

# *Working Paper*



**Research Department  
Federal Reserve Bank  
of Minneapolis**

Federal Reserve Bank of Minneapolis  
Research Department

**Are Banks Dead?  
Or, Are the Reports Greatly Exaggerated?**

John H. Boyd and Mark Gertler\*

Working Paper 531

First Version: October 1993

This Verision: June 1994

\*Boyd, Federal Reserve Bank of Minneapolis and University of Minnesota; Gertler, New York University and National Bureau of Economic Research. We received helpful comments on earlier drafts from Cara Lown, Preston Miller, Art Rolnick, Dave Runkle, and Gary Stern. We thank Kerstin Johnsson and Joel Krueger for their excellent assistance with statistical work. We also thank Rama Seth (Federal Reserve Bank of New York) and Robert Yuskavage (Department of Commerce, Bureau of Economic Analysis) for help with data analysis and interpretation. At the Board of Governors of the Federal Reserve System we are indebted to Jalal Aqhavein, Allan Berger, Jim Embersit, Ed Ettin, Myron Kwast, Tom Simpson, and David Wright. Jody Fahland provided outstanding word processing assistance. Of course, we remain solely responsible for any remaining errors. The views expressed herein are those of the authors and not necessarily those of the Federal Reserve Bank of Minneapolis or the Federal Reserve System.

**Are Banks Dead?  
Or, Are the Reports Greatly Exaggerated?**

by  
John H. Boyd and Mark Gertler

**ABSTRACT**

This paper reexamines the conventional wisdom that commercial banking is an industry in severe decline. We find that a careful reading of the evidence does not justify this conclusion. It is true that on-balance sheet assets held by commercial banks have declined as a share of total intermediary assets. But this measure overstates any drop in banking, for three reasons. First, it ignores the rapid growth in commercial banks' off-balance sheet activities. Second, it fails to take account of the substantial growth in off-shore C&I lending by foreign banks. Third, it ignores the fact that over the last several decades financial intermediation has grown rapidly relative to the rest of the economy. We find that after adjusting the measure of bank assets to account for these considerations there is no clear evidence of secular decline. To corroborate these findings, we also construct an alternative measure of the importance of banking, using data from the National Income Accounts. Again, we find no clear evidence of a sustained decline. At most the industry may have suffered a slight loss of market share over the last decade. But as we discuss, this loss may reflect a transitory response to a series of adverse shocks and the phasing in of new regulatory requirements, rather than the beginning of a permanent decline.

John H. Boyd  
Senior Research Officer  
Federal Reserve Bank of Minneapolis  
250 Marquette Avenue  
Minneapolis, MN 55480

Mark Gertler  
Professor Economics  
Department of Economics  
New York University  
269 Mercer Street - 7  
New York, NY 10003

Tel. 612-340-2361

Tel. 212-998-8931

## Introduction

It is widely believed that commercial banking is a declining industry. Two factors are often cited to support this contention. First, nonbank credit alternatives have grown rapidly over the last fifteen years. Second, in the late 1980s, banks experienced record levels of failures and loan losses, symptoms of an industry in distress.

The view that banks are shrinking in importance is held by banking executives, academics, and high officials in many branches of government. For example, William Isaac, former chairman of the Federal Deposit Insurance Corporation and now a prominent banking consultant recently stated that “. . . the banking industry is becoming irrelevant economically, and it's almost irrelevant politically,” (*Wall Street Journal*, July 9, 1993). Carter Golembe, the Dean of bank consultants, similarly noted the “. . . major problems faced by the bank industry, most notably its eroding competitive position in the financial community and the crushing burden of regulation . . . ” (Golembe 1993).

The purpose of this study is to check the accuracy of the consensus position. Our conclusion based on an analysis of a variety of data is that there is no evidence of a significant decline in banking. After correcting for a number of measurement issues, we find that commercial banks' share of total financial intermediation in this country has been roughly stable over the last four to five decades. At most, banks may have suffered a slight loss of market share in the late 1980s and early 1990s. A case can be made, further, that this slight loss in market share was mainly a transitory response to a series of shocks to the bank industry that occurred over this period. On the other side of the coin, commercial banking has actually risen in importance relative to aggregate economic activity, even over the last fifteen years. While banks have maintained a relatively constant share of intermediation, financial intermediation has been growing steadily relative to gross domestic product.<sup>1</sup>

Why do our results run counter to conventional wisdom? Formal evidence for the traditional view comes from analyzing the ratio of bank assets to other forms of credit. There are, however, two major problems with this metric. First, traditional measures of bank assets fail to account for banks' off-balance sheet activities. Over the last fifteen years, banks have increased the extent to which they do business off the balance sheet (see Boyd and Gertler 1993, 1994). The combination of deregulation and financial innovation has permitted banks to increasingly decouple the various functions involved in intermediating lending. For example, banks now sell some of the loans they originate to other financial institutions. They have also increased the extent to which they indirectly support lending by providing backup lines of credit and guarantees. They now facilitate risk-sharing through the provision of derivative instruments. The moral is that industry share measures based on on-balance sheet assets understate commercial banks' contribution. We show that a good fraction of what appears to have been a decline in commercial banks share of intermediation by traditional measures instead reflects a relative movement of bank activities from on to off the balance sheet.

The second measurement consideration involves the expansion of lending by foreign commercial banks to U.S. firms that occurred over the 1980s. In addition to providing increased competition for domestic banks, the increased foreign involvement has also contributed to mismeasurement of commercial banks' share of domestic credit flows. The official measures have significantly understated the rise in loans supplied by foreign commercial banks (McCauley and Seth 1992). As we will document, after correcting for both the mismeasurement of foreign bank loans and the exclusion of off-balance sheet assets, any evidence of a substantial decline in commercial banks' share of intermediated assets vanishes.

It is also important to emphasize that proponents of the consensus view have tended to incorrectly use market share of intermediation numbers to draw inferences about banks' importance to the economy. As we implied earlier, market share numbers fail to account for the relative growth

of financial intermediation. Indeed, we find that even the unadjusted balance sheet measures indicate no decline in bank assets relative to gross domestic product. And our adjusted measures indicate a clear increase.

In Section II, we construct measures of bank assets that are designed to properly account for off-balance sheet activities and for total lending by foreign banks. We then analyze the behavior of this newly constructed aggregate relative to other forms of credit and to GDP. For robustness, we construct credit-equivalents of off-balance sheet assets using two quite different methods. The two approaches yield very similar results.

To obtain further evidence on the robustness of results, Section III presents a completely different approach to measuring banks' importance, using data from the National Income Accounts (in place of balance sheet data). Here the idea is to use value added numbers to measure banks' contribution to economic activity. Computations based on this approach give an impression that is very similar to that provided by the augmented balance sheet data: there is no evidence of a secular decline. Because of possible measurement problems with the value-added data, we also do computations based on input usage. Again, there is no evidence of secular decline.

It certainly is true that a number of disturbances jolted the banking industry in recent years. These disturbances included increased competition, loan losses, and the phasing in of new regulatory requirements. In Section IV, we assess the impact of these shocks on the condition of commercial banking. We conclude that these factors may have accounted for the slight loss in banks' share of intermediation over this period. But there is no evidence to suggest that these disturbances have pushed the industry into permanent decline. Indeed, in the last two years the fortunes of banks have steadily improved, along with the overall economy. In the section, we also cite other reasons to be optimistic about the future of banking. Concluding remarks are in Section V.

## II. Trends in the Importance of Commercial Banking: Adjusted Balance Sheet Measures

Figure 1 shows the shares of (on balance-sheet) U.S. financial assets held by the different types of private financial intermediaries over the period 1957-92. It clearly reveals the source of the conventional wisdom. In 1974, bank assets amounted to 46 percent of total intermediated claims. Since then, the bank share has steadily declined, falling to 34 percent in 1992. Some types of intermediaries, notably finance companies, increased their market share dramatically. On the other hand, the thrift industry (primarily savings and loan associations) lost more relative ground than did banks over this period.<sup>2</sup>

Figure 2 offers a different perspective. It plots the ratios of commercial bank assets to GDP and of commercial bank loans to GDP. Both ratios have increased over the last four decades. Bank assets to GDP rose from 0.38 in 1957 to 0.49 in 1992, and bank loans to GDP rose from 0.21 to 0.33. Both ratios are currently about the same as they were in 1974. Thus, perhaps contrary to popular thinking, the unadjusted balance sheet numbers do not indicate a decline in banking relative to overall economic activity since 1974; they only indicate a loss in market share.<sup>3</sup> It is important to keep this distinction in mind.

The unadjusted numbers do indicate a drop-off in the ratio of bank loans to GDP, beginning in 1986. However, this drop-off just offsets the rise that occurred in the roughly eight years prior. We defer a detailed analysis of the recent behavior of bank loans until Section IV. In the meantime, we simply note that a similar sharp drop in the ratio of bank loans occurred around the time of the 1974-75 recession. In the 10 years following that episode, the ratio rose by nearly a third.

In the rest of this section, we adjust the measure of bank assets to account for off-balance sheet activities (using two different procedures) and for the under reporting of foreign loans. The adjusted series paint a different picture. Adjusted bank assets have been growing roughly in accord

with other forms of financial intermediation over the last four decades. And they have been rising relative to national output. Our adjusted series are not free of measurement problems, as we discuss. However, we offer reasons to believe that, if anything, these estimates are conservative.

## **A. Adjustments For Off-Balance Sheet Activities**

### *Background Motivation*

A salient feature of commercial banking over the last several decades has been the growth and evolution of off-balance sheet activities. Generally speaking, off-balance sheet activities unbundle the intermediation process. The key implication for our purposes is that on-balance sheet assets may no longer be a reliable indicator of banks' role in financial intermediation.

The traditional tasks involved in intermediating a loan include: origination (for example, screening the borrower); obtaining loanable funds from savers; monitoring the loan (which may involve holding the loan on the balance sheet); and asset transformation (providing savers with a security that may differ in risk and liquidity than the loan that the bank makes). There are a variety of types of off-balance activities. Each involves segmenting off one or more of these intermediary functions.

Banks, for example, may originate loans but then sell them to other financial institutions. Sometimes the loan is sold in the same form that it is originated (for example, a private placement.) If the loan has fairly standard features and is well collateralized (for example, an auto loan or a mortgage), then the bank may pool it together with other similar loans and sell it as part of a securitized package.

Another important way that banks facilitate intermediation without directly holding loans is by providing collateral in the form of backup lines of credit or guarantees. A good example of this phenomenon involves the growth of commercial paper. Over the last twenty years, working capital

lending to high grade companies has shifted away from banks and to the commercial paper market. Banks have remained in the picture, however, by providing required back up lines of credit and/or guarantees to most of these borrowers.<sup>4</sup> Simple balance sheet measures clearly fail to capture commercial banks key role in intermediating these funds.

The most rapidly growing off-balance sheet activity—and the one that has surely attracted the most media attention—is the provision of derivative instruments. Provision of derivatives may be viewed as a form asset transformation, one of the traditional intermediary functions. A simple example is an interest rate swap, in which a borrower may use the bank to hedge against the interest rate risk it faces on a variable rate loan. The difference from traditional asset transformation, of course, is that arrangements for derivative securities take place off the banks' balance sheet.

The behavior of noninterest income reflects the rising importance of off-balance sheet activities. Total bank income can be expressed as the sum of net interest income (earnings from balance sheet assets) and noninterest income (earnings from off-balance sheet activities). As Figure 3 illustrates, noninterest income as a percentage of bank assets was roughly stable from 1957 to the late 1970s. Since then this number has more than doubled, moving from about 0.7 percent in 1979 to 1.75 percent in 1992. Similarly, over this period noninterest income has jumped from from less than 20 percent of total income to about a third. It is worth emphasizing that noninterest income grew rapidly over the same time period that banks share of (on-balance sheet assets) in total credit was falling.

Our objective in this section is to adjust the measure of bank assets to take account of off-balance sheet activities. Because simple direct measures of the value of off-balance sheet activities are unavailable, we construct several indirect ones. One approach involves using credit equivalents for off-balance sheet activities that are computed to meet the requirements of the Basle Capital

Standards. The other involves capitalizing noninterest income. Each method has drawbacks. However, by using two very different approaches, we hope to obtain reasonable ballpark estimates.

We first construct credit equivalents of balance sheet activities using Basle Accord numbers, and then do so using the capitalization method.

#### *Estimates of Off-Balance Sheet Activities: Basle Credit Equivalents*

Regulators have traditionally imposed capital requirements only against on-balance sheet assets. The newly instituted Basle Accord explicitly recognizes the changing nature of banking. It requires that banks must also hold capital against off-balance sheet positions that entail significant risk exposure. The procedure for computing the off-balance capital requirement entails converting a bank's risky off-balance sheet positions into credit equivalents. In effect, the credit equivalent is an estimate of the amount of on-balance sheet asset holdings which would result in the same amount of risk exposure for the bank. Once the credit equivalent is computed for a bank, it is multiplied by a percentage capital requirement, just as if it were an on-balance sheet asset.

For our purposes the Basle credit equivalent is a very useful construct. It provides a measure of off-balance sheet activities in units of on-balance assets. Research staff at the Federal Reserve Board of Governors provided us with estimates of U.S. commercial banks' total Basle credit equivalents for the years 1983-91. (Unfortunately, earlier estimates are unavailable.) Figure 4 expresses the estimated credit-equivalents as a fraction of total (on balance sheet) bank loans. This fraction grew from about 0.13 in 1983 to 0.19 in 1991. Thus, by 1991, the estimated credit equivalent of off-balance sheet activities was approximately 20 percent the size of on balance sheet loans. The relative growth in the credit equivalents over this period is consistent with the relative growth in noninterest income portrayed in Figure 3.

The Basle estimates likely understate off balance sheet activities, for several reasons. First, they exclude certain activities. Only those off-balance sheet activities which are believed to result in significant risk exposure are included. Activities such as loan sales without recourse, loan servicing, consulting, and trust department services receive no weight whatsoever. In this vein, the classification scheme is somewhat arbitrary. For example, loan commitments with a maturity of one year or more are subject to capital requirements. However, loan commitments with shorter maturities receive no capital weight at all, and therefore do not enter the measure of credit equivalents. (Not surprisingly, the banking industry has responded to this regulatory policy by heavily marketing 364 day loan commitments, and then periodically rolling them over).

Second, it appears that the estimated numbers we have obtained may systematically underestimate the true Basle credit equivalents. Prior to 1990, banks did not have to publicly disclose all the relevant information needed to compute these numbers. Hence, the estimates (by researchers at the Federal Reserve Board) need not correspond to the actual credit equivalents. For the years 1990 and 1991, however, both estimated and actual numbers are available. If these two years are any guide, then the estimates understate the true values by at least a third. The true numbers reveal that credit equivalents for off-balance sheet activities were roughly 30 percent the size of on-balance bank loans during these two years, instead of the estimated 20 percent. In 1993, the true number climbed to 33 percent.<sup>5</sup>

The computed credit equivalents primarily reflect loan commitments, standby letters of credit, and derivative securities positions. One interesting issue is the role of derivatives. It is well known that only a few banks (roughly ten) account for the vast majority of derivatives activity. (See Table 2.) Do the Basle credit equivalents mainly reflect the explosion in derivatives activities at this handful of large banks? Or do they instead reflect a broader based expansion of off-balance sheet intermediation? Figure 4 suggests that the latter is closer to the truth. Information on derivatives'

contribution to the credit-equivalents is available back to 1990. Derivatives typically account for less than 30 percent of the total.

Another piece of evidence supports the view that the rise in off-balance sheet activities has been broad based. Figure 5 plots the growth in noninterest income across different size classes of banks over the period 1986-91. The categories are: 10 largest; \$5 billion in assets to 11th largest; \$300 million in assets to \$5 billion; and under \$300 million. If derivatives explain all the growth in off-balance sheet activity, then we should expect the rise in noninterest income to be concentrated mainly amongst the 10 largest banks (which account for virtually all the industry's derivatives activity). However, noninterest income as a percentage of assets grew across all categories of banks. True, for the 10 largest banks, this ratio grew the most (from 1.37 in 1986 to 2.59 in 1992). However, it grew nearly as fast for banks outside the top 10 with assets exceeding \$5 billion (from 1.32 to 2.25.)

*Estimating Off-Balance Sheet Activities: Credit Equivalents From Capitalizing Noninterest Income*

The second approach makes use of the behavior of noninterest income relative to net interest income to back out an estimate of off-balance sheet activities. As with the construction of the Basle credit equivalents, the objective is to obtain a measure in units of on-balance sheet assets. The credit equivalent of off-balance sheet activities under this approach is the quantity of on balance sheet assets that would be required to generate the observed level of noninterest income. This procedure boils down to using the rate of return on balance sheet assets to capitalize noninterest income.

While the procedure is crude, it has several advantages relative to the Basle method. Since only income and balance sheet data are required, constructing a long time series of credit-equivalents is possible (Recall that estimates of Basle credit equivalents are only available back to 1983.) Second, the approach constructs a credit equivalent for the universe of off-balance sheet activities.

This contrasts with the Basel method which computes credit equivalents only for those activities that are thought to entail significant risk. In this vein, it is not susceptible to regulatory gaming by banks (to avoid capital requirements) in the same way as are the Basle numbers. For example, loan commitments under a year that do not figure into the calculation of the Basle credit-equivalents are captured by the capitalization method.

We also emphasize that the capitalization approach uses an entirely different data source than does the Basle method. The former employs bank income statements, while the latter makes use of memoranda items that are reported in bank Call Reports. Comparable results from the two approaches, therefore, would be evidence of robustness.

The algorithm for computing credit-equivalents using the capitalization method works as follows: Define  $A$  = balance sheet assets,  $A'$  = credit equivalent of off-balance sheet assets,  $I_n$  = noninterest income, and  $I_i$  = net interest income  $\equiv$  interest income  $-$  interest expense  $-$  loan loss provisions. The goal is to infer the unobservable variable  $A'$ . If we make the (strong) assumption that both  $A$  and  $A'$  earn the same before tax rate of return,  $r$ , then

$$(1) \quad rA' = I_n$$

$$(2) \quad rA = I_i$$

and therefore,

$$(3) \quad A' = A(I_n/I_i).$$

We refer to  $A'$  as the NIC-1 credit equivalent (for Noninterest Income Capitalization—method 1). Figure 6 plots the ratio of this credit-equivalent to on-balance sheet loans, over the time frame 1955–91. Not surprisingly, this ratio closely mirrors the normalized value of noninterest income portrayed in Figure 3. It is fairly flat until the mid-1970s, and then rises sharply from about 0.35 in 1975 to nearly 0.70 in 1991.

Over the 1980s, the NIC-1 credit-equivalent is also qualitatively similar to the behavior of the estimated Basle credit-equivalent (compare Figures 4 and 6). Not surprisingly, the capitalization method yields a larger estimate than do the Basle estimates. (Recall from the discussion in the previous section that the latter at best captures only off-balance sheet activities that are risky (by regulatory definition), and that they likely understate the true values, possibly by as much as a factor of a third).

To obtain a credit-equivalent that can be more directly comparable to the Basle number, we make the following adjustment to NIC-1. We attempt to eliminate from NIC-1 the nonrisky off-balance sheet activities that the Basle numbers do not capture. We first assume (reasonably) that off-balance sheet activities prior to 1970 were primarily safe “plain vanilla” services (for example, trust department services). We then use the period 1955-70 to obtain an estimate of the ratio of the credit equivalent of these safe activities to on-balance sheet assets. This involves taking an average of the ratio  $(I_n/I_i)$  over this period (see equation 3). Call this ratio  $\alpha$ . Then  $\alpha A$  is an estimate of the credit-equivalent of these plain vanilla activities, assuming that these activities remain in fairly stable proportion to balance sheet assets. (Note that over the period 1955 to 1970, the ratio  $I_n/I_i$  was indeed fairly stable.) Finally, to obtain a credit equivalent that is adjusted to capture only risky activities, we subtract  $\alpha A$  from  $A'$  in equation 3. Call the adjusted number  $A(\text{adj})'$ . Thus

$$(4) \quad A(\text{adj})' = A' - \alpha A = [(I_n/I_i) - \alpha]A.$$

For consistency, we refer to  $A(\text{adj})'$  as the NIC-2 credit-equivalent (for Noninterest Income Capitalization—method 2). Figure 6 also plots NIC-2 credit equivalent as fraction of on-balance sheet loans.<sup>6</sup>

## **B. Adjustments for Under-Reporting of Off-Shore Foreign Loans**

It is no secret that over the last decade foreign banks have significantly increased their operations within the U.S. Until very recently, however, few observers fully appreciated the magnitude of foreign bank intermediation. A study by McCauley and Seth (1992) showed that the official numbers greatly understated foreign involvement. In particular, there was no accounting for loans by foreign banks that were booked off-shore. For a number of years, U.S. offices of foreign banks had an incentive to book loans outside the United States, at their home offices or in tax havens. Until recently, by doing so they could avoid all U.S. reserve requirements. Unfortunately, the official U.S. statistical sources, including the Flow-of-Funds Accounts, did not capture such off-shore bookings.<sup>7</sup>

McCauley and Seth obtained data from the U.S. Treasury that avoid this measurement problem. The Treasury collects the data from U.S. borrowers, and not from banks. Therefore, its numbers include the off-shore bookings. Figure 7 shows that the discrepancy between the actual and officially measured quantity of foreign bank loans was quite large. And the discrepancy grew over the last decade. In 1983, the unadjusted share of bank assets held by foreign banks was about 5 percent, while the share after adjusting for off-shore bookings was 9 percent. In 1992, the unadjusted share was 11 percent, while the adjusted share jumped to 21 percent. By 1993, unreported off-shore commercial loans totaled \$175 billion (see Table 1).

## **C. An Adjusted Measure of Total Bank Assets**

We now present measures of total bank assets that adjust for both off-balance sheet activities and unreported off-shore loans. We construct two aggregates: one that uses the Basle estimates to generate credit equivalents for off-balance sheet assets, and another that uses the noninterest income

capitalization method. We then use the adjusted aggregates to recompute (i) banks' share of total intermediated assets and (ii) the magnitude of bank credit relative to GDP.

Figure 8a plots the adjusted share of commercial bank assets in total financial intermediation, relative to the unadjusted share. In this figure we use the NIC-2 credit-equivalent to illustrate the effect of the capitalization method, since this aggregate corresponds best to the Basle credit-equivalent (Recall that NIC-2 is a rough attempt to isolate risky off-balance sheet activities). Both procedures yield very similar results; though, as expected, the NIC-2 method produces a slightly larger change than does the Basle method. In either case, adjusting for (risky) off-balance sheet activities eliminates about half the decline in bank share that occurred since the peak in 1974. And viewed from the perspective of the entire four decades, the decline in the bank share is quite modest. The average bank share over this period is fairly stable, averaging slightly greater than 40 percent. In the late 1980s and early 1990s, this share fell to slightly under 40 percent.

Table 3 provides some indication of the relative importance of correcting for off-balance sheet activities versus correcting for off-shore foreign lending. Each correction accounts for about half of the deviation of the adjusted bank share number from the unadjusted number in Figure 8a when the Basle credit-equivalent measure is employed. With NIC-2, the off-balance sheet correction accounts for about two-thirds of the difference, and the foreign lending correction explains the remaining third.

Figure 8b repeats the exercise portrayed in Figure 8a, this time normalizing the adjusted measures of bank assets relative to GDP. While the unadjusted ratio flattens out after 1975, the two adjusted ratios continue to steadily rise. Thus, relative to GDP commercial banking appears to have increased in importance. As in the previous case, using either the Basle or the NIC-2 credit equivalent to account for off-balance sheet activities appears to generate very similar results. As in the previous case, however, the NIC-2 method produces a somewhat larger change.

In Figures 8c and 8d, we use the NIC-1 credit equivalent—the comprehensive measure of off-balance sheet activities—in place of the NIC-2 measure to compute adjusted bank assets. The figures plot the ratios of adjusted bank assets to total intermediary assets and adjusted bank assets to nominal GDP, respectively. This time we do not include the Basle adjusted ratios in the figures, since the Basle credit-equivalent does not correspond closely to the NIC-1 measure. From roughly 1955 to 1975, the adjusted series for each ratio is simply an upward parallel shift of the unadjusted series. After 1975 the gap steadily widens, as off-balance sheet activities grow in importance.<sup>8</sup>

We readily acknowledge that our adjustments to the Flow-of-Funds balance sheet data are crude. Nonetheless, it is reassuring that two very different approaches for accounting for off-balance sheet activities yield rather similar results. One way in which our numbers may be biased, however, is that due to lack of data availability, we have not been able to take account of off-balance sheet activities of other financial intermediaries. Insurance companies, in particular, have been active in issuing letters of credit and other financial and performance guarantees. Thus, our adjusted numbers may overstate banks' share of intermediated asset holdings. This consideration, however, does not affect our rough measure of banks' importance to the overall economy; that is, the ratio of bank assets to GDP. We also emphasize that both the Basle and the NIC-2 credit-equivalents that we used in the calculations that underlie Figures 8a and 8b, only account for a subset of banks' off-balance sheet activities. Only the NIC-1 credit-equivalents used in Figures 8c and 8d are in principle comprehensive.

In the next section, we pursue an entirely different approach to measuring the importance of banking using data from the National Income Accounts.<sup>9</sup>

### III. National Income Accounts Data

Our goal in this section is to measure the economic output—or value added—of commercial banks, using information from the National Income Accounts.

The National Income Accounts provide information on the value-added of different sectors of the economy, including the financial sector. The series begin in 1947. The finance sector data include information separately for depository institutions, insurance, brokers, and other credit intermediaries. At present, these sub-sector value-added data are only available through 1990.

Because a total sales figure is unavailable for financial intermediaries, one cannot compute their value-added using standard methods. Instead, value-added for this sector is represented by the sum of payments to all factors of production, which are composed primarily of wages and salaries, profits, interest expense, and depreciation.<sup>10</sup>

We emphasize that the value-added approach to measurement is quite different than the balance sheet approach we employed in the previous section. Not only are the data sources different, so is the underlying conceptual basis. Indeed, the value added-approach is in principle the purest way to identify banks' contribution. Unlike the balance sheet approach, it naturally adjusts for changes in the nature of bank activities. For example, a dollar's worth of bank employee labor is treated the same, whether it is paid to a teller or to a swap trader. Therefore, the value-added measure will capture all off-balance sheet activities of banks and other financial intermediaries (thus, eliminating one important potential source of bias in our previous analysis). Moreover, value-added should capture changes in the composition of on-balance sheet assets for banks and other intermediaries. For commercial banks the trend has been to move out of low-risk lending, into higher-risk, information-intensive lending (for example, see Boyd and Gertler 1993, 1994). Value-added per dollar of assets is likely higher for the latter activity than for the former.

Unfortunately, the National Income Accounts do not maintain sectoral data for commercial banks by themselves. What are called banks in these accounts (and in our Figures 9 and 10) include commercial banks, Federal Reserve Banks, and mutual savings banks. And these data are only available through 1987. After that date, changes in standard industrial classifications were made. Therefore, to obtain a banking industry series that is historically consistent and goes beyond 1987 we must examine an even more inclusive aggregate. We call this aggregate "Banks+Credit." It includes banks as defined above plus savings and loans, credit unions, business credit institutions, mortgage banks, and rediscounting agencies (for example, FNMA and GNMA).<sup>11</sup>

Figure 9a shows value added by the banking industry, expressed as a percentage of total value-added by the financial intermediary sector. Both banking industry definitions are shown there and both are highly correlated. The main thing to observe from Figure 9a is that over the long run banks' share of value-added has remained fairly constant; if anything, increasing somewhat over time. Linear time-trends fitted through both series display positive slopes.

These is a long-standing controversy about national income accounting for financial intermediaries and on the accuracy of value-added computations for firms in this sector.<sup>12</sup> In light of the continuing debate, it is useful to investigate trends in factor inputs of firms in these industries as well as their output. Factor inputs for financial intermediaries are measured in the usual way, and are not particularly subject to error relative to other industries. Figure 9b shows banks' share of total (full and part-time equivalent) employment as a fraction of total employment of financial intermediary firms. The long term trend in banks' share of employment displays a positive slope, according to either measure. However, it appears to have modestly turned down in the 1980s. For example, Bank+Credit declines from just over 50 percent in 1983 to about 47 percent in 1992.

Figure 9c shows banks' share of total investment in plant and equipment as a percent of total plant and equipment investment in the financial intermediary sector. These numbers are net of

depreciation and are adjusted for the effects of inflation. The picture here is very much like that for employment. That is, the long run trend is positive according to either measure. However, in the late 1970s or early 1980s both measures fall below trend. It is worth noting that the input share measures for banks turn down around 1980, whereas their share of value added is actually above trend in the 1980s. We are not sure of the explanation for the difference between recent trends in industry inputs and outputs. What is clear, however, is that according to any of these measures there is no evidence that commercial banking has lost market share over the long haul. All six fitted time trends in Figure 9 display positive slopes.

In analogy to the balance sheet data, if we scale banks' importance relative to the national economy instead of to other intermediaries, the picture is even brighter. First, consider the growth of the financial intermediary sector relative to the total economy, as in Figure 10. The figure shows value-added by the financial intermediary sector as a percent of total national GDP. This fraction has increased substantially over the sample period, in fact more than doubling. However, the same is true for either measure of banks' share of value added to total GDP. As shown in Figures 10b and 10c, the same result (much more rapid growth than the overall economy) is displayed by the factors of production of the intermediary sector and of bank-related firms. The growth in capital investment has been particularly dramatic. These data therefore consistently suggest that the financial intermediary sector including banks has been a growth industry, relative to the overall economy.

#### IV. Implications of the Recent Slowdown in Bank Lending

Both the adjusted balance sheet data and the National Income data suggest that, at most, there has been a slight decline in commercial banks' share of financial intermediation over the last decade. And, if anything, banking as a component of GDP has risen in importance. Nonetheless, from 1986 to 1992 there was a fairly substantial drop in the growth rate of (on-balance sheet) commercial bank

lending. The measurement issues that we have emphasized in Section II-account for part of this phenomenon. The other part, we think, may be explained largely by factors that were transitory in nature. There is no clear reason to believe that it is symptomatic of a major decline in banking.

Figure 11 plots the growth rates of real bank loans, bank assets, and total financial intermediary assets over the period 1957-92. From 1986 on, the growth rate of bank loans steadily declines, becoming negative in 1990. Most of the decline is due to a drop in commercial and industrial lending (see Boyd and Gertler 1993, 1994). However, the commercial paper market, which grew rapidly over this period, absorbed some of this decline. As we have argued earlier, this phenomenon, for the most part, reflects a shift of high quality C&I lending from on to off the banks' balance sheets, since banks typically provide continued support with backup credit lines and guarantees. Off-shore foreign banks absorbed another portion of the decline. Here, of course, the problem is the failure to include the assets of foreign off-shore banks in the measure of the aggregate C&I lending.

Beyond these measurement issues, however, we think that underlying the 1986-92 slowdown in bank lending were at least two other factors which were largely transitory in nature. The first involves the recent "capital crunch," which, according to numerous authors, was a significant factor in the lending slowdown. The second involves the 1990-91 recession and the associated drop in long term interest rates. We analyze each in turn.

### **The Capital Crunch**

In the 1980s, several factors combined to produce (what many observers claim to have been) a shortage of capital within the banking industry. The first was a series of adverse shocks to bank loan portfolios that substantially depleted bank capital by producing record loan losses for the postwar. These shocks included the LDC debt crisis and the collapse of prices in agriculture, oil,

and real estate. The second factor was the associated tightening of regulatory standards. In response to the deteriorating condition of depository institutions, regulators tightened supervision and imposed new restrictions. Included among the new restrictions was the Basle Accord, which raised capital standards.

The pressure on capital was particularly acute for large banks (see Boyd and Gertler 1993, 1994). These banks suffered disproportionate losses of capital since they had invested heavily in both LDC and commercial real estate lending. Further, even before loan losses piled up, they tended to operate with capital/asset ratios that were well below the industry mean. The huge loan losses over the last decade simply pushed them further below the mean. Therefore, in the peak years of the capital crunch (1989-91), large banks had the most ground to gain in order to satisfy the newly instituted capital standards.

The significance of the capital crunch for our purposes is that it was likely a factor in the recent bank lending slowdown. An enormous volume of recent research, beginning with Bernanke and Lown (1991), Furlong (1991), Johnson (1992), and Peek and Rosengren (1992), has identified a connection between bank capital and lending over this period. These papers use panel data on individual banks to estimate loan supply equations that allow for the influence of capital. While there has been debate over the influence of regulatory factors, the finding of a link between capital and lending has been fairly robust. Further, this finding survives after controlling for variation in loan demand across banks. Finally, Lown and Peristani (1993) have recently shown that it was mainly among large banks that capital impinged on lending (that is, the link between capital and lending was strongest among large banks). This finding is compatible with the earlier evidence that the capital shortage was likely most acute for large banks.

While it is beyond the scope of this paper to add to the formal evidence on this topic, we do think that it is useful to show the link between capital and asset growth that is present in the raw

data. As shown in Table 4, under capitalized banks contracted their assets in each year, 1990 through 1992, and in 1993 increased them at only about a 1 percent rate. Well capitalized banks, on the other hand, exhibited positive rates of asset growth in each of these years, averaging about 5.7 percent.

It is, of course, important to distinguish between the behavior of assets and the behavior of loans. Table 4 shows that for the period 1990-93 the differences in loan growth across poorly and well capitalized banks were roughly the same as the differences in asset growth. In 1991 and 1992, loan growth was below asset growth for all categories, though it was weakest at poorly capitalized banks, and strongest at well capitalized banks. Interestingly, in 1993, loan growth picked up substantially for well-capitalized banks, but remained stagnant for the other categories.

Table 5 reports the connection between size and real asset growth, in the spirit of Lown and Peristani (1993). (Unfortunately our data disaggregated by size do not perfectly overlap with our data disaggregated by capital adequacy.) The largest banks grew much less rapidly over the 1984-91 period than did the rest of the industry. The average growth rate of balance sheet assets of banks in the over \$10 billion category was only 0.7 percent, whereas the industry average growth rate was 4.3 percent. To the extent that large banks were on average further below regulatory capital limits, we should expect (everything else equal) the decline in loan growth to be greatest amongst these banks. This is, of course, exactly what Lown and Peristani (1993) found.

In summary, there is evidence to suggest that (beyond the measurement problems discussed in Section II), a component of the unusual slowdown in bank lending was due to balance sheet problems experienced primarily by large banks. Much of the adjustment to the capital shortage however, appears to have taken place. Capital/asset ratios within the industry have improved, partly due to adjustment in assets and also partly due to the replenishment of capital. Several years of strong earnings and a favorable equity market are responsible for the latter.

### Effects of the 1990-91 Recession

Another key factor underlying the lending slowdown was the 1990-91 recession. From 1983-91, (unadjusted) real bank assets grew at a uniformly lower rate than did total intermediary assets, as Figure 11 illustrates. However, in the period around the recession the growth rate of total real financial intermediary assets declined at about the same rate as the growth rate of (unadjusted) real commercial bank assets. This across-the-board decline suggests that falling demand for intermediary loans around this time was partly responsible for the behavior of bank lending. As Figure 11 illustrates, a similar sharp drop in the growth rate of bank assets and bank lending occurred around the 1974-75 recession. The growth rate of total intermediary assets also fell, suggesting again that demand factors were at work.

We also emphasize that the growth rates of bank loans and bank assets in Figure 11 are not adjusted for the measurement issues raised in Section II. Though we do not report the results here, simply adding in corrections for omitted offshore foreign loans and off-balance sheet activities raises the growth rate of bank loans and bank assets by several percentage points over the years 1987 to 1990.

Finally we ask, why did bank lending not pick up in 1992 and 1993? Is this not evidence that there has been a fundamental change and that commercial banking is in decline? We believe not. There have been similar episodes (for example, flat or falling loan demand in a recovering economy) in the past. Rising cash flows associated with the recovery add to the supply of internal funds, dampening the need for external finance. For example, bank loans fell precipitously in 1976, the first year of the recovery after the 1974-75 recession. In addition, as we have been suggesting, stagnant lending has not been unique to commercial banks. As shown in Table 6c, total business lending by nonbank finance companies has been essentially flat since 1991.

There may be several other factors involved that are particular to this recovery. First, some loan markets remain depressed. This is particularly true of commercial real estate lending and the problem is much worse in some parts of the country than in others. In the first nine months of 1993, business loans expanded in the southeast, midwest, and southwest; but contracted in the northeast and far west. (The latter two areas were most hard hit by the commercial real estate crash). Moreover, most of the contraction in bank business lending has been in construction and land development loans. (Board of Governors of the Federal Reserve System 1993.) Whereas delinquency and charge-off rates have fallen since mid-1991, these still remain high by historical standards in many part of the country.

In response to these conditions, many bank managers have remained cautious about expanding loan portfolios, even as the economy has recovered. (Most likely, bank supervisory agencies and examiners have encouraged such conservatism.) The Federal Reserve's Survey of Terms of Bank lending indicates that banks have gradually eased credit terms for large corporate borrowers, but have not done so for smaller corporations. Indeed, the spread of the prime rate over the federal funds rate remains around 300 basis points, which is extremely high by historic standards.

Second, banks have not needed to expand their loan portfolios to earn exceptional profits (Table 6a). Over the last several years the yield curve has been extremely steeply sloped, and banks have been able to earn excellent interest rate spreads on expanded holdings of government and mortgage-backed securities. Table 6b shows the growth in the ratio of securities to total assets. Various observers have noted the unusual nature of these circumstances, and the potential for interest rate risk exposure.

Third, for the last several years very low long term interest rates and an associated favorable equity market may have induced substitution away from bank loans. That is, nonfinancial corporations have reduced their dependance on short-term borrowing by issuing long-term debt and

new equity. Corporate financial restructuring is clearly illustrated in Table 6c, which shows the composition of borrowing by nonfinancial firms. Over the period 1990-93, the fraction of total borrowing obtained from commercial banks fell by just over two percent. Similarly, nonbank loans fell by 2.4 percent. However, these declines were offset by bonds outstanding which increased from 37 percent to nearly 42 percent, or about a 5 percent change.

## V. Concluding Remarks

We do not dispute the notion that the banking industry experienced severe difficulties in the late 1980s. Indeed, our earlier work (Boyd and Gertler 1993, 1994) focused on this issue. What we are calling into question is whether the poor performance over this period signals the beginning of a permanent decline. Both the balance sheet data (adjusted for a variety of measurement issues) and value-added and input data from the National Income Accounts fail to reveal any striking decline in the role of commercial banks.

Clearly, banks have faced increased competition from nonbank alternatives. They have responded, however, by changing the way they provide traditional services and by developing new products.<sup>13</sup> The rising importance of off-balance sheet activities, ranging from credit-lines to derivative products, are symptomatic of these developments.

If we are right that banking is not a declining industry, then more than academic interest is at stake. Important public policy decisions have been and continue to be based on the consensus view. One such policy is in the area of bank mergers. Consolidation in banking (largely via mergers) has been encouraged, partly on the grounds that it is a way to mobilize resources out of a declining industry. If the industry is not declining, only changing, this argument loses force. A second such policy area is the expansion of bank powers. One common argument is that banks are declining because with current powers limitations that cannot compete. This argument also loses

force (although there may be other, perfectly valid, reasons why bank powers should be expanded). Along the same lines it is often argued that banks can't compete because of excessive regulatory burden; or, that interest should be paid on required reserves to help out this troubled industry. Related policy proposals abound all based on a premise that is questionable. If public policy is based on bad assumptions, it is unlikely to be good policy except by accident.

## Footnotes

<sup>1</sup>In fairness, we are not the only ones to have recently questioned the consensus view or noted the severe deficiencies of conventional bank accounting data (see, for example, Cates 1993).

<sup>2</sup>In Figure 1 government (state and local) pension funds are excluded from the insurance sector (although they are included there in the Flow-of-Funds accounts).

<sup>3</sup>Romer and Romer (1993) similarly emphasize that the ratio of bank loans to GDP has not declined over the postwar.

<sup>4</sup>Commercial bankers have informed us that in recent years, providing guaranteed credit lines for highly-rated commercial paper issues can be about as profitable as doing the loan directly. That is, fee income on the credit line is roughly of the same order of magnitude as net interest income would be on a commercial loan of the same size. Interest rate spreads are generally very thin on large commercial loans to low risk borrowers.

<sup>5</sup>Beginning in 1990 banks were required to fully report the information necessary to calculate Basle credit equivalents; prior to that only estimates were possible. We are indebted to Allan Berger and Jalal Aqhavein for their help in obtaining these estimates.

<sup>6</sup>The adjustment to total banks assets is not greatly affected if the base period (1955-70) for computing  $\alpha$  is moved forward or backward a few years. Nor is it significantly affected if noninterest income is deflated by total assets instead of net interest income.

<sup>7</sup>Very recently, the Federal Reserve Board began collecting and publishing comparable data. (See Terrell 1993.)

<sup>8</sup>In some computations (not reproduced here), NIC-adjusted bank assets were reduced by the amount of their holdings of U.S. government securities and agency issues. Bank's share of financial intermediation and bank assets divided by GDP still displayed almost exactly the same patterns as

in Figures 8c and 8d. Of course, there is a downward level shift, due to the reduction in adjusted total bank assets.

<sup>9</sup>For completeness, we should note several additional bank-related assets which do not appear on conventional bank balance sheets. One is assets held by nonbank affiliates of bank holding companies (for example, consumer finance affiliates). As shown below, by 1993 these amounted to \$268 billion (roughly half in the form of securities). Another is loans *originated* by commercial banks and sold or participated without recourse into the secondary market. In 1993 about \$83 billion in consumer loans and (at least) \$53 billion in commercial loans had been sold in this manner. These data on sold loans must be interpreted with extreme caution, however. A significant (but unknown) fraction of such loan sales are to other commercial banks. Moreover, data on sales of mortgage loans by commercial banks—undoubtedly a large volume activity—are not currently available.

| Year | Nonbank Assets of<br>Bank Holding Companies <sup>1</sup><br>(In \$ bils.) | Securitized<br>Consumer Loans <sup>2,4</sup><br>(In \$ bils.) | Commercial and Industrial Loans<br>Sold or Participated <sup>3,4</sup><br>(In \$ bils.) |
|------|---|---|---|
| 1993 | 268   | 83  | 53  |
| 1992 | 212   | 66  | 55  |
| 1991 | 209   | 57  | 65  |
| 1990 | 216   | 40  | 80  |
| 1989 | 224   | 22  | 72  |

<sup>1</sup>Asset holdings of nonbank affiliates of bank holding companies.

<sup>2</sup>Securitized consumer loans originated by commercial banks.

<sup>3</sup>Based on a sample of approximately sixty large commercial banks—not the industry aggregate.

<sup>4</sup>Only loans sold without recourse are included. An unknown but substantial fraction of these loans has been sold to other commercial banks.

Data sources: Call Reports, Senior Loan Officer Opinion Survey, and other Federal Reserve sources.

<sup>10</sup>This method for computing value-added is also employed for many service sectors of the economy.

<sup>11</sup>We thank Robert Yuskavage for explaining these features of the data to us.

<sup>12</sup>See, for example, Fixler and Zieschang (1992) or Berger and Humphrey (1992).

<sup>13</sup>In Boyd and Gertler (1993) we summarize the arguments why banking continues to occupy a special niche in the financial services industry. After taking into account its (important) indirect role in the commercial paper market, banks remain central to the provision of liquidity. For similar arguments see D'Arista and Schlesinger (1992).

## References

- Avery, Robert B., and Berger, Allen N. 1991a. Loan commitments and bank risk exposure. *Journal of Banking and Finance* 15 (February): 173-92.
- \_\_\_\_\_. 1991b. Risk-based capital and deposit insurance reform. *Journal of Banking and Finance* 15 (September): 847-874.
- Benveniste, Larry; Boyd, John H.; and Greenbaum, Stuart I. 1991. Bank capital regulation. *Osaka Economic Papers* 40 (March): 210-26.
- Berger, Allen N. and David B. Humphrey. 1992. Measurement and efficiency issues in commercial banking. In *Output Measurement in the Service Sectors*, ed. Zvi Griliches, pp. 245-79. Chicago: University of Chicago Press.
- Board of Governors of the Federal Reserve System. 1993. Credit availability for small businesses and small farms.
- Boyd, John H. and Gertler, Mark. 1993. U.S. commercial banking: Trends, cycles and policy. In *NBER Macro Annual*, ed. Olivier Blanchard and Stanley Fischer. Cambridge, MA: MIT Press.
- Boyd, John H. and Gertler, Mark. 1994. The role of large banks in the recent U.S. banking crisis. *Federal Reserve Bank of Minneapolis Quarterly Review* 18 (Winter): 2-21.
- Boyd, John H., and Graham, Stanley L. 1991. Investigating the banking consolidation trend. *Federal Reserve Bank of Minneapolis Quarterly Review* 15 (Spring): 3-15.
- Boyd, John H.; Graham, Stanley L.; and Hewitt, R. Shawn. 1993. Bank holding company mergers with nonbank financial firms: Effects on the risk of failure. *Journal of Banking and Finance* 17 (February): 43-64.

- Boyd, John H., and Prescott, Edward C. 1986. Financial intermediary-coalitions. *Journal of Economic Theory* 38 (April): 211-32.
- Boyd, John H., and Rolnick, Arthur J. 1989. A case for reforming federal deposit insurance. *Federal Reserve Bank of Minneapolis 1988 Annual Report*. Minneapolis: Federal Reserve Bank of Minneapolis.
- Boyd, John H., and Runkle, David E. 1993. Size and performance of banking firms: Testing the predictions of theory. *Journal of Monetary Economics* 31 (February): 47-68.
- Calomiris, Charles W. 1989. The motivations for loan commitments backing commercial paper: Comment. *Journal of Banking and Finance* 13 (May): 271-77.
- Cates, David. 1993. *The bank analyst*, Vol. VII, No. 3. Ferguson and Company.
- Corrigan, E. Gerald. 1983. Are banks special? *Federal Reserve Bank of Minneapolis 1992 Annual Report*. Minneapolis: Federal Reserve Bank of Minneapolis.
- D'Arista, Jane W., and Schlesinger, Tom. 1992. The parallel banking system. Manuscript. Economic Policy Institute, Washington D.C.
- Diamond, Douglas W. 1984. Financial intermediation and delegated monitoring. *Review of Economic Studies* 51 (July): 393-414.
- Diamond, Douglas W., and Dybvig, Philip H. 1983. Bank runs, deposit insurance, and liquidity. *Journal of Political Economy* 91 (June): 401-19.
- Federal Financial Institutions Examination Council. 1992. *Study on regulatory burden*. Report to U.S. Congress from the Board of Governors of the Federal Reserve System, the Federal Deposit Insurance Corporation, the National Credit Union Administration, the Office of the Comptroller of the Currency, and the Office of Thrift Supervision.

- Fixler, Dennis J. and Kimberly D. Zeischang. 1992. User costs, shadow prices, and the real output of banks. In *Output Measurement in the Service Sectors*, ed. Zvi Griliches, pp. 219-44. Chicago: University of Chicago Press.
- Greenbaum, Stuart, and Thakor, Anjan. 1993. *Contemporary financial intermediation*. Manuscript. Northwestern University.
- Golembe, Carter. 1993. *Golembe Letter* 1993-7.
- Hetzel, Robert. 1991. Too-big-to-fail: Origins, Consequences, and Outlook. *Federal Reserve Bank of Richmond Economic Review* (November/December): 3-13.
- Johnson, Ron. 1991. The capital gamble. Manuscript. Federal Reserve Bank of New York.
- Kareken, John H., and Wallace, Neil. 1978. Deposit insurance and bank regulation: A partial-equilibrium exposition. *Journal of Business* 51 (July): 413-38.
- Keeley, Michael C. 1990. Deposit insurance, risk, and market power in banking. *American Economic Review* 80 (December): 1183-200.
- Labaton, Stephen. 1992. A record-breaking year for bank profits. *New York Times* CXLII (December 11): Section C, p. 1.
- Lown, Cara, and Peristani, Stavros. 1993. The 1990 credit slowdown: Did large banks create a credit crunch? Working Paper. Federal Reserve Bank of New York.
- McCauley, Robert, and Seth, Rama. 1992. Foreign bank credit to U.S. corporations: The implications of offshore loans. *Federal Reserve Bank of New York Quarterly Review* 17 (Spring): 52-65.
- Peek, Joseph, and Rosengren, Eric. 1992. The capital crunch: Neither a borrower nor a lender be. Working Paper 91-4. Federal Reserve Bank of Boston.
- Terrell, Henry S. 1993. U.S. bank and agencies of foreign banks: A new look. *Federal Reserve Bulletin*, October, 913-25.

Romer, Christina D., and Romer, David H. 1993. Credit channel or credit actions: An interpretation of the postwar transmission mechanism. In *Changing capital markets: Implications for monetary policy*. Federal Reserve Bank of Kansas City, pp. 71-116.

White, Lawrence J. 1991. Banking deregulation and consolidation: An industrial organization perspective. Manuscript. Stern School of Business, New York University.

Table 1

## Foreign Bank Share of U.S. Commercial and Industrial Loan Market

Billions of Dollars (except as noted)

|  | 1983 | 1984 | 1985 | 1986 | 1987 | 1988 | 1989 | 1990 | 1991 | 1992 Q1 | 1992 Q2 | 1992 Q3 | 1992 Q4 | 1993 Q1 |
|--|------|------|------|------|------|------|------|------|------|---------|---------|---------|---------|---------|
| C&I Loans to U.S. Addressees                                 | 467  | 512  | 556  | 623  | 654  | 712  | 765  | 804  | 777  | 776     | 774     | 771     | 743     | 741     |
| I. U.S.-Owned Bank Loans                                     | 381  | 402  | 419  | 454  | 445  | 464  | 481  | 477  | 428  | 432     | 415     | 408     | 380     | 319     |
| A. Onshore   | 364  | 382  | 401  | 439  | 431  | 446  | 460  | 454  | 407  | 411     | 393     | 386     | 360     | 359     |
| B. Offshore  | 17   | 20   | 18   | 15   | 15   | 18   | 21   | 22   | 22   | 21      | 22      | 22      | 21      | 20      |
| II. Foreign-Owned Bank Loans†                                | 86   | 110  | 137  | 169  | 209  | 248  | 284  | 327  | 348  | 344     | 359     | 363     | 363     | 363     |
| A. Branches and Agencies                                     | 34   | 43   | 53   | 68   | 86   | 103  | 116  | 127  | 146  | 145     | 145     | 144     | 148     | 142     |
| Subsidiary   | 32   | 35   | 39   | 41   | 44   | 50   | 52   | 52   | 50   | 40      | 49      | 49      | 45      | 46      |
| B. Estimated Offshore‡                                       | 20   | 31   | 45   | 60   | 79   | 95   | 116  | 148  | 152  | 160     | 164     | 171     | 170     | 175     |
| 1. Offshore Claims by Foreign Banks on U.S. Nonbanks         | 31   | 49   | 74   | 98   | 130  | 157  | 192  | 246  | 252  | 264     | 272     | 282     | 281     | 289     |
| 2. BIS Reporting Banks' Claims on U.S. Nonbanks              | 52   | 71   | 93   | 115  | 146  | 181  | 217  | 272  | 278  | 289     | 298     | 307     | 306     | 314     |
| 3. Claims on U.S. Nonbanks by Foreign Branches of U.S. Banks | 21   | 22   | 19   | 17   | 16   | 24   | 25   | 26   | 26   | 25      | 26      | 25      | 25      | 25      |
| 4. Offshore Loans by Subsidiaries, Branches, and Agencies    | 1    | 2    | 1    | 1    | 1    | 1    | 1    | 1    | 1    | 1       | 1       | 1       | 1       | 1       |
| Memo: Foreign Share (percent)                                | 18   | 21   | 25   | 27   | 27   | 35   | 37   | 41   | 45   | 44      | 46      | 47      | 49      | 49      |
| A. Branches and Agencies                                     | 7    | 8    | 10   | 11   | 13   | 14   | 15   | 16   | 19   | 19      | 19      | 19      | 20      | 19      |
| Subsidiary   | 7    | 7    | 7    | 7    | 7    | 7    | 7    | 6    | 6    | 5       | 6       | 6       | 6       | 6       |
| B. Offshore  | 4    | 6    | 8    | 10   | 12   | 13   | 15   | 18   | 20   | 21      | 21      | 22      | 23      | 24      |

This table was provided by Dr. Rama Seth, Federal Reserve Bank of New York.

†Includes branches, agencies, and subsidiaries.

‡These figures are estimated in two steps. We calculate the C&I proportion of total claims on nonbanks of branches and agencies of foreign banks in the United States. Then, assuming that the offshore proportion is the same, we apply this fraction, 60 percent, to the offshore claims on U.S. nonbanks of foreign banks. Also, Q1 1991 Bahamian and Q1 and Q2 Cayman Islands' figures for lending are carried over from end-1990.

Note: Banks in the United States include all banking institutions that file Reports of Condition with the Federal Financial Institutions Examinations Council.

Sources: Bank for International Settlements; Federal Financial Institutions Examination Council, Reports of Condition; Federal Reserve Form 2502; Federal Reserve Form 2951; *Federal Reserve Bulletin*, Statistical Table 4.3; and Federal Reserve Bank of New York staff estimates

Table 2

Total Assets, Derivative Securities Positions and  
Credit Equivalent Risk Exposure of Ten Large Banks, 1993\*

|                                    | Total<br>Assets | Derivative<br>Securities<br>Positions** | Total Credit<br>Equivalent<br>Exposure | Credit<br>Exposure<br>as % Assets |
|------------------------------------|-----------------|---|--|-----------------------------------|
| Chemical Bank                      | \$110.4         | \$2,114.0                               | \$31.9                                 | 29%                               |
| Bankers Trust Co.                  | 63.9            | 1,802.3                                 | 29.5                                   | 46                                |
| Citibank                           | 168.6           | 1,789.3                                 | 38.2                                   | 23                                |
| Morgan Guaranty Trust Co.          | 103.5           | 1,537.5                                 | 37.9                                   | 37                                |
| Chase Manhattan                    | 79.9            | 1,026.1                                 | 23.0                                   | 29                                |
| Bank of America                    | 134.0           | 893.5                                   | 21.7                                   | 16                                |
| First National Bank of Chicago     | 34.1            | 457.4                                   | 10.1                                   | 30                                |
| Continental Bank                   | 22.0            | 169.9                                   | 2.5                                    | 11                                |
| Republic National Bank of New York | 28.4            | 167.7                                   | 2.7                                    | 10                                |
| Bank of New York                   | 35.8            | 92.2                                    | 1.7                                    | 5                                 |

\*Dollar amounts in billions.

\*\*Notional principal positions.

Source: Office of the Comptroller of the Currency

Table 3  
Total Bank Assets, Unadjusted and Adjusted<sup>1</sup>  
(\$ billion)

| (1)<br>Year | (2)<br>Unadjusted | Adjusted for  |   |  |
|-------------|-------------------|---|---|--|
|             |                   | (3)<br>Off-Balance<br>Sheet Activities <sup>2</sup><br>(Basle Method) | (4)<br>Off-Balance<br>Sheet Activities <sup>3</sup><br>(NIC-2 Method) | (5)<br>Under Reporting of<br>Offshore Loans <sup>4</sup> |
| 1971        | 506.5             | NA<br>(NA)  | 521.0<br>(2.9)  | NA<br>(NA)   |
| 1972        | 575.7             | NA<br>(NA)  | 596.9<br>(3.7)  | NA<br>(NA)   |
| 1973        | 662.4             | NA<br>(NA)  | 686.7<br>(3.7)  | NA<br>(NA)   |
| 1974        | 737.5             | NA<br>(NA)  | 758.6<br>(2.9)  | NA<br>(NA)   |
| 1975        | 768.8             | NA<br>(NA)  | 822.1<br>(6.9)  | NA<br>(NA)   |
| 1976        | 833.2             | NA<br>(NA)  | 836.6<br>(.4)   | NA<br>(NA)   |
| 1977        | 924.6             | NA<br>(NA)  | 920.9<br>(-.4)  | NA<br>(NA)   |
| 1978        | 1,052.6           | NA<br>(NA)  | 1,048.3<br>(-.4)  | NA<br>(NA)   |
| 1979        | 1,181.8           | NA<br>(NA)  | 1,177.0<br>(-.4)  | NA<br>(NA)   |
| 1980        | 1,289.9           | NA<br>(NA)  | 1,305.7<br>(1.2)  | NA<br>(NA)   |
| 1981        | 1,398.2           | NA<br>(NA)  | 1,472.4<br>(5.3)  | NA<br>(NA)   |
| 1982        | 1,482.9           | NA<br>(NA)  | 1,561.5<br>(5.3)  | NA<br>(NA)   |
| 1983        | 1,626.1           | 1,797.2<br>(10.5)   | 1,752.3<br>(7.8)  | 1,682.6<br>(3.5)   |
| 1984        | 1,799.7           | 2,036.1<br>(13.1)   | 1,954.0<br>(8.6)  | 1,883.4<br>(4.7)   |
| 1985        | 1,989.1           | 2,260.1<br>(13.6)   | 2,175.9<br>(9.4)  | 2,100.3<br>(5.6)   |
| 1986        | 2,183.9           | 2,475.4<br>(13.4)   | 2,460.2<br>(12.7)   | 2,313.6<br>(5.9)   |
| 1987        | 2,319.2           | 2,626.2<br>(13.2)   | 2,688.3<br>(15.9)   | 2,481.3<br>(7.0)   |
| 1988        | 2,476.3           | 2,804.5<br>(13.3)   | 2,870.5<br>(15.9)   | 2,674.0<br>(8.0)   |
| 1989        | 2,643.9           | 3,000.0<br>(13.5)   | 3,129.6<br>(18.4)   | 2,874.9<br>(8.7)   |
| 1990        | 2,769.3           | 3,198.2<br>(15.5)   | 3,345.8<br>(20.8)   | 3,043.5<br>(9.9)   |
| 1991        | 2,853.3           | 3,248.3<br>(13.8)   | 3,470.6<br>(21.6)   | 3,114.1<br>(9.1)   |
| 1992        | 2,944.0           | NA<br>(NA)  | NA<br>(NA)  | 3,215.2<br>(9.2)   |

<sup>1</sup>Unadjusted data are from the Flow-of-Funds accounts. Entries in parenthesis represent the percentage increase in banking industry assets due to adjustment.

<sup>2</sup>Estimated Basle credit equivalents are added to balance sheet assets.

<sup>3</sup>Capitalized noninterest income is added to balance sheet assets.

<sup>4</sup>Unreported offshore loans are added to balance sheet assets.

Table 4

Average Annual Percentage Growth Rates, Domestically Chartered Banks<sup>1</sup>

## By Capital Adequacy Class (in percent)

| Year                               | Well Capitalized <sup>2</sup> |       | Adequately Capitalized <sup>2</sup> |       | Under Capitalized <sup>2</sup> |       | All Banks    |       |
|------------------------------------|-------------------------------|-------|-------------------------------------|-------|--------------------------------|-------|--------------|-------|
|                                    | Total Assets                  | Loans | Total Assets                        | Loans | Total Assets                   | Loans | Total Assets | Loans |
| 1990                               | 6.95                          | 6.72  | 3.62                                | 3.90  | -2.24                          | -2.46 | 2.62         | 2.38  |
| 1991                               | 5.79                          | 2.37  | 1.54                                | -2.75 | -4.85                          | -8.53 | 1.05         | -2.86 |
| 1992                               | 3.48                          | .88   | 1.66                                | -1.65 | -5.12                          | -9.09 | 2.63         | -1.24 |
| 1993                               | 6.76                          | 7.50  | 2.90                                | .19   | 1.25                           | .40   | 5.39         | 5.40  |
| Outstandings on 12/31/93 (\$ bil.) | 3,016                         | 1,724 | 433                                 | 263   | 236                            | 153   | 3,691        | 2,140 |

<sup>1</sup>Consolidated foreign and domestic operations.

<sup>2</sup>Adjusted for CAMEL ratings.

Source: Federal Reserve Board

Table 5

Average Annual Growth Rate of Real Bank Assets; by Asset Size Class of Banks (in percent)<sup>1</sup>

| Year                  | Beginning Total Asset Size Class |                   |                    |                       |                 | Over \$10 bil. |                       | All Banks |
|-----------------------|----------------------------------|-------------------|--------------------|-----------------------|-----------------|----------------|-----------------------|-----------|
|                       | \$0-<br>50 mil.                  | \$50-<br>100 mil. | \$100-<br>250 mil. | \$250 mil.-<br>1 bil. | \$1-<br>10 bil. | Unadjusted     | Adjusted <sup>2</sup> |           |
| 1984                  | 6.2                              | 4.5               | 4.9                | 6.1                   | 9.3             | -2.0           | 2.2                   | 5.8       |
| 1985                  | 5.7                              | 3.6               | 4.7                | 6.9                   | 9.9             | 2.2            | 3.4                   | 5.4       |
| 1986                  | 6.6                              | 5.3               | 6.8                | 7.8                   | 11.0            | 7.1            | 6.9                   | 6.6       |
| 1987                  | 2.6                              | .9                | 1.1                | 2.1                   | 3.0             | 1.3            | 1.9                   | 2.0       |
| 1988                  | 3.8                              | 3.8               | 4.9                | 5.3                   | 6.3             | -.6            | .5                    | 4.0       |
| 1989                  | 3.0                              | 2.9               | 2.8                | 4.4                   | 3.8             | 2.0            | 2.6                   | 3.0       |
| 1990                  | 5.4                              | 3.4               | 3.1                | 3.8                   | 2.7             | -2.2           | .6                    | 4.5       |
| 1991                  | 3.7                              | 2.2               | 2.1                | 2.0                   | 1.5             | -2.1           | -3.3                  | 2.9       |
| Arithmetic<br>Mean    | 4.6                              | 3.3               | 3.8                | 4.8                   | 5.9             | .7             | 1.9                   | 4.3       |
| Average #<br>of Firms | 6,948                            | 2,380             | 1,461              | 607                   | 270             | 33             | 33                    | 11,700    |

<sup>1</sup>Deflated by implicit GDP deflator.<sup>2</sup>Adjusted assets include Basle Credit Equivalents.

Source: Call Reports

Table 6

Bank Performance, Asset Composition, and  
Loan Demand: 1990-1993<sup>1</sup>

**A. Selected Measures of Bank Performance<sup>2</sup>**

|  | 1990 | 1991 | 1992 | 1993 |
|--|------|------|------|------|
| Return on Assets (%)                     | .48  | .53  | .93  | 1.23 |
| Return on Equity (%)                     | 7.45 | 7.94 | 13.0 | 15.7 |
| Number of Problem Institutions           | 1012 | 1016 | 787  | 496  |
| Assets of Problem Institutions (\$ Bil.) | 342  | 528  | 408  | 281  |

**B. Selected Measures of Bank Asset Allocation (in percent)<sup>3</sup>**

|                         | 1990 | 1991 | 1992 | 1993 |
|-------------------------|------|------|------|------|
| Loans/Assets            | 61.1 | 60.2 | 58.0 | 57.8 |
| Commercial Loans/Assets | 18.2 | 17.1 | 15.5 | 14.6 |
| Securities/Assets       | 17.4 | 18.6 | 20.9 | 22.6 |
| Asset Growth Rate       | 2.73 | 1.21 | 2.18 | 4.31 |

**C. Sources of Debt of Nonfinancial Corporations (in percent)<sup>4</sup>**

|              | 1990 | 1991 | 1992 | 1993 |
|--------------|------|------|------|------|
| Bonds        | 37.0 | 39.7 | 40.8 | 41.9 |
| Mortgages    | 6.9  | 6.9  | 5.9  | 5.6  |
| Bank Loans   | 18.3 | 17.6 | 16.7 | 16.2 |
| Other Loans  | 16.1 | 13.9 | 14.0 | 13.7 |
| Trade Credit | 21.7 | 21.9 | 22.5 | 22.6 |

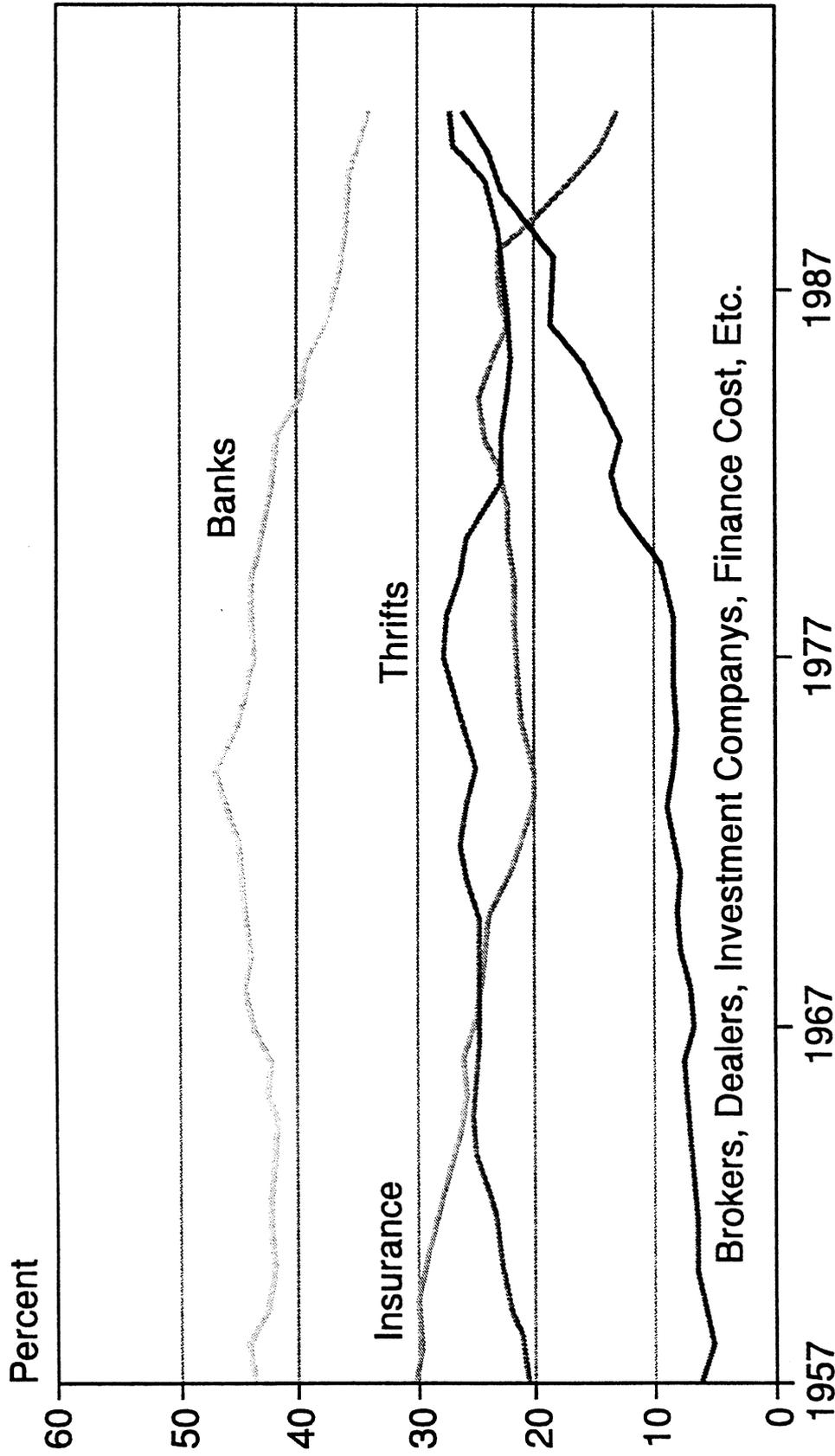
<sup>1</sup>Third quarter, 1993.

<sup>2</sup>Source: FDIC

<sup>3</sup>Source: Federal Reserve Board and FDIC

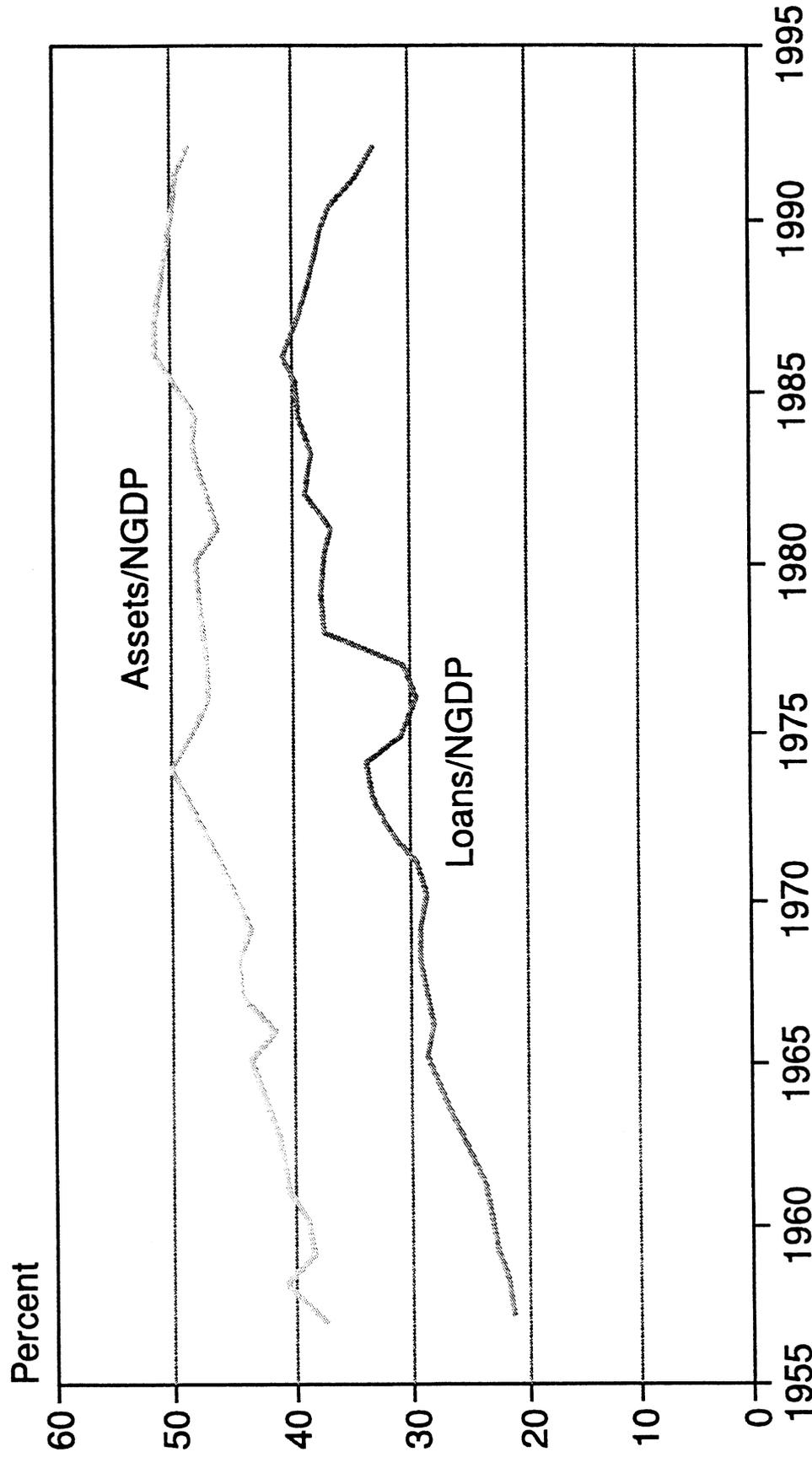
<sup>4</sup>Source: Board of Governors of the Federal Reserve System (1993)

**Figure 1, Share of U.S. Financial Intermediation, 1957-1992**  
*Credit Market Assets Held by Financial Sectors*



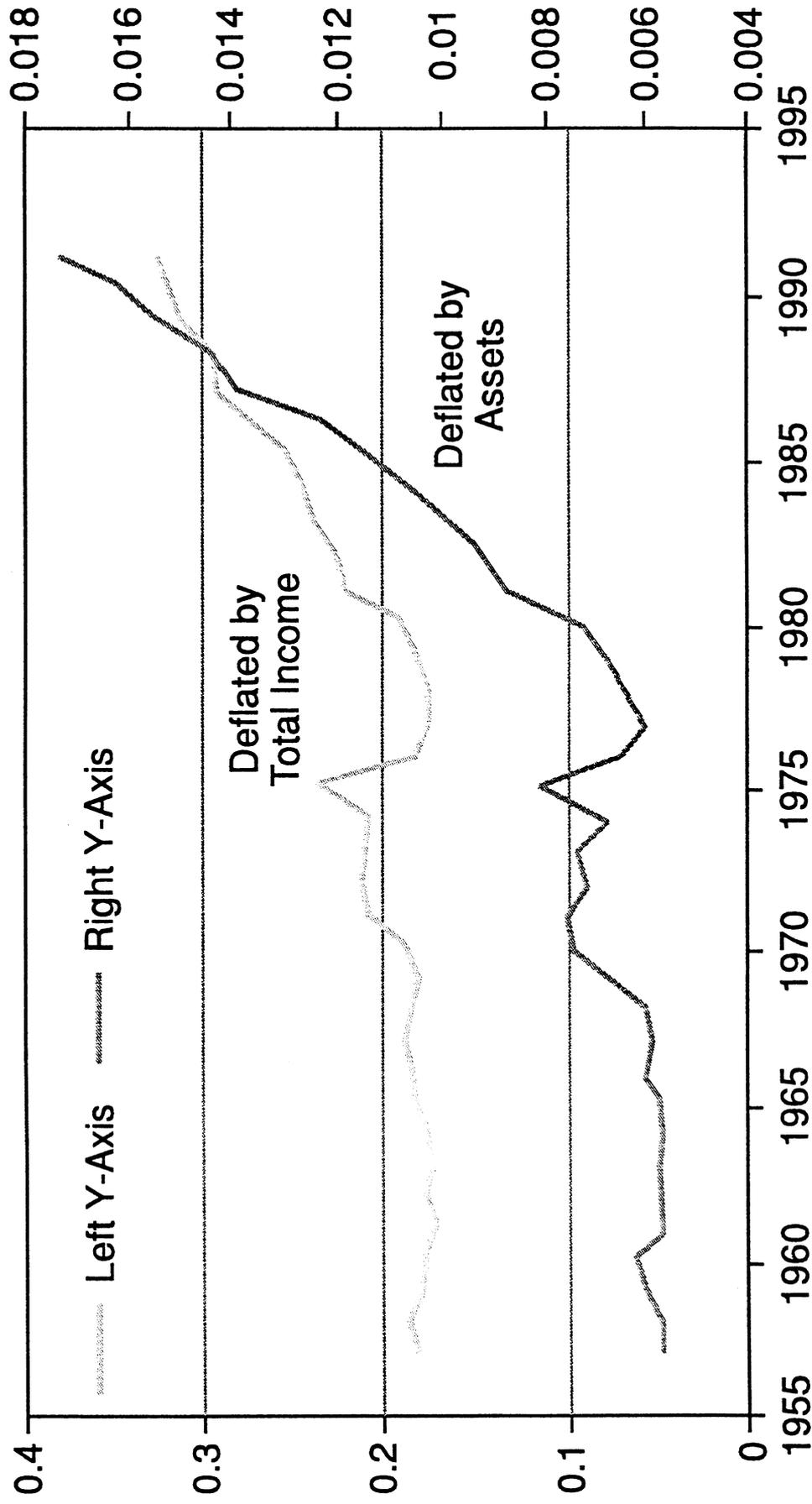
Source: Flow of Funds

**Figure 2, Bank Assets, Loans to Nominal GDP, 1957-1992**

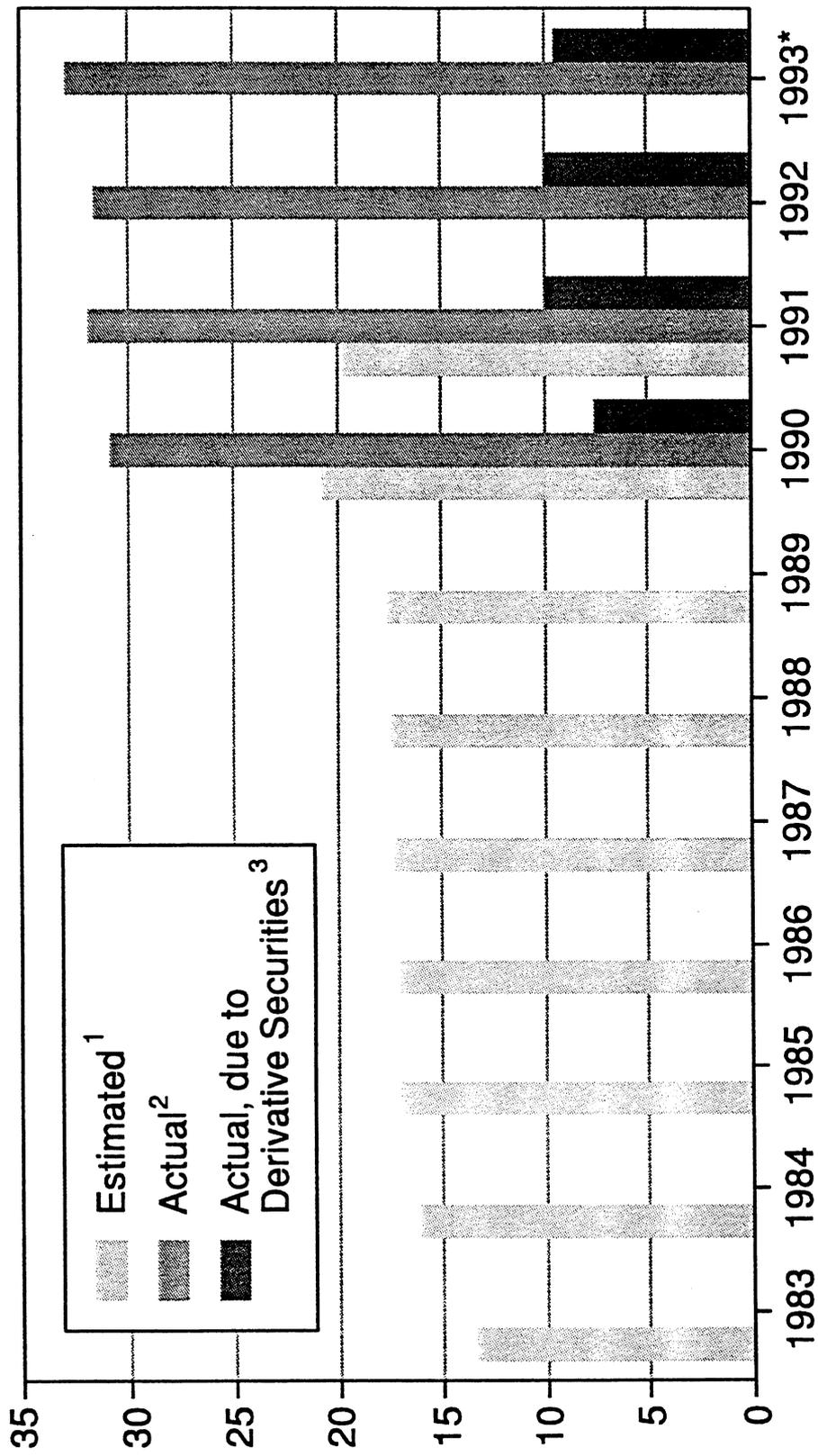


Source: Flow of Funds, NIPA Accounts, FDIC

**Figure 3, Trends in Non-Interest Income of Banks**

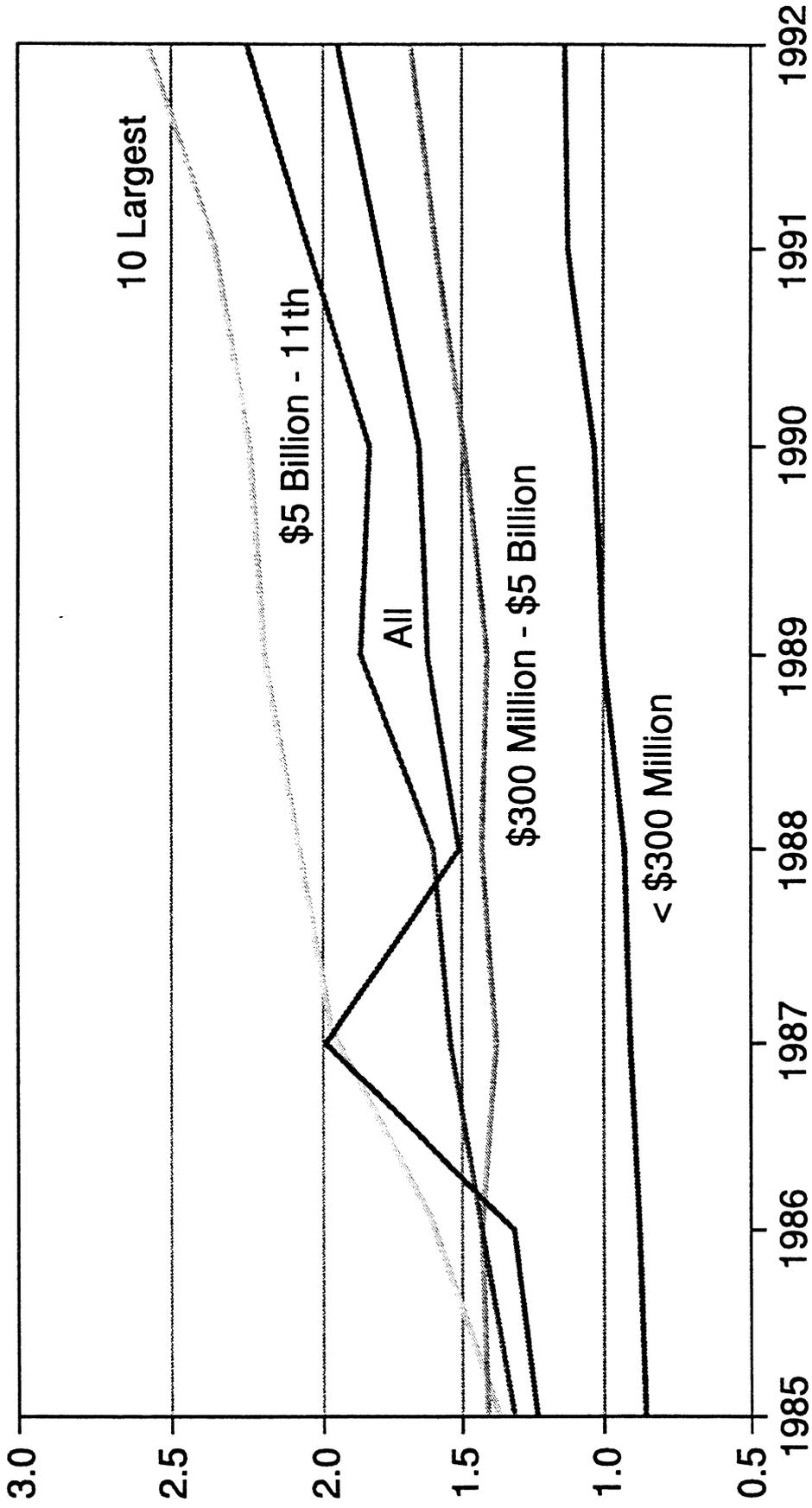


**Figure 4, Basle Credit Equivalents: Estimated, Actual, and Due to Derivatives as a Percentage of Total Loans**

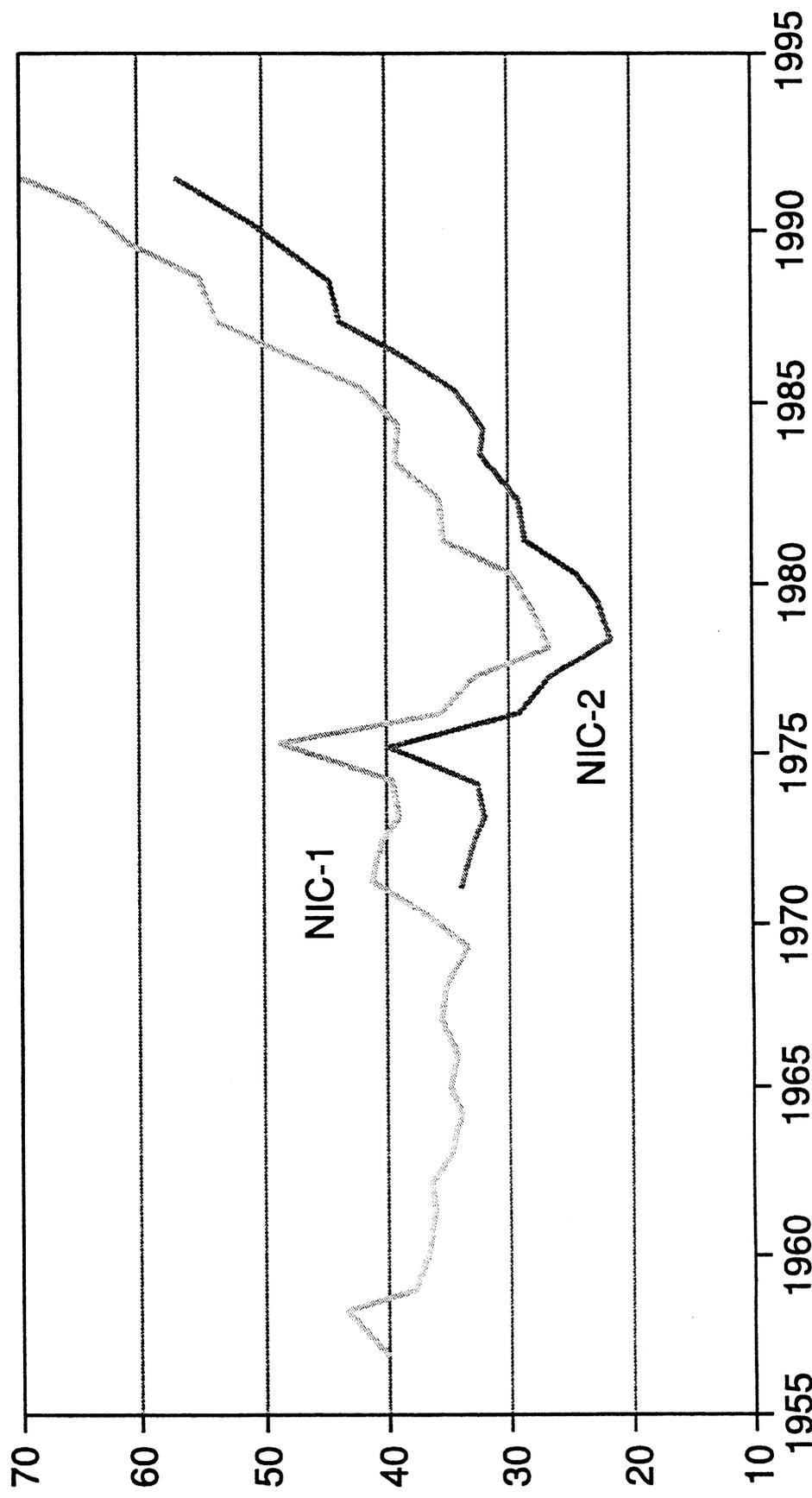


\* 1993 data are preliminary.  
 1 Estimated, using (historical) Call Report balance sheet data.  
 2 Data incorporated herein first available in 1990. A small fraction of total credit equivalents is omitted from the totals.  
 3 Basle Credit Equivalents due to interest rate and foreign exchange positions (commodity, equity positions excluded).

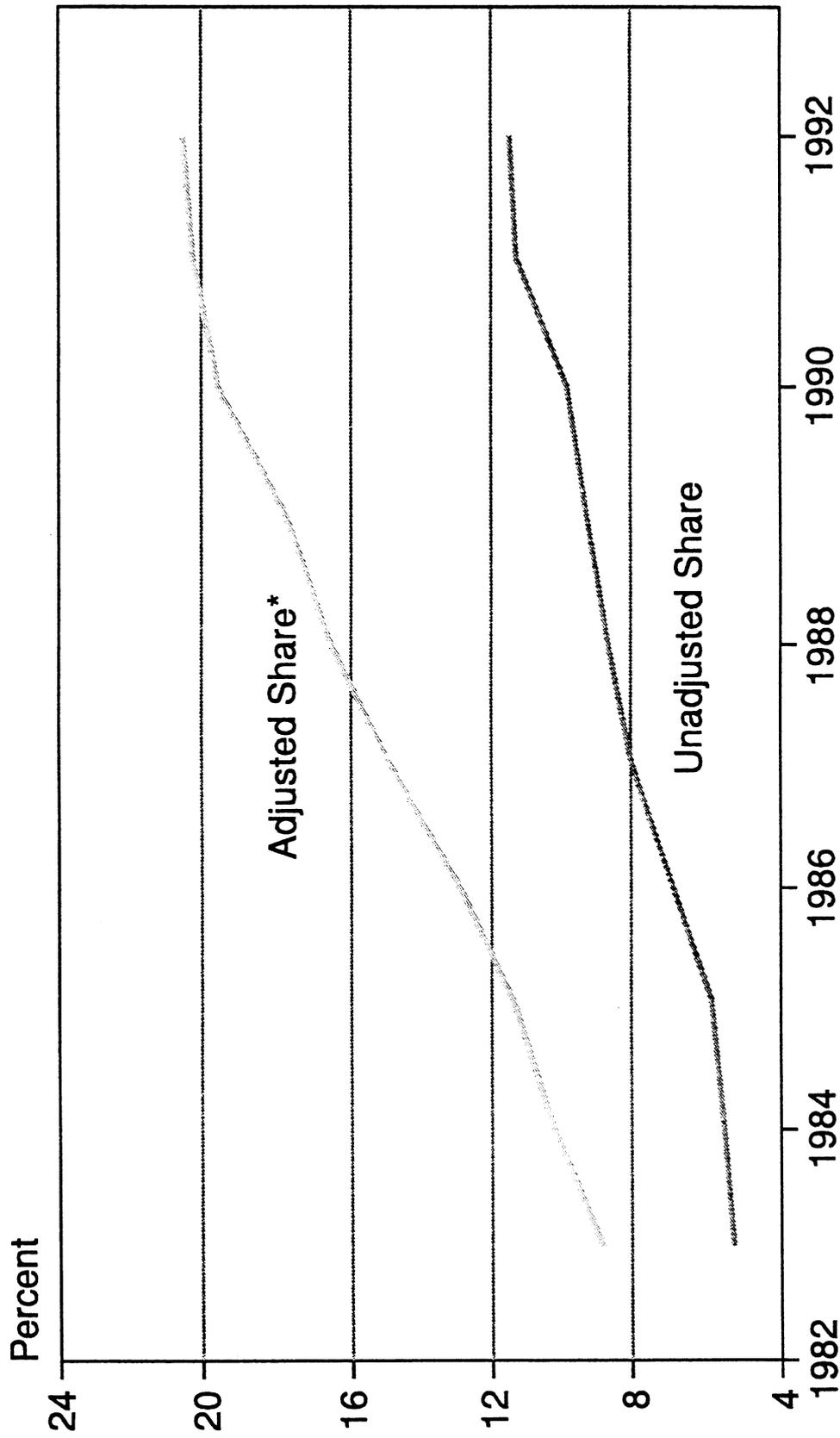
**Figure 5, Non-Interest Income as a Percent of Average Consolidated Total Assets by Size Class of Bank**



**Figure 6, Estimated Credit Equivalents  
of Off-Balance Sheet Assets/Total Loans  
(Non-Interest Income Capitalization Method)**

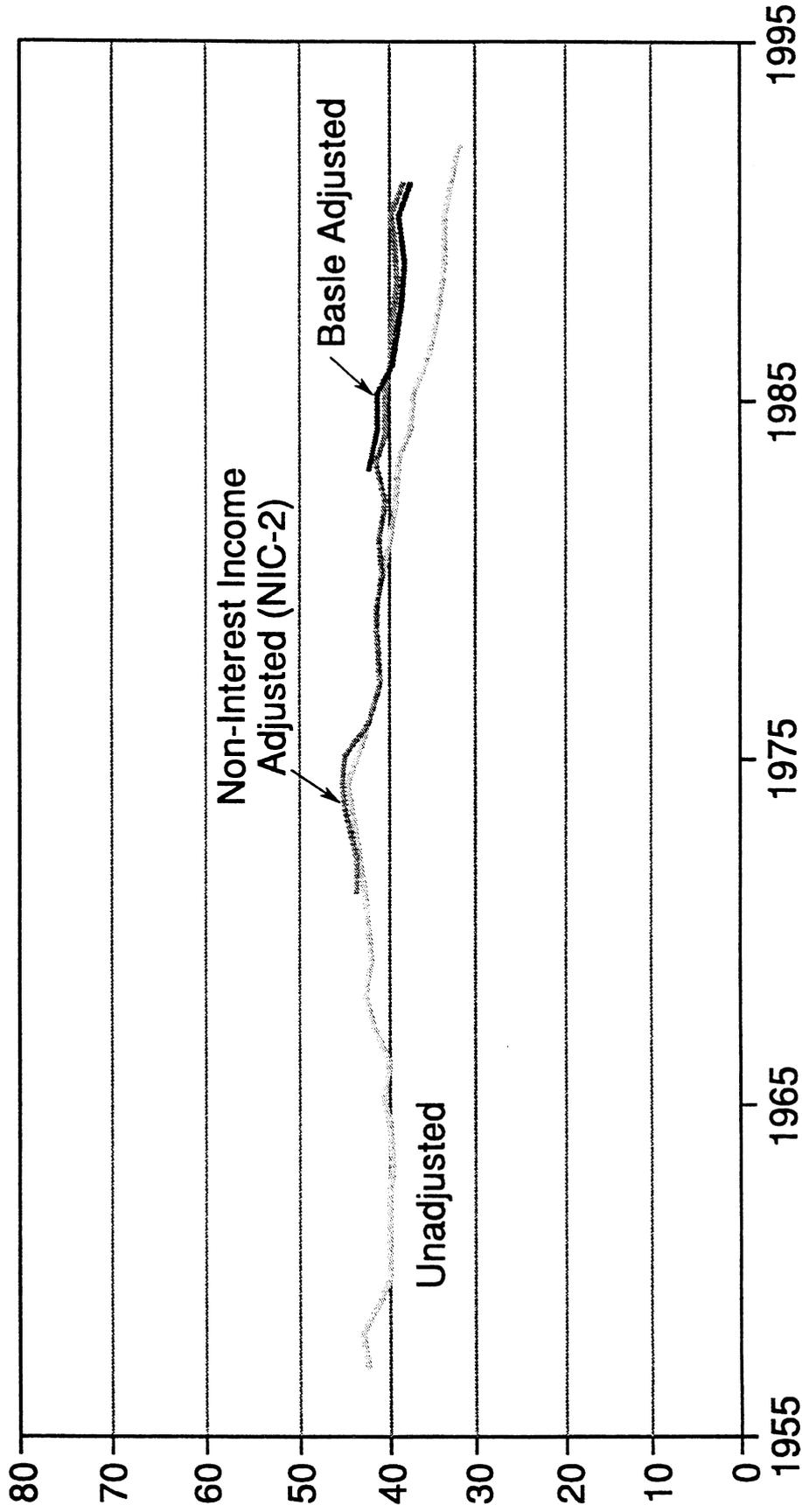


**Figure 7, Share of Total U.S. Bank Assets Held  
by Offices of Foreign Banks in U.S.**



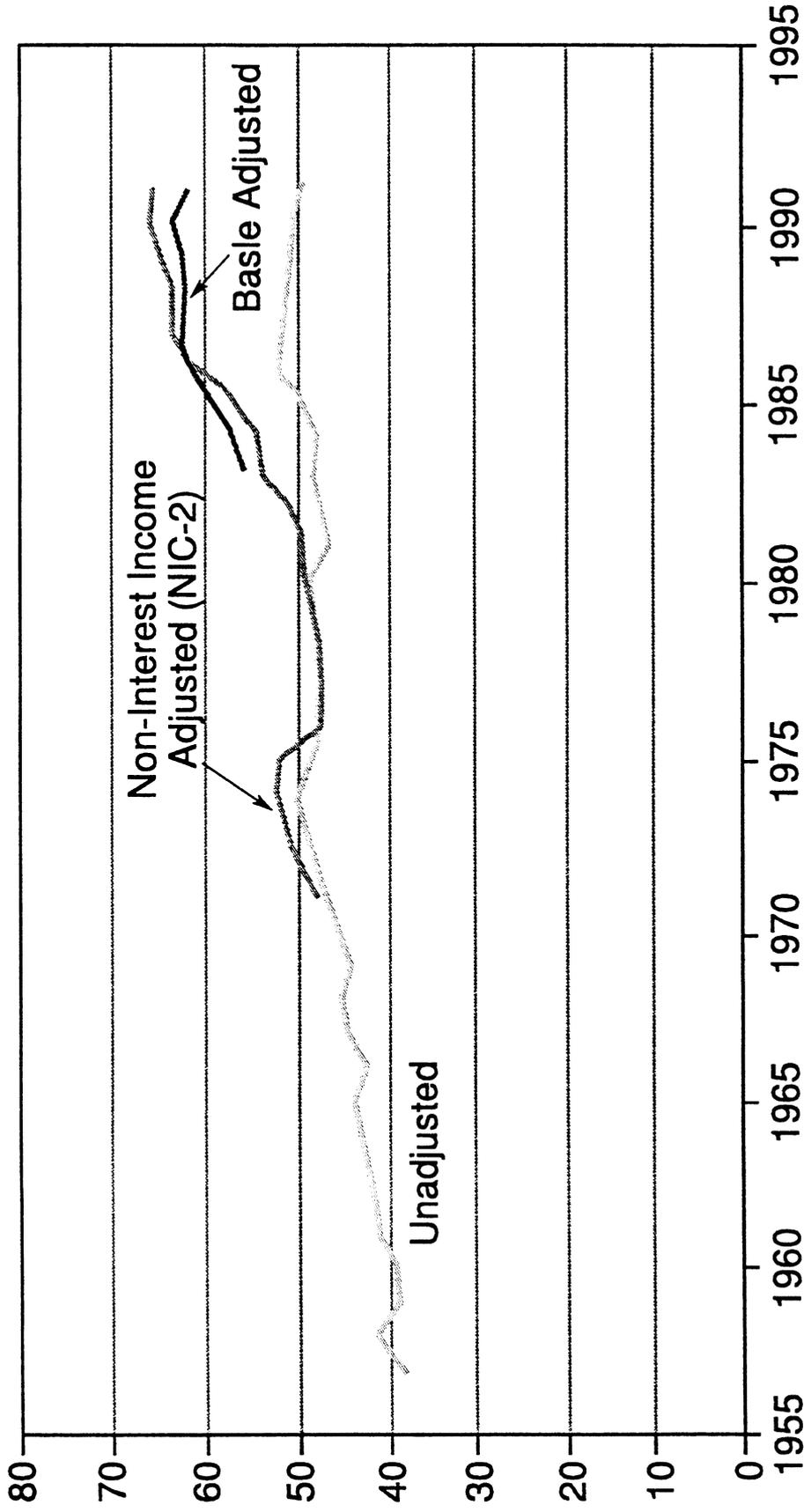
\* Adjusted for under-reporting of off-shore loans  
Source: Flow of Funds, FRB New York

**Figure 8a, Share of Commercial Bank Financial Intermediation  
Unadjusted and Adjusted\***



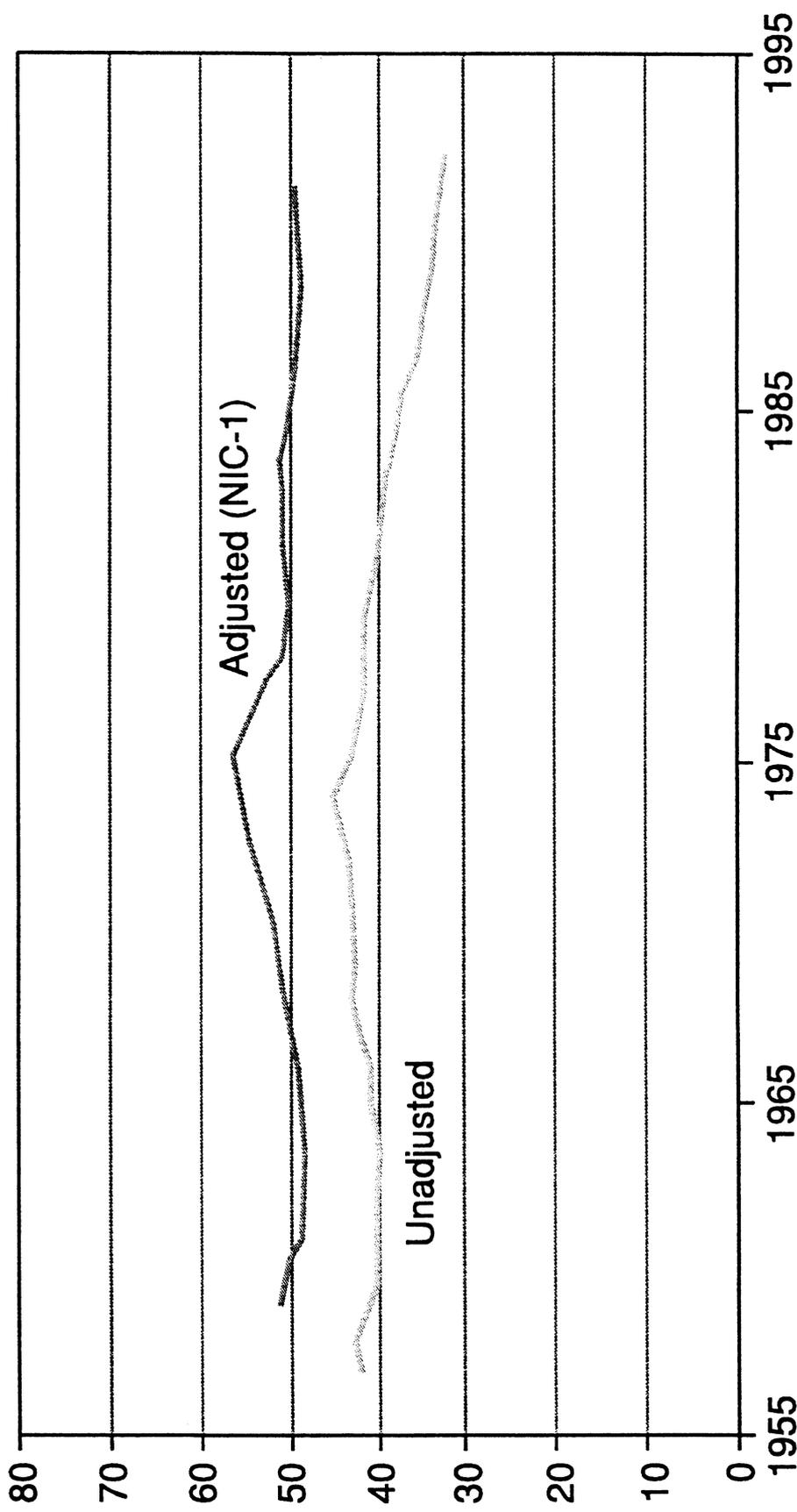
\* Both adjusted series include under counted off-shore loans, as well as off-balance sheet credit equivalents.

**Figure 8b, Bank Assets/Nominal GDP, 1957-1992**  
*Unadjusted and Adjusted\**



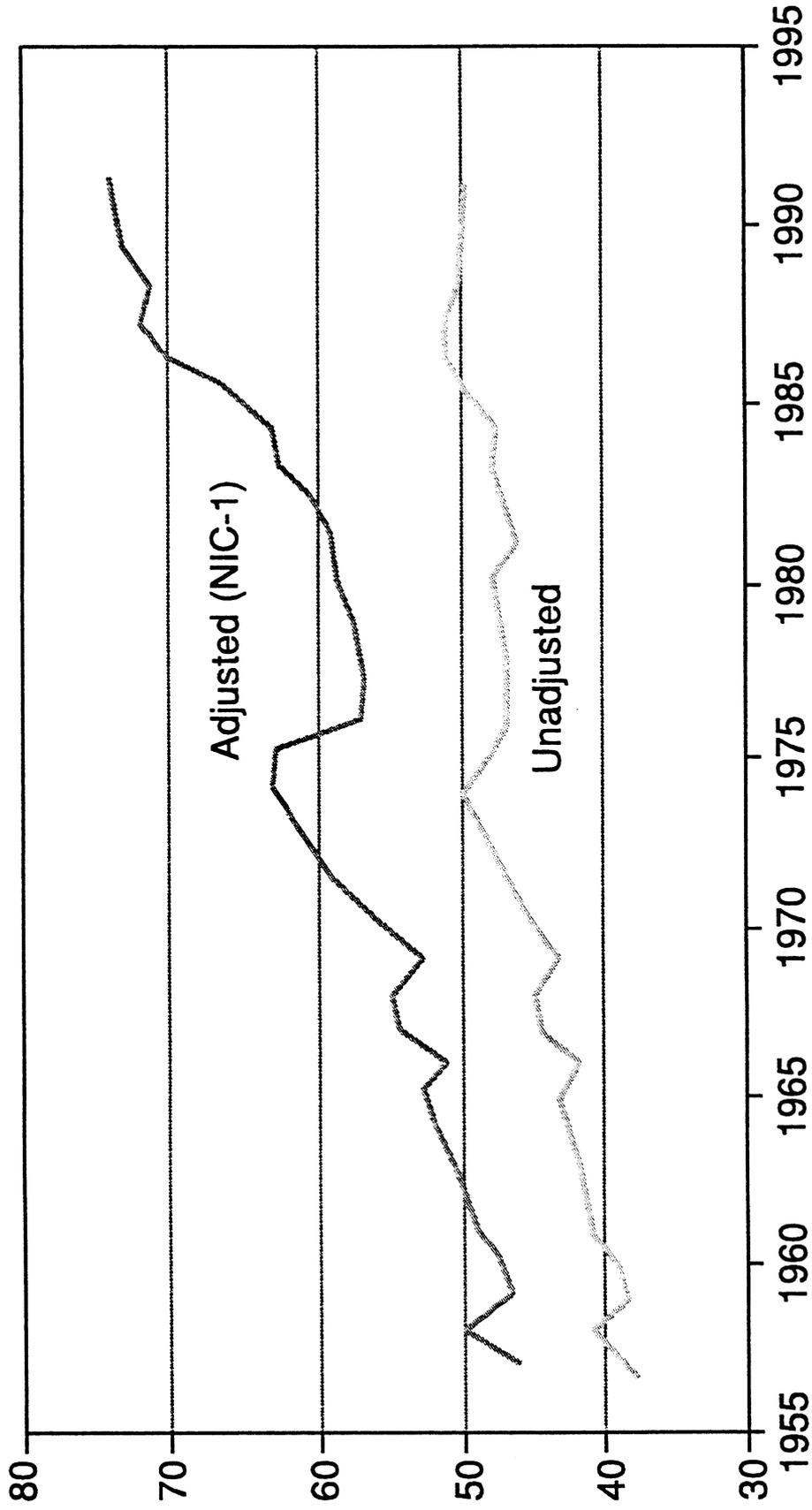
\* Both adjusted series include under counted off-shore loans, as well as off-balance sheet credit equivalents.

**Figure 8c, Share of Commercial Bank Financial Intermediation  
Unadjusted and Non-Interest Income Adjusted\***



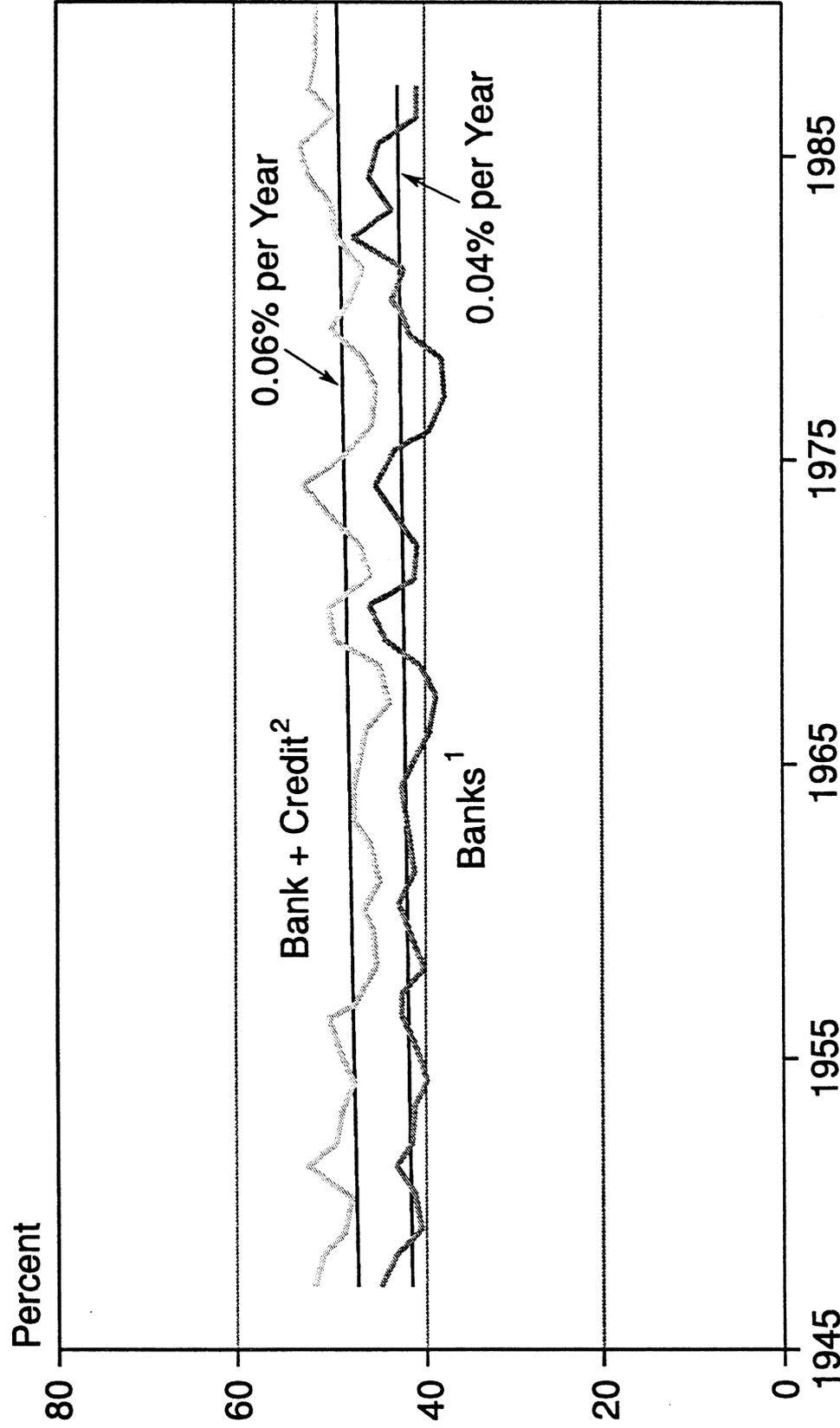
\* Adjusted bank assets are increased in every year in proportion to the gross ratio, non-interest income/net interest income (three year moving averages).

**Figure 8d, Bank Assets to Nominal GDP**  
*Unadjusted and Adjusted\**



\* Adjusted bank assets are increased (in every year) in proportion to the ratio, non-interest income/net interest.

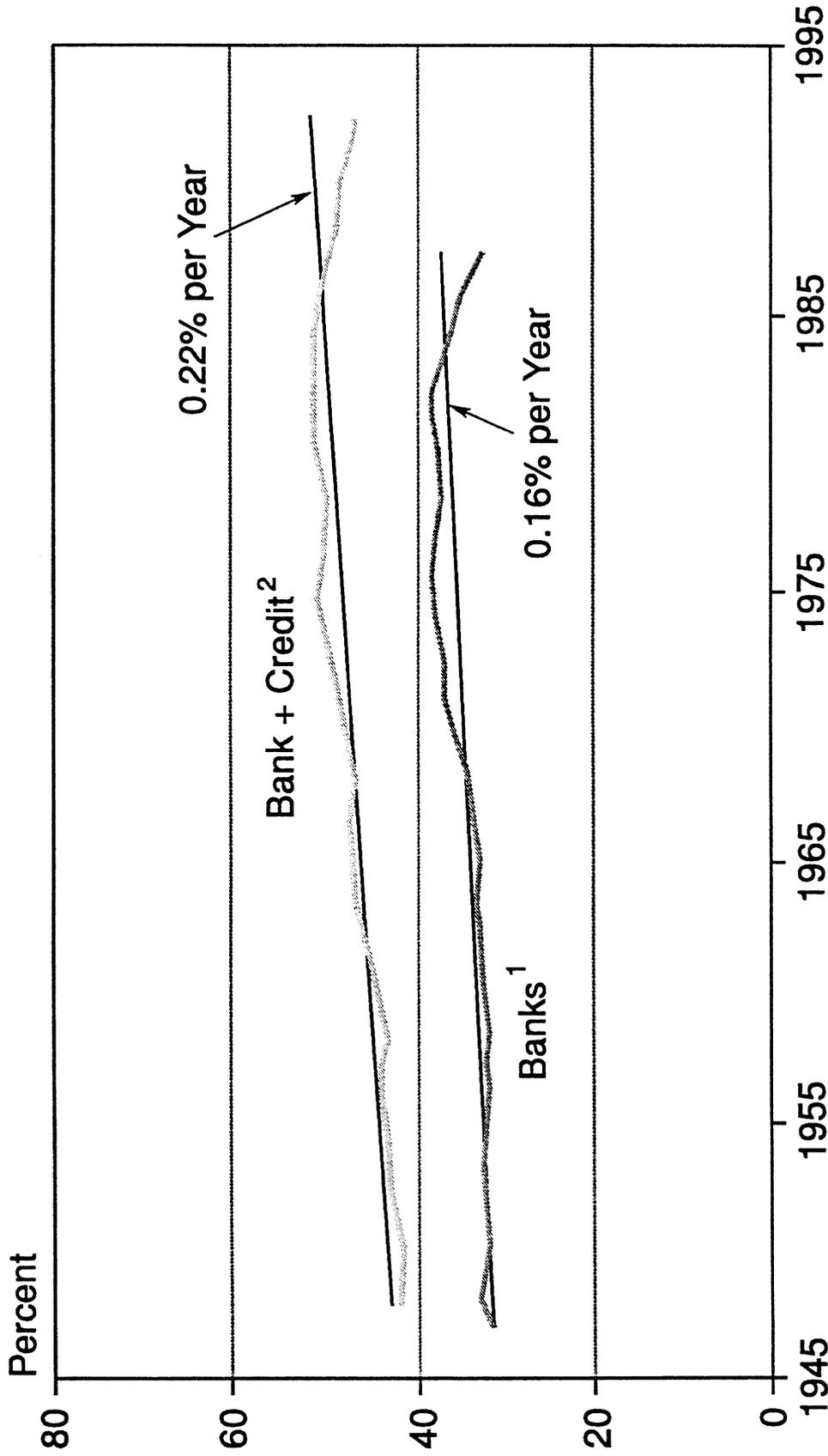
**Figure 9a, Banks' Value Added to GDP as a Percent of Value Added to GDP by Financial Intermediaries**



1 Commercial Banks, Federal Reserve Banks, Mutual Savings Banks.

2 "Banks" (1) plus S & L's, Credit Unions, Business Credit Inst.'s, Mortgage Banks, Rediscouting Agencies (e.g. FNMA, GNMA).

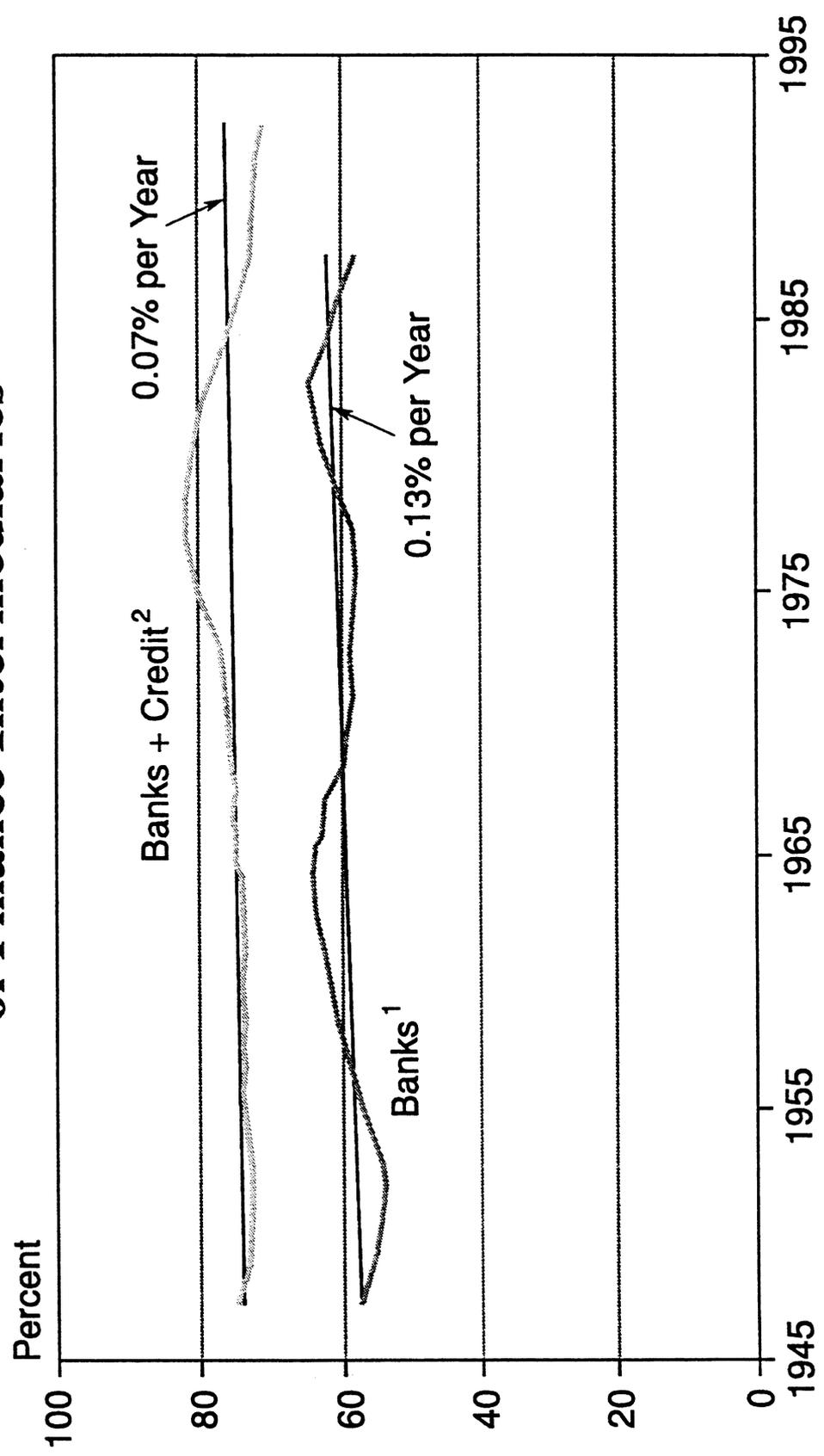
**Figure 9b, Employment (Full and Part Time) in Banking  
as a Percent of Employment in the Financial Sector**



1 Commercial Banks, Federal Reserve Banks, Mutual Savings Banks.

2 "Banks" (1) plus S & L's, Credit Unions, Business Credit Inst.'s, Mortgage Banks, Rediscounting Agencies (e.g. FNMA, GNMA).

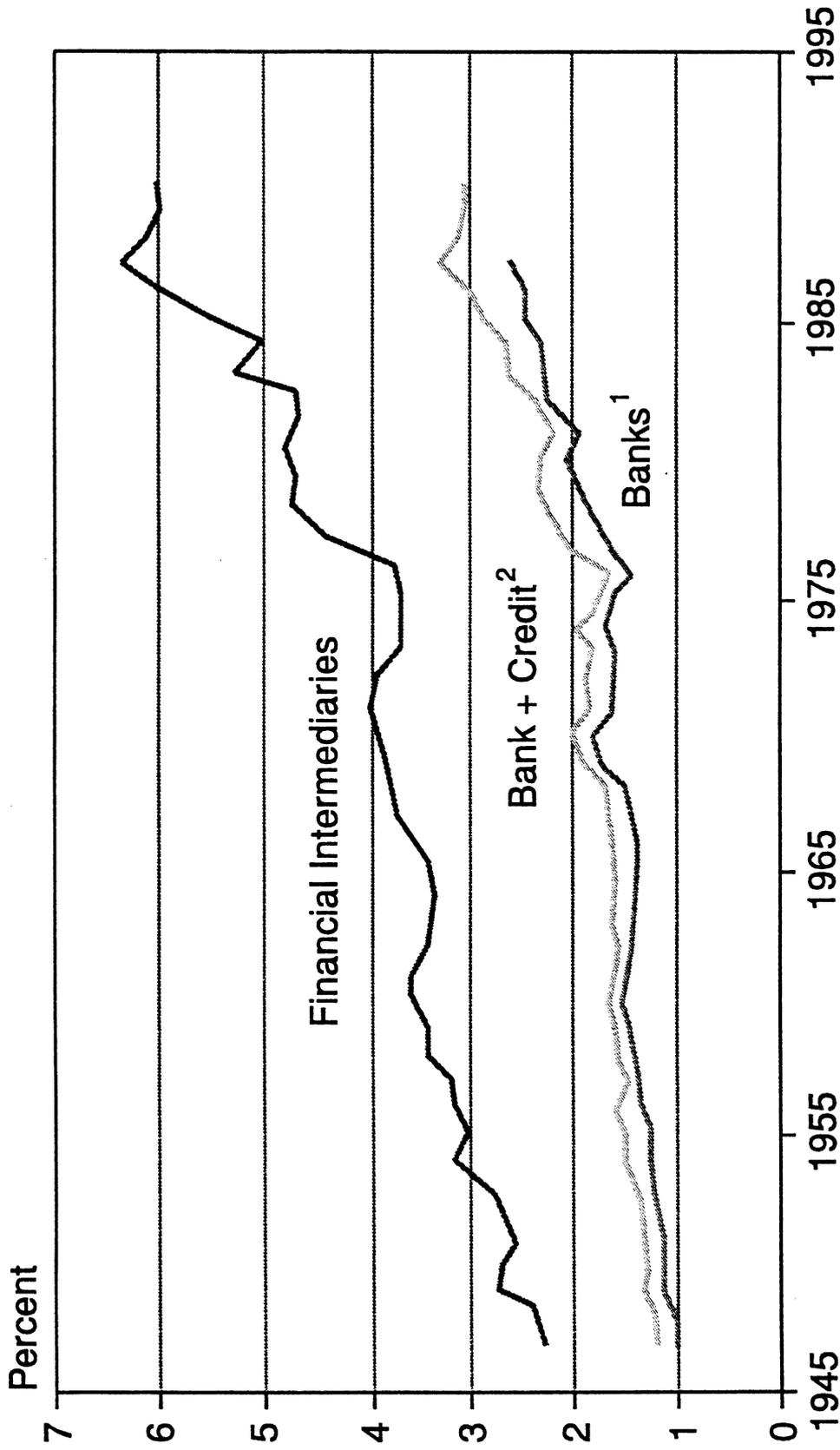
**Figure 9c, Banks' Real Capital (Net Plant and Equipment) as a Percent of Total Capital Net Plant and Equipment of Finance Intermediaries**



1 Commercial Banks, Federal Reserve Banks, Mutual Savings Banks.

2 "Banks" (1) plus S & L's, Credit Unions, Business Credit Inst.'s, Mortgage Banks, Rediscounting Agencies (e.g. FNMA, GNMA).

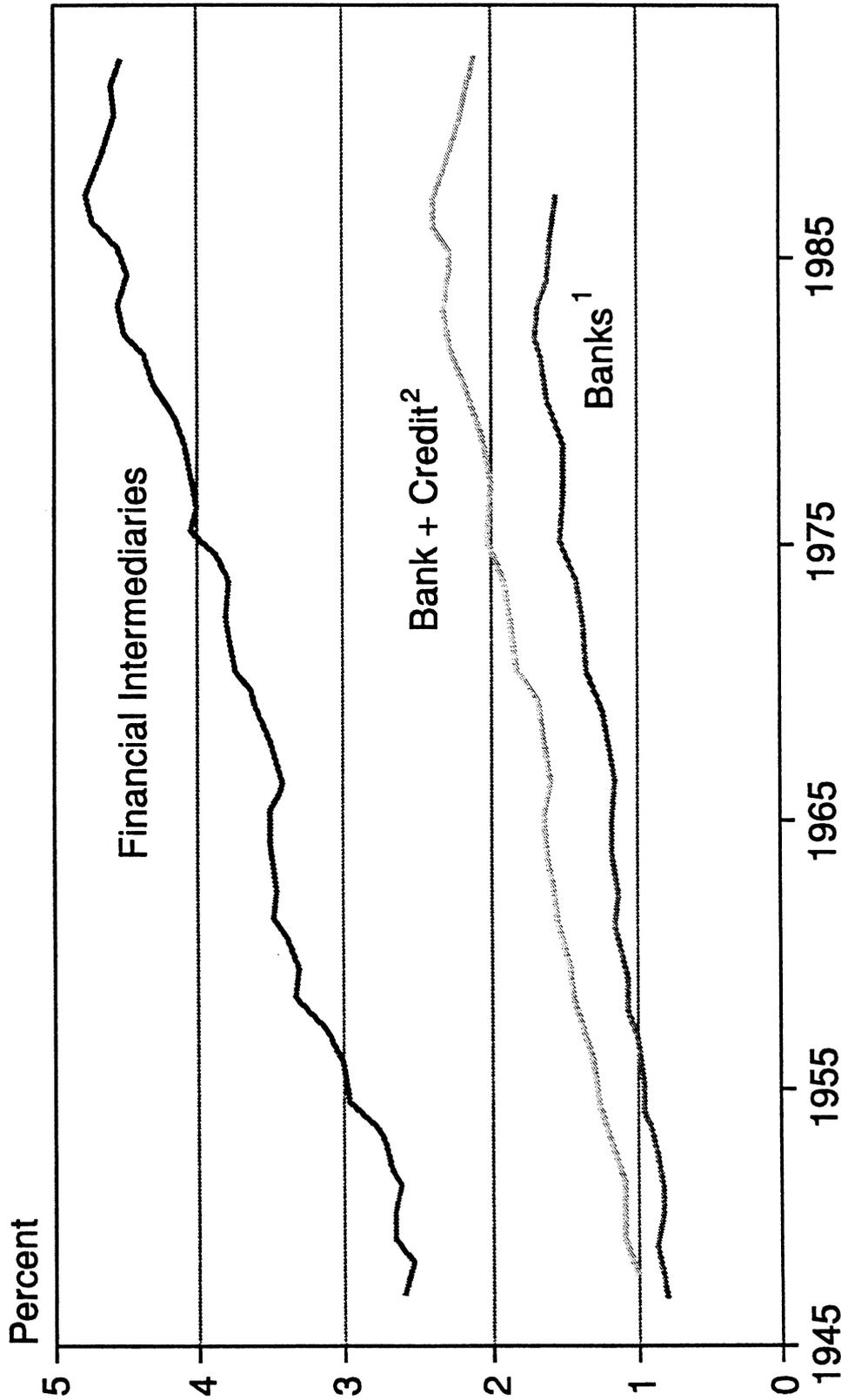
**Figure 10a, Sector Value Added to GDP  
as a Percent of Total GDP**



1 Commercial Banks, Federal Reserve Banks, Mutual Savings Banks.

2 "Banks" (1) plus S & L's, Credit Unions, Business Credit Inst.'s, Mortgage Banks, Rediscouting Agencies (e.g. FNMA, GNMA).

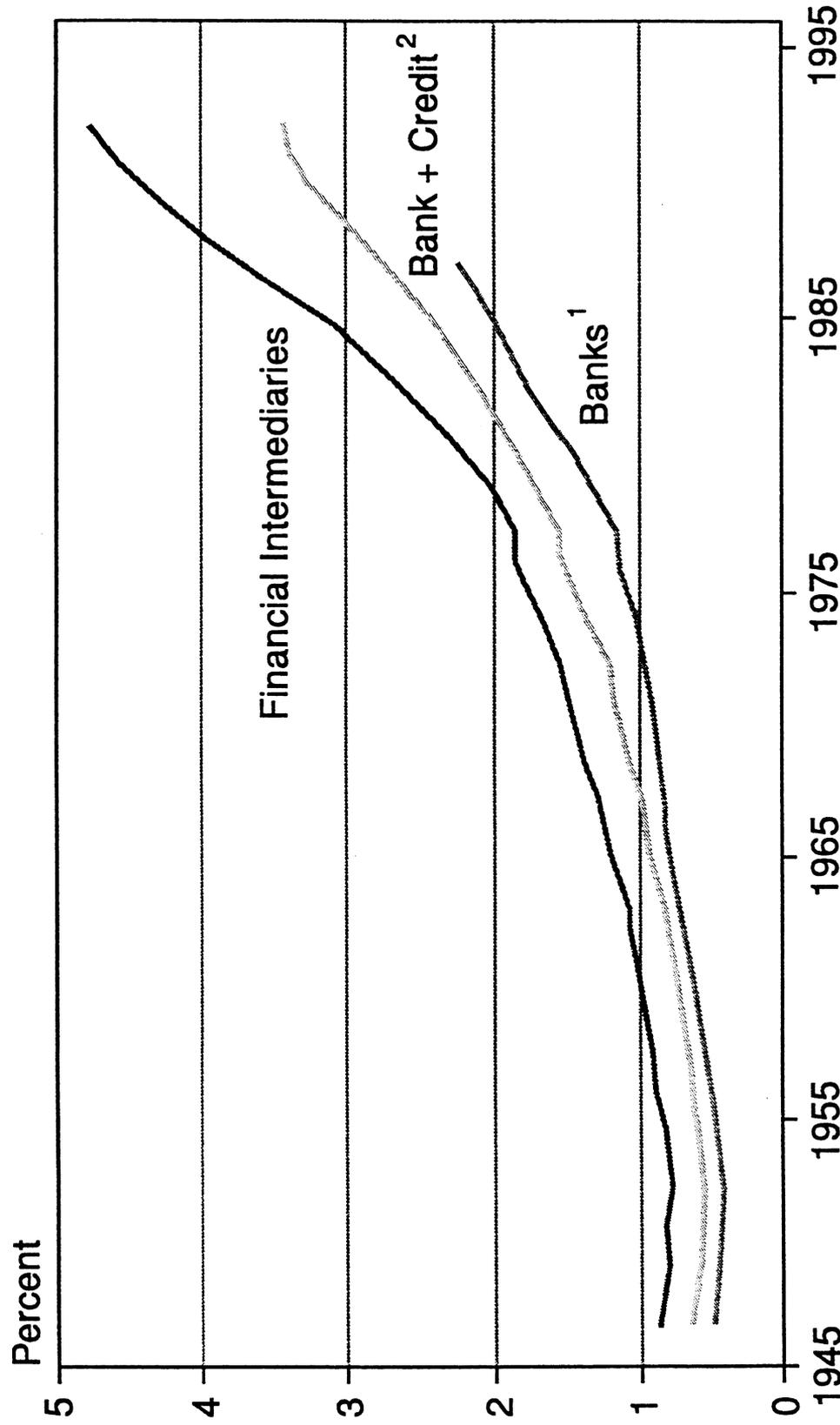
**Figure 10b, Sector (Full and Part Time) Employment  
as a Percent of Total U.S. Employment**



1 Commercial Banks, Federal Reserve Banks, Mutual Savings Banks.

2 "Banks" (1) plus S & L's, Credit Unions, Business Credit Inst.'s, Mortgage Banks, Rediscounting Agencies (e.g. FNMA, GNMA).

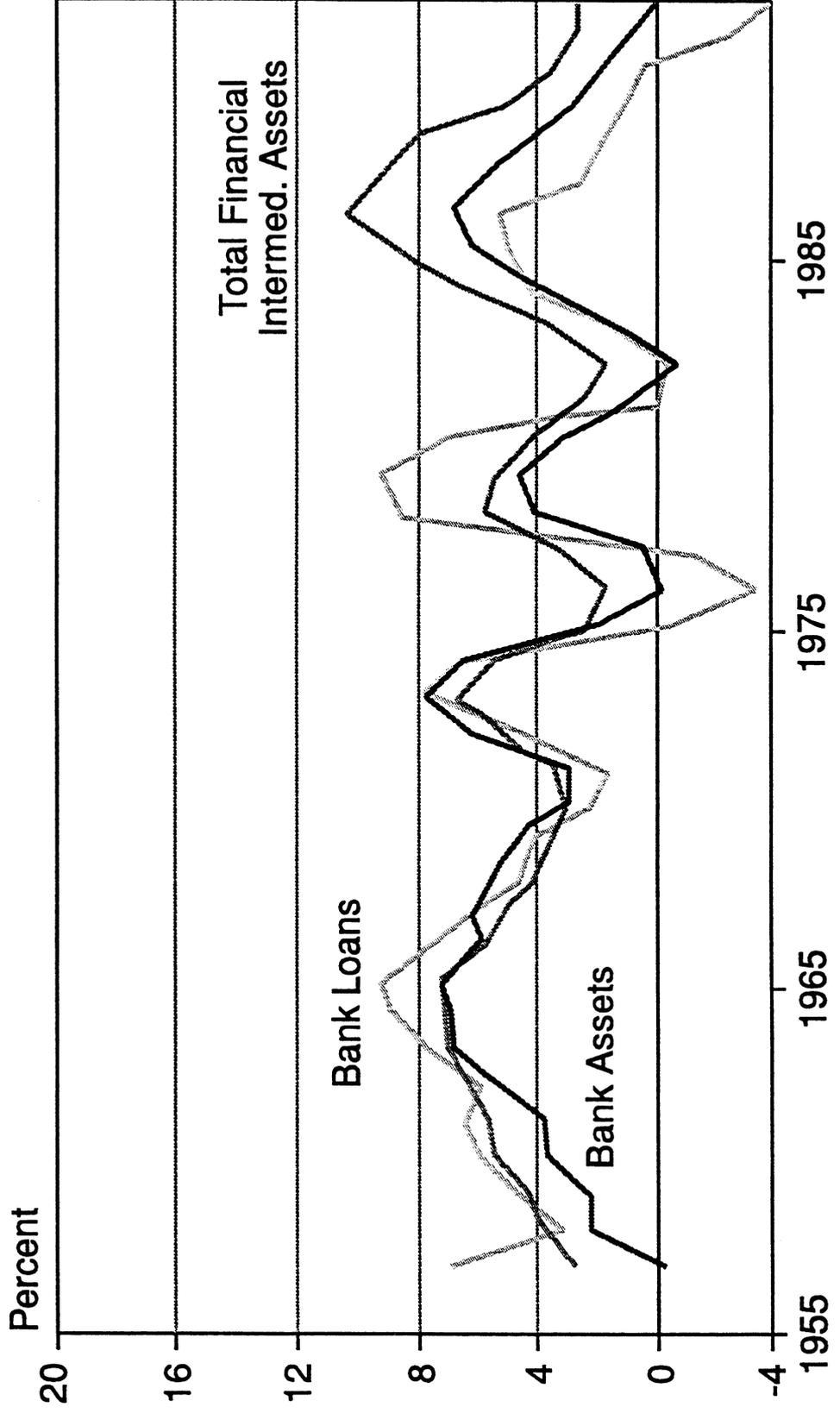
**Figure 10c, Sector Real Capital (Net Plant and Equipment)  
as a Percent of U.S. Total Net Plant and Equipment**



1 Commercial Banks, Federal Reserve Banks, Mutual Savings Banks.

2 "Banks" (1) plus S & L's, Credit Unions, Business Credit Inst.'s, Mortgage Banks, Rediscouting Agencies (e.g. FNMA, GNMA).

**Figure 11, Percent Growth Rate in Real Financial Assets**  
*Three Year Moving Averages\**



\* Deflated using implicit GDP deflator  
 Source: Flow of Funds, FDIC

