NBER WORKING PAPER SERIES

FINANCIAL INTERMEDIATION IN THE UNITED STATES

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Working Paper No. 1451

NATIONAL BUREAU OF ECONOMIC RESEARCH
1050 Massachusetts Avenue
Cambridge, MA 02138
September 1984

NBER Working Paper #1451
September 1984

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ABSTRACT

The principal rationales that give rise to financial intermediation are benefits of size and specialization, the diversification of specific asset risks, and the pooling of even broader classes of risk. Each is a significant factor in accounting for the U.S. economy's reliance on intermediation. In addition, since World War II a further important factor has been the economy's continual shift away from government debt toward the debt of private nonfinancial entities including individuals and businesses. Nonfinancial investors (primarily individuals) have exhibited a strong preference for holding the debt of these nonfinancial borrowers via financial intermediaries rather than directly.

As the U.S. economy's reliance on financial intermediaries overall has increased during the post-war period, some specific kinds of intermediary institutions have grown more rapidly than others. Commercial banks have about held their own in relative terms, while steadily shifting their basic business back toward lending activities and away from securities investments. Nonbank deposit intermediaries have grown in relation to overall economic and financial activity, as the growth of savings and loan associations has more than offset the (relative) decline of mutual savings banks. Among private nondeposit intermediaries, life insurance companies have declined in relative terms while both public and private sector pension funds have shown exceptionally rapid growth. Finally, the federal government's participation in the financial intermediation process in the United States has also increased rapidly during these years, in part as a result of the pressures created by the economy's shift to private instead of government debt.

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Revised
June, 1984

FINANCIAL INTERMEDIATION IN THE UNITED STATES*

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The intermediating function provided by specialized institutions has always been a hallmark of well developed financial markets. In the modern economy almost everyone participates in the financial markets, and few economic events take place without their financial counterpart. The basic role of the financial markets is to enable millions of businesses and individuals to carry out, more easily and more efficiently, the interactions that their activities in the nonfinancial economy entail. Although in principle businesses and individuals could carry out their financial dealings directly, without the advantages of intermediary services, in most cases doing so would be inconsistent with the underlying reason for having and using financial markets in the first place. Intermediation renders financial transactions more efficient, and therefore increases the use that both businesses and individuals make of financial markets. In addition, in some instances financial intermediaries enable market participants to achieve objectives that would be unattainable in their absence.

This important role played by financial intermediation is typically not static. Throughout their history, financial markets have undergone a shift — away from direct transactions between nonfinancial borrowers and lenders, toward the intervention of financial intermediaries. In the United States the development of the commercial banking system and of the life insurance industry in earlier years, and more recently the great expansion of nonbank deposit institutions and both private and public

sector pension funds, have been important features of the development of the U.S. financial system. In addition, the roles played even by specific intermediary institutions change over time. The shifting requirements of the nonfinancial economy, the evolution of new communications and information processing technologies, changes in government regulations, and even independent financial innovations, all play a part in this dynamic process.

The goal of this chapter is to examine the structure of financial intermediation in the United States, both as it exists today and as it has evolved in the years since World War II.[1] The primary focus is on the role played by intermediation in general, and by specific kinds of intermediaries in particular, in fulfilling the financial markets' basic purpose of serving the needs of the nonfinancial economy.

Section 1 notes explicitly several of the main rationales underlying the use of financial intermediation. Section 2 relates these considerations to the observed portfolio behavior of participants in the U.S. financial markets other than financial intermediaries, including especially the household sector. Section 3 quantifies the role of financial intermediaries, at the aggregate level, in the United States. Section 4 details the respective roles of several specific kinds of intermediaries, including commercial banks, nonbank deposit institutions, life insurance companies and pension funds, and federally sponsored intermediaries. Section 5 briefly summarizes the chapter's principal points.

1. Rationales for Financial Intermediation

Three basic rationales typically motivate the reliance on financial intermediaries in the modern economy: benefits of size and specialization, when there are economies of scale in gathering information or in processing transactions; diversification of specific asset risks, when asset holders are risk averse; and pooling of liquidity or other risks, when asset holders themselves face uncertain contingencies.

1.1. Benefits of Size and Specialization. Many economic activities exhibit economies of scale, at least up to a point, and what takes place in the financial markets is no exception. At the simplest level, the data processing equipment needed to process many financial transactions efficiently is expensive. Acquiring it to meet the sole needs of any financial market participants but a few of the largest businesses would be out of the question. The obvious solution is sharing effected by reliance on specialized institutions.

An analogous argument applies to the human capital represented by the specific knowledge required either to operate sophisticated equipment or to perform the purely human aspects of financial transactions. The kinds of human capital involved in the services provided by financial intermediaries go well beyond mere transactions processing, however. The existence of assets bearing uncertain returns, due to either market or specific risk, creates a need for information-related activities. Holders of such assets must first discover the attendant risks, and then monitor them on an ongoing basis. These information costs are especially large in the case of negotiated loans like home mortgages, consumer credit, and bank loans to businesses, although some kinds of securities investments have similar characteristics. Once again, the obvious solution is for most asset holders

to delegate these information gathering and monitoring costs to specialized third parties.

In some cases economies of scale are sufficiently great that assets simply become indivisible beyond set limits. Many kinds of investments available in today's financial markets have minimum transaction sizes. Real estate assets are a common example, as are participations in newly created business enterprises. In principle, of course, an investor could directly obtain a smaller unit size at some price, but in practice no one does so. In such cases the more straightforward, and economically more sensible, approach to such indivisibilities is to hold the relevant assets through intermediaries.

1.2. Diversification of Specific Asset Risks. Investors who are risk averse care not just about the most likely return associated with their asset holdings but also about the uncertainty associated with that return. For a given level of uncertainty, of course, investors presumably prefer a higher expected return to a lower one. Conversely, for a given expected return, risk averse investors prefer less uncertainty to more.

When different assets bear specific risks that are not perfectly correlated — as is the case, for example, among equity investments in different companies — investors can reduce the level of uncertainty associated with the return to their overall portfolios by holding a diverse mix of assets rather than only one. By doing so they can take advantage of the imperfect correlation among the individual asset returns, in effect exploiting the "law of large numbers" as some assets end up delivering higher than expected returns and others lower, to achieve a total portfolio return more likely to fall within any stated range above or below the associated expected return.

Such diversification is, in essence, the motivation behind mutual funds. A risk averse investor is better off, in the sense of facing less uncertainty for a given expected return, holding a diversified portfolio of equities rather than just one stock. The same argument holds for mortgages, consumer and business loans, and a wide variety of other assets. Rather than betting on whether any single borrower will default, a risk averse investor is in each case better off holding a portfolio of many such loans.

Because of indivisibilities and economies of scale in asset holding, however, this kind of diversification is not feasible for most individuals or for most nonfinancial businesses acting on their own. Few investors have sufficient capital even to acquire well diversified equity portfolios consisting of round lots of each security. Fewer still have sufficient capital to acquire and service portfolios of mortgages or other loans. The obvious solution is to achieve the required diversification through intermediation. Financial intermediaries in effect transform assets, therefore, holding assets subject to specific risk while issuing against them claims in which these specific risks are largely diversified away.

1.3 Risk Pooling. Risks associated with their portfolios of financial assets are hardly the only kind of risks that individuals and businesses face in today's environment. At the individual level, people can lose their jobs, suffer expensive illnesses, have automobile accidents, or see their houses burned or burgled. Businesses face many of the same contingencies, as well as more directly business-connected risks like weak market demand, delivery failures, or lawsuits.

The pooling of such risks via explicit insurance arrangements is a long-standing practice, and both life and casualty insurance have been familiar examples of financial intermediation for centuries. By insuring

against a specific contingency, an individual or business in effect accepts a cost equal to the average incidence of that contingency within the insured population. Although it is possible to imagine such insurance taking place in abstraction from any financial intermediation per se, in practice almost all insurance arrangements guarantee performance through the holding of financial reserves. Moreover, certain forms of life insurance have traditionally combined saving and risk pooling features.

Risk spreading via financial intermediation goes well beyond insurance arrangements, however. Banks and other deposit intermediaries in effect pool the liquidity needs of many individual and business depositors. Just as risk pooling makes sense in an insurance context because it is highly improbable that all houses will burn or all automobiles will crash in any year, deposit intermediation is advantageous because not all depositors are likely to want to withdraw their funds on the same day, or even in the same week or month. Deposit intermediaries in effect exploit the imperfect correlation among depositors' uncertain liquidity requirements to achieve yet a further kind of asset transformation, holding portfolios that may consist mostly of highly illiquid assets while issuing against them claims which each depositor can rightly regard as fully liquid. Even some nondeposit intermediaries, like open-ended mutual funds, perform an analogous transformation.

Because of these three basic economic effects achieved by the intermediation process — exploitation of economies of scale, diversification of specific asset risks, and risk pooling — the development of intermediation in general and of specific intermediary institutions has typically paralleled, and has often spurred, the evolution of modern financial markets.

2. The Portfolio Behavior of Nonfinancial Investors

The function of the financial markets in any economy is to provide for the needs of participants in the nonfinancial economy. On one side, individuals and businesses come to these markets to find financial resources, seeking to issue claims of various forms in exchange for those resources. At the same time, others come with resources to deploy, seeking to acquire in exchange for them some kind of claim on resources in the future. The unwillingness of some individuals and businesses to hold directly the claims that others issue creates the need for intermediation.

2.1. Households. In the United States individuals are the principal nonfinancial holders of assets that represent direct claims on other nonfinancial participants in the economy. Figure 1 shows that U.S. households have shifted the composition of their financial asset portfolios in important ways during the post-war period.[2] Households' aggregate holdings of deposit-type liabilities of financial intermediaries have grown continually from the early 1950s to the early 1980s, not only absolutely but in relation to overall nonfinancial economic activity (and personal income). Households' claims on insurance and pension reserves have also grown on balance during the post-war years, although here the growth has been less steady because of the effect of equity price changes on the valuation of these reserves. By contrast, households' direct holdings of nonintermediated debt have declined in relative terms almost continually since World War II, and their direct holdings of equity claims on business corporations have varied mostly with equity price fluctuations, exhibiting little overall relative trend.[3] Since the total size of households' financial asset portfolios in relation to gross national product has also shown no overall trend — first declining during the immediate

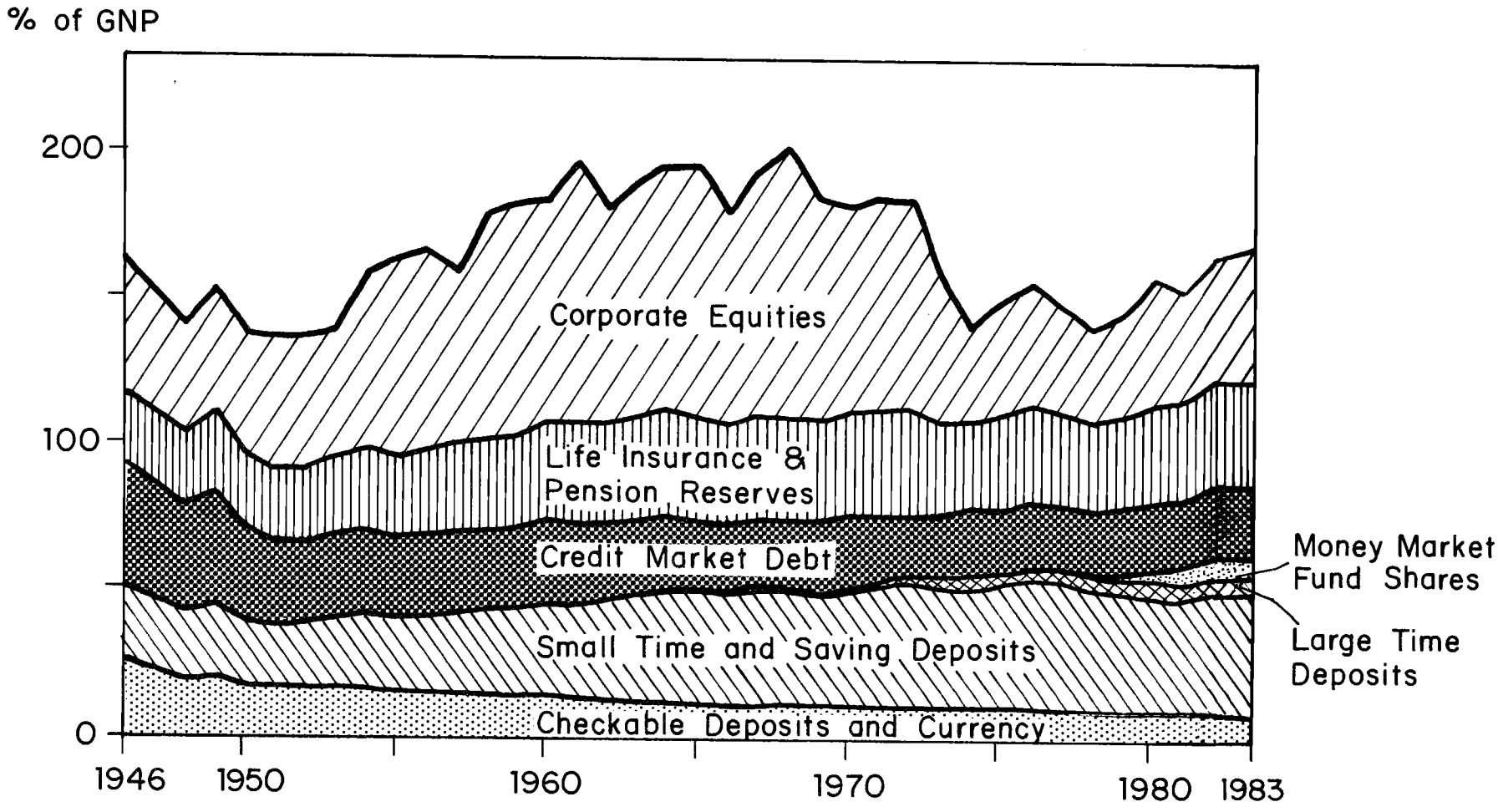

FIGURE 1

FINANCIAL ASSETS OF U.S. HOUSEHOLDS, 1946-1983

post-war years, then rising sharply in the 1950s, remaining steady through the 1960s, declining in the 1970s, and then rising again in the early 1980s — these patterns of growth and decline in comparison to gross national product also correspond, for the post-war period as a whole, to growth or decline in shares of households' aggregate portfolio.

Households' increasing preference for claims on intermediaries has appeared even more pronounced from the perspective of their accumulation of financial assets. Table 1 provides an indication of U.S. households' portfolio preferences during the post World War II period by presenting data, both in dollars and as percentage shares of households' total net acquisition of financial assets, showing the average volume of net acquisition of various specific asset categories. In order to abstract from year-to-year variations, yet still capture significant changes over time, the table presents these data in the form of averages for successive five-year periods (and the three-year average for 1981-83).

The two features of households' investment behavior that stand out most sharply here are the dominance of deposits and of life insurance and pension reserves throughout the post-war period, and the change that took place at the end of the 1950s in households' net investment in corporate equities. Except for the first few post-war years, U.S. households have consistently invested nearly two-fifths or more of their financial saving in deposits and currency. In more recent years, except for the late 1960s, the fraction going into monetary instruments has been well in excess of one-half. The devotion of approximately one-third of financial saving to life insurance and pension forms has been a steady feature of household behavior ever since World War II.

Although U.S. households purchased more equity shares in corporations

Table 1

Net Acquisitions of Financial Assets by U.S. Households

	Total Assets	Currency & Deposits	Equities			Credit Market Debt	Life Ins. & Pension Reserves	Other
			Total	Investment Co. Shares	Direct Holdings			
	Billions of Dollars							
1946-1950	14.3	3.4	1.0	0.2	0.7	1.2	5.7	3.1
1951-1955	21.8	9.7	1.2	0.5	0.7	3.3	7.6	-0.2
1956-1960	30.5	13.0	1.0	1.4	-0.4	6.5	10.6	-0.5
1961-1965	47.4	27.8	-1.3	2.1	-3.4	4.7	14.3	1.9
1966-1970	66.3	33.5	-3.5	3.9	-7.3	15.8	20.6	-0.1
1971-1975	125.1	80.5	-4.2	0.2	-4.4	25.0	34.0	-10.2
1976-1980	234.2	134.8	-5.7	0.7	-6.4	54.2	70.3	-19.4
1981-1983	339.2	186.9	-6.3	19.3	-25.6	66.8	120.6	-28.8
	Percent of Total Net Acquisitions							
1946-1950	100.0	23.9	6.4	1.6	4.8	8.1	39.9	21.7
1951-1955	100.0	44.5	5.7	2.3	3.4	15.3	35.1	-0.7
1956-1960	100.0	42.7	3.5	4.4	-0.9	20.6	34.6	-1.5
1961-1965	100.0	58.2	-2.8	4.4	-7.2	10.1	30.6	3.9
1966-1970	100.0	48.5	-5.1	6.0	-11.1	25.4	31.3	-0.2
1971-1975	100.0	65.9	-3.5	-0.3	-3.8	18.4	27.2	-8.0
1976-1980	100.0	58.2	-2.4	0.2	-2.6	22.4	30.0	-8.2
1981-1983	100.0	55.1	-1.9	5.7	-7.5	19.7	35.6	-8.5

Notes: Data are averages of annual flows, in dollars and as percentages of annual total net acquisitions.
Detail may not add to totals because of rounding.
Source: Board of Governors of the Federal Reserve System.

than they sold in every year during 1946-57, so that the tripling in value of their direct equity holdings over this period represented the combined result of capital gains and positive net purchases, in every year since 1958 they have sold more direct equity shares than they have purchased. Capital gains have therefore accounted for more than all of the increase in total value of their direct equity holdings during this period. Moreover, allowing for the shift from direct ownership of equities to indirect ownership via mutual funds does not alter this picture of individuals' investment behavior. Households in the aggregate were net purchasers of mutual fund shares during the rise of that industry in the 1960s, and have been again during 1980-83, but in neither period were mutual fund purchases sufficient to offset the liquidation of their direct equity holdings. During the 1970s households were net sellers of both direct equity holdings and mutual fund shares. Hence the conclusion stands that equity price movements have accounted for more than all of any increase in the value of individuals' equity holdings for the past quarter century. Because equity prices have fluctuated widely but shown little net gain since the mid 1960s, even in nominal terms, the aggregate equity portfolio of individuals in the United States has shown no trend movement in nominal value and has declined in relative value during the last decade and more.

This shift of individuals' investment flows away from equities during the second half of the post-war period probably reflects several considerations in addition to the economies-of-scale and diversification motives noted above as general advantages of intermediation. No doubt changing birth rates, age distributions, and income levels have all played some role. The increasing government provision of health, education and income security benefits has also altered the objectives associated with

saving for many people. The growing importance of workers' claims on future pension benefits, including job-specific pensions in both the private and public sectors and also Social Security, has especially changed many people's need to accumulate assets directly to finance their retirement.[4] Perceptions of the relative returns and risks associated with different assets, including both debt and equity securities, have also changed markedly during the post-war period. After the official unpegging of bond prices in 1951, fixed-income securities became subject to market risk in addition to inflation risk, and since the 1970s both inflation risk and market risk have increased dramatically. During most of the 1950s and 1960s renewed confidence in economic stability and prosperity lessened fears of any collapse of equity values comparable to that of 1929-33, and in addition many people regarded equities as a "hedge" against price inflation.[5] Following the rapid acceleration of inflation and the poor performance of both equity prices and the U.S. economy during the 1970s, however, prevailing opinion became progressively more skeptical both of the economy's long-run growth prospects and of the usefulness of equities as an inflation hedge.[6]

Apart from equities, holdings of direct claims against other nonfinancial participants in the economy has always constituted a relatively small fraction of U.S. households' aggregate portfolios. As Table 1 shows, net acquisitions of such debt have accounted for less than one-fourth of households' financial saving throughout the post-war period. Against this background of households' aversion to holding direct claims in either debt or equity form, the need for financial intermediation is readily apparent.

2.2. Other Nonfinancial Investors. Although individuals are the dominant nonfinancial holders of direct claims on other nonfinancial

participants in the U.S. economy, businesses also advance a substantial amount of direct credit, both to individuals in the form of installment and other consumer credit, and to each other in the form of trade credit and commercial paper. Even with the ready availability of business credit cards and charge accounts, however, commercial banks and finance companies have increasingly dominated the consumer credit field. The share of outstanding consumer credit owed to nonfinancial businesses (including corporations and others) has fallen from just over one-third in the early 1950s to just under one-sixth since the 1970s. In addition, business lending via purchases of nonfinancial commercial paper has remained relatively small, so that trade credit — typically equal to 15-18% of the gross national product, and mostly borrowed and lent within the corporate sector — remains the primary vehicle for businesses' holdings of direct claims on nonfinancial obligors.

Foreign investors have held a small but growing share of direct claims on nonfinancial participants in the U.S. economy throughout the post-war period.[7] The growth of foreign holdings was especially rapid during the 1970s, as the persistent U.S. balance of payments deficit transferred assets abroad, especially to member countries of the international oil cartel. This rapid growth proceded from a small base, however, so that foreign holdings still represented less than 5% of all direct claims against U.S. nonfinancial obligors as of yearend 1983. Nevertheless, the concentration of foreign (especially foreign official) investments in specific instruments has made foreign holdings of somewhat greater importance in several U.S. markets. The yearend 1983 share of federal government securities held abroad, for example, was approximately one-tenth.

In sum, neither individuals nor other nonfinancial entities

participating in the U.S. financial markets, including businesses and foreign investors, have shown much willingness to hold direct claims on U.S. individuals and businesses. Instead, they have largely left that task to financial intermediaries.

3. The Dominance of Financial Intermediation

Figures 2 and 3 indicate the extent to which the increasing preference for claims on financial intermediaries by individuals (and, to a lesser extent, by other nonfinancial investors) has shifted to intermediaries the task of meeting the needs that nonfinancial participants in the economy have brought to the U.S. financial markets. As of 1983 individuals in the aggregate remained the largest single class of holders of all direct claims on nonfinancial borrowers and share issuers — but only by virture of their continuing domination of the ownership of corporate equities, as the contrast between Figures 2 and 3 shows. On an overall basis, however, the household share either including or excluding equities has declined, as has the share held by all other nonfinancial investors. As the share of direct claims on nonfinancial entities held by all nonfinancial investors has declined, the share held by financial intermediaries has correspondingly risen. Intermediaries' holdings first accounted for the majority of all direct claims outstanding in the U.S. financial markets (including equities) in 1969, and they have remained the majority ever since.

Table 2 presents flow data indicating the even stronger post-war dominance of intermediaries in meeting the new funds required each year by nonfinancial participants in the U.S. economy. The table shows data both in dollars and as percentage shares of all net funds extended to all nonfinancial sectors. As in Table 1, the data are in the form of five-year averages (and the three-year average for 1981-83). Also as in Table 1, these data exclude equity capital gains, which constituted most of the increase in households' equity holdings until the late 1960s, and more than all of the increase since then.

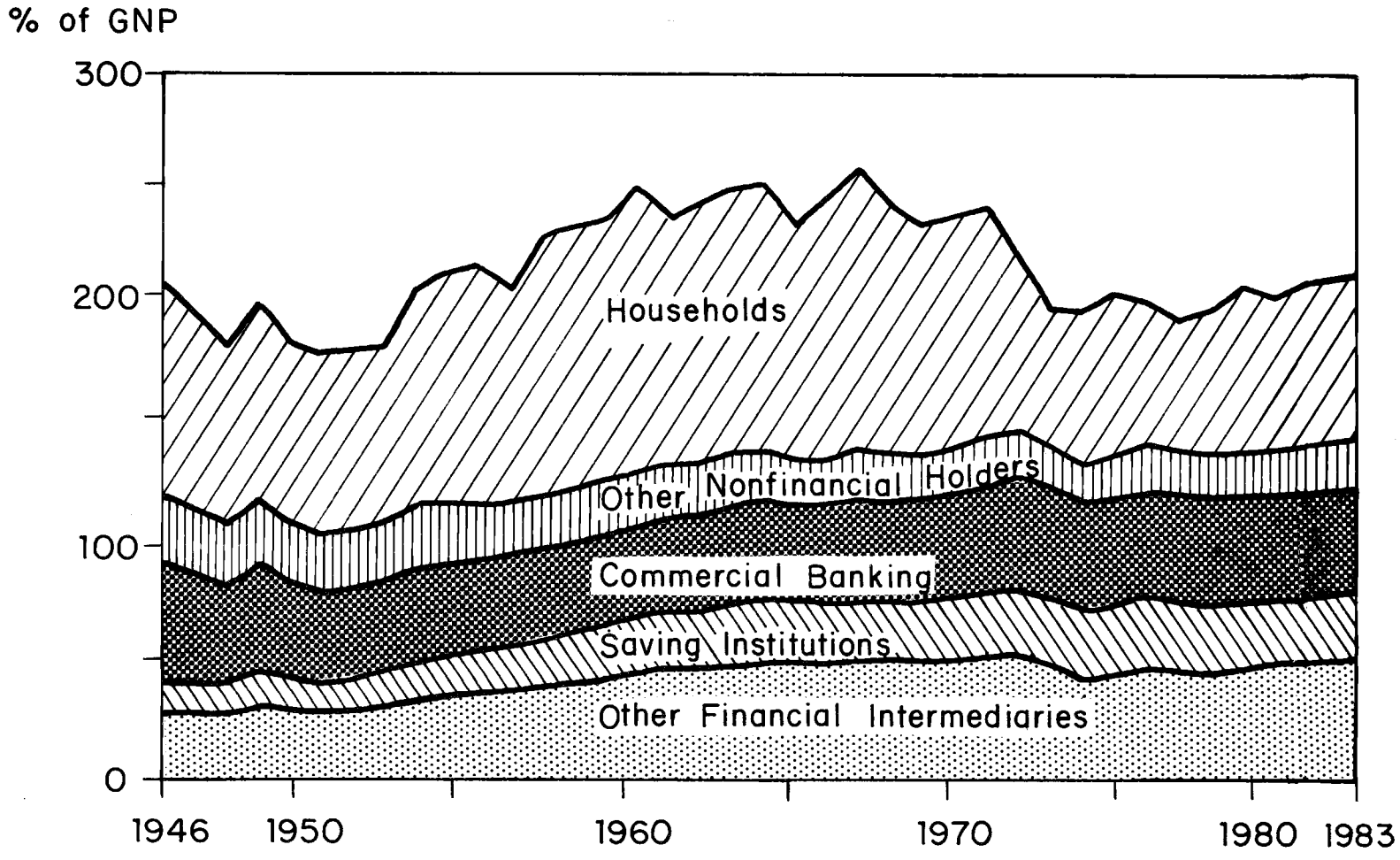

FIGURE 2

HOLDER OF CLAIMS (INCLUDING EQUITIES) AGAINST U.S. NONFINANCIAL SECTORS, 1946-1983

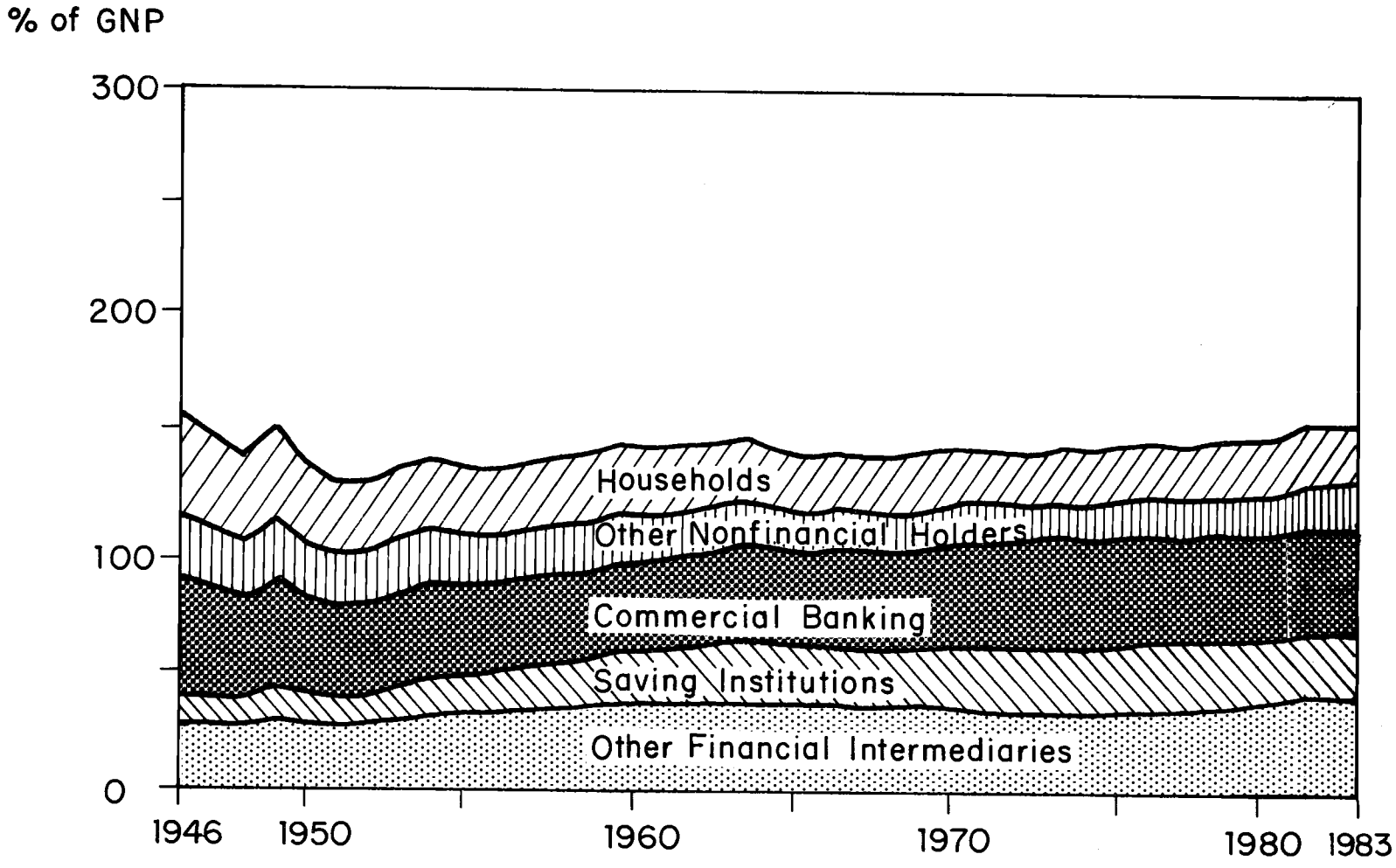

FIGURE 3

HOLDERS OF CLAIMS (EXCLUDING EQUITIES) AGAINST U.S. NONFINANCIAL SECTORS, 1946-1983

Table 2

U.S. Credit Market Funds Advanced to Nonfinancial Sectors

	Total	Pvt. Dom. Nonfinancial Investors	Federal Govt.	Foreign	Financial Intermediaries			
					Total	Commercial Banks	Savings Insts.	Other
	Billions of Dollars							
1946-1950	12.2	3.1	0.3	0.0	8.8	0.6	2.7	5.5
1951-1955	30.6	6.7	0.6	0.7	22.6	5.6	5.6	11.3
1956-1960	37.8	5.6	0.8	1.3	30.0	7.4	8.6	14.0
1961-1965	58.3	2.4	1.0	0.7	54.1	18.1	14.6	21.4
1966-1970	87.5	4.5	2.4	3.1	77.5	28.2	13.0	36.3
1971-1975	181.7	24.2	4.1	12.8	140.6	49.9	35.4	55.3
1976-1980	339.1	33.8	11.8	25.3	268.3	87.0	59.1	122.2
1981-1983	441.8	49.5	11.8	24.6	355.7	107.3	37.5	211.0
	Percent of Total Funds Advanced							
1946-1950	100.0	41.2	3.2	3.3	53.3	26.9	5.5	19.9
1951-1955	100.0	20.8	2.1	2.2	74.8	19.4	18.1	37.3
1956-1960	100.0	13.4	2.1	3.4	81.2	20.3	23.1	37.7
1961-1965	100.0	4.1	1.8	1.3	92.7	30.8	25.3	36.6
1966-1970	100.0	5.5	2.8	3.0	88.7	32.2	14.8	41.7
1971-1975	100.0	12.6	2.1	7.5	77.7	27.7	19.6	30.4
1976-1980	100.0	10.0	3.4	7.6	79.0	25.4	18.0	35.6
1981-1983	100.0	10.5	2.9	5.6	81.0	24.3	7.4	49.3

Notes: Data are averages of annual flows, in dollars and as percentages of annual total funds advanced.
Detail may not add to totals because of rounding.
Source: Board of Governors of the Federal Reserve System.

Apart from accumulating capital gains on equities, individuals and other private domestic nonfinancial investors have played only a small and (except for the early 1980s) shrinking role in meeting directly the needs that nonfinancial entities have brought to the U.S. financial markets.[8] Similarly, the role of the federal government has been consistently small in this context, and that of foreign investors has grown but remains small nonetheless. In part because of the growing fraction of nonfinancial sectors' needs that have come in the form of debt issued by private borrowers rather than government borrowers (at least until the 1980s),[9] as well as for other reasons related to financial innovation, nonfinancial investors have instead accumulated claims on intermediaries and have left to them the task of directly allocating the economy's financial resources. As Table 2 also shows, banks, savings institutions and nondeposit intermediaries have all been significant participants in this process.

4. The Role of Specific Intermediaries

The advance of intermediation in the U.S. financial markets since World War II has hardly been uniform. The specialization of financial intermediaries has inevitably led to some playing more important roles than others, and some experiencing more rapid growth than others, as the needs and objectives of both borrowers and lenders have changed, and as government interventions have (intentionally or otherwise) favored first one kind of institution and then another.

4.1. Commercial Banks. The commercial banking system has long stood at the center of attention devoted to financial markets. Even today, despite several decades of increasing importance of nonbank intermediaries,[10] many kinds of discussions ranging from textbook descriptions of the economy to professional evaluations of monetary policy often proceed as if commercial banks were the only intermediaries in the U.S. financial markets. This emphasis on the commercial banking system is understandable in part, in view of the special role that banks play in the monetary policy process by virtue of their relationship to the Federal Reserve System. In addition, in the past commercial banks were more dominant in financial market activity than they are today. Earlier in this century banks' assets and liabilities dwarfed those of other intermediaries, and before passage of the Glass-Steagall Act in 1933 commercial banks also dominated the securities business.[11] Until as recently as the early 1970s, commercial banks in the United States enjoyed a monopoly on the right to issue checkable deposits.

Since World War II the U.S. commercial banking system has approximately held its own in relation to the scale of nonfinancial economic activity, but it has not participated in the economy's overall post-war

expansion of intermediation. The approximate stability of the banking system's relative size is apparent in Figure 3, and also in the more detailed data on commercial banks' assets and liabilities in relation to gross national product presented in the upper half of Table 3. The total size of the banking system in relation to gross national product has shown essentially no trend during the post-war period. As Figure 4 shows, there has been little post-war trend in the "income veolcity" of bank credit, which consists of most commercial bank earning assets. This relative stability stands in marked contrast to the pre-war years when, over nearly a century, the size of the banking system continually grew in relation to gross national product.[12]

Within the stability of the overall totals, however, the post-war years have also seen substantial shifts in composition on both sides of the banking system's balance sheet, as is clear from the percentage share data presented in the lower half of Table 3. Among bank assets, the most significant development during this period has been the post-war (really post-depression) recovery of bank loan portfolios, and hence the general resumption of banks' traditional role as "inside" intermediaries. In 1929 loans constituted 73% of bank credit. During the depression and then the war years, however, the fall-off in private debt issuing activity meant that, for all practical purposes, there was little or no loan business to be had. By contrast, the federal government was then issuing debt in record volume, and banks participated in financing it. By 1935 banks' securities investments exceeded their loan portfolios, and in 1945 investments constituted 79% of bank credit. Commercial banks simply were no longer very commercial. The years since 1946 have largely consisted of a reversal of the 1930-45 pattern, with bank loans exceeding securities investments

Table 3

Assets and Liabilities of U.S. Commercial Banks

	Financial Assets					Financial Liabilities			
	Total	Treasury Debt	Gov. Agency Debt	St. & Loc. Debt	Loans	Total	Demand Deposits	Non-CD Time Deposits	CDs
	Percent of GNP								
1946-1950	54.8	26.7	0.6	2.3	16.0	51.1	35.4	14.0	0.0
1951-1955	47.1	17.5	0.8	3.0	18.6	43.8	29.6	12.0	0.0
1956-1960	45.1	13.2	0.5	3.4	22.2	41.6	25.8	13.3	0.0
1961-1965	47.0	10.6	0.7	4.8	26.1	43.5	22.6	16.6	1.5
1966-1970	49.1	6.9	1.1	6.3	30.1	46.0	19.4	19.7	2.2
1971-1975	52.7	5.0	2.0	7.1	34.0	49.7	17.1	22.3	4.6
1976-1980	50.6	4.6	2.0	5.6	33.6	47.7	13.5	17.9	9.1
1981-1983	51.0	4.5	2.4	4.9	34.1	48.1	11.6	19.4	9.3
	Percent of Total Financial Assets								
1946-1950	100.0	48.3	1.1	4.3	29.5	93.2	64.6	25.4	0.0
1951-1955	100.0	37.1	1.6	6.5	39.6	93.0	62.8	25.6	0.0
1956-1960	100.0	29.1	1.1	7.5	49.4	92.3	57.1	29.7	0.1
1961-1965	100.0	22.2	1.6	10.3	55.8	92.7	47.8	35.5	3.3
1966-1970	100.0	14.0	2.3	12.8	61.4	93.6	39.4	40.1	4.4
1971-1975	100.0	9.4	3.9	13.3	64.6	94.3	32.1	42.3	9.0
1976-1980	100.0	9.1	4.0	11.1	66.6	94.2	26.7	35.4	18.1
1981-1983	100.0	8.7	4.7	9.7	66.9	94.3	22.6	38.0	18.3

Notes: Data are averages of yearend amounts, as percentages of fourth-quarter gross national product, seasonlly adjusted at annual rates, and as percentages of annual year-end total assets.
Detail may not add to totals because of rounding.
Source: Board of Governors of the Federal Reserve System.

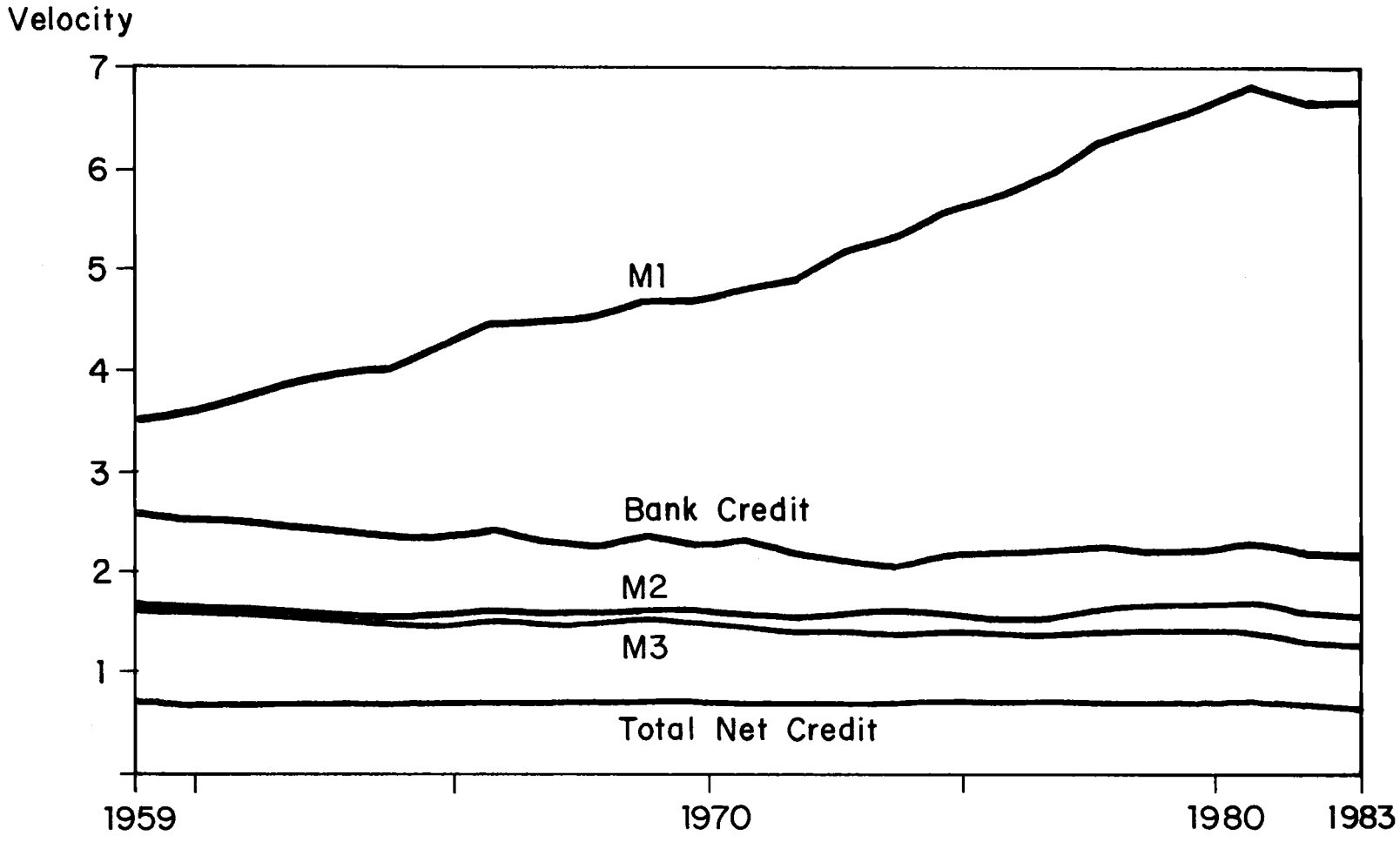

FIGURE 4

INCOME VELOCITIES OF MONEY AND CREDIT AGGREGATES, 1959-1983

in 1957 for the first time in more than two decades, and standing again at 73% of total bank credit as of yearend 1983.

In rebuilding their loan portfolios and de-emphasizing their investments, banks have both altered the mix of their lending business and changed the character of their securities holdings. Although banks remain a principal source of business credit, and commercial and industrial loans are still the largest single category of bank lending, these loans no longer dominate bank loan portfolios as they once did. Instead, mortgage credit and other consumer loans now comprise more than one-third of the total. Especially during the second half of the post-war period, the widespread use of bank-issued credit cards has been a major factor in banks' development of their consumer lending business. Moreover, among business loans per se, the larger banks have increasingly become a major element in the intermediate-term credit market through the use of explicitly longer maturity loans (in some cases up to ten years) and revolving credits of an implicitly ongoing nature. Total bank investments have grown slowly since World War II, but because of tax incentives banks have so concentrated their investments on state and local government issues that, for a few years in the early 1970s, they held more of these securities than of federal government debt.[13]

Among bank liabilities, the two most significant changes that have occurred during the post-war period have been the continual decline of demand balances and increase of time and saving deposits, relative to either total bank liabilities or gross national product, and the "liability management revolution" that has greatly increased the larger banks' reliance on "bought funds." As Figure 4 shows, the income velocity of the narrow M1 money stock, consisting of currency plus checkable deposits,

has about tripled over the post-war years as a result of a combination of influences including economies of scale in the public's holding of cash balances, the secular rise in nominal interest rates, and the increasingly widespread use of credit cards and charge accounts.[14] This persistent trend increase in M1 velocity stands in sharp contrast to either the absence of any trend during 1910-30 or the steeply declining trend during 1930-45. Only the strong growth of time and savings deposits, including the new negotiable certificates of deposit that first came into existence in 1961, has accounted for the absence of much post-war trend in the income velocity of the broader M2 and M3. "Total net credit," consisting of the outstanding debt of all U.S. obligors other than financial intermediaries, has also shown no velocity trend.

Large banks' growing use of such liabilities as certificates of deposit, federal funds, Eurodollar borrowings, commercial paper issues, repurchase agreements and so on — instruments that in some cases represent the development of new financial markets since World War II — has not only changed banks' balance sheets but also facilitated a major change in the feasible aggressiveness of bank lending practices. The enormous post-war expansion of bank loan portfolios, which banks have achieved in part through the competitive use of such devices as loan commitments and medium-term credits, would probably have been impossible if banks had simply continued to follow the classic practice of treating their deposits (and other liabilities) as determined by outside forces.

Finally, it is useful to point out explicitly that because of changes in commercial bank organization, especially during the 1960s, the representation of banks as having merely held their own during the post-war increase in the U.S. economy's reliance on financial intermediation relative to

economic activity risks understating by a wide margin the growing overall presence of commercial banks in the financial system. After falling by more than one-half between 1920 and 1935, the number of American commercial banks has remained roughly steady at about 14,000. The number of bank branches, however, has risen from some 4,000 to over 39,000 during the post-war years, with most of this growth occurring since 1960. Moreover, especially since the 1970 Amendments to the Bank Holding Company Act and the 1980 Depository Institution Deregulation and Monetary Control Act, banks have increasingly entered activities other than their traditional loan and deposit business. Most recently, these extensions of activity have included indirect participation in the securities brokerage business. Although their direct participation in financial intermediation has not kept pace with the rising post-war trend, commercial banks have increasingly enhanced their importance as more nearly full-service financial institutions.

4.2. Nonbank Deposit Institutions. As is clear from Figure 3, one group of intermediaries that has accounted for much of the post World War II increase in U.S. financial intermediation has been the nonbank deposit institutions including savings and loan associations, mutual savings banks, and credit unions. The public's strong demand for consumer-type time and savings deposits has enabled these institutions to grow rapidly, not just absolutely but in relation to economic activity, during most of the post-war period. Their growth has been great enough to offset the relative stagnation of the commercial banking system, so that the income velocities of the M2 and M3 money stocks have shown a modest downward trend. When extrapolated backward, this trend appears to have been a continuation of the downward trend associated with corresponding aggregates during the pre-war era when nonbank deposit institutions were not of major importance.

Table 4 presents data for the individual deposit (or share) volume and combined asset holdings of the three major groups of nonbank deposit institutions, first in relation to gross national product and then as a share of the total assets of the three groups of institutions together. The post-war expansion of the savings and loan industry stands out clearly here. Between the early post-war years and the 1970s outstanding savings and loan shares more than quadrupled as a percentage of gross national product. By 1983 the amount of these shares was well over twice the amount of mutual savings bank deposits and credit union shares combined, and was almost equal to the amount of consumer-type time and savings deposits held at commercial banks. In comparison with mutual savings banks, the primary factor underlying the more rapid growth of savings and loan associations has probably been mere geography; mutual savings banks are overwhelmingly concentrated in a few states, especially New York and Massachusetts, which have experienced slower than average economic growth since World War II. In comparison with commercial banks, the primary factor at work has probably been the effect of government regulation, in that savings and loan associations did not face deposit interest rate ceilings until 1965 and enjoyed a one-fourth percent differential over commercial banks for many years thereafter. The growth of credit unions has been even faster than that of savings and loan associations, but credit unions constitute another example of rapid growth from a small base, and they remain by far the smallest of the three groups of institutions. Mutual savings banks are alone among the three groups in having failed to do more than grow in pace with economic activity. Although mutual savings banks were twice as large as savings and loan associations at the end of World War II, savings and loans were equal in size in 1954 and larger by a factor of four by 1983.

Table 4

Assets and Liabilities of U.S. Nonbank Deposit Institutions

	Combined Financial Assets			Liabilities by Institution		
	Total	Mortgages	Consumer Credit	Savings & Loan Shares	Mutual Saving Banks Deposits	Credit Union Shares
	Percent of GNP					
1946-1950	13.4	6.3	0.3	4.3	7.2	0.2
1951-1955	15.3	9.7	0.5	6.3	6.6	0.5
1956-1960	21.0	15.0	1.0	10.3	7.1	0.8
1961-1965	26.9	20.5	1.3	14.7	7.3	1.2
1966-1970	27.0	20.9	1.6	14.7	7.2	1.4
1971-1975	30.2	22.3	2.1	16.8	7.2	1.8
1976-1980	32.4	23.1	2.5	19.0	6.3	2.3
1981-1983	31.2	19.1	2.4	18.6	5.1	2.5
	Percent of Total Combined Financial Assets					
1946-1950	100.0	47.4	2.2	32.3	53.5	1.8
1951-1955	100.0	63.4	3.3	41.2	43.0	3.0
1956-1960	100.0	71.4	4.4	50.0	33.9	4.0
1961-1965	100.0	76.4	5.0	54.7	27.1	4.4
1966-1970	100.0	77.3	6.0	54.5	26.6	5.2
1971-1975	100.0	73.9	7.0	56.0	23.5	6.2
1976-1980	100.0	71.2	7.8	58.6	19.4	7.2
1981-1983	100.0	61.5	7.5	59.8	16.3	8.2

Notes: Data are averages of yearend amounts, as percentages of fourth-quarter gross national product, seasonally adjusted at annual rates, and as percentages of annual year-end total combined assets.
Detail may not add to totals because of rounding.
Source: Board of Governors of the Federal Reserve System.

The history of nonbank deposit institutions in the United States since World War II has been in large part a story of evolving financial regulation, including restrictions on these intermediaries' liability issuing as well as their asset holding. Especially because these institutions operate under legal and regulatory constraints governing the disposition of their asset portfolios (although some of these constraints were weakened by the 1980 Depository Institutions Deregulation and Monetary Control Act), their aggregate contribution to meeting the financial needs of nonfinancial participants in the economy has followed a fairly predictable pattern. Savings and loan associations and mutual savings banks both typically invest the majority of their assets in mortgages, so that these two groups together have become the nation's leading provider of mortgage lending. This dominance has lessened somewhat in recent years, however, especially with the increasing prominence of the federally sponsored mortgage pools. As of yearend 1983 savings and loan associations and mutual savings banks together held more than one-third of all outstanding mortgages, down from nearly one-half only a few years earlier. (By comparison, commercial banks held less than one-fifth of all outstanding mortgages as of 1983.) Credit unions have instead traditionally invested most of their assets in consumer installment loans, and as of 1983 they accounted for just over one-tenth of the outstanding consumer credit.

4.3. Private Nondeposit Intermediaries. As is also apparent from Figure 3, a significant part of the post World War II increase in the U.S. economy's reliance on financial intermediation has stemmed from neither commercial banks nor nonbank deposit institutions but, instead, from intermediaries that issue only nondeposit claims. There are many forms of such intermediaries operating in the U.S. markets, but among the

most familiar and important are life and casualty insurance companies, private and public sector pension funds, independent consumer finance companies and the "captive" finance companies of nonfinancial businesses, equity and money market mutual funds, real estate investment trusts, and securities brokers and dealers.

Table 5 presents data, analogous to that shown above for the nonbank deposit institutions, for three specific categories of U.S. nondeposit intermediaries:[15] life insurance companies, private pension funds, and state and local government pension funds. The reason for focusing in particular on these three kinds of institutions is not only that they are the largest of the nondeposit intermediaries but also that their respective post-war experience reflects interesting contrasts. Because the low interest rates implicitly paid on the savings component of ordinary life insurance have increasingly prompted the use of group and other term insurance policies, life insurance companies' total assets held and liabilities outstanding grew little relative to gross national product during the first half of the post-war period, and since then they have mostly been declining in relative terms. Moreover, the relative decline in these companies' life insurance business has been even more pronounced, in that their growth in recent years has consisted disproportionately of pension monies which they manage for other businesses. As of yearend 1983 pension reserves constituted more than two-fifths of U.S. life insurance companies' total liabilities, up from less than one-tenth in the early post-war years.

By contrast, both private and public sector pensions have experienced extraordinarily rapid growth throughout these years.[16] Tax incentives at both the individual and corporate levels, business personnel policies aimed at reducing worker turn-over, features of the collective bargaining

Table 5

Assets of U.S. Life Insurance Companies and Pension Funds

	Combined Financial Assets				Financial Assets by Institution		
	Total	Equities	Corporate Bonds	Mortgages	Life Insur. Co.	Private Pension	State & Local Gov. Pension
	Percent of GNP						
1946-1950	24.6	0.8	8.2	4.3	21.2	1.9	1.4
1951-1955	26.3	1.6	10.8	6.5	20.8	3.3	2.2
1956-1960	31.8	3.4	13.2	8.3	22.3	6.2	3.3
1961-1965	36.0	6.1	14.3	9.1	22.3	9.2	4.5
1966-1970	36.8	8.3	14.0	9.0	20.6	10.8	5.4
1971-1975	35.1	10.2	12.9	6.7	18.4	10.4	6.4
1976-1980	33.2	8.7	12.5	5.4	17.0	9.3	6.8
1981-1983	36.5	9.7	11.9	5.1	17.8	10.5	8.2
	Percent of Total Combined Financial Assets						
1946-1950	100.0	3.3	33.4	17.4	86.4	7.7	5.9
1951-1955	100.0	6.0	41.1	24.9	79.1	12.6	8.3
1956-1960	100.0	10.6	41.4	26.1	70.0	19.4	10.5
1961-1965	100.0	17.0	39.7	25.3	62.0	25.6	12.4
1966-1970	100.0	22.6	38.1	24.3	55.9	29.3	14.8
1971-1975	100.0	29.0	36.7	19.6	52.4	29.5	18.1
1976-1980	100.0	26.2	37.8	16.3	51.4	28.0	20.6
1981-1983	100.0	26.5	32.6	13.9	48.7	28.8	22.5

Notes: Data are averages of yearend amounts, as percentages of fourth-quarter gross national product, seasonally adjusted at annual rates, and as percentages of annual year-end total combined assets.
Detail may not add to totals because of rounding.
Source: Board of Governors of the Federal Reserve System.

process, and other corporate financial objectives have all combined to favor the mushrooming of private pension liabilities since World War II. During most of this period, however, businesses had (and many used) broad latitude to incur pension liabilities without funding them. The 1974 Employee Retirement Income Security Act subsequently specified minimum standards for the vesting of workers' rights to accumulated pension benefits and for employers' funding of vested pension liabilities. Even so, businesses retain important flexibility in choosing the actuarial assumptions underlying the calculation of future benefits, the minimum required amortization of unfunded vested benefits is very slow, and nonvested benefits require no funding at all. Consequently, many businesses continue to carry substantial amounts of unfunded liabilities, so that private pension funds' total assets as shown in Table 5 substantially understate their liabilities.[17] This understatement was especially great during the 1970s when many private pension funds' asset portfolios, more than half of which in the aggregate is invested in equities, suffered an erosion in market value.

State and local government pensions, including both teachers' and other employees' funds, have experienced similar post-war growth. Public sector workers have the same tax incentive to use the pension mechanism to spread income beyond retirement as do private sector workers. Although public sector employers do not have the same tax incentives as do private businesses, in many cases the political process has favored the use of pension compensation over current compensation, especially when there is no pressure to raise tax or other revenues immediately to fund the accumulating pension liabilities. Hence public sector pension funds have been and remain substantially underfunded, so that the asset data shown

in Table 5 greatly understate their liabilities also.[18] The continued growth of public sector pensions' assets during the 1970s, in contrast to private pensions, reflects merely the smaller share of assets invested in equities by public sector funds' portfolios (about one-third in the aggregate) rather than any difference in funding practices.

The asset mix of these insurance and pension intermediaries, and hence their role in financing economic activity, has undergone important changes since World War II. Regulatory changes in the 1960s allowed many life insurance companies to increase the equity portion of their portfolios, and since the mid 1960s life insurers have largely withdrawn from direct home mortgage lending. State and local government pension funds and especially private pension funds have even more dramatically increased the equity share of their investments. Consequently, these nondeposit intermediaries have increasingly become a major source of both debt and equity funds for corporate businesses. As a result of these portfolio changes, together with the rapid growth of pensions and the (relative) stagnation of the commercial banking system, insurance companies and pension funds combined have increasingly dominated banks as holders of claims on the U.S. corporate business sector — despite banks' post-war emphasis on loans over investments in government securities. In the early post-war years these nondeposit intermediaries held only slightly more claims on the corporate sector than did commercial banks, but by the 1970s they held more than twice as much.

It is also important to distinguish the claims on business held by banks, which are overwhelmingly in the form of short- to medium-term loans, from the corresponding claims held by insurance companies and pension funds, which consist mostly of long-term debt and equity securities.

These non-deposit intermediaries have traditionally held more than two-thirds of all outstanding corporate bonds, and in recent years they have also come to hold about one-sixth of all corporate equity. On a flow basis, these investors have been of even greater importance in providing long-term debt and equity capital to U.S. business corporations. In addition to accounting for much or all of the corporate sector's net long-term bond financing throughout the post-war period, since 1960 they have also accounted for more than all of its equity financing, absorbing also the equity holdings liquidated by the household sector. In sum, businesses' equity and bond financing has become increasingly dominated by these nondeposit intermediaries. Given their high rates of portfolio turn-over, especially in comparison with individuals, equity and bond trading has become even more so.

4.4. Government Sponsored Intermediaries. Another important change that has come about in the U.S. financial markets since World War II has been the great increase in the federal government's activities as an intermediary for (and also a guarantor of) private credit. "Off-budget" sponsored credit agencies like the Federal Home Loan Bank System and the Federal Intermediate Credit Bank were in operation before World War II, but the scale of their lending operations was small then. As of 1946, all of these agencies combined held only about $2 billion of assets, the majority of which consisted of agricultural loans, and they owed only $2 billion of liabilities. The focus of these agencies' activity turned more toward support for homebuilding after the Federal National Mortgage Association began its lending operations in 1955, but as late as 1960, when their combined assets had reached $11 billion, their total agricultural credit outstanding still exceeded their total housing credit. Only since the

1960s, as the interaction of deposit interest rate ceilings with rising nominal interest rates led to the introduction of large-scale support for housing, did government financial intermediation begin to increase rapidly.

Table 6 presents data, comparable to that shown above for other groups of intermediaries, for the assets of the federally sponsored credit agencies and the even more recent mortgage "pools" like the Government National Mortgage Association and the Federal Home Loan Corporation. Government sponsored intermediation has grown rapidly, not just absolutely but in relation to gross national product, and by 1983 these intermediaries held more than one-fifth of all outstanding home mortgages and more than two-fifths of all outstanding farm debt. Moreover, the total housing credit advanced by these intermediaries, which have grown especially rapidly since the onset of periodic disintermediation in the mid 1960s, includes not only direct purchases of mortgages but also Federal Home Loan Bank advances to savings and loan associations, so that the effective amount is even greater. Federally sponsored intermediaries accounted for 45%, 48%, 52% and 100% of the total net extensions of single-family home mortgage credit in the high-disintermediation years 1969, 1970, 1974 and 1982, respectively.[19]

Federally sponsored intermediaries conduct their business much like private intermediaries, acquiring financial assets on either a loan or purchase basis, and in turn issuing their own liabilities. There are at least two important differences, however. One is that government intermediaries do not operate subject to the profit motive alone. While they typically pursue a profit objective, they do so within the limitations imposed by their charter to support areas of economic activity designated by Congress as public policy priorities.[20] The other key difference is that

Table 6

Assets of U.S. Sponsored Credit Agencies and Mortgage Pools

	Combined Financial Assets			Housing Credit	Loans to Agriculture
	Total	Agencies	Mortgage Pools		
	Percent of GNP				
1946-1950	1.0	1.0	0.0	0.2	0.7
1951-1955	1.1	1.1	0.0	0.3	0.6
1956-1960	1.8	1.8	0.0	0.7	0.8
1961-1965	2.5	2.4	0.1	1.1	1.1
1966-1970	3.7	3.4	0.3	2.0	1.4
1971-1975	6.3	5.0	1.3	4.2	1.8
1976-1980	9.3	6.0	3.2	6.7	2.2
1981-1983	13.5	7.8	5.7	10.2	2.4
	Percent of Total Combined Financial Assets				
1946-1950	100.0	99.7	0.3	18.7	65.9
1951-1955	100.0	98.3	1.6	25.0	58.8
1956-1960	100.0	97.8	2.1	36.0	45.1
1961-1965	100.0	96.6	3.4	43.0	42.4
1966-1970	100.0	92.2	7.8	50.0	38.8
1971-1975	100.0	79.5	20.5	65.0	28.1
1976-1980	100.0	65.4	34.6	71.8	23.6
1981-1983	100.0	58.1	41.9	75.1	17.9

Notes: Data are averages of yearend amounts, as percentages of fourth-quarter gross national product, at seasonally adjusted annual rates, and as percentages of annual year-end total combined assets.
Detail may not add to totals because of rounding.
Source: Board of Governors of the Federal Reserve System.

the liabilities of the mortgage pools and some of the sponsored credit agencies are directly guaranteed by the federal government and accordingly pay interest geared to that on federal government securities. Hence government intermediation also provides some degree of subsidy in the form of access to less expensive (because less risky, by virtue of the guarantee) credit.[21]

The federal government's role as a credit guarantor, which is not limited to the financial intermediation that it sponsors, is itself an important factor that has had great influence on the U.S. economy's reliance on financial intermediation. Deposit insurance provided by the Federal Deposit Insurance Corporation and the Federal Savings and Loan Insurance Corporation constitutes the most prevalent form of government sponsored guarantee provided for a fee, and it significantly alters the character of the liabilities that private sector deposit intermediaries can offer. Other familiar government sponsored agencies providing guarantees for a fee include the Veterans Administration, the Federal Housing Authority, the Overseas Investors Protection Corporation, the Security Investors Protection corporation, and most recently the Pension Benefit Guarantee Corporation. The federal government has also sponsored large-scale loan guarantee programs for diverse borrowers ranging from college students and small businesses to the Lockheed and Chrysler Corporations and New York City. In all, the government's 1983 outstanding credit and credit guarantees — including direct loans, formally guaranteed loans, and other loans by federally sponsored lenders — totaled $848 billion in comparison to $986 billion of direct federal debt obligations outstanding and held outside the federal government (including the Federal Reserve System).

This post World War II growth in the U.S. economy's reliance on

federal government intermediation, deposit insurance, and other credit guarantees has probably been to a great extent a counterpart of the government's waning role as a direct borrower. Given the substantial decline (relative to nonfinancial activity) in the federal government's outstanding debt, and the corresponding increase in the outstanding debt of private nonfinancial borrowers,[22] the U.S. financial markets have increasingly attempted to make private obligations more acceptable to the economy's ultimate wealth holders by converting them into government obligations via government insurance and credit guarantees. Along with the increase in private financial intermediation, the growth of government credit guarantees broadly defined — including some that are merly implicit — has enabled the U.S. financial system to absorb with substantial success the large post-war shift in the public versus private mix of the economy's debt.

5. Summary

Intermediation is a hallmark of all highly developed financial systems, and the United States is no exception. The U.S. financial markets are heavily intermediated, and since World War II they have become progressively more so.

The principal rationales that give rise to financial intermediation are benefits of size and specialization, the diversification of specific asset risks, and the pooling of even broader classes of risk. Each is a significant factor in accounting for the U.S. economy's reliance on intermediation. In addition, since World War II a further important factor has been the economy's continual shift away from government debt toward the debt of private nonfinancial entities including individuals and businesses. Nonfinancial investors (primarily individuals) have exhibited a strong preference for holding the debt of these nonfinancial borrowers via financial intermediaries rather than directly.

As the U.S. economy's reliance on financial intermediaries overall has increased during the post-war period, some specific kinds of intermediary institutions have grown more rapidly than others. Commercial banks have about held their own in relative terms, while steadily shifting their basic business back toward lending activities and away from securities investments. Nonbank deposit intermediaries have grown in relation to overall economic and financial activity, as the growth of savings and loan associations has more than offset the (relative) decline of mutual savings banks. Among private nondeposit intermediaries, life insurance companies have declined in relative terms while both public and private sector pension funds have shown exceptionally rapid growth. Finally, the federal government's participation in the financial intermediation process

in the United States has also increased rapidly during these years, in part as a result of the pressures created by the economy's shift to private instead of government debt.

Footnotes

* This paper was prepared as a contribution to The Banking Handbook, edited by Richard C. Aspinwall and Robert A. Eisenbeis (New York: John Wiley & Sons, Inc., forthcoming). It is based in part on my earlier contribution to The American Economy in Transition, edited by Martin Feldstein (Chicago: University of Chicago Press, 1980). I am grateful to Michael Burda and Jeff Fuhrer for research assistance and helpful suggestions.

1. See Goldsmith (1958, 1969) and Gurley and Shaw (1960) for an analysis of the prior experience.

2. The discussion here (and the data plotted in Figure 1 and used in Table 1 below) refers only to financial assets and hence excludes nonfinancial assets like houses and consumer durables. As of yearend 1983 households' nonfinancial assets, valued at replacement cost, totaled $4.8 trillion (of which $2.2 trillion was residential real estate), in comparison to $8.3 trillion of financial assets. The available current-value data on nonfinancial asset holdings are understandably weak.

3. Moreover, these data overstate households' direct equity holdings in that they do not separate holdings via mutual funds, which grew from 2% of total equity holdings on average during 1946-50 to 6% on average during 1976-80.

4. Feldstein (1974), for example, derived a large estimate of Social Security "wealth" (defined as the present discounted value of expected future benefits) and found evidence of a significant impact of Social Security on private saving behavior. Although this work and the literature that has followed it have emphasized effects on total saving behavior, there is no reason to expect the composition of asset holding to remain invariant.

5. Some of the best known examples of this thinking were Greenough (1951) and Advisory Committee (1969).

6. Lintner (1975), Modigliani and Cohn (1979) and Feldstein (1979), among others, have provided analyses of the failure of equity returns to keep pace with inflation.

7. A distinction documented by Hartman (1978) is that, within the category of long-term portfolio (as opposed to direct) investments, foreign investors have mostly bought U.S. equities while U.S. investors have mostly bought foreign debt securities.

8. Funds generated internally and retained by corporate businesses also represent a form of investment by the holders of equity shares in those corporations, of course. Given the large houshold ownership of equities, including retained earnings in the data shown in Table 1 would greatly increase the share of funds "advanced" by nonfinancial investors, but would still leave intermediaries as the direct source of well over half of the total.

9. See Friedman (1980, 1982) for a discussion of the post-war increase in the role of private debt in the U.S. economy.

10. Gurley and Shaw (1960) first emphasized this phenomenon.

11. Following Glass-Steagall, commercial banks no longer engage on their own account in investment banking or broker-dealer activities for publicly offered corporate securities, although they do so for public sector securities, and in recent years they have been increasingly involved in arranging direct placements of corporate securities. In addition, the trust departments of commercial banks continue to be the largest single factor in private asset management.

12. See the historical account given in Friedman and Schwartz (1963).

13. Banks' holdings of Treasury securities were essentially flat from 1946 until the swelling of the federal deficit in 1975, so that banks' portfolios of municipals have exceeded their portfolios of direct U.S. Treasury obligations ever since 1969. Except for 1974-76 and 1980-83, all of the growth in banks' holdings of federal government debt has consisted of federal agency securities.

14. See Goldfeld (1973, 1976) for a review of the post-war evidence on money demand behavior.

15. In Table 5, however, the respective size of the three groups is indicated by their total assets because of the lack of historical data on pension funds' liabilities.

16. See Bodie and Shoven (1983) and Kotlikoff and Smith (1983) for a comprehensive survey of the role of pension funds in the U.S. economy.

17. Several of the papers in Bodie and Shoven (1983) investigate the nature of this underfunding. Although corporations are now required to report (as a footnote to the balance sheet) the difference between pension assets and liabilities for vested benefits, there is no easy way to discover the liability for nonvested benefits.

18. See again Kotlikoff and Smith (1983).

19. The mortgage market receives, as a net addition to available funds, less than all of the credit provided by the sponsored credit agencies and mortgage pools if they in turn sell their securities to investors who would otherwise have held deposits in thrift institutions; see the analysis of this question in Jaffee and Rosen (1979).

20. It is important not to draw this distinction too firmly, however. For example, savings and loan associations have a tax incentive to hold at least 82% of their asset portfolios in residential mortagages (or other qualified assets). Also, in the presence of deposit interest ceilings limiting the pay-out of earnings to holders of deposit shares, it has never been clear what role the profit motive plays in portfolio decisions of savings and loan associations or mutual savings banks.

21. See Penner and Silber (1973) for an analysis of the subsidy implicit in federal credit programs.

22. See again Friedman (1980, 1982).

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