

BULLETIN 520
AUGUST 1980

AGRICULTURAL
LENDING
PROFITABILITY
FOR ALABAMA
COMMERCIAL
BANKS



AGRICULTURAL EXPERIMENT STATION
AUBURN UNIVERSITY
AUBURN UNIVERSITY, ALABAMA
R. DENNIS ROUSE, DIRECTOR

CONTENTS

	Page
INTRODUCTION.....	3
Statement of the Problem	4
Objectives	7
Procedure	7
BANKING STRUCTURE IN ALABAMA	8
Bank Investments	10
Importance of Loans	10
LOAN PROFITABILITY ANALYSIS	15
Bank Objectives and Attitudes	15
Loan Portfolio Composition	17
Compensating Deposits	20
Direct Measures of Loan Profitability	22
Administrative and Clerical Expense	22
Loan-Loss Expense	24
Comparisons of Relative Profitability	25
CONCLUSIONS	26
SELECTED REFERENCES	27
APPENDIX.....	28

FIRST PRINTING 3M, AUGUST 1980

Information contained herein is available to all persons without regard to race, color, sex, or national origin.

AGRICULTURAL LENDING PROFITABILITY FOR ALABAMA COMMERCIAL BANKS*

MICHAEL W. MOORE and WILLIAM E. HARDY, JR.**

INTRODUCTION

THE AGRICULTURAL environment in the United States has experienced changes in recent years which have had important implications for agricultural finance. Major changes include the declining number of farms and improvements in efficiency made possible through the utilization of labor-saving machinery and other technological advances.

The future structure of farming is highly dependent on the ability of farmers to secure adequate amounts of investment and operating capital. The ability of the agricultural sector to acquire sufficient capital has become a matter of concern to both farmers and managers of financial institutions. Similarly, the future structure of financial institutions serving agriculture will be determined by the way they perceive the changing financial requirements of the farmer and adjust to those needs.

The relative importance of traditional agricultural lenders has changed over the past years. Federal Land Banks have emerged as the primary institutional supplier for farm real estate credit, lending \$24.6 billion for real estate purchases in 1979, about 34 percent of the total market. Individuals were also very important, providing 34.3 percent of the total volume, \$24.8 billion. This importance of individuals as a source of funds was emphasized during the tight credit periods of 1979.

Life insurance companies were the third largest farm real estate creditor, \$11.9 billion, followed by commercial banks, \$8.6 billion, and the Farmers Home Administration, \$4.4 billion (2).

*Research on which this report is based was supported by Federal and State Research Funds under Hatch Project Alabama 476.

**Former Graduate Research Assistant and Associate Professor, Department of Agricultural Economics and Rural Sociology.

The relative positions of these lenders in 1950 and 1979 are illustrated in figure 1.

Commercial banks have long been the major source of non-real estate credit in the United States, providing at least 40 percent of total each year since 1950. In 1979, they supplied \$28.3 billion, 47.2 percent of the total market (2). Competition in this market has increased, however, with the Production Credit Association share rising from 7.5 percent in 1950 to about 25 percent in 1979. While the Farmers Home Administration and private individuals supply a substantial amount of non-real estate credit, neither offer a significant challenge to the major market portions held by commercial banks and PCAs. Figure 2 illustrates the market shares held by the principal non-real estate lenders in 1950 and 1979.

Statement of the Problem

Total farm debt in the United States increased from \$10.7 billion in 1950 to \$132.2 billion in 1979 — an increase of over 1,135 percent (2). During the same period, total farm production expenses went from \$19.5 billion to \$114 billion, a 435 percent increase (3). Total farm cash receipts rose about 359 percent, increasing from \$28.8 billion to \$132.1 billion (2). With both production expenses and total debt having increased faster than farm receipts, farmers who were once self-sufficient in terms of generating adequate capital to continue and expand farming operations, are less able to do so. Profit margins have narrowed and, subsequently, the farmer's ability to finance his operation with equity capital from profits earned in previous years has decreased substantially. In many instances, the increased utilization of credit has become a necessary component of the farm management plan.

Increased dependence upon borrowed funds and leverage in farming developed from at least three occurrences:

- (1) The consolidation of agriculture into fewer and larger farms to achieve greater economies of scale from improved technology and management techniques;

- (2) High land values brought about by capitalization of the benefits of new technology, economies of scale, government payments, and increased demand for farmland from nonagricultural sources; and,

- (3) The increased substitution of purchased for non-purchased inputs, and the increased prices of these inputs caused by in-

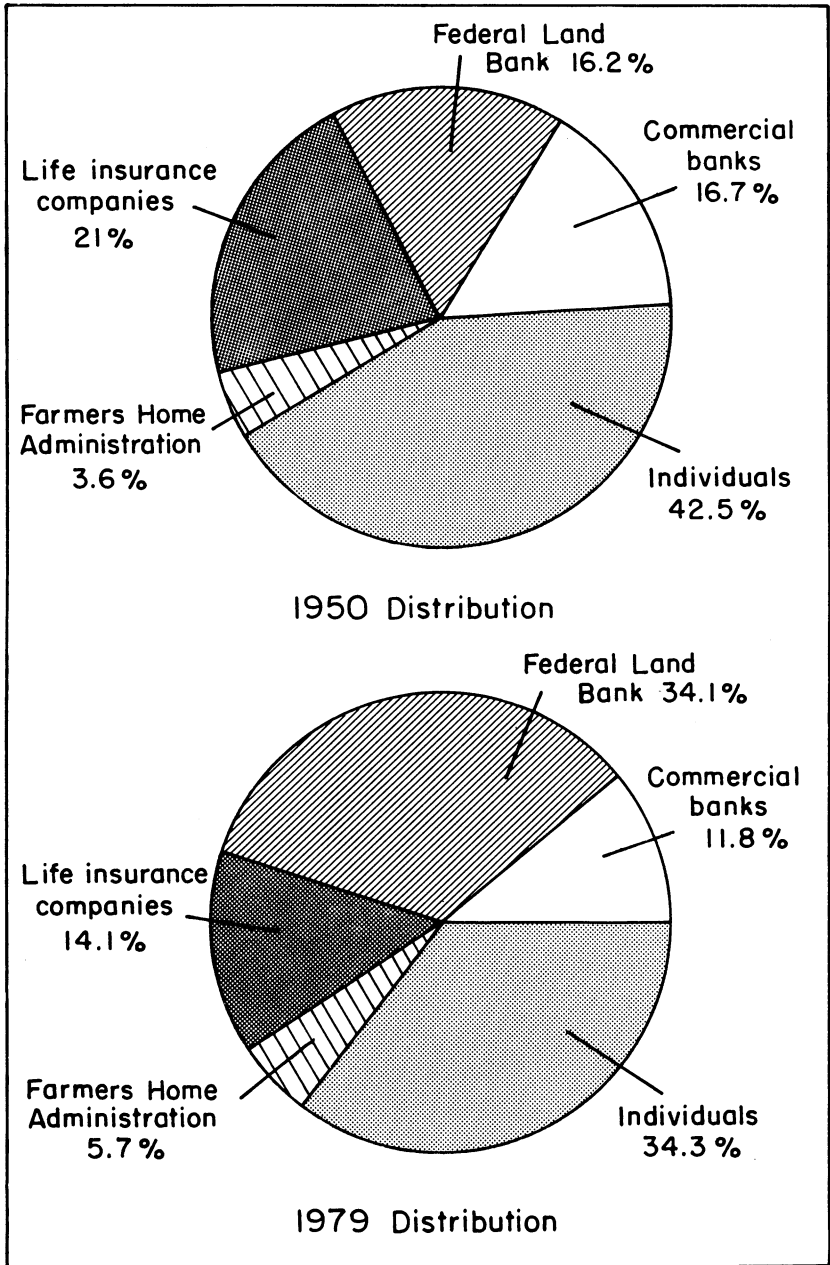


FIG. 1. Distribution of real estate debt by lending source, 1950 and 1979.

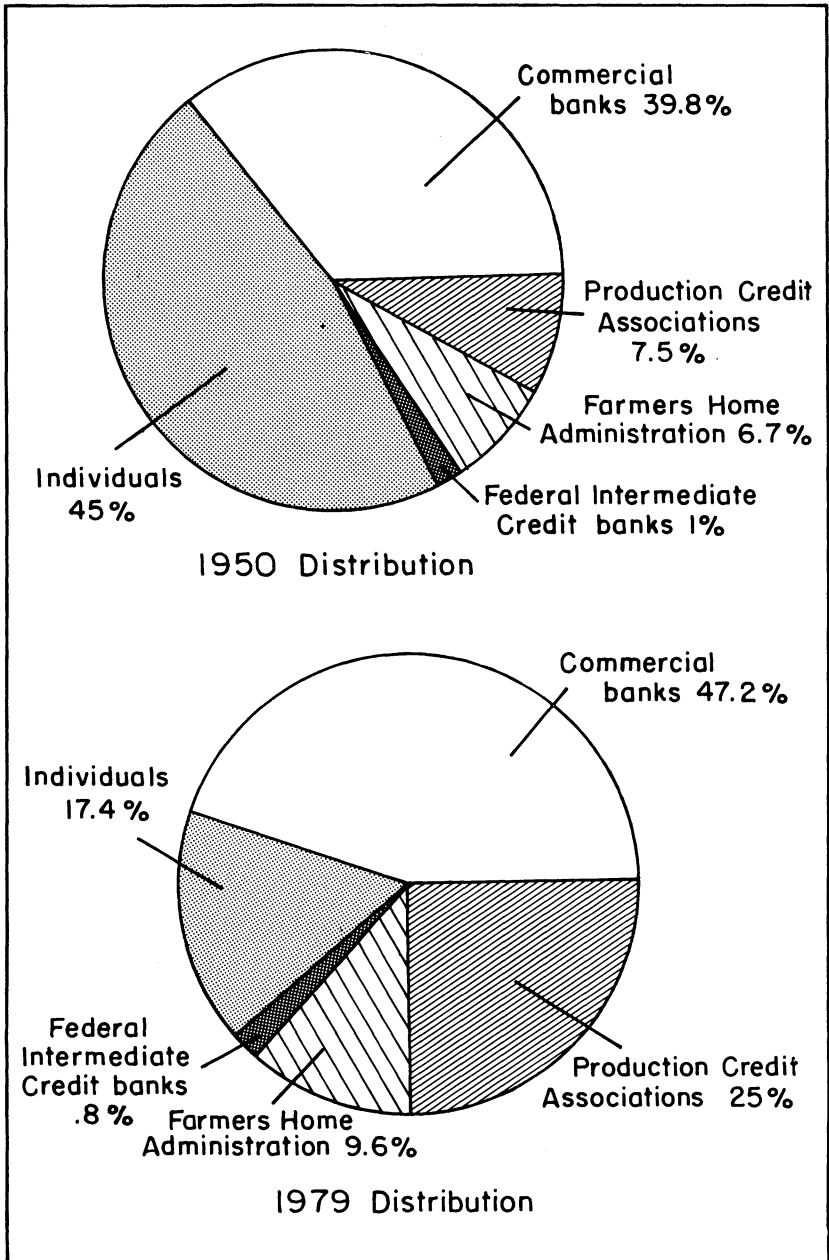


FIG. 2. Distribution of non-real estate debt by lending source, 1950 and 1979.

flation. An obvious consequence of the increased use of borrowed capital has been growing pressure on financial institutions to provide more loanable funds.

Commercial banks, as traditional leaders in supplying agricultural credit, have been among the first to feel the pressure of increased farm-loan demand. A major problem, faced by a large number of banks (previously involved to some extent with agricultural lending), is justifying farm loans in light of other investment opportunities. For agricultural loans to be included in a bank's loan portfolio, the loans must be perceived by bank management as contributing to the attainment of bank objectives. Banks, like other businesses, usually have profit maximization as their primary objective. Therefore, for bank management to commit funds to agricultural lending, those funds must be able to generate at least as much profit as they could in their next best use.

Faced by this continuing pressure — from their stockholders to optimally allocate loanable funds, and from the agricultural sector to continue to provide large amounts of credit — commercial bank management is being forced to reevaluate their lending and investment policies.

Objectives

The major objective of the study presented in this report was to examine the commercial banks' role in supplying agricultural credit in Alabama. Specific objectives were:

- (1) To examine Alabama banking structure and loan-investment portfolio composition;
- (2) To examine selected factors affecting loan profitability; and
- (3) To determine the economic feasibility of agricultural loans for commercial banks in Alabama.

Procedure

An analysis of the banking environment in Alabama was accomplished through the use of secondary data. These data were obtained from the Federal Reserve Bank of Atlanta, the Alabama State Bankers Association, and other selected sources.

The "case study" approach was used to permit an analysis of the relative profitability and economic feasibility of various categories of loans made by Alabama commercial banks. Data were obtained from five banks which were geographically dispersed over the State representing the major agricultural areas—Wire-

grass, Lower Coastal Plain, Black Belt, Limestone Valley, and Piedmont. The agricultural lending officer, or an officer familiar with the bank's overall lending activity, was interviewed and asked to assist in collecting the detailed data necessary for the analysis. Bank policy permitted only bank employees access to individual customer records to prevent disclosure of confidential information. So complete anonymity of all data would be preserved, data were recorded by bank personnel on the questionnaire given in the Appendix (4). Specific information requested from each bank dealt with the following topics:

- (1) Bank objectives and management attitudes,
- (2) Compensating balances,
- (3) Loan volume,
- (4) Loan losses,
- (5) Loan-loss recovery,
- (6) Bank personnel productivity, and
- (7) Bank operating expenses.

For comparative purposes, data were collected in five customer categories and four loan categories. Customer categories were: (1) active farmer, both proprietors and active farmers in a formal business organization, (2) retired farmers, (3) business organizations deriving at least 70 percent of their revenues from farmers, (4) nonagricultural commercial businesses, and (5) individuals not employed in a job directly connected with agriculture. Loan categories considered were: (1) agricultural loans, including production loans secured with real estate, (2) commercial loans, (3) installment loans, and (4) mortgage loans.

BANKING STRUCTURE IN ALABAMA

The data presented in table 1 show how the structure of commercial banking in Alabama has evolved during the past 10 years. Growth has been evident in all areas. Total deposits grew from just over \$4 billion in 1969 to more than \$12.6 billion in 1978. This growth in deposits can be attributed in part to three fundamental, interrelated factors:

- (1) The general growth of the economy during this period with the accompanying inflow of new sources of deposit funds into the banking system;
- (2) The contribution of bankers in soliciting new loan customers and thereby generating new money stocks which ulti-

TABLE 1. SELECTED CHARACTERISTICS DESCRIBING COMMERCIAL BANKING STRUCTURE IN ALABAMA, 1969-1978¹

Characteristics	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978
	<i>No.</i>	<i>No.</i>	<i>No.</i>	<i>No.</i>	<i>No.</i>	<i>No.</i>	<i>No.</i>	<i>No.</i>	<i>No.</i>	<i>No.</i>
National banks	88	88	87	88	89	92	94	96	97	99
National bank branches	166	188	206	225	244	264	286	299	311	337
State banks	180	184	186	189	196	201	205	206	211	211
State bank branches	63	77	91	104	121	143	163	176	182	198
Total banks	268	272	273	277	285	293	299	302	308	310
Total bank branches	229	265	297	329	365	407	499	475	493	535
Total banks and branches	497	537	570	606	650	700	798	779	801	845
	<i>Mil. dol.</i>	<i>Mil. dol.</i>	<i>Mil. dol.</i>	<i>Mil. dol.</i>	<i>Mil. dol.</i>	<i>Mil. dol.</i>	<i>Mil. dol.</i>	<i>Mil. dol.</i>	<i>Mil. dol.</i>	<i>Mil. dol.</i>
Total deposits	4,289	5,023	5,764	6,788	7,715	8,389	9,149	10,163	11,675	12,612
Total capital accounts	405	495	547	609	733	828	889	949	1,066	1,165
Total assets	4,803	5,736	6,603	7,802	8,993	10,821	10,821	11,937	13,609	14,735

¹These data were taken from selected editions of *Polk's World Bank Directory*.

TABLE 2. VOLUME OF COMMERCIAL BANK LOANS AND PERCENT OF TOTAL BANK INVESTMENTS FOR ALABAMA, SIXTH FEDERAL RESERVE DISTRICT, AND NATION, 1969-1978¹

Year	Alabama		Sixth Federal Reserve District		Nation	
	Loan volume ²	Percent of total investments	Loan volume ²	Percent of total investments	Loan volume ²	Percent of total investments
1969.....	2,482	62.9	19,464	63.9	286,750	69.5
1970.....	2,694	60.5	20,781	61.6	297,897	66.8
1971.....	3,153	60.4	24,050	60.9	327,656	65.9
1972.....	3,814	61.4	30,272	63.3	388,593	67.9
1973.....	4,588	64.9	37,278	66.9	460,143	70.2
1974.....	5,187	67.3	40,265	68.3	509,531	72.3
1975.....	5,567	64.0	40,596	64.8	507,202	68.8
1976.....	6,536	65.5	44,025	64.6	546,704	68.6
1977.....	7,847	68.9	50,916	66.4	626,346	70.9
1978.....	8,053	69.0	52,093	66.2	616,443	70.6

¹Data taken from reports provided by Federal Reserve Bank of Atlanta.

²In millions of dollars.

mately filtered through the economy and returned in the form of additional deposits; and,

(3) The overall effect of inflation.

The value of total bank assets in Alabama also showed substantial growth during this same period, increasing from \$4.8 billion in 1969 to \$14.7 billion in 1978. On a per bank basis, assets grew from \$9.7 million in 1969 to \$17.4 million in 1978. These growth figures indicate not only that Alabama banks have been a factor in economic development during the past several years, but also, because of their increased size, they have developed the potential to facilitate further economic growth and development of their communities.

The distribution of banks throughout the State is such that accessibility is not a limiting factor in the banking system's ability to serve the people. Another factor which has aided the development of better customer service is the expansion of branch banking in the State with the total number of banks and branches growing from 497 in 1969 to 845 in 1978. These added branches have given commercial banks a comparative advantage over other lending agencies.

Bank Investments

Three general criteria are often used by commercial banks in determining the components of their asset portfolio. These are liquidity, safety, and profitability. Liquidity is concerned with the very short-run situation, while the other factors are considered to be longer-run concepts. It is difficult to optimize all three measures. For example, in maximizing profitability, liquidity and safety often suffer. Holding all cash would be liquid and safe, but would produce no profit.

Most assets of the earning portfolios of commercial banks are invested in loans and securities. The data given in table 2 indicate the prevalence of loans made by commercial banks in Alabama, The Sixth Federal Reserve District, and the Nation. Over the 10-year period from 1969 to 1978, loans were at least 60 percent of the total portfolio. Also, relative to other investments, loans grew in importance.

Importance of Loans

Loans made by banks are typically grouped into one of five categories with classification depending upon the purpose, the type of borrower, or the collateral taken to secure the loan. The types of loans are: Mortgage or Real Estate; Farm; Installment; Commercial; and a general category, Other. Loan data pre-

sented in table 3 indicate that, for Alabama banks, the only loan category showing any increase as a percentage of total loan volume was real estate loans, increasing from 18.7 percent of total loan volume in 1969 to 26.3 percent in 1978. All other loan categories remained relatively constant or declined slightly, with the "Other" loan category showing the largest decline, moving from 8.4 percent in 1969 to 5.1 percent in 1978.

Similar changes in the distribution of loanable funds were observed for banks in the Sixth Federal Reserve District and the United States as a whole during the same 10-year period, tables 4 and 5. Real Estate loans increased relative to other loans for both Sixth District and U.S. banks. In both cases, these were the only loan categories showing increases as a percentage of total loans. Also in the commercial loan category, Sixth District banks showed a decrease from 31.5 percent of total loan volume in 1969 to 26.6 percent in 1978, while the same category for U.S. banks declined slightly more than 5 percent, from 37.8 percent to 32.6 percent during the same period. The "Other" category of loans showed decreases as a percentage of total loans similar to those of Alabama with Sixth District banks exhibiting a 3.3 percent decline and U.S. banks displaying a 1.7 percent decrease from 1969 to 1978.

Several generalizations can be drawn from these loan data. The first, and most obvious, is that the credit needs of Alabama, the Sixth Federal Reserve District, and the entire United States have grown substantially, as reflected by the increase in bank loans in all categories. The second factor is that the percentages of total loan volume being made in each loan category have remained relatively constant during the past 10 years with the exception of a moderate decline in commercial loans in favor of real estate loans. In regard to farm loans and their relationship to lending practices of commercial banks, it may be concluded that one or more of four developments have taken place during the last 10 years:

- (1) Commercial banks have not recognized the credit needs that have been generated by the farming sector in recent years and have, therefore, not directed more of their lending activity toward these needs;

- (2) Commercial banks have been aware of the growing dependence of the agricultural industry for more credit, but have been faced with equally urgent credit needs from other segments of the economy;

TABLE 3. COMMERCIAL BANK LOANS BY TYPE, ALABAMA, 1969-1978¹

Year	Type of loan										
	Mortgage or real estate		Farms		Installment		Commercial		Other		Total
	Volume	Pct. of total	Volume	Pct. of total	Volume	Pct. of total	Volume	Pct. of total	Volume	Pct. of total	Volume
	<i>Mil. dol.</i>	<i>Pct.</i>	<i>Mil. dol.</i>	<i>Pct.</i>	<i>Mil. dol.</i>	<i>Pct.</i>	<i>Mil. dol.</i>	<i>Pct.</i>	<i>Mil. dol.</i>	<i>Pct.</i>	<i>Mil. dol.</i>
1969	465	18.7	163	6.5	885	35.7	762	30.7	208	8.4	2,482
1970	492	18.3	174	6.4	951	35.3	868	32.2	208	7.7	2,694
1971	603	19.1	195	6.2	1,148	36.4	960	30.4	247	7.8	3,153
1972	779	20.4	229	6.0	1,410	37.0	1,091	28.6	305	8.0	3,814
1973	955	20.8	276	6.0	1,702	37.1	1,298	28.3	357	7.8	4,588
1974	1,064	20.5	322	6.2	1,847	35.6	1,551	29.9	403	7.8	5,187
1975	1,188	21.4	363	6.5	1,944	34.9	1,623	29.2	449	8.1	5,567
1976	1,540	23.6	393	6.0	2,266	34.7	1,856	28.4	482	7.4	6,536
1977	1,988	25.3	468	6.0	2,741	34.9	2,168	27.6	483	6.2	7,847
1978	2,114	26.3	462	5.7	2,810	34.9	2,258	28.0	409	5.1	8,053

¹Data taken from reports provided by Federal Reserve Bank of Atlanta.

TABLE 4. COMMERCIAL BANK LOANS BY TYPE, SIXTH FEDERAL RESERVE DISTRICT, 1969-1978¹

Year	Type of loan										
	Mortgage or real estate		Farms		Installment		Commercial		Other		Total
	Volume	Pct. of total	Volume	Pct. of total	Volume	Pct. of total	Volume	Pct. of total	Volume	Pct. of total	Volume
	<i>Mil. dol.</i>	<i>Pct.</i>	<i>Mil. dol.</i>	<i>Pct.</i>	<i>Mil. dol.</i>	<i>Pct.</i>	<i>Mil. dol.</i>	<i>Pct.</i>	<i>Mil. dol.</i>	<i>Pct.</i>	<i>Mil. dol.</i>
1969	4,092	21.0	954	4.9	6,660	34.2	6,130	31.5	1,629	8.4	19,464
1970	4,375	21.1	1,035	5.0	7,191	34.6	6,564	31.6	1,615	7.8	20,781
1971	5,220	21.7	1,125	4.7	8,477	35.3	7,416	30.8	1,813	7.5	24,050
1972	7,016	23.2	1,343	4.4	10,469	34.6	9,069	30.0	2,375	7.9	30,272
1973	9,158	24.6	1,587	4.3	12,862	34.5	11,083	29.7	2,588	6.9	37,278
1974	10,603	26.3	1,764	4.4	13,246	32.9	12,032	29.9	2,618	6.5	40,265
1975	11,192	27.6	1,917	4.7	13,291	32.7	11,485	28.3	2,710	6.7	40,596
1976	12,690	28.8	1,998	4.5	14,634	33.2	11,875	27.0	2,827	6.4	44,025
1977	15,207	29.9	2,265	4.5	17,106	33.6	13,436	26.4	2,902	5.7	50,916
1978	15,835	30.4	2,249	4.3	17,474	33.5	13,879	26.6	2,658	5.1	52,093

¹Data taken from reports provided by Federal Reserve Bank of Atlanta.

TABLE 5. COMMERCIAL BANK LOANS BY TYPE, U.S., 1969-1978¹

Year	Type of Loan										
	Mortgage or real estate		Farms		Installment		Commercial		Other		Total
	Volume	Pct. of total	Volume	Pct. of total	Volume	Pct. of total	Volume	Pct. of total	Volume	Pct. of total	Volume
1969	<i>Mil. dol.</i>	<i>Pct.</i>	<i>Mil. dol.</i>	<i>Pct.</i>	<i>Mil. dol.</i>	<i>Pct.</i>	<i>Mil. dol.</i>	<i>Pct.</i>	<i>Mil. dol.</i>	<i>Pct.</i>	<i>Mil. dol.</i>
1969	66,020	23.0	14,328	5.0	63,256	22.1	108,443	37.8	34,703	12.1	286,750
1970	68,165	22.1	15,481	5.2	65,807	22.1	112,486	37.8	35,957	12.1	297,897
1971	77,432	23.6	16,666	5.1	74,514	22.7	118,526	36.2	40,519	12.4	327,656
1972	93,652	24.1	19,044	4.9	87,232	22.5	132,701	34.2	55,965	14.4	388,593
1973	112,638	24.5	22,721	4.9	99,927	21.7	159,417	34.7	65,440	14.2	460,143
1974	124,681	24.5	24,141	4.7	103,210	20.3	186,826	36.7	70,673	13.9	509,531
1975	128,533	25.3	26,395	5.2	106,352	21.0	179,348	35.4	66,573	13.1	507,202
1976	142,762	26.1	30,003	5.5	118,408	21.7	182,920	33.5	72,611	13.3	546,704
1977	169,422	27.1	33,480	5.4	140,392	22.4	205,014	32.7	78,038	12.5	626,346
1978	174,871	28.4	33,359	5.4	142,918	23.2	201,203	32.6	64,092	10.4	616,443

¹Date taken from reports provided by Federal Reserve Bank of Atlanta.

(3) Commercial banks have recognized the importance of meeting farm credit needs, but have not perceived farm loans as contributing significantly to the attainment of bank objectives; and/or

(4) Commercial banks have felt that earnings from lending to customers other than farmers were greater.

LOAN PROFITABILITY ANALYSIS

The following sections present an analysis of the data obtained from the five case study banks. The information indicates the relative importance of agricultural customers and their associated transactions with the bank.

Bank Objectives and Attitudes

Each banker interviewed was asked to rank nine, short-term management objectives in order of their perceived importance, table 6. This was requested to obtain a clearer understanding of the five banks' goals and objectives in establishing bank policy and designing their loan operations. Although more than one of the nine objectives could be used in the decision-making process, and interaction would almost certainly exist among the objectives, the respondents were asked to indicate which particular objectives would influence their decisions the most.

Profit maximization was given the highest average priority by the respondents. Three of the five bankers ranked this as their number one objective; however, one ranked this objective as the least important. Employee welfare was considered the next most important factor in formulating bank policy, followed by high productivity. The three least important objectives were seen as commercial bank leadership, structural efficiency, and organizational growth. The reason most often cited for low rankings was that if the other objectives were being met, the less important objectives should be indirectly achieved.

While management of the study banks agreed that setting objectives was a desirable management concept, few of them actually had structured goals or objectives. All utilized some version of a profit plan in their operations, but rarely were specific goals set for bank concerns such as growth, losses, or productivity. Finally, all bankers interviewed agreed that more short-term and long-range forecasting needed to be considered to help prepare their operations for service in the 1980's.

In addition to information relating to general bank objectives,

TABLE 6. INDIVIDUAL RANKINGS AND AVERAGE RANKING OF BANK MANAGEMENT OBJECTIVES, ALABAMA CASE STUDY BANKS, 1979¹

Objectives	Bank 1	Bank 2	Bank 3	Bank 4	Bank 5	Average
Profit maximization	1	1	2	1	9	2.8
Employee welfare (satisfying the needs and wants of employees)	3	2	4	4	3	3.2
High productivity	2	6	3	2	8	4.2
Customer welfare (efficiently satisfying customers' needs . .	4	8	6	3	4	5.0
Operational stability (mini- mizing risk and anticipating financial difficulties)	6	4	5	6	6	5.4
Social Welfare (involvement in community activities)	8	3	7	8	1	5.4
Commercial banking leadership (innovation and leadership in Alabama banking)	9	5	1	9	7	6.2
Structural efficiency (orga- nizing resources effectively)	7	7	8	7	2	6.2
Organizational growth (including loans, in- vestments, and customer services)	5	9	9	5	5	6.6

¹"1" is most important and "9" is least important.

each respondent was asked to give the bank's attitude regarding lending policy. Loan officers were first asked to describe how their bank developed new agricultural loan customers within their service area. Three of the five respondents indicated that their banks did, in fact, have a progressive farm-loan program in which an agricultural loan officer had, as a responsibility, the active solicitation of new customers from the agricultural sector. This solicitation came mainly in the form of personal visits to existing and prospective farm customers to present the features and benefits offered by the bank to farm borrowers. Two banks did not actively seek new business from the agricultural sector. One banker indicated that he realized the importance of visiting prospective farm customers, but, because of the work load imposed on the existing lending personnel, no time was available for such activities. Another banker stressed that his bank was presently making as many farm loans as bank management felt was desirable and, therefore, was making no effort to attract new customers in this loan category.

Whether farm loans were actively sought or not, all five bankers perceived farm loans as a desirable part of their bank's portfolio. When asked to justify this reasoning, frequently mentioned

responses were:

(1) "Farming is such an important part of our local economy that it benefits us and the whole community when we make these loans."

(2) "Farm loans are generally safe loans, very few farm loans have to be written-off."

(3) "The personal character of farmers, as a group, is very high, you can depend on an honest relationship with them."

Of the above three responses, the first was unanimously stressed as the most important. All bank personnel interviewed recognized the necessity and corresponding importance of farmers in their community. This view is consistent with the results of studies which have attempted to identify and measure a "feedback rate" associated with agricultural loans, although not specifically referred to as such by the study banks (1, 5).

Finally, the bankers were asked to project their farm lending activities for the next 5 years. Two saw their banks moving increasingly away from agricultural loans because of the strong competition from Production Credit Associations and Federal Land Banks. The specialized services offered by these two organizations were seen as a distinct advantage in serving the credit needs of farm customers. Two of the remaining three banks saw little or no change in the relative composition of their bank's portfolio in the next 5 years. They pointed out that while they realized the importance of agricultural lending in their community, credit needs from other segments of their service area were also projected to increase at a fast rate. The result for the bank was seen to be proportional increases in all loan categories. One study bank forecasted an increase in both the volume of agricultural loans and the relative percentage of this type loan in the bank's loan portfolio. Three primary reasons given for this prediction were:

(1) The continued importance of farming in the local economy;

(2) Bank management's perception of the importance of meeting the credit needs of farmers in order to foster economic growth and development within the community; and,

(3) The attitude of farm-lending personnel in seeking new farm-loan customers.

Loan Portfolio Composition

The five case study banks averaged a loan-to-deposit ratio of between 62.4 and 72.2 percent from 1973 to 1977, table 7.

TABLE 7. LOAN-TO-DEPOSIT RATIO, ALABAMA CASE STUDY BANKS, 1973-1977

Case study banks	1973	1974	1975	1976	1977
	<i>Pct.</i>	<i>Pct.</i>	<i>Pct.</i>	<i>Pct.</i>	<i>Pct.</i>
Bank 1	44.5	51.7	53.2	65.1	69.3
Bank 2	75.9	74.6	70.9	71.5	71.7
Bank 3	45.3	57.5	84.3	72.8	77.1
Bank 4	71.5	71.0	68.8	71.2	72.7
Bank 5	74.9	77.5	70.2	73.5	70.1
Average	62.4	66.5	69.5	70.8	72.2

Changes in bank management and acquisition by a holding company were the two reasons suggested for the relatively large increase in loan-to-deposit ratios for banks one and three. Both of these banks indicated that as new management personnel were introduced into their banks as a result of a holding company acquisition, new, active, and progressive lending programs were implemented. The remaining three banks maintained a more stable ratio throughout this period.

The actual volume of loans in each category, along with the percentage each represented of total loan volume, is presented in table 8. Total loan volume rose from an average of \$55.6 million in 1973 to \$84.3 million in 1977 for an average yearly increase of 12.9 percent. Over this period, an average of 35.7 percent of these total loans were for the financing of real estate (mortgage loans), with the balance, 64.3 percent, being allocated among the various classes of non-real estate loans.

Agricultural loan commitment for each bank was derived by summing the farm loans reported in the Quarterly Call Report Data and farm-operating loans which were secured by real estate. The five study banks averaged more than \$7.6 million of agricultural loans in 1977 or slightly more than 9 percent of their total loan volume. This compares with \$1.5 million and approximately 6 percent of total loan portfolio for *all* Alabama banks in the same year (3). Average farm-loan commitment for the case study banks increased at an annual rate of 22.7 percent from the \$4 million level in 1973. Over this same period, commercial loans increased at an annual rate of 6.5 percent, installment loans grew at a 10.3 percent rate, and mortgage loans increased at a 20.0 percent rate. This large rate of increase in mortgage loans likely came from the increased desire of banks to take real estate as collateral for the other loans.

Although annual growth during the 5-year study period was greatest for farm loans, consumer installment credit received

TABLE 8. AVERAGE LOAN PORTFOLIO COMPOSITION, ALABAMA CASE STUDY BANKS, 1973-1977¹

Loan category	1973		1974		1975		1976		1977	
	Vol.	Pct.	Vol.	Pct.	Vol.	Pct.	Vol.	Pct.	Vol.	Pct.
Farm	4,000	7.2	5,094	8.4	5,693	8.7	6,720	9.2	7,639	9.1
Commercial	16,000	29.9	17,231	28.4	17,721	27.2	20,109	27.6	20,185	23.9
Installment	15,853	28.5	16,948	27.9	18,556	28.5	19,038	26.1	22,379	26.5
Mortgage	18,545	33.4	20,856	34.4	2,425	34.5	26,507	36.4	33,390	39.6
Other	582	1.0	567	.9	680	1.1	502	.7	739	.9
Total	55,580	100	60,696	100	65,075	100	72,876	100	84,332	100

¹In thousands of dollars.

more emphasis than any other loan category. Bank loan officers interviewed believed this to be the most desirable loan because of its high yield and quick "turnover" characteristics. Also, the market for installment loans permitted higher interest rates to be charged.

Compensating Deposits

Compensating balances indirectly influence loan profitability in that they help reduce risk, assist a bank in meeting its reserve requirements, and provide funds for additional bank loans and investments which in turn increase the bank's total income. It was, therefore, considered important to study the level of customer deposits, or compensating balances, which farmers and other groups held in the bank. None of the case study banks required compensating balances as a prerequisite for making a loan, but all agreed that funds being held on deposit by loan customers were a positive factor in attaining the profit objectives of their banks.

For an assessment of deposit balances by customer type, deposit data were obtained from each of the five case study banks. Accounts within each customer category were randomly chosen to get the following total sample: 90 active farmers, both proprietors and active farmers in a formal farm business organization; 84 retired farmers; 72 agribusiness or business organizations deriving at least 70 percent of their revenues from farmers; 70 nonagricultural commercial businesses; and 90 individuals not employed in a job directly connected with agriculture. An average checking deposit balance was determined for each customer within the various classifications by utilizing a 6-month average balance (the most recent 6 months) or averaging the checking balances on the 15th and 30th day of the most recent month. The particular method used depended on the accounting practices used by the bank supplying the data. Also, savings and certificates of deposit balances were determined for each customer by examining their current level of deposits in each of these categories.

As illustrated in table 9, the case banks' agricultural customers (active farmers, retired farmers, and agribusinesses) accounted for about 68 percent of the average total deposits for the group total. With a \$14,395 average total balance, active farmers maintained almost twice the funds deposited by individual non-farmers.

TABLE 9. AVERAGE CUSTOMER DEPOSIT BALANCES, CASE STUDY BANKS, 1977

Customer category and deposit type	Number of customers	Bank Av. <i>Dol.</i>
Active farmer.....	90	
Checking.....		6,897
Savings.....		1,296
C.D.'s.....		6,202
Total.....		14,395
Retired farmer.....	84	
Checking.....		5,414
Savings.....		3,411
C.D.'s.....		23,601
Total.....		32,426
Agri-business.....	72	
Checking.....		22,323
Savings.....		1,530
C.D.'s.....		7,580
Total.....		31,342
Commercial busine.....	70	
Checking.....		13,582
Savings.....		1,063
C.D.'s.....		14,040
Total.....		28,685
Other individuals.....	90	
Checking.....		2,100
Savings.....		1,378
C.D.'s.....		4,478
Total.....		7,956

The retired farmer group averaged over four times the level of deposits of individual non-farmers and more than twice the level of active farmers. This group of bank customers was included to emphasize the benefits that can accrue to banks which maintain a strong farm-loan program. The general consensus among management of the study banks was that retired farmers tend to stay in their local community after retirement and continue to do business with the bank they have traditionally used. As a result, this group tends to maintain sizeable deposits with their local bank. Banks can use these funds for reserve requirements and new loans or other investments. This customer-bank relationship should weigh heavily as a factor in establishing farm-loan policy.

Considering the business categories, agribusinesses were found to maintain a slightly larger total deposit balance than commercial, non-agricultural businesses. The largest difference between agricultural and non-agricultural businesses was that

non-agricultural businesses had an average C.D. balance two times as great as agribusinesses.

The average deposit balance for the "individual" category was by far the lowest of the five groups sampled. The \$7,956 value represented only 7 percent of the total average deposit balances of all customer categories.

Direct Measures of Loan Profitability

Profit is normally considered to be the return that a business receives in excess of its costs. The most accurate reflection of the overall profitability of a bank's lending operations is given on the year-end Call Reports under the heading "net operating profit before taxes and security transactions." This value may be related to other data on bank size and activities to determine relative profitability. Table 10 gives three ratios calculated from the Call Reports of the case study banks indicating their levels of profits. The average profit-to-loan ratio of 2.18 percent for the study banks gives an indication of the relatively low rate of return and small profit margin received from the loan portfolio.

The overall profitability of bank lending is determined by the difference between the gross return received from the loan, the interest, and the costs associated with granting and servicing the loan. These costs may generally be grouped into two basic categories: the administrative and clerical expenses associated with interviewing the applicant, preparing the necessary paperwork, examining the collateral, and making collections; and the loss realized from the loans that become uncollectable.

TABLE 10. AVERAGE OPERATING PROFITABILITY RATIOS, ALABAMA CASE STUDY BANKS, 1977

Profitability measures	Percent
Net operating profit Total assets	1.19
Net operating profit Total deposits	1.66
Net operating profit Total loans	2.18

Administrative and Clerical Expense

The productivity of bank personnel in making and servicing loans directly influences the profitability of bank loan operations. Increased personnel efficiency in administering loans will increase the net profit margin for the bank loan department.

Data were obtained from each of the five study banks to indi-

cate the levels of administrative and clerical expenses associated with the lending process. Bank officers who provided the data for this study were asked to indicate the total number and type of bank personnel involved with the bank’s loan operations, the portion of time that each spent in the lending process, and the salary of each individual involved. Total anonymity was preserved since no names were used and general terms were used to describe positions. In addition, the time that each individual spent in the lending function of the bank was allocated to the following loan categories:

- (1) Farm loans, including farm loans secured with real estate;
- (2) Commercial and industrial loans;
- (3) Consumer or personal installment loans; and,
- (4) Mortgage or real estate loans.

These data were assimilated to construct productivity measures for the personnel and to estimate the administrative and clerical costs of lending, table 11. Basic productivity standards were loan volume per employee, loan volume per dollar of salary, and a similar measure, salary expense per dollar loaned.

TABLE 11. AVERAGE PRODUCTIVITY OF BANK PERSONNEL BY LOAN CATEGORY, ALABAMA CASE STUDY BANKS, 1977

Loan category	Productivity measure		
	Loan volume/ employee	Loan volume/ total salaries	Salary cost/ dollar loaned
	<i>Dol.</i>	<i>Dol.</i>	<i>Pct.</i>
Farm.....	3,236,779	224	.45
Commercial.....	3,923,929	240	.42
Installment.....	1,478,620	99	1.01
Mortgage.....	5,697,924	580	.20

Loan volume per employee reflected the efficiency of the bank work force in the lending activity. Productivity in mortgage loans was greatest, an average of \$5,697,924 per individual. Typically larger sizes of mortgage loans tended to make this value relatively high. Commercial loan activity was the next highest, followed by farm loans and installment loans. Characteristically small installment loans made bank personnel productivity in this area relatively low.

The relation of loan volume to salary gives an indication of how much the bank is getting in return for its investment in personnel. Again, size of loan directly affects this measure with mortgage lending being the highest, \$580, and installment lending being the lowest, \$99. The farm and commercial categories fell between

these extremes at \$224 and \$240, respectively.

Perhaps the most valuable relationship from a profitability viewpoint is the ratio of total salary expense to loan volume. These values reflect the cost per dollar loaned and may be compared directly to the interest earned on a loan to get a net return. The data show for each dollar of mortgage loan, administrative and clerical expense amounts to 0.20 cents or 0.2 percent. Comparable values for commercial, farm, and installment loans are respectively, 0.42, 0.45, and 1.01 percent. These values appear to be very small, but when compared to the 2.18 percent net operating profit of the study banks given in table 10, they gain added significance.

Loan-Loss Expense

Another factor considered to be important in influencing the profitability of bank lending operations was the amount lost through uncollectable loans. Average dollars of loss and recovery were determined for each category of loan and for total loans in each study bank from 1973 to 1977. Net loan-loss for each loan category was determined by subtracting the amount recovered from the amount originally lost. Losses and recoveries do not necessarily correspond each year. For example, a loan "written off" in 1973 may have been recovered in increments over the next several years. However, practices for all five banks were consistent in regard to loan-loss accounting so that these calculations were considered to be a valid measure of this profitability factor. Total net loan-loss, the average recovery rate, and net loss per dollar loaned in each category are given in table 12. The greatest amount of net loss for the study banks was in installment loans, 58.9 percent of total losses, with the least being in the farm category, only 3.4 percent of the total.

TABLE 12. AVERAGE ANNUAL NET LOAN LOSS AND PERCENT OF TOTAL LOSS, LOAN LOSS/DOLLAR LOANED IN CATEGORY, AND AVERAGE ANNUAL RECOVERY RATE BY LOAN TYPE FOR SAMPLE BANKS, 1973-1977

Type of loan	Net loan loss		Recovery rate	Net loss/dollar loaned
	<i>Dol.</i>	<i>Pct.</i>	<i>Pct.</i>	<i>Pct.</i>
Farm	5,990	3.4	26.8	.10
Commercial	58,457	33.6	35.4	.32
Installment	102,623	58.9	36.3	.55
Mortgage	7,025	4.1	39.2	.02

The rate of recovery values indicate the relative percentage of past due loans eventually collected. Farm loans were the worst

in this measure with a 26.8 percent recovery rate. The rate for mortgage loans was the best, 39.2 percent, indicating that eventual collection from those few who defaulted on a mortgage was more likely than the other categories. When viewed in proportion to the total loans in each category, installment loans had the greatest amount of loss, .55 percent, or 55 cents per dollar loaned. Mortgage loans had the smallest rate of loss in proportion to amount extended, .02 percent. The rate of loss per dollar loaned in the farm and commercial categories was .1 percent and .32 percent, respectively. Again, these values seem small, but are significant when compared to net profit percentages.

Comparisons of Relative Profitability

The cost of loans made in each of the categories—installment, farm, commercial, and mortgage—may be compared by combining administrative and clerical costs with loan-loss expenses, table 13. These total-cost-per-dollar-loaned values give a true indication of relative profitability.

Installment loans are, by far, the most expensive, and mortgage loans are the least costly. Loans for agricultural purposes cost one-third as much as those in the installment category.

TABLE 13. TOTAL COST (ADMINISTRATIVE AND LOAN-LOSS) PER DOLLAR OF LOAN, BY LOAN CATEGORY, CASE STUDY BANKS, 1977

Loan category	Percent
Installment	1.56
Commercial74
Farm55
Mortgage22

The relative profitability of farm loans, as compared to the other categories, may be seen more clearly if differentials are calculated, table 14. These differences may be referred to as interest rate buffers. They emphasize that sufficient variation in cost exists among loan types so as to negate profitability comparisons based entirely on interest rates charged on a given loan.

The interest rate buffer between farm and installment loans was nearly two times larger than the buffer between farm and commercial loans. The yield buffer between farm and mortgage loans has a negative value, -.33 percent, as both loan personnel and loan-loss expenses were proportionally less for mortgages. The implication of these calculations are significant for bank management as well as the farming sector — a farm loan made at 8.0 percent interest would compare in terms of profitability (as

TABLE 14. INTEREST RATE BUFFERS FOR COST COMPARISONS, CASE STUDY
BANKS, 1977

Loan category comparison	Percent
Farm to installment	1.01
Farm to commercial91
Farm to mortgage	-.33

defined in this study) with a 7.67 percent mortgage loan, an 8.19 percent commercial loan, and a 9.01 percent installment loan.

CONCLUSIONS

The favorable profitability of farm loans, as identified by this study, suggests that bank management should rationally include farm loans as components of the total loan portfolio. Given that farm loans foster business activity in the local economy, banks making loans of this type would enhance their own level of banking activity by supplying credit needs of farm customers. An increased level of deposits and other bank business (trusts, estate planning, farm management, and tax services) can continuously accrue for banks actively involved in agricultural lending. Finally, banks choosing to make farm loans can make a return on loan investment comparable to most other loan alternatives they could consider.

From the standpoint of the farming sector, banks which continue to actively engage in agricultural lending provide an alternative source of credit and thus promote the competitive nature of farm lending in Alabama.

SELECTED REFERENCES

- (1) BARRY, PETER J. "Rural Banks and Farm Loan Participation," *Amer. Jour. Agri. Econ.* Vol. 60, No. 2 (May 1978).
- (2) MELICHAR, EMANUEL, AND MARTHA WALDHEGER. *Agricultural Finance Databook*. Division of Research Statistics, Federal Reserve System, Washington, D.C., November, 1979.
- (3) MOORE, MICHAEL W. "An Evaluation of Agricultural Loan Profitability for Commercial Banks in Alabama," M.S. Thesis, Auburn University, 1979.
- (4) MOSS, JERRY L. "Profitability of Agricultural Loans for New York Commercial Banks," M.S. Thesis, Cornell Univ., Ithaca, 1977.
- (5) PODOLECKI, VERA B. "Loan-Deposit Linkages at Rural Texas Banks," M.S. Thesis, Texas A&M University, 1977.

APPENDIX

**Questionnaire Used For Case
Study Analysis**

BACKGROUND INFORMATION SHEET

Name _____ Date _____

Age _____ Home Address _____

Home Telephone Number _____

Business Telephone Number _____

Education _____

Present Occupation (including job title) _____

Years of Service with the Bank (including positions held) _____

Farm-Related Experience _____

Previous Employment _____

OBJECTIVE LIST

Please rank the following commercial bank objectives in descending order of importance (assume a short-term perspective of up to two years).

- _____ A. Commercial Banking Leadership (being innovators and leaders among the Alabama Commercial banks)
- _____ B. High Productivity (getting the most from the resources available)
- _____ C. Employee Welfare (striving to satisfy the needs and wants of banking personnel)
- _____ D. Operational Stability (minimizing risks and anticipating future financial difficulties)
- _____ E. Profit Maximization
- _____ F. Social Welfare (being involved in community activities)
- _____ G. Organizational Growth (expansion of services, portfolio, or volume of loan customers)
- _____ H. Customer Welfare (endeavoring to most efficiently satisfy the needs of customers)
- _____ I. Structural Efficiency (organizing resources in their most effective order)

20 RANDOMLY CHOSEN ACTIVE FARMER "COMPENSATING BALANCES"

Customer No.	Ave. Checking	Ave. Savings	C.D.'s	Ave. Comp. Balance

20 RANDOMLY CHOSEN RETIRED FARMER "COMPENSATING BALANCES"

Customer No.	Ave. Checking	Ave. Savings	C.D.'s	Ave. Comp. Balance

20 RANDOMLY CHOSEN OTHER INDIVIDUALS "COMPENSATING BALANCES"

Customer No.	Ave. Checking	Ave. Savings	C.D.'s	Ave. Comp. Balance

20 RANDOMLY CHOSEN AGRIBUSINESS RELATED "COMPENSATING BALANCES"

Customer No.	Ave. Checking	Ave. Savings	C.D.'s	Ave. Comp. Balance

20 RANDOMLY CHOSEN COMMERCIAL BUSINESSES "COMPENSATING BALANCES"

Customer No.	Ave. Checking	Ave. Savings	C.D.'s	Ave. Comp. Balance

20 RANDOMLY CHOSEN AGRICULTURAL BORROWERS & LOAN CLASSIFICATION

Customer No.	\$ Short Term	i	\$ Int. Term	i	\$ Long Term	i

20 RANDOMLY CHOSEN INDIVIDUAL BORROWERS AND LOAN CLASSIFICATION

Customer No.	\$ Short Term	i	\$ Int. Term	i	\$ Long Term	i

20 RANDOMLY CHOSEN COMMERCIAL BORROWERS & LOAN CLASSIFICATION

Customer No.	\$ Short Term	i	\$ Int. Term	i	\$ Long Term	i

**LOAN VOLUME FOR LAST FIVE YEARS (1973-1977)
(As Submitted for Call Reports)**

Year	Farm Loans	Commercial	Installment Loans	Mortgage Loans	Other	Total Loans
1973						
1974						
1975						
1976						
1977						

**TOTAL NUMBER OF LOANS MADE IN LAST
FIVE YEARS BY LOAN CATEGORY**

Year	Farm	Commercial	Installment	Mortgage	Other	Total
1973						
1974						
1975						
1976						
1977						

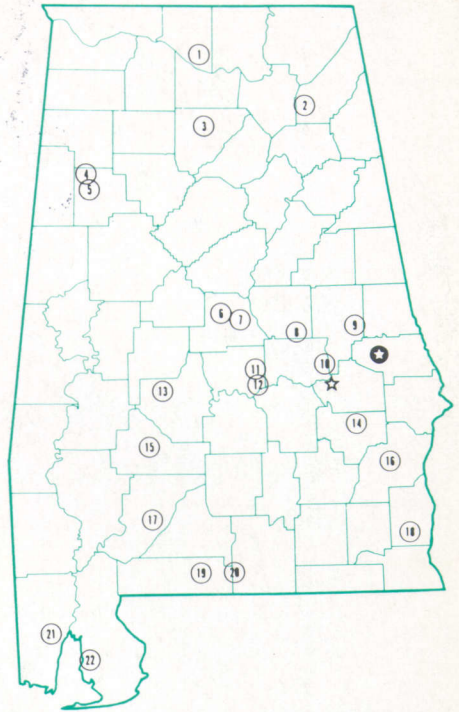
**SELECTED INFORMATION FROM CALL REPORTS
FOR LAST FIVE YEARS (1973-1977)**

Operating Income		\$ _____
Int. & Fees on Loans	\$ _____	
Other Income	\$ _____	
Operating Expenses.....		\$ _____
Salaries, Wages & Benefits	\$ _____	
Loan-Loss Prov.	\$ _____	
Int. on Deposits	\$ _____	
Other Expenses	\$ _____	
Occupancy Expense	\$ _____	
Income BT & ST		\$ _____
Income After Taxes.....		\$ _____
Income AT & ST		\$ _____
Total Bank Assets.....		\$ _____
Total Liabilities		\$ _____
Deposits		\$ _____
Demand	\$ _____	
Time & Savings	\$ _____	
Reserve for Loan Loss		\$ _____
Recoveries Credited to Reserve		\$ _____
Losses Charged to Reserve		\$ _____

Alabama's Agricultural Experiment Station System

AUBURN UNIVERSITY

With an agricultural research unit in every major soil area, Auburn University serves the needs of field crop, livestock, forestry, and horticultural producers in each region in Alabama. Every citizen of the State has a stake in this research program, since any advantage from new and more economical ways of producing and handling farm products directly benefits the consuming public.



Research Unit Identification

- ★ Main Agricultural Experiment Station, Auburn.
- ☆ E. V. Smith Research Center, Shorter.

1. Tennessee Valley Substation, Belle Mina.
2. Sand Mountain Substation, Crossville.
3. North Alabama Horticulture Substation, Cullman.
4. Upper Coastal Plain Substation, Winfield.
5. Forestry Unit, Fayette County.
6. Foundation Seed Stocks Farm, Thorsby.
7. Chilton Area Horticulture Substation, Clanton.
8. Forestry Unit, Coosa County.
9. Piedmont Substation, Camp Hill.
10. Plant Breeding Unit, Tallassee.
11. Forestry Unit, Autauga County.
12. Prattville Experiment Field, Prattville.
13. Black Belt Substation, Marion Junction.
14. The Turnipseed-Ikenberry Place, Union Springs.
15. Lower Coastal Plain Substation, Camden.
16. Forestry Unit, Barbour County.
17. Monroeville Experiment Field, Monroeville.
18. Wiregrass Substation, Headland.
19. Brewton Experiment Field, Brewton.
20. Solon Dixon Forestry Education Center,
Covington and Escambia counties.
21. Ornamental Horticulture Field Station, Spring Hill.
22. Gulf Coast Substation, Fairhope.