THE FINANCIAL CONDITION OF THE FARM CREDIT SYSTEM

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The Congress of the United States
Congressional Budget Office

PREFACE

The Farm Credit System is the largest source of finance for the agriculture sector. A variety of analysts have expressed concern that the system will become insolvent in the near future. In response to a request from the Senate Budget Committee, this staff working paper examines whether the system will become insolvent, when that may occur, and the magnitude of the funds needed to restore it. In keeping with the Congressional Budget Office's mandate to provide impartial analysis, this report makes no recommendations.

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SUMMARY

The Farm Credit System (FCS)--a federally sponsored credit agency--is the largest lender serving agriculture. It borrows from capital markets by selling bonds and relends these funds to agricultural borrowers. The FCS lost more than $4 billion in 1985 and 1986 when it was forced to set aside large amounts of money in anticipation of losses on its loans. It is expected to continue losing money, though at a falling rate, for the foreseeable future. The FCS's problems are the result of its own operating procedures and of economic policies that have contributed to a very weak farm economy. This paper examines the future financial condition of the FCS, specifically: will the FCS require additional federal assistance if it is to remain a viable lender; when might additional assistance be needed; and how much assistance might ultimately be required to return the system to profitability?

The Congress addressed the financial difficulties of the FCS in 1985 and 1986. In 1986 temporary relief was provided by allowing the FCS to employ Regulatory Accounting Practices (RAP) to delay the recognition of certain expenses. Authorizing the use of RAP illustrated Congressional intent to avoid the appearance that the stock in the system, purchased by farmers as a condition of their loans, be valued at less than par.

Analysis performed by the Congressional Budget Office (CBO) indicates that additional federal assistance will almost certainly be needed during 1987 if the FCS is to remain a viable lender. This analysis suggests that the system will need some type of aid during the second half of 1987, probably during the third quarter. The amount needed during 1987 is expected to be between $30 million and $352 million, depending on the assumptions employed regarding financial factors such as performing loan volume and intrasystem transfers of capital. This analysis also indicates that up to $7 billion may be required between now and 1992 in order to recapitalize the FCS. Again, the ultimate magnitude of federal assistance depends on assumptions about economic and financial variables, and on the extent of intrasystem transfers.

The future profitability of the system hinges on several factors. First, the FCS must increase the margin between the rates it pays for funds and the rates its charges for funds. The system's ability to increase its interest rate margin is limited by the characteristics of its financial instruments, by

competitive pressures from other lenders, and by its internal policies. Second, it must halt the dramatic decline in the size of its portfolio. During 1986 and the first quarter of 1987 (the most recent period for which data are available), net loans in the FCS have fallen by about $1 billion per month. As a result, the proportion of nonperforming to total loans in the portfolio is high; in other words, there are relatively few earning assets (principally loans to farmers) in comparison to those that generate no income. The proportion of nonperforming loans must be reduced through a combination of improved management of the nonaccruing accounts and expansion of the volume of performing loans.

The budgetary impact of assistance to the FCS depends on the mix of grants, loans, and guarantees that might be employed, and on the timing of assistance. The alternative means of offering assistance will not be discussed in this paper but will be the focus of a forthcoming CBO analysis.

THE FARM CREDIT SYSTEM: A PROFILE

Permitting the FCS to continue its financial decline would have serious consequences in the agricultural sector. With total assets of $70.1 billion at the end of 1986, the FCS is the largest institutional lender serving agriculture, holding more than 25 percent of total farm debt. 1/ FCS dominance in the farm real estate market is even more pronounced--it held nearly 40 percent of farm real estate debt at the close of 1986. Because of its size, its dominance in the real estate market, and the difficulty in finding institutions able and willing to assume its loans, the short-term disruptions in agriculture associated with a collapse of the FCS would be serious.

It is also possible that financial difficulties in the FCS could adversely affect lenders outside the agricultural sector. The FCS is a federally sponsored lender and is said to have "agency status". Having agency status conveys certain tangible benefits (exemption from state and local taxes, for example), but perhaps the most important benefit is that buyers believe that

1. Total assets are composed of net loans ($54.6 billion as of December 1986), investments and cash ($11.4 billion) and nonearning assets ($4.1 billion). Liabilities consist of bonds and notes sold to private investors ($64.5 billion), while total capital is composed of borrower contributions ($4.4 billion) and earned surplus ($1.3 billion).

there is an implied government guarantee associated with FCS bonds. 2/ This notional guarantee results in interest rates on FCS securities that are only marginally higher than those of Treasury bills. If losses in the FCS were severe enough to cause the FCS to default on its bonds, the confidence of buyers of other agency lenders (such as the Federal Home Loan Mortgage Association) could be undermined. Such a loss of confidence would increase the rate of interest other agency lenders would have to pay for funds and thereby affect their ability to provide low cost credit to targeted borrowers.

ORGANIZATION OF THE FARM CREDIT SYSTEM

The Farm Credit System is a complex, multi-tiered, cooperative that was initially capitalized by the federal government but is now fully owned by its farmer-borrowers. Because it is now a private lender, it is wholly off-budget. The FCS was originally designed to contend with a shortage of capital in agriculture. The system has provided agriculture with direct access to national capital markets and has given farmers some control over their supply of credit. Because it is a cooperative, it functions differently than other lenders. For example, a cooperative has less incentive to maximize profits, since profits only increase the patronage refunds to borrowers. Another difference is that a borrower from the FCS is required to purchase stock in the cooperative amounting to between 5 percent and 10 percent of the value of the loan requested. Purchase of stock entitles the farmer to a prorated share of any patronage dividends issued by the cooperative. The stock is redeemed when the loan is repaid, generally at its par value.

The organizational structure of the FCS is summarized in Figure 1. The system has essentially three tiers: local, district, and national. At the local level are the approximately 150 Production Credit Associations (PCAs) and 230 Federal Land Bank Associations (FLBAs). Generally, each PCA and FLBA is restricted to lending in a specified area. PCAs make short-term and intermediate-term loans for the production, processing, or marketing of agricultural products, and for rural housing. FLBAs are the conduit through which the FCS makes long-term financing available to

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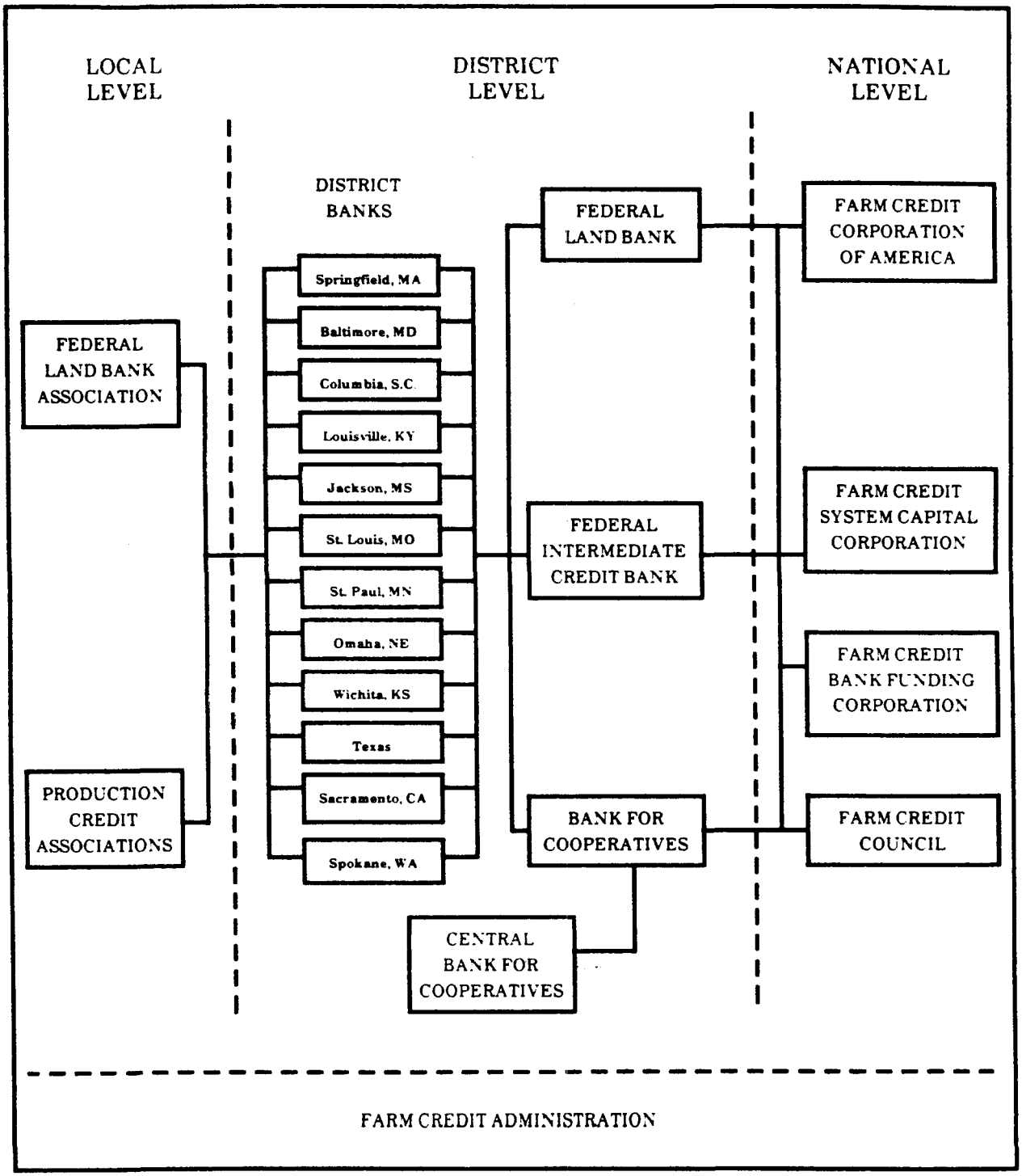
2. For a more complete discussion of federally sponsored agencies, see CBO's, *Government-Sponsored Enterprises and Their Implicit Federal Subsidy: The Case of Sallie Mae* (December 1985), and *The Solvency of the REA Revolving Fund* (forthcoming).

FIGURE 1. ORGANIZATION OF THE FARM CREDIT SYSTEM



SOURCE: Congressional Budget Office.

farmers. FLBA-issued loans are available for purchases of real estate, equipment, buildings and homes, livestock, and other long-lived assets.

Above the local level, the system has 12 districts, each with three types of institutions. The Federal Intermediate Credit Banks provide short- and intermediate-term credit, principally to PCAs. The Federal Land Banks make long-term loans secured by first liens on real estate to agricultural producers through the FLBAs. Finally, each district has a Bank for Cooperatives (BC), which lends to agricultural cooperatives. Within the BC system is the Central Bank for Cooperatives, which helps finance loans in excess of the lending limits of an individual BC and provides international banking services to cooperatives.

Finally, there are five organizations that function at the national level. The Farm Credit Corporation of America, the principal policy making body, is responsible for implementing management and accounting procedures. The Farm Credit System Capital Corporation is charged with providing assistance to financially stressed banks and associations within the system. The Capital Corporation is authorized to purchase nonperforming loans and acquired property using funds transferred to it from healthy banks and associations. The Federal Farm Credit Banks Funding Corporation manages the sale of system securities, proceeds from which are used to fund FCS operations. The Farm Credit Council is a trade association representing the interests of the FCS before the Congress and the Administration. Finally, the Farm Credit Administration (FCA) is an arms-length regulator responsible for ensuing the safety and soundness of the FCS. The FCA is a government agency that is outside of the system proper.

FACTORS CONTRIBUTING TO THE FCS's FINANCIAL PROBLEMS

Factors external to and within the FCS share responsibility for the current financial woes of the system. External factors contributing to current problems include:

- A mix of **monetary and fiscal policies** have caused real interest rates to rise and the value of the dollar to increase. These developments contributed to a sharp decline in the demand for U.S. agricultural exports and to financial stress within the agricultural community.

- **Agricultural policies** in many developed countries, including the United States, have contributed to a buildup of stocks of agricul-

tural commodities. Increased agricultural productivity in several key developing countries has also contributed to current problems of oversupply and low prices.

These external factors have an adverse impact on the FCS by lowering farm prices and incomes, thus reducing the ability of borrowers to service their debt, and by lowering the value of collateral pledged to back real estate loans.

Factors internal to the FCS have also contributed to its current problems. The FCS is, with a few minor exceptions, restricted to lending to agriculture, which limits portfolio diversification and ties the system's fate to that of the agricultural sector. The negative effects of low prices, declining export markets, and falling land values on the financial well-being of farmers are quickly transmitted to farm lenders, of which the FCS is the largest.

The system's lending practices have also contributed to its present financial difficulties. During the 1970s, approval of loans for the purchase of farmland tended to be based on the value of the collateral backing the loan. Relatively little attention was paid to the income-generating potential of farmland with the expectation that any shortfalls would be covered by the steadily rising value of the land. The riskiness of collateral- based lending was compounded by the authorization granted to the FCS in 1971 to lend up to 85 percent of the value of the asset (compared with the previous maximum of 65 percent). Another portion of the 1971 amendments permitted the FCS to assess pledged collateral at its market value rather than its "agricultural value." Agricultural value was based on the income-generating potential of the collateral. These changes meant that if land values fall, as they did after 1983, the point at which the outstanding principal exceeds the value of the collateral would be reached that much sooner. While the FCS was no more guilty of collateral-based lending than other lenders, it is the dominant real estate lender in agriculture and therefore had the most to lose.

Three other aspects of FCS loan-pricing practices contributed to current financial problems. First, the system has historically priced its loans on the basis of the average cost of its capital. Most other lenders base their rates on what they are currently paying to raise new funds. During periods of increasing nominal rates of interest, the average cost system conveys a lower-than-market rate of interest to FCS borrowers. Conversely, when nominal rates are falling, as they have been during much of the 1980s, FCS rates will be higher than those of their competitors. Higher rates have caused some borrowers to seek debt capital from other sources.

A second, related issue concerns the nature of FCS bonds. These bonds are "noncallable," meaning the system cannot insist that its bondholders redeem their bonds at par. During the late 1970s and early 1980s, the system sold large amounts of long-term bonds bearing high rates of interest. Because these bonds are noncallable the system is forced to continue paying high rates of interest on this debt.

The third pricing issue concerns the rates the FCS charges on loans to individual borrowers. In the cooperative tradition, which stresses equal treatment, all members are offered the same interest rate. Pricing loans in this manner overlooks differences in the risks associated with lending to various customers. Again, the FCS is not alone in this practice; studies have shown that agricultural banks have tended to offer the same price to most borrowers.

Finally, the institutional structure of the FCS has contributed to its current difficulties. The FCS is a cooperative owned by members who are dispersed across the country and have different interests. Not surprisingly, there are many differences of opinion regarding system policies. These have led to a number of lawsuits, many of them concerning the implementation of the rules covering intrasystem transfers to bolster financially strapped portions of the FCS (the implications of which will be discussed below). These lawsuits have restricted the system's ability to gain access to capital owned by individual components within the system.

THREE LEVELS OF FINANCIAL PROBLEMS

The financial problems facing the FCS concern the level of capital within the system. Focusing on the level of capital in the system allows the definition of three progressively more troublesome levels of financial difficulty.

The system's capital consists of earned net worth, also called surplus, and the equity shares that must be purchased by borrowers as a condition of getting loans. When operating losses occur, they are covered by the system's earned net worth. Once earned net worth is exhausted, as the losses during the past two years have very nearly done, further losses must be offset by drawing down the value of borrower stock. When the value of borrower stock falls below its par value, the stock is said to be "impaired."

Theoretically, because borrower stock represents ownership of the cooperative, its impairment should not be of great concern. In practice,

RAP VERSUS GAAP

Generally Accepted Accounting Practices (GAAP) are the set of rules and conventions used by accountants to assess the financial condition of most businesses in this country. Regulatory Accounting Practices (RAP) are deviations from these standards that are permitted, in this case, by legislation enacted by the Congress. Under RAP, the FCS is permitted to delay the recognition of a portion of interest expenses (the premium above rates paid on similar bond issues during October, 1986). These interest-rate premiums may be amortized over a 20-year period. The other expense that can be amortized over 20 years using RAP is the provision for loan losses. Provisions for loan losses are deductions from income made to cover expected losses on loans. RAP allows the FCS to defer loan loss provisions in excess of one-half of 1 percent of total loans.

When operating losses occur, they must be covered by the lender's capital. For the FCS, there are two types of capital: earned surplus, and stock purchases made by borrowers as part of the loan agreement. As noted in the text, there is reluctance to use borrower stock as true risk capital. The 1986 Farm Credit Act authorized the use of RAP in order to preserve, at least on paper, borrower stock. Once all earned surplus has been used to cover operating losses, a system bank is allowed to reduce apparent losses by deferring a portion of its costs. The hope is that this "breathing space" will allow the system to regain its financial health, and that the future costs generated by these deferrals will not undermine the long-term health of the system.

however, there is great reluctance to place this capital at risk. One reason for this reluctance is that borrowers do not purchase stock voluntarily, and hence should not be treated as investors who have chosen to bear this risk. Second, borrower stock has always been redeemed at par, farmers have come to expect this, and failure to continue the practice would lead to more borrower flight and greater difficulty in attracting new customers.

To forestall the appearance of impairment of borrower stock, in 1986 the Congress authorized the FCS to employ special accounting rules, called Regulatory Accounting Procedures (RAP), which delay recognition of certain costs (see box). Delayed recognition of costs slows the rate at which capital is reduced, at least on paper. System banks and associations can only use these rules when earned net worth under normal accounting rules (Generally Accepted Accounting Practices or GAAP) is exhausted. Thus, the first level of financial stress is reached when a bank or association is forced to use RAP to forestall debt impairment. It should be noted that RAP forestalls the appearance of debt impairment but not its reality, since the use of RAP implies that the value of borrower stock is below par when GAAP is used.

The second level of financial stress is reached when all of the deferrals allowed under RAP are used up and borrower stock is impaired even on a RAP basis. Functionally, it is not clear what, if anything, occurs when this stage of capital depletion is reached. Psychologically, however, RAP impairment of borrower stock could be important since a bank in this position could no longer even pretend that the value of its borrower stock is still at par. At a minimum, borrowers' confidence about the security of their investment and the bank's ability to attract new borrowers would be expected to diminish.

The third, and most serious, level of capital depletion results in exclusion of a bank from the bond market. A bank may be prevented from selling additional bonds for two reasons: insufficient collateral or debt impairment. To sell additional bonds, a bank's uncommitted assets (composed principally of performing loans, cash and investments, and the market value of acquired property) must exceed the value of outstanding bonds. When a bank fails to meet this condition, it is said to have insufficient collateral to issue more debt. Several FLBs are currently near the point at which additions to loan losses or to nonaccrual loans will push them into an undercollateralized position. Alternatively, debt impairment occurs when all of a bank's capital (earned surplus and borrower stock) is consumed. A bank in this condition is insolvent and, as a result, the value of its bonds is less than par.

Reaching this third level of capital depletion would have several consequences. First, without the ability to issue new bonds, a bank's ability to make new loans would be severely restricted. Second, if debt impairment occurs, the assumption made by investors that there is a government guarantee behind FCS securities would be tested. As noted, if the government failed to honor this presumed commitment, serious disruptions in national capital markets could result. Third, debt impairment would test the system's joint and several liability clause. The joint and several liability refers to the clause in the system's charter that states that all of the banks in the FCS are liable for any debt issued by the system. Thus, if one district completely exhausts its capital and cannot meet its obligations to its bondholders, all other districts are responsible for satisfying the ailing district's bondholders. While this requirement has not been legally tested heretofore, there have been legal challenges to transferring capital from health districts to weak ones to avoid stock impairment when the financial well-being of the healthy member is placed at risk.

RESULTS OF THE ANALYSIS

A quarterly model of the FCS was developed to examine the need for federal assistance for the system during 1987. Actual financial data from the second, third, and fourth quarters of 1986 were used as a base for the model. The model calculates two simplified income and balance sheet statements, one based on GAAP and the other on the new RAP. The Federal Land Banks (FLB) were modeled separately, at the district bank level, because the financial difficulties faced by the system are concentrated in these banks. The Federal Intermediate Credit Banks, Production Credit Associations, and Banks for Cooperatives were modeled as a unit at the national level.

THREE QUARTERLY SCENARIOS

The model's projection of financial conditions in the FCS is driven mainly by the asset side of the balance sheet. Three scenarios were created to test the sensitivity of the model to changes in assumptions about asset levels. In each scenario two sets of assumptions were used: one set for the 12 FLB districts and a separate, slightly more optimistic set for the remainder of the system. The projection period considered in the quarterly model

extends through the fourth quarter of 1987. The key assumptions used in the three quarterly scenarios are summarized in Appendix Table 1.

In all three scenarios, the problems facing the FCS are assumed to remain concentrated in the FLBs. The assumptions used for the FLBs in the three scenarios differ with respect to changes in performing loan levels, levels of investment, operating expenses, new nonaccrual loans (loans for which interest payments are not being received), and additions to loan loss provisions.

The Most Likely Quarterly Scenario

The most likely case assumes that financial conditions in the FLBs continue to deteriorate, but at a slower rate than in 1986. Though the worst is behind the FLBs, performing loan volume is lost and additions to loan loss reserves and new nonaccrual loans remain relatively high. The system is assumed to reduce investments and operating expenses throughout 1987. The assumptions used for the rest of the system in the first scenario are quite similar to the FLB assumptions. The major differences are that performing loans are assumed to decline more slowly, charge-offs and provisions for loan losses are lower, and interest rates are assumed to decline.

The Optimistic Quarterly Scenario

In the optimistic case, it is assumed that the decline in the performing loan portfolio in the FLBs is halted in the first quarter of 1987 and stabilized thereafter. Investments continue to grow for most districts during 1987 in this scenario. It is also assumed that the FLBs reduce operating expenses by even more than in the first case. This case presumes that farm financial conditions begin to stabilize and, as a result, new nonaccrual loans and provisions for loan losses for the FLBs are substantially lower than in case one. The assumptions applied to the rest of the system in case two differ only in that investments are assumed to fall rather than rise and gross charge-offs occur at a lower rate than for the FLBs.

The Pessimistic Quarterly Scenario

Finally, the assumptions used for the FLBs in the third case are similar to those in the first except that investments continue to increase (though at a slower rate than observed in 1986), and operating expenses, additions to loan losses, and new nonaccrual loans are all somewhat higher. The assumptions

for the rest of the system are similar to those used for the FLBs, though somewhat less pessimistic. In this scenario, new nonaccruals and additions to loan losses for the rest of the system are lower in 1987 than the average levels for these variables during 1986, though not as low as in the first two scenarios. In addition, the difference between interest rates charged and interest rate paid by the rest of the system are assumed to increase during 1987. Finally, gross charge-offs by the rest of the system are again assumed to be less than for the FLBs.

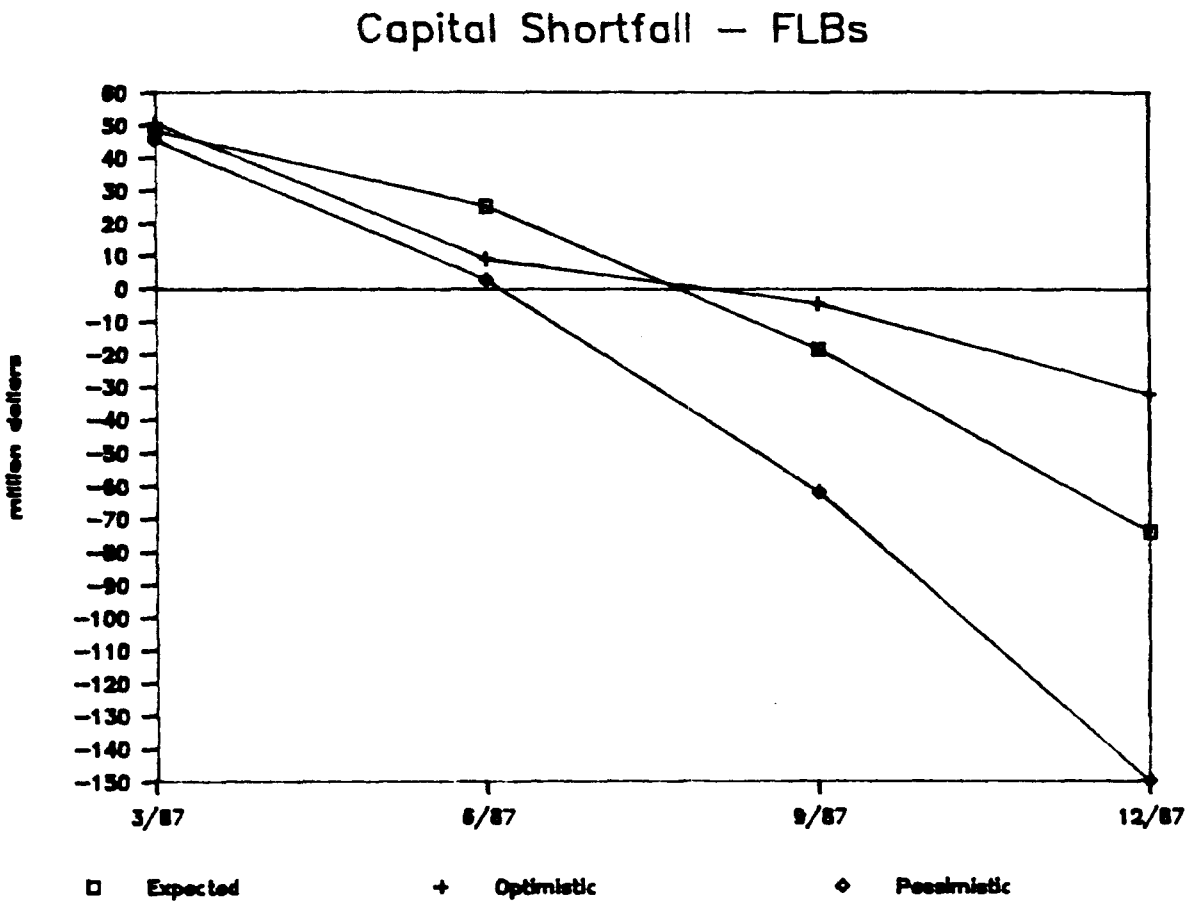
EXPECTED TIMING OF NEEDED ASSISTANCE

Given that eight FLBs and one FICB were already using RAP by March 1987, the central question to be examined using this quarterly model is whether or not the FCS will reach the second or third levels of financial stress described above. A negative value in Figure 2 indicates that the second level of financial stress, impairment of borrower stock using RAP, has been reached even with intrasystem transfers of capital. RAP figures were used because the Congress has indicated its intention of avoiding borrower stock impairment under this accounting system. In all three scenarios, the FCS shortfall net of intrasystem transfers becomes negative in the third quarter of 1987. By the end of 1987, the amount needed to avoid a post-RAP impairment of borrower stock is expected to be between $32 million and $150 million per quarter if transfers of capital are fully implemented across bank types in the FCS. The cumulative shortfall for 1987, with intrasystem transfers, is between $37 million and $212 million. If no additional funds are made available to the FLBs, the cumulative shortfall is projected to be as much as $352 million for the year.

In order to provide a clearer view of the true profitability of the FCS, net income per quarter using GAAP is plotted in Figure 3 for the three scenarios. For the year, the cumulative expected loss for the FCS is $1.8 billion, with a range of $1.2 billion to $2.3 billion. Losses of this magnitude make it unlikely that the system would be able to avoid impairment of borrower stock on a GAAP basis in 1987, even if all of the system's earned surplus could be used in this effort. Since earned surplus for the FCS in aggregate was $1.4 billion at the close of 1986, only the optimistic scenario would avoid impairment of borrower capital under GAAP even if all the system's earned surplus could be mobilized.

Several factors contribute to the relatively poor results shown in Figures 2 and 3. First, the margin between the interest rates the FCS charges its borrowers and the rates they pay on their securities is assumed

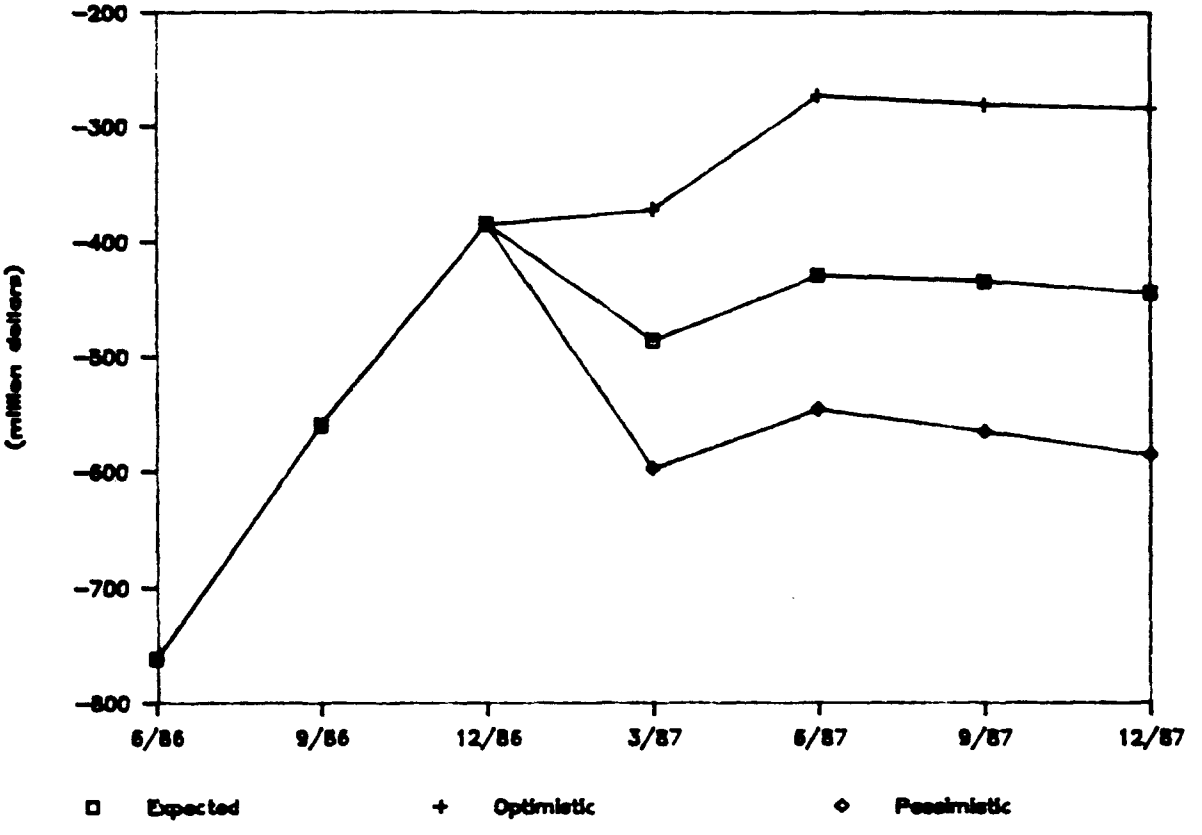
FIGURE 2



SOURCE: Congressional Budget Office.

FIGURE 3

FCS Net Income



SOURCE: Congressional Budget Office.

to remain the same for the FLBs. Second, the ratio of nonaccrual loans to total loans in the FLBs remains high in all but the optimistic scenarios (this ratio for each of the scenarios is shown in Figure 4). Obviously, the greater the proportion of loans in a portfolio that are not generating income, the lower will be the net income for the bank. Total loan volume for the FCS is very similar across scenarios, ranging from $56.0 billion to $56.6 billion at the end of 1987. In contrast, nonaccrual loans as a percentage of total loans range from a low of 11 percent in the optimistic scenario to a high of 15 percent in the pessimistic scenario. By way of comparison, nonaccrual loans were 4.6 percent of total loans at small commercial banks at the end of 1986. 3/

In 1986, most of the losses suffered by the FCS could be directly attributed to the extremely large loan loss provisions that the system was forced to make. In the projections for 1987, total additions to loan loss provisions range from $0.9 billion to $1.8 billion with an expected value of $1.4 billion, compared with loss provisions in 1985 and 1986 of $3.0 billion and $1.8 billion, respectively. Thus, loan loss provisions remain relatively high in these scenarios and certainly contribute to the poor performance projected for the system. Figure 5 plots loan loss provisions by quarter.

When the results for individual FLBs are examined, the picture is even more bleak. In the most likely scenario, the FLBs in the Jackson and St. Paul districts are projected to impair debt by the end of 1987 on a GAAP basis. By the end of 1987, nine of the twelve districts are using RAP and three (Jackson, St. Paul, and Omaha) have post-RAP shortfalls, the second level of financial stress discussed above. The Jackson district accounts for nearly 60 percent of the total system shortfall, with St. Paul accounting for another 30 percent.

Conclusions from the Quarterly Model Results

This analysis indicates that the system will impair borrower stock under RAP during the third quarter of 1987 without additional federal assistance. This conclusion is in general agreement with analyses done by the Farm Credit Administration and the FCS. Even if the FLBs are able to halt the shrinkage of their portfolio (as in the second scenario), the system will be unable to cope with its financial problems using only internal resources.

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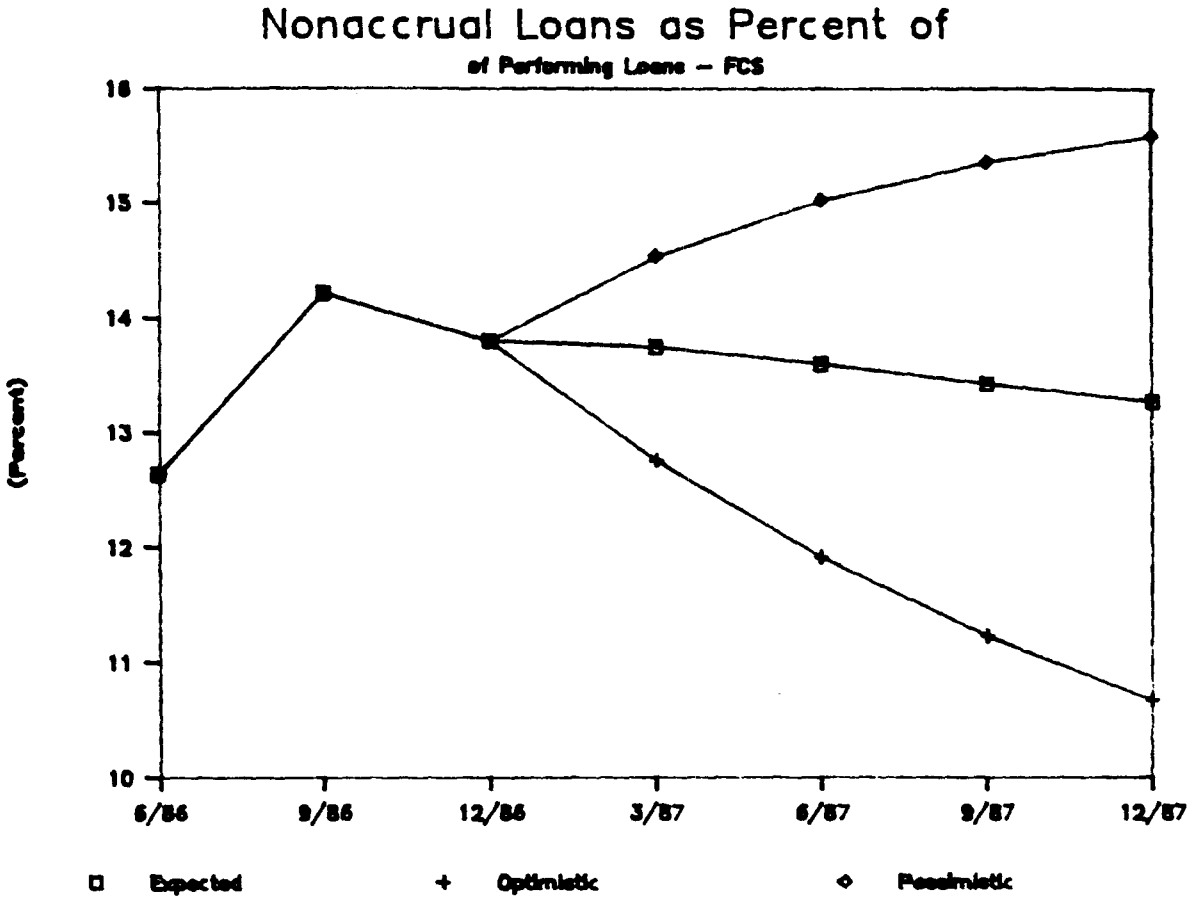
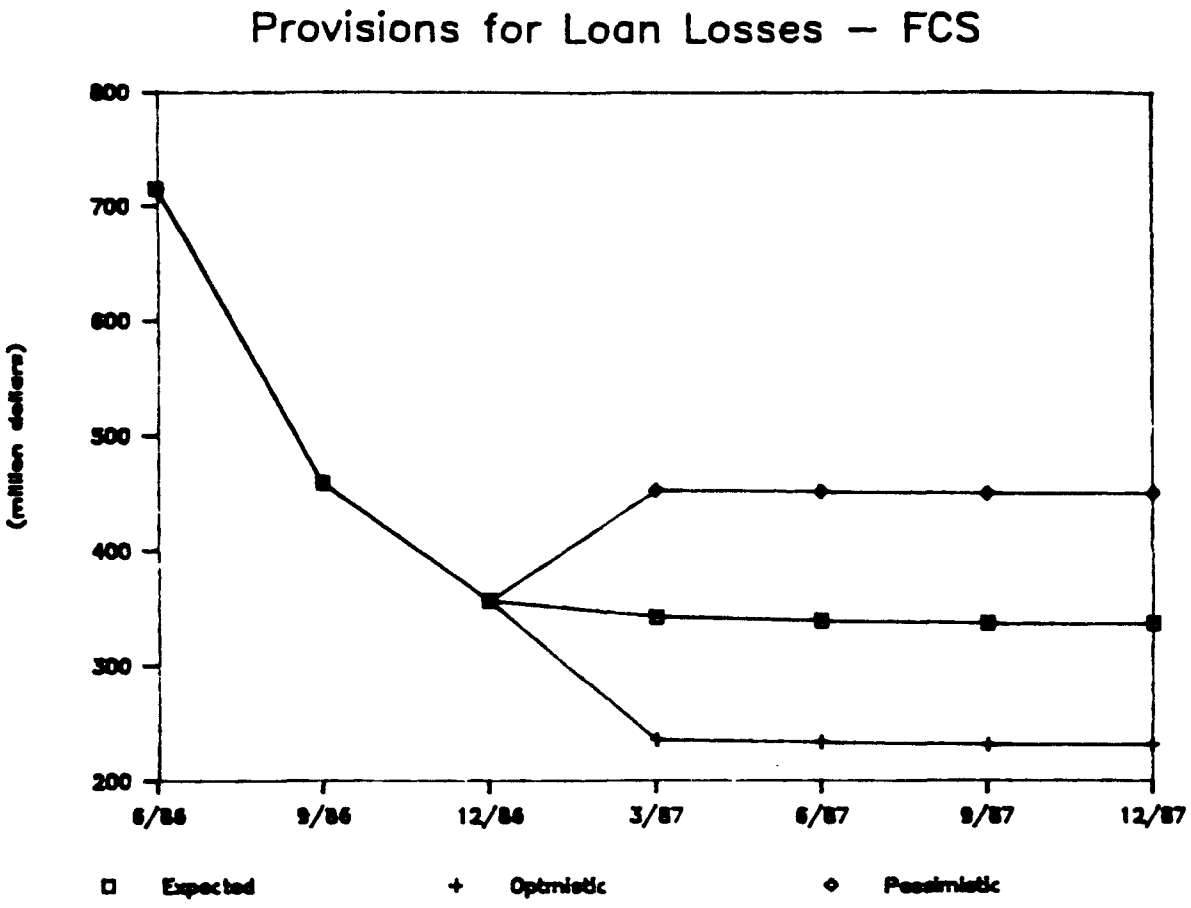
3. Melichar, Emanuel, "Turning the Corner on Troubled Farm Debt," Federal Reserve Bulletin (July 1987).

FIGURE 4



SOURCE: Congressional Budget Office.

FIGURE 5



SOURCE: Congressional Budget Office.

Resolution of the legal issues regarding additional intrasystem capital transfers will not fundamentally alter the conclusion that the system will need outside assistance if it is to survive. This analysis indicates that only two FLB districts, Baltimore and Springfield, are likely to be in sufficiently good financial condition to transfer money to the Capital Corporation during 1987. Even with transfers from the rest of the system, internal resources available to cope with financial problems will be fully used by the fall of 1987. The inescapable conclusion is that additional federal assistance will be needed in 1987 if the FCS is to avoid stock impairment.

For some FLBs, assistance could be needed to avoid debt impairment during 1987. The districts with the greatest problems in 1987 appear to be Jackson, Omaha, and St. Paul. The financial problems of farmers in the St. Paul and Omaha districts have been well publicized, so it is not surprising that these districts show up as problem cases. The depth of financial difficulties in the Jackson district is somewhat more surprising. Jackson's poor performance is most obvious in the income statement. Interest expenses were 116 percent of interest income in Jackson during the final three quarters of 1986. This compares with 102 percent and 107 percent in Omaha and St. Paul, respectively. To measure operating efficiency, average operating expenses during the final three quarters of 1986 were divided by total assets at the end of 1986. By this measure, Jackson at 0.7 percent is less efficient than the average for the 12 FLBs (0.3 percent). Some of Jackson's difficulties can probably be attributed to the severe drought that affected the southeastern states in 1986. The drought would be expected to have reduced the proportion of performing loans (thereby reducing the returns from loans relative to interest expenses) and may have increased operating expenses (since servicing requirements for loans in the portfolio may have increased).

A Longer-Term Forecast of FCS Performance

In addition to the timing of additional federal assistance, it is important to have an estimate of the total amount of assistance that might ultimately be needed to see the system through its current difficulties. Again, CBO constructed three scenarios to examine the total capital shortfall the FCS might experience between now and 1992. Because the Congress has indicated its desire to avoid the appearance of borrower stock impairment (through the authorization of RAP), the capital shortfall measure employed in these models represents the amount of additional capital that would be needed to avoid borrower stock impairment under RAP. The means by which this capital might be transferred to the FCS is not included in this paper but will be discussed in a forthcoming CBO study.

THREE ANNUAL SCENARIOS

The basic model developed for the quarterly scenarios was extended to an annual basis. Actual data from 1985 and 1986 were used in the model. Differences in the assumptions used and in periodicity mean that results from the annual model are not strictly comparable to the quarterly model outcomes. A general correspondence between the two models does exist. Key assumptions are summarized in Appendix Table 2.

The Most Likely Annual Scenario

In the most likely scenario, performing loans in the FLBs continue to fall in 1987, though at one-half the rate observed between 1985 and 1986. In 1988, the volume of performing loans stabilizes and it increases at 10 percent per year thereafter. Performing loan volume expands because of new business and because some nonaccrual loans are restructured. Nonaccrual loans and loan loss provisions are allowed to decline rapidly after 1987 in this scenario. Both interest rates paid and interest rates charged fall slowly throughout the projection. The assumptions used for the rest of the system are similar to those for the FLBs, though in general rates of change are more moderate. For example, performing loans are assumed to expand at only 5 percent per year in 1988 and beyond.

The Optimistic Annual Scenario

The most significant difference between this scenario and the previous one is the margin between interest rates charged and interest rates paid. In this case, the spread between these two rates is allowed to increase in 1987 and remains at least as large as in the most likely scenario through the end of the projection. The assumptions used for most of the other variables are only moderately more optimistic than in the first case. For example, in this scenario, performing loans fall half as rapidly in 1987 and expand at the same rate as in the most likely case during the 1988 to 1992 period. Again, changes in variables for the rest of the system follow the same general trend assumed for the FLBs.

The Pessimistic Annual Scenario

The key difference between the pessimistic scenario and the most likely one is that performing loans do not stabilize until 1989 and expand at only 5

percent per year thereafter. These seemingly minor changes have a significant impact on system performance. A similar pattern of change in performing loan volume was assumed for the rest of the system.

The total capital shortfall over the five-year period depends greatly on the amount of additional capital transferred between system entities. In Figure 6, it is assumed that transfers occur among all system entitities. In this "full transfer" case, the total capital shortfall ranges from zero in the optimistic case to $4.3 billion in the pessimistic one. The expected shortfall is $2.2 billion. If transfers occur only between FLBs, the shortfall ranges from $0.7 billion to $6.4 billion with an expectation of $4.5 billion. Finally, if no transfers occur, the shortfall is expected to be between $2.1 billion to $7.3 billion with an expected level of $5.4 billion. Given the current legal problems facing the system, transfers within the system are likely to be limited. If so, the expected shortfall is more apt to be in the $4.5 billion to $5.4 billion range than in the $2.2 billion to $4.5 billion range.

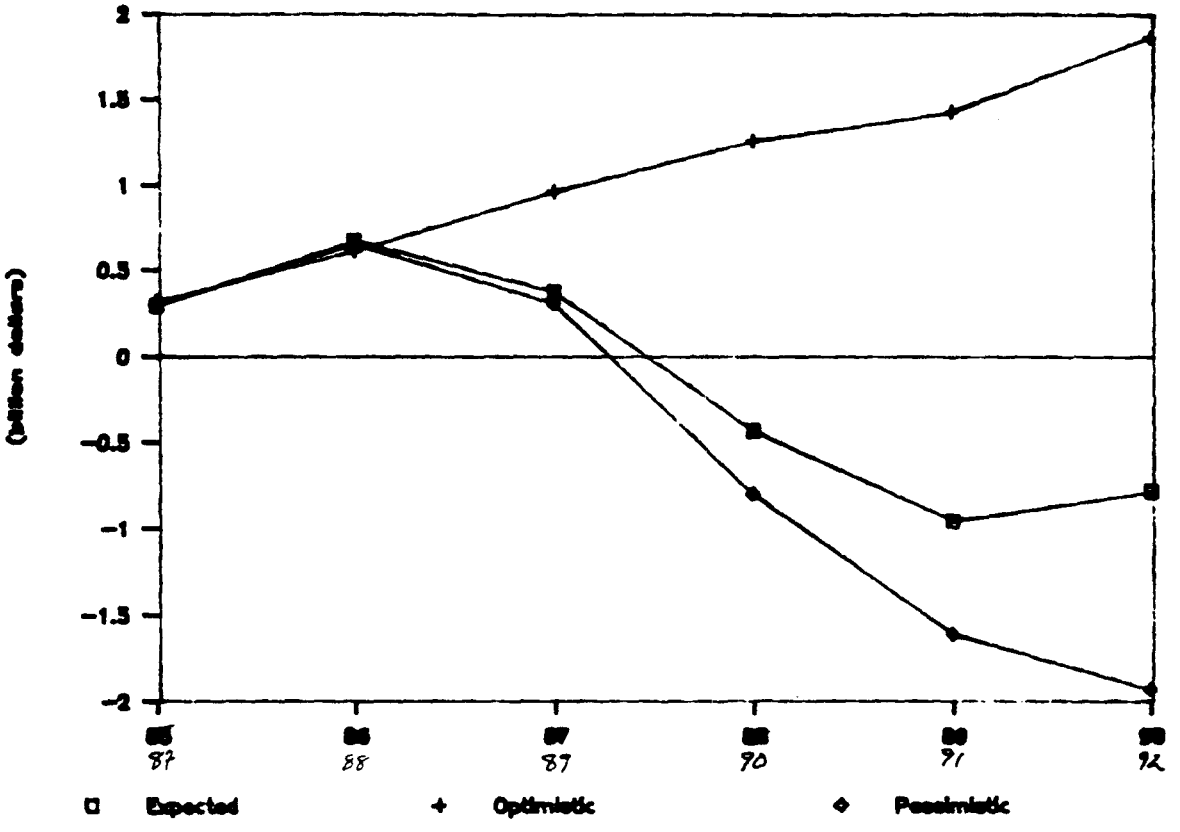
Two aspects of Figure 6 are particularly noteworthy. First, the annual shortfall increases dramatically in the years after 1988, when the authority to use RAP expires. The other is that in two of the scenarios a substantial capital shortfall remains at the end of the projection period. This shortfall indicates continued financial problems for the system. Some of these financial difficulties arise from the assumptions employed (especially for the pessimistic case), but a major cause of the result is the RAP provisions. Allowing an institution to delay recognition of certain expenses is an effective strategy if it regains profitability quickly. In all cases, however, this delayed recognition saddles the institution with an additional expense in later years as it works through the amortized expenses.

Figure 7, which shows annual net income for the 37 district-level banks on a GAAP basis, reinforces this second point. Figure 7 shows that even in the pessimistic case the system regains a break-even point by the end of the projection period. This result implies that the shortfall in the out-years is caused entirely by the previously incurred RAP obligations. An additional caveat must be inserted here. In this model, the system is not charged for any capital which is given to it during this projection period. Because so many transfer mechanisms are currently being discussed, the discussion of this cost would be extremely complicated. Charging the system for capital infusions will cause net income to fall and the total capital transfer to increase.

Finally, Figure 8 indicates that all the scenarios assume that the FCS will continue to lose loan volume in the near term and gain it in the outyears. Differences in loan volume, the principal difference between the

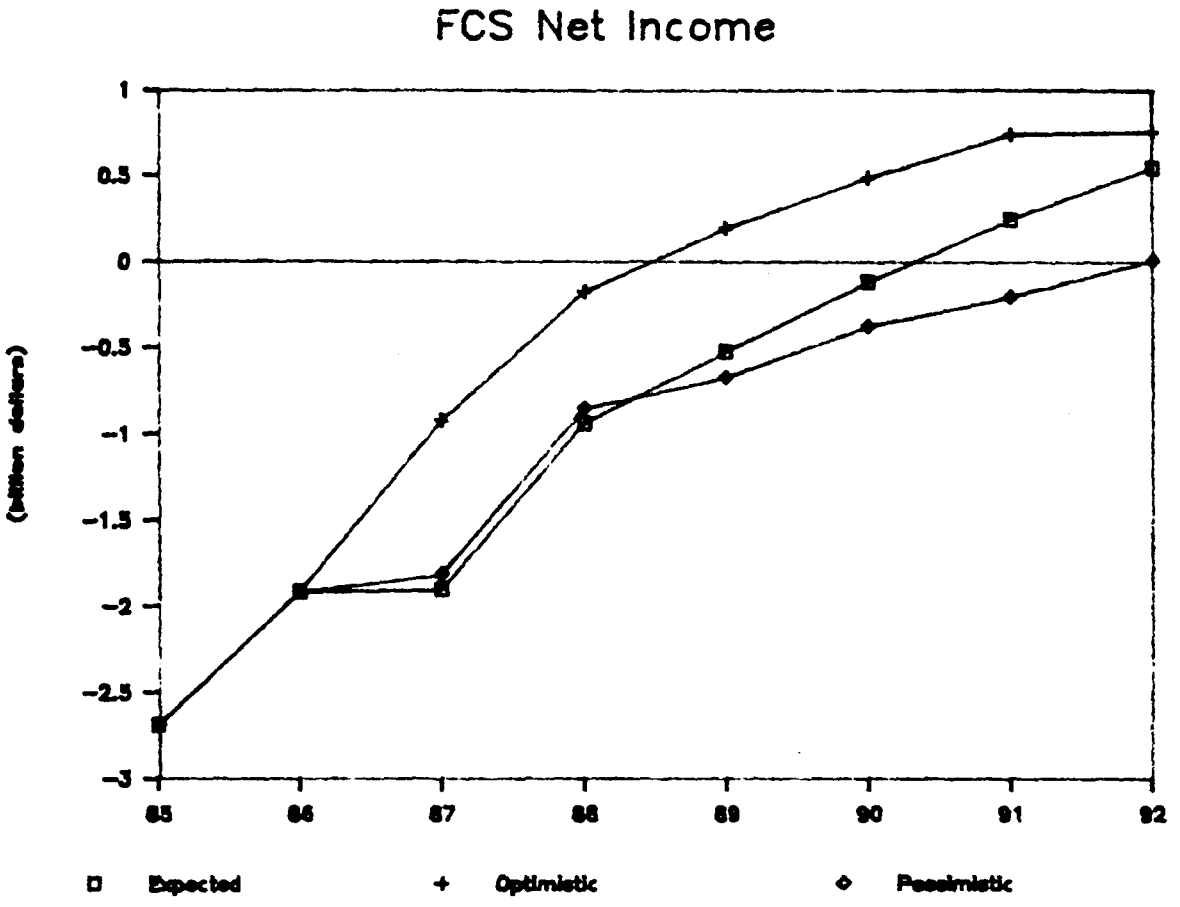
FIGURE 6

Capital Shortfall — FLBs



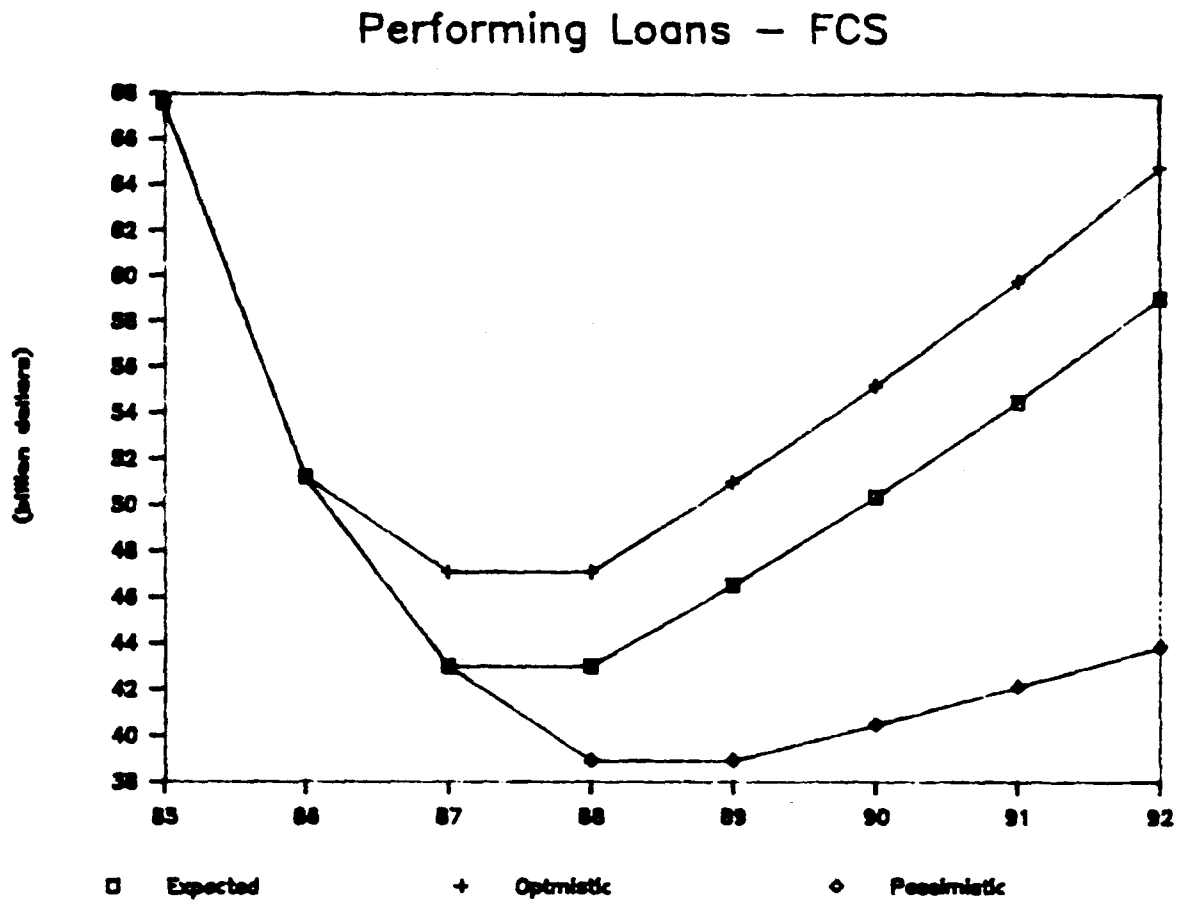
SOURCE: Congressional Budget Office.

FIGURE 7



SOURCE: Congressional Budget Office.

FIGURE 8



SOURCE: Congressional Budget Office.

expected and pessimistic scenarios, have a major impact on projected outcomes. For example, in 1992 net income in the expected scenario is more than $500 million greater than in the pessimistic case. The capital shortfall, assuming full transfers, is more than twice as large in the pessimistic case as in the expected case by 1992. These two results highlight the importance of stabilizing performing loan volume as quickly as possible.

The districts with the greatest degree of financial stress over the longer term seem to be Jackson, Spokane, St. Paul, and Louisville, roughly in that order. By 1992, between four and eight of the FLBs continue to experience an annual capital shortfall. On a GAAP basis two to four districts continue to lose money, while on a RAP basis, two to six districts find themselves in this condition. The larger RAP numbers illustrate the longer-term negative impact of expense deferrals on the income position of system banks.

Conclusions from the Annual Models

The major conclusions reached by examining these annual models can be summarized as follows:

- The amount of capital that may have to be transferred to the FCS if it is to avoid borrower stock impairment between 1987 and 1992 on a RAP basis is roughly $5.0 billion dollars;

- The amount of capital needed to avoid RAP stock impairment would be less (perhaps $2 billion) if a workable intrasystem capital transfer mechanism could be arranged;

- If the FCS has to pay interest on transferred capital, the total amount of assistance needed will increase;

- The capital shortfall will increase substantially when the RAP authorization expires unless the financial condition of the FCS improves markedly between now and 1989, and this is not expected;

- Increasing the margin between interest rates paid for loanable funds and interest rates charged borrowers (from 1.7 percent to 3.1 percent in the most likely scenario) reduces the number of

districts failing to cover interest expenses with interest income from four in 1986 to one in 1992; and

- Failing to stabilize the volume of performing loans, as in the pessimistic scenario, reduces net income by $500 million and doubles the capital shortfall by 1992 relative to the most likely scenario.

APPENDIX TABLE 1. SELECTED ASSUMPTIONS USED IN THE QUARTERLY MODEL

Variable	Most Likely Scenario	Optimistic Scenario	Pessimistic Scenario
	Assumptions Used for FLBs		
Performing Loans	Change at one-half rate preceding 3 months	Constant at December 1986 level	Change at one-half rate preceding 3 months
Investments	Decrease 5 percent per quarter	Change at one-half rate preceding 3 months	Change at one-half rate preceding 3 months
Operating Expenses	Decrease 2.5 percent per quarter	Decrease 5 percent per quarter from average last 3 quarters, 1986	Constant at average last 3 quarters 1986
New Nonaccruals	Decrease 25 percent from average, last 3 quarters 1986	Decrease 50 percent from average, last 3 quarters 1986	Average, last 3 quarters 1986
Loan Loss Provisions	Decrease 25 percent from average, last 3 quarters 1986	Decrease 50 percent from average, last 3 quarters 1986	Average, last 3 quarters 1986
Interest Income	Constant, average last 3 quarters 1986	Constant, average last 3 quarters 1986	Constant, average last 3 quarters 1986
Interest Expense	Constant, average last 3 quarters 1986	Constant, average last 3 quarters 1986	Constant, average last 3 quarters 1986
	Assumptions Used for Rest of FCS - - Same as for FLBs Except		
Performing Loans	Change at one-quarter rate preceding 3 months		
Investments		Decrease 2.5 percent per quarter	
Other Assets			Constant at December 1986 level
Other Income			Constant at December 1986 level
Operating Expenses			Constant at December 1986 level
New Nonaccruals			Decrease 25 percent from average, last 3 quarters 1986
Loan Loss Provisions	Decrease 35 percent from average, last 3 quarters 1986		Decrease 25 percent from average, last 3 quarters 1986
Interest Income	Declines 2.5 percent per quarter from average, last 3 quarters 1986		Declines 5 percent from average, last 3 quarters 1986
Interest Expense	Declines 5 percent per quarter from average, last 3 quarters 1986		Declines 10 percent from average, last 3 quarters 1986

SOURCE: Congressional Budget Office.

APPENDIX TABLE 2. SELECTED ASSUMPTIONS USED IN THE ANNUAL MODEL

Variable	Most Likely Scenario	Optimistic Scenario	Pessimistic Scenario
	Assumptions Used for FLBs		
Performing Loans	1987 = Change at one-half rate preceding year 1988 = 1987 level 1989-1992 = Increases 10 percent per year	1987 = Change at one-quarter rate preceding year 1988 = 1987 level 1989-1992 = Increases 10 percent per year	1987 = Change at one-half rate preceding year 1988 = Change at one-half rate preceding year 1989 = 1988 level 1990-1992 = Increases 10 percent per year
New Nonaccruals	1987 = 1986 level 1988-1990 = Declines 25 percent per year 1991-1992 = Declines 50 percent per year	1987 = Declines 25 percent from 1986 1988-1990 = Declines 50 percent per year 1991-1992 = Declines 75 percent per year	1987-1990 = Declines 25 percent per year 1991-1992 = Declines 50 percent per year
Interest Income	1987-1992 = Declines 5 percent per year from average for 1985 and 1987	1987 = Declines 10 percent from average 1988 = Declines 5 percent from 1987 1989-1991 = Increases 5 percent per year 1992 = 1991 level	1987-1989 = Declines 5 percent per year from 1985 and 1986 average 1990-1991 = Increases 5 percent per year 1992 = Increases 2.5 percent
Interest Expense	1987 = Declines 5 percent from average rate for 1985 and 1986 1988-1992 = Declines 10 percent per year	1987 = Declines 15 percent from average rate for 1985 and 1986 1988 = Declines 10 percent 1989 = 1988 level	1987 = Declines 5 percent from average rate for 1985 and 1986 1988-1989 = Declines 10 percent per year 1990-1991 = Increases 2.5 percent per year 1992 = 1991 level
	Assumptions Used for Rest of FCS--Same as for FLBs Except		
Performing Loans	1989-1992 = Increases 5 percent per year	1989-1992 = Increases 5 percent per year	1989-1992 = Increases 2.5 percent per year
New Nonaccruals	1987 = Declines 33 percent from 1986 level	1991-1992 = Declines 25 percent per year	
Interest Income			1992 = Increases 5 percent
Interest Expense	1988-1992 = Decreases 5 percent per year from average, last 3 quarters 1986	1987-1989 = Declines 5 percent per year	1988-1989 = Declines 5 percent per year 1990-1991 = Increases 5 percent per year 1992 = Increases 2.5 percent

SOURCE: Congressional Budget Office.