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REPORT BY THE

Comptroller General

OF THE UNITED STATES

9906

Long-Term Cost Implications Of Farmers Home Administration Subsidized And Guaranteed Loan Program

The Farmers Home Administration provides loans for rural housing, farming, and community and industrial development. In fiscal year 1979 the authorization request exceeded $7 billion, but the agency does not identify the future financial obligations that are incurred by the annual authorization for each loan program or for all programs.

Each program, serving different areas of the rural community, has unique characteristics that directly affect its cost. This report, a request of the Subcommittee on Agriculture, Rural Development, and Related Agencies, Senate Committee on Appropriations, discusses the nature and operation of each program and develops an approach for estimating its long-term costs.

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APRIL 24, 1979

COMPTROLLER GENERAL OF THE UNITED STATES
WASHINGTON, D.C. 20548

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The Honorable Thomas F. Eagleton
Chairman, Subcommittee on
Agriculture, Rural Development,
and Related Agencies
Committee on Appropriations
United States Senate

SEN 00317

Dear Mr. Chairman:

In response to your June 27, 1977, request for a review of the long-term cost implications of subsidized and guaranteed loans made by the Farmers Home Administration, this AFC 00358 report develops and implements a methodology for long-term cost projections that can provide a permanent improvement in the quality of information provided to you in the hearings process.

We selected the major lending programs in the Farmers Home Administration and identified the cost components for each. If cost data was not available from the program, we used similar data from other programs, data from loan programs in other Federal agencies, or data from commercial lending organizations. We have tried to respond directly to your request for a "detailed calculation of the cost of the Federal payout for all costs and subsidies involved during the life of the loans."

We did not ask the Farmers Home Administration to provide written comments on this report. Instead, we obtained oral comments from officials of that agency. Their response was basically favorable, and there is general agreement between us on the validity and usefulness of the results and methodology.

As agreed with your office, we are sending copies of this report to the Director, Office of Management and Budget, the Secretary of Agriculture, and the Administrator of the Farmers Home Administration. Copies will also be available to other interested parties who request them.

Sincerely yours,

Comptroller General
of the United States

REPORT BY THE
COMPTROLLER GENERAL
OF THE UNITED STATES

LONG-TERM COST IMPLICATIONS OF FARMERS HOME ADMINISTRATION SUBSIDIZED AND GUARANTEED LOAN PROGRAM

D I G E S T

Because the value of outstanding Farmers Home Administration loans serving farmers, rural residents, businesses, and communities has expanded rapidly in recent years, a need exists for a system which can provide a comprehensive view of the long-term financial obligations incurred. This study, a June 27, 1977, request of the Chairman, Subcommittee on Agriculture, Rural Development, and Related Agencies, Senate Committee on Appropriations, is a series of analyses using a common methodology for long-term cost projections; GAO believes it can assist congressional and executive branch decisionmakers in planning, managing, and evaluating Farmers Home Administration loan programs.

PROGRAM COSTS NOT IDENTIFIED BY AUTHORIZATION AMOUNT

GAO is concerned with the future budget implications of current program decisions. Cost, in the sense of future budgetary requirements, may be incurred in varying degrees depending on the program's characteristics. An interest subsidy cost develops when the agency loans funds at a rate lower than the rate at which it borrows. Some programs have a higher default loss rate--when borrowers are unable to repay loans and the collateral does not cover the amount of the loss. Agency staff provides financial advice and guidance to borrowers, and some programs use proportionally more of this resource than others. There are other costs, not directly a part of the loan, but a component in the success of particular loan programs.

Although there are unsettled issues regarding the conceptual basis for determining loan program costs, GAO found that it was possible to estimate these costs by identifying the incremental costs that would be incurred with

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the addition of a substantial but not unreasonable increase in program funding. In practice, cost estimates were developed for either a $10 million or $100 million increase, with the choice depending on the 1978 and 1979 authorization levels. Where data was not available from the agency, estimates were based on mortgage industry averages and on the experience of similar programs in other Federal agencies. There are several programs in which authorizations for grant funding are requested in addition to authorizations for loans. Although these appear to be independent processes, the evidence indicates that grants are an integral component of certain loan programs and should be considered a cost; their elimination would substantially change the nature of the program.

RESULTS OF LOAN PROGRAM ANALYSES

Subsidized individual housing loans were made at an average interest rate of 3 percent. The cost for the first 10 years of $100 million in loans totals $46 million, of which over $41 million is interest subsidy; most of the remainder is the cost of administration. Over the expected lifetime of these loans, the interest subsidy will amount to $69 million with other costs raising the total to $75 million.

Unsubsidized housing loans are made in a separate program in which the interest rate charged to the borrower is equal to the Farmers Home Administration's cost of funds. Such loans have a low cost, almost all of which is due to the cost of administration.

Rural rental housing loans also have an average interest rate of 3 percent, and the loans are more likely to stay in effect for a longer period. The interest subsidy on $100 million in loans in the first 10 years amounts to almost $52 million and to more than $133 million over the life of the loans. Ten-year and lifetime total costs are, respectively, $60 million and $152 million. An unusual aspect of this program is the cost of rental assistance payments which are provided on a portion of the housing units.

The farm labor housing program is a small, heavily subsidized program providing housing for domestic farm workers. Subsidies are provided by means of 1 percent loans, grants, and rental assistance payments. GAO estimated that the 10-year cost for $10 million in loans would total almost $17 million and that over the lifetime of the loans the total cost would be $26 million. This is the highest cost program per dollar loaned.

Water supply and waste disposal loans are made at 5 percent interest to communities and nonprofit organizations. These loans are often accompanied by substantial grants. Recent experience suggests that $33 in grants are given for each $100 in loans. Thus, grant costs and interest subsidy are both important cost elements. The 10-year costs for $100 million of loans are $68 million, while lifetime loan costs are estimated at $127 million. Other community facility loans have a similar interest cost but operate without grants and for a shorter time. For that type the 10-year and lifetime costs are estimated at $30 million and $43 million, respectively, on a $100 million base.

Until recently the farm ownership loan program provided 40-year loans at 5 percent. Ten-year and lifetime costs are estimated at $34 million and $71 million on $100 million in loans. The new farm ownership loan program eliminates the interest subsidy for middle-income farmers but provides low-income farmers with a greater interest subsidy for a shorter term. Cost estimates for this new program have not been developed.

Farm operating loans are made at the same interest rate that the agency pays for funds. Program costs result from default and administration expense. The costs on $100 million in loans would be about $4 million for the 7-year period over which such loans may extend. Farm emergency loans are similar to operating loans, but loans are made at subsidized interest rates. The total cost for the same loan volume and period as operating loans is estimated at $20 million.

Business and industrial development loans are made between private borrowers and lenders with the agency guaranteeing the loans in case of default. We estimated that $100 million in these loans would have a 10-year cost of $15 million, mostly to reimburse lenders.

The final task of this report was to use the individual program results to develop an overall estimate of the cost of the fiscal year 1979 Farmers Home Administration loan programs. The requested authorization totaled $7.6 billion; the 10-year and 20-year cost estimates amounted to $2.6 billion and $3.8 billion, respectively.

RECOMMENDATIONS TO THE SECRETARY OF AGRICULTURE

The Secretary of Agriculture should ensure that:

--Long-term cost projections be developed for major Farmers Home Administration programs and be incorporated in the request for authorization and appropriation.

--Each program cost projection include analyses of costs for the requested authorization level and of costs for an increase in authorization such as $10 million or $100 million.

--The information requirements of a cost projection system be identified and provisions made for collecting and analyzing the required data on default rates and costs, loan origination and servicing costs, loan termination rates, and other needed information.

--Program managers in the business and industrial development loan program review the rural lending experience of the Economic Development Administration, ~~Department of Commerce~~, to improve their estimates of loan viability and default losses.

MATTERS FOR CONSIDERATION BY THE CONGRESS

GAO recommends that the Subcommittee on Agriculture, Rural Development, and Related Agencies, Senate Committee on Appropriations, specify that the agency's program authorization and appropriation request include long-term cost projections. To control the number of analyses required and keep the effort focused on programs where the majority of funds are being used, the subcommittee could further specify a program funding level below which projections would not be required.

AGENCY COMMENTS

At the suggestion of the subcommittee, GAO did not request written comments from the agency. Instead, Farmers Home Administration staff members provided oral comments on a draft of this report. Their comments were generally favorable and included suggestions for improving the quality of the projections. They agreed that long-term cost projections could provide useful data to the Congress, the Office of Managment and Budget, and to the agency itself.

Contents

ABBREVIATIONS

EDA	Economic Development Administration
FFB	Federal Financing Bank
FmHA	Farmers Home Administration
GAO	General Accounting Office
HUD	Department of Housing and Urban Development

CHAPTER 1

INTRODUCTION

IMPORTANCE OF ISSUE

This study of the long-term cost implications of loan programs managed by the Farmers Home Administration (FmHA) was prepared in response to a request by the Subcommittee on Agriculture, Rural Development, and Related Agencies, Senate Committee on Appropriations. The Subcommittee requested that we review these programs and report on the costs associated with FmHA's insured and guaranteed loan programs.

In recent years a number of FmHA loan programs have grown dramatically. Lending increased from $3.6 billion in 1974 to $8.3 billion in 1978. 1/ The cost implications of these programs should be recognized and understood. The lessons learned from these loan programs may be applicable to other federally guaranteed, insured, or subsidized loan programs. The Office of Management and Budget estimated that $277 billion is outstanding in federally guaranteed loans. These loans result from the diverse activities of many agencies, but an examination of the FmHA loan programs--serving farmers, rural residents, businesses, and communities--may suggest guidelines and policies applicable to all Federal loan programs.

SCOPE OF REVIEW

It is important to note that this is a study of the costs of FmHA programs, not an analysis of their social benefits. The reader should not attempt to judge among programs simply by comparing costs. This study is a series of analyses using a common methodology in which predictive cost profiles of FmHA major loan programs are developed.

Our basic approach is to estimate the annual costs incurred by a program funding increase that is substantial but within operational limits. Thus for a $800 million program, the estimate is for an additional $100 million, while for a $50 million program, the projection is based on a $10 million increase. A table prepared for each program predicts the costs of a single year's incremental funding over the operational life of the loans generated

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1/All years are fiscal years unless otherwise stated.

by that funding. For some program, costs will be incurred for 40 years, while for others, costs will be terminated in 6 to 7 years.

We have approached the analysis from the perspective of a decisionmaker, who needs estimates of the future costs of present decisions. Historically, financial reporting in both the public and private sectors has been developed to show current status or record results of the past year or quarter. Results for that past year have been affected by the decisions made in that year and in every previous year, and identifying the effects of a particular decision upon the total results for the year is difficult. Thus, the usual financial reporting approach, while adequately describing what has been accomplished, gives little indication of what will be accomplished. A wealth of such information is available on the FmHA loan programs. The "Agriculture and Related Agencies Appropriations for Fiscal Year 1978" and "Budget of the United States Government" are a part of that material; much more is available from FmHA, but almost all of it records the past rather than predicts the future.

LIMITATIONS AND EXTENSIONS

The nature of the analysis involves the forecasting of costs of various FmHA programs. Although our methodology could be improved and better data could be developed, this type of analysis is appropriate to present useful information about Federal programs to decisionmakers who must make substantial expenditure decisions. Naturally, major unforeseen changes in the U.S. economy could upset the underlying assumptions of the analysis.

A number of Federal agencies we contacted that could profitably use predictive data do not develop life cycle data that would show what happens to a block of loans made in a particular year. When we found such information, it was collected for other purposes or just happened to be available. We believe that all agencies involved with loan programs should consider this approach for providing the Congress with better information for authorization and appropriation decisions.

IMPACT OF RECENT LEGISLATION

With the passage of the Agricultural Credit Act of 1978 (Public Law 95-334) several changes in FmHA programs were instituted. A major change has been made in the farm ownership loan program. Formerly loans were made at a 5-percent

interest rate; they will now be made at the "market" rate of interest, which is essentially the cost of money to FmHA. This policy will substantially reduce the interest subsidy costs of the program. In addition, FmHA is undertaking a major effort to make subsidized farm ownership loans to low-income limited resource farmers. FmHA plans to make about 25 percent of its farm ownership funds available to this group. These loans will initially incur a larger interest subsidy cost than the former 5-percent loans. It is likely that they will be more costly to service or administer, and it is also possible that the default costs for these loans will be at a higher rate than for loans made to middle-income farmers. A cost projection for the subsidized portion of the new farm ownership loan program is beyond the scope of this report. The farm ownership loan program projection is based on the program as it operated under the prior legislation. It should remain useful as many of these loans are outstanding and will be incurring costs in future years.

CHAPTER 2

FARMERS HOME ADMINISTRATION LOAN PROGRAMS

BACKGROUND

The Farmers Home Administration's predecessor agency was the Resettlement Administration, a rural rehabilitation agency created in 1935 and concerned almost exclusively with assisting farm families to become and remain successful operating farm units. Passage of the Farmers Home Administration Act of 1946 (Public Law 79-731) marked the reconstitution of prior organizations under the Farmers Home Administration. Until 1949, however, FmHA operations were confined to its farm ownership and farm operating loan programs. In retrospect, the Housing Act of 1949 (Public Law 81-171) appears to be the seminal move for the expansion of FmHA into all sectors of the rural economy. That act gave FmHA the authority to make housing loans to farmers; this was the first expansion into an area not directly involved with farm operations.

In 1961 two key acts further expanded FmHA's authority. The Consolidated Farmers Home Administration Act (Public Law 87-128) allowed the general (nonfarm) rural population to benefit from the water system program. Also, the Federal Housing Act was amended so that nonfarm rural residents could benefit from the FmHA housing loan program. Thus, two key concepts were introduced by the 1949 and 1961 acts: loans did not have to be made solely for farming, and the benefits were made available to rural residents. These fundamental legislative guidelines provided the basis in later years for expanding the types of programs supported by FmHA and broadening the beneficiary population to ever larger categories of nonfarm residents.

OVERVIEW OF LOAN PROGRAMS

The FmHA loan programs may be broadly categorized into three groups: housing, farming, and public and private rural development. Many programs have been conceived and developed. Some were never implemented, others were discontinued, others continue at modest loan levels, and a few have grown to be giant loan programs. There are now more than 20 active loan programs. Between July 1, 1962, and July 1, 1976, the amount of loans outstanding increased from $1.62 billion to $18.46 billion, an average annual growth rate of 19 percent, while the number of active borrowers grew from 176,400 to 920,040, an annual increase of 12.5 percent.

HOUSING PROGRAMS

Although the Housing Act of 1949 gave FmHA the authority to make housing loans to farmers, housing loan programs developed slowly until the late 1960s. Eligibility was extended to residents of larger communities and to senior citizens and young low-income people in expanded geographic areas. The premise behind the housing programs was that there was a shortage of credit at prevailing rates in the rural areas. In the mid-1960s, however, interest rates began a climb that continues to this day. By 1968 the Congress recognized that interest costs had mounted to the point where low-income borrowers would have difficulty with payments. It was no longer simply a matter of a credit shortage; the cost of ownership was too high for the people that FmHA wanted to assist. The Congress responded with legislation for the interest supplement housing loan program, which enabled low-income families to pay as little as 1-percent interest on their FmHA loans. By June 30, 1976, FmHA had issued almost $15 billion in housing loans, more than $14 billion of which was incurred after the loan authority changes of 1965. The estimate for 1979 is for housing loans in excess of $3.6 billion.

Most loans are provided to low- and moderate-income families to purchase individual new or existing housing. Loans generally are made with a repayment period of 33 years at interest rates ranging from 8 percent to as little as 1 percent for some low-income families, although mortgage interest rates may be adjusted as the family income rises. Current program emphasis is on housing in new dwellings; FmHA plans that two-thirds of the 76,000 subsidized individual housing loans made in 1979 will be for new housing. These individual home loans are generally referred to as section 502 loans. The second largest program, known as section 515 loans, makes funds available to individuals, corporations, State or local agencies, and other types of organizations for moderate cost rental or cooperative housing. Such housing should be particularly attractive to rural residents who either cannot afford a conventional home or prefer apartment living. Funds allocated to this program have been increasing in absolute amount and at a faster rate than individual housing loans. It is estimated that in 1979 section 515 loans will total over $850 million, about one-third as much as will be allocated to section 502 loans. Long repayment periods--40 and 50 years--and interest subsidies are characteristics of section 515 housing loans. Other programs provide funds for housing repair, loans to farm owners or nonprofit organizations to provide decent living quarters for farm labor, and homesite development loans.

FARMER PROGRAMS

These programs have their origins in the initial activities of the predecessor organization, and the largest of these programs, farm operating loans, may not differ much from the original Resettlement Administration's loan program. The relative stability of this phase of FmHA operations is shown by some statistics. In 1962, $275 million in farm operating loans were made; by 1976, the amount had risen to $539 million--an annual increase of only 4.9 percent. In the same period the number of operating loans made annually had steadily decreased from 74,000 to 44,000. Such loans are to provide farmers with the elements of production (for example, feed, seed, fertilizer, and machinery), and the terms are adjusted according to the nature of the loan. A loan for capital equipment may have a repayment period as long as 7 years, while 1 year might be the term if the loan is for consumables, such as seed and fertilizer.

Although the farm operating loans represent the largest program in terms of the amount loaned, the farm ownership program, which in 1977 was 83 percent of the size of the operating loan program, was much more costly to FmHA. This is because operating loans are made at a rate approximating the FmHA cost of money, while farm ownership loans carry a 5-percent interest rate. The latter are made to qualified borrowers to purchase, enlarge, or improve farms or even to undertake a nonfarm enterprise. In recent years FmHA has worked with the Federal land banks so that FmHA funds for ownership are used in joint loans with unsubsidized land bank funds. The program has increased from $183 million in loans made in 1962 to $435 million made in 1976, while the total number of loans made annually was about 11,500 in each of these years and usually did not exceed 14,000. The annual growth in value of loans made, 6.4 percent, is similar to the increase in the operating loan program.

The other major farmer loan programs are the emergency loan program and the emergency livestock loan program. The former provides low interest loans to cover losses experienced in disasters; the latter guarantees bank loans to farmers and ranchers engaged in livestock operations. The magnitude of these programs depends on the environmental conditions. In 1977 more than $1.1 billion in emergency loans and $173 million in emergency livestock loans were made. In 1976 emergency loans totaled $478 million. The legislation for the emergency loan program is written so that the amount loaned may respond to need even if it exceeds the authorization.

There are several other small programs, such as grazing association loans, recreation loans, and Indian tribe land acquisition loans, but only soil and water loans, with an annual loan volume of about $50 million, represent a substantial commitment in the FmHA agricultural sector.

PUBLIC AND PRIVATE RURAL DEVELOPMENT PROGRAMS

In its own reports FmHA uses two program areas to encompass loans aimed basically at rural development. The community program area consists of programs through which loans are made to public and nonprofit organizations to improve the rural infrastructure. Water supply and waste disposal loans and grants are the major programs in this area. Based on 1978 estimates, about 25 percent of these annual expenditures are in the form of grants. The total amount of loans and grants has been in the billion-dollar range annually in the late 1970s. This program is designed to provide modern and adequate water supply and waste disposal systems in rural and semirural communities. Loans for other community facilities, such as clinics, schools, fire houses, libraries, and recreation centers, were authorized by the Rural Development Act of 1972. Loans for these facilities totaled $170 million in 1976 and $200 million in 1977. Like the water supply and waste disposal loans, loans are made to public or nonprofit organizations and involve 5-percent interest rates and up to 40-year repayment periods.

To build upon and further benefit from the above infrastructure loans, FmHA introduced a business and industrial loan program to encourage private industry to undertake business operations in rural areas, thus preserving or increasing employment opportunities. These loans may be made by FmHA directly or by commercial banks with up to 90 percent of the principal and interest guaranteed by FmHA. Although the program has been in operation since 1974, funding amounted to $274 million in 1976, reached $350 million in 1977, and was projected at $1 billion for 1978. The program, as it is being implemented, relies on funds provided by commercial lenders, who make loans at interest rates negotiated between borrower and lender.

INSURED AND GUARANTEED LOANS

FmHA makes loans through two main methods. Most loans are made by the "insured" loan method, while the "guaranteed" loan method is used primarily for the business and industrial development program and the emergency livestock loan program.

Insured loans are made from one of three revolving funds, which holds the loan security as collateral and uses the pool of collateral to acquire funds for additional loans. In practice, this means that the loans are made directly by FmHA. Applications for loans are made to FmHA offices, loans are approved by FmHA personnel, and the funds are provided by FmHA. Essentially all housing loan programs and most farming loan programs operate with insured loans.

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The Rural Development Act of 1972 introduced an alternative to this direct involvement. FmHA was allowed to guarantee payments on loans made by authorized lenders. Although the agency is still involved in approving these loans, part of the loan initiation and implementation process is shifted to private financial institutions. To insure that the financial institution is concerned about the quality of the loan, the guarantee may not exceed 90 percent of the principal and interest. Guaranteed loans are generally made at negotiated rates. There is no outlay of FmHA funds unless the borrower defaults. The business and industrial development and emergency livestock loan programs have been the primary users of guaranteed loans.

CHAPTER 3

PROGRAM FUNDING

Financial resources for FmHA operations and loan programs must be considered on two levels. One level is the congressional authorization and appropriation process that is required to get authority to make loans and incur expenses. The other is the actual availability of funds to cover the payments being made.

CONGRESSIONAL AUTHORIZATION AND APPROPRIATION

The cost of administering FmHA (that is, the personnel and operating costs, such as rent and travel) is appropriated and borne in the year in which such costs are incurred. These costs, then, are handled no differently than similar items in other Federal agencies. A second set of costs--certain loan program costs--are treated rather differently. The various loan programs are assigned to one of three major revolving funds. As these loan program costs (such as interest subsidy and capital loss) are recognized, the expenses are charged to their particular revolving fund. An annual authorization and appropriation are then requested to restore the fund. The delays of the process are such that expenses incurred in 1977 are reimbursed by appropriations in the 1979 budget. The estimate for 1980 is that $232 million will be appropriated for salaries and operating expenses and more than $700 million will be appropriated primarily to cover the interest subsidies and losses incurred by loan programs in 1978. In addition, the total FmHA appropriation will be several hundred million dollars greater due to additional appropriations for grant programs and, to a small extent, direct loans.

In a sense, the above items are operating budget items. In addition to providing these operating costs, authorization must be provided for the funds used in making loans. Thus, the Rural Rental and Cooperative Housing Program, if authorized for $600 million, will generally attempt to commit that amount. Unlike the appropriations for costs, a less direct connection exists between the authorization and a source of funds for loans.

SOURCES OF FUNDS

The first source is Treasury funds, provided through the appropriations process, to cover the personnel expenses, other current overhead costs, and reimbursable program

costs. Funds are also available through payments to principal and interest on outstanding loans. Because some loan programs have been operating at elevated levels for several years, there is a substantial flow of funds from principal and interest payments. Between 1968 and 1976 the annual payments of interest and principal averaged 16 percent of loans outstanding at the start of the fiscal year. In 1976 these payments amounted to $2.23 billion. These funds are available for FmHA interest payments, debt retirement, operating expenses, or loans.

Over the years, FmHA has developed several methods of obtaining funds. Initially, loans were made directly from appropriations or borrowings from the U.S. Treasury, but as loan volume increased, alternative funding mechanisms were sought. Starting in 1948, loans were made by private lenders but were insured and serviced by FmHA. Between 1958 and 1969, loans were resold on an individual basis to financial institutions and investors. In 1970 a new contract form was developed by which loans were combined in $1 million packages and sold through security dealers to investors. The actual promissory notes were held in trust by a St. Louis bank, although the investor could take possession if he/she desired. The final evolutionary step of this process, taken in 1973, was the development of the Certificate of Beneficial Ownership, which created a more distant relationship between the lender to FmHA and the promissory notes.

In the early 1970s we 1/ and others noted that a number of Federal agencies were independently raising funds in the financial markets and apparently paying a higher interest cost than if the Treasury had raised those funds. Shortly after passage of the Federal Financing Bank Act (Public Law 93-224), Federal agencies were able to sell Certificates of Beneficial Ownership to the Federal Financing Bank (FFB) at a rate that compared favorably to an agency's efforts in the securities market. FmHA began sales of Certificates to FFB in July 1974 and terminated private sales to the financial markets in 1975. The interest rate FFB charged to FmHA, and other agencies, is based on the cost of money to the Treasury for an equivalent length bond plus 0.125 percent for administrative costs and profits. In addition to the above-mentioned financing methods, the revolving funds are also authorized to borrow from the Treasury.

1/Letter from the Comptroller General to Hon. John Sparkman, Senate Committee on Banking, Housing and Urban Affairs, Washington, D.C., Aug. 26, 1972.

Thus, FmHA's financial obligations consist of a mix of securities. The volume of borrowing in the last few years, almost all of it from FFB, has been so substantial, however, that most debt is owed FFB. Although the Secretary of Agriculture is authorized to treat agency transactions with FFB as a sale of assets, the transaction has many characteristics--agency retaining possession of original debt instruments, agency servicing debt, no risk of default assumed by FFB--that suggest that it is more a borrowing of funds than a sale of assets. Between 1975 and 1977 FmHA borrowed $14.6 billion from FFB, and projections indicate that FmHA will borrow close to $9.6 billion in 1978 and 1979.

CHAPTER 4

BENEFIT AND COST CONCEPTS IN FMHA LOAN PROGRAMS

The process of identifying and measuring costs, benefits, and subsidies in Federal loan programs is controversial. Interpretations and definitions differ, and key data is often unavailable. Before presenting the analysis of each loan program, we shall briefly discuss some general issues involved in determining their benefits, costs, and subsidies.

Economists identify two interpretations of subsidies. One, the "cost" approach, defines the subsidy as the difference between the program costs to the Government and the charges made to beneficiaries. The second, the "benefit" approach, identifies the subsidy as the difference between what the borrower pays for the Government loan and the price that he/she would have paid to an efficient, competitive private lender.

BENEFIT APPROACH

The key problem with the benefit approach is determining the rate that private lenders would charge. This is difficult because FmHA loans are to be made when private or commercial sources are not willing or able to provide the funds. Some of the FmHA borrowers are recognized as a higher risk group, for one function of Federal loan programs is to serve those who have difficulty obtaining funds in the private sector. The argument has also been made that there is a shortage of credit in rural areas and that the available credit goes to another segment of the rural population. Interest rates vary in the private sector according to the credit-worthiness of the borrower. However, structural limitations, such as usury laws, could prevent lenders from charging rates that they believe necessary to loan to certain high-risk borrowers. We would expect a range of rates if FmHA borrowers were able to borrow in the private sector, but for many prospective borrowers, the loan would probably not be available at reasonable rates, and "unreasonable" rates would probably not even be quoted.

Even if a good estimate of what the private lender would charge is available, the benefit approach does not provide detailed management cost information. Thus, the administrative and default costs are commingled with the pure cost of money; each cost is implicitly present, but not explicitly identifiable. One of our objectives will be to identify these particular costs.

COST APPROACH

The cost approach requires that the cost areas be identified and the amount of each be determined. The three areas common to all FmHA programs are costs of money to the lending agency, administrative expenses, and default/collection losses. The cost of money is the area most subject to varying interpretations. Most approaches to developing a cost of money assume that the funds are borrowed. A large proportion of Federal funds, however, are raised through taxes, so it has been argued that the cost of borrowed funds should not be solely allocated to credit programs. The cost may be equivalent to the social rate of discount--a concept upon which no widely agreed-upon point estimate is available. The choice of the borrowing rate still leaves questions. Rates vary with maturity; is it therefore necessary to match the maturity of the Federal borrowing with the maturity of the loan, or can the least expensive maturity be chosen? Are current interest rates a better estimate of costs than average existing rates? Should borrowing costs be adjusted to reflect the fact that taxes will be paid on interest income? These issues are indicative of the elements of controversy that remain.

Identifying administrative expenses is more straightforward, but still complex. One can calculate average costs using the number of loans made and the number of persons employed in the prior year. Similar personnel data might be collected from related industries, such as commercial banks or savings and loan associations. An allocation of overhead costs may or may not be included. Alternatively, detailed timekeeping records might provide a basis for estimating the actual staff requirement for initiating and managing an additional loan. In converting staffing requirements to costs, such considerations as the present cost of pension benefits, which, it has been argued, are not accurately reflected in Federal personnel cost estimates, and salary equivalence to private lenders might be introduced.

Foreclosure is a last resort that FmHA tries to avoid. To that end it provides counseling and guidance to keep the borrower financially solvent. With housing loans, FmHA will often encourage the borrower to sell the property or transfer it to FmHA rather than undergo foreclosure. This reluctance to foreclose could tend to understate annual loss by delaying foreclosures on a large proportion of seriously delinquent loans until the following year. There are various ways of recognizing the costs of default.

When a property is defaulted upon, it could be appraised at that time and compared to the mortgage outstanding to determine the gain or loss. The alternative, used in practice, is to determine the gain or loss upon resale. All losses or gains are attributed to the property at time of sale, but some of this could be interpreted as a result of holding or investing in the property.

APPROACH USED IN STUDY

Costs, as used in this report, are essentially the type of expenses that appear in the budget. For the major costs of interest subsidy and default, however, there is a delay between the time that the expenses are incurred (by withdrawals from a revolving fund) and the time when funds are appropriated to cover those expenses and restitution is made to the revolving fund. Thus, the costs shown in the program cost tables for those two categories will in fact not be requested in the year incurred but in the appropriation request 2 years later. As long as the budget process waits for actual expenses to be known before requesting funds to cover them, there will be an information gap; full fiscal disclosure will not be available. In the year in which the expenses are incurred, funds are not appropriated to cover those expenses, and the funds appropriated in any year are for expenses incurred 2 years before.

CHAPTER 5

INDIVIDUAL PROGRAM ANALYSIS

SUBSIDIZED INDIVIDUAL HOUSING LOANS

Several evolutionary developments have enabled FmHA to assist low-income rural families with subsidized housing loans. The first was the Housing Act of 1949, which gave FmHA the authority to make housing loans to farmers. In 1961 this act was amended to make nonfarm rural residents eligible for housing loans. Finally, in 1968, after a period of steadily rising interest rates, the Housing Act was further amended to provide interest subsidies to low-income families. Depending upon the financial circumstances of the applicant, these subsidies may reduce the interest rate to as little as 1 percent. In general, however, the average interest rate paid by program beneficiaries is 3 percent, and the mortgages are written for repayment in 33 years. The program allows loans for purchasing existing houses as well as building new homes. With a few changes in conditions, loans are also made to modernize or repair homes already owned by applicants.

Cost elements associated with this program include interest subsidy, default, and administration. The interest subsidy is the difference between the interest rate that FmHA pays for funds from FFB and the rate that it receives from borrowers. Because the average mortgage is terminated before its expiration date, we used the FFB interest rate for 15-year funds, which as of March 1978 was 8.5 percent annually, as a fair match against the life expectancy of loans. The interest rate earned on the loans was assumed to be 3 percent.

If all loans lasted for the full mortgage period, it would be simple to calculate the total interest subsidy from a mortgage amortization table. However, the calculation must be adjusted by the percentage of loans terminated annually. Data from 9 years was available to estimate annual termination rates. Percent of termination estimates for the 10th through the 20th years were based on data developed on home loans issued by the Department of Housing and Urban Development (HUD), although we recognize that the rural experience may be substantially different from HUD's urban experience. For years 21 through 33 no terminations were assumed. This assumption overstates interest subsidies, but it has a relatively small impact on the total interest cost at this point.

Table 1 clearly shows that the interest subsidy cost is the dominant program cost and that almost 60 percent of the total cost is incurred in the first 10 years. This cost would be even higher except that some mortgages are terminated, and after a few years the savings resulting from having fewer mortgages outstanding becomes substantial. The 10-year interest subsidy cost is over 40 percent of the amount lent, and one would be safe in estimating that the total subsidy costs for 10 years will be 45 percent of the additional program lending.

The annual default cost is based on the number of defaulted loans and the average loss on a defaulted property. From certain FmHA operations data, we estimated that the average loss in 1976 on a defaulted property was $1,200. This figure was used for the average future loss and, in combination with some limited default rate data, a default projection was completed. Table 1 does not include default estimates after 10 years and suggests that default costs are relatively minor. Default costs were not extended beyond 10 years because both mortgage termination and default estimates beyond that point would not have been based on FmHA data. This would probably not have been necessary anyway since the default costs to that point were low and appeared to be declining.

External economic conditions could greatly affect default rates and costs, which could alter projections based on historical experience. The constant inflation of recent years tends to reduce the likelihood of a final loss on property repossessed by FmHA, although in a particular case the inflation factor may be overridden by unpaid taxes, repairs, and local market conditions.

Annual administrative costs consist of loan origination costs, normal loan servicing costs, and loan default servicing costs. Origination costs, incurred only during the first year of loan activity, constitute the major administrative cost. Estimates of the administrative costs for the first year of almost $2.6 million include $2.4 million in origination costs, $130,000 in servicing costs, and only $3,000 in default servicing costs. Loan servicing costs decline over the following 19 years, because fewer loans require servicing. Loan origination costs (based on FmHA data) are estimated at $680 per loan, and annual servicing costs (based on mortgage banking industry data) are estimated at $36 per loan. We further assumed that the loan default servicing costs were equal to loan origination costs because they share many similar tasks. Normal servicing costs may have been underestimated. There is a substantial in-arrears rate among

subsidized homeowners, and these low-income homeowners are likely to require more service and advice than a typical mortgagee.

In terms of both capital requirements and operational expenses, subsidized individual homeowner loans represent a major demand on FmHA's resources. The operational expenses incurred by a given year's appropriation will in 10 years amount to more than 40 percent of that year's program level. Almost 90 percent of these costs are interest costs; most of the rest are attributable to administration. Default costs appear to be minor.

Table 1
Individual Homemakers Loans
Section 502 Subsidized
(FY 1978 program authorization--$1.7 billion)

EXPECTED COSTS FOR $100,000,000 ADDITIONAL LENDING AUTHORITY

Year	Interest cost (note a)	Default cost (note b)	Total fund appropriation cost	Administration cost (note c)	Total costs
1	$ 5,440,000	$ 8,000	$ 5,448,000	$2,560,000	$8,008,000
2	5,257,000	56,000	5,313,000	149,000	5,462,000
3	4,956,000	102,000	5,058,000	162,000	5,220,000
4	4,598,000	106,000	4,704,000	157,000	4,861,000
5	4,245,000	104,000	4,349,000	150,000	4,499,000
6	3,913,000	96,000	4,009,000	141,000	4,150,000
7	3,618,000	79,000	3,697,000	129,000	3,826,000
8	3,363,000	67,000	3,430,000	119,000	3,549,000
9	3,132,000	62,000	3,194,000	114,000	3,308,000
10	2,903,000	62,000	2,965,000	113,000	3,078,000
10-year total	41,425,000	742,000	42,167,000	3,794,000	45,961,000
11	2,676,000	-	2,676,000	107,000	2,783,000
12	2,465,000	-	2,465,000	100,000	2,565,000
13	2,267,000	-	2,267,000	96,000	2,363,000
14	2,083,000	-	2,083,000	90,000	2,173,000
15	1,914,000	-	1,914,000	85,000	1,999,000
16	1,758,000	-	1,758,000	80,000	1,838,000
17	1,619,000	-	1,619,000	74,000	1,693,000
18	1,496,000	-	1,496,000	69,000	1,565,000
19	1,386,000	-	1,386,000	65,000	1,451,000
20	1,281,000	-	1,281,000	65,000	1,346,000
20-year total	60,370,000	742,000	61,112,000	4,625,000	65,737,000
21	1,188,000	-	1,188,000	56,000	1,244,000
22	1,108,000	-	1,108,000	56,000	1,164,000
23	1,025,000	-	1,025,000	56,000	1,081,000
24	940,000	-	940,000	56,000	996,000
25	853,000	-	853,000	56,000	909,000
26	763,000	-	763,000	56,000	819,000
27	671,000	-	671,000	56,000	727,000
28	577,000	-	577,000	56,000	633,000
29	480,000	-	480,000	56,000	536,000
30	381,000	-	381,000	56,000	437,000
30-year total	68,356,000	742,000	69,098,000	5,185,000	74,283,000
31	279,000	-	279,000	56,000	335,000
32	175,000	-	175,000	56,000	231,000
33	61,000	-	61,000	56,000	117,000
Program total	$68,871,000	$742,000	$69,613,000	$5,353,000	$74,966,000

Loan Data:
Statutory authorization: Public Law 81-171, section 502 of the Housing Act of 1949, as amended. 42 U.S.C. 1472; 7 C.F.R. 1822.1. Type of credit aid: insured loans provided by FmHA. Loan term: 33 years of home ownership; 25 years for repair. Interest rate: 1 to 8 percent, current average interest charged is 3 percent.

a/Interest costs estimates are based on an 8.5-percent cost of 15-year funds borrowed by FmHA from FFB and an expected average lending rate of 3-percent . Loan termination data is based on FmHA experience for years 1 through 9 (extent of data available in appropriate from), on Federal Housing Administration experience for years 10 through 19, on estimates for year 20, and on the assumption of no mortgage terminations other than termination at final payment for years 21 through 33.

b/Default cost estimates are based on FmHA loss experience and mortgage termination data. Required data was available for only 9 years, the 10th year was estimated, and no estimates were attempted beyond the 10th year.

c/Administration cost estimates consist of loan origination expenses, loan servicing costs, and loan termination costs.

UNSUBSIDIZED INDIVIDUAL HOUSING LOANS

For 12 years after the passage of the Federal Housing Act of 1949, FmHA housing loans were restricted to farmers. Finally, in 1961 the law was amended so that other rural residents could benefit from the FmHA housing loan program. Until 1965 the annual volume of housing loans remained relatively low. Annual loan volume reached $186 million in 1963, but was otherwise at or below $131 million annually between 1962 and 1965.

In 1965, with the expansion of communities served and increased use of the insured loan process by which loans could be used to raise funds from private financial institutions, the housing loan program began to grow dramatically. The value of loans rose to $258 million in 1966 and to well over $400 million in the late 1960s. In 1974 and 1975 $884 million and $741 million, respectively, were invested in unsubsidized or non-interest-credit housing. The total amount invested in individual housing grew, and a large proportion was used for subsidized loans. The obligation for unsubsidized loans reached $1.08 billion in 1977, but has since declined, with the 1979 estimate calling for only $674 million. FmHA is emphasizing assistance to low-income families with subsidized loans and is reducing its loan program among the moderate-income families that accounted for most unsubsidized individual housing loans.

The cost elements associated with this program are administration and default. Loans are made at approximately the long-term cost of money to FmHA, so there is no interest subsidy cost to the Government, although the terms of the borrower are generally better than would be available commercially. The loan term is for 33 years. Default costs have historically been low. Table 2 is extended for only 10 years, because we believe that default costs beyond that point are nominal. The expected default costs in this program appear to be only one-fourth of those in the subsidized individual housing program. We assumed identical cost structures for originating and servicing loans and processing defaults. Administration cost differences are accounted for by less effort expended on defaulted loans; experience also suggests that the unsubsidized program will have a higher loan termination rate through resale or early payoff, which will also decrease servicing costs.

Although the program has made substantial demands for capital, in terms of subsidies it is a low-cost program. One important cost, particularly in view of constraints on FmHA personnel, may be that staff resources expended in this program are unavailable for the other FmHA programs.

Table 2

Individual Homeowners Loans
Section 502 Unsubsidized
(FY 1978 progam authorization--$955 million)

EXPECTED COSTS FOR $100,000,000 ADDITIONAL LENDING AUTHORITY

Year	Default cost and total fund appropriation (note a)	Administration	Total costs
1	$ 5,000	$2,560,000	$2,565,000
2	15,000	131,000	146,000
3	23,000	127,000	150,000
4	24,000	120,000	144,000
5	24,000	113,000	137,000
6	22,000	105,000	127,000
7	19,000	96,000	115,000
8	19,000	89,000	108,000
9	19,000	84,000	103,000
10	14,000	77,000	91,000
10-year total	$184,000	$3,502,000	$3,686,000

Loan Data:
Statutory authorization: Public Law 81-171, section 502 of the Housing Act of 1949, as amended. 42 U.S.C. 1472; 7 C.F.R. 1822.1. Type of credit aid: insured loans provided by FmHA. Loan terms: 33 years for home ownership. Interest rate: based on the cost of Government borrowings for like maturities.

a/No data available to extend default cost projections beyond 10 years. Such costs expected to negligible.

RURAL RENTAL AND COOPERATIVE HOUSING LOANS--SUBSIDIZED

Although the Rural Rental Housing Program has operated since 1963, the annual loan volume did not reach $100 million until 1973. Before 1973 the program's annual loan volume averaged $14 million. Loans are made to individuals and to public and private organizations to provide moderate cost rental or cooperative housing and related facilities for elderly persons and other persons of low and moderate incomes in rural areas. This program was created in recognition of the fact that not everyone required, wanted, or could afford an individual house and that young couples and the elderly are particularly likely to prefer this type of housing. The program offers both subsidized and unsubsidized loans, but while the unsubsidized loan volume has remained in the $50 million range, the 1979 request for the subsidized program calls for a volume of $820 million.

Loans are made for 40 years, or 50 years for housing for the elderly, and interest credits may lower the interest rate to as little as 1 percent. The typical loan in this program produces a large number of housing units. In 1977, on a loan volume of $545 million distributed over 1,336 loans, 32,000 housing units were produced. The cost elements included interest cost, administration costs, and rental assistance payments--a cost shared only with the farm labor housing loan program.

No default cost is included. This is not to say that there will be no default cost, but the total default cost as of September 30, 1977, was less than 0.05 percent of the total loaned. It is important to understand that a default potential exists even though it does not appear as a cost. In 1975 through 1978, $1.8 billion was loaned in this program, including unsubsidized loans. The total lending before 1975 was $417 million. We do not know if the few defaults that have occurred are attributable to the older or newer loans. If loans for rental housing are more likely to default after several years, then the apparent default rate is deceptive because 80 percent of the loans are so recent that trouble has not yet appeared. Default then is a potential cost, but one that appears quite small for the near future compared to the others.

An extensive discussion of failure rates of privately financed and federally supported multifamily housing can be found in our report, "Section 236 Rental Housing--An Evaluation With Lessons For The Future" (PAD-78-13). That report notes that the Mortgage Guarantee Insurance Company, a major

mortgage insurer for privately financed multifamily projects, had experienced a cumulative failure rate of 1.3 percent as of December 31, 1974. The percentage of financial loss for each failure was not given. Section 236 housing projects had a cumulative failure rate of 6.8 percent at the same date. The financial loss on a failed section 236 project appears to be about two-thirds of the mortgage amount plus expenses. Differences among sponsors, renters, and terms of both federally supported and private mortgages make comparisons very subjective, but further analysis might provide better guidelines and insights as to what can be expected in the rural rental housing program.

Administrative costs consist of loan origination costs and loan servicing expenses. Using FmHA data, we estimated that $100 million in additional loans involved an origination cost of $411,000, or about $1,100 per loan. The estimate for servicing cost is based on 1976 data from the Mortgage Banking Association, which indicated that such costs are in the range of 0.13 percent of the initial amount of the loan. We adjusted this estimate to reflect "seasoning," or maturation after the first 5 years by reducing costs after that period by 25 percent. For this program we assumed that no loans are repaid early and that no defaults occur. Both origination and servicing costs are incurred in the first year; thereafter, only servicing costs are charged.

The interest subsidy is the major cost. The estimates appearing in table 3 assume an interest rate paid by FmHA of 8.6 percent, an average lending rate of 3 percent, and a 40-year amortization. In a recent response to the Subcommittee on Agriculture, Rural Development, and Related Agencies, Senate Committee on Appropriations, FmHA estimated an 8-percent cost of money, a 2.25-percent average lending rate, and a 50-year loan. We also assumed that the loans would last for the full period of the mortgage, with no prepayment or graduation to other credit sources. On $100 million of additional program lending, the 10-year interest subsidy cost is $52 million and the 20-year cost is $94 million. The total interest cost for the 40-year period is almost $134 million.

Rental assistance payments are supplemental payments made to the owners of FmHA-financed rental housing when a tenant is unable to pay the full rent. The allowable rental rate is based on mortgage cost, operating and maintenance expenses, and a limited profit. Rental assistance is used when tenants cannot pay the basic rent with 25 percent of their income. Including rental assistance costs in this program and in the farm labor housing program may be questioned because both programs can exist without this

additional support. However, this form of assistance is being used regularly and without it the nature of both programs would change.

Information provided by FmHA suggests that about 4,300 of the 42,500 rural rental housing units planned for 1979 may receive rental assistance under the plan which provides new housing with a 20-year rental assistance agreement. There is another plan for rental assistance for existing housing that we believe is not applicable when considering the costs for an additional $100 million in rural rental housing loans. Since the estimate of 42,500 units is based on an authorization of $820 million, we used the same proportion to make an estimate of 5,182 units developed by $100 million. Ten percent of these units receiving annual rental assistance of $1,368 each results in a total cost estimate of $709,000. The FmHA estimates, not shown, of the total cost of rental assistance incorporate an inflation factor which results in substantially higher costs over the same period.

The combined costs of interest subsidy and rental assistance are substantial. For a $100 million initial loan amount the costs of these two items total almost $60 million at the end of 10 years and exceed $100 million at the end of 20 years. Costs decrease slowly because a 40-year mortgage does not pay principal very rapidly in the early years and because rental assistance payments do not decrease. To the extent that loans are made for 50 years, the total interest subsidy is underestimated, but the difference is minor until the later years.

Table 3

Rural Rental Housing Loans--Subsidized
Sections 515 & 521

EXPECTED COSTS FOR $100,000,000 ADDITIONAL
LENDING AUTHORITY

Year	Interest cost (note a)	Rental assistance payments (note b)	Total fund appropriation costs	Administration costs	Total costs (note c)
1	$5,563,000	$ 709,000	$6,272,000	$541,000	$6,813,000
2	5,489,000	709,000	6,198,000	130,000	6,328,000
3	5,412,000	709,000	6,121,000	130,000	6,251,000
4	5,332,000	709,000	6,041,000	130,000	6,171,000
5	5,251,000	709,000	5,960,000	130,000	6,090,000
6	5,166,000	709,000	5,875,000	98,000	5,973,000
7	5,080,000	709,000	5,789,000	98,000	5,887,000
8	4,990,000	709,000	5,699,000	98,000	5,797,000
9	4,898,000	709,000	5,607,000	98,000	5,705,000
10	4,803,000	709,000	5,512,000	98,000	5,610,000
10-year total	51,984,000	7,090,000	59,074,000	1,551,000	60,625,000
11	4,705,000	709,000	5,414,000	98,000	5,512,000
12	4,605,000	709,000	5,314,000	98,000	5,412,000
13	4,501,000	709,000	5,210,000	98,000	5,308,000
14	4,394,000	709,000	5,103,000	98,000	5,201,000
15	4,283,000	709,000	4,992,000	98,000	5,090,000
16	4,170,000	709,000	4,879,000	98,000	4,977,000
17	4,053,000	709,000	4,762,000	98,000	4,860,000
18	3,932,000	709,000	4,641,000	98,000	4,739,000
19	3,808,000	709,000	4,517,000	98,000	4,615,000
20	3,680,000	709,000	4,389,000	98,000	4,487,000
20-year total	94,115,000	14,180,000	108,295,000	2,531,000	110,826,000
25	2,978,000	0	2,978,000	98,000	3,076,000
30	2,164,000	0	2,164,000	98,000	2,262,000
30-year total	122,865,000	14,180,000	137,045,000	3,511,000	140,556,000
35	1,218,000	0	1,218,000	98,000	1,316,000
40	118,000	0	118,000	98,000	216,000
40-year total	$133,759,000	$14,180,000	$147,939,000	$4,491,000	$152,430,000

Loan Data:
Statutory authorization: Public Law 81-171, sections 515 and 521 of the Housing Act of 1949, as amended. 42 U.S.C. 1485 and 1409(a); 7 C.F.R. 1822.81. Type of credit aid: insured loans provided by FmHA. Loan term: 50 years for senior citizens' nonprofit projects; 40 years for others. Interest rate: as low as 1 percent; estimate of 3 percent used in calculation of subsidy costs.

a/Based on 8.6 percent cost of 25-year funds borrowed by FmHA from FFB, an expected lending rate of 3 percent, 40-year level payment amortization, and principal reduced only by amortization.

b/Rental assistance cost projection is based on 10 percent of units receiving 20-year rental assistance agreement with an annual costs of $1,368 per unit (not corrected for future inflation).

c/Insufficient default experience to estimate losses, but such losses expected to be small relative to interest cost and rental assistance.

FARM LABOR HOUSING LOANS

Farm labor housing loans are made to provide rental housing for domestic farm workers and their families, who, overall, are among the most poorly housed segment of our population. These loans may be made to farm owners, public bodies, or private nonprofit organizations on terms that provide 33-year mortgages and a 1-percent interest rate. By FmHA standards, the program is modest in size. The 1977 obligation was $5.3 million, the 1978 budget estimate was $10 million, and the 1979 budget requested $38 million.

Even with the substantial interest subsidy, this housing is too expensive for the beneficiary population without additional assistance. This program is notable for the way in which additional assistance is integrated with the program so that a total financial package responsive to the needs of this community can be prepared. The additional services or funds provided are farm labor housing grants and rental assistance payments. On an individual case basis, it might be argued that the costs of a farm labor housing loan should include only interest, default, and administration costs. But an examination of the overall program reveals that grants and rental assistance are an integral part of the plan to provide the proposed level of housing assistance. Including them as costs is no different than including default costs even though most loans will not have such a cost. This is essentially admitted in the budget justification statement, which reads:

> "The demand for this program will be stimulated by the availability of the rural assistance program subsidy and by the substantial increase proposed for domestic farm labor grants in FY 1979."

For this reason grant and rental assistance costs are included in calculating the cost of an additional $10 million in program loans.

The grant cost is a major one-time cost incurred when the loan funds are obligated or paid. The 1979 budget requested a grant level equal to the loan program level, but we used the 1978 estimate, in which the grant level was about 75 percent of that level. Thus a $10 million additional loan authorization is likely to be accompanied by a grant request of $7.5 million.

The interest subsidy cost is the major continuing cost. The estimate is based on an 8.6-percent cost of long-term

funds to FmHA, a 1-percent lending rate, and amortization over 33 years. Since these are nonprofit or limited-profit undertakings, the loan is expected to last for the full period of the mortgage with no prepayment and no transfer to other sources of credit. The 10- and 20-year interest subsidy costs on $10 million of additional loans are $6.5 million and $11 million, respectively, giving this program the highest ratio of interest subsidy to initial loan of any program for comparable periods.

The rent on an apartment is based on the mortgage cost and on operating and maintenance costs. Rental assistance payments, also used in the rural rental housing loan program, make up the difference between the rental rate and the tenants' payment, which is calculated at 25 percent of their income. On new property the rental assistance agreement is established for 20 years; on existing property the basic agreement is for 5 years and is renewable. In 1978, 700 of the 5,000 new rental assistance units were reserved for farm labor housing. FmHA personnel were not aware of any farm labor housing that received rental assistance under the 5-year existing housing option.

At this writing FmHA plans were indefinite as to how rental assistance would be distributed in 1979, but it was anticipating 5,000 rental assistance units on new property. If 700 are again reserved for farm labor housing, it would mean that 23 percent of the planned production of 3,000 farm labor housing units would receive rental assistance. Since these 3,000 units would be developed with $38 million in loans, a proportional estimate would be that an additional $10 million in loans provides 790 units, of which 182 (23 percent) would receive rental assistance. Since FmHA also estimated that the annual rental assistance cost for a new unit is $1,368 (no differentiation was made between the rural rental and farm labor programs), the total annual rental assistance cost on $10 million would be $249,000. FmHA also developed estimates of the future costs of rental assistance which incorporated an inflation factor.

Administrative costs consist of loan origination costs and normal loan servicing costs. Origination costs, incurred only during the first year of loan activity, are the major administrative costs. First year administrative costs of $256,000 include $243,000 in origination costs and $13,000 in servicing costs. Annual servicing costs remain constant for the remaining years of loan activity, reflecting the assumptions that there are neither defaults nor graduations to other sources of credit. The average loan origination cost (based

on FmHA data) is estimated at $1,470; the servicing cost (based on a mortgage industry average cost factor of 0.13 percent of original loan principal) is estimated at $79 per loan. Because of the nature of this program and the clientele being served, we believe that the annual servicing estimate is very low. Better estimates, unfortunately, are not available.

Disregarding the grant cost, this program incurs cumulative expenses equal to 95 percent of the loan in 10 years and 165 percent in 20 years. The projection assumed that rental assistance payments terminated after 20 years, which was the length of the original agreement. Whether these payments would actually be terminated depends on several factors, including inflation, price and income levels, and housing operating costs.

Table 4

Domestic Farm Labor Housing Loans
(FY 1978 program authorization--$10 million)

EXPECTED COSTS FOR $10,000,000 ADDITIONAL LENDING AUTHORITY

Year	Interest cost (note a)	Grant cost (note b)	Rental assistance cost (note c)	Total fund appropriation	Administration cost	Total costs (note d)
1	$750,000	$7,500,000	$249,000	$8,499,000	$256,000	$8,755,000
2	731,000	-	249,000	980,000	13,000	993,000
3	711,000	-	249,000	960,000	13,000	973,000
4	691,000	-	249,000	940,000	13,000	953,000
5	671,000	-	249,000	920,000	13,000	933,000
6	650,000	-	249,000	899,000	13,000	912,000
7	629,000	-	249,000	878,000	13,000	891,000
8	608,000	-	249,000	857,000	13,000	870,000
9	587,000	-	249,000	836,000	13,000	849,000
10	566,000	-	249,000	815,000	13,000	828,000
10-year total	6,594,000	7,500,000	2,490,000	16,584,000	373,000	16,957,000
11	544,000	-	249,000	793,000	13,000	806,000
12	522,000	-	249,000	771,000	13,000	784,000
13	500,000	-	249,000	749,000	13,000	762,000
14	478,000	-	249,000	727,000	13,000	740,000
15	456,000	-	249,000	705,000	13,000	718,000
16	433,000	-	249,000	682,000	13,000	695,000
17	411,000	-	249,000	660,000	13,000	673,000
18	388,000	-	249,000	637,000	13,000	650,000
19	364,000	-	249,000	613,000	13,000	626,000
20	341,000	-	249,000	590,000	13,000	603,000
20-year total	11,031,000	7,500,000	4,980,000	23,511,000	503,000	24,014,000
21	317,000	-	-	317,000	13,000	330,000
22	293,000	-	-	293,000	13,000	306,000
23	269,000	-	-	269,000	13,000	282,000
24	245,000	-	-	245,000	13,000	258,000
25	220,000	-	-	220,000	13,000	233,000
26	195,000	-	-	195,000	13,000	208,000
27	170,000	-	-	170,000	13,000	183,000
28	144,000	-	-	144,000	13,000	157,000
29	119,000	-	-	119,000	13,000	132,000
30	93,000	-	-	93,000	13,000	106,000
31	66,000	-	-	66,000	13,000	79,000
32	40,000	-	-	40,000	13,000	53,000
33	13,000	-	-	13,000	13,000	26,000
Total	$13,215,000	$7,500,000	$4,980,000	$25,695,000	$672,000	$26,367,000

Loan Data:
Statutory authorization: Public Law 87-70, section 514 of the Housing Act of 1949. 42 U.S.C. 1484; 7 C.F.R. 1822.61. Type of credit aid: insured loans provided by FmHA. Loan term: maximum loan term is 33 years. Loans may be accompanied by grants; 1978 proportion of grants to loans--75 percent. Interest rate: 1 percent.

a/Based on 8.5-percent cost of 25-year funds borrowed by FmHA from FFB, an expected lending rate of 1 percent, and a 33-year level payment amortization.

b/Grant cost projection is based on FY 1978 grant-to-loan relationship.

c/Rental assistance cost projection is based on 23 percent of units receiving 20-year rental assistance agreement with an annual cost of $1,368 per unit (not corrected for future inflation).

d/Insufficient data available to estimate default costs. Total costs understated by default costs that will occur.

WATER AND WASTE DISPOSAL LOANS

Public, quasipublic, and nonprofit associations are eligible to receive water and waste disposal loans primarily for replacement or improvement of water systems, waste disposal systems, or combined systems. These loans have a 5-percent interest rate and a 40-year repayment period. Borrowing organizations may also be eligible for water and waste disposal grants. Grants may be provided if financing the total cost of the system would impose an excessive cost burden on beneficiaries. During 1977, 2,048 water and waste disposal loans totaling $750 million and 1,430 grants totaling $346 million were made. The estimate for 1978 was that there would be 1,710 loans for $750 million and 971 grants for $250 million. The 1977 grant total appears to exceed the aggregate grant authority of $300 million, but this was accomplished by bringing forward unobligated balances; the actual appropriation for 1977 was $275 million.

Cost elements associated with this program include interest subsidy, grants, and administration. The interest subsidy is based on the difference between the rate that FmHA pays, estimated at 8.6 percent for long-term funds, and the rate at which it lends, 5 percent. This 3.6-percent subsidy is applied against a loan principal that is amortized over 40 years. The projection of interest subsidy costs assumed that loans were not prepaid and that they lasted for the full 40-year term. On $100 million in additional loans, interest costs will total $34 million after 10 years, $64 million after 20 years, and $94 million by the time the loan is repaid.

Grant costs of $33.3 million are projected for the first year of loan activity, based on the 1978 grant-to-loan ratio of 1 to 3 and a similar ratio projected for 1979. Admittedly, one can question whether a grant program should be tied this closely to a loan program. In a particular case a project might be undertaken without grant support, but the 1977 to 1978 data indicates that a large proportion of loan requests qualify for and receive grants. Thus, within the legislatively imposed constraints that these grants may not exceed $300 million in the aggregate in any fiscal year and that a grant may not exceed 50 percent of the project cost, the loan and grant mechanisms were apparently designed to operate together, providing facilities to rural communities that could not otherwise afford them.

No default costs are projected. They should be low, perhaps negligible, in part because grants are provided to

prevent the user charges from excessively burdening the community.

Administration costs consist of loan origination costs and normal loan servicing costs. First year administrative costs of $419,000 include $332,000 in origination costs and $87,000 in servicing costs. Every third year, beginning with the fourth year, annual administrative costs increase due to additional servicing efforts required for those years. Since no defaults or early repayments are assumed, annual administrative costs remain constant over the 40-year mortgage term. The 10-year and 20-year costs of administration are $710,000 and $1,024,000. Much of this is due to loan origination costs.

The total costs incurred by a given year's appropriation will amount to nearly two-thirds of that year's program level in 10 years and to 96 percent in 20 years. The total costs over the 40-year term are projected at $127 million for a $100 million appropriation.

Table 5

Water and Waste Disposal Loans
(FY 1978 program authorization--$750 million)

EXPECTED COSTS FOR $100,000,000 ADDITIONAL LENDING AUTHORITY

Year	Interest cost (note a)	Grant cost (note b)	Total fund appropriation	Administration cost	Total costs (note c)
1	$3,586,000	$33,300,000	$36,886,000	$419,000	$37,305,000
2	3,556,000	0	3,556,000	23,000	3,579,000
3	3,525,000	0	3,525,000	23,000	3,548,000
4	3,492,000	0	3,492,000	51,000	3,543,000
5	3,457,000	0	3,457,000	23,000	3,480,000
6	3,421,000	0	3,421,000	23,000	3,444,000
7	3,383,000	0	3,383,000	51,000	3,434,000
8	3,343,000	0	3,343,000	23,000	3,366,000
9	3,301,000	0	3,301,000	23,000	3,324,000
10	3,256,000	0	3,256,000	51,000	3,307,000
10-year total	34,320,000	33,300,000	67,620,000	710,000	68,330,000
11	3,210,000	0	3,210,000	23,000	3,233,000
12	3,161,000	0	3,161,000	23,000	3,184,000
13	3,109,000	0	3,109,000	51,000	3,160,000
14	3,055,000	0	3,055,000	23,000	3,078,000
15	2,999,000	0	2,999,000	23,000	3,022,000
16	2,939,000	0	2,939,000	51,000	2,990,000
17	2,876,000	0	2,876,000	23,000	2,899,000
18	2,810,000	0	2,810,000	23,000	2,833,000
19	2,741,000	0	2,741,000	51,000	2,792,000
20	2,668,000	0	2,668,000	23,000	2,691,000
20-year total	63,888,000	33,300,000	97,188,000	1,024,000	98,212,000
25	2,243,000	0	2,243,000	51,000	2,294,000
30	1,698,000	0	1,698,000	23,000	1,721,000
30-year total	85,630,000	33,300,000	118,930,000	1,338,000	120,268,000
35	999,000	0	999,000	23,000	1,022,000
40	101,000	0	101,000	51,000	152,000
40-year total	$94,483,000	$33,300,000	$127,783,000	$1,680,000	$129,463,000

Loan Data:
Statutory authorization: Public Law 92-419. Consolidated Farm and Rural Development Act, section 306. 7 U.S.C. 1926. Type of credit aid: insured loans provided by FmHA. Loan term: maximum of 40 years. Interest rate: 5 percent. Loan recipients are generally public and nonprofit organizations.

a/Based on 8.6-percent cost of 25-year funds borrowed by FmHA from FFB and expected lending rate of 5 percent. The principal outstanding is reduced by amortization only.

b/Based on FY 1978 grant-to-loan ratio of 1 to 3 and a similar ratio projected for FY 1979.

c/Insufficient default experience to estimate losses, but such losses expected to be minimal.

COMMUNITY FACILITY LOANS

FmHA lending was expanded to all vital rural community facilities under the Rural Development Act of 1972 (Public Law 92-419). The act authorized FmHA loans for essential community facilities, such as fire departments, community halls, hospitals, nursing homes, and public recreation facilities. Loans are made at a 5-percent rate with repayment periods of up to 40 years, but with an average of 20 years. In 1977, 382 loans totaling $200 million were made. Loan authorization of $250 million is requested for 1979.

Cost elements of this program include interest subsidy and administration. The interest subsidy is calculated as the difference between the interest rate at which FmHA makes loans, 5 percent, and its borrowing rate from FFB, 8.6 percent for 20-year loans. The interest subsidy costs on $100 million in additional loans amount to almost $30 million after 10 years and almost $42 million after 20 years.

We believe that these loans have a low default risk because they provide funds for essential community services. FmHA data shows that only one similar loan, a water and waste disposal loan, has defaulted. In a loan to a community or representative agency, the entire cost of debt servicing can be spread over a relatively large population. On the other hand, a changing economic climate or technological change has been known to hurt small communities dependent on a local industry. Although default is unlikely, its possible occurrence must be considered. We would certainly encourage analysis and data collection to develop improved estimates of the cost of default.

Administration costs consist of normal loan servicing costs and, in the first year, loan origination costs. FmHA provided data from which we estimated that origination costs would be $1,963 per loan and first year servicing efforts would be $750 per loan. Annual servicing costs incurred in later years are estimated at $420 or $160 per loan, depending on the specific servicing efforts required; site visits are generally made every third year. First year administrative costs of $459,000 include $332,000 in origination costs and $127,000 in servicing costs. Annual administrative costs in the subsequent 19 years are either $27,000 or $71,000 reflecting service without and with site visits.

In terms of future financing requirements, the community facility program can be regarded as making moderate demands on FmHA resources. Default is unlikely and the interest subsidy is moderate, but once made, a loan is not likely

to leave the system until the final payment is made. Costs total 30 percent of the initial amount after 10 years and over 43 percent for the 20-year life of the loans.

Table 6

Community Facility Loans
(FY 1978 program authorization--$250 million)

EXPECTED COSTS FOR $100,000,000 ADDITIONAL LENDING AUTHORITY

Year	Interest cost and fund appropriation (note a)	Administration cost	Total costs (note b)
1	$3,546,000	$459,000	$4,005,000
2	3,436,000	27,000	3,463,000
3	3,320,000	27,000	3,347,000
4	3,198,000	71,000	3,269,000
5	3,070,000	27,000	3,097,000
6	2,935,000	27,000	2,962,000
7	2,794,000	71,000	2,865,000
8	2,645,000	27,000	2,672,000
9	2,489,000	27,000	2,516,000
10	2,324,000	71,000	2,395,000
10-year total	29,757,000	834,000	30,591,000
11	2,151,000	27,000	2,178,000
12	1,970,000	27,000	1,997,000
13	1,779,000	71,000	1,850,000
14	1,578,000	27,000	1,605,000
15	1,367,000	27,000	1,394,000
16	1,144,000	71,000	1,215,000
17	912,000	27,000	939,000
18	667,000	27,000	694,000
19	410,000	71,000	481,000
20	139,000	27,000	166,000
20-year total	$41,874,000	$1,236,000	$43,110,000

Loan Data:
Statutory authorization: Public Law 92-419. Consolidated Farm and Rural Development Act, section 306. 7 U.S.C. 1926; 7 C.F.R. 1933.1. Type of credit aid: insured loans provided by FmHA. Loan term: Not to exceed 40 years; average, 20 years. Interest rate: 5 percent. Loan recipients are generally public and nonprofit organizations.

a/Based on 8.6-percent cost of 20-year funds borrowed from FFB. Lending rate of 5 percent. Twenty-year amortization.

b/Insufficient default experience available to estimate losses, but such losses expected to be minimal.

FARM OWNERSHIP LOANS

FmHA farm ownership loans during 1977 accounted for nearly 7 percent of total loan funds provided by the agency (not including business and industry loans). While FmHA has evolved from its original mission as a supervised credit agency for low-income farmers into a multifaceted credit arm of rural development, the farm ownership program is still a major loan program. In terms of cumulative lending activity through 1976, this program accounted for over one-eighth of total FmHA lending.

Farm ownership loans are made to borrowers who cannot otherwise obtain credit to buy, improve, or enlarge farms. A number of loans are made jointly with loans from the Federal Land Banks, thus reducing the subsidy to the farmer. Statutory limits for loans are $100,000 with 40-year repayment periods at a 5-percent interest rate. Borrowers who later prosper sufficiently to qualify for conventional, non-FmHA credit sources will "graduate" from FmHA credit. A mortgage on farm real estate may be used for collateral for FmHA farm ownership loans. Insured loans appear to be the predominant type of loans made. Total farm ownership loans made averaged $213 million annually from 1962 to 1968 and nearly $340 million annually from 1968 to 1976. Loans averaged nearly $19,000 each from 1962 through 1972 and about $33,000 from 1972 through 1976. In 1977, 11,122 loans averaging about $41,000 each were made for a total obligation of $451 million. We estimate that an additional $100 million in loans would result in 2,632 additional loans averaging $38,000 each.

Cost elements associated with this program include interest subsidy, default, and administration. The major cost is the interest subsidy, which is essentially the difference between the interest rate that FmHA pays for borrowed funds from FFB and the interest rate at which it makes loans. If all loans lasted for 40 years, the interest subsidy could be calculated directly from amortization tables. However, the annual graduation of some of the loans to other non-FmHA sources of credit requires the interest subsidy to be adjusted. Based on FmHA data we assume that about 2.5 percent of the existing loans will graduate annually. Thus, the interest subsidy cost is related directly to both the annual graduation factor and the declining volume of remaining loan principal. The interest subsidy on $100 million of additional loans will have totaled $30.3 million after 10 years and $50.7 million after 20 years. The total interest subsidy for the 40-year period is estimated at $66.2 million.

Administration costs consist of loan origination costs and normal loan servicing costs. Default servicing was assumed to be negligible. Similarly, the cost to graduate a loan to other credit sources is estimated as part of the servicing cost. Origination costs, incurred only during the first year of loan activity, constitute the major administrative costs during that year. First year administrative costs of almost $2.8 million include $2.65 million in origination costs and $127,000 in servicing costs. Administration costs, which include only servicing costs after the first year, decline over the subsequent 39 years due to a declining volume of loans requiring servicing. Loan origination costs, based on FmHA data, are estimated at $1,016 per loan. Annual servicing costs, based on mortgage banking industry estimates of 0.13 percent of initial loan principal, are estimated at $50 per loan during the first 5 years of loan activity and $36 during the remaining 35 years. The decline in annual servicing costs reflects the reduced servicing effort required of seasoned or mature loans.

Default costs appear to be a minor cost consideration, amounting to less than 0.5 percent of total program costs incurred over the first 10 years. According to a December 1977 FmHA report, the overall loss rate to date amounts to 0.16 percent of funds advanced. The loss rate for this program can be considered reasonably accurate since losses have been incurred over a relatively long period as the loan volume has remained relatively constant.

The expenses incurred by a given year's appropriation will amount to one-third of that year's program level in 10 years and 55 percent in 20 years. Nearly 90 percent of these costs are interest costs, and most of the remaining 10 percent are attributable to administration costs. The average annual cost of years 2 through 10 is 3 percent of the initial amount loaned.

The Agricultural Credit Act of 1978 (Public Law 95-334) essentially terminated this program and replaced it with a program that provides loans at the market rate of interest to middle-income farmers and subsidized loans to low-income limited resource farmers. (See pp. 2 and 3.)

Table 7

Farm Ownership Loans
(FY 1978 program authorization--$550 million)

EXPECTED COSTS FOR $100,000,000 ADDITIONAL LENDING AUTHORITY

Year	Interest cost (note a)	Default cost	Total fund appropriation	Administration cost	Total costs
1	$3,541,000	$14,000	$3,555,000	$2,781,000	$6,336,000
2	3,424,000	14,000	3,438,000	124,000	3,562,000
3	3,308,000	14,000	3,322,000	120,000	3,442,000
4	3,196,000	14,000	3,210,000	117,000	3,327,000
5	3,085,000	14,000	3,099,000	115,000	3,214,000
6	2,976,000	14,000	2,990,000	84,000	3,074,000
7	2,869,000	10,000	2,879,000	82,000	2,961,000
8	2,764,000	10,000	2,774,000	80,000	2,854,000
9	2,661,000	10,000	2,671,000	78,000	2,749,000
10	2,559,000	10,000	2,569,000	76,000	2,645,000
10-year total	30,383,000	124,000	30,507,000	3,657,000	34,164,000
11	2,460,000	10,000	2,470,000	74,000	2,544,000
12	2,362,000	10,000	2,372,000	72,000	2,444,000
13	2,265,000	10,000	2,275,000	70,000	2,345,000
14	2,170,000	10,000	2,180,000	68,000	2,248,000
15	2,076,000	10,000	2,086,000	67,000	2,153,000
16	1,984,000	10,000	1,994,000	65,000	2,059,000
17	1,893,000	10,000	1,903,000	63,000	1,966,000
18	1,803,000	4,000	1,807,000	62,000	1,869,000
19	1,714,000	4,000	1,718,000	60,000	1,778,000
20	1,627,000	4,000	1,631,000	59,000	1,690,000
20-year total	50,737,000	206,000	50,943,000	4,317,000	55,260,000
25	1,205,000	4,000	1,209,000	52,000	1,261,000
30	804,000	4,000	808,000	46,000	854,000
30-year total	62,409,000	246,000	62,655,000	4,829,000	67,484,000
35	417,000	3,000	420,000	40,000	460,000
40	38,000	3,000	41,000	35,000	76,000
40-year total	$66,206,000	b/$280,000	$66,486,000	$5,223,000	$71,709,000

Loan Data:
Statutory authorization: Public Law 87-128. Consolidated Farm and Rural Development Act, section 302. 7 U.S.C. 1922; 7 C.F.R. 1904.180. Type of credit aid: insured loans provided by FmHA. Loan term: maximum of 40 years. Interest rate: 5 percent.

a/Based on 8.6-percent cost of 25-year funds borrowed by FmHA from FFB and expected lending rate of 5 percent. The principal outstanding is reduced both by amortization and by graduation to other credit sources.

b/Column may not add due to rounding.

FARM OPERATING LOANS

Farm operating loans account for one-sixth of cumulative funds provided by FmHA through 1977. Farm operating loans can be used to purchase feed, fertilizer, livestock, machinery, or other elements of production and to undertake other farming-related activities. These are generally insured loans made through the Agricultural Credit Insurance Fund, often secured by chattel mortgages, and made to family farmers and ranchers who cannot otherwise obtain conventional credit for production financing. Loan repayment varies from 1 to 7 years, depending on its purpose, and the interest rate is set annually based upon the current Treasury rate for loans with similar maturities. The statutory loan limit is $50,000. Using recent loan data, we estimate that increasing the program authority by $100 million would result in approximately 8,200 new loans.

Cost elements associated with this program include default and administration costs. There is no interest subsidy since interest rates are based on an average Treasury rate for loans with similar maturities. Data from 3 years was available to estimate the annual termination rate--the yearly rate at which loans are liquidated. Thirty-five percent of loans are paid off during the first 2 years, and we assume that the remaining loans are paid off at an equal annual termination rate of 13 percent. We have not allowed for possible loan renewals at the end of 7 years.

The annual default cost is based upon FmHA statistics, which indicate that 1.8 percent of terminated loans were in default. From that we have estimated an annual default rate of 0.36 percent for outstanding loans, or $360,000, as an estimate of first year loan default losses on total loans of $100 million. The data organization function needs to be improved to provide adequate default cost information. It is presently not possible, without excessive staff use, to determine the default and loss history of loans made in a particular year.

Annual administration costs consist of loan origination costs, normal loan servicing costs, and loan default servicing costs. We assume that normal loan termination (that is, being paid in full) does not require additional servicing efforts. Origination costs, incurred only during the first year of loan activity, constitute the major administrative cost. First-year administration costs of nearly $2.1 million include almost $2 million in origination costs, $105,000 in servicing costs, and $27,000 in default servicing costs. Administrative costs decline over the subsequent 6

years due to a declining volume of loans requiring servicing. Loan origination costs, based on FmHA data, are estimated at $240 per loan, while annual servicing costs, based on mortgage banking industry data, are estimated at $16 per loan. We assumed that the loan default servicing costs were equal to loan origination costs.

Cumulative expenses of $4.3 million will be incurred over the 7-year period of loan activity for an initial loan amount of $100 million. About three-fifths of these costs are administration costs and the rest are attributable to default costs. Nearly half of the 7-year cumulative cost of $4.3 million is due to first-year origination costs. Costs in this program are quite low compared to other programs--particularly those with interest subsidies. However, the costs of this program are also likely to show sharp variations in response to local and national economic conditions.

Table 8

Farm Operating Loans
(FY 1978 program authorization--$825 million)

EXPECTED COSTS FOR $100,000,000 ADDITIONAL LENDING AUTHORITY

Year	Default cost and total fund appropriation	Administration cost	Total costs
1	$360,000	$2,092,000	$2,452,000
2	270,000	106,000	376,000
3	234,000	86,000	320,000
4	234,000	69,000	303,000
5	234,000	52,000	286,000
6	234,000	34,000	268,000
7	234,000	18,000	252,000
7-year total	$1,800,000	$2,457,000	$4,257,000

Loan Data:
Statutory authorization: Public Law 87-128. Consolidated Farm and Rural Development Act, section 312. 7 U.S.C. 1942; 7 C.F.R. 1904.175. Type of credit aid: insured loans provided by FmHA. Loan term: 1 to 7 years, renewal possible. Interest rate: based on current average Treasury rate for similar maturities.

FARM EMERGENCY LOANS

The farm emergency loan program provides emergency, temporary financing to cover farm losses caused by a natural disaster. Loans have variable repayment periods depending on the purpose of the loan and the financial capacity of the borrower. Interest rates for these loans were generally 5 percent, but loans are now being made with rates of 1, 3, or 5 percent, depending upon the use and amount of the loan. Operating loans at the market rate of interest may also be made through this program to a borrower who is recovering from a natural disaster. The cost projections for this program are based on an assumed lending rate of 5 percent; they would obviously be somewhat larger if loans were made at lower interest rates. This program should not be confused with a separate program, emergency livestock loans, in which private lenders make FmHA-guaranteed loans at a market rate of interest to livestock producers.

From 1962 to 1972 the annual loan volume in this program averaged about $90 million. The average for 1973 through 1977 increased over six-fold to $609 million. This program appears to be characterized by substantial fluctuations in loan volume, which between 1973 and 1977 ranged from $128 million to $1.2 billion. The program is also unusual in that the appropriation language allows funds to be made available in whatever amounts are necessary to respond to natural disasters. Thus, natural events rather than specific congressional appropriation determine the funding level.

Cost elements associated with this program include interest subsidy, default losses, and administration. The interest cost is based on an FmHA borrowing rate of 8.3 percent for 5-year funds from FFB and a projected lending rate of 5 percent for loans of similar maturities. The FmHA report, "Longer-Term Average Maturity of Funding from the Federal Financing Bank," estimated that emergency loans had an average life of 4.4 years. That report provides little data to develop a loan repayment schedule. The only legitimate inference that can be drawn is that a higher-than-average percentage of loans are repaid in years 1 and 7. We assumed arbitrarily that the principal on these loans is repaid at the following percentages per year: 15, 10, 10, 10, 15, 15, 25. Under this assumption the estimate for the interest subsidy cost over the life of the loans is almost $14.5 million on $100 million in loans.

Data sources allowed us to estimate that default losses were 2.6 to 2.9 percent of loans during the operation

of the program. The loss rate has to be adjusted to reflect the fact that losses should be measured mainly against loans repaid and not against the total of loans repaid and loans outstanding. With this adjustment, it appeared that a 4-percent loss rate was appropriate. This is a loss rate for the entire period of the loan, so it is prorated annually in proportion to the amount of principal repaid. Thus, in the first year the loss will be 4 percent of 15 percent of the principal, and in the last year it will be 4 percent of 25 percent of the principal. The total default cost on $100 million is $4 million. Based on our assumptions, this program appears to have a higher default cost than other programs. The program has a longer history and a shorter repayment cycle than most of the others. Therefore, this loss rate may reflect the greater accuracy upon which our estimates are based rather than an inherently higher default loss rate.

During 1976, emergency loans averaged $28,300. This figure suggests that 3,530 new loans would be made if the lending authority for this program were increased by $100 million. Loan origination costs, based on FmHA estimates, are projected at $354 per loan, and this cost was applied to servicing a loan in default. In addition to loan origination and default servicing costs, the cost of administration also includes normal loan servicing. This first-year administrative cost of nearly $1.4 million includes $1.2 million in origination costs, $111,000 in loan servicing costs, and $11,000 in default-related servicing costs. Annual administration costs decline during years 2 through 6 due to a declining volume of loans. Total administration costs amount to $1.7 million over the 7-year period.

Total costs for $100 million in additional loans will in 7 years amount to slightly more than $20 million, of which 73 percent ($14.5 million) is interest cost and 20 percent is loss due to default.

Table 9

Farm Emergency Loans
(FY 1978 program authorization--$1.2 billion)

EXPECTED COSTS FOR $100,000,000 ADDITIONAL LENDING AUTHORITY

Year	Interest cost (note a)	Default cost	Total fund appropriation	Administration cost	Total costs
1	$3,300,000	$600,000	$3,900,000	$1,372,000	$5,272,000
2	2,550,000	400,000	2,950,000	105,000	3,055,000
3	2,475,000	400,000	2,875,000	92,000	2,967,000
4	2,145,000	400,000	2,545,000	79,000	2,624,000
5	1,815,000	600,000	2,415,000	59,000	2,474,000
6	1,320,000	600,000	1,920,000	43,000	1,963,000
7	875,000	1,000,000	1,875,000	18,000	1,893,000
7-year total	$14,480,000	$4,000,000	$18,480,000	$1,768,000	$20,248,000

Loan Data:
Statutory authorization: Public Law 92-419. Consolidated Farm and Rural Development Act. Subtitle C, sections 321-328, as amended by Public Law 94-68. 7 U.S.C. 1961-1968; 7 C.F.R. 1904.170. Loan term: variable. Up to 7 years, normally, with 5-year renewal possible. Interest rate: originally 5 percent, recently 1, 3, and 5 percent. The 3- and 1-percent rates are scheduled to expire Oct. 1, 1978; 5 percent used in cost projections.

a/Based on 8.3-percent cost of 5-year funds borrowed by FmHA from FFB and expected lending rate of 5 percent.

BUSINESS AND INDUSTRIAL DEVELOPMENT LOANS

FmHA expansion into new programs designed to encourage business and industrial development in rural areas came about under the Rural Development Act of 1972 (Public Law 92-419). The act authorized FmHA to provide loans and to guarantee loans made by commercial lenders for business and industrial development. In practice this program has been funded through the guarantee mechanism; in 1978 the program was required to use this mechanism exclusively, with the possible exception of loans to Indian tribes.

The borrower receives the loan from a commercial lender. The loan is reviewed and approved by FmHA, and the lender pays FmHA a fee of 1 percent of the amount of principal guaranteed, which may not exceed 90 percent of the loan principal. FmHA in turn promises to reimburse any loss of principal or interest to the extent of the guarantee. Funds may be borrowed by individuals, nonprofit organizations, and for-profit corporations; acceptable loan purposes include all types of mercantile, commercial, and manufacturing endeavors. The interest rate on guaranteed loans is negotiated between lender and borrower, perhaps with implicit recognition of the value of the Federal guarantee.

Loans amounted to $274 million in 1976 and $350 million in 1977. In 1978 the authorization was increased to $1 billion, and $1.1 billion was requested for 1979.

In a guaranteed loan program, the financial activity takes place in the private sector, and, if all goes well, FmHA intervention is limited to reviews of the borrower's financial situation. While the interest rate should reflect the Government guarantee, there is no out-of-pocket interest subsidy cost. This program has not been in operation long enough to allow development of data that would provide estimates of the cost of default. However, we were able to identify a loan program in the Commerce Department's Economic Development Administration (EDA) that made loans similar in size and type to those being made in this FmHA program. The EDA program operated on a much smaller scale, with total loans from 1966 through 1970 amounting to $182 million. We believe that the EDA program results can be used as a substitute in developing costs for the business and industry loan program. The EDA data provided information on the year the loan was made, the amount of the loan, the year of default, and the amount lost after bankruptcy proceedings or forfeiture of collateral. For example, the average size of loan liquidated between 1970 and 1974 was

$662,000 and the average loss on the liquidated loans was $478,000. These results are based on a total of only 213 loans, most of which are still outstanding, so the derived estimates of default cost cannot be said to be statistically significant. We do suggest, though, that if as much caution is exercised in making FmHA loans as was taken with EDA loans and if economic conditions are comparable, the EDA experience may serve as a valuable guideline. EDA has the advantage of several years of additional experience with loans issued in the 1960s. Thus, default cost estimates can be revised based on forthcoming EDA experience which will lead FmHA's own experience by several years. Default costs were projected for only 10 years because that is the limit of the EDA experience. The $900,000 revenue recorded for the first year under "default cost" represents the guarantee fees paid to FmHA when the loan guarantee is issued. We show it in this column because it is similar to a default-insurance payment. The default costs in this program are likely to be more responsive to economic conditions than the default costs in the individual housing program and community facilities program. Because the costs of this program are almost all default expenses, a high variance from any average cost should be expected. Under adverse economic conditions this program could present a major demand on FmHA resources, although expected results based on available data call for a total 10-year program cost of only 15 percent of the initial year's program level.

Annual administrative costs consist of loan origination costs, annual loan servicing costs, and loan default servicing costs. Origination costs, incurred only during the first year of loan activity, constitute the major administrative expense. First-year administrative costs of $934,000 on $100 million in loans include $692,000 in origination costs and $242,000 in normal servicing costs. It is assumed that defaults do not commence until the second year. Administrative costs incurred after the first year reflect normal loan servicing, which for these loans entails substantial oversight and loan default servicing costs. Unlike other FmHA loan programs, most of the administrative effort for this program is provided at the State and Federal office levels due to the size and complexity of the loans.

Table 10

Business and Industrial Development Loans
(FY 1978 program authorization--$1 billion)

EXPECTED COSTS FOR $100,000,000 ADDITIONAL LENDING AUTHORITY

Year	Default cost (total fund appropriation) (note a)	Administration cost	Total costs (note b)
1	c/ $ -900,000	$ 934,000	$ 34,000
2	500,000	156,000	656,000
3	560,000	155,000	715,000
4	450,000	152,000	602,000
5	1,400,000	161,000	1,561,000
6	2,910,000	171,000	3,081,000
7	2,910,000	163,000	3,073,000
8	1,960,000	146,000	2,106,000
9	1,850,000	140,000	1,990,000
10	1,120,000	128,000	1,248,000
10-year total	$12,760,000	$2,306,000	$15,066,000
11-30 (note d)			

Loan Data:
Statutory authorization: Public Law 92-419. Section 310(b), Consolidated Farm and Rural Development Act, as amended. 7 U.S.C. 1932; 7 C.F.R. 1980.401. Type of credit aid: guaranteed loans made between borrower and private financial institution. Loan term: 7 years, 15 years, 20-30 years, for working capital, machinery, buildings, respectively. Interest rate: negotiated between borrower and lender.

a/Default cost estimates are based on the experience of the EDA loan program. Loans made were of a similar size and for reasonably similar undertakings.

b/There is no direct interest subsidy.

c/An origination fee is paid by the lender to FmHA.

d/No data is available to project beyond 10 years. National economic conditions may have a substantial impact on default rates.

SOIL AND WATER LOANS TO INDIVIDUALS

The soil and water loan program accounted for less than 1 percent of total FmHA lending through 1976. These loans are available to associations, farmers, ranchers, and others for land and water development and conservation. Because the program's emphasis is on conservation, loans need not be tied to immediate farm production goals. Loans have a maximum repayment period of 40 years if backed by a mortgage on real estate; otherwise they are limited to 20 years. The interest rate is 5 percent. During 1977, 3,795 new loans were made, with a total lending volume of $62 million. The cost projection shown in table 11 is based on an additional lending authority of $10 million since the annual loan volume is currently about $50 million. The projection also assumes that loans are made for 40-year terms.

Cost elements associated with this program include interest subsidy, default, and administration. The interest subsidy cost is based on an 8.6-percent cost of 25-year funds borrowed from FFB and an FmHA lending rate of 5 percent. The projected annual interest cost reduction is based on our assumption that each year a small percentage of loans will graduate to other credit sources and on the amortization of loan principal. Graduation to other credit sources is assumed to be at the annual rate of 2.5 percent of outstanding loans. The interest cost totals 30 percent of the initial principal after 10 years and 50 percent after 20 years. Due to graduation the interest cost reaches a total of only 66 percent of initial principal. In comparison, water and waste disposal loans (see table 5), with an assumption of no graduation, reach an interest cost of 94 percent of initial principal.

The default cost estimate is based on the 0.2-percent rate experienced in the farm ownership loan program. The expected default cost of $20,000 is allocated evenly over the first 20 years. Under this assumption default cost appears to be a negligible aspect of total costs, but the area should be carefully watched for developments that may lead to a higher, more costly default rate.

The administrative costs of this program consist of loan origination costs and annual loan servicing costs. Origination costs, incurred only during the first year of loan activity, constitute the major administrative cost during that year. Although these loans are for smaller amounts than farm ownership loans, the characteristics of the loans and the loan process are similar enough that we

chose to use the same cost per loan estimates that we used for those loans. These costs are: origination cost, $1,016, and servicing cost, $50 per loan per year for the first 5 years and $36 thereafter. Under these assumptions, first-year administrative costs total $575,000, including $549,000 in origination costs and $26,000 in servicing costs. Administrative costs after the first year of loan activity reflect servicing efforts only, and these decline as loans graduate to other credit sources.

The expenses incurred by an additional appropriation will amount to 38 percent of that appropriation in 10 years and 60 percent in 20 years. About 85 percent of the 20- and 40-year costs are interest subsidy costs; the rest are almost completely attributable to origination and servicing. Because of the assumed low rate of default, default costs appear to be minor, amounting to a fraction of a percent of total program costs.

Table 11

Soil and Water Loans to Individuals
(FY 1978 program authorization--$48 million)

EXPECTED COSTS FOR $10,000,000 ADDITIONAL LENDING AUTHORITY

Year	Interest cost (note a)	Default cost	Total fund appropriation	Administration cost	Total costs
1	$354,000	$1,000	$355,000	$575,000	$930,000
2	342,000	1,000	343,000	26,000	369,000
3	331,000	1,000	332,000	25,000	357,000
4	320,000	1,000	321,000	24,000	345,000
5	309,000	1,000	310,000	24,000	334,000
6	298,000	1,000	299,000		
7	287,000	1,000	288,000	16,000	304,000
8	276,000	1,000	277,000	16,000	293,000
9	266,000	1,000	267,000	15,000	282,000
10	256,000	1,000	257,000	15,000	272,000
10-year total	3,039,000	10,000	3,049,000	753,000	3,802,000
11	246,000	1,000	247,000	15,000	262,000
12	236,000	1,000	237,000	14,000	251,000
13	227,000	1,000	228,000	14,000	242,000
14	217,000	1,000	218,000	14,000	232,000
15	208,000	1,000	209,000	13,000	222,000
16	198,000	1,000	199,000	13,000	212,000
17	189,000	1,000	190,000	13,000	203,000
18	180,000	1,000	181,000	12,000	193,000
19	171,000	1,000	172,000	12,000	184,000
20	163,000	1,000	164,000	12,000	176,000
20-year total	5,074,000	20,000	5,094,000	885,000	5,979,000
25	121,000	0	121,000	10,000	131,000
30	80,000	0	80,000	9,000	89,000
30-year total	6,241,000	20,000	6,261,000	987,000	7,248,000
35	42,000	0	42,000	8,000	50,000
40	4,000	0	4,000	7,000	11,000
40-year total	$6,621,000	$20,000	$6,641,000	$1,066,000	$7,707,000

Loan Data:
Statutory authorization: Public Law 92-419. Consolidated Farm and Rural Development Act, section 304(a). 7 U.S.C. 1924; 7 C.F.R. 1904.180. Type of credit aid: insured loans provided by FmHA. Loan term: maximum term is 40 years when secured by real estate, otherwise 20 years. Interest rate: 5 percent.

a/Based on 8.6-percent interest cost of 25-year funds borrowed by FmHA from FFB and expected lending rate of 5 percent. The principal outstanding is reduced both by amortization and by graduation to other credit sources. Assumes that loans are made for 40-year term.

CHAPTER 6

TWENTY-YEAR COST PROJECTION

BASED ON THE 1979 LOAN PROGRAM

The primary purpose of this report has been to examine the costs associated with incremental increases in individual programs; the analysis is equally applicable to determining the savings associated with decreases in program support. These changes (1) were for amounts within a reasonable range of the existing program support level, (2) assumed linear cost functions, and (3) did not attempt to reflect costs or savings that would be incurred with a doubling or halving of the program loan level.

We also extended the costs developed above to a projection of the costs deriving from the planned fiscal year 1979 FmHA loan program. The first effort--measuring the effect of modest increases or decreases in program size--provides a tool to help make decisions about individual program levels. It provides a means to analyze the cost effects of changes in each program. This extension develops an estimate of the cost effect for the overall FmHA loan program.

A substantial amount of data is collected and reported on the costs of the various programs. Most of this data, however, is oriented to identifying the costs incurred by or charged to the program in the current year. As such, these costs result from decisions made from 1 to 30 years ago. Cost data of this kind provides little help in the decision-making process. Instead, a projection of the cost of current decisions is needed. Such a projection should show what costs can be expected in future years from the program decisions made in the current year.

A note of caution about the methodology used to develop the total cost projection: the first effort was essentially oriented to developing a marginal cost approach; this projection has extended those marginal or incremental costs to a total cost analysis. It assumes a linearity of costs over the total range of expenses that may not accurately represent reality. Some cost elements may be more likely to follow this linearity than others. We think that an overview that attempts to identify future costs is worthwhile. As with the other projections, our response to those who fault the effort is that they should join in the process of providing better information for decisionmakers.

The various programs that were aggregated have loan amortization periods that extend from as little as 1 year for certain operating loans to 50 years for senior citizen rental housing. The choice of a 20-year projection is arbitrary, but it seems to cover a period that will interest decisionmakers without extending so long as to be largely irrelevant. Although not all the FmHA loan programs are included in this projection, the ones not included are small-scale programs. The programs that are included and their proposed 1979 authorizations are as follows:

Programs	Authorizations
	(000,000 omitted)
Subsidized individual housing	$1,942
Unsubsidized individual housing	674
Subsidized rural rental and cooperative housing	820
Domestic farm labor housing	38
Farm ownership	550
Farm operating	825
Farm emergency	578
Community facilities	250
Water and waste disposal	800
Soil and water	51
Guaranteed business and industry development	1,100

The evidence in table 12 demonstrates that interest subsidy costs are the dominant costs of the FmHA loan programs. Such costs are closely allied to the cost of money. Therefore, interest subsidy costs may decline if interest rates drop because presumably FmHA could refinance its higher cost loans. The annual interest subsidy costs gradually decline from above $200 million to the $90 million range after 20 years.

The default cost projection is the most uncertain item. Default experience is likely to be more responsive to economic conditions than the other cost elements. The data on which the default estimates are based is also less reliable than the information for most of the other cost elements. The default cost projection is only developed for 10 years because of the almost total lack of data on loans defaulting after the 10th year. Default costs can be substantial, and particularly because of their uncertainty and variability, they deserve further analysis and development. (See app. I.)

The rental assistance cost is a relatively small manageable cost that is developed in two programs--rural rental housing and farm labor housing. Most of the cost is attributable to the rural rental housing program because it is much larger. On a per program-dollar basis, however, the farm labor housing program is a more intensive user of rental assistance funds. It appears that this assistance is a comparatively minor aspect of the rental housing program and could be contracted or expanded depending on the availability of funds. Conversely, it seems to be an important component of and needed element for the successful operation of farm labor housing projects.

Of all the cost estimates, the grant cost estimate is the most accurate and reliable. It may also be the item most likely to surprise program proponents who may claim that loans can be made without grants. No doubt some loans can be made that way (in most programs there are no grants), but in the programs in which grants are used--water and waste disposal and farm labor housing in the aggregate--grants can clearly be expected if the full range of loans is to be made. In practice, grants may be paid out over the course of construction, which may be 2 or 3 years beyond the authorization. Placing the total grant cost in the first year is a statistical simplification. Grant costs are a major cost component, exceeded only by the interest subsidy cost.

Most administration costs are incurred in the first year as part of the loan origination process. In that year administration is a substantial expense, but not readily identifiable in FmHA data on a program-by-program basis. Administration costs are also less likely to display linearity as the volume of work rises or falls. The projection of a precipitous decline in cost from the first to the second year followed by a gradual decline over the following years is reasonable based on our understanding of the various loan programs. Better estimates can be developed with improvements in the FmHA management information system. After the first year, however, the costs have only a minor effect on the total cost projection.

The loan programs that were examined, which include almost the total value of FmHA programs, have a requested 1979 authorization of $7.6 billion. In the first 10 years the total cost for the 1979 program is projected at $2.6 billion, nearly one-third of the amount loaned, and for the full 20-year projection the costs total $3.8 billion, or one-half of the amount loaned.

Table 12

Twenty-Year Aggregate Cost Projections
Based on FY 79 Estimated Loan Levels

Year	Interest cost	Default cost	Rental assistance cost	Grant cost	Total fund appropriation	Administration cost	Total costs
	(millions)						
1	$231.9	$ -3.1	$ 6.7	$294.9	$530.4	$130.6	$661.0
2	222.1	11.3	6.7	-	240.1	9.2	249.3
3	214.0	12.7	6.7	-	233.4	9.8	243.2
4	203.1	11.6	6.7	-	221.4	9.0	230.4
5	192.5	23.1	6.7	-	222.3	8.3	230.6
6	181.1	39.5	6.7	-	227.3	7.5	234.8
7	170.9	41.4	6.7	-	219.0	7.1	226.1
8	158.4	23.1	6.7	-	188.2	6.1	194.3
9	151.8	21.8	6.7	-	180.3	5.9	186.2
10	145.2	13.9	6.7	-	165.8	6.0	171.8
10-year total	1,871.0	195.3	67.0	294.9	2,428.2	199.5	2,627.7
11	138.6	-	6.7	-	145.3	3.7	149.0
12	132.1	-	6.7	-	138.8	3.5	142.3
13	125.8	-	6.7	-	132.5	3.8	136.3
14	119.6	-	6.7	-	126.3	3.3	129.6
15	113.9	-	6.7	-	120.6	3.3	123.9
16	108.2	-	6.7	-	114.9	3.5	118.4
17	102.9	-	6.7	-	109.6	2.9	112.5
18	97.8	-	6.7	-	104.5	2.8	107.3
19	92.7	-	6.7	-	99.4	3.1	102.5
20	87.7	-	6.7	-	94.4	2.8	97.2
20-year total	$2,990.3	$195.3	$134.0	$294.9	$3,614.5	$232.2	$3,846.7

CHAPTER 7

RECOMMENDATIONS, MATTERS FOR CONSIDERATION BY THE CONGRESS, AND AGENCY COMMENTS

The long-term cost projections developed in this report represent our best judgment regarding future costs of FmHA loan programs. Although our estimates could be improved if better data and more sophisticated methodologies were developed, these or similar cost projections can contribute to the decisionmaking processes of the Congress, the executive branch, and FmHA. We believe that the working model developed in this report provides program cost information in a context useful to the decisionmakers and that improvements in methodology and data and modifications reflecting changes in legislation can provide even more useful, reliable information.

RECOMMENDATIONS TO THE SECRETARY OF AGRICULTURE

The Secretary of Agriculture should ensure that:

--Long-term cost projections be developed for major FmHA programs and be incorporated in the request for authorization and appropriation.

--Each program cost projection include analyses of costs for the requested authorization level and of costs for an increase in authorization such as $10 million or $100 million.

--The information requirements of a cost projection system be identified and provision made for collecting and analyzing the required data on default rates and costs, loan origination and servicing costs, loan termination rates, and other needed information.

--Program managers in the business and industrial development loan program review the rural lending experience of the Economic Development Administration, Department of Commerce, to improve their estimates of loan viability and default losses.

MATTERS FOR CONSIDERATION BY THE CONGRESS

We recommend that the Subcommittee on Agriculture, Rural Development, and Related Agencies, Senate Committee on

Appropriations, specify that the FmHA program authorization request include long-term cost projections. To control the number of analyses required (and to keep the effort focused on programs where most appropriation funds are being used), the subcommittee could further specify a program funding level below which projections would not be required.

AGENCY COMMENTS

We asked FmHA staff members to provide oral comments on a draft of this report. Their comments were generally favorable and included several suggestions for improving the quality of the projections. The staff members:

--Thought that this report and cost projections in general would be useful to the Congress, the Office of Management and Budget, and to FmHA.

--Suggested that the cost analysis might also be performed for a given increase in the number of units, such as an additional 10,000 single family mortgage loans, as well as in fixed dollar amounts, such as $100 million. This approach would make discussions more concrete.

--Believed that more accurate loan servicing costs could be developed from FmHA data and that its use would be preferable to using data from private financial institutions which would tend to underestimate FmHA costs.

--Did not believe that the accuracy of the discriminant analysis model discussed in appendix I was sufficient to be useful for their conditions.

MORTGAGE DEFAULT RISK ANALYSIS

Loans on individual residential housing account for a major share of FmHA assets. Although losses due to default in this area appear to be under control and at a low level, the potential for loss is substantial because of the large investment in these assets. Analytical techniques have been used to model mortgage default risk, but an FmHA official told us that the agency does not use any modeling techniques to estimate mortgage default risk or loss. We have included this discussion of mortgage default risk modeling because the concept of modeling default risk is an area that FmHA might find worth pursuing. Although the discussion concentrates on residential housing default risk, risk analysis techniques might profitably be extended to other loan programs.

Residential mortgage default risk has been studied by government and academic researchers. However, based on a review of related journal literature and conversations with officials from HUD, the Federal National Mortgage Association, the Federal Home Loan Bank Board, and the Congressional Budget Office, we have concluded that these studies have not been widespread. Researchers believe that only a few of the largest savings and loans institutions may have commissioned research in this area. However, their findings and the extent that they use them in formulating operating policy are not known. This information is not generally circulated for competitive reasons. We also think there is a need for more research in estimating losses on Government mortgage loan programs targeted to lower income borrowers.

Most of the available residential mortgage default risk studies attempt to identify characteristics of borrowers, mortgage terms, and the mortgaged property that are most closely associated with defaults. A few studies have gone further and incorporated some of these characteristics in computerized models that screen potential mortgagors to determine whether they are likely to default. These computerized models show good predictive ability. However, each model was developed using its own set of data having specialized characteristics. Therefore, these models cannot be universally applied to other studies. A unique discriminant model must be developed for each study.

The use of these models can be extended to provide a basis for estimating future losses on defaulted mortgages. Apparently no attempts have been made to construct computerized models that could be used to directly estimate annual future losses based on borrower, mortgage, and property characteristics of a portfolio.

Rather, empirical cumulative frequency distributions of defaults have been developed and undoubtedly used for estimating future losses. These distributions reflect the number of defaults experienced over time beginning with the mortgage origination year. They have been categorized by mortgage terms and assumed property market value appreciation. Estimates of future losses on a yearly basis can be made if screening models are combined with cumulative loss distributions.

Although research studies do not agree on which variables are the most significant indicators of default risk, this is not a major concern. All of the variables studied represent characteristics of the borrower, mortgage, or collateral property. Studies regarding variables found to be the most significant differ because comparable data was not used across studies.

Nevertheless, these studies seem to have identified three principal areas by which potential mortgage default risk might be assessed based on information known at the time of mortgage origination (ex ante variables). These areas are: stability of the borrower, ability of the borrower to absorb unexpected financial adversity, and the equity of the borrower in his or her home.

Ex ante variables that were found by some studies to be significant indicators of a borrower's stability include: (1) length of time with current employer, (2) employment stability of the profession or industry in which the borrower is employed, (3) responsibility traits such as demonstrated by successful past home ownership, and (4) past moving patterns between different locales.

The second principal area represents a borrower's ability to absorb unexpected financial adversity. Significant ex ante variables in this area include (1) recurring non-housing-related charges, (2) a large number of dependents, which would both increase household expenses and also preclude a nonhead of household from seeking employment to supplement family income, (3) a borrower's expected future earnings increase or his or her position in the life cycle earnings curve, (4) total expected housing expense (for example, utilities and maintenance) as a percentage of net income, and (5) multifamily (versus single family) investments since multifamily investments are very sensitive to unexpected interruption of rental income and unexpected high maintenance costs.

The third principal area identified as affecting mortgage default risk reflects the equity a borrower has established in his or her home. There is little financial incentive, other than concern for future credit rating, to preclude a mortgagor from defaulting when the market value of his or her property becomes less than the amount of the outstanding mortgage principal. Additional incentive to default exists if the mortgagor is contemplating moving anyway. The mortgagor's equity is derived from the amount of downpayment, amortization of principal, and rate of market value appreciation of the property. As equity increases, the probability that market value will be less than the outstanding principal decreases. Consequently, ex ante variables in one form or other which represent this equity concept and which were found to be significant are: (1) loan-to-value ratio, (2) initial term to maturity, (3) junior financing (second or third mortgage), and (4) deterioration of the neighborhood, which might indirectly be measured by a low price paid for the property or low or declining income level of the neighborhood.

None of these studies have been targeted to low income groups who could not buy a home without a Government subsidy. Also, none have been targeted to rural area residential mortgages. Thus, they need to be reviewed in more detail and refined for estimating FmHA's mortgage risk and related future losses. Such a model might be developed for these types of loans by testing for variables which are significant indicators of risk and which reflect mortgagor stability, ability to absorb unexpected financial adversity, and amount of equity in the property. Well-known statistical techniques to establish the significance of such variables, or ratios of these variables, include multiple regression analysis and hypothesis testing of differences between groups based on the F-distribution and t-distribution.

WORKING MORTGAGE CREDIT RISK MODELS-- THE HUD EFFORT

A few researchers have attempted to build models which could distinguish good and bad mortgagor credit risks using ex ante variables and have tested them with promising results. In particular, Dr. William F. Shaw of HUD has recently constructed such a model using stepwise discriminant analysis. The HUD model was built based on data for about 35 percent of the 265,289 section 203(b) mortgages underwritten by the Federal Housing Administration in 1970. It was important to construct the model using mortgages originated in the same year so that the mortgagors would have experienced the same general economic conditions.

The model correctly predicted 1,399 of 2,007 defaults incurred on section 203(b) mortgages underwritten in 1970 and tracked over the subsequent 5-year period. Data on these mortgages was not used in constructing the model. Similar results were obtained using the same model based on 1970 data for section 203(b) mortgages underwritten in 1971. All of these mortgages were accepted by the Federal Housing Administration as good risks since they were previously screened according to the agency's formal criteria. Validation of the model was further extended as it predicted default in 96 percent of 600 section 203(b) cases judgmentally rejected by agency officials in 1975.

A HUD official believes that the model's parameters should be reevaluated and reestimated at regular intervals more frequently than every 5 years. However, the constancy of good predictive results over time is encouraging since it indicates stable predictive power of the variables selected for the model and the principal areas of mortgage risk they represent.

Dr. Shaw has told us that a similar model could be developed which is targeted to specific housing markets or income groups. However, HUD is not planning to do this in the near future since 85 percent of the Federal Housing Administration's business deals are with the section 203(b) program, which represents mortgagors who are middle income and have good credit. It is not yet clear to what extent the agency will amend its screening procedures to incorporate the results of this study.

DISCRIMINANT ANALYSIS

Models estimated using discriminant analysis classify individual cases into one of two categories (for example, default or nondefault). A stepwise feature allows only variables that contribute the largest incremental predictive power to be sequentially entered into the model. A best set of variables is selected in order of predictive power by stepwise discriminant analysis. Once the model has been developed, the discriminant function can quickly categorize thousands of potential mortgagors as either good or bad risks.

The final HUD discriminant analysis model does not include all variables that are significant indicators of mortgage credit risk, but this does not reduce the predictive power of this model. For example, a high loan-to-value ratio and a long term to maturity both suggest low homeowner equity, which is a principal contributor to default.

However, both variables may also indicate the inability of a potential mortgagor to generate a substantial sum of money under a purposeful savings plan. Thus, both variables overlap in predictive power with variables that would indicate a borrower's (1) lack of funds after expenses and (2) lack of financial discipline. In this way, not all variables would be required in the model, although the risk concepts which nonincluded variables represent would still be accounted for.

Discriminant analysis techniques are well documented in applied statistics texts, published literature of research in mortgage credit scoring, and other studies dealing with estimating the likelihood that business entities will remain financially stable.

Researchers have emphasized that results obtained from such a discriminant model should not be the only or the final determinant in classifying a case as a good or bad risk. The model does not always predict correctly. For cases classified by the model as bad risks, special compensating factors may exist which the model cannot detect but which an experienced loan analyst might uncover and recognize as indicating strong credit worthiness. Such factors are so numerous and varied that not all can realistically be built into the model. Conversely, mortgagors who default may have been classified as good risks but also may have incurred unexpected difficulties, such as death, divorce, or illness. These are factors that are not known at the time of mortgage origination but nevertheless contribute heavily to default.

These factors that materialize after the loans are made (ex post factors) cannot be modeled in judging credit risk of potential mortgagors. However, if enough data was collected, such variables might be considered in obtaining more refined estimates of the total number of expected defaults from a mortgage portfolio originated in a given year.

Mortgage default risk discriminant models that have been demonstrated to be successful do not directly include macroeconomic variables (for example, inflation and unemployment rates). However, this may not be a substantial limitation. Predictions made by these models are based on the latest information available to credit examiners at the time of application for the mortgage. Credit lenders or mortgage underwriters cannot possibly know what future macroeconomic conditions will be so that these conditions can be included in credit risk models. Forecasts of economic conditions might be used. However, these forecasts are only partly

reliable and realistically can be made for at most 1 year. However, macroeconomic considerations are at least indirectly built into the models. That is, the models contain variables which reflect a mortgagor's ability to absorb unexpected financial adversity and the stability of employment in the industry in which he or she works.

ESTIMATING FUTURE DOLLAR LOSSES

A discriminant function model designed to screen potential mortgagors can also be used along with other information to estimate annual losses.

For example, assume that 10,000 mortgages were underwritten in the first year and that these cases were later run through a computerized discriminant model. Also, assume that the model classified 500 of these cases as bad risks. The yearly pattern of these expected defaults would follow a cumulative frequency distribution, such as shown below. The Federal Housing Administration compiled this distribution from historical data on 7-percent, 30-year mortgages with a 90-percent loan-to-value ratio on properties with moderately appreciating market values. If the loss per turnover on a foreclosed mortgage is $8,900 (as was estimated for mortgages underwritten by the Federal Housing Administration under section 203(b)), then the corresponding yearly dollar volume losses resulting from the first year portfolio might be estimated as follows:

Year	Cumulative frequency distribution of defaults	Number of defaults expected	Expected loss (note a)
2	0.03	0.03 x 500 = 15	$133,500
3	0.20	(.20-.03) x 500 = 85	752,500
4	0.33	(.33-.20) x 500 = 65	578,500
5	0.44	(.44-.33) x 500 = 55	489,500
6	0.53	(.53-.44) x 500 = 45	400,500
7	0.61	(.61-.53) x 500 = 40	356,000
8	0.68	(.68-.61) x 500 = 35	312,500
9	0.73	(.73-.68) x 500 = 25	222,500
10	0.78	(.78-.73) x 500 = 25	222,500
11	0.83	(.83-.78) x 500 = 25	222,500
12	0.87	(.87-.83) x 500 = 20	198,000
13	0.90	(.90-.87) x 500 = 15	133,500
14	1.00	(1.00-.90) x 500 = 50	445,000

a/Expected number of defaults times $8,900.

Yearly losses resulting from defaults on mortgages originated in other years could be similarly estimated and added to those of the first year.

A computerized discriminant model might be used in both planning and operating functions. In an operating context it might be used to quickly identify the more obvious cases of low- and high-risk mortgagor applications. The loan analysts could then focus on the more difficult applications for which the model's results might supplement the analysts' judgment. The model might also be used as a planning tool to estimate future yearly losses on mortgages which will become foreclosed.

The predictive ability of any model is constrained by the information collected on past case histories. Therefore, the policies controlling FmHA data and information collection should be reviewed for their adequacy if serious model-building is contemplated.

APPENDIX II

United States Senate

COMMITTEE ON APPROPRIATIONS
WASHINGTON, D.C. 20510

June 27, 1977

Mr. Elmer B. Staats
Comptroller General of the United States
General Accounting Office Building
441 G Street
Washington, D. C. 20548

Dear Mr. Staats:

During its consideration of H. R. 7558, the 1978 Agriculture and Related Agencies Appropriations bill, the Committee on Appropriations indicated that it would request the General Accounting Office (GAO) to perform two reviews--one involving minimum employment ceilings, and the other, long-term cost implications of subsidized and guaranteed loans that are provided in this bill and other Agriculture Appropriations bills of recent years.

The Committee would appreciate it if you would undertake to have GAO make these two reviews. Specific details are set out in the attached excerpts from Senate Report 95-296.

Please contact Mr. Richard Lieberman of the Subcommittee staff on 224-7272 in order to determine an appropriate time frame for these studies.

Thank you for your assistance in this matter.

Very truly yours,

Thomas F. Eagleton

THOMAS F. EAGLETON, Chairman
Subcommittee on Agriculture
and Related Agencies

TFE:dli

Enclosures

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* U.S. GOVERNMENT PRINTING OFFICE : 1979 O - 620-167/136

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