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INVERTED YIELD CURVES AND FINANCIAL INSTITUTIONS: IS THE UNITED STATES HEADED FOR A REPEAT OF THE 1980'S CRISIS?

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Abstract

The paper examines the financial, institutional, and regulatory factors that affected financial institutions when the yield curve inverted in the early eighties and addresses the concern that today's environment could pose similar risks. We conclude that depository institutions are in overall good financial conditions and that regulation has been significantly improved. Despite concerns over yield curve inversions and weaknesses in the real estate market, the problems emerging today are not of sufficient magnitude or sufficiently widespread to be comparable to those that arose two decades ago and we are unlikely to face a recurrence of the savings and loan crisis of the 1980s. The developing real estate problems may, however, be serious enough for selected institutions to attract more intense regulatory scrutiny and greater shareholder concerns.

Key words: inverted yield curve, savings and loan, financial institutions, regulation.
JEL classification: G 21.

Introduction

Because depository institutions profit by paying out lower interest rates on deposits and earning higher interest rates on their assets, the difference between short- and long-term rates carries significant bottom-line implications. The average maturity of deposits is shorter than the average maturity of assets, and problems can arise when short-term rates rise above long-term rates, which can happen when there is an inversion of the yield curve.

In the early 1980s, for instance, nearly 4,000 savings and loan institutions were driven into insolvency when the yield curve inverted (i.e., short-term interest rates exceeded long-term rates) and the rates they had to pay depositors rose substantially above the rates they received on their own assets, which consisted of mainly long-term, fixed-rate home mortgages.

There is some disagreement as to whether an inversion in the yield curve is a good predictor of economic recessions[1]. This is a discussion from which we will refrain. Instead, here we examine the financial, institutional, and regulatory contexts in which an inverted yield curve has the potential to affect financial markets and institutions adversely; and which factors can amplify or accentuate the impact of yield curve changes. Off and on in recent months, the yield curve has been inverting again, and some commentators are asking if savings and loans are in for a repeat of the troubles that plagued them twenty-five years ago.

We believe financial institutions today are not likely to suffer to the same degree from the same problems; and our examination, which compares the two periods in light of regulatory environments, balance sheets, risks, and risk management, will explain why. We will show that the inverted yield curve facing institutions today presents a quite different situation, though one not without risks.

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[1] See Haubrich and Dombrosky (1996), Wright (2006), and Ang, Piazzesi, and Wei (2006).

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A Historical Perspective on Inverted Yield Curves

Inverted yield curves are not rare. Table 1 provides information on the numbers of days when the curve was inverted, as well as the degree of inversion. It shows the rate of interest on ten-year U.S. Treasury securities minus the three-month rate on Treasure securities between January 3, 1966, and October 13, 2006.

Table 1 shows that of the 10,181 trading days over the period, the yield curve was inverted on 14 percent of the time, or 1,426 days. It also shows that there were six years in which the yield curve was inverted on 50 percent or more of the trading days, with a high of 97 percent in 1979. The maximum consecutive days of inversion was 209, occurring in 1979. There were twenty-four years with no inversions. The highest negative spreads occurred in 1979 (298 basis points), 1980 (373 basis points), and 1981 (295 basis points). In only two other years did negative spreads exceed 100 basis points: 1973 (187 basis points) and 1979 (159 basis points).

Short- and long-term interest rates fluctuate substantially over time, according to the demand and supply of funds. Figure 1 illustrates this fact by plotting the yields of three-month Treasury securities. This rate reached record highs in the late 1970s and early 1980s.

Figure 2 shows the periods in which the yield curve was inverted, comparing the differences between the ten-year Treasury rate and the three-month Treasury rate. Table 1 and Figure 2 clearly demonstrate the importance of interest rate risk to depository institutions. Interest rate movements can be both sudden and large, thereby posing potential problems for financial institutions heavily dependent upon net interest margins for their profits.

Inverted Yield Curves and the Savings and Loans Crisis in the 1980s

Savings and loans were highly regulated firms at the beginning of the l980s[1]. They were prohibited from making adjusTable-rate home mortgages and could not make loans more than a hundred miles from their headquarters. In addition, savings and loans were prohibited from making most loans that commercial banks could make, such as commercial real estate loans or commercial loans to business. Savings and loans were not even allowed to offer their customers demand deposits until relatively recently.

Savings and loans specialized in originating and then holding portfolio home mortgage loans that were relatively long term and carried fixed interest rates. In contrast, the mortgages were funded by relatively short-term deposits whose interest rates were relatively flexible. At the beginning of the l980s, for example, savings and loans earned an average of 9 percent on home mortgages and paid 7 percent on deposits. Thus, the net interest margin earned by the institutions was 2 percent. There was relatively little non-interest revenue so that interest income was the primary source of revenue, out of which they paid salaries, interest and other expenses, and taxes.

This traditional way in which savings and loans operated exposed them to substantial interest rate risk. For years, interest rates remained relatively sTable. But in the late 1970s and early 1980s, the Federal Reserve tightened its operating policy in reaction to inflationary concerns. As a result of the subsequent monetary tightening, interest rates rose abruptly and significantly. The 2 percent in net interest income earned by savings and loans quickly fell as they raised the interest rates paid on deposits to retain deposits and thereby avoid having to sell home mortgages at losses to meet deposit withdrawals. More than 90 percent of all institutions quickly lost money and were insolvent on a market-value basis because the market value of the home mortgages held in portfolio was less than the value of the deposits funding them.

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[1] Our historical perspective and comparison are taken from the chapter "The U.S. Savings and Loan Crisis in Hindsight: 20 Years Later", *The Savings and Loan Crisis: Lesson from a Regulatory Failure*. James R. Barth, Susanne Trimbath, and Glenn Yago, (2004). Kluwer Academic Publishers.

The government considered it better to allow the savings and loans to remain open, even though they were market-value insolvent, rather than attempting to close, sell, or otherwise take actions to force their recapitalization. The latter course of action would have been extremely disruptive and costly to accomplish. Instead, the overall governmental strategy was designed to buy time for savings and loans by imposing a fairly lenient and misleading regulatory capital requirement until interest rates returned to more normal levels. The expectation, or perhaps more likely the hope, was that this reversal would occur sometime soon and restore profitability to the industry.

The Industry Implodes When the Yield Curve Inverts

The initial phase of the savings and loan crisis lasted roughly from 1980 to 1985 It was entirely the result of laws that imposed too rigid structure on the depository institutions, permitting them only to offer fixed-rate, long-term home mortgages funded by deposits tied to short-term rates. Savings and loans were largely forbidden to hedge interest rate risk in the forward, futures, and options markets, and to offer adjusTable-rate mortgages. Only after the crisis the government allowed institutions to use these financial instruments.

The savings and loan industry was devastated when the yield curve inverted in the late 1970s and the early 1980s. The crisis occurred within the context of the dollar appreciation against other currencies, causing a twist in the term structure and creating losses from which the savings and loans could not extricate themselves, given the regulatory chokehold imposed upon them. From 1979 to 1983, unanticipated double-digit inflation and dollar depreciation resulted in negative real interest rates. The savings and loans extended their lending base, but their capital ratios only worsened. By the time the Federal Reserve tightened monetary policy, short-term rates had soared over 20 percent, savings and loans were squeezed, and the crisis was under way.

Figure 3 shows the fairly abrupt drop in the industry's net income after 1978, reaching an all-time low in 1981 and 1982. This was the beginning of the savings and loan debacle. An inverted yield curve, with short-term interest rates exceeding long-term interest rates by roughly 3 percentage points or more, occurs in over half of the trading days in these two years.

Table 2 presents more detailed information on what happened to the income and expense of savings and loans during this period. As may be seen, the industry lost roughly $8.8 billion in 1981 and 1982, when net interest income turned negative due to the inversion of the yield curve.

As noted above, the regulatory authorities were supposed to seize savings and loans known to be insolvent and either close or sell them, depending upon which alternative imposed the least cost on the deposit-insurance fund. This was not a desirable course of action, however, because the deposit insurance fund for savings and loans (the Federal Savings and Loan Insurance Corporation) was insufficient to handle the problem and the use of taxpayer funds was considered politically inappropriate. By the early 1980s, savings and loans throughout the country were insolvent by about $110 billion and the fund was reporting only $6 billion in reserves (Barth, 1991; Brumbaugh, 1988; Kane, 1989). The FSLIC itself, in other words, was insolvent on the basis of its contingent liabilities due to the open but insolvent institutions. Yet its auditor, the U.S. General Accounting Office (GAO), did not require this significant liability to be recorded and reported to the public until 1986 on the grounds that before then it was not "probable and estimable".

Congress acted to deal with the crisis by enacting the Depository Institutions Deregulation and Monetary Control Act in 1980 and the Garn-St Germain Depository Institutions Act in 1982, which expanded the types of loans the savings and loans could offer consumers and removed savings and loan interest rate ceilings. The new laws, however, failed to provide the necessary funds to allow the regulators to resolve insolvent institutions. Instead, they allowed regulators to lower the minimum level of capital that a savings and loan was required to hold to satisfy regulatory requirements. The regulators did so, and this enabled institutions to report being financially healthier than they were in reality.

This leniency gave regulators more time to devise a more permanent solution. The laws also lowered enforcement standards for those institutions near insolvency, and they gave the regulators authority to permit new forms of regulatory capital. As a result, many savings and loans known to be insolvent, even on the basis of accounting standards already in use, were allowed to report otherwise, and some were even allowed to report capital levels that met or exceeded the minimum requirements.

Figure 4 shows the aggregate capital-to-asset ratio for savings and loans on the basis of several alternative accounting measures (see Table 3 and Figure 5 for a longer-term perspective on the equity-capital ratio for the industry as well). The amount of capital that institutions reported on the basis of regulatory accounting practices (RAP) exceeded that reported on the basis of Generally Accepted Accounting Principles (GAAP) and, even far more than that, reported on the basis of tangible accounting principles (TAP), despite all these measures declining abruptly in the early 1980s (see Table 4).

The most lenient of the three capital measures, the RAP measure, was allowed to buy time in the hope that insolvent savings and loans would return to profitability with an improved interest rate environment. It was hoped that when this happened institutions would have availed themselves of the opportunity to find ways to improve their financial conditions through the new and expanded powers provided for in the laws enacted in the early 1980s. The government strategy was to make savings and loans more like commercial banks, which were far more immune to the interest rate shock at that time because of their more diversified portfolios. The inverted yield curve per se, in other words, was not the fundamental cause of this initial phase of the savings and loans crisis.

Credit Quality Problems Emerge

Lower capital requirements were allowed in the 1980 and 1982 federal laws, which were based largely on book values rather than more market-value oriented techniques. The use of book values could grossly overstate the health of a financial institution. The legislation also allowed savings and loans to begin to diversify into commercial real estate loans, direct equity investments, commercial loans, and other kinds of loans that commercial banks could already make. The savings and loans were also allowed to originate adjusTable-rate home loans and to make loans nationwide. At roughly the same time, an increasing number of states granted broader lending and investment opportunities to their own state-chartered savings and loans, sometimes even broader than the opportunities authorized for federally chartered institutions. Although all these developments were intended to put savings and loans on a firmer financial footing, they gave rise to a subsequent twist in the crisis.

The new changes did indeed allow savings and loans to reduce their interest rate risks. But the changes exposed savings and loans to new risks. Whereas few borrowers default on their home mortgages, defaults and associated losses on other types of loans and investments are typically much higher. Furthermore, while home mortgages are secured by real property, many of the loans that savings and loans began making were unsecured or backed by assets with difficult to determine market values. By combining interest rate risk with credit risk spread over a wider geographical area, well-managed and well-capitalized institutions are provided with greater opportunities to choose a prudent overall balance of risk and return. Such a strategy provides potentially lower portfolio risk than with lending and investment powers restricted to a narrow range of activities.

The problem that arose after being granted broader powers was that many savings and loans began making commercial real estate loans and investments, activities in which they were relatively inexperienced. The Economic Recovery Tax Act of 1981 spurred much of this activity (for details of the Tax Act, see Table 5). As savings and loans moved into the commercial real estate market, commercial banks at the same time increased their commercial real estate loan business, resulting in a very competitive market. This gave rise to credit quality problems for first savings and loans and then somewhat later commercial banks. These credit quality problems are reflected in Figure

3, which shows net income of the industry plunged once again, but even more than in the early 1980s, when the yield curve inverted. Indeed, as Table 2 shows, the industry lost nearly $21 billion in 1987 and 1988, and almost another $8 billion in 1989.

Table 4 shows in more detail the deterioration that occurred in the industry during these years. The return-on-equity (ROE) for the industry reached a low of a negative 19 percent in 1987 and a negative 31 percent in 1988, and then slightly improved to a negative 14 percent in 1989.

Perverse incentives were by-products of the new, looser regulatory restrictions. Many open but insolvent savings and loans took excessive risks, or "gambled for resurrection", in part because of "moral hazard" (i.e., the federal deposit insurance fund would bear the losses if everything went terribly wrong)[1]. Yet the owners would reap the rewards if everything went well.

The new, lower capital requirements and broader opportunities to lend and invest allowed some savings and loan executives to take undue risks. With federally insured deposits and the ability to attract more deposits by offering higher rates of interest, even deeply troubled or even insolvent savings and loans always had ready access to additional funds. This enabled them to avoid the discipline of the marketplace, and unless constrained by the regulators, they were free to expand their lending and investments despite any weakened financial condition.

Unfortunately for savings and loans, in the mid- to late 1980s, after they began to make considerable real estate loans and investments, regional recessions struck the country, which reduced commercial real estate values. In particular, an unexpected plunge in the price of oil in 1986 contributed to recession in the southwestern United States. Subsequently, every savings and loans in Texas would close or be sold to a healthier commercial bank.

To make matters worse, the Congress passed the Tax Reform Act of 1986 that more than eliminated the tax benefits to commercial real estate ownership it had conveyed only a few years earlier (again, for details of the Tax Act, see Table 5). Commercial real estate values fell dramatically as a result.

Commercial Banks Also Suffer but Avoid Crisis

During the late 1980s and early 1990s, commercial bank failure resolutions cost $37 billion and for a few years led to insolvency of the Federal Deposit Insurance Corporation (FDIC). Commercial banks suffered from one of the same events that caused the savings and loan crisis: deterioration in asset quality from commercial real estate loans. Savings and loans drew more attention chiefly because their failures were more widespread and costly, and because taxpayer money was required to remove insolvent institutions from the industry.

The financial deterioration in banks was the result of a series of difficulties first involving loans to lesser-developed countries in the early 1980s, then loans for highly leveraged transactions in the mid-1980s, and finally commercial real estate loans in the late 1980s. The process that led to this sequence of difficulties had many characteristics similar to the savings and loan debacle. Banks faced geographic banking restrictions that were not removed until the enactment of the Riegle-Neal Interstate Banking and Branching Efficiency Act of 1994. They were also restricted in their ability to engage in securities, insurance, and real estate activities. The enactment of the Gramm, Leach, Bliley Act of 1999 removed the final restrictions to allowing banks to engage in securities and insurance activities through the establishment of separately capitalized subsidiaries of financial service holding companies. However, banks' investments in non-financial firms and non-financial firms' investments in banks are now prohibited[2].

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[1] This is a result of limited liability laws in which owners are liable for losses only to the extent of the equity they contribute to an institution.

[2] Indeed, of the nineteen countries comprising the European Union and G-10, the United States was until recently by far one of the most restrictive in regulating banking activities. It remains so, moreover, with respect to the mixing of banking and commerce.

As deterioration in the banks' condition overwhelmed the FDIC's reserves, the banking regulatory authorities adopted some of the same forbearance techniques that had been used for the savings and loans. For instance, banks known to be insolvent were allowed to remain open in the hope that they would be able to recover and thereby avoid drawing down the limited funds of the deposit-insurance agency.

The financial condition of the banks improved due to the unexpected interest rate developments that more than compensated for the existing asset-quality problem. As a result of the 1990-1991 recessions and the response of the Federal Reserve to inject more liquidity into the economy, short-term interest rates fell relative to long-term interest rates (i.e., the yield curve steepened its positive slope considerably). This development allowed banks to improve their profitability through greater net interest income. For several years, due to the steep yield curve, banks were able to earn substantial profits merely by purchasing Treasury securities with insured deposits rather than making more traditional business loans. As a result, the bank insurance fund was restored to solvency and taxpayers were spared having to bear losses directly as the overall condition of the banking industry improved.

Tables 6 and 7 provide information on the performance and financial condition of commercial banks from 1962 to 2005. As may be seen, unlike in the case of savings and loans, when the yield curve inverted in the late 1970s and early 1980s, commercial banks were largely unaffected in terms of return on asset (ROA) and net interest margin. The worst period for the commercial banks was in the latter part of 1980s and early 1990s. In the worst year, 1987, ROA was barely positive, at 0.09 percent, and the return on equity (ROE) was only 1.55 percent. Performance was still quite poor from 1989 through 1991, in terms of both ROA and ROE, but improved significantly thereafter. Despite their poor performance, the capital asset ratio of banks never plummeted during any of these years as happened with savings and loans in the 1980s.

As described above, in the 1980s and early 1990s, insured depositories failed in greater numbers and imposed greater losses than any other group of financial-service firms, despite being among the most heavily regulated firms in the nation. Their relatively dismal performance suggests that overly restrictive laws and regulations on insured depositories tended to inhibit their ability to adapt to technological and competitive changes in the global financial marketplace. This is no longer the case, however. Laws have significantly changed to allow these institutions much greater latitude in the activities in which they may engage so as to better protect themselves from inversions in the yield curve as discussed in the next section.

The Transformation of Depository Institutions in the Past Two Decades

Subsequent to the problems of savings and loans in the 1980s and the commercial banks in the late 1980s and early 1990s, depository institutions underwent a substantial transformation. Some of the more important changes that have taken place reflecting the lessons learned discussed above are the following:

- The equity capital-to-asset ratio for savings and loans was 9.45 percent at year-end 2005, whereas in 1977 (preceding the crisis of the early 1980s) it was 5.45 percent. It is now higher than at any time during the past forty years and more accurately measured on an accounting basis (see Table 4).
- The revenue source of savings and loans is now more diversified. In 1978, the ratio of non-interest revenue to total revenue was 7 percent, whereas it was 25 percent in 2005 (see Table 4 and Figure 6).
- The asset portfolio of savings and loans is less concentrated in residential real estate loans. In 1977, such loans accounted for about 80 percent of total assets. By 2005, this percentage had declined to 60 percent. These institutions have diversified by moving to a greater degree into commercial loans, consumer loans, mortgage-backed securities, and commercial real estate (see Table 8).

- The equity capital-to-asset ratio for commercial banks was 6 percent in 1987, which was its worst year for profits in the past forty years. At year-end 2005, the ratio was 10 percent (see Table 7).
- The revenue source of commercial banks is now more diversified. In 1987, non-interest revenue to total revenue was 14 percent; it more than doubled by 2005, to 32 percent.
- The asset portfolio of commercial banks has become more diversified. In the 1980s, commercial loans accounted for an average of about 20 percent of total assets, but by 2005 this percentage had declined to 12 percent. At the same time, residential real estate loans had increased from less than 10 percent of total assets to more than 20 percent. Commercial banks are also less dependent on cash and securities now than at any time prior to 2000 (see Table 9 and Figure 7).
- Savings and loans, and commercial banks, are now less dependent on deposits today, and thus insured deposits, than in the 1980s. As a result, the insurance funds for these institutions are less exposed to the risk of failures (see Tables 3 and 10).
- Financial institutions rely to a much greater extent than in the past on derivative instruments and other off-balance sheet activities to better manage and control interest risk exposure. Also, a significant percentage of home-mortgage loans are now adjusTable-rate mortgages (see Table 15).
- In the late 1970s and early 1980s, savings and loans were predominately mutual-type institutions, owned entirely by their depositors. Today these institutions are almost entirely stock-type institutions, owned only by those who purchase stock. As a result of this major shift in ownership structure, the movement in stock prices now reflects the combined knowledge of all stockholders as to the current and future prospects of institutions. This is a form of external governance that helps to control the risk-taking behavior of savings and loans.
- Regulatory authorities, in addition to the institutions themselves, pay extremely close attention to risk exposures rather than simply a checklist indicating whether institutions are complying with a host of rules and regulations. The regulatory emphasis today is on quantitative assessments, not a simple yes or no to various compliance issues.

Even though there has been a relatively high percentage of trading days in 2006 in which the yield curve has been inverted, the maximum negative spread thus far has been only 0.0016 percentage points, or 16 basis points. This is far short of the 241-basis point negative spread that occurred in 1980. The more general point is that the economy is more stable now than in the past, and the same is the case for interest rates, in no small part due to the Federal Reserve. To further assess the extent to which an inverted yield curve today may be as devastating to financial institutions as it was in the 1980s, the next section presents the results of various statistical tests and interest rate risk assessments of the regulatory authorities.

Some Empirical Evidence on the Relationships between the Performance of Savings and Loans and Inverted Yield Curves

We conducted a simple statistical analysis to assess the effect of an inverted yield curve on the performance of savings and loans. More specifically, we examined the relationship between the return on assets (ROA) for savings and loans and the inverted yield curve, controlling for several variables that could also affect ROA. The following regression equation was estimated with annual data:

$$ROA_t=\alpha_0+\alpha_1 T\_ROA_{t-1}+\alpha_2 T\_GAAP_t+\alpha_3 AVGSPD_t+\alpha_4 T\_RREL_t+\alpha_5 YieldCurveVariable_t+e_t, \quad (1)$$

where the variables are defined and their summary statistics are presented in Table 11. The Yield Curve Variable, which is the focus of our attention, is measured in five different ways, which will now be explained. DNEG is a dummy variable, with a value of 1 if the yield curve inverted in a

year, 0 otherwise; DSNL is a dummy variable, with a value of 1 if the year is 1980, 1981, or 1982, 0 otherwise; MAXCONDAY is the maximum number of consecutive days that the yield curve inverted in a year; MAXSPD is the absolute value of the largest negative spread between the ten-year Treasury bond rate and the three-month Treasury bill rate; and NEGDAY is the number of days that the yield curve inverted as a share of the total trading days in a year. These five alternative variables are used to assess whether or not, after controlling for other bank-specific factors, the yield curve significantly affects the performance of savings and loans as measured by their return on assets. (The correlations among the variables are reported in Table 12.)

The empirical results from our regression analysis are reported in Table 13. They indicate that ROA in the current period is positively and significantly associated with ROA in the previous period. ROA is also significantly higher for better capitalized savings and loans and for institutions with higher net interest margins. There is also a positive but somewhat less significant relationship between ROA and the share of assets devoted to real estate loans.

Turning to the measures to capture inverted yield curves, it is noteworthy that only two are significant. The mere fact that the yield curve inverts does not mean that ROA will be adversely affected. Furthermore, neither the percentage of the total trading days in which the yield curve is inverted nor the maximum number of consecutive days in which the yield curve is inverted has a significant relationship with ROA. What matters most are the years 1980, 1981, and 1982, which were by far the worst consecutive years, in terms of not only inverted yield curves but large negative spreads. There is also evidence, though less significant, that large negative spreads in any year adversely affect ROA. Overall, the results indicate that inverted yield curves per se have not been a serious problem for savings and loans over the past forty years, except when they were clustered in a few consecutive years with large negative spreads.

In addition to these results, the Office of Thrift Supervision (OTS) assesses the sensitivity of the market value of the capital-to-asset ratio of savings and loans to interest rate shocks. Table 14 presents the results of a 200-basis point increase in interest rates on the market value capital ratio for selected time periods. As may be seen, even after such a fairly large increase in interest rates, the ratio is still nearly 9 percent as of June 2006. The OTS considers this level of interest risk exposure to be moderate. This finding is consistent with the simple statistical results just discussed. Of course, in both cases the results apply to the entire savings and loan industry and not individual institutions.

Some Cautionary Remarks about Recent Weakness in Real Estate Markets

Although depository institutions have undergone a significant transformation and the regulatory authorities have also learned an important lesson from the problems that occurred two decades ago, innovations in housing finance and recent developments in the real estate sector raise cautionary flags about the current financial condition of these institutions. This concern is not directly related to the risk exposure of institutions to an inverted yield curve per se, but rather to weakness in the real estate markets coupled with credit exposure resulting from the use of newer innovations in the extension of credit for real estate purchases.

Some institutions have been relying relatively heavily on the use of pay-option adjustable-rate mortgages and interest-only fixed-rate and adjustable-rate mortgages when making loans for home purchases. Further, a relatively large number of such loans have been made to sub-prime borrows. According to David Liu of the Union Bank of Switzerland, there has recently been a significant increase in delinquency rates in selected parts of the United States. This is due to high interest rates, a weak housing market, tougher competition, and increased regulatory scrutiny. It is not yet clear to what extent borrowers are overextended and whether they have sufficient home equity to refinance their loans. In addition, bank regulatory authorities are concerned about the concentration of commercial real estate lending in some depository institution portfolios.

Conclusion

In the 1980s, the United States experienced its worst bank problems since the Great Depression. The triggering factor was a steeply inverted yield curve that persisted for an abnormally lengthy period of time. Savings and loans at the time were heavily invested in fixed-rate home mortgages and consequently were devastated as the rates institutions had to pay on deposits rose above the rates they were receiving on mortgages. Although commercial banks also encountered problems toward the latter part of the 1980s, they were far less serious due to their greater portfolio diversification and more favorable interest rate environment.

Banking institutions today are in overall good financial condition, and bank regulation has been significantly improved. Despite recent concerns over inversions in the yield curve and weakness in the real estate market, we do not project a repeat of the savings and loan crisis of the 1980s. The transformation in the depository institutions and the improved regulatory environment have substantially reduced the likelihood of such an event recurring. The problems emerging today are not of sufficient magnitude or sufficiently widespread to be comparable to those that arose two decades ago. They may, however, be serious enough for selected institutions to attract more intense regulatory scrutiny and greater stockholder displeasure. But these problems are unlikely at the moment to lead to any significant and costly failures.

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Table 1

Total trading days and number of inverted yield curve days January 3, 1966, to October 13, 2006: Ten-year Treasury minus three-month Treasury

Year	Number of Trading Days	Number of Inverted Days	Percent of Total Days with Negative Spread	Maximum Negative Spread (Basis Points)	Maximum Consecutive Inverted Days
1966	250	83	33	42	97
1967	249	21	8	1	1
1968	250	7	3	16	23
1969	248	130	52	45	50
1970	250	22	9	21	17
1971	249	0	0	0	0
1972	250	0	0	0	0
1973	248	144	58	187	140
1974	249	157	63	159	92
1975	249	0	0	0	0
1976	250	0	0	0	0
1977	249	0	0	0	0
1978	248	25	10	58	86
1979	248	240	97	298	209
1980	250	126	50	373	95
1981	249	152	61	295	95
1982	249	8	3	96	3
1983	250	0	0	0	0
1984	249	0	0	0	0
1985	248	0	0	0	0
1986	250	0	0	0	0
1987	250	0	0	0	0
1988	250	0	0	0	0
1989	250	99	40	35	28
1990	250	0	0	0	0
1991	250	0	0	0	0
1992	251	0	0	0	0
1993	250	0	0	0	0
1994	249	0	0	0	0
1995	250	0	0	0	0
1996	252	0	0	0	0
1997	250	0	0	0	0
1998	250	5	2	13	2
1999	251	0	0	0	0
2000	251	122	49	95	127
2001	248	14	6	3	1
2002	250	0	0	0	0
2003	250	0	0	0	0
2004	250	0	0	0	0
2005	250	0	0	0	0
2006	197	71	36	16	61
	Total 10,181	**Total 1,426**	**Average 14.0**	**Maximum 373**	**Maximum 209**

Table 2

Income at U.S. thrifts, 1962-2005 ($ Million)

Year	Interest Income	Interest Expense	Net Interest Income Before Provisions for Losses	Provisions for Losses Interest Bearing Assets	Noninterest Income	Noninterest Expense	Net Income Before Taxes and Extraordinary Items	Net Income
1962	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
1963	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
1964	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
1965	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
1966	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
1967	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
1968	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
1969	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
1970	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
1971	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
1972	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
1973	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
1974	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
1975	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
1976	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
1977	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
1978	37,917	28,705	9,212	n/a	3,027	6,519	5,720	3,920
1979	45,630	36,479	9,151	n/a	3,497	7,459	5,189	3,613
1980	52,880	47,437	5,443	n/a	4,082	8,339	1,186	781
1981	61,672	63,194	-1,522	n/a	4,882	9,511	-6,151	-4,631
1982	66,802	69,751	-2,949	n/a	8,574	11,345	-5,720	-4,142
1983	75,293	69,229	6,064	n/a	10,885	14,429	2,520	1,945
1984	96,298	88,637	7,661	1,424	10,827	16,296	768	994
1985	105,343	91,523	13,820	4,090	10,280	20,484	3,614	4,010
1986	104,730	87,426	17,304	2,359	13,199	24,696	3,448	610
1987	103,363	84,125	19,238	9,462	15,995	26,735	-7,385	-7,407
1988	110,751	92,499	18,252	13,972	15,511	25,586	-13,557	-13,263
1989	114,265	95,668	18,597	8,664	15,397	25,746	-8,306	-6,783
1990	98,062	77,776	20,286	6,647	14,432	21,385	-3,409	-3,817
1991	81,786	59,780	22,006	4,920	14,504	19,291	2,264	1,195
1992	64,039	39,692	24,347	4,142	13,982	18,157	6,855	5,103
1993	52,536	29,018	23,518	3,582	13,886	17,495	7,141	4,917
1994	49,853	27,648	22,205	2,092	14,049	17,597	7,447	4,275
1995	55,246	34,717	20,529	1,736	14,348	16,143	7,464	5,360
1996	55,165	33,375	21,789	2,114	6,913	19,858	6,730	6,802
1997	55,296	33,479	21,817	1,989	7,041	16,797	10,072	6,413
1998	54,900	33,402	21,497	1,585	9,897	18,210	11,599	7,569
1999	57,006	34,104	22,902	1,312	9,063	17,706	12,948	8,228
2000	64,199	40,925	23,275	1,659	10,023	19,238	12,400	8,014
2001	65,233	37,618	27,615	2,532	13,137	22,591	15,629	10,202
2002	55,456	25,468	29,988	2,854	14,132	22,999	18,266	11,837
2003	51,479	20,659	30,820	2,190	18,516	25,766	21,379	13,742
2004	55,872	21,301	34,572	2,601	20,106	30,500	21,576	13,963
2005	72,288	33,464	38,824	2,857	23,845	34,316	25,495	16,416

Table 3

Total liabilities and liability composition at U.S. thrifts, 1962-2005

Year End	Total Deposit (%)	FHLB Advances (%)	Other Borrowings (%)	Other Liabilities (%)	Equity Capital (%)	Total Liabilities and Capital (Million USD)
1962	n/a	n/a	n/a	n/a	n/a	n/a
1963	85.70	3.87	0.14	3.25	7.04	103,154
1964	84.85	4.62	0.20	3.56	6.77	114,672
1965	85.34	4.63	0.21	3.10	6.72	124,576
1966	85.17	4.79	0.32	2.85	6.87	129,045
1967	85.06	5.36	0.37	2.27	6.94	138,489
1968	86.78	3.16	0.22	3.04	6.80	147,736
1969	86.13	3.53	0.25	3.20	6.89	156,788
1970	83.55	5.86	0.28	3.25	7.06	170,645
1971	83.04	6.14	0.20	3.69	6.93	199,984
1972	84.53	3.95	0.50	4.53	6.49	236,349
1973	85.03	3.36	0.73	4.73	6.15	264,797
1974	83.42	5.64	0.77	3.94	6.23	288,223
1975	82.12	7.45	1.08	3.15	6.20	330,259
1976	84.41	5.30	0.92	3.56	5.81	383,172
1977	85.66	4.09	0.86	3.81	5.58	449,997
1978	84.17	4.42	1.71	4.25	5.45	497,287
1979	84.54	6.42	0.42	2.97	5.65	554,358
1980	82.89	7.28	0.78	3.35	5.70	603,777
1981	82.60	7.79	0.62	3.63	5.36	639,821
1982	80.06	9.89	0.88	4.94	4.23	686,225
1983	80.14	9.37	0.71	6.05	3.73	813,770
1984	82.00	7.04	0.79	6.12	4.05	1,012,969
1985	81.22	7.17	2.50	6.35	2.76	1,109,789
1986	79.63	7.76	3.36	6.08	3.17	1,208,408
1987	76.96	8.54	4.02	7.04	3.44	1,288,981
1988	74.74	9.44	4.63	8.31	2.88	1,368,843
1989	73.13	10.11	5.02	8.24	3.50	1,186,906
1990	74.45	9.83	4.98	6.35	4.39	1,029,165
1991	77.00	9.07	3.62	5.29	5.02	895,296
1992	79.95	7.43	3.04	3.64	5.94	806,662
1993	78.56	7.94	2.67	3.90	6.93	774,775
1994	74.97	9.81	2.86	4.86	7.50	774,069
1995	70.57	11.48	3.82	6.65	7.48	770,982
1996	69.40	11.04	4.54	7.01	8.01	769,367
1997	67.58	13.44	3.90	7.16	7.92	776,577
1998	65.39	15.26	3.23	7.80	8.32	817,612
1999	61.00	17.50	3.97	9.30	8.23	863,606
2000	58.47	21.99	1.97	9.78	7.79	928,548
2001	57.02	23.51	2.48	8.98	8.01	977,715
2002	59.09	17.06	3.54	11.03	9.18	1,004,532
2003	60.59	17.36	5.49	7.47	9.09	1,092,615
2004	57.99	18.73	6.99	7.21	9.08	1,306,790
2005	57.09	18.72	7.60	7.14	9.45	1,463,945

Table 4

Capital asset ratios and selected income measures at thrifts, 1962-2005

Year	Capital-Asset Ratios (%)			ROA (%)	ROE (%)	Non-Interest Revenue to Total Revenue (%)	Net Interest Margin (%)
	RAP (%)	GAAP (%)	TAP (%)				
1962	7.04	7.04	7.04	0.98	13.97	n/a	n/a
1963	6.77	6.77	6.77	0.70	10.11	n/a	n/a
1964	6.72	6.72	6.72	0.72	10.74	n/a	n/a
1965	6.87	6.87	6.87	0.67	9.70	n/a	n/a
1966	6.94	6.94	6.94	0.50	6.95	n/a	n/a
1967	6.80	6.80	6.80	0.46	6.43	n/a	n/a
1968	6.89	6.89	6.89	0.60	4.28	n/a	n/a
1969	7.06	7.06	7.06	0.68	9.47	n/a	n/a
1970	6.93	6.93	6.93	0.57	8.02	n/a	n/a
1971	6.49	6.49	6.49	0.71	10.51	n/a	n/a
1972	6.15	6.15	6.15	0.77	12.14	n/a	n/a
1973	6.23	6.23	6.23	0.76	12.15	n/a	n/a
1974	6.20	6.20	6.20	0.54	8.63	n/a	n/a
1975	5.81	5.81	5.81	0.47	7.82	n/a	n/a
1976	5.58	5.58	5.58	0.63	5.55	n/a	n/a
1977	5.45	5.45	5.45	0.77	13.94	n/a	n/a
1978	5.66	5.65	5.63	0.83	14.84	7.39	1.85
1979	5.70	5.70	5.68	0.69	11.25	7.12	1.74
1980	5.36	5.36	5.33	0.14	2.43	7.17	0.94
1981	4.35	4.23	3.95	-0.74	-15.57	7.34	-0.24
1982	3.75	2.95	0.54	-0.63	-17.52	11.37	-0.44
1983	4.06	3.13	0.43	0.26	8.50	12.63	0.81
1984	3.83	2.77	0.33	0.12	3.72	10.11	0.84
1985	4.39	3.14	0.81	0.38	12.71	8.89	1.30
1986	4.51	3.34	1.26	0.05	1.59	11.19	1.49
1987	4.05	2.72	0.70	-0.60	-18.84	13.40	1.54
1988	4.42	3.34	1.63	-1.00	-31.21	12.28	1.37
1989	3.83	4.39	3.11	-0.54	-14.14	11.87	1.46
1990	4.27	5.02	3.94	-0.35	-7.65	12.83	1.83
1991	5.27	5.94	4.99	0.13	2.25	15.06	2.29
1992	6.43	6.93	6.21	0.61	9.33	17.92	2.86
1993	7.08	7.50	6.88	0.63	8.66	20.91	2.97
1994	7.12	7.48	7.08	0.56	7.36	21.99	2.87
1995	7.47	8.01	7.44	0.70	9.00	20.62	2.66
1996	7.38	7.92	7.37	0.89	11.15	11.14	2.83
1997	7.59	8.33	7.58	0.84	10.44	11.30	2.82
1998	7.44	8.23	7.43	0.97	11.42	15.27	2.70
1999	7.42	7.79	7.42	0.98	12.16	13.72	2.72
2000	7.39	8.01	7.38	0.91	11.63	13.50	2.60
2001	7.46	8.13	7.46	1.07	13.10	16.76	2.90
2002	7.80	9.18	7.80	1.21	13.61	20.31	3.03
2003	7.82	9.09	7.82	1.29	14.29	26.45	2.94
2004	7.80	9.08	7.79	1.17	12.79	26.46	2.88
2005	8.15	9.45	8.15	1.19	12.84	24.80	2.80

Table 5

Major tax legislation, 1980-2002

Date of Enactment	Legislation	Depreciation	Capital Gains/Passive Losses	Individual Income Tax Rates	Corporate Income Tax Rates
August 1981	Economic Recovery Tax Act of 1981	Shortened depreciation life for real property placed in service after Dec. 31, 1980, to 15 years, compared to 40-60 years under prior law. Real property placed in service after Dec. 31, 1980, (other than low-income housing) could be depreciated under the 175% declining balance method (dbm). Low-income housing placed in service after Dec. 31, 1980, could be depreciated using the 200% dbm. Under prior law, non-residential real property was depreciated using a 150% dbm (if new) or the straight line method (slm). New residential real property was depreciated using slm, the sum of years digits, or 200% dbm. Used residential property could be depreciated using 125% dbm or slm.	Reduced the maximum marginal tax rate on long-term capital gains for individuals from 28% (70% of 40% of gain) to 20% (50% of 40% of gain), effective for sales or exchanges occurring after June 9, 1981. Increased from $100,000 to $125,000 the amount of gain excludable from gross income on the sale or exchange of a residence by an individual who has attained age 55, effective for sales or exchanges after July 20, 1981.	Compared to prior law, marginal tax rates were reduced 1.25% in 1991, 10% in 1992, 19% in 1993, and 23% in 1994 and subsequent years. Maximum marginal tax rate reduced from 70% to 50% effective Jan. 1, 1982.	Reduced the marginal tax rate on the first $25,000 of taxable corporate income from 17% to 16% for 1982 and to 15% for 1983 and subsequent years. Reduced the marginal tax rate on the second $25,000 of taxable corporate income from 20% to 19% for 1982 and to 18% for 1983 and subsequent years. The marginal tax rates on the third and fourth $25,000 of taxable corporate income remained unchanged at 30% and 40%, respectively. The maximum marginal tax rate on taxable corporate income greater than $100,000 was unchanged at 46%.
October 1986	Tax Reform Act of 1986	Effective for all real property placed in service after Dec. 31, 1986, the depreciation life was increased from 19 years to 27.5 years for residential property and to 31.5 years for non-residential property. The method of depreciation for all real property placed in service after Dec. 31, 1986, was changed to straight line. A tax credit, to be taken in annual installments over 10 years, was provided to low-income housing constructed, rehabilitated, or purchased after Dec. 31, 1986, and before Jan. 1, 1990. The credit had a present value of 70% of qualified costs for non-federally subsidized projects and a present value of 30% of qualified costs for federally subsidized projects. Any building eligible for the credit had to receive an allocation of credit authority from the state. The annual credit authority limitation for each state was equal to $1.25 per capita.	60% long-term capital gains exclusion for individuals was repealed effective Jan. 1, 1987. For 1987, the maximum marginal tax rate on long-term capital gains was capped at 28%. For 1988 and subsequent years, the maximum marginal rate rose to 33% for those in the income range where the benefit of the 15% rate was phased out. Limitation on the deductibility of passive losses against ordinary income was phased in beginning Jan. 1, 1987, and became fully effective Jan. 1, 1991. Effective July 1, 1987, the maximum marginal tax rate of 28% on corporate long-term capital gains was repealed, increasing the maximum rate to 34%. A 34% rate was also applicable to gains realized between Jan. 1, 1987, and July 1, 1987.	The 15 tax brackets and rates of prior law were replaced by a schedule with 2 brackets and 2 rates: 15% and 28% effective Jan.1, 1988. The benefit of the 15% rate was phased out for taxpayers with income exceeding specified levels, creating a marginal tax rate of 33% in the affected income range. A transition schedule consisting of 5 brackets and 5 rates, 11% to 38.5%, was in effect for 1987.	The 5-bracket schedule with rates ranging from 15% to 46% was replaced with a 3-bracket schedule with rates of 15%, 25%, and 34%, effective July 1, 1987. Effective July 1, 1987, the benefit of the 15% and 25% rates was fully phased out for corporations with taxable income in excess of $335,000. Specifically, an additional 15% tax, up to a maximum of $11,750, was levied on corporate taxable income in excess of $100,000, affecting corporations with taxable income between $100,000 and $335,001.

Table 6

Income at commercial banks, 1962-2005 ($ Million)

Year	Interest Income	Interest Expense	Net Interest Income Before Provisions for Losses	Provisions for Losses Interest Bearing Assets	Noninterest Income	Noninterest Expense	Net Income Before Taxes and Extraordinary Items	Net Income
1962	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
1963	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
1964	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
1965	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
1966	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
1967	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
1968	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
1969	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
1970	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
1971	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
1972	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
1973	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
1974	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
1975	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
1976	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
1977	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
1978	37,917	28,705	9,212	n/a	3,027	6,519	5,720	3,920
1979	45,630	36,479	9,151	n/a	3,497	7,459	5,189	3,613
1980	52,880	47,437	5,443	n/a	4,082	8,339	1,186	781
1981	61,672	63,194	-1,522	n/a	4,882	9,511	-6,151	-4,631
1982	66,802	69,751	-2,949	n/a	8,574	11,345	-5,720	-4,142
1983	75,293	69,229	6,064	n/a	10,885	14,429	2,520	1,945
1984	96,298	88,637	7,661	1,424	10,827	16,296	768	994
1985	105,343	91,523	13,820	4,090	10,280	20,484	3,614	4,010
1986	104,730	87,426	17,304	2,359	13,199	24,696	3,448	610
1987	103,363	84,125	19,238	9,462	15,995	26,735	-7,385	-7,407
1988	110,751	92,499	18,252	13,972	15,511	25,586	-13,557	-13,263
1989	114,265	95,668	18,597	8,664	15,397	25,746	-8,306	-6,783
1990	98,062	77,776	20,286	6,647	14,432	21,385	-3,409	-3,817
1991	81,786	59,780	22,006	4,920	14,504	19,291	2,264	1,195
1992	64,039	39,692	24,347	4,142	13,982	18,157	6,855	5,103
1993	52,536	29,018	23,518	3,582	13,886	17,495	7,141	4,917
1994	49,853	27,648	22,205	2,092	14,049	17,597	7,447	4,275
1995	55,246	34,717	20,529	1,736	14,348	16,143	7,464	5,360
1996	55,165	33,375	21,789	2,114	6,913	19,858	6,730	6,802
1997	55,296	33,479	21,817	1,989	7,041	16,797	10,072	6,413
1998	54,900	33,402	21,497	1,585	9,897	18,210	11,599	7,569
1999	57,006	34,104	22,902	1,312	9,063	17,706	12,948	8,228
2000	64,199	40,925	23,275	1,659	10,023	19,238	12,400	8,014
2001	65,233	37,618	27,615	2,532	13,137	22,591	15,629	10,202
2002	55,456	25,468	29,988	2,854	14,132	22,999	18,266	11,837
2003	51,479	20,659	30,820	2,190	18,516	25,766	21,379	13,742
2004	55,872	21,301	34,572	2,601	20,106	30,500	21,576	13,963
2005	72,288	33,464	38,824	2,857	23,845	34,316	25,495	16,416

Table 7

Capital asset ratios and selected income measures at commercial banks, 1962-2005

Year	Capital Asset Ratio (%)	ROA (%)	ROE (%)	Non Interest Revenue to Total Revenue (%)	Net Interest Margin (%)
1962	8.02	0.79	9.89	13.57	2.67
1963	8.08	0.77	9.50	12.95	2.70
1964	7.72	0.75	9.77	12.80	2.70
1965	7.53	0.76	10.13	12.56	2.61
1966	7.44	0.75	10.14	12.16	2.70
1967	7.10	0.78	10.96	12.06	2.68
1968	6.90	0.76	10.97	11.67	2.77
1969	7.18	0.83	11.50	11.43	3.07
1970	7.12	0.85	11.92	12.10	3.30
1971	6.95	0.83	11.88	13.05	2.99
1972	6.62	0.77	11.69	12.97	2.85
1973	6.53	0.80	12.23	11.31	2.90
1974	5.71	0.68	11.95	10.16	2.81
1975	5.88	0.67	11.36	12.99	2.61
1976	6.11	0.66	10.85	9.46	2.97
1977	5.92	0.66	11.20	8.97	2.99
1978	5.80	0.71	12.30	8.47	3.13
1979	5.75	0.76	13.20	7.57	3.19
1980	5.80	0.75	13.02	7.52	3.17
1981	5.83	0.73	12.51	7.04	3.16
1982	5.87	0.68	11.64	7.81	3.27
1983	6.00	0.64	10.62	9.68	3.23
1984	6.14	0.62	10.06	9.58	3.35
1985	6.19	0.66	10.63	11.12	3.47
1986	6.19	0.59	9.56	13.11	3.35
1987	6.02	0.09	1.55	14.49	3.36
1988	6.28	0.79	12.62	14.17	3.50
1989	6.21	0.47	7.60	13.82	3.49
1990	6.45	0.47	7.31	14.63	3.45
1991	6.75	0.52	7.74	17.12	3.58
1992	7.51	0.91	12.14	20.46	3.85
1993	8.00	1.16	14.51	23.42	3.86
1994	7.78	1.11	14.30	22.83	3.80
1995	8.11	1.13	13.94	21.42	3.71
1996	8.20	1.14	13.94	23.02	3.66
1997	8.33	1.18	14.15	23.49	3.65
1998	8.49	1.14	13.39	25.52	3.50
1999	8.36	1.25	14.91	28.30	3.43
2000	8.49	1.13	13.35	26.48	3.40
2001	9.06	1.13	12.44	28.22	3.35
2002	9.15	1.27	13.86	32.54	3.47
2003	9.10	1.35	14.80	35.71	3.27
2004	10.10	1.24	12.32	34.63	3.12
2005	10.09	1.26	12.50	31.66	3.09

Table 8

Total assets and asset composition at thrifts, 1962-2005

Year End	Cash and Investment Securities (%)	Mortgage-backed Securities (%)	Residential Real Estate Loans (%)	Commercial Real Estate Loans (%)	Consumer Loans (%)	Commercial Loans (%)	Other Assets (%)	Total Assets (Million USD)
1962	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
1963	10.37	0.00	84.78	0.00	0.00	0.00	4.85	103,154
1964	9.84	0.00	85.12	0.00	0.00	0.00	5.04	114,672
1965	9.35	0.00	85.36	0.00	0.00	0.00	5.29	124,576
1966	9.00	0.00	85.64	0.00	0.00	0.00	5.37	129,045
1967	9.67	0.00	85.08	0.00	0.88	0.00	4.36	138,489
1968	9.16	0.00	85.80	0.00	0.93	0.00	4.12	147,736
1969	8.48	0.00	86.76	0.00	1.03	0.00	3.73	156,788
1970	9.29	0.00	85.58	0.00	1.12	0.00	4.01	170,645
1971	10.12	0.00	84.79	0.00	1.43	0.00	3.65	199,984
1972	9.96	0.00	84.99	0.00	1.62	0.00	3.43	236,349
1973	7.67	0.00	85.41	0.00	1.22	0.00	5.70	264,797
1974	7.79	0.00	84.50	0.00	1.29	0.00	6.42	288,223
1975	9.05	0.00	82.50	0.00	1.26	0.00	7.19	330,259
1976	9.03	2.71	78.95	0.00	1.64	0.00	7.67	383,172
1977	8.45	2.82	79.04	0.00	1.65	0.00	8.03	449,997
1978	8.73	3.23	76.67	2.17	1.77	1.56	5.86	497,287
1979	8.27	3.59	75.89	2.77	2.20	1.76	5.52	554,358
1980	9.27	4.43	73.71	3.04	2.37	1.94	5.24	603,777
1981	9.54	5.13	71.72	2.85	2.35	2.08	6.33	639,821
1982	11.75	8.90	63.79	2.90	2.42	2.34	7.91	686,225
1983	13.48	11.40	58.16	3.39	2.68	2.82	8.08	813,770
1984	14.47	11.55	53.30	8.93	3.65	1.31	6.79	1,012,969
1985	13.75	10.88	51.13	6.97	4.38	1.77	11.12	1,109,789
1986	14.41	13.76	44.35	7.16	4.43	2.15	13.76	1,208,408
1987	13.66	16.37	43.53	7.21	4.51	1.92	12.81	1,288,981
1988	14.01	15.30	44.22	6.85	4.53	2.53	12.56	1,368,843
1989	13.45	14.19	47.05	6.76	4.62	2.56	11.37	1,186,906
1990	13.32	14.49	49.18	6.31	4.50	2.19	10.03	1,029,165
1991	12.94	14.22	52.01	5.88	4.55	1.89	8.51	895,296
1992	15.77	14.49	52.30	5.30	4.46	0.90	6.79	806,662
1993	15.61	15.43	52.67	4.99	4.57	0.66	6.07	774,775
1994	14.59	16.48	53.65	4.46	4.64	0.67	5.51	774,069
1995	14.14	16.27	53.70	4.26	4.90	0.93	5.79	770,982
1996	12.77	14.42	56.23	4.24	5.18	1.22	5.92	769,367
1997	12.35	13.37	56.43	3.89	5.78	1.48	6.71	776,577
1998	15.50	11.42	54.44	3.61	5.80	1.90	7.34	817,612
1999	16.12	10.98	52.34	3.78	6.53	2.35	7.91	863,606
2000	14.68	10.02	53.02	4.00	6.55	3.00	8.72	928,548
2001	15.38	9.45	52.23	4.02	6.67	3.00	9.25	977,702
2002	14.63	8.94	52.54	4.36	6.31	2.98	10.25	1,004,532
2003	13.71	8.41	54.37	4.28	6.48	3.59	9.18	1,092,630
2004	5.76	12.02	60.48	4.02	5.98	3.11	8.62	1,306,790
2005	5.75	11.79	60.19	3.72	6.60	2.96	8.99	1,463,945

Note: U.S. Thrifts are deposit-taking institutions regulated by the Office of Thrift Supervision.

Table 9

Total assets and asset composition at commercial banks, 1962-2005

Year End	Cash and Investment Securities (%)	Mortgage-backed Securities (%)	Residential Real Estate Loans (%)	Commercial Real Estate Loans (%)	Consumer Loans (%)	Commercial Loans (%)	Other Assets (%)	Total Assets (Million USD)
1962	50.24	n/a	7.89	3.02	10.31	16.44	12.09	295,983
1963	47.44	n/a	8.42	3.38	11.08	16.90	12.78	311,790
1964	46.65	n/a	8.33	3.59	11.54	17.40	12.51	345,130
1965	43.71	n/a	8.57	3.82	12.12	18.98	12.80	375,394
1966	42.92	n/a	8.60	4.05	11.91	19.95	12.56	402,899
1967	44.55	n/a	8.29	3.97	11.41	19.57	12.21	450,647
1968	43.68	n/a	8.23	4.09	11.68	19.62	12.71	500,160
1969	40.29	n/a	8.44	4.20	12.08	20.66	14.34	524,645
1970	41.11	n/a	7.98	4.08	11.58	19.69	15.56	570,158
1971	41.41	n/a	8.19	4.15	11.81	18.69	15.76	633,573
1972	39.72	n/a	8.57	4.34	11.99	18.13	17.26	730,902
1973	35.92	n/a	9.06	4.68	12.17	19.24	18.93	824,960
1974	35.40	n/a	7.92	4.20	10.00	17.76	24.72	1,037,197
1975	38.23	n/a	7.63	4.31	9.83	16.19	23.81	1,086,674
1976	38.08	n/a	7.24	3.49	10.06	15.12	26.01	1,182,412
1977	37.41	n/a	7.59	3.57	10.55	14.72	26.17	1,339,376
1978	36.02	n/a	8.20	3.55	11.40	20.40	20.43	1,507,936
1979	34.91	n/a	8.46	3.52	11.39	20.75	20.97	1,691,789
1980	35.40	n/a	8.26	3.44	10.10	21.07	21.72	1,855,687
1981	32.86	n/a	7.99	3.31	9.48	22.44	23.92	2,028,982
1982	31.96	n/a	7.57	3.29	9.07	22.98	25.13	2,193,339
1983	32.71	n/a	7.54	3.48	9.59	22.41	24.27	2,342,101
1984	28.27	n/a	7.67	3.83	10.64	22.53	27.06	2,508,749
1985	28.57	n/a	7.74	4.15	11.32	21.14	27.08	2,730,672
1986	29.39	n/a	8.11	4.77	11.42	20.42	25.90	2,940,699
1987	29.30	n/a	9.36	5.58	11.71	19.63	24.41	2,999,949
1988	28.48	n/a	10.22	6.04	12.07	19.17	24.02	3,130,796
1989	27.55	n/a	11.24	6.53	12.16	18.75	23.78	3,299,362
1990	27.22	n/a	12.44	7.03	11.90	18.14	23.27	3,389,490
1991	29.04	n/a	13.25	7.27	11.42	16.29	22.72	3,430,682
1992	30.55	n/a	14.00	7.35	10.99	15.29	21.81	3,505,663
1993	29.94	n/a	14.72	7.22	11.31	14.53	22.28	3,706,165
1994	28.09	n/a	14.98	7.06	12.15	14.69	23.03	4,010,517
1995	25.91	n/a	15.34	6.92	12.41	15.34	24.07	4,312,676
1996	24.83	n/a	15.15	6.90	12.28	15.50	25.34	4,578,325
1997	24.45	n/a	15.14	6.81	11.26	15.84	26.50	5,018,532
1998	24.56	n/a	14.86	6.81	10.49	16.51	26.78	5,442,604
1999	24.64	n/a	15.56	7.28	9.74	16.90	25.88	5,735,135
2000	23.20	n/a	15.66	7.47	9.71	16.84	27.11	6,245,560
2001	23.85	n/a	15.71	7.72	9.61	14.97	28.14	6,552,421
2002	24.29	n/a	17.41	7.86	9.94	12.87	27.63	7,076,584
2003	24.26	n/a	17.87	7.93	10.13	11.44	28.37	7,601,142
2004	23.05	n/a	18.66	7.93	9.97	10.80	29.59	8,412,844
2005	23.45	n/a	20.89	8.77	9.95	12.12	33.60	9,039,739

Note: Mortgaged-backed securities holding are included in cash and investment securities.

Table 10

Total liabilities and liability composition at commercial banks, 1962-2005

Year End	Total Deposit (%)	FHLB Advances (%)	Other Borrowings (%)	Other Liabilities (%)	Equity Capital (%)	Total Liabilities and Capital (Million USD)
1962	88.33	n/a	1.22	2.43	8.02	295,983
1963	88.09	n/a	1.19	2.64	8.08	311,790
1964	88.73	n/a	0.99	2.57	7.72	345,130
1965	88.31	n/a	1.60	2.57	7.53	375,394
1966	87.58	n/a	1.60	3.38	7.44	402,899
1967	87.83	n/a	1.67	3.39	7.10	450,647
1968	86.90	n/a	2.16	4.04	6.90	500,160
1969	83.29	n/a	3.94	5.59	7.18	524,645
1970	84.63	n/a	3.85	4.41	7.12	570,158
1971	85.10	n/a	4.62	3.32	6.95	633,573
1972	84.40	n/a	5.87	3.11	6.62	730,902
1973	82.62	n/a	7.58	3.27	6.53	824,960
1974	84.00	n/a	6.20	4.09	5.71	1,037,197
1975	84.28	n/a	6.05	3.79	5.88	1,086,674
1976	83.89	n/a	7.26	2.73	6.11	1,182,412
1977	83.37	n/a	7.71	3.00	5.92	1,339,376
1978	81.79	n/a	8.79	3.61	5.80	1,507,936
1979	80.55	n/a	9.47	4.22	5.75	1,691,789
1980	79.82	n/a	9.93	4.46	5.80	1,855,687
1981	78.30	n/a	10.76	5.11	5.83	2,028,982
1982	77.77	n/a	11.17	5.19	5.87	2,193,339
1983	78.67	n/a	10.40	4.94	6.00	2,342,101
1984	78.24	n/a	10.82	4.80	6.14	2,508,749
1985	77.57	n/a	12.27	3.97	6.19	2,730,672
1986	77.65	n/a	12.78	3.37	6.19	2,940,699
1987	77.85	n/a	12.65	3.48	6.02	2,999,949
1988	77.67	n/a	12.72	3.33	6.28	3,130,796
1989	77.24	n/a	13.30	3.25	6.21	3,299,362
1990	78.19	n/a	12.07	3.29	6.45	3,389,490
1991	78.34	2.30	9.49	3.11	6.75	3,430,682
1992	76.98	2.28	10.28	2.94	7.51	3,505,663
1993	74.32	2.78	11.66	3.24	8.00	3,706,165
1994	71.67	3.14	11.90	5.51	7.78	4,010,517
1995	70.20	3.07	12.48	6.14	8.11	4,312,676
1996	69.83	3.52	12.41	6.04	8.20	4,578,325
1997	68.18	4.03	12.64	6.82	8.33	5,018,532
1998	67.64	5.30	11.72	6.85	8.49	5,442,604
1999	66.80	6.90	11.88	6.06	8.36	5,735,135
2000	66.92	7.01	11.15	6.43	8.49	6,245,560
2001	66.81	7.21	10.59	6.32	9.06	6,552,421
2002	66.27	6.92	10.97	6.69	9.15	7,076,584
2003	66.16	6.76	11.22	6.75	9.10	7,601,142
2004	66.48	6.91	10.03	6.48	10.10	8,412,844
2005	67.19	6.86	10.24	5.62	10.09	9,039,739

Table 11

Description of variables

Variable	Description	Maximum Value	Minimum Value	Mean	Median	Standard Deviation
T_ROA	Return-on-asset ratio, %	1.3	-1.0	0.5	0.6	0.6
T_GAAP	Capital-asset ratio, %	9.5	2.7	6.2	6.4	1.9
AVGSPD	Average interest rate spread between ten-year treasury bill and three-month treasury bill, basis points	349.5	-62.1	142.2	141.2	113.4
T_RREL	Real estate loans as share of total loans, %	86.8	49.9	67.4	62.4	13.8
DNEG	Dummy variable, 1 if the yield curve inverts in a year; 0 otherwise	1.0	0.0	0.4	0.0	0.5
DSNL	Dummy variable, 1 if the year is 1980, 1981, or 1982; 0 otherwise	1.0	0.0	0.1	0.0	0.3
MAXCONDAY	Maximum number of consecutive days that the yield curve inverts in a year	209.0	0.0	26.7	0.0	50.2
MAXSPD	The absolute value of the largest negative spread between ten-year Treasury bond and three-month Treasury bill, basis points	373.0	0.0	43.4	0.0	91.6
NEGDAY	Number of days the yield curve inverts as share of total trading days in a year, %	96.8	0.0	13.6	0.0	24.6

Table 12

Pair-wise correlation of variables

	T_ROA	T_ROA(-1)	T_GAAP	AVGSPD	T_RREL	DNEG	DSNL	MAXCONDAY	MAXSPD	NEGDAY
T_ROA	1									
	40									
T_ROA(-1)	0.85***	1								
	39	39								
T_GAAP	0.82***	0.75***	1							
	40	39	40							
AVGSPD	0.08	-0.07	-0.05	1						
	40	39	40	40						
T_RREL	0.17	0.24	-0.01	-0.38**	1					
	40	39	40	40	40					
DNEG	-0.08	0.02	0	-0.76***	0.46***	1				
	40	39	40	40	40	40				
DSNL	-0.45***	-0.22	-0.3*	-0.21	0.13	0.35**				
	40	39	40	40	40	40	40			
MAXCONDAY	0.01	0.19	-0.03	-0.7***	0.42***	0.66***	0.22	1		
	40	39	40	40	40	40	40	40		
MAXSPD	-0.21	0.06	-0.17	-0.61***	0.35**	0.59***	0.67***	0.81***	1	
	40	39	40	40	40	40	40	40	40	
NEGDAY	-0.1	0.08	-0.07	-0.75***	0.4**	0.69***	0.29*	0.92***	0.84***	1
	40	39	40	40	40	40	40	40	40	40

Note: ***, ** and ** denote significance level at 1, 5, and 10 percent, respectively.

Table 13

Summary of regression results

	Dependent Variable: T_ROA					
	1	**2**	**3**	**4**	**5**	**6**
C	-1.0788***	-1.0706***	-0.9391**	-1.1084***	-0.8623**	-1.0286***
	0.0032	0.0042	0.0226	0.0051	0.0324	0.0071
T_ROA(-1)	0.4908***	0.4877***	0.4813***	0.4793***	0.5545***	0.5019***
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
T_GAAP	0.1358***	0.1362***	0.1186***	0.1388***	0.1122***	0.1319***
	0.0002	0.0002	0.0004	0.0002	0.0030	0.0003
AVGSPD	0.0009**	0.0008***	0.0007**	0.0010*	0.0005	0.0008*
	0.0284	0.0051	0.0151	0.0538	0.1357	0.0520
T_RREL	0.0052*	0.0054*	0.0057*	0.0051*	0.0054*	0.0053*
	0.0546	0.0641	0.0949	0.0544	0.0832	0.0508
DNEG		-0.0330				
		0.7421				
DSNL			-0.4447***			
			0.0002			
MAXCONDAY				0.0003		
				0.6903		
MAXSPD					-0.0010*	
					0.0850	
NEGDAY						-0.0011
						0.5690
Adjusted R-squared	0.8061	0.8007	0.8432	0.8007	0.8170	0.8014
Included observations	40	40	40	40	40	40
Durbin-Watson stat	1.4745	1.4805	1.4089	1.4620	1.5528	1.5133
F-statistic	41.52	32.34	42.96	32.34	35.82	32.47

Note: ***, ** and ** denote significance level at 1, 5, and 10 percent, respectively.

Table 14

Sensitivity of market value capital ratio to interest rate increases 1998-2006

	Pre-shock NPV Ratio: NPV as % of PV Assets	**Post-200 bp-shock NPV ratio**	**Decline in NPV ratio**	**TB 13a Level of Risk**
1998	9.22%	7.92%	131 bp	n.a.
1999	8.41%	6.01%	240 bp	n.a.
2000	8.87%	7.19%	168 bp	n.a.
2001	10.35%	9.08%	126 bp	Minimal
2002	10.05%	9.55%	50 bp	Minimal
2003	10.90%	9.26%	165 bp	Minimal
2004	11.29%	9.70%	159 bp	Minimal
2005	11.09%	9.37%	172 bp	Minimal
June 2006	10.99%	8.88%	211 bp	Moderate

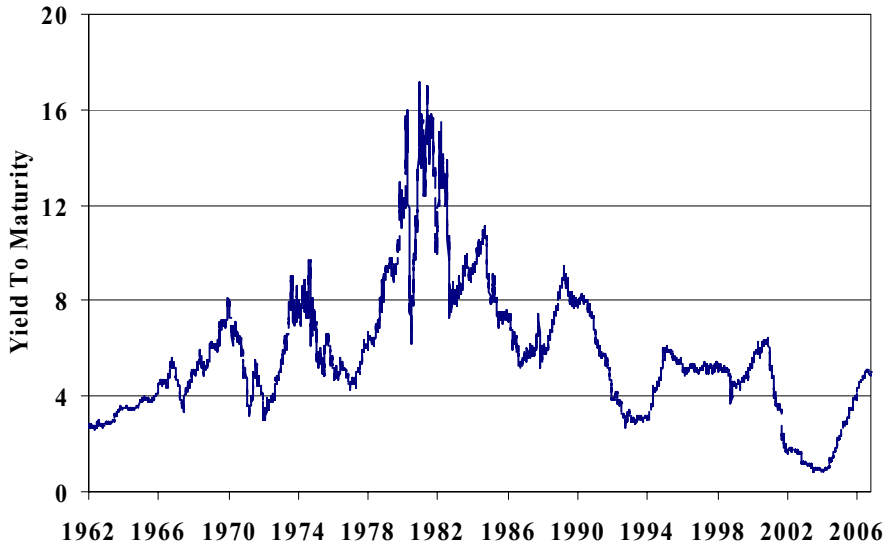
Source: Office of Thrift Supervision.

Table 15

Composition of single-family loans and MBS by FRMS and ARMS 1998-2006

	Total Single Family Loans and MBS (US$ Millions)	Share of Total (%)		
		Fixed-Rate Loans and MBS	Current Market ARMs	Option-Adjusted ARMs
1998	467,132	45.1	26.3	28.5
1999	473,222	43.8	27.4	28.8
2000	501,141	40.1	29.4	30.5
2001	497,072	45.1	25.6	29.3
2002	507,951	44.0	26.6	29.4
2003	549,646	39.3	30.9	29.7
2004	700,379	35.2	30.8	34.0
2005	755,211	35.6	31.9	32.5
June 2006	785,718	36.7	32.4	30.9

Source: Office of Thrift Supervision.



Note: Prior to 1982, the three-month Treasury market rate is used.

Fig. 1. U.S. Treasury three-month yield, January 2, 1962, to October 13, 2006

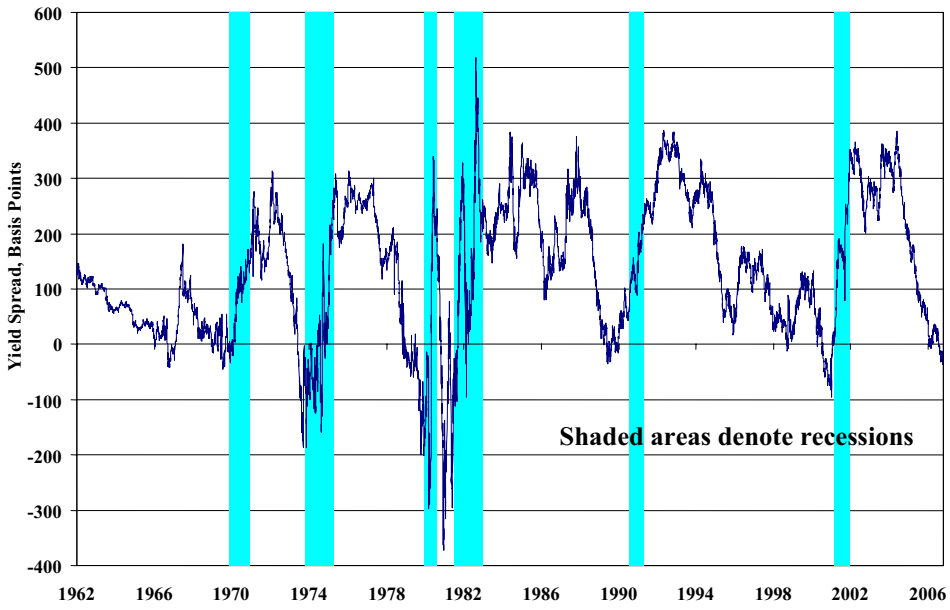


Fig. 2. Yield spread: Ten-year Treasury minus three-month Treasury, January 2, 1962, to October13, 2006

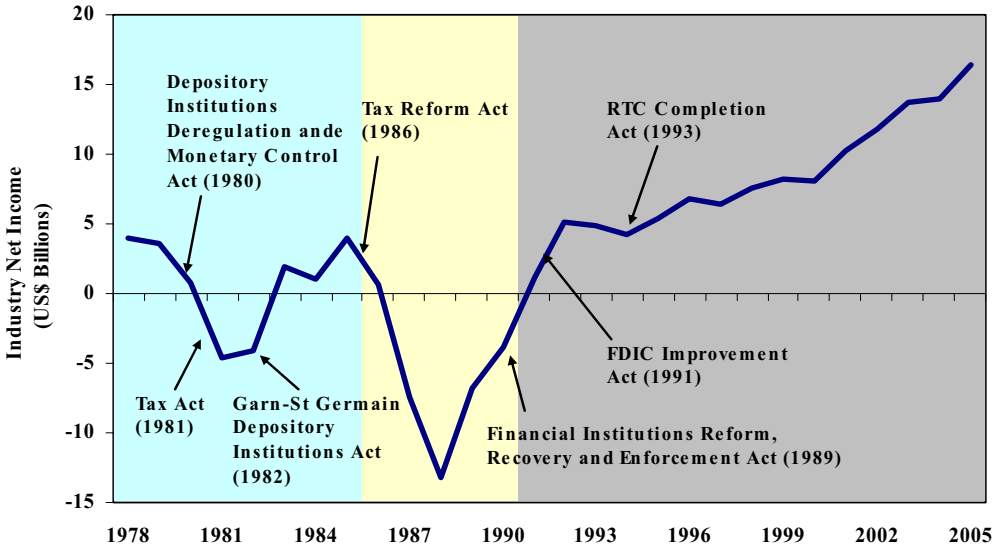


Fig. 3. Thrifts income and selected regulations, 1978-2005

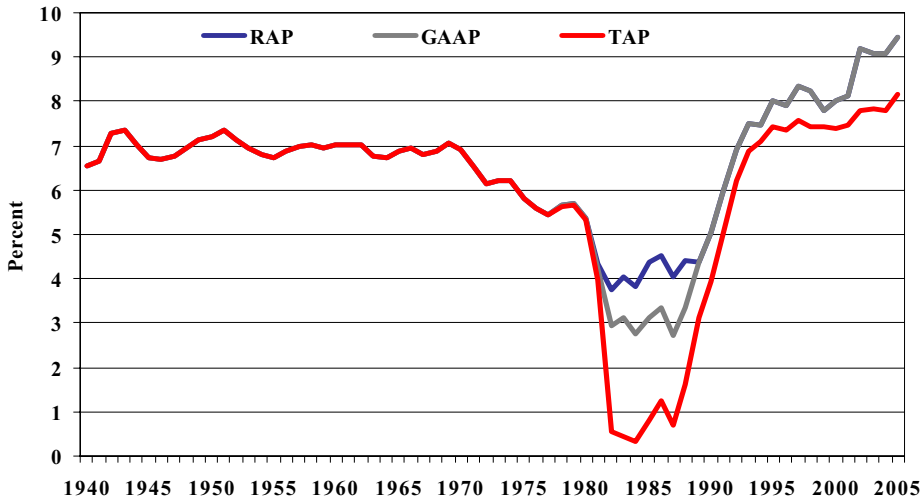


Fig. 4. Capital-to-asset ratio for thrifts, 1940-2005

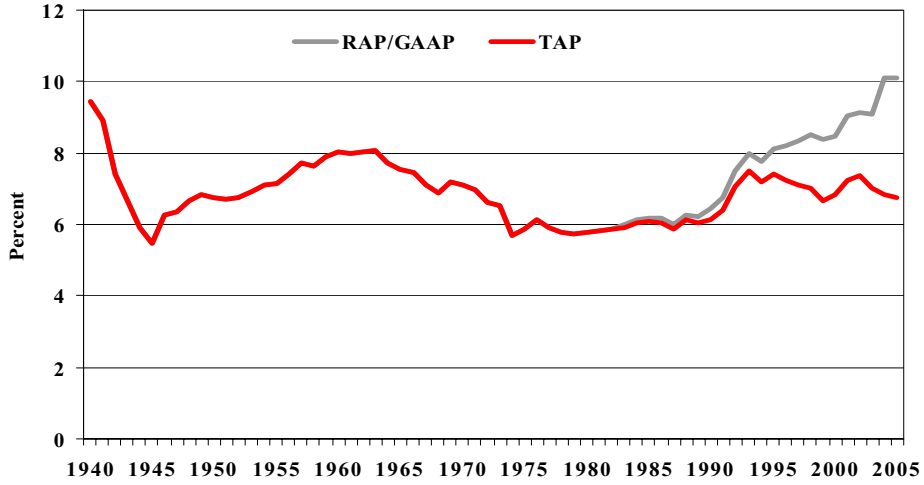


Fig. 5. Capital-to-asset ratio for commercial banks, 1940-2005

Fig. 6. Comparing asset composition of thrifts, 1970, 1980, 1990, and 2005

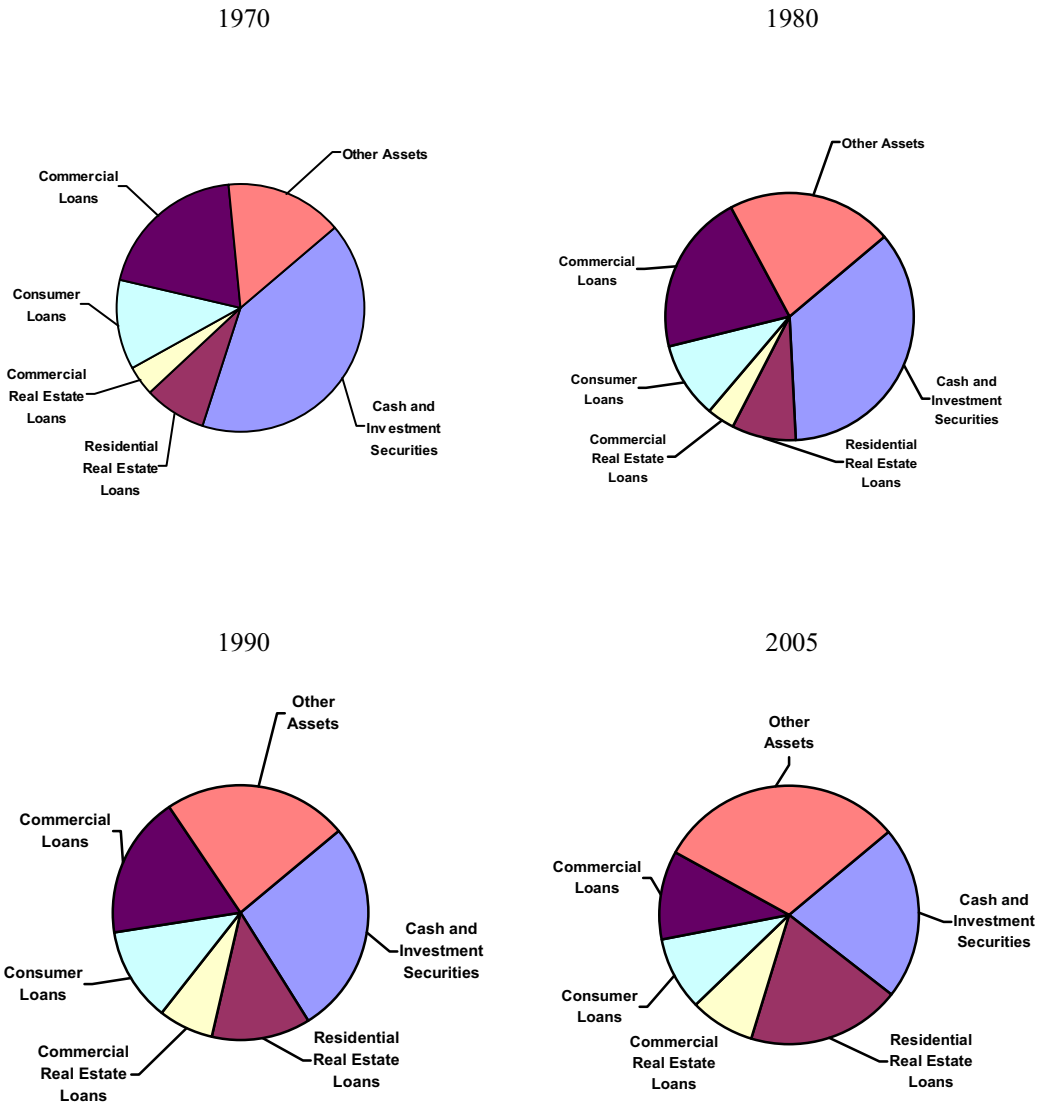


Fig. 7. Comparing asset composition of commercial banks, 1970, 1980, 1990, and 2005