that the real bills doctrine would not automatically prevent overexpansion of credit, calling the idea "hopelessly fallacious" and "delusive." One was a prominent Harvard economist, O.M.W. Sprague; the second, A. Piatt Andrew, also from the Harvard faculty, became adviser to Senator Aldrich and served as publicist for Aldrich's bill. A third figure who shared this perception, a New York banker named Paul M. Warburg, requires more extended treatment.

The fact that Warburg gained his early banking experience in Europe (he moved from Hamburg to New York in 1902 to join the investment banking house of Kuhn, Loeb) enabled him to view the American banking scene with a fresh viewpoint. Warburg was able to observe the American world of banking "from the outside" although he had become part of it. There is something of a parallel here with Thorstein Veblen, a native American whose immigrant cultural background equipped him to see American society acutely because he felt himself to be an outsider. Soon after coming to this country, Warburg wrote a memorandum on "the cardinal defects of our system." He suggested reforms based on European models, but saw as a great obstacle to the adoption of a European-style central banking system the absence in the United States of modern commercial paper and bankers' acceptances. A senior partner in his firm read the memorandum and showed it in confidence to two friends. The tenor of the time is well conveyed by Warburg's own words describing the response of one of the friends.

One of these was Mr. James A. Stillman, President of the National City Bank of New York. It was significant, however, of the atmosphere in which we were then living that Mr. Schiff warned me to be careful not to have the memorandum go any further, lest, having just arrived from Europe, I might impair my standing in the banking community by creating the impres-

sion that I was urging a system which, in the final analysis, would have to be built around a central banking organization. I gladly accepted Mr. Schiff's suggestion, and a few days afterwards I found Mr. Stillman standing over my desk. He looked at me silently, as was his wont, through his half-closed, heavy dark eyes.

"How is the great international financier?" he asked with friendly sarcasm. He then added, "Warburg, don't you think the City Bank has done pretty well?"

I replied, "Yes, Mr. Stillman, extraordinarily well."

He then said, "Why not leave things alone?"

It was not without hesitation that I replied, "Your bank is so big and so powerful, Mr. Stillman, that, when the next panic comes, you will wish your responsibilities were smaller."

At this, Mr. Stillman told me that I was entirely wrong, that I had the mistaken notion that Europe's banking methods were the most advanced, while, as a matter of fact, American methods represented an improvement upon, and an evolution of, the European system, America having already discarded its central bank. He had no doubt that progress would have to be sought, not by copying European methods, but by elaborating our own.

Four years later, in the midst of the panic, I found Mr. Stillman once more standing over my desk; and when I looked up, he asked, "Warburg, where is your paper?"

I said to him, "Too late now, Mr. Stillman. What has to be done cannot be done in a hurry. If reform is to be secured, it will take years of educational work to bring it about."³¹

As Warburg grew in influence in banking circles he contributed much to the "educational work." The *New York Times Annual Financial Review* in 1907 published an article of his analyzing the banking situation and suggesting how panics, like the one to strike later that same year, might be obviated. In November, while the panic was in progress, he published a paper entitled, "A Plan for a Modified Central Bank." In 1910, when the National Monetary Commission was just beginning its work, Warburg proposed a single central bank called the United Reserve Bank. The plan contained all of the essential theoretical concepts for the new banking system, and the Aldrich bill that was later submitted to Congress followed his proposals. While the discounting of real bills was central to his design, Warburg warned against reliance on self-regulation and explained how the central bank could use the discount rate to regulate credit. Like Sprague and Andrew, Warburg recognized that short-term commercial bills were kept liquid in a credit crunch environment by the action of the central bank in taking them; they could become immobile if the market for them dried up. For his distinctive contribution Warburg later came to be regarded as the father or chief architect of the Federal Reserve System and served on the first Federal Reserve Board.

The last of our trio of doctrines passing in review is the gold standard. A gold standard country was required to get on the gold standard bus as a passenger, not as a driver. Gold was in the driver's seat, and whether it carried the country's money stock up hill, down dale, or across flat country, the monetary authorities were supposed to keep their hands off the steering wheel. It was a mystery ride determined by the impersonal forces of gold production, inflow, and outflow; whatever route the gold standard took was ipso facto the right route. Human drivers were thought to be prone to driving into ditches through mistakes in judgment, or to take a wrong route due to seductive special interest groups or electoral pressures. Orthodox thought relied instead on a comforting trinity of concepts for the guidance of Man and Society: natural harmony, laissez faire, and the gold standard. The gold standard mentality was so ingrained before World War I that the banking reformers simply accepted it as part of their world.

Given the importance of the size of the money stock to the quantity theory of money, by what device would it best be regulated? Two candidates, the real bills doctrine and the gold standard, had been accepted into the sanctum of official policy. On the one hand stood the real bills doctrine, promising automatically to adjust the money supply to the needs of the economy. On the other hand stood the even more august gold standard, promising the quantity of money that the economy needed. Thus two servants promised the same master the same prize. Unfortunately the two means of regulating money could and almost inevitably would conflict. Perhaps when credit was expanding through the operation of the real bills doctrine, the operation of the gold standard mechanism would require a slowing down or reversal of bank lending. The discount rate and interest rates generally would have to be raised, thereby discouraging bank credit extension. One or the other principle would be forced to give ground. As Warburg, Sprague, and Andrew had warned, the real bills theory did not effectively limit the money stock as the devotees of the self-regulating version believed. In the end, especially in view of the almost mystical attachment to it, the gold standard would seem the likely survivor. There being no statutory law against believing in two incompatible ideas, the Federal Reserve System came into the world under both the real bills and the gold standard banners.