

U. S. BANKING IN THE LAST FIFTY YEARS: GROWTH AND ADAPTATION

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Abstract

This essay analyzes and interprets changes in commercial banking in the United States in the years since the Second World War. It argues that the banking system effectively recovered from the trauma of the Great Depression and the war around 1955. From that year banks have struggled mightily with other intermediaries, financial market innovations, and regulations. The discussion proceeds chronologically; a summary section compares banks in the last decade with their counterparts in the 1920s and evaluates the changing risks and returns that clients of banks have experienced in this half century. It concludes that banks have been increasingly discarding their traditional mode of financing loans and investments with deposits they collect and becoming brokers who originate loans and then use securitization to lodge them with other investors who are likely to be less informed and correspondingly more vulnerable to losses.

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I INTRODUCTION

In this essay I describe and interpret post World War II banking in the United States. The goal is to understand the changing risks and returns that are being provided to bank customers as banks moved from an extreme depression-era set of regulatory controls toward today's highly competitive environment. While my concern is commercial banks, the distinctions between banks and other providers of financial services have become fuzzy. Other providers are discussed when their activities strongly impact on commercial banks. My emphasis is on banking practices, portfolio composition, and the changing role of banks as financial intermediaries. I do not attempt to evaluate the macroeconomic success of monetary policy, but explore in some detail the substantial effects that monetary and fiscal policies have had on banks.

During this period the U. S. banking system has been experiencing profound structural changes that are occurring at an accelerating rate in the most recent decades. It is inaccurate to portray banks as if they are in or are approaching an equilibrium state in which they provide some time-invariant mixture of financial services; institutional change has been a feature of U. S. banking since the country was established. In part, institutional changes are the result of regulatory and fiscal interventions, which often were precipitated by financial or fiscal crises. In part, the acceleration has occurred because of technical progress in information processing. When banks record deposits, make credit evaluations, and transfer funds, they are only processing information. Banks and potential entrants into financial services industries have been extraordinarily affected by the ongoing information processing revolution. In part, the acceleration reflects intellectual breakthroughs in the theory of finance, which are steadily being incorporated in a plethora of new financial instruments and derivatives. Finally, in recent years institutional change seems to have increasingly reflected political changes in the perceived balance between the desirability of institutions that reflect a *laissez faire* philosophy and the need for governmental intervention. This change may be partly due to fading memories of the trauma that resulted from the Great Depression and the consequent perceived need for government intervention. However, there is more than that involved, because some government interventions change the nature of the services in ways that are difficult to reverse and may not be desirable.

The discussion is organized chronologically. The succeeding sections describe and interpret U. S. banking in the years 1945-60, 1961-70, 1971-83, 1984-94, and 1995 to the present (2002). The final section compares the banking system in the 1990s with its counterpart in the 1920s and assesses how the returns and risks of clients of banks have changed over time.

¹ An earlier version of this paper summarized two lectures that I presented at a workshop on The History of Banking in the 19th and 20th Centuries that was held in 1989 at the Certosa di Pontignano, Siena and organized by the International School on the History of Banking and Finance of the University of Siena.

As background, recall that the fifteen years of the Depression and World War II were a period of extraordinary turmoil and struggle for commercial banks. The U. S. banking system had essentially collapsed when Franklin D. Roosevelt assumed the Presidency in March 1933. One of his first actions was to declare a national banking holiday so that bank examiners could determine which banks were viable and which must be closed. More than 4,000 banks never reopened. In 1933 the Federal Deposit Insurance Corporation was created; it insured the first \$2,500 in an account in an insured bank against loss. A large majority of banks chose to be insured. The Banking Acts of 1933 and 1935 limited the interest rates that banks could pay on demand and time deposits, severed investment banking from commercial banking, restricted establishment of new branches and banks, increased the minimum capital that was required to open a bank, and in other ways sought to shield banks from competition. The goals of these actions were to restore the credibility of banks, to increase bank profitability, and to rebuild capital accounts. These interventions succeeded immediately in almost eliminating bank failures, but banks were unable to earn great profits in the depression-ridden U. S. economy. After 1933 and especially during the Second World War banking system deposits grew rapidly; deposits tripled between 1935 and 1945, but loans grew very slowly. In 1945 banks were profitable, but had nearly 60% of their assets invested in U. S. government securities. Until the post-war period they had little opportunity to take advantage of congressional largesse from the Banking Acts of 1933 and 1935. Table 1 reports fragmentary information that is available for U.S. banks between 1929 and 1945.

Table 1

Summary Information on all U. S. Commercial Banks: 1929 – 45

(balance sheet variables in billions of dollars – deposits exclusive of interbank balances)

end of year	number of banks	total assets	loans	US Govt. securities	cash assets	demand deposits	time deposits	all deposits
1929	24,026	n.a.	36.0	n.a.	n.a.	n.a.	n.a.	46.3
1931	19,375	n.a.	25.2	n.a.	n.a.	n.a.	n.a.	35.9
1933	14,440	n.a.	16.2	n.a.	n.a.	n.a.	n.a.	29.1
1935	15,325	n.a.	15.1	n.a.	n.a.	n.a.	n.a.	38.8
1937	14,843	n.a.	17.1	14.2	n.a.	n.a.	n.a.	42.0
1939	14,484	n.a.	17.2	16.3	n.a.	n.a.	n.a.	47.8
1941	14,278	79.1	21.7	21.8	26.6	44.3	16.0	60.3
1943	14,034	114.4	19.1	59.8	27.7	75.6	19.4	95.0
1945	14,011	160.3	26.1	90.6	34.8	105.9	30.2	136.2

Sources: Board of Governors of the Federal Reserve System, Banking and Monetary Statistics: 1914 – 1941 and Banking and Monetary Statistics: 1941 – 1970, Table 1.3.

II REALIZING THE BOONS: 1945 – 1960

At the end of 1945 commercial banks in the United States were the dominant financial

intermediary with \$160 billion in assets. Mutual savings banks, savings and loans associations, and credit unions respectively had assets of \$17 billion, \$9 billion, and less than \$1 billion. In 1945 there were about 14,000 commercial banks, 540 savings banks, 6,100 savings and loan associations, and perhaps 20,000 credit unions. By the end of 1960 the numbers of institutions had not changed greatly, but commercial banks had lost considerable market share to these thrift institution rivals. At the end of 1960, commercial banks had \$258 billion, savings banks had \$41 billion, savings and loan associations had \$71 billion, and credit unions had about \$5 billion in assets.²

During these fifteen years all four intermediaries were very profitable, and the net worth of each kept pace with or increased relative to its liabilities. Commercial banks were especially profitable; the book value of their net worth rose from \$9 billion in 1945 to \$21 billion at the end of 1960. Until around 1960 banks were content to sacrifice market share in order to realize extraordinary profits.

During this period banks rationally made little effort to compete for consumer deposits by raising interest rates; other intermediaries paid much higher rates than banks.³ Commercial banks would have considerably increased the cost of their own deposits if they had competed for the relatively small amounts of funds held by their rivals. However, as the market shares of rivals rose, a point would be reached in every local market when the expected gains from competing exceeded the costs. This point was reached between 1957 and 1963 in markets for deposits in many U. S. communities. When commercial banks started to compete seriously, depositors were the principal beneficiaries. Profit rates at all depository intermediaries fell. The difference between interest rates paid on consumer time deposits at commercial banks and at other depository institutions diminished until 1966, when Congress and the Federal Reserve intervened to halt what they perceived to be destructive competition by imposing binding ceilings on the interest rates intermediaries were allowed to pay.

Market interest rates had an upward trend during the decade ending in 1961. As interest rates rose, large corporations began to manage cash assets with greater care; deposit balances at banks were closely monitored and the commercial paper market grew rapidly. Commercial paper is a debt instrument that was issued by large corporations with good credit ratings; it is a good substitute for short-term bank loans. Until 1961 commercial banks declined to pay competitive interest rates on corporate time deposits.

In 1958 the outgoing Eisenhower administration sensed that substantial changes were occurring in banking and financial markets. It established the Commission on Money and Credit, which proposed timely reforms for financial markets. The proposals were not adopted by the incoming administration of President Kennedy.

III A DECADE OF REGULATORY DISINTEGRATION: 1961 – 1970

² Sources: Board of Governors of the Federal Reserve System, Banking and Monetary Statistics: 1941-1970 and United States League of Savings Institutions, Savings & Loan Fact Book '74.

³ See Hester [1981, p. 149].

In 1961 the competitive struggle for consumer deposits among banks and thrift institutions was intensifying. Banks also were losing commercial lending business with the largest corporations. Nonfinancial corporations resented earning no interest on deposits kept in banks and increasingly recognized that by dealing commercial paper to one another they could largely eliminate the intermediation costs implicit in bank lending. Banks would still have a role to play, however, because issuers of prime commercial paper needed to have approved bank lines of credit.

In September 1961, the First National City Bank of New York together with the Discount Corporation and the First National Bank of Boston introduced negotiable certificates of deposit, which paid an interest rate that closely approximated the prime commercial paper rate. These certificates were large denomination time deposits that had fixed maturities at issuing banks, but they were highly liquid because corporations could convert them into cash at little cost by selling them in the newly created secondary market. This innovation was the first in a long series of developments that allowed banks to use interest rates to manage their liabilities. It broke a long-standing policy of large commercial banks not to pay market interest rates to corporations. The banks' earlier policy was rationalized by the argument that corporations should have better uses for their funds than investing in bank time deposits.

In the early years of the decade a controversial new Comptroller of the Currency, James Saxon, facilitated the chartering of new banks and allowed national banks to use subordinated debt to satisfy capital requirements that were enforced by bank examiners. This policy eroded the 1930s philosophy of protecting banks from competition. Further controversy developed between the U.S. Antitrust Division and bank regulators about the criteria to be used when evaluating bank mergers.

As the U. S. began to incur balance of payments deficits, the Kennedy administration and the Federal Reserve developed a policy of attempting to twist the yield curve to protect the international standing of the dollar and U. S. gold stocks. Part of the policy was to force short-term interest rates higher in order to induce foreign investors to hold treasury bills, rather than withdraw gold from the Treasury. In the Bretton Woods agreements that established the International Monetary Fund, the United States was obligated to convert dollars into gold when foreign investors requested gold. The other part of the policy was to drive long-term rates down by buying bonds in order to encourage investment in plant and equipment. There is controversy about whether the policy actually was effective, but there is no question that short rates rose relative to long rates between 1961 and 1964. Rising short-term rates could also have been a consequence of the intensifying struggle for deposits among intermediaries.

The effect of short-term interest rates rising relative to long-term rates was to weaken the profitability of mutual savings banks and savings and loan associations, because they raised funds with short maturity deposits and almost exclusively invested in long maturity, fixed interest rate mortgage loans. The fact that these institutions were mutually chartered and not monitored by stockholders would result in seemingly perverse behavior, which appeared to reflect differences in incentives for management of stock and mutually chartered firms. Specifically, mutual savings banks increased the share of high yielding mortgages in their portfolios at a time when mortgage interest rates were **falling** relative to interest rates on other assets.⁴

⁴ Cf. Hester and Pierce, [1975, Chapters 1 and 7].

A much more severe crisis for mutual savings banks and savings and loan associations developed in 1966 when the Federal Reserve undertook restrictive monetary policies to deter inflation, which was developing from the mobilization for the Vietnam War. This policy began with an increase in the discount rate at the end of 1965 and continued with increases in interest rates over the first nine months of 1966, as can be seen in Table 2 below. The thrift institutions were locked into a portfolio of low interest rate mortgage loans, when their funding costs were steadily rising. This together with the continuing struggle for market shares meant that both intermediaries were becoming unprofitable and, perhaps, were not viable without government intervention.

In September 1966 Congress ordered the Federal Reserve to put an inflexible ceiling on the interest rates that commercial banks could pay on time and savings deposits. The Federal Home Loan Bank Board (FHLBB) was similarly required to put a ceiling on the interest rates that savings and loan associations could pay.⁵ Interest rate competition was effectively banned. Interest rates on U. S. government securities were higher than these ceilings and, as a result, a process of “disintermediation” began which would drain funds from banks and thrifts as interest rates drifted higher. Suspending competition among intermediaries was harmful to all depositors, although it temporarily protected government agencies that insured deposits.

The interest rate ceilings applied to all bank time deposits, including large denomination negotiable certificates of deposits. This presented a new challenge to commercial banks that were trying to serve their corporate clients. They could not attract funds with high interest rates in order to accommodate loan requests. Banks responded to this challenge and protected their large corporate customers in highly creative ways. First, beginning in about 1965, they recognized a legal loophole in the Bank Holding Company Act of 1956.⁶ In that act the Federal Reserve was empowered to supervise any organization that controlled 25% of the stock of **two** or more commercial banks. Congress had believed that small communities would not have adequate banking services if a small local bank was required to stand alone; therefore, a local holding corporation was allowed to operate both a bank and some other businesses without being subject to the rules of the bank holding company act. Activities of multi-bank holding companies were severely circumscribed by the Federal Reserve, so that they could not gain competitive advantages over individual banks.

Large banks undertook “congeneric” transformations through which they reorganized themselves into a one-bank holding company. This was achieved at a meeting of stockholders in which a bank's outstanding common stock was called in and replaced by an equivalent number of shares in a new one-bank holding company. In principle, the new corporation could raise funds at competitive market rates by issuing commercial paper that was not subject to interest rate ceilings.

⁵ The Federal Home Loan Bank System was established in 1932 to provide assistance to member savings and loan associations. It consisted of a controlling Federal Home Loan Bank Board and twelve satellite Federal Home Loan Banks that were designed to be analogous to the twelve Federal Reserve Banks. In 1934, a part of the National Housing Act established the Federal Savings and Loan Insurance Corporation (FSLIC) as an agency that was supervised by the Federal Home Loan Bank Board. Both the Board and the FSLIC were eliminated by the Financial Institutions Reform, Recovery, and Enforcement Act of 1989 (FIRREA).

⁶ Between 1965 and 1968 deposits at unregistered (one) bank holding companies rose about 600%, from \$15.8 billion to \$108.2 billion. [United States House of Representatives, 1969, p. 1].

The Federal Reserve would respond with lags to this and similar evasions and eventually in 1970 was able temporarily to close down the whole class of games, by getting Congress to amend the Bank Holding Company Act to eliminate the exemption for one-bank holding companies. The Federal Reserve continued to be the sole regulator of bank holding companies.

Second, banks began to expand the number of overseas branches and subsidiaries. As late as 1965 U. S. banks only had 211 overseas branches, 177 of which were offices of the First National City Bank of New York. Overseas assets of U. S. banks at the end of 1965 were \$12 billion. The number of offices would quadruple, the number of banks with overseas offices would grow to more than 150, and overseas assets would soar to about \$150 billion by 1975. Large banks saw that U. S. corporations would be able to obtain banking services in offshore centers where there were no interest rate ceilings or reserve requirements on time deposits. They followed their customers abroad and thus were able to avoid restrictive U. S. monetary policies and regulations. Many overseas branches were “shell” branches; they consisted only of a mailbox in some Caribbean island country and memory in a computer in one of a U. S. bank’s domestic offices. The shell branch operated under the laws of the “host” country.

Third, banks probed and took advantage of vagueness in Federal Reserve rules and definitions, especially those involving federal funds, commercial paper, bankers’ acceptances, and repurchase agreements.⁷ The Federal Reserve responded to these initiatives by tightening the rules, but again with a lag. These games continued through the 1970s as well and included weekend Eurodollar and float transactions.⁸

With binding interest rate ceilings on deposits, competition for consumer deposits was similarly inventive. Prizes were offered whenever a new account was opened or if a substantial deposit was made in a time deposit account. Regulators did not regard such supplements as “interest”. Prizes offered by savings banks and savings and loan associations were not very effective in raising new funds for financing residential mortgage loans. Depositors were still suffering from the continuing ceilings on interest rates that banks could pay.

As political pressure from the housing industry increased, the departing Johnson administration began to search for a new mechanism to finance housing. Existing government mortgage programs could not be conveniently expanded, because they were in the federal budget that already had a sizable deficit from the Vietnam War effort. The administration creatively adopted a practice used in the private sector, namely, establishing an unconsolidated subsidiary. In 1968 the government spun off the Federal National Mortgage Association (FNMA), so that its deficit would no longer be part of the official federal deficit. This “privatization” was more form than substance, because all financing actions by the reorganized FNMA required approval by the U. S. Secretaries of the Treasury and Housing and Urban Development. A second organization, the Government National Mortgage Association (GNMA), was simultaneously created to finance subsidized mortgage programs, because private investors would not buy shares of a firm that was designed to lose by providing subsidies. In 1970 the government created a third housing finance organization, the Federal Home Loan Mortgage Corporation (FHLMC) to support savings and loan

⁷ For a discussion of the evolution of regulation of repurchase agreements, see Smith [1978].

⁸ Cf. Coats [1981].

associations, which feared that they would be unsuccessful competitors with FNMA. These government agencies are important players in the next sections.

A further complication in 1968 resulted from continuing demands from foreign investors who sought to exchange dollars for gold. The United States was legally required to maintain a 25% gold backing for its currency and bank reserves. Continuing withdrawals threatened the ability of the U. S. to comply with this requirement. A law was passed that eliminated the requirement and suspended sales of gold to anyone but foreign governments. The continuing withdrawals, this law, and a 1971 decision by the Nixon administration to suspend sales to foreign governments would serve to complete the destruction of the postwar quasi fixed exchange rate system that was established at the Bretton Woods conference.

Bank net operating income, expressed as a percentage of assets, peaked in 1960 and then trended down over the decade as competitive pressures intensified. The aggregate ratio of the book value of insured bank net worth to total assets would peak around 1961 at about 8.4% and then decline irregularly for the next quarter century.

In 1969 the incoming Nixon administration recognized that financial markets were becoming severely distorted by the uneven erosion of the regulations that were adopted in the 1930s. The administration created the Commission on Financial Structure and Regulation and asked it for a set of proposals that could be used to create a “level playing field.” The Commission largely consisted of executives from the financial sector. Its final report repeated many of the proposals of the earlier Commission on Money and Credit, but was distinctive in urging removal of deposit interest rate ceilings. Congress would enact none of the proposals for another decade.

However, events were beginning to overtake policy proposals. In June 1970 the Penn Central Transportation Corporation with seven billion dollars in assets filed for bankruptcy, defaulting on \$200 million of commercial paper. This failure threatened the stability of the \$40 billion commercial paper market. To prevent a collapse, the Federal Reserve under its new chairman, Arthur Burns, allowed the money stock to expand rapidly and removed interest rate ceilings from large denomination (\$100,000 or more) time deposits, including negotiable certificates of deposit. These actions would spur a new round of financial market innovations.

IV INNOVATIONS, TURBULENCE, AND RESTRUCTURING: 1971 – 1983

At the outset of this period there was a new serious threat to the fixed exchange rate system that had been established at the Bretton Woods Conference of 1944. Large corporations began to recognize that the Bretton Woods fixed exchange rate system was no longer viable; they shifted very large amounts of funds into hard European currencies in the correct anticipation that the U. S. dollar would fall relative to strong foreign currencies when the system collapsed. In a desperate last attempt to stem the dollar outflow, the Federal Reserve dramatically forced interest rates up. Yields on government securities and large denomination certificates of deposit were threatening to rise above ceilings that banks and thrifts could pay on deposits. This situation together with the first recession since 1961 induced President Nixon to make a draconian speech on August 15, 1971 that suspended convertibility of dollars into gold by foreign governments. In the speech he also imposed 90-day freezes on prices and wages, imposed tariffs on imported vehicles, lowered excise

taxes on vehicles, and expanded the investment tax credit.

In the new floating exchange rate environment, it seemed plausible that interest rates would be more volatile. Arthur Burns attempted to defuse this suspicion by simultaneously wearing two hats; in addition to being Chairman of the Federal Reserve he was leader of an Executive Branch committee that was intended to moderate fluctuations in interest rates and dividends in a loosely structured incomes policy. These two roles were contradictory. By 1973 market interest rates were considerably higher than the rates that banks could pay on small time and savings deposits. Table 2 shows the extraordinary volatility of interest rates, which began with the Federal Reserve's decision to raise the discount rate in December 1965. The table reports end-of-quarter, monthly-average interest rates on 3-month treasury bills, constant maturity 5- and 20-year government securities, and quarterly first differences in these series for 39 quarters.

As can be seen the three interest rates roughly doubled between 1965 and 1974. The amplitude of their quarterly changes increased markedly over this period — especially in the longer maturities — as the Federal Reserve sought variously to fight inflation, respond to different political pressures, protect the commercial paper market, and defend the dollar. It had too few instruments for the number of goals it was pursuing. The Nixon speech of August 15, 1971 took some of the burden off the Fed's shoulders and interest volatility decreased for a few quarters. However, the Fed became active again in 1973 as it sought to combat inflation that resulted from rising import prices, which were a consequence of the collapse of the Bretton Woods system. As is explained below, the battle against inflation was at best marginally successful.

In 1972 some investment bankers anticipated the possibility that market rates might rise above the rates banks were allowed to pay and created a new financial institution, the money market mutual fund (MMMF). They reasoned that a MMMF would be able to attract many small investors by offering accounts that paid interest rates that were slightly less than the rates paid on large denomination certificates of deposit, commercial paper, and government securities. The accounts were exempt from interest rate ceilings and reserve requirements. Investors could write checks with a minimum denomination of, say, \$500 against their balances. The MMMFs had no deposit insurance and were rather slow in gaining broad public acceptance. The overt objective of the funds was to get around the interest rate ceilings on depository institution accounts. By 1974 they were paying several percentage points more in interest than banks and thrifts, but had only attracted about four billion dollars. The MMMFs would wreak havoc with banks and thrift institutions that accepted time and savings deposits by the end of the decade.

A second major innovation occurred in 1972 when a small New Hampshire mutual savings bank contrived to offer checking accounts. By law only commercial banks could offer demand deposit accounts. The innovation was to offer an account that would permit third-party transfers. An account holder could request a bank to transfer funds to a third party by writing an order, which was indistinguishable in all but name from the check which individuals wrote against demand deposit accounts. This negotiable order of withdrawal (NOW) account had an important advantage over demand deposit accounts, because individuals could receive interest on deposit balances. Commercial banks are not allowed to pay interest on demand deposits. Balances in NOW accounts were typically insured. Authorization to offer NOW accounts gradually spread to other states and became universal in 1981. NOW accounts strengthened the hand of thrift institutions when competing with commercial banks, which responded by offering them as well.

Table 2
End-of-Quarter Levels and First Differences of Short-Term Interest Rates: 1965 – 1975

year and quarter	(annual percentage yields)			(quarterly first differences)		
	3-month treasury bill market rate	5-year constant maturity	20-year constant maturity	3-month bills	5-year	20-year
1965:4	4.38	4.72	4.50	0.46	0.47	0.20
1966:1	4.59	4.92	4.72	0.21	0.20	0.22
1966:2	4.50	4.97	4.73	-0.09	0.05	0.01
1966:3	5.37	5.50	4.94	0.87	0.53	0.21
1966:4	4.96	5.00	4.76	-0.41	-0.50	-0.18
1967:1	4.26	4.54	4.56	-0.70	-0.46	-0.20
1967:2	3.54	5.01	4.99	-0.72	0.47	0.43
1967:3	4.42	5.40	5.16	0.88	0.39	0.17
1967:4	4.97	5.75	5.59	0.55	0.35	0.43
1968:1	5.17	5.76	5.59	0.20	0.01	0.00
1968:2	5.52	5.85	5.40	0.35	0.09	-0.19
1968:3	5.19	5.48	5.28	-0.33	-0.37	-0.12
1968:4	5.96	6.12	5.88	0.77	0.64	0.60
1969:1	6.02	6.41	6.22	0.06	0.29	0.34
1969:2	6.44	6.75	6.28	0.42	0.34	0.06
1969:3	7.09	7.57	6.55	0.65	0.82	0.27
1969:4	7.82	7.96	6.91	0.73	0.39	0.36
1970:1	6.63	7.21	6.72	-0.19	-0.75	-0.19
1970:2	6.68	7.85	7.34	0.05	0.64	0.62
1970:3	6.12	7.29	6.88	-0.56	-0.56	-0.46
1970:4	4.87	5.95	6.28	-1.25	-0.34	-0.60
1971:1	3.38	5.00	5.94	-1.49	-0.95	-0.34
1971:2	4.75	6.53	6.38	1.37	1.53	0.44
1971:3	4.69	6.14	6.05	-0.06	-0.39	-0.33

1971:4	4.01	5.69	6.00	-0.68	-0.45	-0.05
1972:1	3.73	5.87	6.06	-0.28	0.18	0.06
1972:2	3.91	5.91	6.01	0.18	0.04	-0.05
1972:3	4.66	6.25	6.05	0.75	0.34	0.04
1972:4	5.07	6.16	5.96	0.31	-0.09	-0.09
1973:1	6.09	6.80	6.91	1.02	0.64	0.95
1973:2	7.19	6.69	7.06	1.10	-0.11	0.15
1973:3	8.29	7.05	7.25	1.10	0.36	0.19
1973:4	7.45	6.80	7.29	-0.75	-0.25	0.04
1974:1	7.96	7.31	7.73	0.51	0.51	0.44
1974:2	7.90	8.60	8.10	-0.06	1.29	0.37
1974:3	8.06	8.37	8.59	0.16	-0.23	0.49
1974:4	7.15	7.31	7.91	-0.91	-1.06	-0.68
1975:1	5.49	7.30	7.99	-1.66	-0.01	0.08
1975:2	5.34	7.51	8.04	-0.15	0.21	0.05

Source: Federal Reserve Bank of Saint Louis, FRED data file.

Consumers gained access to interest income from this innovation, but interest rates on time and savings accounts were subject to the aforementioned ceilings, which sometimes prevented depositors from receiving a competitive rate of return.

In 1973 another innovation occurred with the establishment of the Chicago Board Options Exchange. Although not generally appreciated at the time, this exchange would eventually become the launching pad for a plethora of financial derivatives that would emerge in the 1980s and 1990s. Its establishment coincided with the publication of a path-breaking article by Fischer Black and Myron Scholes [1973] that showed how simple options could be priced. This and a related literature too large to cite here provided the intellectual foundations for designing new financial instruments and contracts that dominate today's financial markets.

In 1975 another major innovation occurred when the Chicago Board of Trade created a financial futures market for collateralized depository receipts of GNMA securities. This market allowed individuals and institutions like mortgage bankers to hedge against fluctuations in long-term interest rates. Its existence meant that agile dealers in a rapidly expanding market for mortgage-backed securities could operate with less risk exposure. The market strengthened potential competitors of thrift institutions as providers of mortgage loans. This initial specialization in collateralized depository receipts was soon dwarfed by futures contracts in U. S. government securities and Eurodollars. Contracts in depository receipts eventually disappeared because of a lack of trading volume. Other financial futures contracts and options contracts were more

convenient to use to achieve hedged positions in mortgage markets.⁹

So long as interest rates on deposits were kept down by effective ceilings, the rising trend in interest rates was not damaging to the net worth of savings and loan associations and other mortgage lenders. They were earning more on their assets and paying no more on their liabilities. To be sure, it would become increasingly difficult to attract deposits in the face of higher interest rates paid on government securities and by MMMFs. As their ability to attract new funds diminished, banks and thrift institutions sought and obtained permission to pay higher rates on a variety of new specialized deposits; an especially important innovation was the then high yielding money market certificate. However, it was very dangerous for savings institutions to attempt to match interest rates paid by MMMFs in an environment of rising interest rates, because they had a large negative gap.¹⁰ When interest rates rise, firms with a negative gap are required to increase the interest rates they pay on liabilities before they are able to increase interest rates they earn on assets. Money market mutual funds by construction are valued at the market values of their assets and, thus, have no gap.

Financial instrument futures and options markets could have reduced the vulnerability of savings and loan associations to rising interest rates, but the severity of their condition was not recognized and managers were not trained, encouraged, or inclined to hedge.

Pressures were rising in financial markets for a variety of reasons. First, the real interest rate on outside money, defined as the nominal interest rate on federal funds minus the contemporaneous rate of change in the GNP implicit price deflator, had been negative on average from 1971 through 1978 and in every year except 1973.¹¹ Because interest was deductible from taxable income, individuals and firms had a strong incentive to borrow. Prices of houses and other assets rose considerably faster than the consumer price index. Why real interest rates were so low is a question that has never been satisfactorily explained, but with the benefit of hindsight it appears to have been a major failure of monetary policy. The Fed was effectively sponsoring inflation! Monetary authorities were increasingly emphasizing monetary aggregates as indicators of monetary policy during this period. This stance was inconsistent with their (failing) effort to smooth fluctuations in interest rates, which is evident in Table 2. Eliminating this inconsistency was a major contribution of the Federal Open Market Committee under Paul Volcker in 1979.

Second, technical improvements in funds transfers both domestically through the Federal Reserve's computers and internationally through the New York Clearing House Interbank Payments System (CHIPS) allowed a considerable increase in repurchase agreement (RP) and Eurodollar transactions. This increase manifested itself in a rapidly rising turnover rate of demand deposits, the ratio of debits to demand deposit accounts to demand deposits, because both RP and Eurodollar transactions raised the volume of debits to demand deposit accounts without raising measured demand deposits. A given amount of measured demand deposits was financing a steadily growing volume of transactions. For example, a monthly average of seasonally adjusted demand

⁹ An early and valuable discussion of the relation between futures and option prices appears in Cox, Ingersoll, and Ross [1981].

¹⁰ At time t , a gap at horizon $s - t$ is defined to be the difference between fixed-rate liabilities and fixed-rate assets in a portfolio at date s in the future.

¹¹ See Hester [1981, pp. 172-3].

deposit turnover for all insured commercial banks was 63.3 times a year in 1970, 105.3 in 1975, 201.8 in 1980, and 500.3 in 1985. Such innovations impaired monetary policy that was based on controlling monetary aggregates, because the volume of transactions from a given monetary base was becoming increasingly unpredictable.

Third, executive instability from the resignation of President Nixon and the need to appoint two Vice Presidents created a difficult environment in which to conduct monetary policy. Financial instability resulting from the failures of several large banks in 1974 and 1976 – the first significant failures since the Great Depression – complicated the implementation of monetary policy. After the election of Jimmy Carter there was also leadership instability at the Federal Reserve where power is concentrated in the office of the chairman. Arthur Burns resigned as chairman in January 1978. He was succeeded by G. William Miller, who in August 1979 was succeeded by Paul Volcker.

Fourth, there was a rapidly expanding internationalization of banking. Banks in the U. S. had about \$400 billion in assets booked in overseas branches in 1980. Foreign banks operating in the U. S. had about \$175 billion in U. S. assets; only a small fraction of which was financed with deposits booked in the U. S. Both foreign banks and overseas U. S. bank branches were avoiding interest rate ceilings, reserve requirements, and other U. S. regulations.¹² About 20% of U. S. banking assets were off shore; foreign banks were making approximately 40% of all commercial and industrial loans in the two largest states, California and New York. In 1978 the International Banking Act was passed in an attempt to regulate foreign banks operating in the United States and to create an environment where they and domestic banks were operating under similar rules. However, nothing was done to control the activities of shell branches or overseas banks that were lending directly to firms in the U. S. Indeed, in 1981 the Federal Reserve weakened its control of economic activity in the U. S. when it ruled that transfers from shell branches to banks in the United States were “immediately available” rather than “next day” funds. It apparently feared that without this change more financial activity would relocate from the U. S. to foreign locations where surveillance would be difficult at best.

In 1978 the Federal Reserve began to push nominal and real interest rates higher. Assets of money market mutual funds began to rise rapidly as money market interest rates soared above deposit interest rate ceilings. On October 6, 1979, against the backdrop of a plunging U. S. dollar and a second round of OPEC price increases, Volcker announced a series of actions to battle renewed inflation. The most important of these was that the Federal Reserve would then focus on monetary aggregates and not intervene to stabilize interest rates. Nominal and real interest rates increased rapidly to new 20th Century highs. This increase would severely penalize individuals such as farmers who had borrowed heavily at floating interest rates from the Federal Farm Credit System. It also would threaten the viability of savings and loan associations that were attempting to compete with MMMFs. The latter had assets that rose at an accelerating rate from less than \$4 billion in 1977 to \$232 billion in September 1982.

The effects of the cumulating pressures and the Volcker initiatives would be, first, the activation of the existing Emergency Credit Control Act of 1969 by President Carter on February 18, 1980 and, second, landmark reform legislation on March 31, 1980, the Depository Institutions Deregulation and Monetary Control Act of 1980 (DIDMCA). The Emergency Credit Control Act

¹² For a valuable discussion of foreign bank credit to U. S. corporations, see McCauley and Seth [1992].

gave the Federal Reserve virtually unlimited powers to alter the nature of financial services available in the economy during an emergency period. It was only in force for a few months, but caused a sharp contraction in economic activity, which induced the Federal Reserve to allow interest rates to fall for two quarters. Access to consumer credit was restricted as a result, so borrowers joined depositors in being savaged by government restrictions in financial markets.

DIDMCA had nine titles (sections); it was the first of several legislative steps to replace the regulatory structure that had been introduced in the 1930s. It established that after an eight-year phase-in period there would be a set of uniform reserve requirements on demand and other checkable deposits (NOWs) and another set on time and savings deposits, irrespective of the type of institution holding the account. All depository intermediaries would have access to the discount window and could avail themselves of Federal Reserve services at cost. Further, over a six-year period all interest rate ceilings on time and savings deposits would be phased out. Deposit insurance was increased from \$40,000 to \$100,000 per account. Lending powers of thrift institutions were expanded and all state usury ceilings on mortgage loans were preempted. Finally, depository institutions anywhere in the United States could offer NOW accounts after January 1, 1981. These and other changes were intended to put all depository institutions on a level playing field.

As the legislation came into force, the Fed again began to force nominal and real interest rates to new 20th Century highs. Assets of MMMFs continued to grow, because deposit interest rate ceilings were not being removed quickly. Thrift institutions were sustaining large operating losses; estimates of the market value of their mortgage portfolios suggested that the industry had a net worth of negative \$100 to \$150 billion instead of the plus \$30 billion shown on its books.¹³

Net operating income of commercial banks as a percentage of assets was higher between 1978 and 1981 than in earlier years of the decade, but lower than in the 1950s and 1960s. Rates of return on bank assets soared, but costs of liabilities only increased modestly until September 1982. Some of these profits would prove to be illusory, because large banks were including large amounts of interest they were earning on burgeoning loans to third-world countries, which would prove to be uncollectable. There were no official estimates of the market values of bank mortgage loans, but a substantial deterioration in value also occurred for banks during these years.¹⁴ This loss was not revealed because bank accountants carried mortgage loans and securities at cost or par, rather than market values.

The condition of savings and loan associations continued to deteriorate because of their large holdings of low, fixed-interest rate mortgage loans. By early 1982 it was becoming obvious that a wave of failures was in progress. Further legislative action and an easing of interest rates were needed to avoid an impending collapse of the industry. In the third quarter of 1982 both would occur. The Federal Reserve sharply increased the rate of growth of M1 and short-term interest rates fell about five percentage points. In September Congress passed and the President signed the Garn-St Germain Act, a second landmark reform bill.

The Garn-St Germain Act provided a number of emergency mechanisms for coping with

¹³ See White [1991, p. 76 and endnote 13].

¹⁴ See Mondschean [1989, p. 114].

the savings and loan industry crisis for a period of three years. These included involuntary mergers, a number of unconventional accounting procedures that concealed the severity of an association's condition, loans, transfers of cash, and “net worth certificates”. The last was conditional synthetic capital; it was a promise by the government to provide a specified amount of funds to creditors, if an association failed. The act also considerably expanded the lending and investing powers of associations. Lower interest rates and these emergency mechanisms allowed the industry to postpone its day of reckoning, but did not solve the industry's problems.

The Garn-St Germain Act also addressed the rapid growth in MMMFs by allowing banks and thrifts to issue two new liabilities, money market deposit accounts and super NOW accounts. Each account had a minimum balance of \$2,500, but would pay close to money market interest rates. The super NOW account allowed individuals to write an unlimited number of checks, but was subject to reserve requirements and paid a slightly lower interest rate than the money market deposit account, which initially had no reserve requirement. After six months these accounts held more than \$300 billion, which was more than was in MMMFs. MMMFs would lose about \$70 billion in this span, but then resume growing again.

One other event occurred in 1981 that would have profound consequences. The incoming Reagan administration put through a series of three tax rate cuts, the first in 1981 and the third in 1983. The tax cuts resulted in massive continuing government deficits, rising interest rates, and a substantial appreciation in the dollar, which would peak in February 1985. The dollar would rise more than 40% relative to currencies of Japan and western European countries.

By 1982 the dollar had already appreciated enough relative to the peso so that Mexico was not able to service its dollar-denominated debts to U. S. and other multinational banks. Other third-world countries would soon encounter the same difficulty. Banks had been accepting large deposits from OPEC countries and lending them to developing countries, apparently in the belief that there could be no defaults on such sovereign debt. The U. S. economy experienced two severe recessions in the period from November 1979 through December 1982. Pastures must have looked greener elsewhere!

Finally, in response to political pressures, the FHLBB reduced the minimum required ratio of book net worth to total assets from 5% to 3% between 1980 and 1982. While all such requirements were specious because assets were not being marked to market values, this action signaled that the Board's policy leaned toward regulatory forbearance. More ominously, the Board's examination and supervisory staff shrank between 1981 and 1984. This reduction in bank examiners was a consequence of budgetary cuts that were mandated by the Reagan administration and Congress in a poorly timed attempt to get the government “off the backs” of entrepreneurs. This is an early instance of implementing an evolving *laissez faire* philosophy that had been acquiring political momentum, beginning with the Goldwater presidential campaign of 1964.¹⁵

V FURTHER WAFLING AND FINALLY ABSORBING THE LOSSES: 1984 – 1994

In the last quarter of 1983, the Federal Reserve returned to a restrictive monetary policy.

¹⁵ See White [1991, pp. 82-92] and Romer and Weingast [1992, pp. 167-202].

The real money supply, M1 in constant dollars, was essentially unchanged for four quarters and real and nominal interest rates rose. As interest rates rose, the condition of savings and loan associations again worsened. Now thrift institutions had to pay market interest rates on their liabilities, but the bulk of their assets were still in low yielding mortgage loans.¹⁶

The government responded to the continuing crisis with a series of patchwork delaying actions that were designed to postpone the inevitable day of reckoning. First, regulatory agencies were authorized to continue the set of emergency actions that had been specified in the Garn-St Germain Act beyond the original three-year time span. Second, the FHLBB under its Chairman, Edwin Gray, attempted to protect the FSLIC from growing losses by banning “brokered deposits,” an arrangement in which savings and loan associations acquired insured certificates of deposit through investment advisors and stock brokers from investors in amounts that did not exceed the maximum amount of \$100,000 that the FSLIC would insure. Gray recognized that such deposits provided operators of associations with extraordinary access to funds that would seriously impair the understaffed FSLIC’s ability to regulate rapidly growing associations. His ban was successfully challenged in court. Third, in 1985 the Board finally found a way to bypass Reagan administration resistance to expanding the number of examiners. The number of examiners more than doubled between 1984 and 1988 and their budget more than tripled.¹⁷

Fourth, a government capital injection to the FSLIC became necessary because it was insolvent. After M. Danny Wall replaced Edwin Gray as chairman of the FHLBB, Congress passed the Competitive Equality Banking Act of 1987 (CEBA) that President Reagan signed in August. It authorized the FSLIC to borrow \$10.825 billion and established the Financing Corporation (FICO), a new government agency that was authorized to borrow an additional \$15 billion that could be used to finance restructuring of savings and loan associations. The Congress exacted a high price for this assistance when it insisted that the FSLIC exercise extreme regulatory forbearance in the Southwest (especially Texas and Oklahoma) where savings and loan associations had been severely impacted by falling oil prices.

In addition to high costs of deposit liabilities, savings and loan associations encountered two other obstacles in their struggle for survival. First, federal housing credit programs offered by FNMA, GNMA, and FHLMC were capturing a steadily increasing share of mortgage markets. By 1988 nearly 40% of all mortgages on houses for 1 - 4 families benefited directly from these programs; as a result interest rates on mortgage loans fell relative to those on bonds with comparable maturities.¹⁸ Mortgage loans were more than fifty percent of savings and loan asset portfolios. Second, expanded lending powers provided by DIDMCA and the Garn-St Germain Act allowed savings and loan associations to acquire diverse other assets in markets where their expertise was very limited. Losses from incompetence, corruption, and dubious investments were

¹⁶ Between 1978 and 1982 savings and loan associations were increasingly allowed to make mortgage loans with floating interest rates. For example, the interest rate on a loan might change every six months so that its rate would be, say, 3% above the rate on a 7-year U. S. Treasury note. By 1983 between 40% and 60% of new mortgage loans had floating rates. The rates still were not fully flexible, since contracts often specified a maximum rate or “cap” which could not be exceeded. An association’s gap would be an increasing function of the fraction of its mortgages that had floating rates. If enough were floating the average association’s gap could be positive. Cf. Footnote 10.

¹⁷ See White [1991, pp. 130-1].

¹⁸ The percentage exceeded 50% in 1994. Most of these mortgages were securitized in mortgage pools.

high.¹⁹

The number of associations steadily dwindled, from 6,320 in 1960 to 3,825 in 1982. More ominously, if assets were being marked to market, the number of continuing associations with negative net worth was rising. By yearend 1989 more than one-third of the 2,878 surviving saving and loan associations with nearly forty percent of industry assets were unprofitable. Collectively their tangible net worth was negative \$23.7 billion and their after-tax 1989 net income was negative \$24.4 billion. The entire industry had a miniscule tangible net worth of \$10.1 billion to back up \$946 billion in deposits and it had 1989 after-tax net income of negative \$19.2.²⁰

The ratio of profits to assets at commercial banks also declined after 1982. Large realized and unrealized losses on third-world loans by money center banks were part of the problem. Growing competition in financial markets from nonfinancial corporations and overseas banks, together with relaxation of barriers to intrastate banking eroded long-standing monopoly rents of banks. Money market mutual funds continued to pay high interest rates, which increased the cost of deposits to banks. Savings and loan associations also continued to contest consumer markets by paying high interest rates on brokered time deposits.

Falling profits were unevenly distributed across commercial banks; bank failures reached levels in the United States not seen since the early years of the Great Depression. The number of insured commercial banks that ceased operations rose from 4 in 1981 to a peak of 261 in 1989. The number of insured banks fell from 14,512 at the end of 1984 to 10,514 at the end of 1994. At the end of 2001, there were 8,129 commercial banks.²¹ Disappearing banks were being bought up by other banks and converted into branches, voluntarily closed, or closed by bank regulators. It should be noted that the number of existing banks includes a large number of newly chartered commercial banks and institutions that converted from mutual savings bank and savings and loan association charters to commercial banking charters.

Quite apart from changes in the number of banks, Amel and Jacowski [1989] reported that between 1976 and 1987 there was a major restructuring of the organization of U.S. commercial banking. In 1976 there were 10,608 independent banks that controlled 30% of domestic banking assets. By the end of 1987 there were 4,375 independent banks that controlled 9% of domestic assets. In 1976 there were 301 multibank holding companies that controlled 36% of domestic banking assets; by the end of 1987 there were 985 that controlled 70% of domestic assets. The remaining category, one-bank holding companies, saw their share of domestic banking assets shrink from 34% to 21% between these two dates. The new or rapidly expanding multibank holding companies tended to be regional organizations with little third-world loan exposure. An interpretation is that banks were responding to increasing competition from nonbanks by merging to reduce intra-industry competition.

¹⁹ It was sometimes argued that the debacle of the 1980s was a rational response by owners of savings and loan associations to their precarious condition in a regime where deposit insurance was universal. See Kane [1989] and references therein. The argument is that thrifts had nothing to lose if risky investments failed, because they already typically had negative net worth, if assets were marked to market. If risky investments yielded high payoffs, an association might become viable; if they failed depositors were insured against losses. A description of corrupt practices in the savings and loan industry is available in Pizzo, Fricker, and Muolo [1989].

²⁰ See White [1991, p. 18]

²¹ See Bassett and Carlson [2002, p. 260].

Between 1984 and 1994 commercial banks were greatly increasing the amount of mortgage loans in their portfolios. There are several candidate explanations for this shift. First, banks were facing aggressive competitors in all loan markets, but the weakest competitors were the crippled and disappearing savings and loan associations. Banks were not as heavily burdened with low fixed interest rate mortgage loans as savings banks and savings and loan associations, so they could undercut these rivals. Second, adjustable-rate mortgages (ARMs) were increasingly being accepted by regulators and the public. This meant that banks could now make mortgage loans and not have the large negative gap that the savings institutions experienced. Third, the growing secondary markets in mortgage-backed securities that had been developed by GNMA and FHLMC had made mortgage loans very liquid. Banks could reasonably expect to be able to securitize and sell them if conditions changed.

Further, the Tax Reform Act of 1986 profoundly changed the extent to which households could deduct loan interest from taxable income. Before the change essentially all interest payments could be deducted from taxable income. After the change, interest payments could only be deducted if the proceeds were used to finance medical, educational, etc. expenses or to finance residential property, i.e. was a mortgage loan secured by residential property. Banks and other lenders rapidly expanded mortgage loans to exploit this tax law revision. A major innovation to achieve this goal was the home equity line of credit. A home equity line of credit allows house owners to borrow funds against the equity in their houses. The funds are fungible in that they can be used for almost any purpose, and the interest continues to be deductible. Table 3 shows mortgage loans and mortgage-backed securities as a percentage of total commercial banking assets. The table understates bank financing of real estate because most, but not all, government agency paper in bank portfolios is used to finance government-sponsored mortgage programs. Home equity lines of credit are shown only if a line has been activated and, then, only the amount borrowed against the line is included in real estate loans. The data are unavoidably incomplete, because the Federal Reserve did not publish information for collateralized obligations and private securities in early years. The missing series are undoubtedly small and the overall trend between 1985 and 1991 is clear; there was no meaningful trend between 1991 and 1999, but the trend again appears to have turned positive in 2000 and 2001.

The bad experience of the savings and loan industry was a result of its large negative gap. Banks and other investors learned from that experience and seemed to have controlled their gaps, positive or negative, with adjustable rate mortgages and instruments available on financial futures and options exchanges. Additional instruments for controlling exposure to gaps included swaps and stripped securities.²² These instruments and their elaborate variations are priced using the then relatively recent results from the theory of finance, especially the option-pricing model of Black and Scholes [1973] and its extensions.

On August 9, 1989, the government finally took actions to clean up the mess in the savings and loan industry when President George H. W. Bush signed the Financial Institutions, Reform, Recovery, and Enforcement Act of 1989 (FIRREA). This very complex bill eliminated the Federal Home Loan Bank Board and the Federal Savings and Loan Insurance Corporation and replaced them respectively with the Office of Thrift Supervision (OTS) and the Savings Association

²² For a discussion of stripped securities, see Beckett [1988]. Swaps are discussed in Bank for International Settlements [1986, Chapter 2].

Insurance Fund (SAIF). The Federal Deposit Insurance Corporation (FDIC) was assigned the responsibility for managing SAIF and another fund, the Bank Insurance Fund (BIF). The two funds established different insurance premiums, which were less onerous for commercial

Table 3
Real Estate Loans and Securitized Mortgage Debt in Commercial Bank Portfolios
 (expressed as a percentage of average net consolidated assets)

year	real estate loans	mortgage pass-through securities	collateralized mortgage obligations	private mortgage-backed securities	total
1985	15.88	0.96	n.a.	n.a.	n.a.
1986	16.90	1.13	n.a.	n.a.	n.a.
1987	19.00	2.10	n.a.	n.a.	n.a.
1988	20.86	2.59	n.a.	n.a.	n.a.
1989	22.50	3.27	n.a.	n.a.	n.a.
1990	23.86	4.08	1.28	n.a.	n.a.
1991	24.86	4.51	2.07	0.94	32.38
1992	24.87	4.52	3.12	0.82	33.33
1993	24.80	4.74	3.72	0.73	33.99
1994	24.43	4.67	3.24	0.64	32.98
1995	25.01	4.47	2.67	0.62	32.77
1996	25.06	4.80	2.11	0.61	32.58
1997	25.02	4.94	1.94	0.50	32.40
1998	24.87	5.17	2.13	0.67	32.84
1999	25.44	5.24	2.15	0.88	33.71
2000	27.04	4.75	1.92	0.95	34.66
2001	27.10	5.13	1.96	1.09	35.28

Sources: Various annual articles entitled "Profits and Balance Sheet Developments at U.S. Commercial Banks in [year]" that appear in June or July issues of the Federal Reserve Bulletin.

banks. Supervision of the twelve Federal Home Loan Banks was transferred to a new organization, the Federal Home Finance Board (FHFB). Responsibility for liquidating insolvent savings and loan associations was assigned to another new agency, the Resolution Trust Corporation (RTC), which was also managed by the FDIC. The cost of this clean up would be very large, although the exact amount is not known – its present value in 1989 was probably on the order of \$150 billion. Responsibility for managing it was assigned to the Resolution Financing Corporation (RFC), which

was authorized to borrow an additional \$50 billion. Other RFC funds came from reserves and future net income of Federal Home Loan Banks; these assessments served to increase the costs of savings and loans and thus favored commercial banks. There were a number of further large expenditures for the saving and loan disaster as a result of a threatened default by FICO and a court decision that FIRREA violated promises made by the government in the Garn-St Germain Act; their details are not important for the present discussion.

In 1991 growing concern about the solvency of the FDIC that came from the continuing wave of commercial bank failures led to the passage of the Federal Deposit Insurance Corporation Improvement Act of 1991 (FDICIA). This act authorized the FDIC to borrow to meet its obligations. It also incorporated reforms that gave the FDIC the goal of attempting to minimize its potential losses when fulfilling its responsibilities of insuring depositors. In particular, it put pressure on the Corporation to avoid resorting to a doctrine of “too big to fail” which had been invoked when large banks got into difficulty. An example is when the Continental Illinois National Bank and Trust Company failed in 1984. In terms of total assets it was the largest bank failure in U.S. history and was estimated in 1997 to have cost the FDIC \$1.1 billion. While large, it was greatly exceeded by costs the FDIC experienced when resolving failures in 1988 and 1989 of the large Texas banks, First Republicbank Corp. (\$3.77 billion) and Mcorp-Dallas (\$2.85 billion).²³ The reason for these large payments was that the FDIC reimbursed all depositors’ losses rather than the \$100,000 per account that they were legally required to insure, because the Corporation apparently feared that systemic failures would occur if uninsured clients at such large entities were not fully protected. They had shown no such concern for large uninsured depositors at small banks, as in the case of the 1990 failure of the Freedom National Bank in Harlem.

FDICIA modified the structure of premiums that the FDIC could charge banks in order to better reflect its risk exposure. This and the nearly contemporaneous Basle international agreements for determining a bank’s minimum required capital would strongly affect banking practices in the years to come, as will be seen in the next section.

Another major legislative reform of banking occurred in 1994, the Riegle-Neal Interstate Banking and Branching Efficiency Act. This legislation attempted to simplify a very messy regulatory structure for U. S. banks. A few multi-state bank holding companies had come into existence in the 1920s and continued to exist because they were “grandfathered” by the 1927 McFadden Act that banned interstate banking structures. Otherwise, banks and savings and loan associations could only have branches in a single U. S. state. The Garn-St Germain Act of 1982 authorized regulatory agencies to approve emergency mergers between failing savings and loan associations and other financial institutions that sometimes were in different states, if suitable merger partners were not available in a state. Further, mergers between a commercial bank and a savings and loan association were approved if no suitable savings and loan partner were available. Finally, different states had heterogeneous regulations about branching within their borders. Thus, some states would not approve branching within its borders or only branching in limited areas, while others allowed statewide branching. While state restrictions on branching within states were slowly being removed and some states were negotiating bilateral interstate branching arrangements, banking markets continued to be subject to many artificial barriers. The Riegle-Neal

²³ See Federal Deposit Insurance Corporation [1998, p. 245].

Act re-established the chartering of multi-state bank holding companies. Further, unless states opted out within a certain time interval the Act authorized full interstate branching. Only Texas and Idaho opted out.

In principle, the Riegle-Neal Act should have helped bank clients by eliminating a large number of indefensible barriers to entering markets. However, it also led to a wave of mergers that has greatly increased the share of banking system assets in the largest banks after 1994. The share of banking system assets understates the share of bank lending originated by large banks, because large banks securitize relatively more of the loans that they make. Securitized loans tend to be homogeneous, which may reduce the access to bank credit by promising but idiosyncratic borrowers.²⁴ Large banks also raise more funds from foreign offices and in non-deposit forms than other banks, which suggests that deposits are likely to decline relative to other financial assets held by households and firms.

VI THE AFTERMATH: 1995 – 2002

Debt in the United States had been rising steadily as the economy grew. The U. S. Flow of Funds Accounts indicate that between 1965 and 1980, total credit market debt owed by domestic nonfinancial sectors was approximately 150% of nominal GDP. Between 1980 and 1989 credit market debt rose much faster than GDP, so that by 1989 it was almost 200% of nominal GDP. It fell to 180% at the end of 1994 and then rose steadily to 189% in 2001. Debt growth after 1980 was quite broadly based, but differed considerably across sectors in different sub periods. Between 1980 and 1989 debt of the U. S. government grew 206%, debt of all business grew 145%, debt of corporations grew 162%, debt of households grew 139%, and debt of state and local governments grew 174%. Between 1989 and 1994, debt of the U. S. government grew 55%, debt of all business grew 6%, debt of corporations grew 12%, debt of households grew 36%, and debt of state and local governments grew 19%. Between 1994 and 2001, U.S. government debt fell 3%, debt of all business grew 82%, debt of corporations grew 87%, debt of households grew 69%, and debt of state and local governments grew 24%. Apart from being a longer sub period than others, debt growth between 1980 and 1989 reflects a high rate of inflation, the deep recessions of 1980 and 1982, and the large tax cuts of the 1981-1983 period. Federal government debt was also growing most rapidly between 1989 and 1994, as the economy suffered another recession and the effects of the tax cuts continued. In part because of tax increases by the first Bush administration and the Clinton administration and the absence of a recession, federal government debt actually shrank between 1994 and 2001. Household and business debt expanded rapidly and perhaps unsustainably in this last sub period.

The manner in which the last sub-period's deficits were financed partly reflects the extraordinary changes in the banking regulatory environment and other developments in financial markets. Changes in total credit market assets (and liabilities) were large relative to changes in GDP. The ratio of total credit market assets to GDP rose from 2.38 in 1994 to 2.87 in 2001. In part

²⁴ Cf. Cole, Goldberg, and White [2001].

this rise reflects the fact that there was growing “roundaboutness” in financial markets as intermediaries were increasingly acquiring credit market assets that were issued by other intermediaries. Direct claims on final borrowers by original lenders were a falling share of total credit market assets.

Table 4 reports end of year positions in credit market assets for selected classes of large investors from 1994 through 2001. Holdings of the domestic nonfederal nonfinancial sector were

Table 4
Total Credit Market Assets Held by Selected Large Investor Classes: 1994-2001
(end of year in trillions of dollars)

investor class	1994	1995	1996	1997	1998	1999	2000	2001
TOTAL	17.2	18.4	19.8	21.3	23.5	25.7	27.5	29.5
<u>Domestic nonfederal nonfinancial</u>	3.0	2.9	2.9	2.9	3.1	3.4	3.2	3.0
households	2.0	1.9	2.0	2.0	2.0	2.3	2.1	1.9
<u>Federal government</u>	0.20	0.20	0.20	0.21	0.22	0.26	0.27	0.27
<u>Rest of world</u>	1.2	1.5	1.9	2.3	2.5	2.7	3.0	3.4
<u>All financial</u>	12.8	13.8	14.7	15.9	17.6	19.4	21.1	22.8
commercial banking	3.3	3.5	3.7	4.0	4.3	4.6	5.0	5.2
savings institutions	0.9	0.9	0.9	0.9	1.0	1.0	1.1	1.1
life insurance	1.5	1.6	1.7	1.8	1.8	1.9	1.9	2.1
MMMFs	0.5	0.5	0.6	0.7	1.0	1.1	1.3	1.5
other mutual funds	0.7	0.8	0.8	0.9	1.0	1.1	1.1	1.2
government-sponsored enterprises	0.7	0.8	0.8	0.9	1.3	1.5	1.8	2.1
federally related mortgage pools	1.5	1.6	1.7	1.8	2.0	2.3	2.5	2.8
ABS issuers	0.5	0.7	0.8	0.9	1.2	1.4	1.6	1.9
finance companies	0.5	0.5	0.5	0.6	0.6	0.7	0.9	0.9

Sources: Federal Reserve statistical release Z.1, Flow of Funds Accounts of the United States, March 12, 1999 and March 7, 2002.

Notes: Table excludes corporate equities and mutual fund shares. The row "TOTAL" is equal to the sum of the underlined sectors.

essentially flat over this period. Holdings of the federal government were rising, but too small to merit discussion. Holdings of the rest of the world nearly tripled; the U. S. partly financed its huge trade deficits by transferring credit market assets to foreign investors. Credit market assets of all financial institutions rose 78% between 1994 and 2001. Commercial banks' credit market assets rose 60% during this interval – more than savings institutions and life insurance companies, but less than the other financial institutions shown in the table.

The highest rate of growth was by asset-backed security issuers, which are special purpose vehicles that issue commercial paper and corporate bonds that are secured by financial and other assets. Commercial banks, savings institutions, finance companies, and other institutions such as leasing companies originate many of the assets they hold. The high growth rate of issuers of asset-backed securities reflects efforts by commercial banks and other intermediaries to get assets off their balance sheets. By moving assets off balance sheets banks can continue to earn income from servicing assets they originate without violating minimum capital requirements that were established in the Basle agreements or by regulatory agencies. Further, banks avoid deposit insurance premiums, if assets are not financed by deposits. Typically acquirers of asset-backed commercial paper and corporate bonds have little recourse to originating institutions or asset-backed security issuers if defaults occur; so asset-backed security issuers are effectively redistributing risk to a broader group of investors. Commercial bank holding companies administer many issuers of asset-backed securities.

Other issuers of securitized debt in Table 4 have also been growing rapidly. Federally related mortgage pools issue securities that are backed by mortgage loans. They compete with private asset-backed security issuers. Because of their association with the federal government, they are perceived to be somewhat safer, can pay a lower interest rate than comparable private sector issuers, and trade in a highly liquid market. As is evident in Table 3 about twenty percent of bank credit to real estate markets takes the indirect form of mortgage-backed securities.

Government sponsored enterprises issue securities that are backed by loans made by agencies established by the United States government. They exist essentially for cosmetic reasons, because the government does not want such paper counted as part of its full faith and credit debt. The securities are analogous to debt that is issued by a subsidiary of a private corporation. While such debt might seem risky, there is a widely held view that the government would reimburse investors for any losses in the event of a default. As a result such debt pays lower interest rates than low risk private debt – roughly forty or fifty basis points more than full faith and credit U.S. government debt of comparable maturity. In 2000 more than ten percent of commercial banking assets were government agency securities, which contributes to their aura of being a safe asset. Agency securities are attractive because in addition to paying a higher rate than treasury securities they can be used in repurchase agreements.

Money market mutual funds have also been growing very rapidly in recent years. As explained earlier, they have a technical advantage because by construction these funds can never

have a gap problem. Their holdings are mostly short-term agency securities and commercial paper.

Securitization often requires the help of investment bankers. Beginning in 1987, some large bank holding companies were authorized by the Federal Reserve to establish subsidiaries that could underwrite state and local government revenue bonds; they were called Section 20 subsidiaries because they are allowable under Section 20 of the 1933 Glass-Steagall Act. Initially, the amount they could underwrite was limited by a condition that the revenue from underwriting could not exceed five percent of the subsidiary's total revenue. This decision by the Federal Reserve Board was the first crack in the separation of commercial and investment banking, which had been mandated by the Glass-Steagall Act.²⁵ The crack widened in 1989 when the Federal Reserve relaxed the restriction on revenue from five to ten percent of a subsidiary's revenues and again in 1996 when the restriction was eased from ten to twenty-five percent. In 1997 the Federal Reserve eliminated all firewalls for Section 20 subsidiaries.²⁶

On April 6, 1998 the largest U. S. bank holding company, Citicorp, and the Travelers Insurance Group announced a merger, which effectively threw the gauntlet down at the feet of the federal government. There was no legislation at the time that allowed such a merger to be sustained. Because the Travelers Group owned an investment-banking firm, Solomon Smith Barney, the proposed merger was in violation of the Glass-Steagall Act. The transaction was effected by having the Travelers Group buy Citicorp and then apply to the Federal Reserve to become a bank holding company, Citigroup. Under the Bank Holding Company Act, the Federal Reserve was authorized to grant new holding companies a two-year window in which to dispose of activities that were not allowed under the Bank Holding Company Act. Two years were not required because a 1999 law eliminated the problem.

On November 12, 1999 President Clinton signed the Financial Services Modernization Act (also known as the Gramm-Leach-Bliley Act). This act repealed restrictions on banks affiliating with securities firms that appeared in Sections 20 and 32 of the Glass-Steagall Act, thereby obviating the need for the two-year window. The act introduced a new construct, a financial holding company, which could engage in a statutorily approved list of activities that included insurance, securities underwriting, merchant banking, and complementary financial undertakings. The Federal Reserve is responsible for overseeing the regulation of financial holding companies; various state and other federal agencies are charged with continuing to regulate activities (functions) provided by affiliates of a financial holding company. At the end of 2001, there were 672 financial holding companies. The Financial Services Modernization Act is extremely intricate and incorporates much political compromise and grandstanding. A thorough exposition is beyond the scope of the present paper. It is important to note, however, that the act preempts state laws that had limited affiliations among financial firms and radically restructures Federal Home Loan Banks. Henceforth, the Federal Housing Finance Board no longer controls Federal Home Loan Banks. Further, commercial banks with less than \$500 million in assets may use long-term FHLB loans to finance loans to small firms.

Press reports at the time of the signing of the Financial Services Modernization Act had predicted a sweeping restructuring of financial markets. It is difficult to confirm that such

²⁵ See Ronald A. Wirtz [2000, p. 9]

²⁶ See Federal Reserve Bank of Minneapolis [2000, p. 54]

revolutionary restructuring is occurring so soon after its passage, but change continues.

VII AN OVERVIEW AND SUMMARY

To a considerable extent the financial system has reverted to a mixture of the system of the 1920s and a new system where there is massive government intrusion in capital markets. The consequences of this intrusion are poorly understood and difficult to analyze. For example, what happens if FNMA or some Federal Home Loan Banks get into difficulty? The transition has been fumbling and costly; larger costs in present value terms are likely in the future. Depositors and borrowers at commercial banks can anticipate receiving a new and different set of services, which in some respects are better and in others worse than they received seventy-five years ago.

a) *Comparing the 1920s and the 1990s.* To begin with, consider the system of the 1920s. Banks could pay interest on demand and time deposits and were able to conduct both commercial and investment banking. Before 1927 interstate bank holding companies existed and banks had branches in different states. Banking instability was widespread; between 1921 and 1929 more than 5,400 banks suspended operations. There was no federal deposit insurance.

Between June 1920 and June 1929, total commercial banking system deposits rose 36%, from \$36 to \$49 billion.²⁷ Deposits of banks that were members of the Federal Reserve System rose from \$25 billion to \$36 billion in the same period.²⁸ In real terms, percentage changes in deposits should be adjusted upward because major price indexes fell about ten percent in the 1920s.²⁹ Business loans fell as a percentage of all bank loans and investments from 47% to 33% between 1922 and 1929. Nonfarm residential mortgage loans on commercial bank balance sheets doubled as a percentage of banking system assets during the 1920s; they were 8% in 1929. For banks that were members of the Federal Reserve System, all securities (loans) expressed as a fraction of total assets were 18% (59%) at the end of 1920 and 20% (55%) at the end of 1929. For member banks, U. S. government securities were 8% of total assets on both dates.³⁰ For all U. S. banks, corporate bonds rose from 8% of banking system assets in 1920 to 11% in 1930. There were large amounts of overnight call loans, which served as short-term secured loans – much like repurchase agreements today. In 1925 loans on security collateral were 29% of all loans at national banks. Like repurchase agreements, many overnight lenders in the call market were nonfinancial corporations; 70% of the \$9.2 billion of loans to brokers and dealers came from such corporations in October 1929.³¹ Federal funds were traded among members of a clearinghouse, but a national market did not exist until the fed wire was established in 1928.

There are marked similarities between the 1920s and the 1990s, especially the late 1990s. Banks are now able to pay interest on NOW account balances, time and savings account balances, and deposits they book at overseas branches. Only demand deposit balances in domestic offices pay no interest. As a percentage of average net consolidated assets in all banks, demand balances in

²⁷ Board of Governors of the Federal Reserve System [1943, p. 17].

²⁸ *Ibid.* p. 73.

²⁹ See Goldsmith and Lipsey [1963, pp. 170-1].

³⁰ Board of Governors of the Federal Reserve System [1943, p. 72].

³¹ Unless otherwise noted, statistics in this paragraph are from Klebaner [1974, pp. 112-29].

domestic offices have fallen from 13% in 1991 to 8% in 2001.³² After 1999, financial holding companies could do both commercial and investment banking. Bank failures occurred at a high rate in the 1980s and early 1990s, but there were few losses sustained by depositors because of deposit insurance. There were 1442 bank failures in the United States between 1982 and 1993, which was about half the percentage incidence of the 1920s. The failure rate has been falling since 1988; the FDIC has reported that fewer than ten banks required assistance in each year between 1994 and 2002.³³

Between December 1990 and December 2001 total assets of domestically chartered commercial banks deposits rose 91%, from \$2.86 to \$5.45 trillion, and all deposits rose 74% from \$2.17 to \$3.78 trillion.³⁴ After adjusting for differences in the rate of inflation (the consumer price index rose 32% in this time interval), in real terms these growth rates were very similar to those in the 1920s. Outstanding commercial and industrial loans at domestically chartered commercial banks, rose from \$514.7 billion in December 1990 to \$827.6 in December 2001 but, as in the 1920s fell as a percentage of total bank assets from 18% to 15%. Unlike the 1920s when outstanding commercial paper fell, commercial paper was an increasingly important source of funds for nonfinancial corporations in the 1980s and 1990s. Commercial paper of nonfinancial corporations (all issuers) rose fairly steadily from \$148 (\$562) billion in December 1990 to \$343 (\$1,615) billion in December 2000, but then plummeted to \$225 (\$1,439) billion in December 2001 and to \$189 (\$1,358) billion in March 2002. Nonfinancial corporations borrowed heavily in the bond market in both periods, and especially from overseas investors in the 1990s. Unlike the 1920s, relatively small amounts of funds were raised through new equity issues in the 1990s. Indeed, over the ten-year span 1992-2001 the Federal Reserve's Flow of Funds accounts indicate that the net issuance of equities by U. S. nonfinancial corporate business was slightly negative, while their net issuance of bonds was about \$147 billion per year.

All real estate loans, as a percentage of average net consolidated assets on U. S. commercial bank balance sheets, rose from 25% in 1991 to 27% in 2001. Either figure is substantially more than banks held seventy-five years ago. However, it is difficult to make quantitative comparisons of real estate loans between the 1920s and the 1990s because their properties have changed so much. Mortgage loan maturities in the 1920s typically were five years or less and contracts often specified that a large "balloon" payment was due at maturity; in recent years many residential mortgage loan contracts have thirty-year maturities. The effective life of mortgage loans in the 1920s was, of course, longer than five years, because loans would often be rolled over, and shorter than thirty years in the 1990s because people move on average about once every five years. In terms of maturity the differences between the two periods is that in the 1920s 1) a bank effectively had an option to call the loan at maturity in the earlier period and 2) had only a limited gap exposure, because interest rates on loans could be set to current market rates when loans matured. The value of the option may not have been high if the underlying asset's value was below the amount of the loan, but a bank could protect the option's value by requiring that a loan be small relative to a

³² This and other percentages of net consolidated assets in all banks are from Bassett and Zakrajsek, [2001, p. 384] for the years 1991 through 2000 and from Bassett and Carlson, [2002, p. 278] for 2001.

³³ <http://www.fdic.gov/bank/historical/bank/index.html>.

³⁴ Board of Governors of the Federal Reserve System [1996, p. 71] and Federal Reserve Bulletin, [2002, May, p. A16].

property's value. Unlike the 1920s, 1990s mortgage contracts could be 1) written with adjustable loan rates, 2) insured against default, and 3) securitized or traded on a liquid secondary market.

Banks held few private sector corporate bonds in the 1990s, but they had large quantities of securitized debt that had been issued by government agencies and large amounts of other direct agency debt. As a percentage of average net consolidated assets on all commercial bank balance sheets, securities were 21% in 1991 and 20% in 2001. The percentage of consolidated assets that was U. S. Treasury securities fell from 5.1% to 0.9% over these years, as compared to 8% in the 1920s. Thus, agency debt and securitized debt represented a much larger share of bank assets in the 1990s than corporate bonds did in the 1920s. Further, much of this debt was securitized by mortgage loans. While only U. S. Treasury securities are full faith and credit obligations of the government, agency and securitized debt were less likely to default than corporate debt held by banks in the 1920s. However, a collapse in real estate markets could greatly stress U. S. banking markets.

An area of growing risk exposure, similar to that of the 1920s, is in short-term funds. The sum of net federal funds purchased and funds acquired through repurchase agreements, as a percentage of net consolidated assets rose about 10% between 1991 and 2001, from 2.51% to 2.84%. They are likely to be mostly repurchase agreements that are secured by agency debt – primarily real estate loans. Another remarkable trend in the 1990s was the sharp increase in “other liabilities” as a percentage of net consolidated banking system assets, from 5.0% in 1991 to 9.9% in 2001. Such liabilities are not covered by deposit insurance, and thus represent risk that is being assumed by others in the economy. Their growth rate was inversely related to size of bank.³⁵ In the 1920s, the sum of borrowings, outstanding acceptances, and other liabilities of all banks that belonged to the Federal Reserve System fluctuated widely; in December 1929 it was 7.1% of total member bank assets.³⁶ Because “borrowings” in 1929 included federal funds and repurchase agreements, the combined 2001 percentages of total assets that were net federal funds purchased, funds acquired through repurchase agreements, and other liabilities were about 180% of their 1929 counterpart.

b) *Evaluating the changing returns and risk exposures of clients of banks.* How have returns, services, and risk exposures changed over the postwar period? The distortions arising from the Great Depression and World War II severely affected banks, as is evident in Table 1. At the end of 1945, 58% of insured banking system assets were U. S. government securities and 17% loans. It is important, but not easy, to allow for this severe initial distortion of bank balance sheets. Bankers

³⁵ It is always difficult to interpret what “other” on a balance sheet includes. I suspect that the growth of other liabilities is in part a consequence of the widespread practice of “sweeping” funds from transactions deposit accounts into other forms to avoid the need to hold required reserves, which expanded rapidly during the 1990s. Some funds were swept into money market deposit accounts, but probably not all because such accounts are only allowed to have six automatic transfers per month. Small banks were more likely than large banks to keep such funds on their books; large banks had used off shore shell branches to avoid reserve requirements and other regulations after 1981 when the Federal Reserve allowed transfers from such branches to be treated as immediately available funds. For a discussion of sweeping, see Wrase [1998, pp. 5-6].

³⁶ See Board of Governors of the Federal Reserve System [1943, pp. 70-3]. Borrowings include funds “borrowed by the reporting banks on their own promissory notes, on certificates of deposit, on notes and bills rediscounted, and on any other instruments given for the purpose of borrowing money, and includes federal funds purchased and loans and securities sold under repurchase agreement.” [p. 70]

as well as balance sheets had been through a wringer; they remembered all too well how vulnerable they were to economic shocks. As a first approximation, it seems reasonable to argue that the traumatizing effects of the depression and war largely defined bank portfolios until perhaps 1955. Banks were taking few risks and provided few new services. To be sure, there were relatively more loans and smaller holdings of U. S. securities; at the end of 1955 loans were 39% and U. S. government securities were 29% of insured banking system assets. But, as noted above, banks were not paying competitive interest rates on time and savings deposits and, relative to the 1920s, still had large amounts of liquid government securities. They were not stretching their resources to accommodate lenders.

This relaxed period disappeared roughly between 1955 and 1957 as the Federal Reserve took actions that sharply raised interest rates in an effort to fight inflation. The prime loan interest rate rose 50%, from 3% to 4.5% in these years. Firms began to seek longer “term” loans from banks and both the federal funds and commercial paper markets revived.³⁷ As noted above, bank interest rates on consumer time deposits began to rise rapidly between 1957 and 1963, closing the spread between what commercial banks and savings and loan associations paid. Bank net income as a percentage of all member bank assets reached a local maximum value in 1960, 0.84%, which was not surpassed until 1992. In the next years this bank profit measure began a prolonged decline as interest rates on deposits continued to rise and large banks introduced negotiable certificates of deposit.

This golden age for bank depositors came to an end in 1966, when Congress and regulators intervened by imposing ceilings on rates that could be paid on deposits in order to prevent a prospective wave of failures in the savings and loan industry. The intervention was initially especially damaging to borrowers, as the foregoing narrative suggests, because depositors were able to avoid the ceilings by acquiring assets that did not have them. Because savings and loan associations were largely limited to making mortgage loans, borrowers in real estate markets were savaged until FNMA was privatized and GNMA and FHLMC were respectively established in 1968 and 1970. However, depositors were also penalized when inflation rates began to exceed the rates banks and others were able to pay – especially if one takes into account taxes that were paid on interest income.

The events of this period pose an interesting question: Was the crisis in 1966 a consequence of uninformed myopic market behavior by banks and savings and loan associations or a serious flaw in system design? While it is true that government insurance funds would suffer losses if banks or savings and loan associations failed, few failed because of the imposition of interest rate ceilings. In 1965 and 1966 both intermediaries were paying higher rates on deposits than were sustainable, because they lacked the ability to raise interest rates sufficiently on the assets they held. As a short-run struggle for market shares, it was a classic example of overshooting that accompanies market clearing, which has been described by A. W. Phillips [1954, pp. 297-9] as “integral stabilization.” However, the competitors were not fairly matched because savings and loan associations were mostly invested in long-term real estate loans and had a much larger negative gap. Congress and government regulators, who required them to have this portfolio specialization and gap, stopped the competition. The system was also flawed because there was too

³⁷ A term loan is a commercial loan with an initial maturity longer than one year. Initially they tended to have fixed interest rates, but as interest rate volatility increased their rates often floated with market rates.

little private sector interest (stakeholders) in the survival of savings and loan associations. Most savings and loan funds were lodged in mutually chartered institutions. In such institutions there are no stockholders with an investment that could be lost. Management had a stake, but apart from losing their jobs they were unlikely to suffer penalties if an institution failed. Many managers and members of boards of directors had conflicts of interest because they often were affiliated with other firms that transacted with an institution. In stock-chartered savings and loan associations, owners were often similarly conflicted. This was also a system design flaw. In these circumstances Congress and regulators were unwilling to let the struggle play itself out. By imposing ceilings the government applied a palliative, but failed to address the underlying structural deficiencies and thereby precipitated the subsequent chaos.

The period between 1970 and the passage of the Monetary Control Act on March 31, 1980 is best viewed as an unseemly struggle among 1) depositors who were struggling (mostly unsuccessfully) to earn a positive rate of return on their savings, 2) borrowers who were struggling (mostly successfully) to earn a high rate of return on their leveraged tangible investments, and 3) the Federal Reserve who was struggling (destructively and mostly unsuccessfully) to fight inflation. Congress and three ineffective presidents largely watched from the sidelines. The events, outcomes, and victims were described in Section IV.

Because real interest rates were borderline negative during much of the decade, the trade-weighted value of the dollar fell about one-third and the U. S. current account balance was positive on average. A falling value of the dollar meant that U. S. firms could remain competitive in global markets without substantively restructuring themselves. Borrowers who were exporters benefited strongly during these years. Firms in Europe and Japan were forced to improve technology, which paid them high dividends in the following decade. Speculators responded to the falling value of the international exchange standard, the dollar, by bidding up the price of gold and silver to absurdly high levels. European countries began serious efforts to construct a substitute for the dollar by limiting bilateral fluctuations in the values of their currencies.

After MMMFs became big players in 1978 and the Garn-St Germain legislation was enacted in 1982, which created new high-yielding deposit accounts, depositors began to gain – at the expense of borrowers, insurers of deposits and, eventually, taxpayers. The Fed's restrictive monetary policy, beginning in late 1978, and the series of large Reagan administration tax cuts caused both nominal and real interest rates and the trade-weighted value of the dollar to rise sharply; the trade weighted index (1973 = 100) nearly doubled from 85.5 in January 1980 to 158.4 in February 1985. The Federal Reserve won the battle against inflation, but its efforts continued to inflict heavy losses on several sectors of the economy. The real cost of funds to borrowers soared and newly cheap imports from Japan and Europe severely impacted American manufacturers. Much of the U. S. Midwest became a "rust belt" as firms bore the brunt of the fight against inflation. The survivors who could borrow and afford the high cost of funds effected a major restructuring of industries, which would yield high returns in the 1990s, like those realized by firms in Japan and Europe in the 1980s.

Beginning with the Plaza Hotel agreement of September 1985, an international campaign was undertaken to reduce the value of the dollar. This campaign contributed to a decrease in the U.S. merchandise trade deficit after 1987 and a sharp fall in the trade-weighted value of the dollar to 89.0 in April 1988. The merchandise trade deficit fell from \$160 billion in 1987 to \$74 billion in 1991.

The falling exchange rate together with the restructuring of industries helped to improve the rate of return to firms – especially those with an export specialization. Because real interest rates were falling, most borrowers were gaining relative to depositors, but real interest rates remained high until the early 1990s.³⁸

As noted in Section V, the Tax Reform Act of 1986 changed rules on the deductibility of interest by households, which strongly favored individuals who could arrange a loan secured by residential real estate. Individuals who owned one or more homes gained at the expense of renters. The effects of the reform act were a surge in demand for real estate loans, which is partly evident in Table 3, and a disproportionately higher rate of inflation of housing prices. The yearend ratio of homeowners' equity in household real estate to its value decreased almost monotonically from 65.8% in 1989 to 54.2% in 1999; it was 54.9% at the end of 2001. Thus, leverage and the risk exposure of borrowers rose as homeowners sought to take advantage of the return from the almost unique tax shield afforded by mortgage loans.

The tax reform act also limited the deductibility of losses that investors could take on passive investments in commercial properties, which reduced the effective demand for mortgages on commercial properties. The passage of the act coincided with a construction boom in commercial properties, with the result that a glut of commercial buildings developed that was accompanied by very high vacancy rates and falling prices and rents.³⁹ Commercial real estate loan losses coincided with and contributed to the high rate of bank failures during this period and the mild recession of the early 1990s.

The Federal Reserve responded to the crisis tardily but aggressively by driving the real federal funds rate down to near zero in late 1992 and 1993. The effect of this intervention was to allow banks to sharply reduce the nominal interest rates that were being paid on deposits. For example, in January 1990 NOW accounts were paying 4.97%; they were only paying 1.84% in January 1994 and 1.98% in November 1996, when the Fed stopped reporting these rates.⁴⁰ Using the contemporaneous GDP price deflator, real interest rates paid on NOW accounts fell from about +0.50% to – 0.25% between 1990 and 1994. Similarly, on time deposits with a maturity of more than two and one-half years, the nominal interest rate banks paid was 7.86% in January 1990; they were paying 4.30% in January 1994 and 5.65% in September 1997 when, again, the Fed stopped reporting these series. Depositors suffered from the Federal Reserve's policies in the early 1990s.

Beginning in 1994 the Fed reversed course and drove the federal funds rate sharply higher, from 2.96% in December 1993 to 5.92% in March 1995. The real federal funds rate also increased about 300 basis points between these two dates. The nominal federal funds rate was reduced slightly in 1995, but the target rate varied between 5.25% and 5.50% between December 1995 and the Long-Term Capital Management crisis of October 1998. The real federal funds rate drifted up over this 34-month span, but was insufficient to arrest an expanding bubble that had developed in the stock market. A rising torrent of funds from overseas resulted from the growing U. S. trade

³⁸ The real interest rate in this discussion is the nominal federal funds rate minus the contemporaneous percentage rate of change of the GDP implicit price deflator.

³⁹ See Hester [1992, p. 127].

⁴⁰ There has been some erosion in the amount and quality of information that is being reported to the public by the Federal Reserve Board in the Federal Reserve Bulletin. Time series are dropped or changed, which impairs their value for analysis. To some extent, changes are forced on the Federal Reserve by financial market innovations.

deficit and an appreciating U. S. dollar fed securities markets. The negative net issues of corporate equities between 1995 and 1998, which are reported in the Federal Reserve's Flow of Funds Accounts, accentuated the bubble.

Households were large net sellers of equities during these years, but life insurance companies, mutual funds, state and local government retirement funds, and bank personal trusts and estates were large net buyers. Nevertheless, the value of corporate equities directly held by the household sector more than doubled between 1994 and 1998. A balance sheet of households and nonprofit organizations shows the percentage of net worth that was directly and indirectly held as equities rose from 23% at yearend 1994 to 37% at the end of 1998; their percentage of net worth held as deposits and credit market assets fell from 21% to 16% over the same period.⁴¹ The same balance sheet shows that deposits and credit market assets as a percentage of tangible assets fell from 50% at yearend 1994 to 47% in 1998, although deposits as a percentage of tangible assets was 31% in both 1994 and 1998, and their ratio of deposits to liabilities fell from 71% in 1994 to 63% in 1998. Clearly leverage and the risk exposure of households and nonprofit organizations rose sharply over these four years.

Interest rates paid on NOW deposits and on savings and small denomination money market deposit accounts at domestic offices of all U. S. banks rose slightly between 1993 and 1998, by 30 and 29 basis points respectively, which was far less than the increase in the federal funds rate.⁴² Small depositors clearly did not benefit from the Fed's attempt to be restrictive. Interest rates on large time deposits did more or less keep pace with movements in the funds rate as did interest rates on money market mutual funds. Interest rates on loans are much more difficult to assess from the Federal Reserve's analysis of bank profitability, because so many loans are securitized and thus not on bank balance sheets and income statements. Using information from aggregate balance sheets and income statements, it appears that loan rates, net of loss provisions, were also sticky; they rose by 28 basis points between 1993 and 1998. Independently reported interest rates on consumer loans were high and relatively unchanging over these years, but independently reported interest rates on mortgage loans secured by new and secondary market houses were falling.⁴³

Most business loan interest rates are indexed to money market "base" rates, such as the federal funds rate, the "prime" rate, and LIBOR (London Interbank Offering Rate). They are strongly positively correlated, but the spread between a base rate and the rate charged a firm and other terms of lending are not time invariant. Trends in the fraction of loans that originate in the commercial paper market and from asset-backed issuers undoubtedly affect the cost of funds to firms, but these rates tend to move in lock step with the federal funds rate, as does the cost of the rising share of non-deposit funds that banks raise to fund loans. National income statistics on nominal after-tax corporate profits and on nominal proprietor's nonfarm income suggest that interest rates were not especially onerous; between 1993 and 1998 the former rose 49% and the latter rose 36%. Nominal national income rose 34% over the same four-year span.

⁴¹ In the flow of funds accounts, indirectly held equity shares include shares held by bank personal trusts and estates, life insurance companies, defined-benefit and defined-contribution pension funds, state and local government retirement funds, and mutual funds. See Flow of Funds Accounts of the United States, March 7, 2002, p. 116.

⁴² Data are from Bassett and Carlson [2002, p. 279].

⁴³ Source: Federal Reserve Bulletin, Tables 1.53 and 1.56.

The period from the collapse of Long-Term Capital Management in October 1998 to the present (August 2002) is both tortured and perhaps too recent to draw firm conclusions about what the Federal Reserve's intentions were. The monthly average federal funds rate fell from 5.51% in September to 5.07% in October to a low of 4.63% in January 1999. It averaged about 4.75% in the first half of 1999 and then began a rise of about 175 basis points until a peak of 6.54% was reached in July 2000. A Federal Reserve target level of about 6.50% was held until January 2001. Signs of an economic slowdown were evident, including those from falling stock prices; the National Bureau declared that a recession had begun in March 2001. It is arguable that this restrictive monetary policy and growing federal government surpluses precipitated the recession and successfully pricked the long-running and widely recognized stock market bubble.⁴⁴ Beginning in January 2001, the Federal Reserve reduced its target level of the federal funds rate eleven times to its present level of 1.75% and the federal budget has shifted from a large surplus to a substantial deficit.

Table 5 provides information about bank income and expenses, which supports an interpretation of the changing role of banks as intermediaries in recent years that was suggested in the preceding section. As a percentage of average consolidated assets, variations in bank net income were largely matched by accounting decisions to make provisions for losses between 1985 and 1991. During this period net interest income and net noninterest expense percentages were essentially invariant. When the Federal Reserve drove the federal funds interest rate down in 1992 and 1993, the net interest income percentage rose markedly because banks reduced the interest rates they paid on deposits more than interest rates on their loans. They managed to keep net interest income abnormally high through 1997, by not competing with deposit interest rates and allowing the share of their funds raised through deposits to decrease. Sweeping funds from transactions accounts, against which banks are required to hold idle reserves, into other liabilities allowed banks to earn interest on a larger fraction of their funds.⁴⁵ More important for changes in bank net income were two post-1993 changes, shown in the fifth and sixth columns of the table. First, the percentage average provision banks made for losses between 1994 and 2000 fell by about 50% from the average in the preceding eight years. This change is partly explained by the recovery from the 1991 recession, but also reflects increased securitization of loans by banks. When loans are securitized without recourse, banks are not exposed to default losses. Second, net noninterest expenses as a percentage of average consolidated assets began to fall steeply. While technical improvements allowed decreased expenditures on major factors of production, most of the change in net noninterest expenses occurred because of a steep rise in "other" noninterest income – primarily income from securitization and fees for providing a variety of services, including credit cards and ATMs. Finally, while bank net income may gain temporarily when interest rates fall, there appears to be no long-term relation between net income, as a percentage of average consolidated assets, and the federal funds rate shown in the last column.

The main conclusion about the most recent eight years is that banks are partially

⁴⁴ See, for example, Robert J. Shiller, *Irrational Exuberance*, [2000, Chapter 1].

⁴⁵ The Federal Reserve does not collect detailed information on the volume of funds that are swept daily from transactions accounts; banks only report the volume of funds swept when the first introduce a sweep program. For evidence that banks, but not their clients, benefit from sweep accounts, see Board of Governors of the Federal Reserve System [1998, p. 599].

transforming themselves from intermediaries that have deposits, loans, and securities on their balance sheets into brokers who originate loans and then distribute them to others who acquire securitized assets. The risks of holding such assets are not borne by banks, which act as agents that provide services by collecting payments and distributing them to the holders of securitized assets for a fee. Banks are, of course, liable for misrepresentations about borrowers and for errors

Table 5
Net Income and Selected Components as a Percentage of Average Net Consolidated Assets

year	net income	net interest income	net noninterest expense	loss provisioning	average federal funds interest rate
1985	0.69	3.53	1.99	0.69	8.10
1986	0.62	3.42	1.96	0.80	6.80
1987	0.09	3.42	1.91	1.29	6.66
1988	0.80	3.52	1.85	0.57	7.57
1989	0.48	3.51	1.79	0.97	9.21
1990	0.47	3.45	1.82	0.97	8.10
1991	0.53	3.60	1.93	1.02	5.69
1992	0.91	3.89	1.91	0.78	3.52
1993	1.20	3.90	1.81	0.47	3.02
1994	1.15	3.78	1.75	0.28	4.21
1995	1.18	3.72	1.62	0.30	5.83
1996	1.20	3.73	1.53	0.37	5.30
1997	1.25	3.67	1.38	0.41	5.46
1998	1.19	3.52	1.36	0.41	5.35
1999	1.31	3.52	1.11	0.39	4.97
2000	1.18	3.43	1.07	0.50	6.24
2001	1.19	3.45	1.05	0.68	3.89

Sources: English and Reid [1994, p. 561], Bassett and Carlson [2002, p. 279], Federal Reserve Board Annual Statistical Digest, [1980-1989, 1990-1995], Statistical Digest, [1996-2000] and Federal Reserve Bulletin.

or deficiencies in providing services, but not otherwise. Data about the extent to which banks have shifted from being intermediaries to being brokers are not generally available, but as noted in the discussion of Table 4, banks' share of outstanding credit market assets has been decreasing since

1994. A different measure, the ratio of banking system credit to total debt of domestic nonfinancial sectors, was about 33% from 1965 through 1980; after 1980 this ratio declined almost monotonically to 25% in the early 1990s and then rose to about 28% in 2001. The trends in these two measures over the 1990s are not inconsistent, because financial institutions are issuing more debt that is held by other financial institutions. Neither trend implies that share of credit being originated by banks has risen or fallen.

The consequences of banks becoming brokers rather than acting as traditional intermediaries are potentially large. Additional risk is being shifted to the private sector because, while agencies of the federal government insure deposits, the government does not insure many institutional or individual holders of securitized assets. The effects of a lack of government insurance is amplified by the continuing shift of pension funds from defined-benefit to defined-contribution pension plans, because the Pension Benefit Guaranty Corporation that was established in the Employee Retirement Insurance Security Act of 1974 provides no insurance for defined-contribution plans. Credit derivatives may allow some risk to be dissipated in the private sector, but not eliminated. Most individuals will not be able to assess the extent to which their funds are protected.

The quantity and quality of information that was heretofore collected and used by banks to allocate funds and to keep informed about clients after a loan was made are also likely to diminish. Once loans are off a bank's books, the incentive for banks to stay informed falls. Further, because it will be necessary to use standardized loan agreements in order to make securitized assets comprehensible to buyers, it is less likely that nonstandard requests for loans will be honored. Banks traditionally knew their clients well enough to incorporate some specific terms in loan contracts that sometimes were crucial to the success of a borrower. Other nonbank lenders and venture capitalists may replace banks as sources of funds for such clients, but lending terms are likely to be less accommodating.

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