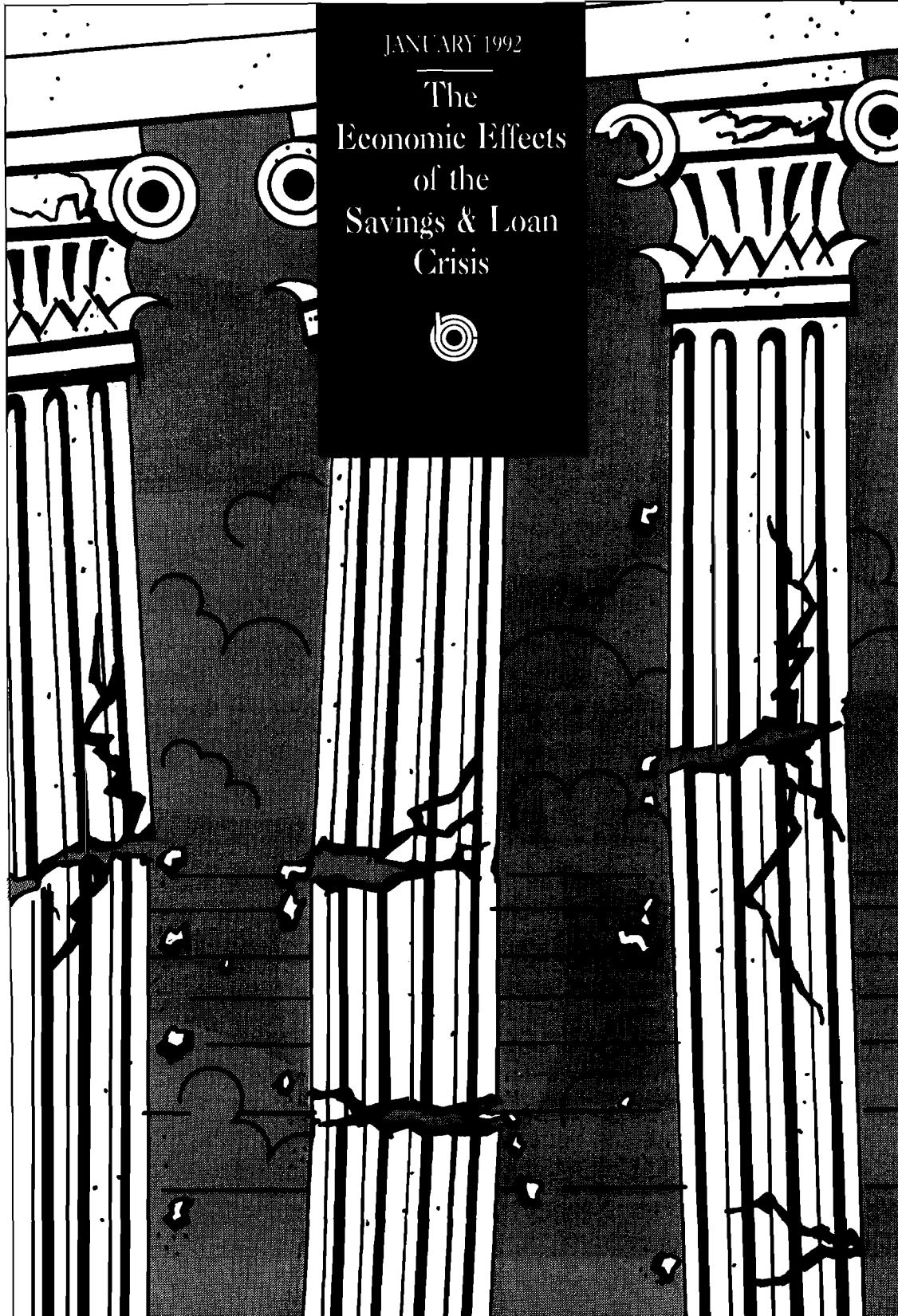CONGRESS OF THE UNITED STATES
CONGRESSIONAL BUDGET OFFICE

A
CBO
STUDY

JANUARY 1992

The
Economic Effects
of the
Savings & Loan
Crisis

THE ECONOMIC EFFECTS
OF THE SAVINGS & LOAN CRISIS

The Congress of the United States
Congressional Budget Office

Preface

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Summary

The $200 billion budgetary cost of cleaning up the mess in the savings and loan (S&L) industry has raised grave concerns about the possible economic consequences and, not least, about preventing a recurrence in the future. What, then, are the economic effects of the S&L breakdown and the resulting federal spending? Are the effects quantitatively significant, and to what extent are they still going on? Moreover, could the economic effects of this crisis be eased by following a different fiscal policy--for example, by resolving failing thrift institutions so that the budget costs are not squeezed together in a few years?

The S&L crisis has already cost the economy a startling amount, and even now the costs continue to mount. Although it is difficult to be precise, illustrative calculations suggest that the overall effect of the losses sustained in the S&L industry and of the buildup of implicit and explicit federal budget obligations for deposit insurance has been to reduce gross national product (GNP) below what it otherwise would have been. Indeed, it has pushed down GNP by amounts that may have averaged $19 billion per year in 1990 dollars during the 1980s and could rise to nearly $40 billion, or about two-thirds of one percent of GNP, in the first half of the 1990s.

However, all of the economic effects of the losses the S&L industry suffered are difficult to untangle. Part of the reason is the important role of federal deposit insurance--a program that commits the federal government to make good on most deposits in insured S&Ls even when those institutions fail. The incentives that federal deposit insurance created for the S&L industry have caused it to channel some of the nation's saving into inefficient and sometimes entirely worthless projects instead of into household and business assets that would have expanded national welfare and GNP. Moreover, because many insolvent S&Ls continue to operate, this misallocation of resources continues, and is still causing losses in GNP.

Federal budgetary obligations under deposit insurance, even implicit ones, also have short-term and long-term economic effects that are reflected in the Congressional Budget Office's (CBO's) estimate of an overall loss to the economy. These economic effects show that deposit insurance is part of the fiscal policy through which the federal budget affects the economy.

o   Deposit insurance has impeded the long-term recovery of the economy from losses in productive capital by depressing the saving of households. If Americans saved more in order to replace the wealth that is being lost as a result of poor investments by S&Ls, they would help more quickly to replace the productive capital that has been wasted as part of the S&L disaster.

o   In the short term, deposit insurance averted the reductions in consumption that would otherwise have occurred

when S&L investments became un-profitable. In that sense, other things being equal, deposit insurance slightly *increased* GNP in the short term by stimulating consumption, and with it, aggregate demand and GNP. This in-crease probably offset in the short run some of the loss in GNP that was caused by bad S&L investments. However, it dissipates in the long run.

Federal deposit insurance exerted these ef-fects primarily at the time the S&Ls' assets become worth less than their liabilities. As S&Ls went belly up, large implicit federal ob-ligations arose because the government is al-ready committed to protect the value of in-sured deposits. These obligations were not re-corded in the budget at the time they first arose, nor was their magnitude widely recog-nized. Still, these federal obligations exert im-portant economic effects as they accrue.

Yet only a small proportion of the overall cost is related to the way the problems of the thrift industry were financed under the de-posit insurance program. Another problem was that the deposit insurance system did not give timely notice to taxpayers of the obliga-tions it was implicitly accruing, and this factor collaborated in reducing private saving at a time when saving was already low.

The reduction in national saving and capital accumulation as a result of the financing of deposit insurance in the 1980s will reduce real GNP in the first half of the 1990s by about $6 billion per year in 1990 dollars. In contrast, borrowing to finance the resolution of failing thrifts has no significant negative economic effects: as opposed to borrowing to finance the ordinary operations of government, it will not raise interest rates significantly or reduce the amount of credit available to private bor-rowers. In fact, such borrowing could cause taxpayers to save more as they anticipate high-er taxes or lower spending for other govern-ment programs that may later be needed to pay interest on the higher federal debt. Thus, no economic case can be made for delaying borrowing for thrift resolutions.

Something Happened: What Went Wrong with the S&Ls?

Federal deposit insurance was one of the ma-jor reforms of the 1930s. It was introduced to deal with the serious problems of banks clos-ing before and during the Depression, closings that tragically caused many people to lose a substantial portion of their savings and shat-tered local economies throughout the country. The purpose of deposit insurance was to sta-bilize the nation's financial system and protect small savers. During most of the post-World War II period, the system worked well and without great cost to the government.

Deposit Insurance and Moral Hazard

Deposit insurance, however, had several im-portant side effects on the economy. With de-posit insurance, managers and depositors of fi-nancial institutions had less incentive to guard against risk. This problem or temptation as it were, referred to as "moral hazard," is not unique to deposit insurance, but is a feature of insurance generally. Also, by making it more attractive for savers to put their funds in banks and thrifts, deposit insurance encour-aged growth in the sectors of the economy to which banks and thrifts lend. In the case of thrifts, regulations and incentives led them to specialize in residential construction and real estate development--sectors that, especially in the early 1980s, were also favored by tax in-centives.

Other Causes of the S&L Losses

A number of other factors contributed to the S&L losses in the late 1970s and 1980s. Es-calation in interest rates and increased com-petition raised the cost of funds to S&Ls, while their income from previously issued mortgages did not increase correspondingly. To take another factor, the resulting profit

squeeze strained the industry and caused the owners' capital to erode.

A number of additional shocks also rocked the economy, such as the precipitous decline in oil prices early in the 1980s, and the widespread softness in real estate markets toward the end of the decade. In hindsight, regulators made the situation much worse than it would otherwise have been by using a policy of forbearance.

Thrifts that the government would have taken over under earlier, more stringent standards were allowed to remain open. Moreover, when capital was dissipated in the S&L industry, the temptation of moral hazard became much worse. At that point, the S&Ls with low capital had little to lose and potentially much to gain by betting the S&L in hopes of large payoffs. It was a case where a wild roll of the dice might save the day.

A contributing factor behind the policy of forbearance was the mistaken belief that the S&L difficulties were only the temporary result of high interest rates and, given time, would resolve themselves. As a result, funds were sometimes not made available to resolve all the problem S&Ls, and the regulatory and accounting standards were watered down. Thus, the regulatory strategy--broadly construed--failed woefully. Although the industry briefly showed signs of a comeback following the 1982 recession, its recovery proved to be short-lived. Fraud was also a factor, but it was not a fundamental cause of the disaster.

How Much Did the S&L Losses Affect the Overall Economy?

CBO's estimates of the economic impacts of the S&L losses are drawn from a simulation model of the U.S. economy, the McKibbin-Sachs Global model, together with estimates

of losses in productive capital and of government spending on the S&L disaster.

The results are intended to be illustrative only, but they do indicate sizable losses to GNP and consumption, as well as increased levels of interest rates from the 1980s through the 2010s. For example, the combined loss to GNP for the 1981 through 1990 period, expressed in 1990 dollars, may be as large as $200 billion, with an estimated loss approaching a massive $300 billion in the 1990s. Little of this loss is attributed to the fiscal policy aspects of deposit insurance, since most is the result of losses in productive capital stemming from unwise investments made by S&Ls that failed.

Estimating Capital Losses and Government Spending

A year-by-year estimate of losses in productive capital as a result of the S&L disaster is necessary information in simulating the overall effects. Because no such estimate exists, CBO developed rough figures based on estimated annual losses to insolvent S&Ls combined with plausible assumptions concerning the percentage of collateral behind loans the S&Ls held and the typical reduction in market values for assets held by S&Ls that failed.

The result is a rough guide to the annual losses in the stock of productive capital that can be attributed to bad investments made by S&Ls that failed. These estimates may be too large or too small compared with the true capital losses. The economic effects would be approximately half (or twice) as large if the assumed capital losses were half (or twice) as large.

What Happens to GNP and Real Long-Term Interest Rates?

The estimated impacts of the S&L crisis on gross national product and real long-term in-

terest rates give a flavor of the results from the simulation model. The model is used to determine how far the economy would diverge from its baseline path as a result of each of three separate aspects of the S&L losses: reductions in the capital stock, rising federal obligations under the deposit insurance system, and the financing of government obligations through borrowing (see Summary Figure 1 for the combined effects on GNP arising from these three factors).

The peak loss to GNP occurs in 1992 and is about $42 billion in 1990 dollars, or about 0.7 percent of baseline output. Behavior of the components of GNP contributes to this pattern. Both consumption and investment remain below baseline levels throughout the simulation period (1981-2017), while the trade balance dips downward until 1988, and then gradually rises until it surpasses the baseline level after 1995.

The implications of fiscal policy of the S&L losses play a relatively small role in explaining the behavior of output. Consumption is

Summary Figure 1.
Simulated Impact of the S&L Crisis on Gross National Product According to Scenario 3, 1981-2007 (By calendar years)
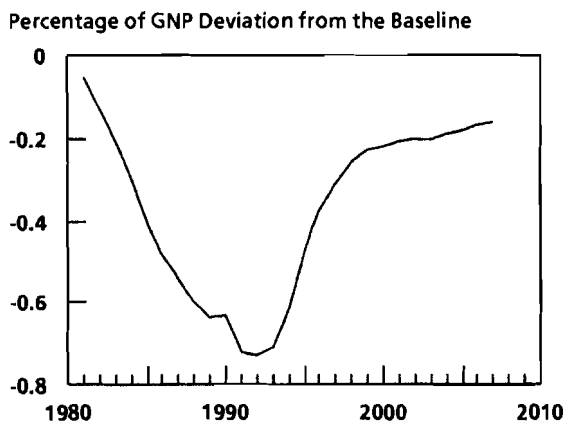
Percentage of GNP Deviation from the Baseline

SOURCE: Congressional Budget Office.

NOTE: Scenario 3, shown in this figure, combines the three separate aspects of the S&L losses: reductions in the capital stock, rising federal obligations under the deposit insurance system, and the financing of government obligations through borrowing.

Summary Figure 2.
Simulated Impact of the S&L Crisis on Real Long-Term Interest Rates According to Scenario 3, 1981-2007 (By calendar years)
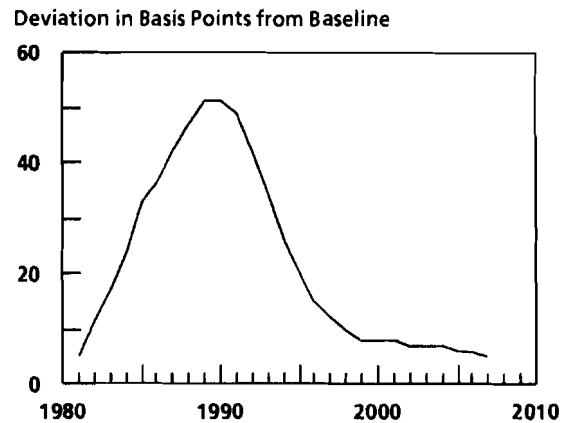
Deviation in Basis Points from Baseline

SOURCE: Congressional Budget Office.

NOTE: Scenario 3, shown in this figure, combines the three separate aspects of the S&L losses: reductions in capital stock, rising federal obligations under the deposit insurance system, and the financing of government obligations through borrowing.

boosted to some degree by the implicit accrual of government obligations in the 1980s, as opposed to the case of losses in productive capital only. Lower investment and a reduction in the trade balance, however, largely offset the effect of this increase in demand on GNP.

Household wealth determines in part consumption, and wealth was higher in the 1980s than it would have been without the support that deposit insurance provided. Lower saving reduced investment and the trade balance. They were also pushed down by higher long-term interest rates that increased the cost of financing investment and increased the foreign exchange value of the dollar, thereby reducing exports and raising imports.

Real long-term interest rates remained elevated above baseline levels throughout the simulation period (see Summary Figure 2). They reached a peak of about one-half of one percentage point above baseline levels in 1989. The foreign exchange value of the dollar followed the pattern of the real long-term

interest rate, with its peak occurring in 1989 as well.

Those simulation results indicate that real long-term interest rates may actually fall slightly at the time that the government announces its plan to borrow funds in order to carry out its obligations under deposit insurance and resolve the S&L failures. This result comes from the particular assumptions used in the model, and might not occur with other assumptions, though no reasonable assumptions are likely to reverse it.

According to the model, interest rates could decline as some households increase their saving in anticipation of higher taxes or lower federal spending for other programs in the future to pay interest on the additional government debt. In 1990, when the plan is announced, long-term real interest rates might decline slightly from where they would have been without the thrift resolutions. This decline in interest rates would grow in later years. The loss in productive capital and the corresponding increase in the productivity of capital assures, however, that interest rates would not fall below where they would have been had the S&L disaster not taken place.

The Economic Effects Still Roll On

Failures among insured S&Ls continue, and the costs of the program are expected to keep mounting during the 1990s. New CBO estimates presented in Summary Table 1 show that significant federal obligations under deposit insurance for savings and loan institutions will continue to accumulate steadily during the early years of the 1990s before falling off in the middle of the decade. Partly as a result, as the figures discussed above make clear, the harshest impacts of the crisis in reducing GNP are estimated to be felt during the early 1990s.

Summary Table 1.
Estimates of Federal Costs for Deposit Insurance for S&Ls (By fiscal years, in billions of current dollars)

	Estimated Accrued Costs	Outlays
1980	0.6	0.6
1981	2.0	0.4
1982	5.5	-0.6
1983	6.9	-0.5
1984	9.2	-0.6
1985	10.3	0.6
1986	12.7	1.1
1987	16.1	5.3a
1988	18.0	11.3a
1989	14.7	23.6a
1990	21.3	69.9a
1991	23.9	76.3a
1992	28.1	96.2
1993	26.2	53.1
1994	21.3	37.1
1995	8.7	-26.5
1996	1.2	-34.7

SOURCE: Congressional Budget Office.

a. Includes borrowing of the Resolution Funding Corporation in 1990 and 1991 and the Financing Corporation in 1988 and 1989, shell corporations that were created solely to borrow funds for S&L resolutions.

Incorporating Deposit Insurance into Fiscal Measures

Policymakers have faced another problem in dealing with the problems of S&Ls. That obstacle is the federal budget, which is based on cash accounting. Federal financial obligations under deposit insurance mounted steadily during the 1980s. Still, the budget showed no sign of these costs until quite late in the decade, when the government began recognizing and paying off its liabilities. As a re-

sult, policymakers had no warning from the budget about the amount of resources that the deposit insurance system was diverting from other uses into resolving insolvent thrifts until the taxpayers were already irrevocably saddled with onerous costs.

In addition to the issue of whether or not the budget signals the effects of such "resource allocation" in a timely manner, analysts worry that the budget has failed to reflect adequately the size of the impact that accruing federal obligations under deposit insurance have been having on the economy. As pointed out above, these obligations can affect both the short-term and long-term strength of the economy, much as other federal expenditures and taxes do. But the conventional treatment of deposit insurance on a cash basis in the budget clearly misrepresents the magnitude and timing of these effects of fiscal policy. This misrepresentation arises because such effects are more directly related to the accrual of new federal obligations for deposit insurance, which do not appear in the budget, than to cash payments under the program, which do.

Analysts have proposed reforms to the budgetary treatment of deposit insurance, which are summarized in a recent CBO study, *Budgetary Treatment of Deposit Insurance: A Framework for Reform* (May 1991). To give a preliminary sense of what is at stake, CBO has developed a measure of the standardized-employment federal deficit--the measure most often used for analyzing fiscal policy--showing costs for deposit insurance not on a cash basis, as at present, but at the time when it estimates that federal costs first arose (see Summary Figure 3).

If it were possible to generate figures on an accounting basis similar to this as part of annual budget-planning exercises, the efforts to anticipate and control federal costs under deposit insurance would clearly benefit. The measure would also prove better for planning fiscal policy than does the conventional cash-based deficit. As shown in the body of this study, however, a revised budgetary measure may not be demonstrably superior for the planning of fiscal policy than the simple method of excluding from the budget nearly all outlays related to deposit insurance.

Summary Figure 3.
Effect of Estimated Thrift Losses on the Standardized-Employment Deficit, 1980-1996 (By fiscal years)
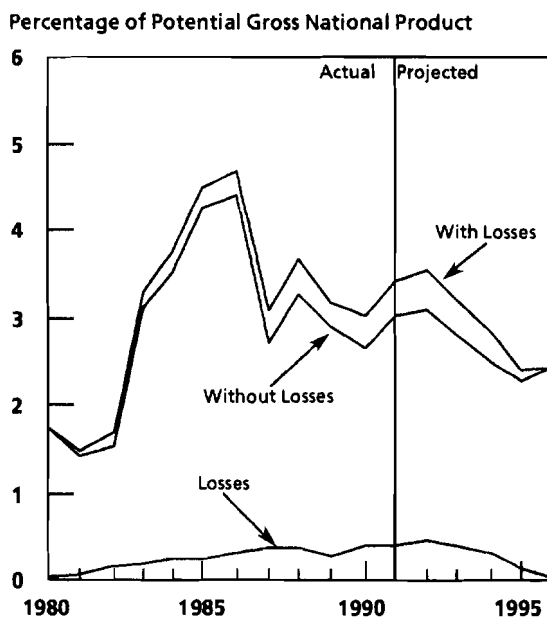
SOURCE: Congressional Budget Office.

Introduction

The crisis of the savings and loan (S&L) industry in the 1980s has cost the economy an exorbitant amount. This cost is substantial whether one measures it by the extent of misallocated or plainly wasted resources or by the amount that taxpayers will have to pay to protect savers from the losses of failed institutions. Moreover, waste of such incredible magnitude has had significant economic effects, including both reduced output and increased interest rates.

Even before the thrift crisis jolted the nation, large federal deficits were dimming the nation's economic prospects. It is only natural for one to ask whether the increase in the deficit to finance the resolution of failed savings and loans (and other depository institutions) under the federal system of deposit insurance will damage the economy even further. Moreover, what ultimate effects will this misadventure have on future generations?

Deficits generally work to increase interest rates and ultimately to slow the growth of the economy by reducing the national saving rate. Resolving the S&L crisis would seem to add to these problems, since it involves huge federal payments to make good on its commitments to deposit insurance, and correspondingly huge federal borrowing. A substantial portion of the borrowing for the S&L crisis is temporary; it will be repaid once the assets of failed S&Ls are sold. Nonetheless, asset sales are not going to match a large amount of the

borrowing--more than $200 billion. Hence, its servicing will fall on taxpayers.

This study will show that, by and large, these cash outlays will not work to slow economic growth and raise interest rates. Rather, the important economic effects stem from the misallocation of investments, such as office buildings and apartment complexes that should not have been built, and from federal budget liabilities that occurred as the S&L industry suffered losses on their investment portfolios.

Why Deposit Insurance Was Established and How It Is Supposed to Work

Federal deposit insurance was established during the depression of the 1930s to deal with bank and thrift closings on a massive scale. Depositors lost large portions of their savings in a plague of bank failures that threw into chaos farms, businesses, and local communities. Understandably, people were so frightened that a mere rumor that a bank or thrift would be closed could set off a run on deposits, which many times itself guaranteed that the failure would occur. To deal with these severe problems, the Federal Deposit Insurance Corporation (FDIC) was estab-

lished to insure bank deposits, and the Federal Savings and Loan Insurance Corporation (FSLIC) was created to insure deposits at thrift institutions. Many analysts consider these measures to be among the most important and enduring reforms of the depression era.

To understand what went wrong during the savings and loan mishap of the 1980s, one needs to review how federal deposit insurance worked during normal times--that is, until the late 1970s. For the most part, deposit insurance did its job well, although, together with the government regulation of financial markets, it caused some changes in the allocation of resources.[1]

Federal deposit insurance works basically as follows. Financial institutions that meet regulatory requirements may offer deposit insurance up to a specified amount on each deposit. Under the current structure of federal deposit insurance, depositors--not depository institutions--are the ones insured. Depository institutions are currently allowed to offer insured deposits up to a maximum of $100,000 per insured account. The Depository Institutions Deregulation and Monetary Control Act of 1980 raised the maximum insured amount on each deposit from $40,000 to $100,000. The depository institution is charged a premium based on the amount of its deposits. These premiums are used to cover the administrative costs of the system and to meet expenses that are incurred in resolving troubled depository institutions.

The remaining funds--usually the vast majority--go into a reserve fund to meet future claims. If a depository institution becomes insolvent--that is, when its liabilities exceed its assets--the federal government takes charge of the institution. Usually, the government arranges a merger or acquisition with another stable firm, so that the institution experiences minimal disruption in the services it provides.

The government often pays something to the acquiring institution. When a purchase or acquisition is not possible, the government closes the institution and pays off the depositors. The funds accumulated from the deposit insurance premiums are used to pay for these various types of resolutions.

Because insurance premiums have traditionally been the same regardless of the riskiness of the institutions' investments, the system has tended to subsidize risk-taking.

In short, deposit insurance contributes to stable economic growth in two primary ways. First, public confidence in the government's guarantee of deposits essentially scotches the likelihood of massive withdrawals of deposits by worried depositors upon hearing the first whisper of any possible serious trouble at depository institutions. Second, deposit insurance provides a safe haven for small savers. As a result, insured depository institutions have enjoyed a stable supply of funds that they could then lend to borrowers.

Before the 1980s, the deposit insurance system did not result in net costs in the federal budget. Deposit insurance premiums and the interest on the accumulated balances covered the claims on the system and its administrative expenses. Some insured institutions were expected to fail even in normal times because of bad luck or bad management. But the system as a whole offered the advantage that such risks would be pooled and that in any

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1.   For a more detailed analysis of federal deposit insurance, see Congressional Budget Office, *Reforming Federal Deposit Insurance* (September 1990).

one period isolated problems would be relatively insignificant in the overall picture. Although many areas might experience difficulties simultaneously during recessions, the system as a whole could prepare for these times by building up reserves. In that sense, it was a safe and sound system. Yet there was, in fact, one potential flaw.

The Temptation of Moral Hazard

A major weakness of deposit insurance is that it creates "moral hazard," a term used to describe actions by some individuals that further their own interest at the expense of another party to a contract. The terms of the contract do not prescribe penalties for all such actions. In the case of deposit insurance, financial institutions have an incentive to undertake riskier investments with depositors' funds because those funds are insured. Indeed, with insurance, depository institutions can engage in risky practices without much concern that depositors will withdraw their funds or that their cost of funds will sharply increase.

Exacerbating the problem of moral hazard for deposit insurance is the inappropriate
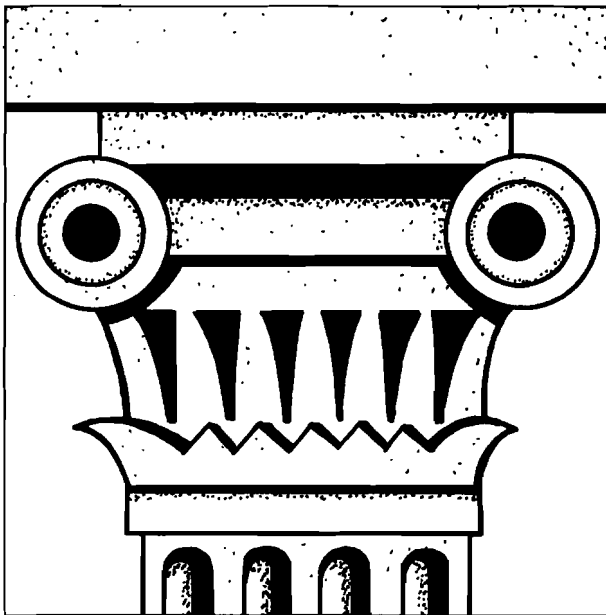
pricing of risk. Because insurance premiums have traditionally been the same regardless of the riskiness of the institutions' investments, the system has tended to subsidize risk-taking. Firms that follow prudent practices in effect subsidize those that engage in bolder behavior. Problems of moral hazard become increasingly serious when the capital of a depository institution is lost. At that point, the institution has absolutely no incentive to avoid risk. It no longer shares in possible losses, and yet it still has much to gain if even its most dubious investments succeed. In such cases, a little derring-do can pay off quite handsomely.

Two factors help to contain the problem of moral hazard for the deposit insurance system. One is the financial institution's own capital or equity, which is the first line of defense in case investments go bad. A healthy institution whose owners have a significant stake of their own in its success will be careful in making investments when they are quite aware that losses on investments could completely wipe out their equity.

A second factor that helps to contain the danger of moral hazard for the deposit insurance system is government regulation and supervision. The government has tried to control risk-taking by examining and auditing depository institutions to ensure that insurers' deposits are prudently managed. Regulation, together with the institutions' maintaining sufficient capital, contained moral hazard until the late 1970s and early 1980s. At that time, however, for reasons that will be discussed later in this study, both constraints on moral hazard unraveled with disastrous effects.

How Deposit Insurance Affects the Allocation of Savings and Investment

By guaranteeing that insured deposits will always be made whole, deposit insurance has

implications for the kinds of investments that are made in the economy. Savers place more of their funds in insured financial institutions than they otherwise would. Simply put, they know that those funds--up to $100,000 per account--will never be lost if a depository institution becomes insolvent. In fact, since deposit insurance reduces the risk of loss to savers, it consequently increases the expected return from saving. Thus, introducing deposit insurance may have had some positive effect on the overall level of saving. Another consequence of deposit insurance is that depositors will accept a lower rate of return on these funds, and thrift institutions in turn can offer lower rates of interest.

Deposit insurance in conjunction with government regulation also has implications for how investment is allocated. The very existence of the insurance caused more funds to flow into the types of investments that depository institutions ordinarily finance. Since depository institutions specialize in certain kinds of investments--particularly residential investments in the case of S&Ls--more funds are available for these investments at the expense of others.

Government regulations have severely limited the types of loans and investments that savings and loan institutions can make. Before the 1980s, these institutions essentially limited their lending to fixed-rate residential mortgages. S&Ls could not make loans on commercial real estate or make consumer loans. Moreover, to qualify for important tax advantages, S&Ls had to maintain a certain proportion of their assets in residential mortgages. In the late 1970s, for instance, S&Ls were required to maintain at least 80 percent of their assets in residential mortgages to qualify for the tax provision.

Under the Garn-St Germain Act of 1982, S&Ls were allowed somewhat more leeway in their investments, but they still had to meet a "qualified thrift lender" (QTL) test by having at least 60 percent of their assets in residential mortgages. Under the Financial Institutions Reform, Recovery, and Enforcement Act of

1989 (FIRREA), the QTL test was raised to 70 percent.[2] Thus, government regulations have prompted S&Ls to channel the bulk of their lending into residential mortgages, and to a limited extent--in recent years--into commercial real estate mortgages.

Measuring the Extent of Government Subsidy

Because the government assumes a risk, deposit insurance clearly involves a government subsidy to depository institutions. The size of the subsidy relates to how risky the investments are that the federally insured deposit institutions make. Ironically, at the same time that a depository institution increases risk, an increase in the subsidy may raise the overall level of investment.

Ways to measure the government's subsidy are several.[3] One approach is to estimate the present value of the net liabilities of the deposit insurance system. That use of present value reflects two specialties: receipts and pay-

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2. For a detailed description of the restrictions on investments and activities of savings and loan institutions, see James R. Barth and Martin A. Regalia, "The Evolving Role of Regulation in the Savings and Loan Industry," in Catherine England and Thomas Huertas, eds., *The Financial Services Revolution: Policy Directions for the Future* (Boston: Kluwer Academic Publishers, and Washington, D.C.: Cato Institute, 1988), pp. 113-161; and James R. Barth, *The Great Savings and Loan Debacle* (Washington, D.C.: American Enterprise Institute Press, 1991), pp. 79-99.

3. For a discussion of the subsidy in deposit insurance and how to measure it, see Michael J. Boskin, and others, "Federal Budget and Federal Insurance Programs," in Michael J. Boskin, ed., *Modern Developments in Public Finance: Essays in Honor of Arnold Harberger* (Oxford, England: Basil Blackwell Ltd., 1987), pp. 14-39; James R. Barth, R. Dan Brumbaugh, Jr., and Robert E. Litan, *The Banking Industry in Turmoil: A Report on the Condition of the U.S. Banking Industry and the Bank Insurance Fund*, Report of the Subcommittee on Financial Institutions Supervision, Regulation and Insurance of the Committee on Banking, Finance and Urban Affairs, House of Representatives, 101st Congress, Second Session (December 1990); and Christopher M. Towe, "The Budgetary Control and Fiscal Impact of Government Contingent Liabilities," *IMF Staff Papers*, vol. 35, no. 1 (March 1991), pp. 109-134.

ments will take place over many years, and a dollar in government losses in the near term is more costly than a dollar in losses in the distant future. (To pay for a loss now, the government would have to borrow and start paying interest.) The measure of the present value converts these expected receipts and payments into a capital sum, evaluated in today's dollars, that is comparable to other current costs. The net liability of the deposit insurance system is the present value of the expected claims on the system (plus administrative costs), less its expected receipts from premiums, if one looks forward as far as possible.[4]

Another way is to think about the government subsidy in terms of the extra amount that private insurers would have to be paid to assume the net liabilities of the institutions that the government insures. Private insurers would not only charge enough to resolve troubled institutions, but they would also demand some compensation for risk-taking. However, this approach might still understate the value of the government's deposit insurance. Any private insurer has limited liability: such a firm cannot pay out more than its assets, no matter how large the losses are.[5]

Yet another way to measure the government's subsidy for deposit insurance is by gauging the reduction in the cost of funds for depository institutions that results from the deposit insurance. The cost of funds for these institutions is reduced because risks are pooled and because the government assumes some of the risk. (That measure may overstate the cost of the subsidy to the govern-

ment, however, because of the overall gains to the thrifts from pooling risks.) In other words, an insured depository institution can attract funds more cheaply because it offers most depositors complete safety for their funds. A subsidy to insured deposit institutions would be measured by comparing their cost of attracting funds with the costs for financial institutions that are similar except that they do not benefit from deposit insurance.

Two of the three ways of measuring the subsidy for deposit insurance that have just been described would have suggested that the government subsidy was rising during the 1970s, despite the fact that the deposit insurance fund itself seemed in good financial condition, using book-value accounting. The receipts generated by the system of fees met the required outlays plus administrative expenses. Unfortunately, cash budgeting procedures did not provide a forward-looking and timely signal of the growing deposit insurance subsidy during the late 1970s. Consequently, the 1980s augured even more trouble.

Conclusions

Federal deposit insurance was enacted in the 1930s to deal with the severe problems created by widespread banking and thrift institution failures. For the most part, the deposit insurance system functioned well and produced important benefits for the economy. However, the system of deposit insurance and government financial regulation had an im-

4. Unlike the second approach that will be discussed, this approach would not include a return for the government's assumption of risk; nor does it include the value to savers that stems from reducing the variation in their returns on saving. The second and third approaches discussed below would include the latter benefit to savers. The issue is not settled concerning whether there should be a return to the government for accepting risk, for example, in its loan guarantee programs or in this case deposit insurance. For further discussion, see Kenneth J. Arrow and Robert C. Lind, "Uncertainty and the Evaluation of Public Investment Decisions," *American Economic Review*, vol. 60 (June 1970), pp. 364-378; and Robert C. Lind, "A Primer on the Major Issues Relating to the Discount Rate for

Evaluating National Energy Options," in Robert C. Lind, and others, *Discounting for Time and Risk in Energy Policy* (Washington, D.C.: Resources for the Future, 1982), pp. 21-94.

5. This "market approach" to valuing the government's subsidy for deposit insurance has a number of variations. For instance, some portion of the government's deposit insurance liability could be reinsured with private firms. Or the value of deposit insurance to each insured institution might be calculated using an analytical model, an "option-pricing model." See for instance, Department of the Treasury, *Modernizing the Financial System: Recommendations for Safer, More Competitive Banks* (February 1991), pp. 34-35.

portant flaw that had the potential to become quite serious--namely, moral hazard. When most deposits are insured, thrift institutions (and banks) have less incentive to be cautious with the depositors' funds. Most depositors have little reason to withdraw their funds from an institution that invests recklessly, because their funds are fully insured. Moral hazard, in turn, was held in check by financial regulation and oversight, and by the thrifts' own capital that could be lost through imprudent investments.

So What Went Wrong in the 1980s?

During the late 1970s and 1980s, financial deregulation and financial innovation, such as the development of money market funds, buffeted the S&L industry and the government's deposit insurance program. The result was to alter the competitive environment at a time when economic conditions were deteriorating, which brought about an unprecedented string of failures among insured S&Ls, and massive federal obligations to their depositors.

In the early 1980s, while the deposit insurance fund appeared robust, some experts had warned that such events could have a catastrophic effect on the deposit insurance program.[1] Nevertheless, the deposit insurance system continued to help minimize the contagiousness of financial shocks: hundreds of S&Ls failed, but surprisingly no panics took place. Nevertheless, regulation and supervision of the insured institutions ultimately proved woefully inadequate to the crisis, and these mistakes contributed substantially to the size of the S&L problem and its ultimate cost to taxpayers.

Economic Pressures on S&Ls Spiral

The savings and loan industry has faced several temporary but systemwide financial disasters during the last 25 years. The first resulted from sharp increases in interest rates that began in the second half of the 1960s, but became much more pronounced in the late 1970s and early 1980s. For instance, the yield on three-month U.S. Treasury bills averaged 4.0 percent in 1965, but 14.0 percent in 1981. Increases in interest rates were such a disaster because of traditional business practice in the S&L industry, which was to borrow short term from depositors and lend long term, primarily through home mortgages.

Initially, when interest rates rose, many large- and medium-size depositors withdrew their funds from S&Ls in favor of other investments such as Treasury bills. This move appeared sound because under financial regulations stemming from the Interest Rate Adjustment Act of 1966, there were ceilings on how much interest S&Ls could pay on deposits. Then, in the late 1970s, money market mutual funds became an option. Hence, when interest rates rose, depositors could switch even relatively small amounts of their funds to these highly liquid, higher-yielding assets. The competition for S&Ls was clearly heating up.

Money market mutual funds may have been among the first major types of new competition for the S&Ls, but they were by no means the last. In particular, other financial institutions began to compete much more ag-

1. See Andrew S. Carron, *The Plight of the Thrift Institutions* (Washington, D.C.: Brookings Institution, 1982). More than 50 years ago, when deposit insurance was being established, some analysts warned that it could cause great financial costs to the government. See C.D. Bremer, *American Bank Failures* (New York: AMS Press, Inc., 1935), p. 140, as cited by James R. Barth, "Post-FIRREA: The Need to Reform the Federal Deposit Insurance System," in Federal Reserve Bank of Chicago, *Game Plans for the '90s*, The 26th Annual Conference on Bank Structure and Competition, May 9-11, 1990 (Chicago: Federal Reserve Bank of Chicago, 1990), p. 333.

gressively in the residential mortgage market. Financial innovation also played a role in the more competitive environment, including the development of more liquid markets for mortgages. This development enabled savers to invest in a diversified pool of mortgages without ever dealing with S&Ls.

The upshot was that intense pressures developed to remove the limits on interest rates that could be paid on deposits and to widen the choices of investments that were available to S&Ls, so that they would not be so exposed to increases in interest rates. The Garn-St Germain Act of 1982 phased out the interest rate ceilings on deposits and permitted the S&Ls to engage in new and different lines of activities, such as lending on commercial real estate and investing in lower-grade (or what are more commonly known as "junk") bonds.

When ceilings on interest rates were removed, the S&L industry faced new pressures. Savings and loan institutions were then free to pay as much as they wanted to attract or hold funds. For some institutions, however, this freedom meant a disappearance of low-cost funds and a need to adjust to new competitive pressures and risks. The greater flexibility in rates on deposits also meant that the spread between what the S&L earned on its fixed-rate mortgages and what it had to pay to attract funds could become negative and wide. Interestingly, if the interest rate ceilings had not been removed, in all likelihood the S&Ls would probably have had even more difficulty competing. In the new higher-interest rate environment, they would have been unable to hold deposits and would have had to sell their assets under unfavorable conditions.

Interest rate risks were not the only kind of outside economic punch that hit the S&Ls. Crises affecting oil producers and farmers reduced the earning assets of many institutions. In the mid-1980s, oil prices collapsed, causing severe recessions in oil-producing areas. In addition, the severe downturn in the farm economy sent many farming communities into deep recession. Both of these shocks knocked down real estate values dramatically at a time

when real estate was a major type of collateral for the loans that S&Ls held. Finally, by the end of the 1980s, weakness in real estate prices, especially for commercial real estate, became much more general, affecting one region after another.

The S&L crisis was associated with several kinds of losses in wealth and transfers in wealth. Loss in one of the most important types of wealth, physical wealth, occurred because of bad investments--for example, a new office building that stood empty, and, to be sure, a staggering number went--and still are-- begging for tenants.

Another part of the S&L losses, however, occurred on existing assets. For example, S&Ls encountered large financial losses because real estate values and the value of junk bonds plummeted. Still another part of the losses to the S&L industry were transfers of wealth in which other people gained. For example, in the late 1970s and early 1980s interest rates rose sharply, and individuals who had fixed-rate mortgages tended to gain at the expense of the mortgage holders.

Regulatory Decisions and Moral Hazard Are Magnified

The troubles of the S&L industry prompted regulators and policymakers to seek solutions that would ease these woes. But their solutions only created more problems for the industry, ending with extremely large accrued liabilities to the government for deposit insurance. In particular, reductions in capital requirements for the S&L industry and the policy of regulatory forbearance contributed in a major way to the ultimate cost of the S&L crisis.[2]

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2.   See Congressional Budget Office, "The Cost of Forbearance During the Thrift Crisis," Staff Memorandum (June 1991).

Regulators and policymakers took measures to lower capital requirements and ease oversight, partly in the mistaken belief that the industry's problems were transitory. In early 1980, the S&L industry had capital requirements of approximately 5 percent of assets; by 1982, capital requirements were reduced to 3 percent of assets--in part to avoid triggering regulatory actions against depository institutions with low capitalization. Moreover, a number of other changes were introduced that further weakened the reduced capital requirements.

Having lost all of their equity, owners had nothing more to lose. Institutions gambled for resurrection by taking inordinate risks.

Accounting measures are important when explaining why the S&L situation became so serious and why it went unnoticed for so long. For one thing, it was customary to rely on book-value accounting rather than on market-value accounting. Book-value accounting means that the assets and liabilities of the S&L industry were carried at their original values at the time when they were acquired, which was usually substantially different from their current market values. Book-value accounting is a standard practice most businesses use. In many cases, its failure to reflect current market conditions is relatively benign. But for financial institutions, failure to track accurately the market value of their assets could be--and often was--catastrophic. Measures of the value of assets at current prices, which constitute market-value accounting, can thus differ substantially from book-value measures.

In addition, the S&L industry and its regulators departed from generally accepted accounting practices in ways that expanded the measure of the capital of S&Ls, thus permitting more S&Ls to remain open. Under regulatory accounting principles, S&Ls were allowed to follow a more liberal set of rules for determining capital than under generally accepted accounting principles.

Constraints on resources for regulating and resolving insolvent S&Ls further compounded the crisis. Although the regulatory situation was becoming much more complex and the deposit insurance system subjected to much greater risks, the resources devoted to overseeing the S&Ls were not increased correspondingly. Indeed, the number of supervisors was actually reduced during some years in the first half of the 1980s. Later in the 1980s, constraints on resources caused the government's losses to mount extravagantly simply because regulators did not have enough cash to close the sharply escalating number of insolvent S&Ls.

Many analysts believe that this regulatory forbearance was an especially key cause of the escalating public liabilities in the S&L crisis. According to one recent study, for example, many of the most costly institutions to resolve had been reporting their insolvency five years or even longer. Obviously, the cost of resolution would have been much lower if it had been carried out promptly. From the time these institutions became insolvent until they were resolved, their liabilities grew rapidly as they paid higher and higher rates to attract deposits and accumulated relatively high-risk assets. Correspondingly, the government's accrued liabilities for resolving insolvent thrifts increased dramatically.[3]

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3.   James R. Barth and Philip F. Bartholomew, "The Thrift Industry Crisis: Revealed Weaknesses in the Deposit Insurance System," in James R. Barth and R. Dan Brumbaugh, Jr., eds., *The Reform of Federal Deposit Insurance: Protecting the Taxpayers and Disciplining the Government* (New York: Harper Collins, forthcoming).

Encouraging S&Ls to Take Excessive Risks

When many S&Ls became insolvent or close to it, the problem of moral hazard took on an especially virulent form. Having lost all of their equity, owners had nothing more to lose. Institutions gambled for resurrection by taking inordinate risks. The deposit insurance system presented managers with a situation in which the institution got to keep the rewards if the roll of the dice paid off, but the government's insurance fund was liable if the gambles failed. And so on it went: the economic incentives essentially forced troubled institutions to undertake highly risky and even dangerous strategies (see Box 1).
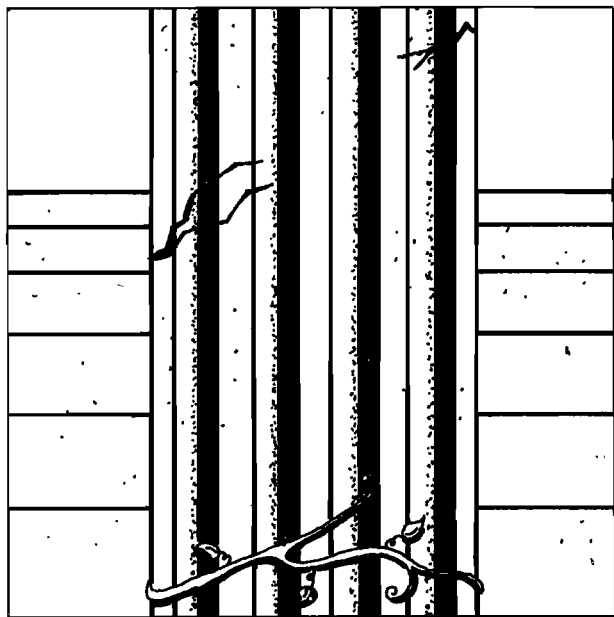
As so often happens in games of chance, however, a great many of the gambles the troubled S&Ls undertook did not pay off, in part because the overall economic environment became less conducive to positive payoffs. During most of the post-World War II period and until the early 1980s, inflation had been on an upward trend, and real estate prices also seemed to be going in only one direction--up. But all that changed during the 1980s. Monetary policy succeeded in bringing inflation under better control, and real interest rates were for the most part unusually high. Moreover, tax policy was changed in

1986 from supporting real estate investments to taking a more neutral stance. Thus, real estate prices stopped their previously uninterrupted climb. In many areas of the country they crashed, and the terms of the gamble deteriorated even more.

Effects on Investment

Regulatory forbearance affected the composition of investment and perhaps the level of overall investment as well. An increase in the subsidy for deposit insurance for S&Ls tended to attract or hold savings and channel investment into particular sectors of the economy-- namely, residential and commercial construction and real estate--as opposed to other kinds of investment such as business equipment. Moreover, because many institutions faced incentives "to grow their way out" of difficulties, a common strategy involved paying relatively high interest rates on deposits to attract more funds. The healthy S&Ls (and competing institutions, including commercial banks) were then forced to match these high rates, which put them, too, under a financial yoke.[4]

In addition to affecting the composition of investment, the overall level of investment may have been increased, particularly during the first half or two-thirds of the 1980s, since residential and commercial construction is part of overall investment. To some extent, the increase in these kinds of investment may have displaced other kinds of investment such as business equipment, but it is unlikely that this displacement would be complete. With international capital markets, the connection between investment and domestic saving is significantly modified: when domestic investment is strongly stimulated, additional saving can flow in from abroad. Moreover, when the economy contains considerable slack, as was

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4.   See Edward J. Kane, *The S&L Mess: How Did It Happen?* (Washington, D.C.: Urban Institute Press, 1989); and John B. Shoven, Scott B. Smart, and Joel Waldfogel, "Real Interest Rates and the Savings and Loan Crisis: The Moral Hazard Premium," Working Paper No. 3754, National Bureau of Economic Research (June 1991).

true in the first half of the 1980s, more investment stimulates overall demand, incomes, and saving. Consequently, when the expansive lending practices of the S&Ls stimulated certain sectors of investment, total national investment probably increased, at least for a while.

However, the giant real estate bubble burst during the late 1980s and was followed by harsh conditions in the industry. Casual observation suggests that when many of the projects financed by the S&Ls went sour, investment was discouraged even further.

Fraud Played a Role

Fraudulent practices--though especially difficult to quantify and assess--were probably not a major cause of the S&Ls' woes. Although some analysts believe that fraud could account

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Box 1
Estimating the Costs of Delay in Resolving Insolvent S&Ls

Because many insolvent S&Ls continue to operate and accrue losses to the federal deposit insurance system, substantial continuing costs are associated with any delay in resolving these troubled institutions. Delay has two main costs: one is the gambling or excessive risk-taking by the S&Ls with weak capital, and the other is the relatively high interest and administrative costs that these institutions pay.

A Saga of High Stakes and Losses

Most analysts have concluded that delay in resolving weakly capitalized institutions significantly added to the ultimate cost because of the incentives to gamble with the depositors' resources. Because of moral hazard associated with deposit insurance, troubled institutions have a strong temptation to undertake risky investments, and the loose supervision and regulation in the early 1980s gave broad scope for such risk-taking. The institutions and management could benefit from a favorable outcome.

Moreover, the institutions and their management had little to lose since their equity was already depleted. Troubled institutions frequently sold perfectly good assets to acquire more risky assets that offered the possibility of munificent returns. To be sure, these gambles usually resulted in large losses, which the government and taxpayers had to assume. This behavior was also costly from the standpoint of the economy because it misallocated investment, resulting in a less productive capital stock.

With Delay Came High Interest Costs on Deposits

Another, related cost associated with delay is the relatively high interest paid on deposits at many of the troubled S&Ls. When regulators take over a bankrupt thrift, they can break these high interest rate contracts and thereby lower interest costs.

To attract new funds or hold existing deposits, troubled institutions tend to pay higher interest on deposits than do healthy institutions. According to one source, "The costliest resolutions in 1988 . . . were offering an average of up to 100 basis points more on their deposits than other institutions in the year before resolution."[1] Moreover, high-interest bearing certificates of deposit at troubled institutions may have several years remaining. These relatively high interest rates result in several kinds of costs. For the government, they add to the ultimate cost of resolution because they contribute to the accumulating losses. For healthy S&Ls, there is a cost because they must pay more in the marketplace to attract deposits. Again, the Financial Institutions Reform, Recovery, and Enforcement Act of 1989 may discourage troubled S&Ls from bidding as aggressively for funds as before, although it does not directly limit rates that they can pay on deposits.

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1. See James R. Barth, *The Great Savings and Loan Debacle* (Washington, D.C.: American Enterprise Institute Press, 1991), pp. 62-64.

for as much as 20 percent to 25 percent of the government's losses, most experts assign a much smaller weight to this factor--on the order of 3 percent to 10 percent.[5] Economic forces, regulatory forbearance, and the incentives for S&Ls to take excessive risks were much more important fundamental causes.

How Great Are the Government's Losses?

Outlays for deposit insurance loom large and significantly affect the current size of the federal budget deficit and the outlook for deficits in the future (see Table 1). Federal outlays to insure deposits in savings and loan institutions and commercial banks, including the need for working capital, are projected to rise from $58 billion in 1990 to a high of $115 billion in 1992. Beginning in 1993, however, outlays for deposit insurance drop sharply, and by 1996 they are minus $44 billion.

The reason that outlays become negative is that the Resolution Trust Corporation will be selling more S&L assets than it will be buying, and these net proceeds count as an offset to program outlays (see Box 2). From 1990 to 1996, annual outlays for deposit insurance are projected to decline by $102 billion. As a result, the deficit is projected to fall by $64 billion over the 1990-1996 period if deposit insurance is included, but will rise by $38 billion without it.

The Financial Institutions Reform, Recovery, and Enforcement Act of 1989 created the Resolution Trust Corporation (RTC) to handle resolving failed thrift institutions that the Federal Savings and Loan Insurance Corporation insured. The FSLIC Resolution Fund inherited the FSLIC's caseload (that is, institu-

tions already closed before the RTC was created). In addition, FIRREA set up a new fund to insure thrifts, the Savings Association Insurance Fund (SAIF). Finally, CBO assumes that SAIF will begin doing necessary resolutions in 1995.

If the government borrows $200 billion for the S&L bailout, . . . this amounts to about $800 for every man, woman, and child in the United States.

Some of the costs of resolving the S&L crisis have been obscured because of the way they have been financed. The Resolution Funding Corporation (REFCORP) was set up for the sole purpose of borrowing funds to finance savings and loan resolutions. The funds borrowed by REFCORP are treated as offsetting collections in the budget. Thus, some $30 billion in spending ($18 billion in 1990 and $12 billion in 1991) is effectively excluded from the budget totals. The government and the taxpayers have paid dearly for this arrangement, since an enterprise such as REFCORP has to pay a higher interest rate when it borrows in credit markets than the Treasury would have to pay. The REFCORP bonds have carried interest rates approximately one-third of a percentage point higher than comparable Treasury securities--adding about $2 billion in present-value costs for interest, according to CBO's estimates.

For purposes of summarizing the costs of the S&L crisis, the single most useful figure is the present value of future costs. Present value reflects payments and receipts that will

5.   See James R. Barth, *The Great Savings and Loan Debacle* (Washington, D.C.: American Enterprise Institute Press, 1991), p. 44; and Lawrence J. White, *The S&L Debacle: Public Policy Lessons for Bank and Thrift Regulation* (New York: Oxford University Press, 1991), pp. 115-117.

Table 1.
Deposit Insurance and the Federal Budget Deficit (By fiscal year, in billions of dollars)

	Actual 1990	1991	1992	1993	1994	1995	1996	Change 1990-1996
Total Deficit[a]	220	279	362	278	234	157	156	-64
Deposit Insurance Outlays[b]	58	77	115	58	32	-32	-44	-102
S&L-related[c]	52	64	96	53	37	-26	-35	-87
Bank-related	6	13	19	5	-5	-6	-9	-15
Deficit Excluding Deposit Insurance[b]	162	202	247	220	202	189	200	38
S&L-Related Outlays Including REFCORP	70	76	96	53	37	-26	-35	-105

SOURCE: Congressional Budget Office.

a.   Assumes discretionary caps as provided in the Budget Enforcement Act of 1990.

b.   Includes bank insurance funds.

c.   Budget outlays reflect the treatment of the Resolution Funding Corporation (REFCORP) and the Financing Corporation, shell corporations that were created solely to borrow funds for S&L resolutions. This treatment permits their borrowing to reduce the deficit.

occur over many years and expresses those future flows in today's dollars. Present value discounts future cash flows. It takes into account that, because of interest, a dollar today is worth more than a dollar next year. Recent estimates by the Congressional Budget Office indicate that the present value of the government's costs to resolve the savings and loan crisis will be approximately $215 billion in 1990 dollars. This total includes the cost of dealing with the cleanup efforts of the original FSLIC, the FSLIC Resolution Fund, and the Resolution Trust Corporation.[6]

These humongous accumulated losses for the deposit insurance funds imply burdensome future costs for taxpayers. If the government borrows $200 billion for the S&L bailout, this amount adds about one-twelfth to the national debt held by the public in 1990. On a per capita basis, this amounts to about $800 for every man, woman, and child in the United States. The cost of servicing the additional federal debt would be approximately $15 billion annually, given current interest rates. Since net interest outlays were approximately $180 billion in the 1990 federal budget, the S&L-related borrowing would increase this category of budget outlays by roughly one-twelfth.

Postponing resolving the S&Ls merely delays having to pay these interest costs. Unfortunately, in the long run, this costs rather than saves money. If the government delays in resolving the S&L crisis, the ultimate cost skyrockets because the insolvent S&Ls may continue their excessive risk-taking at the taxpayers' expense, and they may raise yields of depositors, eroding the profits of still healthy S&Ls. The ultimate cost to the government is thereby apt to be considerably higher than if the resolutions were carried out as quickly as possible.

The timing of the government's liabilities for the losses to the deposit insurance fund for

6.   See Congressional Budget Office, *The Economic and Budget Outlook: An Update* (August 1991), pp. 63-69.

Box 2
Working Capital for Resolving Insolvent Thrifts

The Resolution Trust Corporation (RTC) requires working capital in order to finance the government's purchase of S&L assets, which it expects to resell later. Working capital differs from other expenditures for resolving thrift institutions. The government will recover working capital when these assets are sold, but its economic effects are minor because the government and the private sector are exchanging assets of equal value. Such exchanges do not stimulate spending by the private sector.

The need for working capital is the major reason that the government's outlays for deposit insurance are so volatile from year to year, and so large during the next few years. CBO estimates net working capital needs for the Resolution Trust Corporation at approximately $30 billion in fiscal year 1991 and $43 billion in 1992. However, in later years expenditures

for working capital become negative-- when the government expects to be selling more assets than it buys (see table below).

The need for working capital is large, in part, because the RTC has to finance temporarily the purchase of assets that acquirers of failed institutions do not want. Selling these assets often takes considerable time, particularly because no developed markets exist for commercial real estate loans and for nonconforming home mortgage loans. When they are sold, the economic effect is minimal because they are exchanged for assets of equal value. In time, as the RTC works down its inventories, its need for working capital will decline. That will dramatically reduce budget outlays for deposit insurance because the proceeds from selling these assets are treated in the budget as an offset, thereby reducing outlays.

Effects of Working Capital Requirements on S&L-Related Outlays, Fiscal Years 1989-1996 (In billions of dollars)

	1989	1990	1991	1992	1993	1994	1995	1996
Total S&L-Related Outlays Including REFCORP	19	70	76	96	53	37	-26	-34
minus								
Working Capital for RTC	9	30	30	43	16	6	-36	-37
equals								
Total Outlays Less Working Capital for RTC	10	40	46	53	37	31	10	3

SOURCE: Congressional Budget Office.

NOTE: Budget outlays reflect the treatment of the Resolution Funding Corporation (REFCORP) and the Financing Corporation, shell corporations created solely to borrow funds for S&L resolutions. This treatment permits their borrowing to reduce the deficit.

the S&Ls differs considerably from that of the cash outlays. As will be discussed in detail in Chapter V, the government's implicit liabilities for the S&Ls' losses began earlier and were more evenly spread throughout the 1980s. In the 1984-1986 period, for instance, CBO's estimates of the accrued costs for the S&Ls' deposit insurance averaged approximately $10.7 billion per year. By contrast, federal outlays for this purpose averaged less than $0.4 billion over this period.

Getting rid of the insolvent S&Ls makes a contribution to longer-run economic growth; it eliminates the losses to the economy associated with the activities of these defunct businesses. As discussed earlier, many of these losses arise from misallocating resources through excessive risk-taking. When these S&Ls are resolved, it puts a halt to these economic losses and it helps the remaining healthy institutions.

The actions of financial regulators themselves may have indirect short-run impacts on economic activity. In the current context, regulatory actions seem to be causing financial institutions to tighten up on their lending practices, restricting the availability of credit for consumers and businesses in certain areas or sectors. The capital position of both banks and thrift institutions has deteriorated in recent years, as loans soured and the value of collateral fell. Moreover, news about the size and scope of the crisis in the S&L industry has probably caused regulators to tighten their oversight and enforcement. Anticipating this possibility, and also responding to more stringent capital requirements, financial institutions may also be much stricter in making loans.

In addition, the process of resolving insolvent S&Ls may cause some temporary losses in employment and output. When financial institutions are closed or merged, naturally the number of jobs drops. Furthermore, some borrowers may temporarily have trouble in finding alternative sources of loans: this, too, causes loss of jobs.[8]

What Is the Current State of the S&L Industry?

The S&L industry is still a highly beleaguered industry. At the end of September 1991, the Office of Thrift Supervision classified the 2,148 thrift institutions (mostly S&Ls) under its purview into four groups: (I) those that were well capitalized and profitable--996 institutions with $314 billion in assets; (II) those that were not as well off as those in Group I but still met or are expected to meet the new, more stringent capital standards provided under FIRREA--688 institutions with $286 billion in assets; (III) those that were considered "troubled" because of poor earnings and low *tangible* capital--385 institutions with $247 billion in assets; and (IV) those that were essentially insolvent and are likely to be transferred to the Resolution Trust Corporation--79 institutions with $63 billion in assets.

Thus, a relatively large number of thrifts either suffer from low capitalization--and therefore are likely to fail--or are already insolvent. In the private sector, this includes Groups III and IV. In addition, at the end of September 1991, the RTC controlled some $147 billion in savings and loan assets that are either in conservatorship or receivership.

Conclusions

While a number of factors contributed to the S&L losses in the late 1970s and 1980s, one of the most important was the structure of the deposit insurance system, together with a

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8. See, for instance, Brian A. Cromwell, "Financial Restructuring and Regional Activity," Federal Reserve Bank of Cleveland, *Economic Review*, vol. 26, no. 3 (1990), pp. 13-25; and Charles W. Calomiris, R. Glenn Hubbard, and James H. Stock, "The Farm Debt Crisis and Public Policy," *Brookings Papers on Economic Activity*, vol. 2 (1986), pp. 441-479.

policy that allowed insolvent and poorly capitalized institutions to remain in operation. The thrift industry was hit with a number of shocks, including sharply rising interest rates and increased competition. These shocks, in turn, weakened the financial situation of many S&Ls. At that point, many S&Ls had little to lose and potentially much to gain by taking large risks--which they were allowed to do because they were not closed by the government. But the result was to compound their losses and the losses to the federal deposit insurance system. Estimates of the present-value cost to the federal government of resolving the S&L troubles now stand at more than $200 billion.

Analyzing the Economic Effects of the S&L Losses

The magnitude of the losses in the savings and loan industry and of the government's costs for deposit insurance raises serious concerns about their economic effects. How has economic performance been affected, and which of the large budgetary consequences have significant effects on the economy?

Two kinds of macroeconomic effects are in play: those that directly stem from the loss in capital that came about because of the thrift crisis itself, which will be called "supply effects" in the discussion below, and those that stem from the large obligations for deposit insurance that arise under the federal government's program of deposit insurance--called "fiscal policy effects" below. These obligations are a part of the government's fiscal policy, albeit one that has been poorly understood.

Supply effects arise because the direct loss in capital for misguided investment projects reduces the supply of output and that in turn lowers the level of actual and potential GNP. The fiscal policy effects are more complicated to sort out, but are nonetheless important. Unlike most federal programs, federal liabilities under deposit insurance arise automatically when insured institutions become insolvent. These liabilities exist, sometimes for several years, as federal promises to pay. The accrual of these promises has economic effects that are generally similar to those of more conventional expansionary policies: in the short run, the accrual works both to prevent

overall demand from falling by protecting the wealth of depositors and to raise interest rates by increasing demands on credit markets. At the same time, the accruing federal obligations lower saving and capital accumulation, which in turn reduces long-run economic growth.

In contrast, when the government's implicit obligations are converted to formal government bonds as part of the process of cleaning up failed thrifts, relatively little impact on the economy takes place because this borrowing does not significantly affect the wealth or incomes of the private sector. Similarly, the government's large but temporary need for working capital has no significant economic effects. Assets of equal value are being exchanged, and private wealth and income are thus unaffected.

How Losses in Investment and the Capital Stock Affect Supply

Since 1980, many resources have been misallocated as a result of the S&L crisis, reducing the efficiency of investment and of the capital stock. A great number of loans were made for investment projects that turned out to be inefficient and wasteful. At least in hindsight, these projects could hardly be justi-

fied as efficient investments paying competitive returns. As a result, the capital stock is smaller now and less productive than it otherwise would be, reducing the economy's ability to produce or supply output. In turn, actual and potential GNP are lowered, since less capital is available. These effects on the capital stock and on actual and potential GNP are cumulative. In short, at the end of the 1980s, losses were substantially greater than at the beginning. Moreover, this process of misallocating investments continues as many S&Ls face the same kinds of incentives to undertake inefficient investments.

Many of the losses that the savings and loan industry--and the parties who borrowed from the S&Ls--suffered have a direct counterpart in inefficient investments and other ways in which resources have been wasted. For example, some of the losses resulted from the construction of office buildings, apartment buildings, shopping centers, hotels, and resorts that were simply not justified on the basis of their fundamental economic returns.

Overbuilding in these sectors was particularly serious, since several provisions of the tax code simultaneously subsidized investment until they were changed in 1986. These tax provisions increased the risk of failure and default on such projects. Resources devoted to these projects were not available for more productive investments. Bad investments made in existing assets also tend to misallocate investment, though in a less direct way than investments in newly produced assets. For example, during the early 1980s, the strong demand for, and rising values of, existing office buildings encouraged the construction of new office buildings and an even-

tual glut on the market. Moreover, other losses to the S&L industry--such as those associated with an inflated cost structure, mismanagement, and fraud--also squandered valuable resources.

Estimating the adverse effect of the S&L breakdown on real investment and the capital stock is especially nettlesome, since no direct measures are available. One benchmark is the government's losses for deposit insurance, which amount to more than $200 billion when they are measured in "discounted" 1990 dollars, as is conventional among economists. But because the government's losses do not include the substantial losses in the borrowers' collateral, the effect on the capital stock could well be larger than that.

During the early 1980s, the strong demand for, and rising values of, existing office buildings encouraged the construction of new office buildings and an eventual glut on the market.

In most cases, the borrowers from the S&Ls had to put up some of their own money as collateral, which acted as a cushion for the S&Ls. As long as the value of the borrowers' collateral was positive, the S&L as lender would not lose on the loan. Moreover, the government's losses would not include the losses on bad investments made by S&Ls that were weakly capitalized but allowed to remain open and operating. These institutions also faced strong incentives to take excessive risks and to cause misallocation of investment.

In contrast, the loss from the S&L breakdown could be smaller for two reasons. First, the policy that contributed to the eventual crisis produced at least some offsetting increase in the capital stock by stimulating residential and commercial investment to some extent. Second, some of the losses to the industry resulted from changes in the market prices of existing assets that did not cor-

respond to a waste of resources, but instead transferred wealth from one person to another.

The negative effect on actual and potential output from this loss in capital lasts for a relatively long period of time, but the effect tends to diminish gradually over time. For many years, potential output has been lower than it otherwise would be because less capital is available to produce output. The effect gradually disappears because it is the net saving rate--net saving as a percentage of income--that determines how much capital there will be compared with the amount of labor. For a given saving rate, the economy will gradually accumulate capital until it reaches a certain level of capital relative to labor--the level consistent with the saving rate.[1]

This conclusion that capital stock tends gradually to catch up holds if the saving rate is a fixed proportion of income. However, the effect of capital loss on potential GNP will diminish over the years for an additional reason--namely, that the saving rate tends to increase when the wealth of savers diminishes. For example, when households suffer a loss in wealth as they bounce back from the S&L misfortune, they tend to save more, which causes the losses in capital to be recouped more rapidly than with a constant saving rate.

In addition to reducing the level of actual and potential GNP, the lower productive capital stock resulting from the S&L breakdown would tend to raise interest rates, which would itself have economic effects. A lower capital stock causes higher interest rates because capital becomes more scarce, and new investments become more profitable. The increased demand for credit for financing these investments leads to a higher interest rate. In turn, an increase in interest rates compared with foreign interest rates attracts more for-

eign investment, and that puts upward pressure on exchange rates. Higher exchange rates reduce the trade surplus.

The macroeconomic effects just described occur when investments turn sour, not when the capital in the S&Ls is used up. The erosion of the thrifts' capital only determines whether the owners of the thrift or the taxpayers will pay for the loss.

Sorting Out the Fiscal Policy Aspects of Deposit Insurance

The fiscal policy aspect of deposit insurance has four parts: the economic effects when implicit federal liabilities accrue; the economic effect when accrued liabilities are recognized and as the government borrows money to clean up insolvent S&Ls, thus discharging its implicit commitment to the depositors; the economic effect of the government's huge but temporary demand for working capital; and finally, the implications of alternative means of financing the federal losses.

Economic Effects of Federal Accrued Liabilities for Deposit Insurance

Accruing liabilities for deposit insurance affect GNP in the short term through their effects on overall demand. They also have a long-term impact by affecting the national saving rate, as does any other expansionary fiscal policy. Like conventional fiscal policy, such liabilities affect aggregate demand through two channels: effects on income or wealth, which increase demand by preserving the assets of depositors in failed S&Ls, and through the effects of partially offsetting increases in interest rates, which tend to reduce investment, the trade balance, and other components of overall demand that are sensitive to interest

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1.   For more detailed discussions, see Rudiger Dornbusch and Stanley Fischer, *Macroeconomics*, 5th edition (New York: McGraw-Hill, 1990), pp. 726-737; and Edwin Burmeister and A. Rodney Dobell, *Mathematical Theories of Economic Growth* (New York: Macmillan Publishing Co. Inc., 1970), pp. 20-64.

rates. In the long run, these accrued liabilities depress GNP, since they retard saving, as do more familiar kinds of expansionary fiscal policies that raise federal budget deficits.

Effects on Income and Wealth. A conventional expansionary fiscal policy, such as an increase in federal transfer payments to people, raises the incomes of some group, which then increases its consumption and, with it, overall demand. The deposit insurance program has an analogous effect: it maintains the wealth of the private sector when it would otherwise fall as a result of losses in the thrift industry. In turn, maintaining the wealth of the private sector supports aggregate demand and GNP above what they otherwise would be. Because federal deposit insurance payments primarily affect wealth rather than incomes, they usually have a less stimulative effect on total demand per dollar--that is, a lower multiplier--than conventional fiscal measures, such as an increase of one dollar in Social Security payments or in unemployment benefits.

It is not the current but future generation of taxpayers who are likely to bear the burden of the bailout.

As with conventional fiscal policy, the effect of the fiscal stimulus from deposit insurance liabilities depends on the amount of slack in the economy and on monetary policy. Other things being equal, a fiscal stimulus of a given size will have a greater effect on real GNP when the economy contains slack compared with a situation in which the economy is operating tightly at its potential. Similarly, with monetary policy, a fiscal stimulus will have more effect on real GNP if the monetary authorities are targeting the growth of money aggregates than if they are targeting a specific growth rate for nominal GNP. The effect on GNP would be still larger if monetary policy targets a specific level of nominal interest rates.

Of course, the effects of fiscal policy on the economy depend on what happens in the overall budget, especially the overall level of the deficit--not on how any single program is financed. Nevertheless, it is useful to examine how a particular change in fiscal policy affects the economy, assuming other aspects of fiscal policy remain the same.

In any case, the S&L losses brought declines in wealth and consumption to several groups, but federal deposit insurance caused other holders of wealth not to increase theirsaving rate and reduce their consumption as they would otherwise have done. The effects on wealth included losses to some individuals who invested in projects that failed and to owners and stockholders of S&Ls that became insolvent. The losses in wealth for these groups were immediately understood and had direct impacts on their perceptions of wealth and on their consumption. Beyond that, however, depositors would ordinarily have absorbed the industry's losses when the institution failed. Because their wealth was protected, depositors did not increase their saving. This effect on saving is thus one of the main ways that the accrual of federal obligations under deposit insurance affected the economy.

As this account implies, however, the effects of the deposit insurance program in protecting the wealth of depositors meant that a third group--the taxpayers--suffered a loss in wealth as a result of the savings and loan crisis. Gauging the overall economic effect of deposit insurance is incomplete until the economic consequences of taxpayers' losses are also taken into account.

Of course, it is not the current but future generation of taxpayers who are likely to bear

the burden of the bailout. The government has financed its outlays for cleaning up thrift institutions and discharging its obligations under deposit insurance by borrowing money, shifting the burden to later generations. Taxpayers in the future will shoulder this burden when taxes are ultimately raised or other government programs are reduced, as funds are needed to service the additional government debt that was used to fund the cleanup of thrift institutions. Although taxes may affect incentives and efficiency in ways that most changes in government expenditures do not, the economic effects of tax increases and reductions in government programs are broadly similar. In particular, both types of measures threaten to diminish the wealth of those whom they affect. For the sake of simplicity, this study refers to those whose wealth is likely to be reduced as "taxpayers."

Economic theory suggests that people save more and consume less when they expect to have to pay higher future taxes.[2] As a result, many economists argue that the impact of a deficit-financed increase in government spending in expanding aggregate demand and GNP is at least partially offset by the reductions in consumption and increases in saving that can be expected among taxpayers. After all, households are bound to some extent to foresee the higher tax liabilities for themselves and for their heirs that may be needed to service and ultimately pay off the higher federal debt that an increase in the deficit implies.[3] If this effect occurs as a reaction to the S&L

crisis, it could offset the stimulative economic effect from consumption among depositors in S&Ls.

Whether it works out so neatly is quite another matter. Taxpayers might increase their saving to a lesser degree for several reasons and thereby fail to offset fully the stimulative impact of deficit-financed changes in government spending.[4] Some taxpayers are myopic when making their financial plans. Their decisions to save and invest are governed by more immediate factors than anticipations of future developments--factors such as limits on the amount that they can borrow and lend. To the extent that taxpayers do form expectations of their future tax liabilities and attempt to plan in anticipation, they may not increase their saving by enough to offset fully the increased future taxes for a variety of reasons--for example, uncertainty about whether their own taxes would increase and if so by how much. All of these arguments suggest that people may not increase saving strongly in response to the increase in future taxes that seems implicit in any increase in the federal deficit.

Even stronger reasons exist, however, for believing that taxpayers may have saved at a lesser rate. For example, little information was available during much of the 1980s about how large federal liabilities would be. Some economists were writing about the S&L problems in the early 1980s, but in general both government and private analysts tended to

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2. For instance, see Franco Modigliani, "Life Cycle, Individual Thrift, and the Wealth of Nations," *American Economic Review*, vol. 76, no. 3 (June 1986), pp. 297-313.

3. According to conventional theory, an increase in the budget deficit stimulates consumption and aggregate demand. This, however, is a controversial issue; those adhering to the Ricardian equivalence view argue that government bonds do not represent net wealth to the private sector. See B. Douglas Bernheim, "Ricardian Equivalence: An Evaluation of Theory and Evidence," in Stanley Fischer, ed., *Macroeconomics Annual 1987*

(Cambridge, Mass.: MIT Press, 1987), pp. 263-304; and Robert J. Barro, "Are Government Bonds Net Wealth?" *Journal of Political Economy*, vol. 82, no. 6 (November/ December 1974), pp. 1095-1117.

4. For more detailed discussions of the analytic issues associated with anticipations of future taxes with reference to the S&L situation, see Angelo R. Mascaro, "Aftermath of the Thrift Crisis: Balancing the Economy's Books," *Contemporary Policy Issues*, vol. 8 (April 1990), pp. 95-106; and Frederick Furlong, "The FSLIC Bailout and the Economy," *FRBSF Weekly Letter*, Federal Reserve Bank of San Francisco (May 12, 1989).

greatly underestimate the size of the industry's losses and of the government's liabilities.[5] In addition, information was scarce as to how the government's obligations under deposit insurance were going to be financed until the Treasury began borrowing funds at the very end of the decade. Under these circumstances, consumers and taxpayers would understandably have had difficulty perceiving how the thrift problem would ultimately affect their wealth.

In sum, accruing federal obligations under deposit insurance act as a stimulative fiscal policy in the face of the S&L collapse. They do this by maintaining the wealth and consumption of depositors in failing institutions, while shifting the loss in wealth to taxpayers who most likely did not reduce their consumption in a fully offsetting way.

Effects on Interest Rates. Like any expansionary fiscal policy, an increase in federal accumulated liabilities for deposit insurance tends to increase interest rates. This increase at least partially offsets the expansionary effect on demand and GNP by reducing spending for investment and other interest-sensitive components of demand.

Increasing federal liabilities for deposit insurance raise interest rates through several channels. First, they reduce the saving rate as described above: reduction in saving puts upward pressure on interest rates because a higher interest rate is needed to balance flows of saving and investment. Second, they raise prospective government borrowing, which--if recognized--could put upward pressure on long-term interest rates. A third way in which accumulating federal obligations for deposit insurance push up interest rates stems from pressures on the available supply of money. If

the overall effect of the obligations is to stimulate total demand and GNP, it increases the demand for money. If the supply of money does not increase swiftly enough to accommodate this increase, it pushes up short-term interest rates.

Long-Run Effects on GNP. In the longer run, however, the net effect on GNP of increases in accrued liabilities for deposit insurance is likely to be unambiguously negative, just as it is for conventional fiscal policies that increase budget deficits. That effect takes place because the accrued liabilities for deposit insurance stimulate consumption and therefore retard saving and capital accumulation. Reducing capital accumulation lowers the growth in potential GNP, and in the long run this outweighs the effect of a stimulus to overall demand.

Effects of Financing Already Accrued Liabilities with Bonds

In contrast, government borrowing and government outlays to finance liabilities already accrued for deposit insurance as part of the process of cleaning up failed S&Ls have little or no effect on GNP, interest rates, and other economic conditions. When regulators act to resolve S&Ls that became insolvent in earlier periods, the associated budget outlays have little effect on overall demand because they do not change anyone's income or wealth. The form of the government's liability is simply being changed from an implicit liability to depositors in failed S&Ls to a conventional liability, such as government bonds; the private sector's wealth is not changed. The important economic effects of the deposit insurance program are triggered when the value of

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5.   In the late 1980s, this situation began changing rapidly, as estimates of the scale of the S&L crisis escalated sharply. Barth and Bartholomew present an interesting chart summarizing the history of estimates of the government's losses from the S&L crisis. Their chart shows that it took a number of years before analysts understood the full magnitude of the disaster. For in-

stance, as late as December 1986, most estimates were under $40 billion. See James R. Barth and Phillip F. Bartholomew, "The Thrift Industry Crisis: Revealed Weakness in the Federal Insurance System," in James R. Barth and R. Dan Brumbaugh, Jr., eds., *The Reform of Federal Deposit Insurance: Protecting the Taxpayers and Disciplining the Government* (New York: Harper Collins, forthcoming).

the government's subsidy increases and the government accrues a liability, not when the government actually borrows in the credit market to formalize this liability.[6]

Most analysts believe that massive government borrowing to honor its obligations under deposit insurance and clean up failed thrift institutions does not significantly raise interest rates. In that respect, such borrowing is quite different from borrowing to finance federal spending for other programs. Although the issue is in dispute, some evidence suggests that this more normal borrowing can increase interest rates by a significant amount.[7] In contrast, federal borrowing to recognize its implicit liabilities is more akin to operations to refund debt, which have little or no effect on interest rates.

Because the borrowing does not lead to any increase in the demand for goods and services, federal borrowing for existing deposit insurance liabilities is unlikely to materially affect interest rates. Without such an increase, no rise in the demand for money and credit occurs, and pressures on interest rates remain the same. Once the government borrows these funds, the people to whom it pays them are probably in turn going to lend them out again.

In some cases, the government uses the proceeds of its borrowing to establish backing for the deposits in S&Ls that have become insolvent. In particular, to arrange a merger or acquisition, the government may have to provide funds to induce the stronger one to take over the liabilities of the insolvent institution. The strong S&L uses the government's funds to buy financial assets or make loans. As a result, as many dollars will be available for borrowers as was true before the borrowing occurred. Moreover, the borrowing did not directly result in an increase in the demand for goods and services--by financing government purchases or by increasing the income of any other party. For all of these reasons, little or no pressure on interest rates arises.

Federal borrowing for existing deposit insurance liabilities is unlikely to materially affect interest rates.

In other cases, the government gives borrowed funds directly to depositors in failed S&Ls. But here, too, the money ends up back in the financial markets without having increased the demand for goods and services. When the government decides to close an insolvent thrift instead of arranging for its takeover by another, it may use borrowed funds simply to pay the value of insured deposits to their owners. But these individuals are virtually certain to deposit this money in another institution or invest it in a financial asset similar to the deposit that they maintained at the closed S&L. Once the individuals redeposit or reinvest these funds, they are loaned out again. No net withdrawal of funds from financial markets has taken place, nor has any increase in demand for goods and services occurred. As a result, no significant pressure on interest rates has been felt.

Some qualifications apply to the general conclusion that government borrowing to resolve insolvent S&Ls does not affect overall demand and interest rates, but the net effect

6. For earlier discussions of this aspect, see Martin Feldstein, "FSLIC Funding Belongs Off-Budget," *Wall Street Journal*, March 1, 1989; and G. Thomas Woodward, "FSLIC, The Budget, and the Economy," Congressional Research Service (January 1989).

7. See James R. Barth and others, "The Effects of Federal Budget Deficits on Interest Rates and the Domestic Composition of Output," in Rudolph G. Penner, ed., *The Great Fiscal Experiment* (Washington, D.C.: Urban Institute Press, 1991), pp. 71-141.

of these factors is probably small. Paradoxically, interest rates could fall slightly rather than rise because the size of government borrowing for resolutions could convey information to taxpayers about the size of the government's costs of resolving the S&L crisis. Because large increases in the debt imply higher taxes in the future, some forward-looking households might decide to increase their saving, which would tend to reduce overall demand and interest rates.

For some reasons, the government's regulatory and financing operations could lower-- rather than raise--interest rates. One reason is that when regulators act to close or merge insolvent S&Ls, the extraordinarily high rates that insolvent institutions tend to offer on deposits to attract funds are wiped out.[8] Although the effect on the average level of interest rates may be small, this change could help the profitability of the remaining healthy financial institutions.

When the government prompts a major exchange of assets between itself and the private sector, as in resolving the S&L crisis, such a step could cause a modest and probably temporary increase in the returns on government bonds compared with those on other assets, without changing the overall level of rates. When the government exchanges its bonds for thrift assets, the net result is to raise interest rates on Treasury bonds relative to returns on other assets. However, recent financial research suggests that these shifts in comparative returns are likely to be minute.[9]

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8.   See John B. Shoven, Scott B. Smart, and Joel Wald-fogel, "Real Interest Rates and the Savings and Loan Crisis: The Moral Hazard Premium," Working Paper No. 3754, National Bureau of Economic Research, (June 1991).

9.   See Jeffrey A. Frankel, "Portfolio Crowding-Out, Empirically Estimated," *Quarterly Journal of Economics*, vol. 100, Supplement (1985), pp. 1041-1065; and Barry P. Bosworth, Andrew S. Carron, and Elisabeth H. Rhyne, *The Economics of Federal Credit Programs* (Washington, D.C.: Brookings Institution, 1987), pp. 23-46 and 177-204.

Recognizing Working Capital as a Special Case

The government needs a substantial amount of working capital in order to finance its purchase of S&L assets that it expects to resell later. Working capital differs from other expenditures for resolving thrift institutions because the government will recover working capital when these assets are sold. Moreover, its economic effects are minor because the government and the private sector are exchanging assets of equal value. Such exchanges do not stimulate spending in the private sector. As a result, expenditures of working capital have far smaller economic effects than do other types of government spending.

Working capital to resolve insolvent S&Ls also does not have the same kind of effect as does conventional fiscal policy. When the government borrows to gain working capital, it returns the money it borrowed to the private sector in exchange for private assets-- namely, the assets held by the S&Ls that were taken over. The private sector has exchanged these financial and physical assets--notably, real estate--for government debt of equal value. Because these transactions do not affect the net worth of the private sector, it would not have any reason to spend either more, or less, than it would otherwise. In the conventional case--for instance, an outlay for unemployment insurance--disposable income in the private sector increases.

Looking at Other Financing Issues

As with conventional fiscal policy, policymakers have several choices concerning financing the costs of deposit insurance, each with different long-term economic effects. The financing options include delay in resolving the institutions. As discussed earlier, however, the costs of delay are probably very high. Otherwise, the government's options include raising deposit insurance premiums, borrowing, increasing taxes, or cutting other spending. Yet another option is to finance the

borrowing by creating additional money--an approach that could eventually raise inflation.

Increases in deposit insurance premiums have economic effects that are similar to those from raising business taxes: profits are initially squeezed, and some of the additional costs get pushed back on depositors or forwarded to borrowers. At the same time, total demand and GNP are reduced. Currently, the major drawback is that deposit insurance premiums for S&Ls have already been raised substantially and the industry is already in a debilitated state. Thus, imposing even higher premiums may be a risky policy to undertake.

As with financing conventional budget outlays, a principal issue concerns the emphasis on taxation versus borrowing as a means of paying the government's obligations for deposit insurance. Most analysts would argue that raising taxes to reduce the amount of borrowing by the government increases national saving and long-run growth, although higher taxes tend to reduce labor supply and private saving.[10] An alternative view, the Ricardian equivalence view, holds that the choice of tax versus debt financing would not affect national saving because taxpayers would offset the government's actions.[11]

One can make a case for smoothing tax rates under both the conventional and the Ricardian equivalence points of view. The argument for smoothing taxes arises when there is a sharp but temporary increase in government spending, such as for paying off the costs of the S&L crisis. Debt should largely finance such a temporary increase in spending to avoid temporary increases in tax rates that could produce a misallocation of resources. Under the conventional view, the need to stabilize overall demand is simply one more reason not to change taxes or spending

abruptly. In the S&L situation, tax smoothing would call for a very heavy emphasis on debt finance.[12]
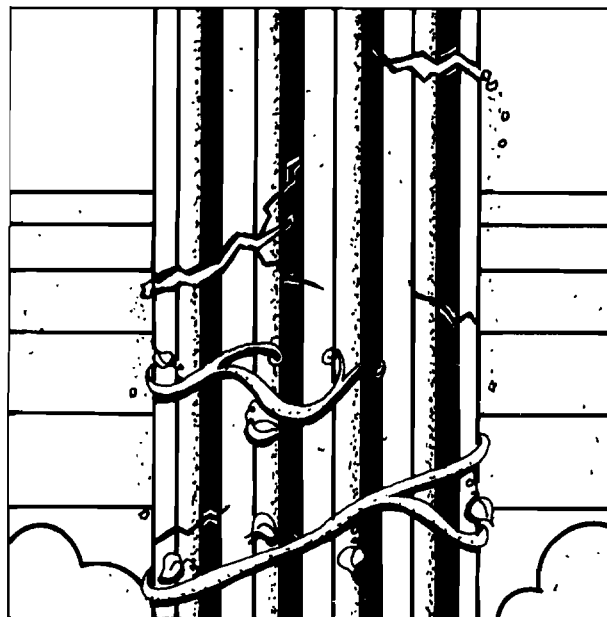
The interest payment costs of servicing additional federal debt, in turn, have to be financed through some combination of higher taxes, reductions in other spending, or still more borrowing. Most taxes, even when well designed, cause some losses in economic efficiency and may bring about some reduction in supply. Reducing other kinds of government spending has another kind of cost--the income transfers or services that are not provided. Finally, borrowing to pay the interest expense raises the government deficit and thereby reduces national saving. Since all of these options have their drawbacks, the natural temptation is to do nothing. But in this case, lack of action would add to the eventual cost.

The decision about how to finance the S&L bailout has important implications for when these costs will be borne and by which generations. It is the overall budget deficit that is crucial in affecting intergenerational equity, rather than how any particular program is financed. Nevertheless, it is useful for analysis

10. For an analysis of the effects of budget deficits on long-run living standards, see Congressional Budget Office, *The Economic and Budget Outlook* (January 1989), pp. 79-99.

11. See Bernheim, "Ricardian Equivalence: An Evaluation of Theory and Evidence."

12. For a more detailed discussion of these issues, see Mascaro, "Aftermath of the Thrift Crisis: Balancing the Economy's Books."

to consider the net effect of choices about financing a particular program, holding other things constant.

In particular, suppose if government debt finances much of the cost, and if taxpayers' consumption declines very little, then the real costs are deferred to the future and to future generations. Why? The reason is that by maintaining consumption the nation is choosing to live with a smaller capital stock and a lower saving rate, and these effects reduce the amount of capital for the future.

Future tax burdens will be greater, regardless of how the higher taxes are distributed in time.

In turn, a lower capital stock reduces the level of output and the standard of living for future generations.[13] Moreover, if government debt entirely finances the costs of the bailout, then taxpayers have to assume a higher debt-service burden forever. That scenario obviously would pile the tax burden on future generations. Conversely, raising taxes or lowering other kinds of government spending would shift the burden toward current generations.[14]

To the extent that deposit insurance requires that taxpayers bear the costs of the S&Ls' losses, future tax burdens will be greater, regardless of how the higher taxes are distributed in time. One implication is that future tax burdens per unit of federal public services will be larger than they would have been if the S&L losses had not occurred. The reason is that the cost of servicing the additional debt must be added to the costs of providing the government service. When the tax system is used to transfer wealth to a particular group, this process can entail what economists sometimes refer to as "marginal efficiency costs of redistribution." That gauge measures the losses for the groups that pay higher taxes relative to the gains for the groups that receive the transfer of wealth. According to some estimates, the losses for some kinds of transfers may exceed the gains by 50 percent to 130 percent.[15]

Conclusions

Two aspects of the S&L losses have implications for the overall economy. One is the detrimental effect on the nation's capital stock because the S&Ls channeled some of the nation's investments into inefficient and sometimes worthless projects, rather than into productive investments such as new factories and new equipment. This reduction in the nation's capital stock causes potential gross national product to be lower than it would be otherwise.

Another aspect stems from the fiscal policy implicit in the deposit insurance program, including the economic effects of deficit-financed federal outlays to finance the resolution of failed savings and loan institutions, as well as the economic effects of the budget liabilities as they accrue. By and large, these

13. For a discussion of the costs of the S&L bailout on different generations, see Frederick T. Furlong, "Regional Effects of the Thrift Bailout," *FRBSF Weekly Letter*, Federal Reserve Bank of San Francisco (September 14, 1990).

14. Concerns about burdening future generations have prompted some legislative proposals to pay for at least part of the S&L bailout costs with higher taxes. See, for instance, Joseph P. Kennedy II, "We Should Pay As We Go for the S&Ls," *Washington Post*, October 29, 1991, p. A23.

15. See Charles L. Ballard, "The Marginal Efficiency Cost of Redistribution," *American Economic Review*, vol. 78, no. 5 (December 1988), pp. 1019-1033; and Appendix B of this report.

cash outlays will not work to slow economic growth and raise interest rates because borrowing to resolve the thrift crisis will not stimulate demand or reduce national saving. In contrast, the accrual of new federal obligations under deposit insurance is part of the government's fiscal policy that affects output, employment, and national saving. The commitments to make actual payments under this program arise automatically when the institutions become insolvent and lose the assets that back the deposits that they hold. Although they have often been unrecognized, these accruing federal liabilities have economic effects somewhat like those of familiar types of federal fiscal policy.

Estimating the Economic Effects of the S&L Breakdown

Although earlier chapters have outlined the economic effects of widespread failures among thrift institutions in qualitative terms, it would also be useful to explore the quantitative analyses of the issue. How much has the aftermath of these failures affected the overall economy? What have been the effects on output, interest rates, prices, and other economic conditions?
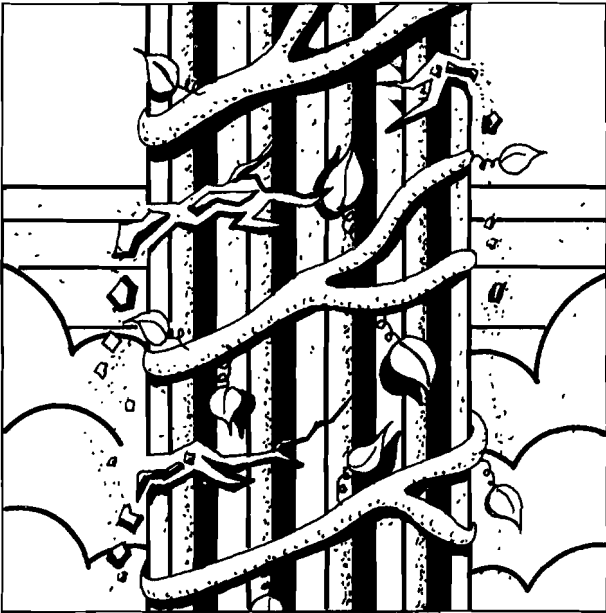
Of course, any such estimates are highly speculative. No precise methods for estimating the effects of these thrift failures are available, and as yet little study has been devoted to the problem. The figures that this chapter presents are derived using a computer model of the economy--the McKibbin-Sachs Global (MSG) model--that uses statistically derived equations describing the behavior of consumers, businesses, and other sectors of the economy.[1] Although this model, which is described in detail in Appendix A, is a promising approach to estimating the impacts of the losses among thrift institutions, other models or approaches might well give different results.

One major theme that emerges from the estimates that are presented below is that the thrift crisis does appear to have reduced the economy's overall output severely since the early 1980s.[2]

Although these estimates are necessarily quite speculative, the figures suggest that the losses among thrifts reduced gross national product during the period between 1981 and

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1. CBO has developed results from only this one model rather than following its usual practice of reporting results from at least two different models, principally for two reasons. First, the problem was too complicated to incorporate in more than one model in the time available. Second, while no model can precisely portray the behavior of consumers and investors during a turbulent decade like the 1980s, the McKibbin-Sachs Global model incorporates the most important channels through which the crisis and its financing may have influenced the economy.

2. For a complete technical discussion of an earlier version of these results, see Joyce Manchester and Warwick J. McKibbin, "A Quantitative Assessment of the Macroeconomic Costs of the Savings and Loan Debacle," Brookings Discussion Paper No. 91-3 (June 1991). For a complete overview of the model and a variety of applications, see Warwick J. McKibbin and Jeffrey Sachs, *Global Linkages: Macroeconomic Interdependence and Cooperation in the World Economy* (Washington, D.C: Brookings Institution, 1991). An updated description of the analysis is available from the authors.

1990 by a total of $200 billion (in 1990 dollars). Furthermore, such substantial losses seem likely to continue--in effect to take on a life of their own. Projections that are developed in this chapter suggest that losses in GNP over the period between 1991 and the year 2000 could total as much as some $300 billion (again in 1990 dollars).

A second theme evident in these estimates has to do with the economic impacts of the large commitments of federal funds to the task of mopping up failed savings and loan associations under federal deposit insurance. The figures that are used in this chapter suggest that newly arising federal financial obligations for deposit insurance--obligations that sprang up during the 1980s without being recorded in the budget at the time--had only a slight impact on the economy.

During the 1980s, the estimated impact on GNP is slightly positive, and during the 1990s it is slightly negative. That outcome sheds light on the contribution of federal liabilities for deposit insurance to the government's fiscal policy during this period. Although the impacts of this aspect of fiscal policy have been little studied until now, the figures in this chapter suggest that their implications have been slight.

Other overall implications of the estimates in this chapter have to do with more subtle economic impacts of the failures among thrift institutions and of the resulting federal obligations. The figures suggest, for example, that because mounting federal obligations under deposit insurance were not clearly recognized in the budget or elsewhere, households may have slightly lowered their rates of saving and thereby increased their consumption. In contrast, when the magnitude of federal liabilities as a result of thrift failures became widely apparent at the end of the 1980s, household saving may have risen slightly in reaction. As a result of the increase in saving, interest rates may have been pushed slightly downward.

Taking Account of Basic Economic Changes

In developing estimates of their economic impacts, CBO took account of three basic changes in the economic environment that the failures and losses among thrift institutions caused. The first was the loss in productive capital stemming from the resources that were wasted through thrift failures; the second was the new budgetary obligations under federal deposit insurance that arose as a result of those failures; and the third was the cash outlays that the federal government made under deposit insurance as a result of those budgetary obligations.

Through the publicity surrounding those cash outlays came new information about the size of the federal obligations under deposit insurance, information that affected the way households and others in the economy behaved, according to the model that CBO used. In developing the estimates of economic impacts, CBO used the MSG economic model to develop figures on how each of these main elements affected the overall economy.

A fourth aspect of the crisis that might have been taken into account, but was not, is the subsidy to certain types of investments that arises through the deposit insurance program before any losses occur.

Estimates of Capital Losses

The most important ingredient of any estimate of the economic effects of the massive failures among thrift institutions that occurred during the 1980s is a set of figures on the amount of productive capital--business plant and equipment, commercial and residential building, and the like--that was lost to the economy as a result of these developments. The chief im-

pact of the crisis was to waste or misallocate billions of dollars of savings that would otherwise have been invested in such assets. Had such investments taken place without interference from poorly conceived decisions by the managers of federally insured thrift institutions, they would have been used to produce more than was possible without them.

There is no direct measure of the magnitude of the losses in the economy's stock of productive capital that are attributable to the S&L breakdown of the 1980s, but such an estimate is a necessary element in this analysis. The study develops rough illustrative estimates of the real capital losses using figures on losses to insolvent S&Ls as calculated by the Congressional Budget Office.[3] These estimates, which are shown in Table 2, suggest that the losses in productive capital could have been very large, and imply GNP losses that will continue for many years even if the thrift crisis is quickly resolved.

These estimates could overstate or understate the true losses in productive capital that resulted from failures and other business problems among insured thrift institutions. Appendix B describes the method that CBO used to generate estimates of capital losses associated with the S&L debacle and also presents several arguments explaining why the estimates may be too large or too small.

Quite possibly, the estimates of capital losses are too high, but no persuasive information reveals by what factor these estimates should be scaled down. Separating the capital losses associated with the collapse from ordinary capital losses that occur as a result of

Table 2.
Annual Incremental Estimated Losses in Productive Capital Associated with the S&L Crisis, 1981-1992

Calendar Year	Capital Loss (Billions of 1990 dollars)
1981	21.82
1982	22.35
1983	28.08
1984	34.45
1985	50.80
1986	25.43
1987	43.21
1988	41.70
1989	49.86
1990	41.20
1991	31.78
1992	7.57
1981-1992	398.24

SOURCE: Congressional Budget Office; see Appendix B for details.

NOTE: These estimates are based on CBO's projections of losses in failed thrifts through 1995. CBO assumes that losses in productive capital occurred three years before the measurement of losses in failed thrifts.

normal risky investment conditions is exceedingly difficult. Estimates of half (or double) the magnitude of the capital losses used here would produce about half (or about double) the effect on GNP and other variables reported in this study. The same qualitative results would emerge.

Estimates of Federal Obligations to Depositors

In addition to capital losses, CBO's estimates of the economic impacts of the losses among thrift institutions are based on figures showing the amount of new federal obligations to depositors under deposit insurance. These obligations affect the economy because they increase the wealth of depositors in insured institutions: if the government had not compensated them through its insurance program,

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3. An earlier version of this analysis relied on estimates of losses to the Federal Savings and Loan Insurance Corporation, the S&L deposit insurance agency, to derive capital loss estimates. FSLIC losses were obtained from Edward J. Kane, "Economic Estimates of the 1986-1989 Time Profile of Taxpayer Losses in the S&L Insurance Mess," Final Report, CBO Contract No. N 10033 (January 18, 1991). However, Kane's estimates provided annual figures for 1986 to 1989 only, and the timing of FSLIC losses is even further removed from the "bad investments" made by failing S&Ls than are the costs of resolution as calculated by CBO.

depositors in thrift institutions that suffered losses would have lost their funds and, with them, a goodly chunk of their wealth. Their reaction would be to increase their saving to replace the lost wealth. The economic impact of federal obligations to depositors under deposit insurance, then, was to protect the wealth of depositors and reduce their saving from the levels that it would have reached if deposit insurance had not been present.

CBO's figures on new federal obligations to depositors, which are shown in Table 3, are based directly on estimates of newly accruing losses among insured thrift institutions (for details of the calculations, see the next chapter and Appendix B).

Estimates of Federal Outlays for Deposit Insurance

Estimates of net federal outlays for the thrift mess in recent and future years are also a necessary factor in CBO's quantitative estimates of economic impacts of the losses among

Table 4.
CBO's "Unlimited Resources" Estimates of Federal Net Outlays for Resolution of Thrift Institutions (Billions of dollars)

Calendar Year	Current Dollars	1990 Dollars
1989	19	20
1990	70	70
1991	76	73
1992	96	90
1993	53	48
1994	37	32
1995	-26	-22
1996	-34	-28

SOURCE: Congressional Budget Office, *The Economic and Budget Outlook: An Update* (August 1991), Table II-5, p. 64.

NOTE: This estimate includes estimated Resolution Trust Corporation outlays for 1989 and 1990, and projected RTC outlays for 1991 through 1996 if it has unlimited borrowing authority. (This is CBO's estimate of the minimum cost of resolutions.) It also includes estimated spending by the Savings Association Insurance Fund, the Federal Savings and Loan Insurance Fund, the FSLIC Resolution Fund, and the Financing Corporation.

Table 3.
Estimates of Accruals of New Federal Budgetary Obligations to Depositors Under Deposit Insurance for Thrift Institutions

Calendar Year	Billions of 1990 dollars
1981	12.1
1982	12.4
1983	15.5
1984	19.0
1985	28.1
1986	14.1
1987	23.9
1988	23.0
1989	27.6
1990	22.8
1991	17.6
1992	4.2

SOURCE: Congressional Budget Office estimates described in Appendix B.

insured thrift institutions. Of course, figures on cash outlays in past years are readily available. For future years, CBO has produced such estimates assuming that the Congress promptly appropriates all the funds that the Resolution Trust Corporation needs to clean up the thrift mess--an assumption that CBO refers to as "unlimited resources" (see Table 4).

Those estimates include resources devoted to the Resolution Trust Corporation, the Savings Association Insurance Fund, the Federal Savings and Loan Insurance Corporation, the FSLIC Resolution Fund, and the Financing Corporation. The estimates include both permanent costs and working capital, or funds needed on a temporary basis to finance transactions but expected to be recovered by the government in future years. This study assumes that all net outlays are financed by borrowing, which is the way they have been financed so far.

Retrieving an Excluded Factor: the Subsidy from Deposit Insurance

As Chapter One pointed out, one prominent aspect of the federal program of deposit insurance is its effect in subsidizing certain types of investment. Because of deposit insurance, many banks and thrift institutions can attract funds more cheaply than would be true without the program. They do not have to compensate depositors for the risk that the investments into which these funds are channeled would fail. Instead, taxpayers bear the risk. As a result, the deposit insurance program provides insured institutions with an implicit subsidy. The institutions pass the subsidy on to the sectors and investments in which federal regulations allow them to invest. Ultimately, this subsidy is what caused the excessive and wasteful investment of recent years in certain sectors, such as commercial real estate, and therefore the capital losses that are studied in this chapter.

The estimates of economic impacts of such failures do not, however, take direct account of the implicit subsidy and of all its economic consequences. For example, the estimates do not take into account the possibility that the subsidy increased the total amount of investment in the economy from the levels that would have occurred without federal deposit insurance. In the short term, such increased investment might have increased GNP and economic activity by putting unemployed workers and other unused resources to work producing investment goods during the economically slack period early in the 1980s.

Instead, the estimates in this chapter begin at a later stage of the process--after the investments that depended on the subsidy from deposit insurance were made, and when they began to prove to be wasteful and inefficient. CBO had two reasons for limiting the scope of the study in this way. Most basically, CBO had no means of estimating the magnitude of the subsidy or of imputing values of it to particular years. Grappling with the subsidy value would have meant finding one's way

through the extraordinarily complicated set of factors that led to the sad state of deposit insurance. More important, however, analyzing the behavior of the subsidy and its immediate consequences was beyond the intended scope of this study. The study is intended to take the insolvencies and losses among insured thrift institutions and their many causes as given, and to try to estimate what the costs may have been.

What the Analysis Reveals

CBO's estimates of the magnitudes of the economic impacts of losses among federally insured thrifts reflect the overall impact as well as its major components. These components are first, the effects resulting from losses in productive capital; second, the effects resulting from the newly arising federal financial obligations to depositors; and third, the effects resulting from federal borrowing together with any new information that this may convey to taxpayers about the magnitude of the bill for cleaning up the S&L mess. To reflect the impacts of all three components, CBO developed three different scenarios. The three are presented together in Figure 1. Details of how these estimates were derived are given in Appendixes A and B.[4]

The first scenario shows only the economic effects of the losses in productive capital. Since the loss in capital reduced the economy's capacity to generate output and income, the hallmark of this scenario is a significant drop in GNP from the baseline level. (The economic model determines the magnitude of the loss in GNP.)

The second scenario shows the effects of the loss in productive capital, as in Scenario 1, as well as the impacts of newly arising federal obligations to compensate depositors in failed

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4.   See also Manchester and McKibbin, "A Quantitative Assessment of the Macroeconomic Costs of the Savings and Loan Debacle."

Figure 1.
Simulated Effects of the S&L Crisis According to Three Scenarios, 1981-2007 (By calendar years)

Gross National Product
Percentage of GNP Deviation from the Baseline

Private Consumption
Percentage of GNP Deviation from the Baseline

Trade Balance
Percentage of GNP Deviation from the Baseline

Investment
Percentage of GNP Deviation from the Baseline

Foreign Exchange Value of the Dollar
Percentage Change from the Baseline

Real Long-Term Interest Rates
Basis Points Deviation from the Baseline[a]

SOURCE: Congressional Budget Office.
NOTE: Scenario 1 shows the economic effects of the losses in productive capital. Scenario 2 shows the effects of the loss in productive capital, as in Scenario 1, as well as the effects of newly arising federal obligations to compensate depositors in failed S&Ls for their losses. Scenario 3 shows the combined effects of the losses in the capital stock, the newly arising federal obligations under the deposit insurance system, and the financing of the government obligations through borrowing.
a.   A basis point is one one-hundredth of a percentage point.

savings and loan institutions for the losses that those institutions have suffered. These federal obligations make depositors richer than they would have been if no one protected the value of their deposits. Scenario 2 incorporates the economic impacts of the reactions of depositors to protecting their wealth. Initially, this reaction is to increase consumption, with wider economic implications.

The third scenario takes account of the losses in productive capital and of new federal obligations to depositors. It also uses the information regarding the total cost to the taxpayer of the federal government's protection of depositors in failed savings and loan institutions through its deposit insurance program.

This study assumes (with considerable realism) that once the federal government began cleaning up the thrift problem in the late 1980s and had to borrow large sums of money as a result, information about the bill facing the taxpayer became widely available for the first time. In the economic model that CBO used, the impact of this information is to induce some households to save more in anticipation of higher tax bills. As a result, the differences between the estimated economic impacts reflected in Scenario 3 and those in Scenario 2 are the economic ramifications of somewhat higher household saving beginning at the outset of the 1990s, combined with the increased government borrowing to finance the reimbursement of deposits.

In each scenario, the impacts are described as deviations from baseline levels of the different economic variables that are discussed. The baseline represents the path that a given economic magnitude, like GNP, would follow had the losses among insured thrift institutions not occurred. As a result, the description of CBO's estimates in terms of deviations from baseline values of different economic variables shows how much greater or less than normal the losses among thrift institutions made a given economic variable turn out to be.

Figure 1 shows estimated impacts of the thrift losses on GNP, private consumption, the balance of trade, investment, the real exchange rate, and real interest rates under each scenario. Detailed results for a wider range of variables are summarized in Table 5.

Totaling the Overall Effects of the S&L Losses

The estimated economic impacts under Scenario 3 illustrate the full effects of the losses among federally insured thrift institutions on U.S. output and on other macroeconomic measures. The figures suggest that the thrift crisis caused a sustained loss in gross national product. The cumulative loss between 1981 and 1990 in 1990 dollars in this simulation is about $200 billion. By the year 2000, the total cumulative loss in forgone GNP is almost $500 billion (in 1990 dollars). The peak annual loss of GNP is about 0.7 percent of the baseline level in 1992--or about $42 billion in 1990 dollars.

By 1995 the estimated level of GNP is still about 0.5 percent lower than what it would have been without the S&L problems, but after that it slowly returns to its normal path. In 2017, however, some 25 years after the capital losses are assumed to stop, GNP remains slightly below where it would have been without the S&L crisis. The slowness of the recovery in output is the result in part of households' being slow to increase their saving to make up the loss in the physical capital stock. With little increase in saving, only a small increase in funds is available for use in replacing the lost capital.[5]

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5. Gross domestic product behaves in much the same way as gross national product but shows a slightly smaller decline over time. GDP shows the value of all production in the United States, no matter who owns the labor and capital that are used. By contrast, GNP shows the value of production using U.S. labor and using capital owned by U.S. nationals here and abroad. GNP falls more than GDP in Scenario 3 because the S&L breakdown reduces U.S. residents' ownership of assets abroad. At the same time, foreigners buy more assets in the United States in response to the higher rate of return.

Declines in several other macroeconomic measures help to quantify the loss that results from the S&L crisis as well. The value of the capital stock in 1990 through 1992 remains more than $290 billion below its baseline level in each year. Consumption remains below baseline at least until 2017, meaning that the standard of living for all households will be depressed, compared with the baseline, for more than three decades. Reductions in GNP and increases in interest rates keep investment slightly lower during this period as well, extending the time needed to return to baseline levels of production and income. Total wealth in the economy is lower for about 25 years, as savers receive a smaller total return from the reduced capital stock. The higher path of consumption and lower levels of in-come imply that national saving is reduced, leading to a deteriorating deficit in the current account of the balance of payments and higher borrowing from overseas. Fewer resources from within the United States are available to finance investment.

These figures are not definitive. As noted earlier, the results depend heavily on uncertain estimates of the amount of capital that was lost in the course of the collapse. Indeed, the losses in GNP could be much smaller or larger than these figures indicate. Qualitatively, however, the lesson of these figures is probably accurate: the losses in output from the thrift crisis are likely to have been significant, and to persist well into the present decade.

Table 5.
Simulated Impact of the S&L Crisis on Selected Variables (By calendar year)

	1982	1985	1988	1990	1992	1995	2000	2010
Gross National Product								
Scenario 1	-.14	-.42	-.58	-.66	-.60	-.36	-.18	-.09
Scenario 2	-.13	-.41	-.60	-.70	-.68	-.48	-.35	-.36
Scenario 3	-.13	-.41	-.60	-.63	-.73	-.47	-.22	-.14
Gross Domestic Product								
Scenario 1	-.13	-.41	-.56	-.63	-.57	-.32	-.14	-.05
Scenario 2	-.12	-.39	-.55	-.63	-.60	-.38	-.21	-.14
Scenario 3	-.12	-.39	-.55	-.57	-.64	-.39	-.14	-.06
Consumption								
Scenario 1	-.06	-.20	-.27	-.31	-.29	-.18	-.09	-.05
Scenario 2	-.03	-.10	-.13	-.13	-.10	-.01	.07	.09
Scenario 3	-.03	-.10	-.13	-.14	-.26	-.22	-.11	-.08
Investment								
Scenario 1	-.04	-.13	-.17	-.19	-.17	-.09	-.04	-.02
Scenario 2	-.05	-.14	-.20	-.23	-.23	-.16	-.12	-.11
Scenario 3	-.05	-.14	-.20	-.21	-.22	-.12	-.04	-.02
Trade Balance								
Scenario 1	-.01	-.02	-.02	-.02	-.01	-.01	.00	.01
Scenario 2	-.02	-.05	-.07	-.09	-.09	-.08	-.07	-.05
Scenario 3	-.02	-.05	-.07	-.06	-.03	-.00	.01	.02
Real Long-Term Interest Rates[a]								
Scenario 1	.07	.21	.28	.30	.27	.15	.07	.03
Scenario 2	.11	.33	.47	.56	.56	.46	.41	.43
Scenario 3	.11	.33	.47	.51	.43	.20	.08	.04
Real Foreign Exchange Value of the Dollar[b]								
Scenario 1	.29	.76	.92	1.01	.83	.39	.13	-.06
Scenario 2	.42	1.12	1.47	1.72	1.58	1.13	.84	.54
Scenario 3	.42	1.12	1.47	1.29	1.00	.37	.02	-.19

(Continued)

Scrutinizing the Fiscal Policy Effects of the Losses Among Thrifts

The overall economic impacts of the losses among thrift institutions that are shown in Scenario 3 consist of three major parts: the effects of the economy's loss in productive capital; the effects of the federal government's newly arising obligations to depositors, reflected in the difference between Scenario 2 and Scenario 1; and the effects of the new information that emerges with the government's borrowing to finance its outlays to liquidate these obligations, reflected in the difference between Scenarios 2 and 3.

The impacts of the new federal obligations and of the resulting federal borrowing show the economic effects of the changes in the fed-

eral budget that came about as a result of the losses among thrift institutions. As such, these impacts reflect on how those federal budgetary operations affect overall federal fiscal policy.

The figures in Scenario 2 suggest that the chief effects of new federal obligations under deposit insurance during the 1980s were to increase private wealth and consumption, and to raise interest rates and the exchange value of the dollar, reducing investment and net exports. (These effects are also evident in Scenario 3.) The accruing government liabilities increased the wealth of depositors in failed institutions, partially offsetting the loss in wealth resulting from the capital losses. Household wealth was not higher than it would have been had the S&L crisis not occurred, but it was

Table 5.
Continued

	1982	1985	1988	1990	1992	1995	2000	2010
Capital Stock								
Scenario 1	-1.16	-3.20	-4.45	-5.27	-4.96	-3.63	-2.04	-.66
Scenario 2	-1.16	-3.22	-4.52	-5.39	-5.14	-3.91	-2.46	-1.3
Scenario 3	-1.16	-3.22	-4.52	-5.39	-5.11	-3.86	-2.19	-.73
Government Debt								
Scenario 1	.02	.20	.58	.88	1.19	1.50	1.61	1.46
Scenario 2	.01	.18	.52	.81	1.10	1.41	1.55	1.51
Scenario 3	.01	.18	.52	1.18	3.99	6.92	5.62	4.45
Total Wealth								
Scenario 1	-2.7	-7.5	-9.8	-11.1	-9.8	-5.7	-2.6	-0.7
Scenario 2	-2.6	-7.6	-10.2	-11.7	-10.8	-7.2	-4.7	-4.1
Scenario 3	-2.6	-7.6	-10.2	-12.1	-10.2	-3.7	-.89	.36
Human Wealth								
Scenario 1	-.47	-1.4	-1.9	-2.2	-2.1	-1.5	-1.1	-0.7
Scenario 2	-.58	-1.7	-2.5	-3.1	-3.1	-2.6	-2.3	-2.3
Scenario 3	-.58	-1.7	-2.5	-4.1	-4.2	-3.3	-2.5	-1.7
Private Savings								
Scenario 1	-.01	-.03	-.04	-.05	-.05	-.03	-.02	-.02
Scenario 2	-.03	-.10	-.16	-.20	-.22	-.22	-.24	-.30
Scenario 3	-.03	-.10	-.16	-.17	-.14	-.07	-.04	-.03
National Savings								
Scenario 1	-.06	-.16	-.21	-.24	-.21	-.13	-.09	-.06
Scenario 2	-.08	-.22	-.32	-.38	-.38	-.32	-.32	-.36
Scenario 3	-.08	-.22	-.32	-1.6	-1.9	.08	-.19	-.14

SOURCE: Congressional Budget Office.

NOTE: Change from baseline in the McKibbin-Sachs Global model, expressed as a percentage of baseline GNP, except where noted.

a.   Change from baseline levels (.05 = 5 basis points).

b.   Percentage change from baseline levels.

higher than it would have been if households had recognized and borne the full losses associated with the deposit insurance program as they were occurring. The figures in Scenario 2 suggest that this higher perceived wealth boosted consumption and GNP during the 1980s compared with where it would have been with full recognition of the tax bill associated with accruing government obligations to deposits.

At the same time that the effects of wealth boosted consumption, however, the resulting higher demand caused interest rates to shoot up. Higher interest rates had two effects: they reduced investment, and they caused the exchange value of the dollar to rise, thereby reducing net exports. Reduced investment and net exports worked to reduce GNP, offsetting the effect of higher consumption.

Impacts on GNP. Estimates show that the fiscal policy associated with financing the S&L failures has very small effects on output in the 1980s and throughout the simulation period (see Figure 2). From 1981 through 1986, new federal obligations under deposit insurance increased GNP minutely--less than 0.02 percent of baseline output ($1 billion in 1990 dollars) in any year. After the government announced its planned borrowing to liquidate these liabilities in 1990, CBO's estimates em-

Figure 2.
Impact on Gross National Product of the Change in Budgetary Obligations, 1981-2007 (By calendar years)

Percentage of GNP Deviation from the Baseline
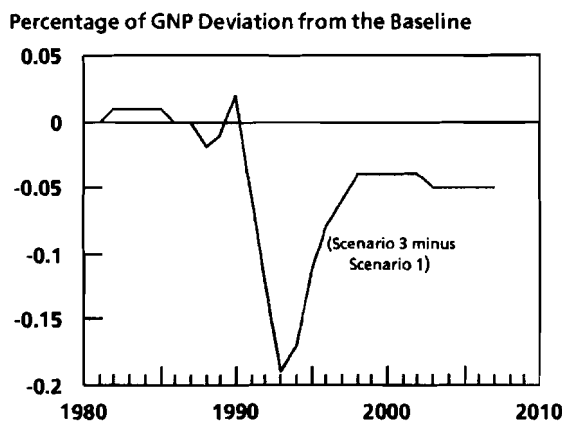
SOURCE: Congressional Budget Office.

Figure 3.
Simulated Impact of One-Time Increase in Government Deposit Insurance Obligations Equal to 1 Percent of Gross National Product, 1982-2007 (By calendar years)

Percentage of GNP Deviation from the Baseline
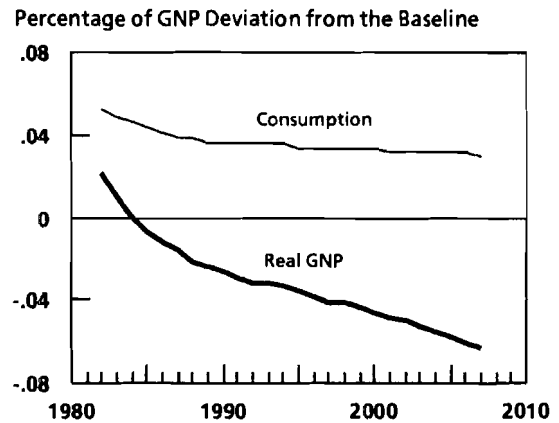
SOURCE: Congressional Budget Office.

bodied in Scenario 3 suggest that consumption dropped somewhat over the next three years. Both investment and the trade balance remain below the levels of Scenario 1 for a few years before they are buoyed by falling interest rates in the mid-1990s and beyond. Thus, Scenario 3 suggests that GNP declines by almost 0.2 percent of baseline output (about $12 billion in 1990 dollars) by 1993 compared with Scenario 1.[6] Only after 1997 does GNP in Scenario 3 relative to Scenario 1 move to within 0.05 percent of baseline output again.

To help understand these fiscal policy effects more clearly, Figure 3 illustrates what happens to consumption and GNP according to the MSG model in .a simpler case, when government obligations for deposit insurance are permanently increased by 1 percent of GNP. No other shocks to the economy occur in this exercise. The first-year "multiplier"-- the change in output divided by the change in

6.   These estimates assume that, after 1989, people are well informed about the cost to the government of the S&L crisis (about $215 billion in all, by CBO's estimate). However, other, much higher figures--on the order of $500 billion--are often cited.   Such estimates are misleadingly high because they include the undiscounted value of future interest costs.   Nevertheless, if consumers are misled, they may cut consumption by more than assumed in these estimates.

obligations--is 0.02, and GNP drops below baseline levels after only a few years. However, consumption remains higher than the baseline for many years.

The fiscal stimulus works by increasing the (apparent) wealth of consumers, thus causing them to spend more. The increase in consumption, however, brings about a combination of reduced investment and increased borrowing from abroad. In turn, lower investment reduces productive capacity in the United States, and an increasing proportion of production must be used to service the foreign debt. As a result, real GNP (which reflects both production and the servicing of foreign debt) quickly falls below baseline levels.

One can give some perspective on the magnitude of the fiscal policy effects of deposit insurance by comparing them with the effects of a much more familiar type of fiscal policy--an increase in federal transfer payments to people, such as payments for Social Security, again in the context of the MSG model. The pattern and timing of the estimated impacts of both consumption and GNP are very similar when transfer payments are permanently raised by 1 percent of GNP, as shown in Figure 4. The magnitudes of the impacts, however, are much larger than those stemming from an increase in federal obligations for deposit insurance. The first-year multiplier in this case is 0.4.

The reason for the stronger impact of the increase in transfer payments is that each dollar of such outlays increases consumers' spending more strongly than does a dollar of new federal obligations for deposit insurance. The explanation is that increased federal transfer payments raise disposable income directly rather than only adding to wealth, as federal obligations for deposit insurance do. Like other economic models, the MSG model predicts that consumers will increase their spending more vigorously when their disposable income rises than when their wealth rises by the same amount. As a result of the stronger response of consumer spending, the

Figure 4.
Simulated Impact of Permanent Increase in Government Transfer Payments Equal to 1 Percent of Gross National Product, 1982-2007 (By calendar years)

Percentage of GNP Deviation from Baseline
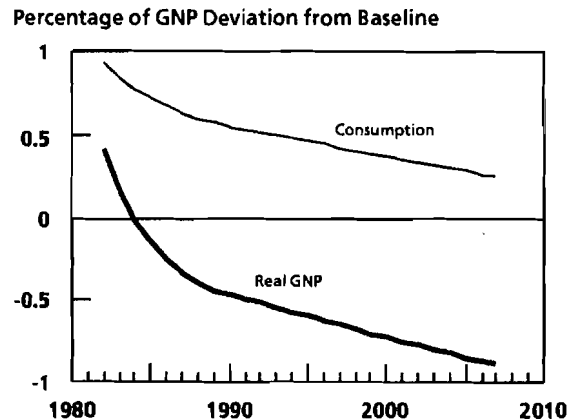
SOURCE: Congressional Budget Office.

short-term stimulus to GNP is stronger from an increase in transfer payments than from an equal increase in obligations under deposit insurance. With transfer payments as with obligations for deposit insurance, however, GNP falls below the baseline in the third year as higher interest rates choke off investment and net exports, while consumption remains above the baseline throughout the simulation period.

Impacts on Interest Rates. Perhaps the most interesting result to come out of comparing Scenarios 1, 2, and 3 is the slight reduction in real interest rates that occurs in Scenario 3 when the government borrows to finance its outlays to clean up the thrift situation. The extra consumption in Scenarios 2 and 3 in the years before 1989 leads to higher real interest rates than under the baseline scenario and Scenario 1. By 1989, long-term real rates are one-half of one percentage point higher than those in the baseline scenario and about 0.2 percentage points above those in Scenario 1. When the government announces its plan to borrow to dispose of the insolvent thrift institutions in 1990 under Scenario 3, however, real long-term rates fall slightly compared with their levels in Scenario 2. This decline in real rates occurs because the economic model predicts that some households react to

the greater information about the government's cost under the thrift crisis that comes with announcements of the scale of government borrowing by increasing their saving compared with the levels predicted in Scenario 2. These households increase their saving as they anticipate higher taxes in the near future to pay interest on the additional bond issues. The decline in real long-term rates grows in later years, and these rates ultimately return almost to their baseline levels.

The decline in interest rates at the time of financing the government's liability conflicts with the usual arguments that interest rates should have risen or stayed the same when the government's financing of the S&L upheaval went on budget. The reason? This study assumes that before 1990, the federal government's obligations under deposit insurance were an implicit liability of the government. This implicit liability was unfunded in the sense that taxpayers did not expect tax increases to service the liabilities in the foreseeable future.[7] Because this view led to higher consumption and lower saving in the 1980s, investment suffered and the amount of capital that was in use fell. With less capital, the productivity of capital increased. Increases in the productivity of capital led to an increase in interest rates. Once the government began borrowing to resolve the thrift

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7.   This liability was funded in the sense that the tax stream in the far future was sufficient to cover the payouts in terms of present value. But households did not save in anticipation of these liabilities because they were discounted so heavily that they could be ignored.

problem and thereby made clear how large its stake was, however, saving rose and long-term interest rates declined slightly.

Conclusions

What are the possible economic effects of the losses among insured thrift institutions? The results suggest that these losses cost the nation a significant amount in production and income. Based on very rough estimates of the losses in productive capital, the losses in output stemming from the crisis are far from trivial, and can be expected to last well into the next decade.

However, little of the forgone production can be attributed to the federal financing of the taxpayers' cost of the S&L failures, as most of the cost stems from the initial losses in productive capital. The cumulative loss in GNP in 1990 dollars for the years 1981 through 1990 could be as large as a whopping $200 billion. An additional loss approaching $300 billion of forgone GNP is likely to occur during the years 1991 through 2000 as a consequence of the S&L breakdown. Moreover, extra consumption during the 1980s as a result of hidden accruing liabilities for taxpayers is apt to be replaced by increased saving in the 1990s, as the obligation to pay for the financing of the crisis becomes known. As saving rises, interest rates may fall slightly in the aftermath of the announcement of the plan to fund the government's obligations.

Incorporating Deposit Insurance in Measures of the Budget

I n the search for ways to keep the savings and loan crisis and its budgetary and economic effects from happening again, attention has focused on reforming the way figures on deposit insurance are reported in the federal budget. Currently, the budget records all receipts and expenditures for deposit insurance when cash changes hands, as with most other federal programs. But some analysts fault this approach for not giving policymakers a timely warning about the mounting costs from the crisis, and for concealing the economic effects that those costs have had.[1]

Although the government itself has never declared unambiguously what the main purposes of the budget are, the President's Commission on Budget Concepts 25 years ago identified two purposes as being especially important: to help policymakers decide how to allocate funds among alternative uses, and to assist them with fiscal policy decisions in order to promote economic stability and growth.[2] Critics of current approaches to these objectives believe that accounting for the major components of federal obligations

under deposit insurance as they accrue, or even earlier, rather than when they are liquidated through cash payments, would help make the budget a more useful guide to the program's effects on both the allocation of resources and the stance of federal fiscal policy.

Viewing the Budget as a Record of Effects on Allocating Resources

Historical figures illustrate the force of the critics' concerns that policymakers do not know how large federal financial commitments for deposit insurance are until it is too late to do anything about them. The present value of federal obligations as a result of losses among thrift institutions during the 1980s amounted to more than $200 billion in 1990 dollars. However, the budget itself did little to warn policymakers of the size of these losses until the very end of the decade, when the large cash outlays to resolve problem thrifts began (see Figure 7 on page 49).

A solution to this shortcoming of the existing budgetary treatment would be to make the budget show new federal obligations for the costs of resolution under deposit insurance as near as possible to the time when they first arise, if reliable figures are available. That is the focus of several of the options for reform that are discussed below.

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1. For a detailed discussion of proposed reforms of budgetary accounting for deposit insurance, see Congressional Budget Office, *Budgetary Treatment of Deposit Insurance: A Framework for Reform* (May 1991).

2. President's Commission on Budget Concepts, *Report of the President's Commission on Budget Concepts* (October 1967), pp. 11-23.

The Budget as Guide to Fiscal Policy Effects

Critics have also indicted the current budgetary treatment of deposit insurance as a poor guide to the fiscal policy effects of federal financial commitments under the program. The current system's focus on cash payments, they charge, is misleading, since such payments have little effect on the overall strength of the economy. Instead, most commentators have argued, the economic impact flows from federal obligations for deposit insurance at the time they first arise or accrue.[3]

Short-Term Fiscal Policy Impacts

The federal budgetary programs can affect the overall economy in two important ways, which conventional budgetary measures normally gauge. The first effect has to do with what happens to overall demand and the short-term strength of the economy. When the budget deficit rises as a result of changes in policy or other outside developments, it can increase total demand and stimulate short-term expansion. When the deficit falls, the opposite occurs. Economists use specialized measures of fiscal policy, such as the change in the standardized-employment deficit, to measure the impact of the federal budget in stimulating or restraining economic expansion in the short term. A change in any one of these measures indicates the direction and--as much as possible--the magnitude of the concurrent impact that federal fiscal policy is exerting on short-term growth in real gross national product. (The measures exclude changes in the deficit

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3.   Besides various CBO publications, other analysts have advocated focusing on fiscal policy measures that exclude cash outlays for deposit insurance. See Martin Feldstein, "FSLIC Funding Belongs Off-Budget," *Wall Street Journal*, March 1, 1989; and G. Thomas Woodward, "FSLIC, the Budget, and the Economy," *Public Budgeting and Finance*, vol. 9, no. 3 (Autumn 1989), pp. 87-93.

Figure 5.
The Standardized-Employment Deficit (Excluding Deposit Insurance Outlays), Fiscal Years 1960-1991
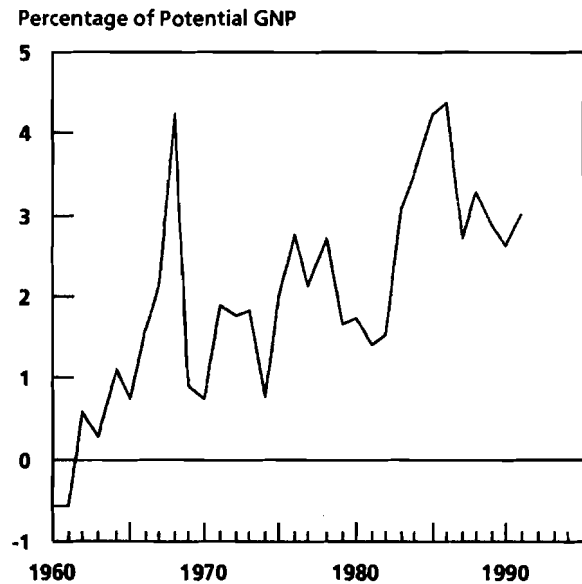
SOURCE: Congressional Budget Office.

that are themselves the direct result of fluctuations in the economy.)

Current estimates of the standardized-employment deficit show that, measured as a percentage of potential GNP, it rose sharply through the middle 1980s, stimulating overall demand and helping to bring about recovery from the deep recession at the beginning of that decade (see Figure 5). The standardized deficit fell sharply in 1987, helping to restrain economic expansion. It then changed little in later years.

Long-Term Fiscal Policy Impacts

A second aspect of the fiscal policy impact of the federal budget has to do with its impact on the long-run strength of the economy and comes about through the deficit's effect on the amount of total saving and investment. By blotting up some of the savings of households and businesses, and thereby preventing these funds from being invested in productive assets

Figure 6.
The Federal Deficit (Excluding Deposit Insurance Outlays), Fiscal Years 1960-1991

Percentage of GNP Deviation from Baseline
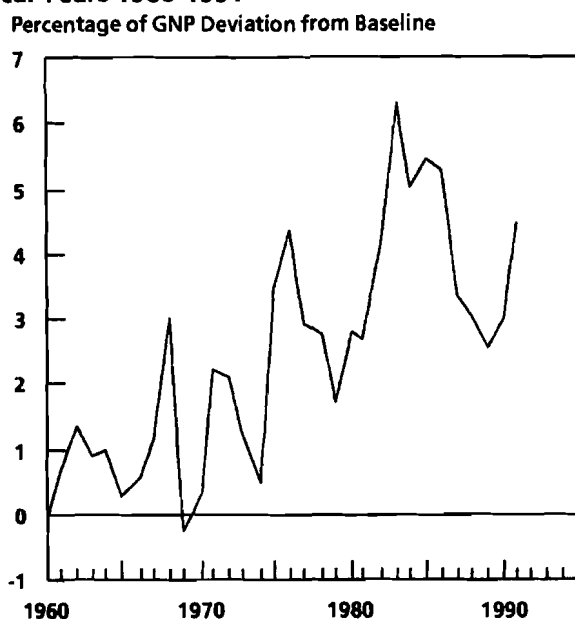
SOURCE: Congressional Budget Office.

in the private sector, the federal deficit reduces the national saving rate--and with it the rate of investment in assets that work to increase U.S. living standards. The nation's prospects for economic growth can change as a result. CBO and many other analysts believe that the large federal deficits of recent years have already had a significant impact in this regard (see Figure 6).[4]

The analysis in earlier chapters of this study shows that both the short-run and long-run fiscal effects of federal obligations for deposit insurance stem primarily from newly arising obligations under the program, which are excluded from current measures of the budget, rather than from the cash outlays that are currently shown in the budget. Again, several of

the options for reformed budgetary treatment that CBO and others have proposed focus on incorporating estimates of new obligations in the budget.

What Then Are the Options for Reforming Budgetary Treatment?

CBO and other analysts have identified alternative approaches to a reformed treatment of deposit insurance.[5] A major purpose of this group of options is to make the budget and the deficit serve as more useful signals of the effects of federal deposit insurance on both the allocation of resources and the economic effects of federal fiscal policy. The most important departure from present practice among these options is in reducing the importance of cash outlays for deposit insurance, as well as increasing the emphasis given to estimates of current and future new federal obligations under the program.

The proposals for reform focus on three separate components of federal outlays under deposit insurance: outlays for working capital--that is, funds to pay insolvent depository institutions for assets that the government expects to sell later; outlays for the administrative costs of the deposit insurance program and for interest on debt incurred in earlier operations under the program; and obligations for resolution costs--the expenses of honoring federal guarantees of the value of many deposits in insured institutions other than outlays for working capital. Some of the most important alternative proposals for reformed budgetary approaches follow.

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4. For detailed discussion of the implications of large federal deficits for longer-term expansion in the economy, see Congressional Budget Office, *The Economic and Budget Outlook: Fiscal Years 1990-1995* (January 1989), Chapter III.

5. Congressional Budget Office, *Budgetary Treatment of Deposit Insurance*.

Record the Costs of Deposit Insurance in the Budget Before They Arise

The most ambitious of CBO's broad options for reforming the budgetary treatment of deposit insurance is to include among budget outlays and the deficit an estimate of prospective new federal obligations under the program in coming years. Most cash outlays for deposit insurance would be excluded, including those for working capital. Cash outlays for resolution costs and working capital would be recorded among means of financing the deficit, but they would not affect budget outlays or the deficit itself. The figures included in outlays would be estimates of prospective losses one or more years into the future.

Consequently, this approach would allow policymakers to take into account, and to do something about, the potential reallocation of resources--commitment of federal funds--to deposit insurance from other uses in the public or private sectors by changing the structure of the deposit insurance program or other means. Similarly, to the extent that current and prospective accruals of new federal obligations for deposit insurance affect the state of the economy through their effects on federal fiscal policy, this approach would give a clearer and more up-to-date indication of these effects than does the conventional budget. In some respects, this approach would parallel the way in which the federal budgetary treatment of federal credit programs--direct federal loans and loan guarantees--has recently been reformed.[6]

Continue Present Practice

The least ambitious of the options that CBO has identified for the budgetary treat-

ment of deposit insurance is to continue to record all outlays for deposit insurance on a cash basis, but at the same time to give increased emphasis to supplementary tables presenting additional information. Proponents of this approach argue that figures on current or prospective federal obligations under the program are likely to be too unreliable to include in a measure as important as the main accounting of federal outlays and the deficit.

With improvements that are under way at the urging of the General Accounting Office, supplementary tables could provide adequate information on prospective federal costs under the program. Under this option, the objectives of presenting a reliable guide to the fiscal policy effects of the deposit insurance program would also be partially fulfilled by adding supplementary tables showing total cash outlays and the cash deficit, excluding most outlays for deposit insurance.

Remove Transactions for Working Capital from the Budget

A third major option for reform that CBO has described would be to exclude transactions for working capital from budget outlays and the deficit, but still include other transactions for deposit insurance on a cash basis. Transactions for working capital--outlays to acquire the assets of insolvent depository institutions and the receipts from the sale of such assets--would be included in the budget accounts, but not among outlays and the deficit. Instead, these figures would be recorded among the accounts showing transactions involved in financing the federal deficit-- "below-the-line" accounts, in analysts' jargon.

That step would improve the usefulness of the budget as a measure of both the permanent effects of the government on allocating resources and as a measure of its fiscal impact on the economy. Transactions for working capital have little permanent effect on either the allocation of resources or the economy.

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6. For a description of credit reform and its implications for the budget, see Congressional Budget Office, *The Economic and Budget Outlook: Fiscal Years 1992-1996* (January 1991), pp. 104-109.

They are exchanges of existing assets between the government and the private sector.

Options Short of Reformed Budgetary Treatment

Without a comprehensive reform of budgetary measures of deposit insurance, some economists have proposed simpler ways in which the conventional measure of the deficit can be modified in order to achieve some of the benefits of full-scale reform. Since the S&L crisis and the factors underlying it have contributed to the decline in national saving in the 1980s, both by misallocating capital and by preventing capital losses from increasing saving and investment, these analysts argue that the measure of the federal deficit should be chosen in such a way as to encourage an offsetting increase in federal saving.

Deficit reduction would increase national saving and thus in time offset the losses to the nation's capital stock that the thrift crisis has caused.

According to one such proposal, the increase in the national debt as a result of the as-yet-unrecorded cash costs of the S&L bailout could be amortized over approximately 15 years and included in the budget over that period. That step would involve increasing the projected deficit in each of the next 15 years by an amount equal to one-fifteenth of the estimated total cost of the thrift crisis. Underlying this proposal is the assumption that a larger recorded federal deficit would encourage further efforts for deficit reduction either through cuts in spending or increases in

taxes. Deficit reduction would increase national saving and thus in time offset the losses to the nation's capital stock that the thrift crisis has caused.[7]

Unlike the cash budget, spreading the increase in the deficit evenly over several years would avoid large year-to-year swings in budget measures. However, such amortization would not accurately reflect the actual periods during which the economic effects of the accrual of federal obligations under deposit insurance were felt. Instead, the effects would be reflected in the budget even later than is true in the conventional cash budget. This study has argued, however, that it would be better to reflect these obligations earlier than the cash budget shows.

Some Preliminary Estimates of Revised Budgetary Measures

Although CBO has not made estimates of how the budget would look under the particular options described above, it has derived figures that provide a rough sense of how the most ambitious change described above would affect the nation's accounts. The new figures, which are described in this section, record the government's obligations under deposit insurance for thrift institutions during the periods in which they accrue, rather than in those in which they are paid off through cash outlays. As such, these estimates are somewhat similar to those that might arise if the first option for reform described above--that calling for substituting prospective multiyear estimates of increases in federal obligations under deposit insurance--were adopted.

Important conceptual differences still exist, however, between these estimates and figures

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7. See discussions by Herbert Stein, "A Little S&L Honesty, Please," *Wall Street Journal,* June 25, 1990; and Charles L. Schultze, Statement before the Committee on the Budget, U.S. House of Representatives, December 6, 1990.

that would reflect reforms discussed above. For example, these figures show new federal obligations arising under deposit insurance for only one year at a time. Moreover, these figures are largely retrospective, and therefore incorporate more and better information than would be available in compiling prospective figures in annual budgeting exercises.

Accounting problems can also limit the usefulness of these figures to the role of preliminary indicators. For example, the treatment of administrative costs and insurance premiums remains unresolved. Moreover, developing the measures requires a number of approximations, so that they do not have the same firm basis in accounting that most other budget measures enjoy. (Some limitations of the figures are described in Appendix B.)

For all their shortcomings, these figures no doubt do a better job of showing when the budgetary costs of the deposit insurance program arose than does the conventional deficit. As described below, the revised figures may also constitute a better guide to the fiscal policy impacts of the program than do conventional cash outlays.

Constructing the Measures

CBO followed three main steps in developing accrual-based measures of federal obligations under deposit insurance to incorporate in revised budget measures. It first identified when individual thrift institutions became insolvent (according to book-value accounting), and for each insolvent thrift, found the size of its net debt (negative net worth) in the year in which it became insolvent. Second, CBO estimated what the negative net worth of these institutions would be if assets and liabilities were valued at market prices rather than at book value. With certain adjustments, these estimates show what it would have cost the government to resolve these institutions had it done so immediately.[8]

Most of these thrifts, however, were not closed immediately, and their condition con-

tinued to deteriorate. The third element in CBO's calculation captures these costs of delay, calculated as the difference between the estimated negative net worth when the institutions first became insolvent and the estimated final cost of resolving the thrift, which is usually much larger. These costs of delay usually occur over a period of years; for lack of better information, the costs of delay are spread evenly over the intervening years.

In the case of thrifts that have not yet been resolved, CBO does not have actual final resolution costs. However, in the course of making its estimates of the cash costs of resolving currently insolvent thrifts, CBO must routinely make assumptions about when the thrifts will ultimately be resolved and how much the resolutions will cost. Similarly, to project the whole cost of resolving thrifts, CBO has already had to make projections of numbers and sizes of thrifts that will become insolvent in the next few years. These projections of ultimate costs of resolution form the basis of the projections of how the obligations for resolving thrifts will accrue. The series was smoothed to reflect the arbitrary timing of the resolutions.

The quality of CBO's estimates is somewhat limited by the availability of relevant data and other considerations. Nevertheless, as the discussion below points out, the figures provide a useful guide to some of the important effects of the deposit insurance program.

Looking Back and Forth: Historical Estimates and Projections

Using those three steps, CBO has developed estimates of the amount of new federal obligations for deposit insurance of thrift institutions that arose or can be expected to arise in each year from 1980 through 1996. The figures differ substantially from the stream of

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8. For a more detailed account of this analysis, see Congressional Budget Office, "The Cost of Forbearance During the Thrift Crisis," Staff Memorandum (June 1991).

deposit insurance outlays that is contained in the conventional cash budget (see Figure 7 and Table 6). The accrual of obligations began much earlier than cash outlays, in the early 1980s, when changes in the general economic environment--high interest rates and a severe recession, followed by a sharp drop in oil prices and the collapse of real estate values in oil-producing states--combined with increased financial competition and more lax regulation of thrifts.

As the thrift crisis continued without resolution, the costs of delay grew and ensured that obligations accrued at an even greater rate. These estimates suggest that the annual accrual of losses (in nominal terms) will peak in the next few years, before tailing off in the mid-1990s as the mess is ultimately cleaned up. Nevertheless, at its peak, the accrual of obligations is much less than the cash outlays for deposit insurance that are recorded in the cash budget.

The estimates of accrued obligations differ from cash outlays with respect not only to

Table 6.
Federal Deposit Insurance Losses

| | Deposit Insurance Losses (Billions of dollars) | | |
Fiscal Year	Accrued Deposit Insurance Losses	Budget Outlays	Budget Outlays Less Working Capital
1980	0.6	0.6	n.a.
1981	2.0	0.4	n.a.
1982	5.5	-0.6	n.a.
1983	6.9	-0.5	n.a.
1984	9.2	-0.6	n.a.
1985	10.3	0.6	n.a.
1986	12.7	1.10	n.a.
1987	16.1	5.3[a]	n.a.
1988	18.0	11.3[a]	n.a.
1989	14.7	23.6[a]	15
1990	21.3	69.9[a]	40
1991	23.9	76.3[a]	46
1992	28.1	96.2	53
1993	26.2	53.1	37
1994	21.3	37.1	31
1995	8.7	-26.5	10
1996	1.2	-34.7	2

SOURCE: Congressional Budget Office.

NOTE: n.a. = not available.

a. Includes borrowing of the Resolution Funding Corporation in 1990 and 1991 and the Financing Corporation in 1987-1989, shell corporations created solely to borrow funds for S&L resolutions.

Figure 7.
Deposit Insurance Losses Measured by Accruals, Cash Outlays, and Cash Outlays Less Working Capital, Fiscal Years 1980-1996
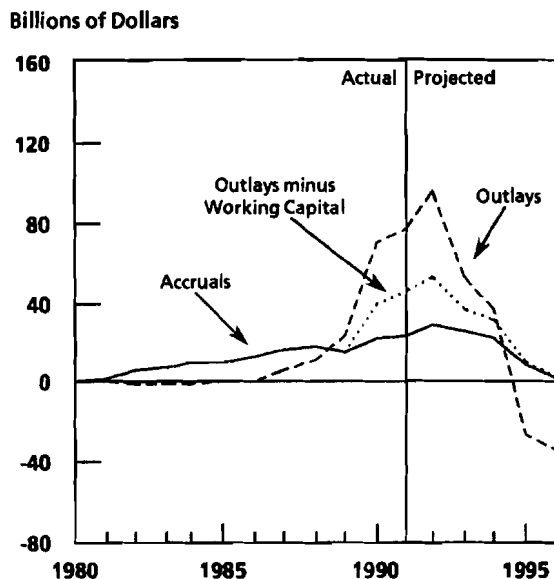
SOURCE: Congressional Budget Office.

when obligations are recorded in the budget, but also to the treatment of working capital. Because working capital does not constitute an ultimate obligation of the taxpayer, however, it is not included in the estimates of accrued obligations. (In fact, working capital is automatically excluded because the estimates of the ultimate cost of resolving failed thrifts are credited with the estimated market value of the assets of the thrifts.)

Are the Revised Figures an Improved Measure?

Including accrued obligations for thrift resolution noticeably changes the historical and projected levels of budgetary measures. As Figure 8 and Table 7 show, adding accru-

Figure 8.
Effect of Estimated Thrift Losses
on the Federal Deficit, Fiscal Years 1980-1996

Percentage of GNP Deviation from Baseline
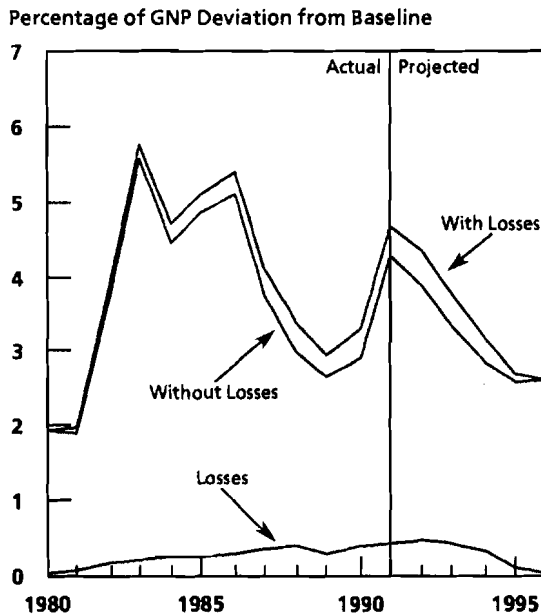
SOURCE: Congressional Budget Office.

ing federal obligations for deposit insurance to figures on the overall federal deficit (national income and product accounts basis) and the standardized-employment deficit significantly increases the magnitude of these measures of the deficit beginning in the early 1980s and extending into the middle 1990s.[10]

Although the preliminary figures based on accruals that have just been presented do not show how full-scale reform of the budgetary treatment of deposit insurance would affect the budget, they do represent a step in that direction. Would these figures, then, present an improved picture of the effects of federal deposit insurance, either on allocating resources or on the stance of federal fiscal policy?

Although the figures are only estimates, and are largely derived after the fact, they seem tentatively to be a useful indication of when and by how much federal commitments of resources to the problem of resolving problem

thrift institutions arose. They may also be a better guide to the effects of fiscal policy than the conventional cash budget is. As a measure of fiscal policy impacts, however, the revised figures may not be significantly better than a measure that excludes most federal obligations for deposit insurance.

Effects on Allocating Resources. CBO's measure, based on accruals, of the impact of deposit insurance on the budget gives an improved picture of the effects of the program on allocating resources. It shows that significant federal costs were mounting during the early and middle 1980s, while the conventional cash budget does not. As Figure 7 shows, the cash budget shows virtually no impacts from deposit insurance until late in the 1980s, when federal efforts to resolve insolvent thrifts began in earnest. When compared with a variation of the present budgetary treatment, excluding expenditures for deposit insurance from the budget entirely (other than outlays for interest and adminis-

Table 7.
Fiscal Policy Measures and Deposit Insurance

Fiscal Year	Standardized-Employment Deficit as a Percentage of Potential GNP		
	Without Accrued Deposit Insurance Losses	With Accrued Deposit Insurance Losses	Accrued Deposit Insurance Losses
1980	1.75	1.77	0.02
1981	1.42	1.48	0.06
1982	1.54	1.70	0.16
1983	3.10	3.29	0.19
1984	3.51	3.75	0.24
1985	4.25	4.50	0.25
1986	4.39	4.69	0.30
1987	2.71	3.07	0.36
1988	3.27	3.65	0.38
1989	2.88	3.17	0.29
1990	2.64	3.03	0.39
1991	3.01	3.41	0.41
1992	3.08	3.54	0.46
1993	2.79	3.20	0.41
1994	2.50	2.82	0.31
1995	2.29	2.41	0.12
1996	2.42	2.43	0.02

SOURCE: Congressional Budget Office.

10. Congressional Budget Office, *The Economic and Budget Outlook: An Update* (August 1991), pp. 8-14.

trative expenses), the revised figures also, of course, represent a superior approach.

Effects on Fiscal Policy. The chief liability of the cash deficit as a measure of the implications of deposit insurance for federal fiscal policy is that outlays for deposit insurance rise and fall sharply over a period of only a few years--a pattern that clearly misrepresents the fiscal impacts of the program. Federal cash costs for the program grew like topsey from nearly nothing to nearly $100 billion per year in the space of just a few years (see Figure 7). Even when outlays for working capital are excluded, federal cash expenditures for deposit insurance rise quite sharply. But the economic analysis in Chapters Three and Four shows that there is no equally abrupt fiscal effect from the deposit insurance program.

In contrast, revised budgetary figures that account for rising federal obligations for deposit insurance over a longer period would clearly be superior as a guide to the fiscal policy effects of these commitments. The revised figures that are presented earlier in this chapter account for federal budgetary costs resulting from deposit insurance more smoothly over the 1980s and 1990s. This pattern corresponds much more closely to the profile of fiscal impacts from these obligations.

When compared with the conventional budget excluding all outlays for deposit insurance (other than those for interest and administrative expenses), however, revised figures such as those presented in this chapter may not be demonstrably superior. There are several reasons why.

First, the short-run fiscal policy effects of any budgetary program flow primarily from the year-to-year changes in net expenditures for that program. Since CBO's preliminary figures suggest that year-to-year changes have been small, they are consistent with the view that federal obligations for deposit insurance have had only slight short-term fiscal impacts. If this is true, a budgetary measure that excluded outlays for deposit insurance altogether would be acceptable as a measure of the program's short-term impacts.

There is a second reason for which the revised figures described above may not be a better guide to fiscal impacts than excluding outlays for deposit insurance from the budget altogether: the economic analysis presented in Chapter Four suggests that the fiscal policy impacts of accruing federal obligations for deposit insurance are proportionally quite small. According to the model simulations, the effects on GNP and other economywide variables of an increase of a given dollar magnitude in federal obligations for deposit insurance are much smaller than those of other federal budgetary programs.

As Figures 3 and 4 in Chapter Four suggest, the "multiplier" showing the GNP impact of changes in federal obligations for deposit insurance as a ratio to the size of those changes is about one-tenth as large as the corresponding multiplier for more typical federal budgetary programs. Even then, this estimate of the multiplier may overstate the impact that accruing federal obligations for deposit insurance would have if the budgetary treatment of the program were reformed.

If new federal obligations were reported prominently in the budget at roughly the time they arose, this information might convince

some households to save more money in anti-
cipation of future tax increases or other bud-
getary consequences of the higher federal ob-
ligations. If that happened, it would reduce
the short-term impact of a given increase in
federal obligations for deposit insurance on
GNP and other variables below the levels that
are suggested in the multiplier shown in Fig-
ure 2. This attenuated fiscal effect would un-
dermine still further the importance of revised
budgetary accounts on deposit insurance as a
guide to the short-term economic effects of
federal obligations under that program.

A third reason that revising the budget to
show federal obligations for deposit insurance
at roughly the time they arise may not result
in a better measure of the fiscal policy effects
of the budget than the simple expedient of
leaving most expenditures for deposit insur-
ance out of the budget altogether relates to
the long-term fiscal effects of the program.

As the discussion earlier in this chapter
pointed out, the most important long-term
economic effect of the budget is its impact in
using up or adding to the private sector's sav-
ings. Budget deficits normally use up savings
and reduce the economy's long-term pros-
pects by reducing the amount of funds that
are available for investment in productive
capital. But as the analysis in Chapter Four
tentatively suggests, mounting federal obliga-
tions for deposit insurance do little to add to
the effect of reducing saving in the budget.
As federal obligations arise, promising com-
pensation to depositors in federally insured
institutions for losses that they would other-
wise suffer as a result of the insolvency of
their bank or thrift institution, depositors do
not significantly increase their spending. An
implication of the low multiplier that was
mentioned in the last paragraph is that newly
arising obligations for deposit insurance lead
to little private spending. As a result, they
must be largely saved. In turn, if they are
saved, then these obligations have little long-
term fiscal effect.

Summing Up

A variety of reforms have been proposed for
incorporating deposit insurance in the budget.
When measuring the implications of deposit
insurance for fiscal policy or for allocating re-
sources, the conventional cash-based budget
has a number of shortcomings. The alterna-
tive CBO figures on these commitments that
have been presented in this chapter shed only
dim light on the potential value of revised
budgetary treatment: conceptually, the figures
do not correspond exactly to any of the major
options for reform. Moreover, the new figures
differ from those that would be used in bud-
geting exercises because, imperfect as they are,
they have been developed with full benefit of
hindsight--a perspective that contemporary
budgetary figures necessarily lack. Even at
that, the revised figures are not demonstrably
better as a means of gauging the fiscal policy
impacts of federal commitments for deposit
insurance than the supplementary approach
that is conventionally used: employing the
cash deficit excluding most transactions in
deposit insurance.

Still, the dramatic difference between the
story about resource allocation presented in
the revised figures and that in the conven-
tional budget underscores the most critical
concern underlying proposals for reform--
namely, that the large budgetary costs from
insolvencies among federally insured savings
and loan institutions during the 1980s show
prominently in the revised figures for that
decade, but not until much later in the con-
ventional accounts. In this context, the main
remaining issue is whether the prospective
estimates that would have been generated un-
der a revised budgetary system while the thrift
debacle was developing during the 1980s
would have told this same story.

Appendixes

The McKibbin-Sachs Global Model

The simulations in Chapter Four were conducted using the McKibbin-Sachs Global (MSG) model. This appendix discusses some of the salient features of that model and offers evidence to verify that the results generated by the model in response to common fiscal policy measures are similar to those of other familiar models. It also briefly describes the modifications to the model that were required for this project.

Although other models could produce somewhat different results, the figures from the MSG model are representative of the current state of economic thinking. The parameters of the model were chosen to track the performance of the economy in the 1980s, and the model incorporates many recent advances in macroeconomic theory. Many properties of the MSG model are similar to those of other well-known macroeconomic models.

A Brief Discussion of the MSG Model

The MSG model is similar to other familiar macroeconomic models in many respects but has two unusual features that make it especially suitable for the current analysis--it treats explicitly the expectations of consumers and producers for future government policies, and it accounts carefully for the accumulation of government and foreign debt.[1] Expectations of future policies play a central role in analy-

sis of the economic effects of the thrift crisis because the deposit insurance liabilities that the government accumulated in the 1980s increased government borrowing.

Ultimately, the need to service this borrowing will mean that the government will have to raise taxes or reduce other spending--measures that will reduce household income and wealth. Consumption and saving in each year depend in part on whether households anticipate these future tightening policies and adjust their spending plans accordingly. Most macroeconomic models do not account systematically for expectations of future government policies, so they cannot reflect any adjustments people make to their spending plans based on these expectations.

The MSG model, in common with a few other newly developed models, assumes by contrast that some people are forward looking enough to reflect in their purchasing decisions taxes they expect to pay in future years and the effects of other future government policies. As a result, the MSG model can illustrate the effects on consumers of increasingly negative news about the extent of the S&L collapse, such as has appeared in the past several years, even before it leads to any actual changes in federal taxes and spending.

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1. For a complete overview of the model and a variety of applications, see Warwick J. McKibbin and Jeffrey Sachs, *Global Linkages: Macroeconomic Interdependence and Cooperation in the World Economy* (Washington, D. C.: Brookings Institution, 1991).

Although the need to finance higher borrowing could be met with either cuts in spending or higher taxes, this model arbitrarily assumes as a financing rule that borrowing will be financed with taxes. To be sure, higher taxes could affect incentives for participating in the labor force or saving in ways that lower spending does not. In accord with most econometric evidence, however, the MSG model incorporates only small incentive effects. Thus, in this model the choice of tax changes to cover interest costs has relatively little effect on outcomes.

A second important feature of the model is its careful accounting for longer-term economic consequences of budget deficits and trade deficits. Stocks of government debt that accumulate as a result of persistent budget deficits cannot grow indefinitely at rates faster than the economy does. The same is true of stocks of national debt to foreigners that accumulate through persistent trade deficits arising from imbalances between production and expenditure. Consequently, government policies, asset prices, and international rates of exchange are assumed in the MSG model to adjust so that such deficits do not last forever. The model incorporates a number of financial markets, such as markets for equities and for short- and long-term government bonds, in each of the industrial regions of the world. Current and expected future paths of the economy determine prices in these markets.[2]

The single most important implication of forward-looking expectations together with the model's accounting for the accumulation of government debt for purposes of this study is that *some* consumers increase saving in response to expected future increases in taxes when deficits increase. Not all consumers are assumed to do this, however, for two reasons.

First, empirical evidence suggests that about 20 percent of the U.S. population is liquidity constrained, meaning that they finance all living expenses out of current income and do not have the luxury of borrowing.[3] Second, evidence exists suggesting that a large share of the population is not forward looking--a finding that accords with common sense.[4] Thirty percent of consumers in the MSG model are assumed to be forward looking, making their consumption dependent both on current income and on household wealth. The remaining consumers determine their consumption level on the basis of current income only.

In general, people behaved as ordinary, confused taxpayers who did not understand the implications of the deposit insurance crisis.

For those households that base consumption partly on wealth, the expectation of higher future taxes will reduce consumption today and increase saving, since household wealth includes the present value of future wage income as well as the present value of future taxes. For those households that base consumption on current income only, the ex-

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2.   In the simulations discussed in Chapter Four, monetary policy is assumed to hold the money supply at baseline levels. If the Federal Reserve were assumed to follow a different monetary regime, however, slightly different results could be obtained. For example, if the Federal Reserve were targeting nominal GNP throughout the simulation period, none of the GNP losses would appear, but the same kinds of compositional changes in GNP and the same long-run effects would result.

3.   See Robert E. Hall and Frederic S. Mishkin, "The Sensitivity of Consumption to Transitory Income: Estimates from Panel Data on Households," *Econometrica*, vol. 50 (1982), pp. 461-81; or Randall P. Mariger, *Consumption Behavior and the Effects of Fiscal Policies* (Cambridge, Mass.: Harvard University Press, 1986).

4.   For example, see John Campbell and N Gregory Mankiw, "Permanent Income, Current Income and Consumption," Working Paper No. 2436, National Bureau of Economic Research (1987).

pectation of higher future taxes will have little or no effect on saving today.

Although the MSG model does not contain a banking sector and does not separate housing capital from other kinds of productive capital, these characteristics do not significantly detract from the model's ability to capture the most important features of the S&L crisis for the economy. Other sectors of the economy reflect impacts on assets and liabilities of the banking sector. The banking sector acts as a financial intermediary that channels resources to and collects deposits from businesses and households. Assets of the banking sector are liabilities of the business and household sectors, and vice versa. The model is, however, able to account for changes in these assets and liabilities even without an explicit banking sector.

The lack of separation of housing capital from other capital matters only in that the rate of return on housing may be lower than the rate of return on other capital. This could arise as the result of subsidies in the tax system that favor housing over other kinds of capital. To the extent that rates of return among these two broad classes of capital differ, losses in real estate may have slightly different GNP effects than losses in other kinds of productive capital. Since most of the "bad investments" of S&Ls during the 1980s were in real estate, the reductions to GNP from a given amount of losses from housing capital may be slightly lower than from the same amount of losses in other kinds of productive capital. These differences would, however, be small.

The general properties of the MSG model in response to unexpected changes in fiscal and monetary policies are broadly similar to those of other familiar macroeconomic models.[5] Model projections are often compared using standard experiments that change monetary or fiscal policies in a single way: on the basis of such experiments, the MSG model produces results like those of other models. For example, consider an experiment in which U.S. government purchases are cut by 1 per-

cent of gross domestic product permanently beginning in 1990. Monetary policy is assumed to hold the money supply at baseline levels. U.S. real output drops in 1990 from its baseline value by about six-tenths of one percent as a result of the contractionary fiscal policy. Output then gradually rises over the next five years until it returns to the baseline output level. The rise in government saving is not offset by a fall in private saving, so that real interest rates fall in the short run and in the long run.

As is expected, the long-run effects of cutting budget deficits on output and consumption are positive in this experiment. Lower real interest rates imply a lower long-run marginal product of capital and therefore a higher capital stock in the United States. This higher capital stock arising from the increase in national saving as a result of reduced government deficits leads to higher levels of GNP. After falling slightly in 1990, consumption remains permanently higher than in the baseline case after 1992. These responses to a permanent reduction in the government deficit are similar to those in familiar macroeconomic models.

Modifying the MSG Model to Include Contingent Liabilities

The MSG model had to be modified for purposes of this study to include the contingent liabilities that accrued to the government during the 1980s as its obligations to back up deposits at failed thrift institutions mounted. The modifications reflect CBO's assumptions

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5. For more detailed comparisons using many models, see *Empirical Macroeconomics for Interdependent Economies,* Volumes 1 and 2, edited by Ralph C. Bryant, Dale W. Henderson, Gerald Holtham, Peter Hooper, and Steven A. Symansky (Washington, D. C.: Brookings Institution, 1988). In particular, Simulation B in *Empirical Macroeconomics* is very similar to the experiment discussed in the text, although it uses an earlier version of the MSG model. Simulation B is described on pp. 11 and 41 of Volume 2.

about the amount of information that was available to different people at different times. These assumptions about information are quite important to the results of the analysis. Although they seem compelling to CBO, other analysts could disagree. In particular, CBO modified the MSG model to incorporate its assumption that during the 1980s people ignored the tax implications of government obligations associated with the S&L breakdown for any of the several reasons discussed in Chapter Three. In general, people behaved as ordinary confused taxpayers who did not understand the implications of the deposit insurance crisis and were oblivious to the future taxes that would have to be paid. They saw deposit reimbursements at failed S&Ls but did not recognize the taxpayers' future liability. As long as households were unaware of the government's accruing liabilities associated with the S&L crisis, the deposit insurance system added to perceived (not actual) wealth.

The MSG model had to be tricked to allow the accumulation of implicit government liabilities without higher current taxes to service those liabilities. As noted earlier, the model imposes a strict intertemporal budget constraint that requires that all liabilities eventually be serviced. To get around this problem, it was assumed for the model simulation that taxes would eventually be raised, but far enough into the future that the prospect of these taxes had no significant effect on taxpayers' current wealth. Thus, from the point of view of the model, households *recognized* both the losses of wealth associated with the thrift disaster and the government's accumulating liability in the 1980s (and believed it added to their wealth), but *discounted* heavily the higher future tax payments associated with those liabilities.

When the government begins to borrow in the financial markets in order to finance the massive cleanup of insolvent thrift institutions, however, the model assumes that some households recognize more clearly their tax obligations and begin to expect that there will be tax consequences in the next few years. This representation of the crisis in the model has the same implications for wealth and consumption as the story told in the text--that consumers at first recognized neither the loss of wealth they had suffered as a result of the thrift debacle, nor the implicit government liabilities as they arose.

It is important to note that no taxpayers, depositors, or businesses are assumed to have perfect knowledge of future events in this study. Some are assumed to know how the economy works, but they are not expected to know about all the events, such as the S&L cleanup, that are going to buffet the economy in future years. Rather, the study assumes a given set of information for the public in each year beginning in 1981 and sequentially updates that information set as the model is solved forward. The simulation for each year starts with new information.[6] In this way the study captures the impacts of shocks and announcements of new policies.

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6. This follows the procedure developed in Warwick J. McKibbin, "Can Macroeconomic Theory Explain the 1980s?" mimeo, Brookings Institution, 1990.

Estimation of Capital Losses

The analysis in Chapter Four is based upon CBO's estimates of losses in productive capital associated with the S&L debacle and in federal liabilities to depositors in failed thrifts. This appendix shows how CBO derived these figures from estimates of losses to failed thrift institutions, as reflected in the cost to the federal government of resolving insolvent thrifts. The methods that CBO used to estimate these resolution costs are described in Chapter Five.[1] A discussion of why CBO's estimates of capital losses may overstate or understate the true losses in productive capital associated with the S&L mess is also included here.

Estimates of Losses in Productive Capital

The figures on losses in productive capital that are used in this study reflect bad investments at about the time they go bad. But other broad approaches would have been possible. A more ambitious, but less practical, approach would be to record the declines in capital during earlier periods, when the basic developments that ultimately led to the savings and loan institutions' poor investments first occurred.

In particular, it may be that the poor investments really should be traced to increases in the value of an implicit subsidy that the S&Ls received through deposit insurance. The subsidy increased during the 1980s (and during still earlier periods) as a result of such developments as large changes in interest rates, changes in regulatory strictness, changes in the tax code, and changes in competition from other financial intermediaries. All of these factors would have made the business climate during those years much riskier for S&Ls had it not been for deposit insurance, which put the burden of the S&Ls' risks on the backs of the taxpayers instead of their depositors. As a result, deposit insurance resulted in a substantial subsidy to the thrifts, as Chapter Two points out. Recognizing this subsidy, losses in capital might be recorded in the years in which the subsidy increased, which would no doubt be earlier periods than those to which CBO's current estimates of capital losses are imputed.

By contrast, the approach taken here views the subsidy value of deposit insurance as given and only recognizes the bad investments after the fact. It acknowledges the associated accrued government liabilities as they actually occur, rather than trying to predict them.

CBO has not recognized in this study the cost to the government of resolving failed thrifts for years before 1984. This is because the purpose of this study is to investigate the economic impacts of the failures among thrift institutions that were attributable to structural problems of the savings and loan industry and

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1. See also Congressional Budget Office, "The Cost of Forbearance During the Thrift Crisis," Staff Memorandum (June 1991).

the deposit insurance program. In keeping with this purpose, it was appropriate to exclude losses that may have been caused by the deep recession that struck the economy during the first few years of the 1980s.

Given CBO's estimates of the cost to the government of resolving failed S&Ls from 1984 through 1995, the next step is to generate corresponding figures on losses in the capital stock. The following example should help clarify both the magnitude and the timing of losses to physical capital associated with failed S&Ls.[2]

Suppose that a thrift institution makes a real estate development loan for $80 in year one. It has other assets worth $20, deposits of $95.70, and net worth of $4.30. The current market value of the asset underlying the $80 loan is $100, assuming that the borrower posted collateral amounting to 20 percent of the asset's value (a conservative assumption). The value of the investment project and the loan decline in subsequent years, and the borrower loses all his collateral before the value of the loan is affected. In year four, the S&L writes down the value of its loan to its true market value of, say, $50. This causes the S&L to become insolvent, meaning that its net worth falls to zero. The thrift suffers a loss of $30 corresponding to the markdown in loan value. Part of this $30 loss is the S&L's net worth, equal to $4.30, and is not reimbursed by the government. The remainder, $25.70, is the difference between the total value of assets of the S&Ls and the total value of deposits and is equal to the estimated cost to the government of resolving the thrift in that year.

The resulting loss in the capital stock is $50: $30 in the markdown of the real estate project (of which $25.70 is the cost of resolution and $4.30 is the loss in S&L net worth) and $20 in collateral the borrower holds. Each of these

losses can be associated with a loss in productive capital for the following reasons. Since the true market value of the underlying asset is only $50, the thrift could have invested the $30 that it invested in excess of the project's value, and subsequently lost, in another project. Because this $30, had it been invested in another project instead, would have expanded the capital stock by that amount, it represents a loss to the capital stock of $30 attributed to the saving and loan's investment. An additional $20 loss in productive capital occurs at the same time because the owner of the real estate development loses the collateral invested in the project.

Beyond issues of value, this example also shows that a lag can occur between the time that capital is lost and the time that losses are accounted for: the bad investment was made before the thrift recognized its own losses. This study assumes that the loss to physical capital occurs three years before the recognition of losses by the thrift. While the three-year lag is somewhat arbitrary, some lag between one and perhaps five years seems appropriate. The three-year lag implies that CBO's estimate of the S&L losses for 1984 relates to the size of the loss to the capital stock in 1981.

The assumptions used in the illustrative story above are the same as those used in deriving estimates of capital losses from CBO's estimates of the cost to the government of resolving insolvent thrifts.[3] Precise annual timing of estimates of capital loss derive largely from the assumption of a three-year lag, while the magnitudes are sensitive to several somewhat arbitrary assumptions including the reduction in asset value, the collateral percentage, and the percentage of S&L assets in real estate assets.

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2.   For further clarification of accounting for losses associated with the S&L breakdown, see Angelo R. Mascaro, "Aftermath of the Thrift Crisis: Balancing the Economy's Books," *Contemporary Policy Issues*, vol. 8 (April 1990), pp. 95-106.

3.   Note that this method of estimating capital losses measures only those associated with S&Ls that failed. Certainly, many bad investments were made in the 1980s by S&Ls that were not resolved by FSLIC. The capital loss value derived from CBO's estimates may overstate the true loss in capital caused by S&Ls that were resolved, but it most likely understates the true loss in capital to the U.S. economy as a whole.

The reduction in the asset's value underlying the real estate loan is assumed to be 50 percent, and the collateral requirement for obtaining the loan is assumed to be 20 percent of the value of the underlying asset.[4] The value of net worth in the S&L before it becomes insolvent is assumed to be 4.3 percent of the original value of total assets in the S&L.[5] Real estate assets are again 80 percent of total S&L assets.[6] The estimate of total capital loss associated with bad investments made by failed S&Ls is then equal to the sum of the government's resolution costs, the value of net worth in the failed S&Ls, and collateral associated with the loans that went bad.

The relationship between resolution costs and capital losses is best seen using simple algebra. Define the following symbols:

A = original value of real estate asset, also equals total value of all S&L assets

ΔA = reduction in value of real estate asset
= .5 A

C = collateral on loan = .2 A

L = original value of real estate loan = .8 A

O = other non-real estate assets of the S&L
= .2 A

NW = net worth of S&L = .043 A

R = cost of resolving the failed thrift

The total capital loss (K loss) is equal to the reduction in the value of the real estate asset and can be written as the sum of the loss in collateral plus the reduction in the value of the loan.

K loss $= \Delta A = .5 A = \Delta C + \Delta L$
$= .2 A + .3 A$

Equivalently, as discussed above, the total capital loss can be written as the sum of the loss in collateral, the loss of net worth in the failed S&L, and the resolution cost.

K loss $= \Delta A = .5 A = \Delta C + \Delta NW + R$
$= .2 A + .043 A + R$

This identity shows that resolution costs must be equal to .5 A minus (.2 + .043) A, or R = .257 A. Inverting this relationship, the value of assets must be equal to resolution costs divided by .257 (A = R/.257). This allows solving for the capital loss in terms of resolution costs R.

K loss $= .2 A + .043 A + R$
$= (.2/.257) R + (.043/.257) R + R$
$= .78 R + .17 R + R$
K loss $= 1.95 R$

The total reduction in productive capital is then equal to 1.95 times the cost of resolving failed S&Ls as estimated by CBO.

An Alternative Approach

The illustrative story as well as the calculations reported above assume that the entire reduction in the S&Ls' net worth was caused by reductions in the value of their real estate loans. An alternative story would be that reductions in the value of consumer loans or junk bonds, not related to real estate, caused the value of net worth to fall to zero. When

4. A 30 percent collateral value roughly corresponds to the equity value underlying real estate loans that thrifts made during the 1980s. See *Federal Home Loan Bank Board Journal* (April 1984), p. 52, for a time series of loan-to-price ratios on conventional home mortgage loans. CBO chose a lower collateral on loans that fail on the assumption that owners with more collateral are less likely to default on their loans. This gives a conservative estimate of the total capital loss.

5. Most thrifts were mutual organizations in the 1980s. When a mutual thrift fails, its management loses the unclaimed value of the mutual institution, assumed here to be 4.3 percent of failed S&L assets as well. (*Wall Street Journal*, July 30, 1990, Reid Nagle editorial.)

6. Regulations required S&Ls to hold 80 percent of total assets in real estate-related assets until 1984, when the percentage dropped to 60 percent. It was then raised to 70 percent, effective July 1, 1991.

Table B-1.
Estimated Capital Losses Associated with the S&L Crisis, 1981-1992 (In billions of dollars)

Calendar Year	Resolution Costs		Obligation to Depositors (1990 dollars)	Capital Loss (1990 dollars)
	Current dollars	1990 dollars		
1981			12.1	21.8
1982			12.3	22.4
1983			15.5	28.1
1984	9.9	12.1	19.0	34.4
1985	10.4	12.3	28.1	50.8
1986	13.4	15.5	14.1	25.4
1987	17.0	19.0	23.9	43.2
1988	25.9	28.1	23.0	41.7
1989	13.5	14.1	27.5	49.9
1990	23.9	23.9	22.8	41.2
1991	23.9	23.0	17.6	31.8
1992	29.5	27.5	4.2	7.6
1993	25.2	22.8		
1994	20.1	17.6		
1995	4.9	4.2		
1981-1992	217.5	220.0	220.0	398.2

SOURCE: Congressional Budget Office.

NOTES: The value for 1988 includes $7.5 billion to reflect the official estimate of the value of tax forgivenesses granted to acquiring institutions in that year.

Conversion to 1990 dollars uses the implicit GNP deflator. Resolution costs are scaled up by 1.81 to obtain capital loss estimates to reflect losses in collateral and net worth in failed thrifts. The derivation of this factor is explained in the text. Columns may not add to totals because of rounding.

the S&Ls became insolvent, regulators forced them to write down their real estate loans to their true market value of $50 (again, .5 A).

In this case, the resolution cost would be equal to $30 (.3 A), since the S&L became insolvent and its net worth was lost before the markdown in its real estate loans. The loss in net worth under these conditions should not be counted as part of the thrift crisis. The loss in capital attributable to the thrift crisis would still be $50, but would be equal to the resolution cost of $30 (R = .3 A) plus the loss in collateral of $20 (.2 A). This result implies a lower estimate of the loss to the capital stock than that derived above--1.67 times the resolution cost [K loss = R + .2 A = R + (.2/.3) R = 1.67 R].

The two alternative estimates of capital loss that have just been derived correspond to the polar assumptions that all, or none, of the in-

solvencies among thrift institutions during the 1980s were the result of real estate losses. Most likely, however, losses in real estate loans were largely responsible for thrift insolvencies. In an effort to produce conservative estimates of losses to the capital stock, CBO has assumed that losses on other investments played a role. Consequently, the size of capital losses is assumed to be less than the higher of the two estimates derived above, 1.95, and more than the lower figure, 1.67, times the estimated costs of resolution. The ratio that underlies the analysis in Chapter Four, 1.81, is the average of these two factors. The resulting estimates of capital loss are shown in Table B-1.

Illustrative calculations demonstrate the sensitivity of the calculation of the capital loss to assumptions regarding the collateral percentage associated with real estate loans and the percentage reduction in the value of real

estate assets. Under the assumptions used in the calculations above (all S&L losses as a result of reductions in the value of real estate loans, 20 percent collateral, and 50 percent reduction in the value of real estate assets), resolution costs are multiplied by 1.95 to obtain capital losses. If a borrower provided only 11.5 percent collateral while the value of the loan held by the S&L represented 88.5 percent of the value of the asset, the resulting capital loss would be 1.46 times the resolution cost. A loan characterized by collateral equal to 30 percent of the value of the underlying real estate asset implies capital losses equal to 3.18 times the cost of resolution. Returning to the original collateral value of 20 percent but assuming that the value of the real estate asset declines 30 percent rather than 50 percent implies capital losses equal to 5.26 times the cost of resolution.

The Estimate Includes Some Extraneous Elements

The estimates of the losses in productive capital that are used in the simulations may overstate the true losses for several reasons.

First, some of the losses that CBO's figures reflect were offset by gains to borrowers from S&Ls. As a result of these gains, other sources of investment financing could have replaced investments not made by failing thrifts.

Second, some part of losses in failed S&Ls represented transfers from the government to developers and owners of real estate. To the extent that CBO's figures reflect such transfers, they do not reflect losses in productive capital. Perhaps because of lax regulation and supervision, some loans were made that allowed real estate to be sold at highly inflated prices. When the S&L went bad, the seller kept the proceeds from the sale but the taxpayer had to pick up the bill for the difference between the loan value and the true market value. Again, the S&L losses in this case are offset by gains in the wealth of sellers.

A third reason for overstatement is that consumers of the services of real estate investments gain something from the increased supply of real estate projects. The net loss to society is the loss in consumer surplus, not the capital loss, which reflects the lower marginal social return on the last dollar of capital.

A fourth factor suggesting that CBO's figures may overstate losses in capital is that some thrifts were forced to close during the depressed years, although the value of their assets and their net worth might have recovered in a few years following a recovery in these asset markets. Markets for real estate were temporarily depressed in different regions of the country at different times during the 1980s, and some of the losses of failed S&Ls were only "paper losses" in that they represented temporary fluctuations in the value of junk bonds and other financial assets.

Fifth, increased competition from mortgage bankers, commercial banks, and other institutions providing financial services might have caused more thrifts to become insolvent during the 1980s even in the absence of any change in their lending practices. This argument suggests that some failures might have occurred because competition became more intense, not because their loan decisions were misguided.

Finally, some part of the losses probably represented waste stemming from fraud and mismanagement. Little additional investment might have occurred in the absence of this behavior.

The Estimate Omits Some Elements

Although the arguments just discussed show ways in which the estimates used in this study may overstate capital losses, in certain respects the figures omit some elements of the capital losses that were associated with the S&L failures.

First, several analysts have shown that through forbearance by banking regulators and several changes in accounting standards, some thrifts that should have been closed were allowed to survive.[7] By examining only those losses at thrifts that were forced to close, this study overlooks a large quantity of capital losses associated with the thrift losses that did occur in the 1980s.

Second, the estimates of capital losses based on losses at failed thrifts depend heavily on the assumptions one makes regarding the percentage of loan value that borrowers were typically required to post as collateral, and the reduction in the value of the assets between the time that loans originated and the time that thrifts became insolvent as a result. The higher the assumed collateral percentage or the lower the assumed percentage loss in asset value, the higher the estimated loss in capital. As discussed above, a relatively low collateral percentage (20 percent) and a relatively high asset reduction value (50 percent) are used here to give a conservative estimate of the capital loss.[8]

A third reason for which these figures may understate actual losses in productive capital is that distributional issues are not addressed explicitly in this study, although the economy as a whole may suffer substantial losses when taxpayers must finance the deposit insurance liabilities of the federal government. Losses stemming from S&L failures imply transfers of wealth or of other benefits from taxpayers to owners of net worth in profitable S&Ls who gain from high rates of return as compensation for risk, to users of capital services in

sectors with overinvestment since the early 1980s, and to borrowers who obtained home mortgages at low long-term rates. To the extent that deposit insurance requires that taxpayers bear these distributional losses instead of depositors, the future tax burdens per unit of federal public services must be greater. But raising taxes involves a significant deadweight loss--some general equilibrium simulations find that the marginal loss from raising an additional dollar of revenue from the current tax system may be larger than 50 cents.[9] While this deadweight loss is not conceptually the same as the economic losses that are included in this study, it is similar, and could be represented roughly through a higher loss in GNP.

A final reason for possible understatement of capital losses is that the boom years of real estate investment in the early 1980s were followed by severe retrenchment and loss of opportunities following the change in incentives in the late 1980s. The transition from boom to bust both in terms of human capital and real resources is costly. These transitional costs are not captured in this study's estimates of losses.

Estimates of Federal Obligations to Depositors

In addition to figures on losses in productive capital, the analysis in Chapter Four is based on estimates of new federal obligations to depositors in failed thrift institutions (see Table B-1 on page 60). These obligations in-

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7.   For example, see Edward J. Kane, *The S&L Insurance Mess: How Did It Happen?* (Washington, D.C.: The Urban Institute Press, 1989) or James R. Barth, *The Great Savings and Loan Debacle* (Washington, D.C.: American Enterprise Institute, 1991).

8.   As one indicator of the fall in the value of assets at failed S&Ls, one study shows FSLIC resolution costs for recognized failures to vary between 4 percent and 58 percent of S&L asset values, with an average of 24 percent from 1982 to 1989. See James R. Barth and Philip F. Bartholomew, "The Thrift Industry Crisis: Revealed Weaknesses in the Federal Deposit Insurance

System," in James R. Barth and R. Dan Brumbaugh, Jr., eds., *The Reform of Federal Deposit Insurance: Protecting the Taxpayers and Disciplining the Government* (New York: Harper Collins, forthcoming). The 20 percent collateral and 50 percent asset reduction assumptions used in this study imply a 37.5 percent decline in the value of S&L assets. Higher reductions in S&L asset values imply that S&L losses were a larger proportion of total capital losses. Hence, since CBO calculates the capital losses from S&L losses, the estimate of total capital losses is conservative.

9.   For example, see Charles L. Ballard, "The Marginal Efficiency Cost of Redistribution," *American Economic Review*, December 1988, pp. 1019-1033.

crease depositors' wealth, and therefore their consumption.

Although they are closely related, the estimates of government obligations to depositors differ from CBO's figures for accruing federal costs for resolving insolvent thrift institutions described in Chapter Five (Table 6 on page 47). Most of the difference arises because federal obligations to depositors are assumed to accrue earlier than federal resolution costs--that is, at the time that thrifts incur capital losses, rather than at the time they are taken over. (A further difference arises because the simulation model uses numbers on a calendar year basis rather than on the fiscal year basis used for budget calculations.) The timing of these capital losses is, of course, just as uncertain as their size. In order to be concrete, they are assumed to occur three years before resolution costs are recorded. If this assumption proved to be wrong, the details of the timing of the economic effects of deposit insurance would change, but the main conclusions would not be affected.

One could make several refinements to the annual resolution costs to reflect the government's accruing liability more accurately. A more sophisticated approach would recognize annual administrative expenses associated with the deposit insurance system less premium revenues. Preliminary numbers for each deposit insurance agency or cleanup agency are available by fiscal year in the annual *Budget of the United States*. However, including these numbers would not change the estimates of the government's accruing liability in a significant way. A further complication is that the budget does not document administrative costs associated with institutions in receivership before they are resolved. These costs include lawyers' fees, title search expenses, and transaction costs for maintaining and transferring properties. In recent years, these costs may have been quite large, but no definitive estimates are available.

RELATED CBO STUDIES

Budgetary Treatment of Deposit Insurance: A Framework for Reform, May 1991.

Reforming Federal Deposit Insurance, September 1990.

Questions about the first study should be directed to CBO's Natural Resources and Commerce Division at (202) 226-2940; questions about the second study should be directed to the Budget Process Unit at 226-2640. The Office of Intergovernmental Relations is CBO's Congressional liaison office and can be reached at 226-2600. Copies of the studies may be obtained by calling CBO's Publications Office at 226-2809.

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