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**AN ECONOMIC EVALUATION OF  
ALTERNATIVE SOURCES OF FUNDING FOR  
AGRICULTURAL LENDING BY COMMERCIAL BANKS**

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## AN ECONOMIC EVALUATION OF ALTERNATIVE SOURCES OF FUNDING FOR AGRICULTURAL LENDING BY COMMERCIAL BANKS

Kenneth C. Carraro and Eddy L. LaDue

Commercial banks have historically played an important role in financing this nation's farmers. However, over the past 10 years the U.S. banks' share of total agricultural debt has fallen steadily from nearly 31 percent in 1974 to approximately 21 percent in 1982 (table 1). In New York State, banks' share has fallen from 34 to 23 percent over the same period, however, in an uneven fashion.

Table 1. MARKET SHARES OF TOTAL AGRICULTURAL DEBT  
BY LENDERS U.S. and N.Y.  
January 1 (Excluding Farm Households)

	Farm Credit System		Banks		U.S. Govt.		Other	
	U.S.	N.Y.	U.S.	N.Y.	U.S.	N.Y.	U.S.	N.Y.
1972	23.8	32.4	28.1	29.3	9.6	7.7	38.5	30.4
1973	24.5	33.1	29.5	30.9	8.3	6.8	37.7	29.0
1974	26.0	31.5	30.9	33.9	6.2	7.0	36.9	27.4
1975	28.4	36.3	29.7	30.0	5.5	6.1	36.4	28.2
1976	29.5	38.9	29.0	25.9	5.9	6.2	35.6	28.9
1977	29.8	38.4	29.0	25.9	6.2	6.9	35.0	28.6
1978	28.6	36.5	27.3	26.8	9.5	8.4	34.6	28.1
1979	28.3	31.7	26.2	25.9	11.0	15.8	34.5	26.5
1980	29.1	28.1	24.0	26.4	12.6	19.2	34.3	26.0
1981	30.9	26.8	22.3	27.6	13.1	19.0	33.7	26.5
1982	32.4	29.4	20.6	22.9	15.2	19.6	31.8	28.0
1983	31.5	28.7	20.6	25.6	18.2	18.7	29.7	27.0
1984	31.5	26.4	22.5	31.2	16.2	16.6	29.8	25.8

Source: Agricultural Finance Databook. Board of Governors of the Federal Reserve System, Annual Edition; and Agricultural Situation and Outlook, New York Economic Handbook. Department of Agricultural Economics, Cornell University, various issues.

Recent work by Key (1984) found that the extent of market share loss by banks in the Northeast is actually greater than the above statistics suggest. He found that a significant proportion of the agricultural loan volume reported by the large New York City banks represented loans made outside New York State. When the New York City banks are excluded, the decline in market share is greater than shown by table 1. A continued decline in the bank market share could significantly reduce competition in the agricultural credit market. As commercial banks decide, consciously or not, to "get out" of farm lending, individual borrowers face a shrinking number of borrowing options.

Under current conditions the Farm Credit System would likely step in and provide the credit most farmers need. However, such an action would place considerable burden on the Farm Credit Service as the primary, and often sole, supplier of agricultural credit, and would place the Farm Credit Service in a monopoly or pseudo-monopoly position. It is unlikely that the Farm Credit Service could provide the level of service to agriculture that would be provided by a competitive market system. A continued active and growing involvement by banks in agricultural lending is critical to competition in agricultural lending, and thus, to the welfare of farm borrowers.

Attempts to explain and remedy commercial banks' shrinking presence in agricultural financial markets during the late 1970's and early 1980's focused attention on the sources of funds utilized by banks to support their agricultural lending activities. As of 1983 a large share, 53.2 percent, of the dollar volume of U.S. commercial bank agricultural lending was done by small rural banks of less than \$50 million in deposits. Smaller banks have limited access to national money markets and therefore rely primarily on locally generated deposits. The economy of a small rural bank's locality is often inextricably tied to the health of its agricultural underpinnings. Due to the unpredictable nature of agricultural production and prices, reliance on locally generated deposits can produce a highly variable lending base.

To cope with their limited and unpredictable supply of deposits, many small banks remain liquid by maintaining a high proportion of deposits in the form of government securities. Secondary markets for government securities are well developed thereby providing a substantial degree of liquidity for such assets. Banks making use of such a liquidity management strategy may refuse or only partially satisfy loan requests during periods of either high loan demand or low fund availability. Another widely used funding strategy to alleviate liquidity pressure has been for banks to sell loans to other financial institutions and to use the proceeds of the sale to fund additional loans. Most loan sales, however, are generally not as easily arranged as the sale of securities due to the extremely heterogeneous nature of loans.

A major exception to the general lack of secondary markets for loans is in the domain of home ownership loans where a number of intermediaries, both public and private, exist to purchase mortgage loans from banks. This study will examine the programs of two intermediaries that provide such a secondary market for agricultural loans. The first is the MABSCO Agricultural Services Incorporated (MASI) agricultural loan funding program initiated by bankers of a 12 state region of the midwest. The MASI organization functions as an intermediary between member banks and Rabobank, a large Dutch bank which has agreed to purchase qualified agricultural loans. The MASI program is currently available only in the 12 state region. This analysis assesses the feasibility of developing an institution like MASI to cover the Northeast.

The second alternative is the agricultural loan discounting program offered by the Farm Credit System (FCS) through its network of 12 Federal Intermediate Credit Banks (FICB). Banks which meet a set of conditions are eligible to sell agricultural loans to the FICB. The purpose of this study is to compare these two alternatives to the funding techniques currently being utilized by banks with respect to their potential to foster improved competition among commercial banks and other agricultural lenders to the ultimate benefit of the farm borrowers.

This report first presents background information on New York banks. This discussion is followed by a summary of the results of a survey of New York banks

designed to determine the characteristics of banks that might influence their ability to use alternate funding sources, and to elicit the level of bank interest in various types of alternatives. The third section analyzes the profit potential of loans made through a MASI type of intermediary and the viability of such an organization for the Northeast. This is followed by an analysis of which banks would be able to use FICB discounting and the effect of such discounting on bank profits. Finally a summary and some conclusions are presented.

### NEW YORK BANKS

Any comparison of banking characteristics in New York State with those of other states, other regions, or of the nation as a whole, must first acknowledge basic differences in the structure of banking due to varying state legislation. As of early 1984, New York State and 20 other states permit statewide branching by banks. In 17 states, limited branching is enforced while in 12 states, unit banking is the rule. The practice of statewide branching, where allowed, generally has resulted in fewer and larger banks than in states with limited branching or unit banking. The Northeast is predominated by states with liberal branching laws while in the 12 MASI states<sup>1/</sup>, banks generally operate in a unit banking or limited branching environment.

New York State has proportionally fewer small banks than either the MASI states or the nation as a whole (table 2). To some degree this is due to the preponderance of the large New York City banks. Even after eliminating their effect, however, average bank size is larger in New York State.

In New York State, the larger banks with more than \$200 million in deposits hold a majority of the total dollar volume of agricultural loans (table 3). This is in sharp contrast to the nation and to the MASI region where small banks of less than \$50 million in deposits account for the majority of agricultural loan volume. These data imply that the funding limitations experienced by the banks in New York State and the Northeast may be of a different nature than those experienced in the MASI states due to size differences.

One size related factor is that of bank lending limits. Due to their generally larger size, New York State banks encounter far fewer situations where loan size is a constraint for making agricultural loans.

### SURVEY OF NEW YORK BANKS SERVING AGRICULTURE

Data for the analysis of bank characteristics and interest in alternate funding sources were provided by a mail survey sent to the 91 banks in New York State having more than \$250,000 of outstanding agricultural loans as of December 1982. Banks in New York City were excluded from the study because much of their agricultural lending efforts are outside of New York State and because their funding concerns are atypical of most agriculturally oriented banks on the basis of bank size. Fifty-one

<sup>1/</sup> Arkansas, Colorado, Illinois, Iowa, Kansas, Michigan, Minnesota, Missouri, North Dakota, Oklahoma, South Dakota and Wisconsin.

bankers returned completed surveys resulting in a response rate of 56 percent. Additional detailed bank data were obtained through the use of December 1982 Call reports which banks file with the Federal Deposit Insurance Corporation (FDIC) on a quarterly basis. Clarifications of bankers' survey responses and other additional information were obtained through a series of follow-up telephone interviews.

Table 2. SIZE DISTRIBUTION OF BANKS IN NEW YORK,  
MASI STATES AND THE U.S.  
January 1, 1983

Bank Size (deposits)	New York with NYCa/		New York non NYCa/,b/		MASI Statesc/		U.S.	
	No.	%	No.	%	No.	%	No.	%
\$0 - \$25 million	54	26	54	30	3,630	56	6,939	48
\$25 - \$50 million	38	19	38	21	1,569	24	3,661	25
\$50 - \$200 million	59	29	56	31	1,117	17	3,038	21
over \$200 million	54	26	31	18	157	3	782	6
TOTAL	205	100	179	100	6,473	100	14,420	100

a/ FDIC insured commercial banks.

b/ Excludes banks headquartered in New York City having overseas offices.

c/ Arkansas, Colorado, Illinois, Iowa, Kansas, Michigan, Minnesota, Missouri, North Dakota, Oklahoma, South Dakota and Wisconsin.

Source: Report of Income and Report of Condition (Call reports), Federal Deposit Insurance Corporation, Board of Governors of the Federal Reserve System, Office of the Comptroller of the Currency, December 1982.

Although the 56 percent response rate on the mail questionnaire is a very acceptable rate, a study of possible nonrespondent bias was conducted. Nonrespondent banks tended to be slightly smaller and less involved in agriculture, but their responses relative to agricultural loan profitability, obstacles to agricultural lending and preferred sources of funds were very similar to that of the respondents. Thus, it appears appropriate to generalize the results of this study to the entire New York bank population.

### Study Bank Characteristics

The 51 responding banks were stratified into groups for the purpose of analyzing the funding alternatives in question. The smallest 12 banks of less than \$25 million in deposits are referred to as the size I banks. A second group of 11 banks having from \$25 to \$50 million in deposits are the size II banks. Fourteen banks having from \$50 to \$200 million in deposits make up the size III banks. The size IV banks are the 14 banks having more than \$200 million in deposits. The size IV banks exhibit the greatest heterogeneity by including banks ranging in size from \$219 million to just over \$3

billion in deposits. The degree of bank involvement in agricultural lending is a second key consideration in the analysis of funding alternatives. To acknowledge the degree of bank involvement, an additional class of the most agriculturally oriented banks was created. Banks included in this category are also represented in the size based groups. This new category, referred to as the Ag banks, includes 13 banks having agricultural loans representing: (1) a minimum of \$2.5 million, and (2) a minimum of 10 percent of the bank's total loan portfolio. A brief summary of study bank characteristics is presented in table 4.

Table 3. DISTRIBUTION OF AGRICULTURAL LOAN  
VOLUME BY BANK SIZE  
New York, MASI States and U.S.  
December 31, 1982

Bank Size (deposits)	New York with NYC	New York non NYC	MASI States	U.S.
-----Percent of Ag Loan Volume in Area-----				
\$0 - \$25 million	2.2	8.0	29.1	28.1
\$25 - \$50 million	2.1	7.9	31.2	25.1
\$50 - \$200 million	7.9	29.9	22.4	22.4
over \$200 million	87.8	54.9	7.3	24.4

Source: Report of Income and Condition (Call report), December 1982.

### Agricultural Loan Characteristics

The study banks were asked to approximate the distribution of new and refinanced agricultural loans according to loan size. Responses indicate that as bank size increased, agricultural loan portfolios were more heavily weighted with larger loans. Table 5 presents data for new and refinanced agricultural loans rather than all outstanding agricultural loans to better portray the nature of current lending practices.

The term of the loan is also an important consideration for both the MASI-like and the FICB loan funding alternatives. In both cases, funding is available for short- and intermediate-term agricultural loans with maximum terms of five or seven years. The two groups of the smallest banks had a higher percentage of short- and intermediate-term loans than did the larger and more agriculturally oriented banks (table 6).

### Trends in Agricultural Loan Volume

Bankers were asked to estimate the trend in their bank's agricultural loan volume over the past five years and to project agricultural loan volume for the coming five years. Their responses were summarized in tables 7 and 8. Generally, more large banks and agricultural banks had experienced increases in loan volume in the past and expected further increases in the future.



Table 4. CHARACTERISTICS OF BANK GROUPS  
51 New York Banks, 1983

Bank Group	Banks	Number of Branches	Total Ag Volume	Average Deposit Size	Number of Ag Borrowers	Loan to Deposit Ratio
	number	average	\$ million	\$ million	total	average
I	12	.4	13.5	16.1	646	54.1
II	11	1.7	16.0	35.2	379	54.5
III	14	6.3	98.6	92.4	1,576	63.4
IV	14	41.9	143.4	523.3	729	80.1
Ag <sup>a/</sup>	13	8.3	177.9	149.8	691	60.4

a/ The ag banks are a subset of the four other groupings.

Sources: December 1982 Call reports; May 1983 bank survey.

Table 5. DISTRIBUTION OF NEW AGRICULTURAL LOANS  
BY LOAN SIZE<sup>a/</sup>

Bank Group	Size of Agricultural Loan		
	\$0 - \$10,000	\$10,000 - \$25,000	over \$25,000
-----Percent of Loans in Each Bank Class-----			
I	30.5	35.7	33.8
II	30.1	22.5	47.4
III	13.4	15.7	70.9
IV	11.7	22.7	65.6
Ag	10.4	20.2	69.4

a/ Includes all production agriculture loans with terms of five years or less.

Table 6. DISTRIBUTION OF NEW AGRICULTURAL  
LOANS BY TERM

Bank Group	Term of Loan (Years)			
	Under 1	1 - 5	6 - 10	over 11
-----Percent of Loans in Each Bank Group-----				
I	45.1	34.3	6.2	14.4
II	43.3	32.1	7.7	16.9
III	21.4	35.9	7.8	34.9
IV	17.1	44.4	20.2	18.3
Ag	15.5	42.2	16.7	25.6

Table 7. AGRICULTURAL LOAN VOLUME TREND 1978-83  
51 New York Banks, 1983

Bank Group	Ag Loan Volume Change		
	Increased	Constant	Decreased
-----Percent of Banks-----			
I	33	33	33
II	45	9	45
III	71	7	21
IV	57	29	14
Ag	85	8	8

Table 8. PROJECTIONS OF AGRICULTURAL LOAN VOLUME 1983-87  
51 New York Banks, 1983

Bank Group	Increase Volume	Constant	Decrease	Don't Know
-----Percent of Banks-----				
I	42	42	0	16
II	55	9	9	27
III	79	0	7	14
IV	64	21	0	14
Ag	85	7	7	0

The term structure of agricultural loans made by banks is, however, expected to change. In the next five years more banks plan to increase their nonreal estate loan volume than plan to increase their generally longer term real estate volume (table 9). This is true for agricultural banks as well as all banks.

The banks' assessment of the term of funds needed to expand agricultural loan volume was consistent with plans to increase nonreal estate loan volume (table 10). One to five year funds were viewed as the most pressing need. Only the size III and the agricultural banks indicated a need for longer term funds. These banks indicated that other than one to five year funds, 11 to 20 year funds were most needed.

#### Obstacles to Ag Lending

To determine the relative priority of the issue of loan funding, the following list of potential obstacles to agricultural lending was developed and respondents were

asked to rank the importance of each obstacle for the past five years and for the coming five years.

- (A) Other loans more profitable
- (B) Insufficient demand for agricultural loans
- (C) Competition from PCAs and FLBAs
- (D) Competition from other commercial banks
- (E) Competition from other lenders
- (F) Bank policy to limit agricultural loan volume
- (G) Limited agriculture in bank's area
- (H) Insufficient funds to support agricultural loans

Table 9. PLANNED CHANGE IN REAL ESTATE AND  
NONREAL ESTATE AGRICULTURAL LOAN VOLUME  
IN THE NEXT FIVE YEARS  
51 New York Banks, 1983

Planned Loan Volume Change	Real Estate Loans		Nonreal Estate Loans	
	All Banks	Ag Banks	All Banks	Ag Banks
-----Number of Banks-----				
Increase	18	6	31	11
Constant	19	3	11	1
Decrease	5	2	0	0
Don't Know	9	1	9	0

Table 10. TERM OF FUNDS NEEDED TO EXPAND  
AGRICULTURAL LOAN VOLUME  
51 New York Banks, 1983

Loan Term	Bank Group					
	I	II	III	IV	All	Ag
-----Average Ranking <sup>a/</sup> -----						
less than 1 year	2	2	5	3	3	4
1 - 5 years	1	1	1	1	1	1
6 - 10 years	3	3	3	2	2	3
11 - 20 years	4	4	2	4	4	2
over 20 years	5	5	4	5	5	5

a/ 1 = most needed; 5 = least needed.

As seen from table 11, loan fund availability was not a highly ranked concern. The obstacle of insufficient funds was rated as being among the top three concerns only for the coming five years, and then only by the group III and ag banks (table 12). Of far greater concern to bankers in the past and for the future is the competition encountered from the Farm Credit System (FCS).

When asked specifically about long-term lending, which they expect to decrease in relative importance, the most frequently mentioned obstacle was uncertainty about the long-run cash flow generating ability of farms (table 13). The uncertainty appears to be of two types: (1) uncertainty about the profitability of agriculture, and (2) uncertainty about the ability of banks and farmers to estimate future cash flows.

Table 11. CURRENT OBSTACLES TO AGRICULTURAL LENDING  
51 New York Banks, 1983

Obstacle	Bank Group					
	I	II	III	IV	All	Ag
	-----Average Ranking <sup>a/</sup> -----					
A. Loan Profitability	7	4	5	2	5	6
B. Low Demand	1	1	3	3	2	4
C. FCS Competition	2	2	1	1	1	1
D. Bank Competition	6	5	4	6	6	3
E. Other Competition	3	6	2	4	4	2
F. Bank Policy	4	7 <sub>b/</sub>	8	7	7	7 <sub>b/</sub>
G. Limited Ag	5	3	6	5	3	7 <sub>b/</sub>
H. Lack of Funds	8	7 <sub>b/</sub>	7	8	8	5

a/ 1 = most important; 8 = least important.

b/ Tie ranking.

Table 12. FUTURE OBSTACLES TO AG LENDING  
51 New York Banks, 1983

Obstacle	Bank Group					
	I	II	III	IV	All	Ag
	-----Average Ranking <sup>a/</sup> -----					
A. Low Profitability	5	4 <sub>b/</sub>	4 <sub>b/</sub>	2	4	5
B. Low Demand	1	2	2	4	2	4
C. FCS Competition	2	1	1	1	1	1
D. Bank Competition	6	6	7 <sub>b/</sub>	5	6	5 <sub>b/</sub>
E. Other Competition	4	8	6	7	5	3
F. Bank Policy	7	7	7 <sub>b/</sub>	6	8	8
G. Limited Ag	3	3	4 <sub>b/</sub>	3	3	5 <sub>b/</sub>
H. Lack of Funds	8	4 <sub>b/</sub>	3	8	7	2

a/ 1 = most important; 8 = least important.

b/ Tie ranking.

Table 13. OBSTACLES TO LONG-TERM LENDING BY BANKS  
51 New York Banks, 1983

Obstacle	Number of Banks Mentioning <sup>a/</sup>
Farm cash flow uncertainty	13
None (no significant obstacles)	11
Lower rates from competition	11
Inability to obtain funds	7
Bank reluctance or policy against long-term	7
Farmer reluctance to borrow long-term	4
Collateral uncertainty	3
Lack of variable rate	2

a/ Each bank could list more than one obstacle.

Lack of funds is an important, though not the most important obstacle to long-term lending. However, bank policy to limit long-term lending may also reflect a concern about mismatching the long terms of loans with the generally shorter terms of the bank liabilities incurred to provide loanable funds. Clearly, the low rates offered by competing lenders, particularly the Federal Land Banks, limit longer term bank lending and indirectly imply the need for lower cost long-term funds. However, the shift away from long-term loans raises questions about the ability of banks to increase nonreal estate lending when the strongest competition in long-term lending, the Farm Credit Service, offers both long- and short-term credit.

The Farm Credit System was clearly ranked as the banks' most important source of competition (table 14). Depending on bank size and level of agricultural involvement the second most important competitor was either the FmHA or other banks. Although by design the FmHA should not compete with other lenders, many bankers clearly believe FmHA provides important competition.

Table 14. RANKING OF COMPETITION PROVIDED  
BY OTHER LENDERS  
51 New York Banks, 1983

Competitor	Bank Group					
	I	II	III	IV	All	Ag
	-----Average Ranking <sup>a/</sup> -----					
PCAs and FLBAs	1	1	1	1	1	1
Other Banks	4	3	2	3	3	2
FmHA	2	2	3	2	2	3
Dealers	3	4	4	4	4	4
Insurance Companies	5	5	5	5	5	5

a/ 1 = most important competition; 5 = least important competition.

The primary characteristic of the competition that makes it difficult for banks to increase their loan volume is the low interest rates they charge (table 15). All bank groups ranked lower interest rates as the most important reason farmers go to other lenders. The longer repayment terms that the Farm Credit Service and the FmHA offer is also important.

One interpretation of these findings is that for a loan funding alternative to foster improved competition from banks for agricultural loans, it is not sufficient for it to simply provide funds, it must do so while permitting banks to compete on an interest rate basis.

### Interest Rates

The interest rates charged by the sample banks for seasonal loans and for short- and intermediate-term loans of one to five years are presented in table 16. The average rate charged on seasonal loans decreases as bank size increases. A similar, but not as clear, trend was also present for production loans.

Table 15. WHY FARMERS ARE ATTRACTED TO BANK COMPETITORS  
51 New York Banks, 1983

Competitor Characteristics	Bank Group					
	I	II	III	IV	All	Ag
	-----Average Ranking <sup>a/</sup> -----					
Lower interest rate	1	1	1	1	1	1
Length of term	3	3	2	2	2	2
Availability of long-term loans	4	4	4	3	3	3
Sizes of loans accepted	2	2	5	5	4	4
Lender knowledge of ag	5	6	3	4	5	5
Other ag services provided	6	5	6	6	6	6

a/ 1 = most important characteristic; 6 = least important characteristic.

Survey results also showed that variable interest rates were widely used by the larger banks (groups III and IV) and were used very little by the size I and II banks (table 17). The sharp division in the use of variable interest rates between banks of different size may explain the generally higher interest rates charged by smaller banks. The smaller banks may find it necessary to charge a higher rate embodying a risk premium for the possibility of subsequent cost of funds increases.

The average New York State PCA interest rate for May 1983, adjusted for stock purchase requirements, was 12.6 percent. This is only slightly lower than the rates charged by the two largest as well as the agricultural bank groups. The unadjusted

average PCA rate, which excludes the effect of the stock purchase requirement, was 11.5 percent in May 1983 which gives the impression of an even larger advantage for PCA rates.

Table 16. AVERAGE AGRICULTURAL LOAN  
INTEREST RATES BY LOAN TERM  
51 New York Banks, 1983

Bank Group	Seasonal Loan (less than 1 year)	Production Loan (1 - 5 years)
I	14.14	14.50
II	13.80	13.75
III	12.64	12.82
IV	12.30	13.13
Ag	12.92	12.80

Table 17. USE OF VARIABLE INTEREST RATES ON  
NEW AGRICULTURAL LOANS  
51 New York Farms, 1983

Group	Percent of New Ag Loans with Variable Rates			
	0 - 25	25 - 50	50 - 75	75 - 100
	-----Number of Banks-----			
I	12	0	0	0
II	10	0	0	1
III	2	0	5	7
IV	1	1	2	10
Ag	3	0	0	10

### Agricultural Loan Profitability

To compete with lenders such as PCAs, banks might need to offer lower interest rates on agricultural loans than charged on other loans. This could cause agricultural loans to be less profitable than nonagricultural loans. However, at study banks agricultural loans were generally perceived to be on par with other loans with respect to profitability. The few banks which cited lower agricultural loan profitability attributed this to competition from other lenders which forced agricultural loan rates down.

### Sources of Funds

Bankers were asked to indicate the funding techniques they would use in the event bank liquidity were limited. The list of funding sources is presented in table 18 with the bankers' ratings of the choices. Only the top three choices were rated. The overwhelming choice of funding techniques for periods of illiquidity for all but the largest banks was the use of loan participations with other banks. The largest banks chose the use of large negotiable certificates of deposit (CD) as the most preferred funding device.

### Cost of Funds

An important component of the interest rate charged to the borrower is the lender's cost of funds. The study banks were requested to estimate their average cost of loanable funds for May 1983. According to bankers' estimates, the smallest banks (group 1) had an average cost of funds substantially higher than any of the other bank groups (table 19).

Table 18. LOAN FUNDING METHODS USED UNDER ILLIQUIDITY  
51 New York Banks, 1983

Competitor	Bank Group					
	I	II	III	IV	All	Ag
	-----Average Ranking <sup>a/</sup> -----					
Large CDs (over \$100,000)	6	5	5 <sub>c/</sub>	1	3	8 <sub>c/</sub>
Participations other banks	1	1	1	4	1	1
Participations correspondent	4	2	5 <sub>c/</sub>	5	5	4
Participation PCAs	5	6 <sub>c/</sub>	7	8	7	8 <sub>c/</sub>
Discount with FICB	7 <sub>c/</sub>	9	2	9	9	3
Federal Reserve borrowing	2 <sub>c/</sub>	6 <sub>c/</sub>	9	3	4	7
Federal funds	2 <sub>c/</sub>	8	3 <sub>c/</sub>	2	2	5 <sub>c/</sub>
Sell FmHA or SBA loans <sup>b/</sup>	7 <sub>c/</sub>	3 <sub>c/</sub>	3 <sub>c/</sub>	6	6	2
Sell Mortgage Loans	7 <sub>c/</sub>	3 <sub>c/</sub>	8	7	8	5 <sub>c/</sub>

a/ 1 = highest ranking; 8 = lowest ranking.

b/ Loans guaranteed by FmHA or SBA.

c/ Tie ranking.

When questioned about their relatively high cost of funds, some group I bankers stated that they really had no firm idea of their actual cost of funds while others attributed their high cost estimates to holding a large volume of "old" CDs and other time deposits made during earlier periods of high interest rates. When examined using Call report data, this claim was not substantiated and further analysis suggested that the cost of funds for the group I banks was in fact lower than for the other groups.



### Interest in Developing Alternative Sources of Funds

Sixty percent of the banks indicated that identifying alternative sources of funds was either currently important for their bank or would be in the near future (table 20). Many of the larger banks had access to money markets that would enable them to obtain the funds required for any loan they wanted to make.

Table 19. AVERAGE COST OF LOANABLE FUNDS  
51 New York Banks, 1983

Bank Group	Number of Respondents	Survey Responses		Call Report Average Cost for 1982 <sup>a/</sup>
		Average Cost of Funds	Range of Cost of Group	
-----Percent-----				
I	11	9.8	8.0 - 12.0	6.65
II	9	8.3	6.5 - 9.8	7.30
III	13	8.3	6.6 - 11.0	7.22
IV	11	8.3	6.5 - 10.0	6.72
Ag	13	8.4	6.9 - 11.5	7.17

a/ Calculated from 1982 Call report data as all interest expense divided by the sum of all liabilities and subordinated notes.

Table 20. IMPORTANCE OF IDENTIFYING ALTERNATIVE  
SOURCES OF FUNDS  
51 New York Banks, 1983

Level of Importance	Percent of Respondents
Important	34
Not important now, will be later	26
Not important	29
Neutral or nonresponsive	11

To gauge the potential interest among bankers in using either of the loan funding programs, the survey included a short description of the mechanics of each of the two programs. Based on this admittedly limited information, bankers were asked if they would use the two loan funding programs given the chance. The most prevalent response was "maybe" (tables 21 and 22). This likely resulted in part from the lack of

detailed information on exactly how the programs would work. In general, larger banks and agricultural banks indicated the greatest interest in the MASI program. Only group III banks which were also agricultural banks indicated an interest in FICB funding. Small banks indicated that they would be unlikely to use either alternative.

Table 21. BANKERS' INTEREST IN USING MASI PROGRAM  
51 New York Banks, 1983

Bank Group	Would Banks Use MASI Funding		
	Yes	Maybe	No
-----Percent of Group Responding-----			
I	0	44	56
II	0	64	36
III	35	35	29
IV	21	50	29
Ag	31	54	8

Table 22. BANKERS' INTEREST IN USING FICB PROGRAM  
51 New York Banks, 1983

Bank Group	Would Banks Use FICB Funding		
	Yes	Maybe	No
-----Percent of Group Responding-----			
I	0	19	81
II	0	73	17
III	29	50	21
IV	0	57	43
Ag	23	54	23

#### A MASI-LIKE AGRICULTURAL LOAN FUNDING PROGRAM

The MASI program, per se, is not currently available in the eastern part of the United States, but the program, or a similar program, could be made available either: (1) by development of a similar agricultural loan funding corporation for the Northeast or for some other group of eastern states, or (2) by expanding coverage of the existing MASI program to include New York State. The following analysis is based on the procedures and the funding sources currently utilized by MASI. The viability of a MASI-like agricultural loan funding corporation is assessed by evaluating the feasibility of such a funding program from the point of view of individual participating banks and the viability of a MASI-like loan funding corporation itself.

## Characteristics of MASI

MASI is a multi-bank agricultural credit corporation, incorporated on May 4, 1982 as a wholly owned subsidiary of MABSCO Bankers Service Company, Incorporated. MASI serves as an intermediary through which member banks can sell portions of farm loans to a funding source in the financial markets. The name MABSCO was originally to be an acronym for Mid-American Banking Services Company. MABSCO was enjoined by court action from using that name because of a proprietary interest in it by an Illinois firm. Therefore, the name MABSCO is free standing and is not represented as an acronym. MABSCO is owned by the bankers' association of 12 mid-western and western states: Arkansas, Colorado, Illinois, Iowa, Kansas, Michigan, Minnesota, Missouri, North Dakota, Oklahoma, South Dakota and Wisconsin. Its formation followed numerous regional banking conferences at which representatives of banks from these states realized the potential for cooperative action in addressing common banking problems.

### Funding Source: Rabobank

Once the state bankers' associations reached the decision to proceed with the MASI concept, domestic as well as foreign money center banks, insurance companies, pension funds, and the Farm Credit System (FCS) were approached to serve as a funding source. The FCS determined that an organization such as MASI, with the potential membership of some 6,000 banks, would itself have adequate access to regional or national financial markets and therefore declined to serve as a funding source.

Rabobank Nederland was approached, expressed interest in the proposal and after much research and negotiation, entered into a contractual agreement with the MASI organization. Under the original contract, Rabobank committed itself to three years of support for the program, after which, appraisal of its progress would determine future participation. The agreement between Rabobank and MASI has since been extended.

Rabobank is a large bank of over \$35 billion of assets which began as a cooperative banking institution for the purpose of financing agricultural production in the Netherlands. It has retained its cooperative status and has become a general commercial bank which finances approximately 90 percent of Dutch agriculture. As a large international bank with high quality ratings from both Standard and Poor's and Moody's, Rabobank has the capacity to draw on a wide range of both domestic and foreign funding sources. Rabobank's funding strategy is to match the amounts and tenor of the liabilities it incurs to generate funding for the MASI program to the tenor and amount of the assets it acquires from MASI.

## The Mechanics of MASI

### The Capital Note

MASI is funded by the initial contributions from participating banks in the form of a capital note. The amount of the capital note ranges from \$5,000 to \$14,750 and is determined by the size of the bank measured by its total deposits as reported in its

most recent Call report (see Appendix A). The return on the capital note starts at a rate of zero percent in the first year and increases by two percent per year thereafter up to the lesser of 10 percent or the national prime interest rate. To comply with securities' laws, the amount of capital raised in this manner is not expected to exceed \$5 million. The capital notes are subordinated liabilities which implies that in the event of MASI insolvency, the investing banks' interest would be honored only after the claims of Rabobank.

### Master Participation Agreements

The Master Participation Agreement between the local bank and Rabobank establishes the terms and conditions under which the sales of agricultural loans are made. These conditions include standards for loan quality, loan documentation, loan collateral, as well as procedures for establishment of interest rates on, and repayment terms for the purchased loans. The agreement also establishes the MASI organization as Rabobank's agent. The local bank agrees to service the entire loan, to remit payment to Rabobank on a timely basis and to repurchase the loan in the event it was misrepresented at the time of sale. Rabobank further makes the commitment not to compete for the borrower's future loan business during the period of the agreement.

### The Loans

Loans which are eligible for the MASI program are agricultural production loans as well as agribusiness loans having a maximum term of five years. Maturities for cattle breeding and dairy farm loans can be as long as eight years. The loans need not be new loans, as seasoned agricultural loans can also be sold to Rabobank. The minimum loan size purchase is \$25,000. Rabobank has given MASI the authority to purchase, on its behalf, any qualified agricultural loan up to \$250,000 in size. Loans larger than \$250,000 or for longer than standard maturities must be approved by Rabobank.

Rabobank has established specifications for the size and terms of loans accepted according to loan purpose. An example of these specifications is that loans for used farm equipment cannot exceed 50 percent of either the purchase price or the market value and carry a maximum term of three years. Examples of similar constraints are presented in Appendix B.

In addition to the general loan criteria, Rabobank has also established a loan scoring matrix to measure loan quality. The matrix consists of five financial ratios calculated from the borrower's balance sheets of the three previous years. The five ratios are: (1) the borrower's current assets over current liabilities, (2) intermediate (1-7 years) assets over intermediate liabilities, (3) total liabilities over net worth, (4) rate of net worth gain, and (5) loan amount over value of security. A weighted score of the five ratios is calculated and, if it falls within the acceptable range, the loan purchase can automatically be effectuated by MASI for Rabobank, provided it meets the previously mentioned size and purpose guidelines. If the loan's quality score is not within the acceptable range, the originating bank can request that Rabobank consider the loan on other merits. The loan scoring matrix is presented in Appendix C.

### The Loan Purchase

When a member bank wants to sell a loan, it first informs MASI of its intentions by providing the necessary loan and farm business financial information (Appendix D)

for the borrower. This process can be accelerated by providing the information over the phone and later mailing the participation form. If the loan is judged to be acceptable, MASI can accept the purchase on behalf of Rabobank and within the same business day or by early the following day, transfer the funds to the originating bank. The selling bank must acknowledge receipt of the funds and must provide further loan documentation to MASI.

Loan participations are purchased by Rabobank on a last in first out basis (LIFO). This means that a borrower's loan repayments are directed first to reimburse Rabobank's portion of the loan and only secondly to amortize the portion of the loan retained by the originating bank. Loan participations are sold on a nonrecourse basis, meaning that Rabobank cannot cause the originating bank to repurchase the loan in the event of loan default. The sole exception to this is if the loan had originally been misrepresented. Losses from a loan default are shared between the local bank and Rabobank in proportion to their loan exposure. The originating bank may repurchase the loan from Rabobank at the end of a participation rate period even if the loan has not matured. Such a repurchase might be desirable in the event a bank's liquidity position improves.

To mitigate Rabobank's credit risk, a loan loss reserve was established to reimburse Rabobank for the difference between its losses under LIFO versus the pro-rate loss sharing. The reserve is administered by MASI and is financed by a one-quarter percent markup of the interest rate charged to the banks.

### Interest Rates

In the MASI program, Rabobank incurs various forms of liabilities to fund its acquisition of agricultural loan participations. The interest rate, which it demands on the asset it acquires, is a function of the cost of its liabilities plus a one percent fixed margin for its services and profit. When a local bank's loan participation request meets Rabobank's criteria, the local bank must select an interest rate participation period varying from one to 12 months offered by Rabobank. The three rate periods are shown in table 23 with the relevant rates for January 1983. Once the local bank has chosen a period, the interest rate it pays to Rabobank is fixed for the duration of the period. If the loan has a longer term than the participation period, the interest rate is readjusted to reflect the new cost of funds at the end of the original participation period. Interest is paid to Rabobank upon the expiration of a participation period and the principal amount is paid upon maturity of the loan. The originating bank, however, is free to collect interest and principal payments from the borrower as it deems appropriate.

The interest rates charged in the MASI program embody several components: (1) Rabobank's cost of funds, (2) Rabobank's service fee of one percent, (3) MASI's service fee of one-quarter percent, and (4) loan loss reserve of one-quarter percent. Rabobank calculates its cost of funds based on the rates for term Federal Funds and on dealers' bids for Rabobank's CDs. The components used in the determination of the MASI participation rate periods are shown in table 24 with the rates effective for January 13, 1983.

Table 23. MASI INTEREST RATES BY PERIOD OF PARTICIPATION  
January 31, 1983

Participation Period	Interest Rate
	--percent--
Short term (1 month)	10.54
Medium term (1 - 6 months)	10.59
Long term (6 - 12 months)	10.91

Table 24. COMPONENTS OF MASI INTEREST RATE

Funding Source	Abbreviation	Interest Rate
		--Percent--
<u>Term Federal Funds:</u>		
30 days	ff30	8.9
60 days	ff60	8.9
90 days	ff90	8.9
180 days	ff180	9.0
<u>Rabobank CDs:</u>		
180 days	cd180	8.85
360 days	cd360	9.40

The exact formulas for computing the MASI participation rates with an example for January 13, 1983 are presented below. The 1.5 in each equation is the sum of the surcharges for Rabobank, MASI, and the loan loss reserve.

Short Term

$$(1.5) + \text{ff30} \times 365/360 = \text{rate}$$

$$1.5 + 8.9 \times 365/360 = 10.54$$

Medium Term

$$1.5 + .2(\text{ff60}) + .4(\text{ff90}) + .4(\text{ff180}) \times 365/360 = \text{rate}$$

$$1.5 + .2(8.9) + .4(8.9) + .4(9.025) \times 365/360 = 10.59$$

Long Term

$$1.5 + .25(cd180) + .75(cd360) \times 365/360 = \text{rate}$$

$$1.5 + .25(8.85) + .75(9.40) \times 365/360 = 10.91$$

The local bank is free to charge whatever interest rate it desires on the entire loan while paying Rabobank the stated participation rate. This differential can result in a multiplication effect on the bank's yield for the portion of the loan which it keeps. For example, if a bank charged a borrower 13 percent for a \$100,000 agricultural loan and then sold 80 percent of the loan to Rabobank at a cost of 11 percent, the return on the \$20,000 investment would be substantially higher than the original 13 percent.

Interest Received	\$100,000	x	.13	=	\$ 13,000
Interest Paid Rabobank	\$ 80,000	x	.11	=	8,800
Net Received				=	\$ 4,200
Effective Return	\$4,200/\$20,000			=	21%

The above calculation of the return on investment can be deceptive as it assumes that the funds obtained as the proceeds of the loan sale can be reinvested at approximately the same return as the original agricultural loan. The effect of this assumption and an alternative measure of profitability is examined in the following analysis.

### **Profitability of Loans Made Through a MASI-Like Organization**

The goal of the following analysis is to determine whether the development of a funding source similar to the existing MASI program could be beneficial to agricultural finance markets of New York State and the Northeast. Based on the bankers' survey responses, it was observed that improved competition among agricultural lenders could be fostered by lowering interest rates on bank-made agricultural loans while maintaining agricultural loan profitability at approximately existing levels. In the analysis, profitability of the MASI program is compared to the profitability of existing funding alternatives. If the MASI program is found to be more profitable than existing techniques, it is assumed that the interest rates charged by banks on agricultural loans could be lowered. If, however, the MASI program is found to be inferior to existing techniques in terms of profitability, it would need to offer other advantages to warrant further consideration. The profitability comparisons are developed first for conditions in which banks are generally liquid and secondly for conditions in which banks are generally illiquid and therefore in need of funds.

The frequency of illiquidity is estimated using commercial bank survey data from the Federal Reserve Bank of Chicago. Agricultural bankers were asked if they felt their bank's loan to deposit ratio was either too high, too low, or at a desirable level. For this study, illiquidity is designated to occur when the percentage of surveyed 7th District bankers stating that loan to deposit ratios are too high, is larger than the percentage of those bankers stating that loan to deposit ratios are too low. Using this definition, approximately 30 percent of the 10 year period from 1974 to 1983 could be considered to have been illiquid. This period of illiquidity ran from the third quarter of 1977 through the third quarter of 1980.

### Using MASI Under Conditions of Liquidity

Conditions of liquidity are defined here to mean that banks are able to grant all additional loan requests using "in-house" funds rather than needing to attract additional funds. In this case, the MASI program is compared only against the use of "in-house" funds. Equations 1 and 2 represent the net cash flows of using MASI and "in-house" funds, respectively.

#### Equation 1: Net Cash Flow (NCF) Using a MASI-like Program Under Conditions of Liquidity

$$\text{NCF} = iX + a(PX) - b(X) - m(PX) - sX - d(1-P)X$$

#### Equation 2: NCF Using Only Bank's Funds Under Liquidity

$$\text{NCF} = i(X) - b(X) - s(X) - d(X)$$

Where:  $i$  = interest rate on agricultural loans  
 $X$  = total agricultural loan volume  
 $a$  = return on alternative investments  
 $P$  = percent of loan sold via MASI  
 $b$  = bank's average cost of funds  
 $m$  = cost of MASI funds  
 $s$  = loan servicing cost (per dollar of loan volume)  
 $d$  = loan loss rate

The return on alternative investments ( $a$ ) represents the return that could be earned by investing the funds that would be generated by the sale of a loan to a MASI-like funding program. Under the conditions of bank liquidity it is assumed that the most profitable use of the loan sale proceeds would be in the U.S. securities or Federal fund markets.

By setting equations 1 and 2 equal to each other and solving for the alternative investment rate ( $a$ ), a break-even point for the return on alternative investments relative to the cost of the MASI funds can be determined. These calculations are facilitated by the number of terms which occur on both sides of the equality and therefore cancel each other out as shown on page 23.

$$\text{Equation 1} = \text{Equation 2}$$

$$\begin{aligned} iX + aPX - bX - mPX - cX - dX(1-P) &= iX - bX - cX - dX \\ aPX - mPX - dX(1-P) &= -dX \\ aPX - mPX + dX(P-1 + 1) &= 0 \\ aPX - mPX + dPX &= 0 \\ PX(a - m + d) &= 0 \\ a - m + d &= 0 \\ a &= m - d \end{aligned}$$

The results indicate that a bank's cost of funds, per se, does not affect the decision to participate in a MASI-like funding program. The return available on the



additional funds relative to their cost is more important in a bank's decision. If the return on alternative investments (a) is equal to or greater than the cost of MASI-like funds minus the loan loss rate, the MASI-like alternative has equal or greater profitability than the option of not making the additional loan or investment. Federal funds and certificates of deposit are likely investment alternatives for many banks. A somewhat higher yielding investment alternative that banks might use is Treasury notes. However, average Treasury note yields over the 1974-83 period was 10.18 percent. The estimated MASI rate for the same period was 11.72 percent. With normal loan loss rates, sale of loans to MASI would remain unprofitable. In this case, the cost of MASI-like funds would always be higher than the Federal funds rate since the MASI rate is calculated using the Federal funds and CD rates plus a markup of 1.5 percentage points. This relationship holds regardless of the individual bank's actual cost of funds, its interest rate charged, or the share of the original loan sold to the funding program. The role of the loan loss variable is important because by selling a portion of a loan to the MASI-like program, the loan loss exposure of the originating bank is lessened due to the nonrecourse nature of the loan sale.

These findings imply that under conditions of bank liquidity the MASI system would not be used by banks given normal investment alternatives. Therefore, it would not improve banks' competitive position vis-a-vis the Farm Credit System.

#### MASI Under Conditions of Illiquidity

The scenario of illiquidity portrays the case in which banks are able to make additional loans only by using outside sources of funds. Use of MASI funds is first compared against the use of loan participations and then against the use of large denomination CDs as funding alternatives. According to survey information, loan participations are frequently written so that the participating bank pays the originating bank a fee to cover the expense of servicing the loan. Equations 3 and 4 model the loan investments using the MASI-like program and loan participation respectively. The term for the return on alternative investments of equation 1 is dropped because the investment opportunities are identical for both the participation funds or the MASI funds.

#### Equation 3: MASI Funding with Illiquidity

$$NCF = iX - bB - mPX - sX - d(1-P)X$$

#### Equation 4: Participation Funding with Illiquidity

$$NCF = iX - bB - yPX - sX - d(1-P)X$$

Where:  $y = \text{cost of participation funds } (y = i - s)$   
 $B = \text{volume of bank's funds used, } B = 1-P(X)$

By setting the two equations equal to each other, it can be determined that a break-even point for usage of the MASI-like program occurs when the cost of MASI funds is equal to the cost of funds obtained from a participation loan.

$$\text{Equation 3} = \text{Equation 4}$$

$$iX - bB - mPX - sX - d(1-P)X = iX - bB - yPX - sX - d(1-P)X$$

$$m = y$$

This result suggests that if the MASI participation rate is lower than the cost of participation funds (which is effectively the interest rate charged on the loan minus servicing costs), it would be more profitable to sell the loan through a MASI-like intermediary than to participate the loan. Using agricultural loan interest rate data and estimates of MASI rates for the period of illiquidity which ran from the third quarter of 1977 to the third quarter of 1980, it can be seen that, on the average, the MASI funds were .4 percent more costly than participation funds (table 25). For banks which could obtain loanable funds through the use of loan participations, these results indicate that a MASI-like program would not improve their competitive position relative to other agricultural lenders.

### Using CDs During Illiquidity

The largest banks, size IV, indicated that in the event of illiquidity they would issue CDs to secure loanable funds. This funding method is compared with the MASI funding option. Equation 5 models the investment decision using CDs and is identical to equations 3 and 4 with the exception that there is no loan loss sharing since the bank retains the entire loan volume.

### Equation 5: Certificate of Deposit Funding with Illiquidity

$$NCF = i(X) - b(B) - z(Z) - s(X) - d(X)$$

Where:  $z$  = cost of CDs  
 $Z$  = volume of CDs ( $Z = PX$ )

By setting equation 3, which represents use of the MASI program, equal to equation 5, which represents the use of CDs the break-even point for the cost of CDs can be calculated. The break-even point represents the maximum that a bank could afford to pay for funds obtained via CDs and break-even relative to the usage of a MASI-like program.

Equation 3 = Equation 5

$$\begin{aligned} iX - bB - mPX - sX - dX(1-P) &= iX - bB - zZ - sX - dX \\ -mPX - dX(1-P) &= -zPX - dX \\ -mP - d(1-P) &= -zP - d \\ -mP - d(1-P) + d &= -zP \\ -mP - d(1-P-1) &= -zP \\ -mP + dP &= -zP \\ m &= z + d \end{aligned}$$

The results indicate that a MASI-like program would be more profitable than use of CDs when the MASI-like program rate is below the cost of CDs plus the loan loss rate. The break-even points were calculated using MASI rates relevant to the period of illiquidity and were compared to the adjusted cost of CDs over the same period. Table 26 presents the break-even costs for the size IV banks, the effective CD costs, and their spread during the period of illiquidity.

Table 25.

**MASI VERSUS PARTICIPATION COSTS  
DURING ILLIQUIDITY**

Year	Quarter	Participation Cost <sup>a/</sup>	MASI Cost <sup>b/</sup>	Advantage of MASI
1977	III	7.4	7.6	-.2
	IV	8.1	8.3	-.2
1978	I	8.3	8.6	-.3
	II	8.6	9.2	-.6
	III	9.4	10.0	-.9
	IV	10.7	11.6	-.6
1979	I	11.5	12.1	-.6
	II	11.8	12.2	-.4
	III	11.9	12.9	-1.0
	IV	15.2	15.8	-.6
1980	I	15.0	17.3	-2.3
	II	17.5	14.8	2.7
	III	11.8	11.8	0.0
Average				-0.4

a/ Participation costs are estimated at average rate charged by large banks on nonreal estate farm loans (as reported in Agricultural Finance Databook, Board of Governors of the Federal Reserve System) minus a one percentage point loan servicing fee.

b/ MASI rates are estimated using the overnight Federal Funds rate as the one month MASI rate. The one-to-six month MASI rate is calculated as the one month rate multiplied by the historical spread between MASI's one month and one-to-six month rate (1.04). This may slightly underestimate MASI's rate due to difference between overnight Federal Funds rate and term Federal Fund rates.

To attract funds through CDs, smaller banks would normally need to pay a premium over the rate paid by the large New York City banks for CDs. Precise information on the size of the CD premium during periods of illiquidity are not available. These findings show that during previous periods of illiquidity, the average quoted cost of CD funds was .6 of a percentage point lower than the cost of MASI funds. This means that a bank should opt for CDs rather than a MASI-like program for obtaining loanable funds if it is able to issue CDs during a period of general bank illiquidity while paying an interest rate premium of less than .6 percent over the quoted rates offered by the largest banks.

#### Feasibility of a MASI-Like Organization

In order to make funding of the type that MASI provides available to bankers in New York or the Northeast, an agricultural loan funding corporation similar to MASI must be established or the services of the existing MASI extended to cover the

additional area. The viability of such an organization was assessed by examining the feasibility of developing an independent funding intermediary for the Northeast in the mold of the MASI program.

Jim Potter, Executive Vice President of MASI, estimated MASI's operating expenses to be roughly \$18,000 per month. Based on a markup of the rates charged to the member banks of one-quarter percent, it can be calculated that over \$85 million of agricultural loans would need to be channeled through the intermediary for it to cover its expenses ( $\$18,000 \times 12 / .0025 = \$86.4$  million).

Table 26. ADVANTAGE OF MASI OVER CD FUNDING OF LOANS DURING ILLIQUID PERIODS

Year	Quarter	MASI Cost <sup>a/</sup>	Break-Even CD Cost <sup>b/</sup>	Advantage of MASI
1977	III	7.6	7.0	-.6
	IV	8.3	7.9	-.4
1978	I	8.6	8.1	-.5
	II	9.2	8.7	-.5
	III	10.0	9.5	-.5
	IV	11.6	11.7	.1
1979	I	12.1	11.7	-.4
	II	12.2	11.5	-.7
	III	12.9	12.3	-.6
	IV	15.8	15.2	-.6
1980	I	17.3	11.7	-.6
	II	14.8	12.9	-1.9
	III	11.8	11.3	-.5
Average			-.60	

a/ MASI rates are estimated using the overnight Federal Funds rate as the one month MASI rate. The one-to-six month MASI rate is calculated as the one month rate multiplied by the historical spread between MASI's one month and one-to-six month rate (1.04). This may slightly underestimate MASI's rate due to difference between overnight Federal Funds rate and term Federal Fund rates.

b/ Average of offering rate quoted by five dealers; annualized ( $\times 365/360$ ) and adjusted for reserve requirements of three percent  $\frac{\text{CD quoted rate} \times 365/360}{1.0 - .03}$  plus 0.9 percent loan loss. Loan loss rate of 0.9 percent is the average of all size IV banks loss rates for all types of loans. Loss rates specifically for agricultural loans were not available.

Source: Federal Reserve Annual Statistical Digest.

Four factors influence the proportion of total agricultural loan volume that banks are likely to place through a MASI-like agricultural loan funding corporation.

They include: (1) the proportion of agricultural loans that are larger than \$25,000 in size and have maturities of five years or less, (2) the percentage of agricultural loans that meet the basic loan eligibility criteria (Appendix B), and are judged acceptable by the loan scoring matrix (Appendix C), (3) the percentage of eligible loans that would be participated to a MASI-like intermediary by the banks making loans, and (4) the percent of participated loans that are sold to the MASI-like intermediary (banks can choose to sell up to a maximum of 80 percent of agricultural loans). Survey data showed that roughly 40 percent of the dollar volume of the study banks' agricultural loans would have met the MASI criteria of being larger than \$25,000 and having a maximum maturity of five years (table 27). Experience to date of the MASI program indicates that banks sell an average of 70 percent of each loan participated through MASI. It is assumed that New York or the Northeast would experience a similar rate of participation.

The remaining two factors, the percent of loans meeting basic MASI loan characteristic criteria and the percent of qualified loans participated by banks are difficult to estimate. These two factors are therefore varied over a range while holding the other two factors at their estimated levels. The previously calculated break-even loan volume for a MASI-like intermediary of \$86.4 million is divided by the product of the four factors to provide an estimate of the total agricultural loan volume needed to support such an intermediary (table 28).

Using bank-made agricultural loan volume data from individual states, the scope of state participation needed to support the intermediary can be estimated. In making these estimations, the bank volume of agricultural loans used included only those banks without foreign branches (table 29). Banks with foreign branches are generally large enough to tap the capital markets quite successfully and, thus, were not likely to use a MASI-like funding source. Further, the banks included under this classification were similar in character to those included in the survey sample. In New York State the excluded banks were generally large New York City banks.

Table 27. PERCENTAGE OF LOANS MEETING MASI  
SIZE AND TERM CRITERIA  
51 New York Banks, 1983

Bank Group	Group Share <sup>a/</sup>	Percent over \$25,000	Percent under 5 yrs.	Weighted Share <sup>b/</sup>
I	.03	.34	.79	.01
II	.06	.47	.75	.02
III	.36	.71	.57	.15
IV	.53	.66	.62	.22
Weighted Sum				.40

a/ Percent of total agricultural loan volume for all New York Banks (from December 1982 Call report).

b/ Product of three previous factors.

Table 28. TOTAL LOAN VOLUME REQUIRED TO SUPPORT  
MASI-LIKE AGRICULTURAL LOAN FUNDING CORPORATION<sup>a/</sup>

Qualified Loans Participated	Percent of Loans Meeting MASI Eligibility Criteria <sup>b/</sup>			
	20	40	60	80
10	15.4	7.7	5.1	3.8
20	7.7	3.9	2.5	1.9
30	5.1	3.9	1.7	1.5
40	3.9	1.9	1.3	.9
50	3.1	1.5	1.1	.8

<sup>a/</sup> Percent of loans greater than \$25,000 and term less than five years assumed to be 40 percent. Participation level of loans sold assumed to be 70 percent.

<sup>b/</sup> Those meeting eligibility criteria (appendix table B) and scoring less than 4.0 on the loan scoring matrix (appendix table C).

Table 29. VOLUME OF BANK-MADE AGRICULTURAL LOANS BY STATE  
December 1982

State	Volume <sup>a/</sup> (million \$)	Cumulative Volume (million \$)
New York	370	370
New England	266	636
Pennsylvania	680	1,316
New Jersey	20	1,336
Maryland	121	1,457
Delaware	96	1,553
Ohio	951	2,504
West Virginia	91	2,595
Virginia	315	2,910
Indiana	1,494	4,404
Kentucky	1,019	5,423
North Carolina	317	5,740
South Carolina	99	5,839
Tennessee	657	6,496
Mississippi	580	7,076
Alabama	423	7,499
Georgia	600	8,099
Florida	327	8,426

<sup>a/</sup> Loans made by banks without foreign branches.

Source: December 1982 Call reports.

Under the least optimistic set of assumptions, all states east of the Mississippi River not already affiliated with MASI would need to join such an endeavor for it to succeed. Under the most optimistic set of assumptions, all New England states, as well as New York State, would be required to support the intermediary. Developing a most likely scenario involves considerable judgement and risk. However, the current proportion of MASI region qualified loans that are participated is less than 10 percent, indicating that participation at the 10 to 20 percent rate is likely as high as could be expected. On the other hand, a high proportion of loans made to farmers by commercial banks meet the basic loan criteria and would score less than four on the loan scoring matrix. Although the general profitability of agriculture will effect this, it appears likely that at least 60 percent of bank loans would meet the specific criteria. Under this most likely situation, New York, New England, Pennsylvania, New Jersey, Maryland, Delaware and Ohio would be the minimum area needed to make such an intermediary viable.

Earlier analysis showed that during periods of liquidity little use of the program would be made. When this factor is taken into account, the geographical scope of participation widens again by a factor of more than three assuming that illiquidity occurs 30 percent of the time.

These projections are, as mentioned, only estimates. They nonetheless serve to demonstrate the potential scope of acceptance necessary for such an undertaking to be economically viable. A new program could alter the general guidelines in a number of ways in response to the concerns raised here regarding program viability. The loan size and term limitations could be eased to provide a larger pool of eligible loans. The participation rate surcharge for its expenses could be increased to provide a wider margin. Currently, banks are not obliged to make use of the MASI program. This provision could be altered to require a minimum level of annual agricultural loan sales to provide the intermediary with a more predictable flow of funds and receipts. Such changes, however, might compromise the program's acceptability to both its funding sources and its potential member banks.

### Joining the Existing MASI

Soon after the MASI program was underway, a group of western state bankers' associations proposed the creation of a MASI-like intermediary to be called WEBSCO. This proposal was dropped due to the limited number of banks in the WEBSCO zone. Even if 10 to 15 percent of all the banks in the area joined WEBSCO, its total membership would still have been less than 100 banks. This total was judged to be insufficient to support such an organization. As an alternative, the bankers of Oregon and Montana were offered the option of joining MASI provided that a minimum of 10 banks from each state joined.

Joining MASI, rather than forming another organization, appears to offer the greatest promise for those bankers in New York State deciding that the MASI program would allow them to better compete for agricultural loans. The choice of joining the existing MASI intermediary does not, however, totally eliminate the concern for the program's viability. MASI's usage can also be expected to vary as a function of liquidity. Further, by early 1984, the volume of loans participated through MASI was considerably less than needed for long term survivability. This slow initial performance could be due to the current period of liquidity, or simply to bankers' unfamiliarity with the proposal.

## Discounting with the Federal Intermediate Credit Banks

In 1923, Congress established a network of 12 Federal Intermediate Credit Banks (FICBs) to discount or purchase agricultural loans from the existing lenders such as farmers' cooperatives and commercial banks. This service was designed to provide these lenders with a reliable source of loanable funds for short and intermediate term agricultural credit needs. Little use was made of the FICB prompting Congress, in 1933, to create a national system of Production Credit Associations (PCAs) to directly serve farm borrowers. The option of discounting agricultural loans to FICBs, however, is still available to qualified commercial banks and other lenders.

Discounting can be accomplished by a commercial bank in either of two ways. The first is for a bank to directly discount eligible loans with the FICB. The second alternative is for a commercial bank to form an agricultural credit corporation (ACC) through which loans would be made to farmers and discounted with the FICB.

Only the option of discounting agricultural loans via an ACC is considered here because direct discounting does not offer relief from high loan to deposit ratios, nor does it provide a "home" for overline loans because the bank itself must guarantee the loan. With the second discounting option, however, it is the ACC and not the bank that provides the guarantee thereby providing liquidity and overline assistance for the bank. The analysis of this funding option focuses first on the requirements banks must meet to qualify for the program and secondly on the profitability of using this funding alternative.

### Bank Eligibility

A bank can qualify for FICB discounting privileges if the following four criteria can be met:

- (1) the bank is significantly involved in agricultural or aquatic lending,
- (2) the bank can demonstrate continued need for such funding,
- (3) the bank is unable to reliably access national or regional capital markets,
- (4) the bank will continue to use the same proportion of its own funds to support agricultural lending activities.

Specific guidelines for measuring these four factors have been established in each of the FCS districts. The guidelines of the Springfield district, under whose jurisdiction loan discounting agreements in New York State would fall, are presented here. In applying these criteria, the FICB first determines if a bank should be considered by itself or together with its affiliates or subsidiaries for the purpose of determining eligibility. This determination is based on the relationship between the various parties with respect to factors such as ownership, common management, common directorships, contractual or correspondent relationships, prior business dealings and liability interrelationships. A bank which is part of a holding company would be eligible for the discounting privilege only if the consolidated entity of the bank and the holding company meets all requirements. This effectively restricts access to the discounting program to independent banks and to those banks which are members of relatively small bank holding companies.



### Lending Involvement

A minimum of 15 percent of the bank's loan portfolio must be in agricultural or aquatic loans at the seasonal peak. This may include loans for agricultural production or agricultural real estate as well as agricultural or aquatic leasing obligations. Rural housing and agribusiness loans **cannot** be applied towards the minimum percentage. A bank having less than 15 percent of such loans but able to show that such a level will be reached in 18 months or less can also be considered.

### Continuing Need

To meet the criteria of continuing need, a bank must have a gross loan to deposit ratio at its seasonal peak of at least 60 percent for the last three consecutive years. If a bank's failure to attain this level is due to general economic decline in its area, this requirement may be relaxed. Items such as loans purchased from other banks in the form of participations are not included in determining this ratio. The bank must also supply a projection of anticipated discounting volume to demonstrate that it will make regular use of the discounting agreement rather than using it only when funds are unavailable elsewhere.

### Lack of Access to Money Markets

This requirement is judged on the basis of whether a bank by itself or in conjunction with its holding company has the ability to utilize bankers' acceptances, commercial paper, negotiable certificates of deposit, or other similar liability instruments as a regular part of its funding mechanism. A bank not using such liability management tools but nonetheless having the capacity to regularly do so would not meet this requirement.

### Continued Agricultural Involvement

The bank is required to maintain a constant or increasing proportion of its resources dedicated to agricultural or aquatic lending after entering into a discounting agreement with the FICB. To meet the requirement, a bank must be able to increase its total agricultural loan volume in order to maintain a constant commitment of its own resources to agricultural lending while discounting agricultural loans to the FICB.

### Banks Qualifying for Discounting Privileges

Based on survey and Call report data only 26 New York State banks met the first criteria of having a minimum agricultural loan to total loan ratio of 15 percent. Two of the 26 are members of large bank holding companies giving them access to financial markets. These two were judged ineligible on the basis of the third requirement of lack of access to the money markets. The FICB-Springfield sets a minimum discounting volume of \$1.5 million. For this analysis it is assumed that for a bank to start an ACC, discount the minimum required volume, and not diminish the percentage of its own resources dedicated to agricultural lending in compliance with the fourth condition, it would need a current agricultural loan volume of at least twice the minimum discounting volume or \$3 million. Only seven of the 24 potential discounters had agricultural loan volumes larger than \$3 million. Loan volume was measured as of May 1983 for the 15 survey respondents and as of December 1982 for the nine nonrespondents.

The seven potentially qualifying banks account for a total of \$62 million of agricultural loans, or roughly 16 percent of all New York State agricultural loans made by non-New York City banks. Six of the seven banks answered a survey questionnaire asking if the bank would use the FICB discounting option if it were given the option to do so. Two answered they would not use it, two were undecided and two stated that they would discount agricultural loans with the FICB given the opportunity.

In summary, the extremely limited number of banks eligible for the FICB discounting program, in combination with an apparent lack of interest in using the program among even those banks qualified to do so indicated, that this funding option could at best be a relatively minor contribution to improved competition in agricultural credit markets in New York State.

### **Profitability Analysis**

The preceding analysis has highlighted the limited scope of the FICB discounting program on an overall basis. Its potential for improving bank competition for those few qualified banks depends on the profitability of such discounting to the individual banks.

The first factor that must be considered is the impact of the capitalization requirement on the cost of funds acquired by an ACC from the FICB. In the Springfield FCS district, an ACC is capitalized by purchasing stock certificates from the FICB in an amount equal to 10 percent of the anticipated discounting volume. The actual cost of funds acquired by an ACC from the FICB must be adjusted to reflect the opportunity cost of the noninterest bearing certificates. With a 10 percent capitalization requirement this adjustment is accomplished by dividing the contract rate by .9 (1.0 - 0.1). According to FICB requirements, the discounting program must be used on a continuing basis by the ACC. For this reason, the separate profitability analyses done under conditions of liquidity and illiquidity must be combined to provide an overall assessment.

### **FICB Discounting Under Liquidity**

The analysis of the MASI funding alternative under conditions of liquidity showed that the determining factor in the profitability comparison was the return available on "nonloan" investments relative to the cost of the funds obtained from the MASI program. Equations similar to those used in the MASI analysis are presented to depict the net returns on investments made using FICB funds as compared to the option of a bank using only its own funds. Equation 7 portrays the use of FICB funds which engenders the making of "nonloan" investments in the amount of the FICB funds used. These alternative investments are included to maintain consistency with the assumption that during periods of liquidity a bank could satisfy all loan demands using locally generated funds regardless of their cost. Equation 2 is repeated to represent the investment of a bank making agricultural loans using its own funds. By equating the two equations, it is shown that if the rate received on alternative investments exceeds the cost of FICB funds net profitability is improved.

Equation 7: FICB Funding Under Liquidity

$$NCF = iX + aPX - bB - fPX - sX - dX$$

Where:  $i$  = interest rate on agricultural loan  
 $X$  = total agricultural loan volume  
 $a$  = return on alternative investments  
 $P$  = percent of loans sold to FICB  
 $b$  = bank's average cost of funds  
 $B$  = volume of bank's funds used ( $B = X$ )  
 $f$  = cost of FICB funds, adjusted for capitalization cost  
 $s$  = servicing cost as percent of loan volume  
 $d$  = loan loss as percent of loan volume

Equation 2: Bank Lending Using own Funds Under Liquidity

$$NCF = iX - bB - sX - dX$$

Equation 7 = Equation 2

$$\begin{aligned} iX + aPX - bB - fPX - sX - dX &= iX - bB - sX - dX \\ aPX - fPX &= 0 \\ f &= a \end{aligned}$$

Table 30 shows that during periods of liquidity over the past 10 years, the FICB funding alternative has been less profitable than the option of making agricultural loans using only a bank's own funds. The results obtained are not surprising as it would be expected that during periods of liquidity the program would not be needed but would instead be "maintained" to comply with program guidelines of continued usage.

Some banks might find other investment vehicles more adaptable for their situation. However, other alternatives that are likely to be selected do not make the FICB alternatives more attractive. Use of three year Treasury Notes or Federal Funds increases the disadvantage of FICB funding to 1.1 and 1.2 percent, respectively.

FICB Discounting Under Illiquidity

Conditions of illiquidity are assumed to imply that a bank would need to attract outside funds to support expanded loan activity. The profitability of the FICB loan discounting program is evaluated by comparing the cost of FICB funds to the cost of funds obtained from other funding sources. The use of loan participations was the funding alternative most frequently cited by the seven banks potentially qualifying for the FICB program.

Equation 4 of the previous section is used here to portray the loan investment made using participation funds. This equation assumes that loan default risk is shared proportionally between the originating and participating banks. Equation 8 represents the agricultural loan investment made using FICB funds under illiquidity. Equation 8 differs from 7 by eliminating the terms for alternative investments, which are not made during periods of illiquidity.

Table 30. ADVANTAGE OF FICB WHEN RELEASED FUNDS  
WOULD BE INVESTED IN CDs DURING PERIODS  
OF LIQUIDITY

Year	Quarter	CD Investment Return <sup>a/</sup>	Cost of FICB Funds <sup>b/</sup>	Advantage of FICB Funding
1974	I	8.7	9.2	-.5
	II	11.1	9.5	1.6
	III	12.2	9.8	2.4
	IV	9.5	10.1	-.6
1975	I	6.8	10.0	-3.2
	II	6.1	9.1	-3.0
	III	6.9	8.4	-1.5
	IV	6.4	8.4	-2.0
1976	I	5.3	8.2	-2.9
	II	5.6	8.1	-2.5
	III	5.5	7.7	-2.2
	IV	5.0	7.5	-2.5
1977 <sup>c/</sup>	I	4.9	7.3	-2.4
	II	5.3	7.2	-1.9
1980	IV	16.0	12.2	3.8
1981	I	16.1	13.8	2.3
	II	17.0	14.7	2.3
	III	17.7	15.5	2.2
	IV	13.7	15.7	-2.0
1982	I	14.4	15.2	-.8
	II	14.4	14.9	-.5
	III	12.1	14.3	-2.2
	IV	9.1	13.0	-3.9
1983	I	8.6	11.4	-2.8
	II	8.9	10.8	-1.9
	III	9.7	11.2	-1.5
Average				-1.0

<sup>a/</sup> Three month CD annualized return rate, Federal Reserve Bank Statistical Digests 1974-83.

<sup>b/</sup> Effective cost of FICB funds adjusted for capitalization requirements, FICB-Springfield.

<sup>c/</sup> The period from quarter III, 1977 through quarter III 1980 is examined under conditions of illiquidity.

Equation 4: Participation Loans Under Illiquidity

$$\text{NCF} = iX - bB - yPX - sX - dX(1-P)$$

Where:  $y$  = cost of participation funds  
 $B$  = bank funds used to make loan,  $B = (1-P)X$

Equation 8: FICB Funding Under Illiquidity

$$\text{NCF} = iX - bB - fPX - sX - dX$$

By equating these two equations it is seen that the break-even point occurs when the cost of FICB funds is equal to the cost of participation funds minus the loan loss percentage. The loan loss percentage is important because in participation loans it was assumed that loan losses are shared, while when using FICB funds, a bank must absorb the entire loss. The FICB alternative would therefore be profitable relative to the option of participating loans when the cost of FICB funds is less than the cost of participation funds minus the loan loss rate.

Equation 4 = Equation 8

$$\begin{aligned} iX - bB - yPX - sX - dX(1-P) &= iX - bB - fPX - sX - dX \\ -yPX - dX(1-P) &= -fPX - dX \\ -yP - d(1-P) + d &= -fP \\ -yP - d(1-P-1) &= -fP \\ -yP - dP &= -fP \\ f &= y - d \end{aligned}$$

Table 31 compares the cost of FICB funds to the break-even point which is the participation rate minus the loan loss rate. The cost of participation funds was obtained from nationwide data representing the interest rates charged on agricultural loans by banks having more than \$500 million in assets minus a one percentage point fee to cover the loan servicing expenses incurred by the originating bank. The loan loss rate of .4 percent was the average rate of the seven potentially qualifying banks. The option of using FICB funds is shown to be more profitable than the use of participation loans under conditions of illiquidity. FICB funds were especially attractive relative to participation funds during periods of rising interest rates. This is partly attributable to the average cost method used by FICBs to price their funds to PCAs and ACCs. Conversely, it can be seen that when interest rates fall, the average cost pricing system of FICBs results in higher rates.

The results of the profitability analysis under liquidity and illiquidity are summarized in table 32. Even if a bank were qualified, the profitability of using FICB funds was inferior to the use of currently available funding techniques over the 1974 to 1983 period. While the FICB program was profitable during periods of illiquidity, it was not profitable enough to outweigh the losses that resulted during periods of liquidity.

Table 31. FICB VERSUS PARTICIPATION FUNDING DURING ILLIQUIDITY

Year	Quarter	Break-Even Rates Using Participation <sup>a/</sup>	Cost of FICB Funds <sup>b/</sup>	Advantage of FICB
1977	III	7.0	7.2	-.2
	IV	7.7	7.8	-.3
1978	I	7.9	7.9	0.0
	II	8.2	8.3	-.1
	III	9.0	8.5	.5
	IV	10.3	9.1	1.2
1979	I	11.1	10.0	1.1
	II	11.4	10.4	1.0
	III	11.5	10.6	.9
	IV	14.8	11.3	3.5
1980	I	14.6	12.3	2.3
	II	17.1	12.9	4.2
	III	11.4	11.7	-.3
Average				1.1

<sup>a/</sup> Participation rate is the average large bank (greater than \$500 million in assets) agricultural loan rate less one percent servicing fee. Break-even rate is the participation rate minus .4 percent loss. The average loan loss rate for the seven banks potentially qualifying for FICB discounting was .4 percent.

<sup>b/</sup> Effective FICB rate including capitalization stock cost.

Source: Federal Reserve Bank Agricultural Finance Databook and FICB-Springfield.

On average over the past 10 years, for each agricultural loan dollar passed through an ACC, a loss of .3 percent occurred. These results are, of course, based on past trends. Future interest rate movements and liquidity environments will undoubtedly differ from past trends. If the frequency or level of FICB dividend payments increases in future periods the average profitability of ACCs could improve. However, if loan loss rates were higher the profitability of an ACC relative to loan participation would decline. For example, if the loan loss rate were 0.9 percent (as experienced by large banks, table 26) instead of 0.4 percent, the average ACC loss of .3 would increase to .5.

If CD's were viewed as the alternate source of funding, the advantage of FICB during illiquid periods would depend upon the amount that an individual's bank's CD rate exceeded the large bank CD rate. The break-even rate is determined by equating equation 5 and 8 and results in a break-even where the FICB rate equals the CD rate ( $z=f$ ). Thus, the advantage to the bank can be determined by directly comparing CD and FICB rates. For the illiquid periods during the decade of 1974 through 1983 the average cost of FICB funds and the large bank CD rates were similar (table 32).

Table 32. FICB VERSUS CD FUNDING DURING ILLIQUIDITY

Year	Quarter	Cost of FICB Funds <sup>a/</sup>	CD Rate <sup>b/</sup>	Advantage of FICB
1977	III	7.2	6.1	-1.1
	IV	7.8	7.0	-.8
1978	I	7.9	7.2	-.7
	II	8.3	7.8	-.5
	III	8.5	8.6	.1
	IV	9.1	10.8	1.7
1979	I	10.0	10.8	.8
	II	10.4	10.6	.2
	III	10.6	11.4	.8
	IV	11.3	14.3	3.0
1980	I	12.3	10.8	-1.5
	II	12.9	12.0	-.9
	III	11.7	10.4	-1.3
Average				-.02

a/ Effective FICB rate including capitalization stock cost.

b/ Average of offering rate quoted by five dealers; annualized and adjusted for reserve requirements of three percent.  $\frac{\text{CD quoted rate} \times 365/360}{1.0 - .03}$

### Summary and Conclusions

The need for alternative sources of funds for bank lending to agriculture was assessed using Call report data and a survey of New York State commercial banks. This was followed by an evaluation of two alternative funding sources: (1) an agricultural loan funding corporation similar to the MASI program currently available in the Midwest which sells agricultural loans to Rabobank, and (2) Federal Intermediate Credit Bank (FICB) discounting of loans through an agricultural credit corporation (ACC).

Call report data indicate that large banks with over \$200 million in deposits were responsible for more than half of the volume of outstanding agricultural loans held by New York State banks outside of New York City. In comparison, the same size group of banks in the U.S. as a whole held a quarter of the volume while in the 12 MASI states such banks were responsible for only seven percent of agricultural lending. Survey results showed that New York State banks with more than \$50 million in deposits and those banks with large existing agricultural portfolios were more likely to have increased their agricultural lending over the past five years and were also more likely to increase agricultural lending in the coming five years. Banks expected to increase shorter term agricultural production loans more rapidly than longer term agricultural real estate loans.

Bankers considered funds to support one to five year loans as the most important term needed to increase agricultural loan volumes. Lack of longer term funds was a concern primarily at agricultural banks.

According to survey responses, the primary obstacle to increased agricultural lending by banks in the past as well as for the future is the strong competition provided by the Farm Credit System (FCS). The strength of FCS competition was attributed first to the lower interest rates offered and secondly to the longer terms for loans in general and the availability of long term loans for real estate purposes. The lack of loanable funds was rated as having been a relatively unimportant obstacle in the past. Agricultural banks (those with more than \$2.5 million in agricultural loans and an agricultural loan to total loan ratio of 10 percent or greater), however, expected this to be the second most significant hinderance to agricultural lending in the future.

The source of funds that banks are most likely to use during periods of illiquidity is participations with other banks. Only large banks were likely to use certificates of deposits (CDs). A number of banks indicated they would buy Federal Funds.

To improve the competitive position of banks any alternate source of funds must not only increase the amount of funds available, it must do so at a competitive interest rate. The current problem is not primarily one of lack of funds but one of lack of low cost funds.

MASI is a corporation owned by 12 midwestern state banking associations through which participating banks can sell up to 80 percent of qualifying loans to Rabobank. Loans must be at least \$25,000 in size and meet eligibility criteria established by Rabobank. Interest rates are fixed for up to 12 months and are based on current money market rates.

Although it is easy to illustrate the advantage of selling 80 percent of a loan when other good agricultural loans could be made with the released funds and there are no other sources of funds, the profitability of a MASI-like funding organization is less clear when other funding alternatives are available or when funds are abundant. During the 1977-80 period, when banks were generally illiquid, MASI costs were 0.4 and 0.6 percent more expensive than loan participations or large bank CDs, respectively. It seems likely that many moderate sized banks could sell CDs at less than 0.6 percent above the large bank rate.

During periods of liquidity the profitability of a MASI-like alternative depends on the rate of return earned on funds released by use of MASI funds. Over the period of 1974 to 1983 average MASI costs were estimated at 11.72 percent compared to rates of return on possible investments in CDs, Federal Funds, and three year Treasury Notes of 9.58, 9.72, and 10.18 percent, respectively. Thus, historical interest rate data suggest that a MASI-like funding program would not contribute significantly to improving the competitive position of banks in agricultural lending.

Given the characteristics of New York agricultural loans, the level of costs currently experienced by MASI and the 0.25 percent fee charged by MASI, the likely minimum northeastern area required to support a new intermediary would include the states of New York, New England, Pennsylvania, New Jersey, Maryland, Delaware, and Ohio. In the short run it appears that the most feasible alternative for banks in these



states who find the MASI alternative attractive is to join the existing MASI program rather than develop a new intermediary.

The potential of the FICB program was also shown to be limited due to the stringent requirements that banks must meet in order to be eligible to discount loans with them. A minimum of 15 percent of a bank's loans must be in agriculture, there must be a continuous need for funds, the bank must be unable to directly tap national money markets and a minimum of \$1.5 million must be discounted annually. Only seven New York State banks with a combined agricultural loan volume of \$62 million, potentially meet these requirements.

During periods of illiquidity FICB funds averaged 1.1 percentage points below the cost of using participations. The cost of FICB funds was about the same as large bank CD costs, indicating that the cost advantage of FICB funding will equal the premium that a bank has to pay over the large bank CD rate. However, during periods of liquidity use of FICB funds resulted in an average disadvantage of 1.0, 1.1 or 1.2 percentage points depending on whether released funds were invested in CDs, three year Treasury Notes or Federal Funds, respectively.

Over the entire 1974 to 1983 period, including periods of both liquidity and illiquidity, FICB funds were 0.3 percentage points less profitable than using participation during illiquid periods and investing excess funds in large bank CDs during liquid periods. Using less profitable investments such as three year Treasury Notes or Federal Funds during periods of liquidity increased the disadvantage of FICB funding. Based on historical (1974-83) interest rate data banks must be illiquid more than the average one third of the time to find this funding alternative attractive.

In summary, the results of this research indicate that neither a MASI-like intermediary nor FICB discounting are likely to significantly improve the competitive position of most New York Commercial Banks.

Appendix A  
MASI Capital Note Formula

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Total Bank Deposits	Assessment
a) \$10 million or less	\$ 5,000
b) \$10 million to \$25 million	\$ 5,000 plus \$150 per million over \$10 million
c) \$25 million to \$50 million	\$ 7,250 plus \$100 per million over \$25 million
d) \$50 million to \$150 million	\$ 9,750 plus \$50 per million over \$50 million
e) Over \$150 million	\$14,750

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Example: A bank with \$67 million in deposits would be assessed \$9,750 plus 17 x \$50 = \$850 for a total of \$10,600.

Appendix B  
A Sampling of MASI Loan Criteria<sup>1/</sup>

1. Any one loan may include a combination of several loan categories. In such cases, the term of the loan must not exceed the shortest term of any such loan category and the maximum loan amount will be determined by totaling the loan amounts available for each loan category.
2. Seasonal Crop Production Loans
  - (a) The term must not exceed 365 days.
  - (b) Loan amounts will not exceed the lesser of 90 percent of scheduled production expenses or 70 percent of the projected value of the growing crops. The projected value of the growing crops will be determined by using the historical yields from the borrower's acreage and a unit price equal to the Chicago Board of Trade (CBT) futures price for the contract month nearest to the expected harvest date, adjusted for the local basis variance from the CBT price.
  - (c) Loans must be secured by a valid and perfected first priority security interest in the growing crops.
  - (d) In geographic regions periodically subject to severe storm damage, at least 50 percent of the value of the growing crops must be covered by hail or all-risk crop insurance.
  - (e) Loans will not be acceptable for participation earlier than 60 days prior to the scheduled planting date.
3. Seasonal Crop Inventory Loans
  - (a) The term must not exceed one year.
  - (b) Loan amounts must not exceed 70 percent of the estimated value of the crop inventory based on the local market price.
  - (c) Loans will be secured by a valid and perfected first priority security interest in the crop inventory or negotiable warehouse receipts covering the inventory.
  - (d) If crop inventory is stored on the borrower's farm, the amount, nature and quality of crop inventory and type of storage facility must be verified by the lending officer in an on-site inspection report. If stored off the farm, the originating bank must 1) be in possession of negotiable warehouse receipts from a bonded warehouseman or, 2) perfect the security interest by filing appropriate financing statements and verifying the amount, nature, quality and type of storage facility in an on-site inspection report.

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<sup>1/</sup> Taken from MASI, MABSCO Agricultural Services, Inc. pamphlet. Data on beef, hog, poultry and sheep are omitted.

- (e) The officers of the originating bank are required to conduct on-site verifications of the amount and condition of the crop inventory every 90 days for the term of the loan, and maintain a record of the verifications in the borrower's credit file.

4. Equipment Loans

- (a) The term must not exceed five years for new equipment and three years for used equipment.
- (b) Loans must be secured by a valid and perfected first priority security interest pursuant to a security agreement which clearly describes and identifies each material item of the equipment by appropriate serial numbers.
- (c) Loan amounts for the purchase of new equipment must not exceed the lesser of dealer's cost or 75 percent of the purchase price. Loan amounts for the purchase of used equipment must not exceed the lesser of 50 percent of the current market value or 70 percent of the purchase price. Other loan amounts supported by a valid and perfected first security interest in used equipment must not exceed 50 percent of the current market value.
- (d) The originating bank is required to verify annually during the term of the loan that the equipment is in good working condition and is being properly maintained, based on an on-site inspection by a lending officer.

5. Dairy Loans

- (a) The term for overall dairy operation/equipment/milk production loans must not exceed a term that is acceptable to MASI.
- (b) The term must not exceed two years for calf to heifer dairy stock breeding operations.
- (c) The term must not exceed 120 days for seasonal calf production for market.
- (d) Loans must be secured by a valid and perfected first priority security interest pursuant to a security agreement which clearly describes and identifies all collateral.
- (e) Loan amounts for total dairy production loans must not exceed 70 percent of appraised value of collateral, including the dairy herd.
- (f) Loan amounts for calf and heifer production for market must not exceed 80 percent of the appraised value of the stock. Appraisal must clearly identify all stock by breed, age and appropriate registration.
- (g) Appraised value of collateral livestock is required to be updated annually by the originating bank following an on-site report by a lending officer.

Appendix C  
MASI Loan Scoring Matrix

**CREDIT SCORING MATRIX**

RATIOS:	SCORE						Scoring	Weighting
	1	2	3	4	5	6		
<u>Current Assets</u> <u>Current Liabilities</u>	▶ 2.0	▶ 1.5 to 2.0	▶ 1.25 to 1.5	▶ 1.1 to 1.25	▶ 0.9 to 1.1	▶ 0.9		25
<u>Intermediate (1-7 yr. life) Assets</u> <u>Intermediate (1-7 yr. maturity) Liabilities</u>	▶ 3.0	▶ 2.5 to 3.0	▶ 2.0 to 2.5	▶ 1.5 to 2.0	▶ 1.25 to 1.5	▶ 1.25		10
<u>Total Liabilities</u> <u>Net Worth</u>	◀ .50	.50 to ▶ .75	.75 to ▶ 1.0	1.0 to ▶ 1.5	1.5 to ▶ 2.0	▶ 2.0		25
<u>(Current Net Worth-Beginning Net Worth)</u> <u>n</u>	▶ .20	▶ .15 to .20	▶ .10 to .15	▶ .05 to .10	▶ .01 to .05	▶ .01		30
<u>Loan Amount</u> <u>Value of Security</u>	◀ .50	.50 to ▶ .60	.60 to ▶ .75	.75 to ▶ .85	.85 to ▶ .95	▶ .95		10
	WEIGHTING SCORE							100%

Definitions and interpretation of matrix of following page

Definitions for MASI Loan Scoring Matrix:

**"Current Net Worth"** means borrower's net worth on borrower's most recent fiscal year-end reduced by the amount of any increased loan valuation per acre since the fiscal year-end when the beginning net worth was ascertained. The value of land acquired or divested since the fiscal year-end when the beginning net worth was ascertained will not be considered for the purpose of this land value adjustment.

**"Beginning Net Worth"** means a borrower's net worth on borrower's fiscal year-end "n" years preceding borrower's most recent fiscal year-end.

**"n"** means the number three or as otherwise provided for in the operations manual.

**"Prior Year Net Worth"** means the borrower's net worth on borrower's fiscal year-end next preceding borrower's most recent fiscal year-end.

Generally, a loan which scores 4.0 or less and conforms to the applicable loan criteria is acceptable to MASI. In such cases and where the participation amount is \$250,000 or less, MASI can, at its discretion, approve and cause Rabobank to purchase the loan on the same day it is received.

When the participation amount exceeds \$250,000, or where there are deviations from loan criteria, or if the loan scores in excess of 4.0, Rabobank makes the credit decision, and approval could take up to five business days.

Appendix D

EXHIBIT A

**PARTICIPATION NOTICE**

Rabobank Nederland  
 c/o MABSCO Agricultural Services, Inc.  
 430 Liberty Building  
 Des Moines, Iowa 50308  
 Attention: Jim C. Potter

19\_\_\_\_

Master Participation Agreement  
 between the undersigned and Rabobank Nederland  
 dated as of \_\_\_\_\_, 19\_\_\_\_

Gentlemen:

We intend to make a Loan (as defined in the Master Participation Agreement, terms defined therein being used herein as therein defined) to the Borrower named below.

Pursuant to the terms and conditions of the Master Participation Agreement, we hereby offer to Rabobank Nederland a Participation in the Loan or Committed Loan described below:

1. Borrower: (a) Name \_\_\_\_\_  
 (b) Address \_\_\_\_\_  
 (c) Place of formation of partnership or incorporation (if applicable) \_\_\_\_\_  
 (d) State & County of Business \_\_\_\_\_  
 (e) Line(s) of business \_\_\_\_\_  
 (f) Federal Tax I.D./Social Security No. (as applicable) \_\_\_\_\_

2. Financial Statement Summary As of \_\_\_\_\_, 19\_\_\_\_:  
 (\$000)

Current Assets _____	Current Liabilities _____
Intermediate (1-7 year life) _____	Intermediate (1-7 year maturity) _____
Assets _____	Liabilities _____
Total Assets _____	Net Worth _____

3. Historical Net Worth Adjusted For Changes in Land Valuation (per Operations Manual):  
 Date: \_\_\_\_\_  
 Amount (\$000): \_\_\_\_\_

4. Loan and/or Committed Loan in Which a Participation is Offered:

	Loan	Committed Loan (if applicable)
(a) Date of Loan or Commitment	_____	_____
(b) Principal Amount	_____	_____
(c) Amount Outstanding under Committed Loan after this Loan Disbursed	N/A	_____
(d) Initial Loan Rate	_____	_____
(e) Terms/Basis of Adjustments to Loan Rate (if any)	_____	_____
(f) Initial Percentage of Participation	_____	_____
(g) Initial Participation Rate	_____	_____
(h) Initial Participation Rate Period	_____	_____
(i) Repayment Schedule	_____	_____
(j) Payment of Interest	_____	_____
(k) Final Expiration/Maturity	_____	_____
(l) Collateral	_____	_____
(m) Value of Collateral	_____	_____
(n) Guarantor/Other Support	_____	_____
(o) Other Terms	_____	_____
(p) Loan Category (per Loan Criteria):	_____	_____
(q) Deviations from Loan Criteria:	_____	_____
(r) Whether expected to be repaid as agreed on the stated maturities out of normal anticipated cash flow: YES _____ NO _____ If NO, please explain:	_____	_____
(s) Whether at least 50% of the value of the growing crops is covered by hail or all-risk crop insurance: YES _____ NO _____ If NO, please explain:	_____	_____

Very truly yours,

\_\_\_\_\_  
(NAME OF ORIGINATING BANK)

By \_\_\_\_\_  
 Title: \_\_\_\_\_





**SECTION 3 - DEPOSITORY INSTITUTION'S INFORMATION**

(Complete as an applicant if depository institution is checked on application Section 1 at 1; also complete as required at Section 2 for each affiliated depository institution.)

Name: \_\_\_\_\_ Address: \_\_\_\_\_

**1. PEAK LOAN TO DEPOSIT AND AGRICULTURAL LOAN RATIOS for last 3 years (omit 000).**  
(Attach copies of call reports for peak quarters.)

a. Date	b. Total Deposits	c. Total Loans	d. % Loans to Deposits (C ÷ B)	e. Ag and Aquatic Loans	f. % of Ag & Aquatic Loans to Total Loans (E ÷ C)
1. _____	\$ _____	\$ _____	_____ %	\$ _____	_____ %
2. _____	\$ _____	\$ _____	_____ %	\$ _____	_____ %
3. _____	\$ _____	\$ _____	_____ %	\$ _____	_____ %

**2. PRESENT LOAN DISTRIBUTION as of \_\_\_\_\_.** (Attach depository institution's balance sheet as of application date.)

	\$ Amount	% of Total
a. Eligible ag and aquatic loans under one-year maturity	_____	_____
b. Eligible ag and aquatic loans one to ten years' maturity.	_____	_____
c. Eligible farm real estate loans with amortized maturities under ten years.	_____	_____
d. Farm real estate loans with amortized maturities over ten years.	_____	_____
e. Agri business loans.	_____	_____
f. Consumer loans.	_____	_____
g. Housing loans.	_____	_____
h. Commercial and business loans	_____	_____
i. _____	_____	_____
<b>Total</b>	\$ _____	100%
j. Volume of loans outside normal trade territory:	\$ _____	
<b>Participations</b>	<b>Purchased</b>	<b>Sold</b>
k. Ag loans	\$ _____	\$ _____
l. Total participations	\$ _____	\$ _____

**3. SOURCES OF OUTSIDE FUNDS (peak amount used in last 2 years):**

	Current Year	Previous Year
a. Federal Reserve discounts	_____	_____
b. Federal funds purchased	_____	_____
c. Total participations sold	_____	_____
d. Bankers acceptances	_____	_____
e. Commercial paper	_____	_____
f. Negotiable certificates of deposit (of \$100,000 or more)	_____	_____
g. Other: _____	_____	_____

**4. EXPLAIN NEED FOR FINANCING RELATIONSHIP, INCLUDING:**

a. Access to national or regional money markets:

-3-

**SECTION 1 - APPLICANT (Cont.)****6. ACCOUNTING FIRM:**

Name \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_

State \_\_\_\_\_

Zip \_\_\_\_\_

**7. EMPLOYEE FIDELITY BOND:**

Total coverage \$ \_\_\_\_\_

Deductible, if any \$ \_\_\_\_\_

Insurance company name: \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_

State \_\_\_\_\_

Zip \_\_\_\_\_

**8. ATTACH A COPY OF THE INSTITUTION'S LENDING POLICY.****9. NORMAL TRADE AREA: County(ies): \_\_\_\_\_ State(s) \_\_\_\_\_**

**10. IS THERE ANY LITIGATION, action, proceeding or dispute before any court or other jurisdiction which might materially affect the institution?**  No  Yes (If yes, explain in writing.)

**11. IS APPLICANT AFFILIATED with another financing institution?**  No  Yes

**SECTION 2 AFFILIATION(S) (Complete and furnish information if applicant is an affiliate.)****1. Applicant is an affiliate of: name(s) \_\_\_\_\_**

A single depository institution (If checked, complete a separate Section 3 - Depository Institution Information.)

Multiple depository institutions (If checked, complete a separate Section 3 - Depository Institution Information, for each institution.)

Bank holding company (Attach latest copy of fiscal year end FR Y-6 report.)

Other (Attach last certified audit.)

**2. a. List the names of owners of the voting stock of each affiliated institution:**

**b. List the names of common management and employees:**

**c. List the names of common directors:**

**d. Describe the contractual and correspondent relationships between the institutions:**

**e. Describe any prior business dealings between the affiliated institutions:**

**f. Describe the liability interrelationships between the affiliated institutions, including but not limited to fund flows.**

**SECTION 3 - DEPOSITORY INSTITUTION'S INFORMATION (Cont.)**

4. **EXPLAIN NEED FOR FINANCING RELATIONSHIP, INCLUDING: (Cont.)**
  - b. Continuing need for supplementary funds from FICB:
5. **CURRENT LEGAL LENDING LIMIT and method of calculation:**
6. **The depository hereby consents and agrees to make examination reports available to a duly authorized FICB representative.**

**SECTION 4 - NON-DEPOSITORY (Required if applicant is a non-depository financing institution.)**

1. **PROJECTED OPERATING STATEMENT for next 3 years. (Attach pro forma operating statement.)**
2. **RECORDS/OPERATIONS PERSONNEL names, titles, and experience (briefly describe or attach resume).**
3. **EXPLAIN NEED FOR FINANCING RELATIONSHIP, INCLUDING:**
  - a. Involvement in agricultural or aquatic lending.
  - b. Access to national or regional money markets.
  - c. Continuing need for supplementary funds from FICB.

**SECTION 5 - APPLICANT'S CERTIFICATION**

I HEREBY CERTIFY that all statements made in this application are true and correct to the best of my knowledge.

Date: \_\_\_\_\_ Signature: \_\_\_\_\_  
Title: \_\_\_\_\_

(Please attach additional information to application when appropriate.)