

FUNDAMENTAL REAPPRAISAL OF THE DISCOUNT MECHANISM

**CAPITAL AND CREDIT  
REQUIREMENTS OF AGRICULTURE,  
AND PROPOSALS TO INCREASE  
AVAILABILITY OF BANK CREDIT**

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The following paper is one of a series prepared by the research staffs of the Board of Governors of the Federal Reserve System and of the Federal Reserve Banks and by academic economists in connection with the Fundamental Reappraisal of the Discount Mechanism.

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FUNDAMENTAL REAPPRAISAL OF THE DISCOUNT MECHANISM

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CAPITAL AND CREDIT REQUIREMENTS OF AGRICULTURE, AND PROPOSALS  
TO INCREASE AVAILABILITY OF BANK CREDIT

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CAPITAL AND CREDIT REQUIREMENTS OF AGRICULTURE, AND PROPOSALS  
TO INCREASE AVAILABILITY OF BANK CREDIT

I. INTRODUCTION

A large proportion of the nation's banks is located in rural areas where agriculture is the primary economic base. Deposit trends at these banks, and loan demands made on them, derive mainly from developments in the agricultural economy. Thus many aspects of the well-known "revolution" in the structure of the agricultural production and related rural business have had major impact on rural banks and promise to continue to exert similar influence for some time to come. This study gives special attention to those problems of rural banks that arise from the peculiar nature of and changes in their agricultural environment. It seeks to determine how the Federal Reserve discount mechanism might be made more helpful in their specific situation.

The examination of past and projected agricultural and rural banking trends, however, suggested that maintenance of the present leading role of banks in rural lending will likely require institutional changes beyond those that appear feasible in discount administration and other Federal Reserve policies. Thus after documenting the growing capital requirements of the agricultural sector and the increasing inability of rural banks to finance their usual share of the resulting credit demands, this report outlines a broad program designed to increase materially the flow of funds from national capital and money markets into rural areas via the banking system.



## II. SUMMARY OF FINDINGS AND PROPOSALS

Capital used in agriculture has been increasing rapidly. Since 1950, for example, the value of farm assets of a primarily productive nature has risen by 131 per cent. This growth is traced mainly to technological developments that have prompted enlargement of individual farms and substitution of purchased inputs for labor and farm-produced inputs. Some of the capital growth occurred as farmers added to physical stocks of machinery, livestock, and other assets. Another part can be ascribed to growth and price inflation in the nonfarm economy, which brought higher prices for some purchased inputs and added to demand for land. And a substantial portion resulted from land price increases to which farm enlargement, land improvement programs, and other technologically-induced pressures contributed. In addition, as agriculture purchased more production inputs, capital requirements of related rural businesses also rose.

Several agricultural economists have recently studied farm capital growth. Each concluded that the value of capital stocks will rise further, though they differed on the rate of growth and on which assets will lead the advance. Mainly from these studies, three alternative capital models are developed in this paper. In the lowest of these estimates, the value of farm assets projected for 1980 is 28 per cent above that of 1969, while the highest estimate indicates a gain of 74 per cent.

From the projected capital stocks, estimates are made of the implied yearly capital flows--the capital requirements that must

be financed in some manner. As the capital assets of agriculture increase, larger annual flows of capital are generally required to make real additions to stocks, replace equipment as it depreciates, and transfer assets from one farmer to the next. Annual capital flows for these purposes are estimated to have averaged \$7 billion during the 1950's, and to have been fairly stable during the late 1950's and early 1960's. By 1965-68, however, the annual flow averaged \$11 billion per year. And, under the three alternative capital models formulated herein, capital flows are projected at from \$13 to \$19 billion in 1975-79.

Annual capital flows are either financed internally from cash flow--depreciation allowances and net income--or externally by expanded use of credit. Upon comparing estimated capital flows, known expansion of credit, and estimated cash flows, it appears that the proportion of cash flow allocated by farmers to capital needs declined during the 1950's. Consequently, the share of capital spending financed by debt rose from 13 per cent in the early 1950's to 31 per cent in the early 1960's. Then, the proportion of income allocated to capital apparently stabilized, but because capital spending rose more sharply than income, the share financed by debt reached 37 per cent during 1965-68.

These findings provide a framework within which future farm credit demands may be projected. For the estimates made herein, capital flow requirements and depreciation allowances were taken as projected by the three alternative capital models, net farm and nonfarm income was projected on the basis of recent trends, and the proportion of cash flow that farmers would allocate to capital spending was projected at

the level that prevailed in the 1960's. Outstanding farm debt, which rose from \$10.7 billion in 1950 to \$23.6 billion in 1960 and \$52.0 billion in 1969, in the lowest projection increases to \$91 billion by 1980 and in the highest to \$137 billion. The lower projection implies that debt will increase by about 5 per cent annually, a significant slowdown from recent growth rates averaging 9 per cent, but a rate that nevertheless calls for \$3 to \$4 billion of net additions to outstanding debt annually between now and 1980. The higher projection calls for debt to rise by \$79 billion during the next decade, which would require annual rates of increase similar to those of the 1960's.

Increased credit to agriculture has been supplied in three important ways. First, more sellers of farms have been taking mortgages or using land contracts. Mainly in this way, individuals have been providing about one-fifth of the additions to outstanding farm debt. Second, money and capital market funds have been channeled into agriculture through the lending operations of life insurance companies, Federal land banks, production credit associations, and national farm supply corporations. Such funds have provided about one-half of the growth in farm credit. Third, commercial banks have been supplying about one-fourth of the additional credit. Some of these loans have been made by large money-market banks, either directly or through correspondent relationships with rural banks. Much of the loan expansion, however, has occurred at smaller country banks.

Rural banks have increased loans at a much faster pace than their deposits have grown, a divergence made possible by the low ratio of loans to deposits found at most banks when World War II ended. Through lending supported by the past accumulation of deposits, bank credit to farmers has almost kept pace with the total expansion of farm credit, even though deposits, being dependent on gains in aggregate farm incomes and savings, rose at a much slower rate.

However, expansion of bank lending by a relative shift from security investments to loans obviously could not be sustained forever. Individual rural banks began to reach a "tight" position during the 1950's, and presently a large proportion have reached the point at which further reductions in liquidity do not appear feasible, given present institutional arrangements. As these banks include most of the larger institutions and those that have been most active in meeting the credit demands of their areas, much of the nation's farm loan volume is affected.

In the last few years, loan demands would have pressed harder against rural banking resources had not time deposits grown at an extremely rapid pace. Unfortunately, a lower rate of deposit expansion may realistically be expected over the next decade. When the alternative farm credit demands projected to 1980 are compared with the projected deposit expansion, a majority indicate that banks as a whole will find it difficult to supply from their own resources the same share of farm credit growth that they have provided since 1950.

If rural banks are to maintain their relative role in farm lending, this analysis indicates that they must draw increasing proportions of their loan funds from sources other than local deposits.

Several existing arrangements permit fund flows between urban and rural areas via banks. In unit banking states, city bank participations in farm loans channel urban funds into farm lending. A thorough examination of this mechanism, however, leads to serious doubts that it can develop sufficiently to fill the credit gap. Its present use is largely restricted to dealing with overlies rather than with general credit deficits at country banks; in fact, since the usual "payment" for the service consists of deposits maintained at the urban correspondent, the net flow of funds in most cases appears to be to the city rather than the rural bank. For those rural banks that are short of loanable funds, correspondent credit would be more helpful if it could be paid for by fees rather than balances, and development of this practice is advised. However, it seems that the generally tight liquidity positions of city banks will hardly lead them to favor this change or to increase significantly the supply of correspondent credit if it were adopted.

In states with large branch bank systems, funds can flow internally from urban offices to rural branches where loan demand exceeds deposit inflow. Studies of branch systems show that such flows do occur, and that at particular branches the funds so obtained are often relatively greater than a unit bank would have been likely to obtain through the correspondent banking system. Thus in states that have well-developed statewide branch systems and also urban areas sufficiently large either to provide surplus funds or to support a bank large enough to tap national

money markets, the supply of bank funds to farm lending appears more likely to remain adequate provided that the managers of the branch systems maintain both interest and competence in farm lending. But even if the latter condition were met, it seems doubtful that expansion of branch banking to rural areas of present unit banking states will provide an adequate near-term solution to maintenance of banking's role in farm lending. If laws restricting branching are liberalized at all, initial changes are likely to permit only limited branching arrangements. Furthermore, in some rural states with limited urban development, even statewide branch banking might not have a sufficient urban base to increase materially the flow of funds into the rural areas.

New approaches are therefore recommended. To maintain farm lending operations of commercial banks in a fully viable condition--in fact, to improve them at banks that are already experiencing the difficulties cited--two broad proposals for channeling funds to rural banks are made herein. First, greater amounts of Reserve Bank credit should be provided directly to rural banks through changes in the nature and administration of the discount mechanism. Second, new institutional arrangements should be established to permit greatly increased rural bank participation in national capital and money markets.

Small rural member banks have made limited use of System discount facilities in recent decades. The window may have been avoided partly because of the manner in which it was administered--the "reluctance to borrow" may have developed into a considerably larger deterrent against borrowing by the smaller banks. In addition, temporary fund needs at

rural banks are usually for relatively lengthy periods such as a crop production season, and borrowing arrangements at most Reserve banks have been ill adapted to handling such needs. In fact, a strict interpretation of the regulation held that borrowing for normally expected seasonal fund outflows was inappropriate.

Thus administration of the discount window that removes any previous stigma associated with borrowings for small short-term adjustments, and that permits borrowing for lengthy seasonal periods under equally clear guidelines, should encourage rural bank use of the discount window. Seasonal borrowing privileges, in particular, would benefit the significant number of small rural banks, and the communities they serve, whose farm customers have a large relative seasonal fund demand. By borrowing from the Federal Reserve to meet such seasonal outflows, these banks could employ for other community loan needs the funds that now must be set aside for the seasonal demands and which therefore either remain idle, or are temporarily invested outside the community, for up to half the year.

A seasonal borrowing privilege appears able to provide prompt and significant assistance to rural member banks facing relatively large seasonal demands, but could not be employed by the many rural nonmember banks and would likely be relatively insignificant to rural member banks in areas of balanced crop and livestock production, in which farm credit demands occur throughout the year. A complementary and more general approach--one that would benefit all rural banks--would aim to reduce the capital market imperfections that now largely prevent small and rural banks from using these national markets as a source of funds.

To this end, a second set of proposals is set forth under the general title of the "unified markets." These markets would be designed to place small and rural banks on a more nearly equal competitive footing with other participants in the national capital and money markets by minimizing the disadvantages that result from the small size and isolated location of these banks. The major objective of unified markets is seen as facilitating sale of a wide variety of bank assets and liabilities, thereby encouraging national money market funds to flow into rural areas through the banking system much as they presently can through the cooperative credit system. Unified markets could provide rural banks with information and arrangements for effective trading in Federal funds, government securities, and certificates of deposit issued by these banks, in addition to a secondary market for loans. In each of these endeavors, they would strive to overcome the market imperfections that now place small and rural banks at a relative disadvantage, and would thereby secure more equitable allocation of money market funds among sectors of the economy and regions of the nation.



PART A. CAPITAL AND CREDIT REQUIREMENTS OF AGRICULTURE

III. INTRODUCTION

Farmers' use of credit increased almost five times in the aggregate and nine times on a per farm basis between January 1, 1950, and January 1, 1969. Total debt (exclusive of CCC debt) rose from \$11 billion to \$52 billion; debt per farm increased from \$1,900 to \$17,000. Several factors combined to bring about this large expansion: new technology spurred upward trends in total farm capital stocks and production expenses; technology also permitted enlargement of individual farms, with associated capital demands; prices of some capital goods-- particularly real estate and machinery--advanced considerably; and finally, farmers financed an increasing proportion of their capital requirements by borrowing. Farm debt as a percentage of selected production assets rose from 8.8 per cent in 1950 to 18.5 per cent in 1969.

Since the major forces responsible for the rapid growth of farm debt from its low point of 1946 continue to prevail, there is widespread expectation of further credit expansion. Few studies, however, have attempted to quantify these expectations in a reasonably rigorous and comprehensive fashion. One study that did cover all farm debt was generally assumed to have reached a bullish--perhaps even alarming-- conclusion by projecting outstanding farm debt of \$100 billion in 1980. In fact, however, this projection implied a substantial slowdown in the rate of credit expansion, which followed as a consequence of the much reduced rates of future capital spending and land price inflation that were assumed in the study. Other analyses of investment and land prices appear to support much higher expectations, but their authors stopped at

projection of stocks rather than also examining the implied capital flows and credit demands.

This paper therefore attempts first to ascertain and analyze postwar capital flows in agriculture, and to remedy the paucity of projections of such flows. In Chapter IV, the nature and magnitude of past and future capital requirements are explored. Uses of capital are identified, and the flow of capital into each use is estimated. Projections of capital flows for 1970-79 are then derived for each of three projections of farm capital stocks in 1980 that have been published by other analysts.

Chapter V then attempts to determine likely future credit demands, given the projected capital flows. To provide a basis for such credit projections, financial data for 1950-68 are examined to ascertain trends in the manner that capital flows required in this period were financed--whether internally from depreciation allowances and net income or externally through increase in debt. Then, with the aid of specific assumptions about future income and financial behavior of farmers, probable additions to debt are projected. (With additional time and resources, development of a model in which capital, income, and savings flows are jointly determined would be a preferable procedure, and perhaps will be inspired by these preliminary efforts.)

After projection of total credit demands, attention turns to the various lenders that may supply these funds. Again, though apprehensions have often been expressed about the continued ability of certain farm lenders--particularly commercial banks--to continue rapid expansion of farm credit, no previous study has pitted specific alternative projections of credit demands against projections of bank

lending resources, in order to determine the situations in which those fears might be justified. This analysis is attempted in Chapter VI. First, sources of additions to farm debt during 1950-68 are examined, in order to ascertain the share of credit provided by each lender group. Then, for each of the alternative credit projections derived in the preceding chapter, estimates are made of the amount by which banks would have to expand their farm lending in order to maintain their relative role in this market. The various required rates of expansion in loans are compared with the projected rate of growth in deposits, to determine the conditions in which banks are likely to experience future difficulty in meeting farm loan demands from their own resources.

Credit extensions to meet seasonal capital requirements are treated separately in Chapter VII. Because neither seasonal expenses nor total seasonal loans are measured directly, little quantitative analysis of these flows has been attempted at the national level. However, in Chapter VII an attempt is made to provide indicators of the trend in seasonal capital needs and in seasonal credit provided by banks and production credit associations. The relative extent to which these two lenders have met the increased seasonal needs is then estimated.

#### IV. CAPITAL REQUIREMENTS, 1950-1979

Measurement, analysis, and projection of capital used in agriculture has primarily dealt with stocks of assets and with past and expected future changes in those stocks. The U. S. Department of Agriculture (USDA) annually publishes the value of several categories of farm assets such as real estate, machinery, and livestock. Analytical studies have related observed changes in these series to changes in various farm and nonfarm factors. On the basis of these observed relationships together with estimates of future trends in the causal factors, several recent studies have projected values of major farm assets to 1980.

This chapter begins with a brief review of past developments and of three selected projections of capital stocks. These data alone, however, prove inadequate as indicators of the actual flow of capital into agriculture, both past and future. The annual capital flows, though related to changes in the value of stocks, are not equivalent thereto. In particular, large amounts of capital are required annually to replace machinery that has worn out or become obsolete and to finance transfers of real estate. Thus in a given year the value of stocks could remain unchanged because of stable prices and no net real investment, but several billion dollars of capital would be required by replacement and transfer transactions. Conversely, although price increases of machinery or land that cause assets to be revalued upward would have the same proportional effect on replacement and transfer transactions, the dollar increase in the latter would be only a small fraction of that in stocks, because only a portion of the stocks is replaced or transferred in any given year.

A significant analytical contribution of this chapter, therefore, is calculation of past annual capital flows and of flows implied by the stocks projected for 1980. Data on most kinds of capital

spending were available from the USDA, but one very important category--real estate transfers prior to 1965--had to be estimated. Capital spending and transfers implied by each projection of stocks were also estimated, with attention to whether an increase in stocks was expected to result from price rises or from real additions. Each type of asset is discussed separately, to consider the factors that probably caused past changes in the annual capital flow that it required, and hopefully to establish a basis for projection of probable future change. The projected components are then summed to obtain three alternative projections of farm capital flows during the 1970's.

The capital stock of agriculture, 1950-1980

The stock of various types of farm capital, valued at current market prices, is estimated annually by the USDA. Table 1 shows that selected assets of a primarily productive nature totaled \$281.1 billion as of January 1, 1969. These assets--machinery, livestock, stored crops, working capital, and real estate--constitute the capital analyzed in this study. The account includes some nonproductive assets such as dwellings, personal cars, and some forms of personal savings. It excludes the two other personal assets included in the USDA's Balance Sheet of Agriculture--household equipment and investments in cooperatives--as well as other personal assets owned by farmers, such as nonfarm investments and the cash value of life insurance policies, that are not included in the Balance Sheet. As in the Balance Sheet, all farm assets of the selected types are included in the totals, whether owned by farmers, nonfarm landlords, or other persons or institutions.

Table 1  
Value of Selected Assets Used in Agriculture

	<u>1950</u>	<u>1955</u>	<u>1960</u>	<u>1965</u>	<u>1969</u>
	<u>A. Billions of dollars</u>				
Vehicles, machinery & equipment.	12.2	18.6	22.2	25.5	32.6
Livestock. . . . .	12.9	11.6	15.2	14.5	20.1
Stored crops . . . . .	7.6	9.6	7.7	9.2	10.5
Demand deposits & currency . . .	7.0	6.9	6.2	5.9	6.3
Time deposits & savings bonds. .	6.8	7.5	7.6	7.9	9.0
Real estate. . . . .	<u>75.3</u>	<u>98.2</u>	<u>130.2</u>	<u>160.9</u>	<u>202.6</u>
Total selected assets. . . .	<u>121.8</u>	<u>152.0</u>	<u>189.1</u>	<u>223.9</u>	<u>281.1</u>
	<u>B. Per cent of total</u>				
Vehicles, machinery & equipment.	10	12	12	11	12
Livestock. . . . .	11	7	8	6	7
Stored crops . . . . .	6	6	4	4	4
Demand deposits & currency . . .	6	5	3	3	2
Time deposits & savings bonds. .	6	5	4	4	3
Real estate. . . . .	<u>62</u>	<u>65</u>	<u>69</u>	<u>72</u>	<u>72</u>
Total selected assets. . . .	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>

Source: The Balance Sheet of Agriculture, 1968, U. S. Department of Agriculture, January 1969, pp. 10 and 26-27. Data are shown as of January 1 of each year.

Composition and trends. The selected agricultural assets increased in value in every postwar year except 1950 and 1954, for a total gain of \$159.3 billion since the beginning of 1950. Annual increases during the 1950's averaged 4.5 per cent, fell to 3.4 per cent during 1960-64, but then accelerated to 5.9 per cent in 1965-68.

Real estate remains the most important farm asset, and indeed its relative value rose from 62 per cent of total assets in 1950 to 72 per cent in 1969. Of the real estate value, perhaps a fifth is contributed by farm dwellings and service buildings, and the remainder by land and land improvements.

In second place among asset groups, the machine stock--vehicles, machinery, and equipment--comprised 12 per cent of assets in 1969 and has roughly maintained this proportion since 1950. Livestock ranked third in 1969, at 7 per cent of the total. Stored crops and financial working balances each represented about 5 per cent and have been declining in relative importance.

Changes in asset values over five-year intervals since 1950 are shown more explicitly in Table 2 (dollar changes occurring during 1965-68 were multiplied by 1.25 to express them as a five-year rate comparable to the previous periods). Among the prominent features, (1) increases in real estate values accounted for a large proportion--an average of 80 per cent--of the gain in total assets; (2) growth in value of machinery and livestock involved considerable sums in some years, but varied considerably over the period; and (3) asset growth in 1965-68 proceeded at an extraordinarily rapid rate, as growth in machinery, livestock, and real estate values each accelerated.

Real versus price changes. In contrast to the changes in "current" value discussed above, the total farm physical plant, often referred to as "real" assets, was expanded rather slowly since 1950 (Panel C, Table 2).



Table 2  
Changes in Value of Selected Assets Used in Agriculture

	<u>1950-54</u>	<u>1955-59</u>	<u>1960-64</u>	<u>1965-69*</u>
<u>A. Five-year total (billions of dollars)</u>				
Vehicles, machinery & equipment.....	6.4	3.6	3.3	8.9
Livestock.....	-1.7	4.0	- .7	7.0
Stored crops.....	2.0	-1.9	1.5	1.6
Demand deposits & currency.....	- .1	- .7	- .3	.5
Time deposits & savings bonds.....	.7	.1	.3	1.4
Real estate.....	<u>22.9</u>	<u>32.0</u>	<u>30.7</u>	<u>52.1</u>
Total selected assets.....	30.2	37.1	34.8	71.5
<u>B. Percentage change in current value</u>				
Vehicles, machinery & equipment.....	52	19	15	35
Livestock.....	-13	36	- 5	48
Stored crops.....	26	-20	19	18
Demand deposits & savings bonds.....	- 1	-10	- 5	8
Time deposits & savings bonds.....	10	1	4	17
Real estate.....	<u>30</u>	<u>33</u>	<u>24</u>	<u>32</u>
Total selected assets.....	25	24	18	32
<u>C. Percentage change in real assets</u>				
Vehicles, machinery & equipment.....	37	- 3	4	18
Livestock.....	11	0	7	2
Stored crops.....	11	3	- 2	40
Demand deposits & currency.....	-10	-16	-12	- 3
Time deposits & savings bonds.....	- 1	- 6	- 3	2
Real estate.....	<u>4</u>	<u>2</u>	<u>2</u>	<u>2</u>
Total selected assets.....	8	0	2	6
<u>D. Average annual percentage change in current value</u>				
Vehicles, machinery & equipment.....	8.8	3.6	2.8	6.3
Livestock.....	-2.7	6.3	-0.9	8.5
Stored crops.....	4.8	-4.3	3.6	3.4
Demand deposits & currency.....	- .3	-2.2	-1.0	1.6
Time deposits & savings bonds.....	2.0	.3	.8	3.3
Real estate.....	<u>5.5</u>	<u>5.8</u>	<u>4.3</u>	<u>5.9</u>
Total selected assets.....	4.5	4.5	3.4	5.9
<u>E. Average annual percentage change in real assets</u>				
Vehicles, machinery & equipment.....	6.5	- .7	.8	3.4
Livestock.....	2.2	.0	1.3	.5
Stored crops.....	2.1	.6	- .4	7.1
Demand deposits & currency.....	-2.2	-3.5	-2.4	- .6
Time deposits & savings bonds.....	- .3	-1.3	- .7	.4
Real estate.....	<u>.8</u>	<u>.4</u>	<u>.4</u>	<u>.3</u>
Total selected assets.....	1.4	.0	.3	1.3

Table 2 (continued)

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\*Data shown for 1965-69 are actual values for 1965-68 multiplied by 1.25 to facilitate comparison with previous five-year periods.

Source: Table 1, and additional data from the U.S. Department of Agriculture.

Note: Users of the data on real assets are referred to p. 20 for a discussion of a probable bias in these estimates.

According to USDA estimates, the selected farm assets, when valued at constant prices, rose by only 15 per cent in 1950-68. As the current value of these assets increased by 131 per cent, by implication the total price rise during the period was estimated as 101 per cent.

The separation of capital growth into its real and price components is important to analysis and projection of capital flows, simply because these flows over time differ for varying mixes of real and price increases in stock. Efforts to allocate changes in stock values to real and price components are greatly handicapped, however, by the fact that capital goods change over time as technology advances. The tractor and land of today are not the same products as in 1950, and so one cannot be sure how much of the increase in their current price represents price inflation and how much is due to gains in quality or productivity of the assets. As the latter gains often occur in subtle ways that defy measurement, the USDA estimates of real assets may understate the progress that has occurred, and the price increase may therefore be overstated.

Nevertheless, it appears that real estate and machinery prices rose rather steadily during 1950-68, with very significant impact on total asset values. On the other hand, prices of livestock moved in a direction opposite to livestock numbers, so that when the real livestock inventory increased, its current value tended to decrease, as in 1950-54 and 1960-64.

The rate at which physical additions were made to stocks of machinery, livestock, and crops varied substantially from one period to the next. Machinery stocks were easily the most volatile component, with especially rapid increases in the early 1950's and again in 1963-67.

Projected capital stocks in 1980. Three widely-circulated projections of 1980 stocks constitute the point of departure for estimation of capital flows in the intervening period. The stocks projected for 1980 in current (1980) dollars are summarized in Table 3. To facilitate comparison with current values, Model NC (for "no change") shows the value of stocks (and later also of flows) if neither price nor real changes occurred after January 1, 1969.

The first set of projected stocks, Model HT, is based primarily on projections for 1960-79 published by Heady and Tweeten in 1963 after extensive econometric analysis of the determinants of demand for various farm capital goods.<sup>1/</sup> The Heady-Tweeten projections were made in real terms only, but the machinery, financial asset, and real estate values shown in Table 3 are altered to reflect moderate price advances. For real estate, the current dollar projection employs a Heady-Tweeten price equation that is relatively successful in explaining the postwar course of farm land values.

The second projection, Model B, is based on current dollar projections of 1980 stocks published by Brake in 1966, with the real

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<sup>1/</sup> Earl O. Heady and Luther G. Tweeten, Resource Demand and Structure of the Agricultural Industry, Iowa State University Press, Ames, Iowa, 1963, 515 pp.

Table 3  
Alternative Projections of Selected Farm Assets in 1980

	<u>Model NC</u>	<u>Model HT</u>	<u>Model B</u>	<u>Model HM</u>
<u>A. Billions of dollars</u>				
Vehicles, machinery & equipment. . .	32.6	40.5	36.4	64.2
Livestock. . . . .	20.1	21.4	23.2	21.9
Stored crops . . . . .	10.5	10.0	11.4	10.0
Deposits, currency & savings bonds	15.3	25.2	15.7	25.2
Real estate. . . . .	<u>202.6</u>	<u>392.9</u>	<u>272.2</u>	<u>288.4</u>
Total selected assets. . . . .	<u>281.1</u>	<u>490.1</u>	<u>358.9</u>	<u>409.7</u>

	<u>B. Per cent of total</u>			
Vehicles, machinery & equipment	12	8	10	16
Livestock. . . . .	7	4	6	5
Stored crops . . . . .	4	2	3	2
Deposits, currency & savings bonds	5	5	4	6
Real estate. . . . .	<u>72</u>	<u>80</u>	<u>76</u>	<u>70</u>
Total selected assets. . . . .	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>

	<u>C. Change during 1970's (billions of dollars)</u>			
Vehicles, machinery & equipment. . .	0	7.3	3.5	29.6
Livestock. . . . .	0	1.2	2.8	1.6
Stored crops . . . . .	0	-.5	.8	-.5
Deposits, currency & savings bonds	0	9.2	.4	9.2
Real estate. . . . .	<u>0</u>	<u>177.8</u>	<u>64.1</u>	<u>79.2</u>
Total selected assets. . . . .	<u>0</u>	<u>195.0</u>	<u>71.5</u>	<u>119.1</u>

	<u>D. Percentage change during 1970's</u>			
Vehicles, machinery & equipment. . .	0	22	10	85
Livestock. . . . .	0	6	14	8
Stored crops . . . . .	0	- 4	8	- 4
Deposits, currency & savings bonds	0	57	2	57
Real estate. . . . .	<u>0</u>	<u>83</u>	<u>31</u>	<u>38</u>
Total selected assets. . . . .	<u>0</u>	<u>66</u>	<u>25</u>	<u>41</u>

	<u>E. Average annual percentage change during 1970's</u>			
Vehicles, machinery & equipment. . .	0	2.0	1.0	6.4
Livestock. . . . .	0	.6	1.3	.8
Stored crops . . . . .	0	-.4	.7	-.4
Deposits, currency & savings bonds	0	4.6	.2	4.6
Real estate. . . . .	<u>0</u>	<u>6.2</u>	<u>2.7</u>	<u>3.3</u>
Total selected assets. . . . .	<u>0</u>	<u>5.2</u>	<u>2.2</u>	<u>3.5</u>

estate estimate as updated by Brake in 1968.<sup>2/</sup>

The final projection, Model HM, is based primarily on one of several projections of real stocks of machinery and livestock and of price changes of real estate published by Heady and Mayer in 1967, in a project executed for the National Advisory Commission on Food and Fiber.<sup>3/</sup> The estimates used herein assumed that land retirement programs of the present "feed-grain" type are continued for wheat and feed grains and are also applied to cotton production, and that exports increase in accordance with 1950-65 trends. As with Model HT, the machinery and real estate projections were modified to reflect trends in machinery prices and in the general price level, respectively. In addition, because Heady and Mayer did not project values of stored crops or of financial assets, these items were projected at the same levels as in Model HT.

The three projections agree in one important respect: that the total value of farm assets will increase considerably during the next decade. Beyond this, there are differences that appear likely to have considerable impact on capital and credit demands: (1) the projected total increase in value varies from \$71.5 billion under Model B to \$195.0 billion under Model HT--an average difference of \$12 billion per year over the decade, and (2) growth projected for major asset components differs greatly. Model HT projects a relatively rapid

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<sup>2/</sup> John R. Brake, "Impact of Structural Changes on Capital and Credit Needs," Journal of Farm Economics, December 1966, pp. 1536-1545. Also, "Dimensions of the Credit Door," unpublished speech at Blacksburg, Virginia, August 5, 1968.

<sup>3/</sup> Earl O. Heady and Leo V. Mayer, Food Needs and U. S. Agriculture in 1980, Technical Papers--Volume I, National Advisory Commission on Food and Fiber, Washington, D. C., August, 1967, 116 pp.

rise in real estate values, but only moderate gains in the machine stock. The reverse is true of Model HM, while Model B anticipates relatively moderate growth in all components, but with rising real estate values dominant.

In the next section, the bases for these stock projections are briefly noted, and the capital flow requirement that appears implied by each model is calculated. The framework for the analysis both here and in the next chapter draws heavily on the pioneering capital study by Tostlebe, which is also the source of many insights into long-term trends.<sup>4/</sup> A comprehensive and more recent capital and credit study by Johnson was also very useful.<sup>5/</sup>

#### Capital requirements by asset group, 1950-1979

Farm capital flows and credit demands arise in three important ways. First, they originate from expenditures to maintain or expand the capital plant. In this category one finds spending for replacements and additions to the stock of vehicles, machinery, equipment, buildings, and land improvements; additions to inventories of livestock and of crops stored for feed and seed; and additions to financial working balances. Second, capital flows and credit demands arise when the capital plant-- especially real estate--is transferred from one owner to the next by means other than gift or inheritance. Estimates for 1950-68 of the various capital flow requirements of these two

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<sup>4/</sup> Alvin S. Tostlebe, Capital In Agriculture: Its Formation and Financing since 1870, Princeton University Press, Princeton, 1957, 232 pp.

<sup>5/</sup> D. Gale Johnson, "Agricultural Credit, Capital and Credit Policy in the United States," Federal Credit Programs, Commission on Money and Credit, Prentice-Hall, 1963, pp. 355-423.

types are summarized in Table 4. Third, seasonal credit demands occur when additional working capital is needed to finance seasonal production processes for which the level of cash assets normally maintained does not fully provide. Consideration of these demands is deferred to Chapter VII.

Vehicles, machinery, and equipment. Improved vehicles, machinery, and equipment (subsequently all grouped under "machinery") constitute a readily visible example of the impact of technological change on the capital goods of agriculture. And, in addition to all the new equipment purchased for production on farms (with which this study is concerned), there has been considerable nonfarm investment in such allied industries as hatcheries and feed mills, which perform work that formerly tended to be done on farms.

Expenditures for machinery now constitute a significant capital requirement, over two-fifths of the total flow. Analytically, these expenditures are of two types: to replace stock that has worn out or become obsolete, and to expand the total stock in order to increase output or reduce labor requirements. Expenditures arising from either need are affected by the course of machinery prices.

To maintain the machine stock at a given real level requires an annual expenditure equal to about 14 per cent of the value of the stock, according to recent depreciation allowances estimated by the USDA.<sup>6/</sup> With the stock valued at \$32.6 billion in 1969, annual replacement requirements are thus around \$4.6 billion.

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<sup>6/</sup> Farm Income Situation, U.S. Department of Agriculture, July 1969, p. 61.



Table 4  
Capital Flows, 1950-69  
(billions of dollars)

	<u>1950-54</u>	<u>1955-59</u>	<u>1960-64</u>	<u>1965-69</u>
	<u>A. Five-year total*</u>			
Gross capital expenditures:				
Vehicles, machinery & equipment. . .	15.4	14.0	16.0	23.6
Buildings and land improvements. . .	7.7	6.9	6.4	6.4
To increase:				
Livestock inventory. . . . .	2.4	.5	1.3	.2
Stored crop inventory. . . . .	.4	.8	- .2	1.4
Demand deposits & currency . . . .	- .1	- .7	- .3	.5
Time deposits & savings bonds. . .	.7	.1	.3	1.4
Required by real estate purchases. . .	<u>11.0</u>	<u>13.5</u>	<u>16.0</u>	<u>20.7</u>
Total capital flow . . . . .	37.4	35.1	39.4	54.2
	<u>B. Annual average</u>			
Gross capital expenditures:				
Vehicles, machinery & equipment. . .	3.1	2.8	3.2	4.7
Buildings and land improvements. . .	1.5	1.4	1.3	1.3
To increase:				
Livestock inventory. . . . .	.5	.1	.3	.0
Stored crop inventory. . . . .	.1	.2	.0	.3
Demand deposits & currency . . . .	.0	- .1	- .1	.1
Time deposits & savings bonds. . .	.1	.0	.1	.3
Required by real estate purchases. . .	<u>2.2</u>	<u>2.7</u>	<u>3.2</u>	<u>4.2</u>
Total capital flow . . . . .	7.5	7.0	7.9	10.8

\*Data shown for 1965-69 are estimates for 1965-68 multiplied by 1.25 to facilitate comparison with previous five-year periods.

Source: Machinery and building expenditures from Farm Income Situation, U.S. Department of Agriculture, July 1969, p. 60; increase in livestock and crop inventories are unpublished data from the U.S. Department of Agriculture (livestock and crop total is published in Farm Income Situation, July 1969, p. 53); increase in financial assets from The Balance Sheet of Agriculture, 1968, U.S. Department of Agriculture, January 1969, p. 10; capital flows required by real estate purchases are estimated by Emanuel Melichar.

Machinery prices, however, appear likely to increase over time. Prices set by manufacturers are likely to reflect the general upward course of unit costs in the capital goods sector of the nonfarm economy. The implicit price deflator for the total farm machine stock rose at annual rates of 4.4 per cent in 1955-59, 2.0 per cent in 1960-64, and 2.8 per cent in 1965-68. If, in view of this record, one projects annual machinery price increases averaging 2.5 per cent in 1969-79, and no real growth, the value of the stock would still rise to \$42.8 billion by 1980. Annual replacement requirements would by then average \$6.1 billion.

Any physical additions to the total stock constitute a capital flow requirement superimposed on the replacement expenditures. In this century, periods of rapid real expansion have alternated with extended periods of little or no growth. A spending boom that nearly tripled the real stock between 1945 and 1954 was succeeded by ten years of little growth or of small declines. Renewed rapid expansion beginning in 1963 lifted real stocks by another 23 per cent before 1969.

Some projections of machinery requirements emphasize the spur from continued technical innovation, combined with desires and incentives (higher wage rates) to reduce labor requirements. Such projections, as in Model HM, indicate substantial real increases in future machine stocks.

Other analysts have been more impressed with the substantial upgrading of stocks that can occur in the course of the large replacement expenditures. For instance, structural analysis by Heady and Tweeten suggested "a 'mature' agricultural economy in terms of machinery.

A large amount of new machinery will continue to be purchased not only to replace worn-out machines but also to substitute for machines which are inadequate for large holdings. This will offer sizeable opportunities for machinery to replace labor, despite the rather small increment in machinery assets.<sup>7/</sup> This view is represented in Models HT and B.

The historical record since World War II taxes analysts seeking to determine the more appropriate view, as the growth rates shown in Table 5 demonstrate. Heady and Mayer analyzed the record of 1949-64 and found a strong upward trend over these years. The large expenditures shown for Model HM in Table 6 are based mainly on assumed continuation of this trend. In 1975-79, annual expenditures would average \$9.6 billion. But Heady and Tweeten, writing in the early 1960's, thought the relative stability of 1952-60 to be more representative of the future, and thus projected little real expansion. Brake, though writing in 1966 after expenditures had again accelerated, also expected relatively slow future growth. Models HT and B both project average annual expenditures of about \$5 billion in 1975-79, or little higher than those at the peak of the recent boom.

Buildings and land improvements. Construction of farm dwellings, service buildings, and various other structures and land improvements such as fences, wells, ponds, terraces, and tile lines comprises a substantial continuing capital expenditure, currently about 12 per cent of total capital flow. In some regions, construction of items such as irrigation systems and commercial feed lots has been expanding. Nationally, however, expenditures have been declining absolutely as well as relative to other capital uses.

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<sup>7/</sup> Heady and Tweeten, op. cit., p. 492.

Table 5

Past and Projected Rates of Change in Machine Stocks and Prices, 1946-79

	Average annual rate of change (per cent)		
	Total	Real	Price
1946 - 48 . . . . .	+23.2	+18.4	+4.0
1949 - 51 . . . . .	+18.2	+14.5	+3.2
1952 - 55 . . . . .	+ 3.7	+ 2.7	+1.0
1956 - 60 . . . . .	+ 2.5	- 1.3	+3.9
1961 - 62 . . . . .	+ 2.1	- 0.8	+2.9
1963 - 64 . . . . .	+ 6.0	+ 4.0	+1.9
1965 - 67 . . . . .	+ 6.7	+ 3.8	+2.8
1968 . . . . .	+ 4.5	+ 1.8	+2.8
<u>1970 - 79</u>			
Model HT . . . . .	+ 2.0	- 0.5	+2.5
Model B . . . . .	+ 0.9	+ 0.3	+0.6
Model HM . . . . .	+ 6.2	+ 3.6	+2.5

Source: Past annual rates of change in total stock was computed from data in The Balance Sheet of Agriculture, 1968, U. S. Department of Agriculture, January 1969, pp. 26-27. Estimates of past real stocks were supplied by the U.S. Department of Agriculture. Price changes shown are for the implicit price deflator for the total machine stock, as computed from these two series.

Note: Users of the data on prices and real stocks are referred to p. 20 for a discussion of a probable bias in these estimates.

Table 6  
Alternative Projected Expenditures for Machinery  
(Billions of dollars)

	<u>1950-54</u>	<u>1955-59</u>	<u>1960-64</u>	<u>1965-69</u>	<u>1970-74</u>	<u>1975-79</u>
<u>A. Five-year total</u>						
Actual. . . . .	15.4	14.0	16.0	23.6*		
Model NC. . . . .					23.1	23.1
Model HT. . . . .					24.3	26.8
Model B . . . . .					24.4	25.5
Model HM. . . . .					35.6	48.2
<u>B. Annual average</u>						
Actual. . . . .	3.1	2.8	3.2	4.7		
Model NC. . . . .					4.6	4.6
Model HT. . . . .					4.9	5.4
Model B . . . . .					4.9	5.1
Model HM. . . . .					7.1	9.6

\*Expenditures for 1965-68 multiplied by 1.25.

The downward drift in construction followed large gains in the years immediately after World War II. Expenditures for farm operators' dwellings reached a peak of \$702 million in 1948, but by 1968 were reduced to \$493 million. Construction of other buildings and land improvements topped at \$949 million in 1952, and was down to \$812 million in 1968.

One factor reducing new farm construction is the rapidly declining number of farm units and families. From 1950 to 1968, the number of farms fell by 46 per cent, or by about 2.6 million units. Each farmstead that was abandoned or became a rural residence for a nonfarm family tended to reduce future farm building needs.

In addition, expenditures for new service buildings have been negatively affected by various technological developments. Greater efficiency in livestock production--more milk per cow, faster growth of hogs and broilers--enabled farmers to increase output without proportional increases in animal housing space. Greater use of purchased mixed feeds and virtual elimination of horses and mules tended to reduce farm feed storage requirements. Less costly types of buildings, such as those employing pole-type construction, were increasingly adopted.

Projected construction expenditures used in Models HT, B, and HM are based on a recent study by Scott and Heady.<sup>8/</sup> They project an average annual real decrease of 0.9 per cent and assume that prices of building materials will continue to rise at the 2 per cent annual average experienced from 1947 to 1963. Thus yearly current-dollar spending would average \$1.4 billion during 1970-74, and \$1.5 billion in 1975-79.

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<sup>8/</sup> John T. Scott, Jr., and Earl O. Heady, Aggregate Investment Demand for Farm Buildings: A National, Regional and State Time-Series Analysis, Research Bulletin 545, Agricultural and Home Economics Experiment Station, Iowa State University, Ames, Iowa, July 1966, pp. 704-736.

Livestock inventory. Additions to the quantity of livestock on farms entail a capital flow equal to the value of the physical quantities added. There is general agreement that expanding domestic population and rising per capita income will continue to raise aggregate demand for livestock products, and that the greater output will require larger livestock inventories on farms. However, inventories are not likely to rise as fast as output. As Tostlebe noted after study of 1890-1950, "the most significant technological advances in agriculture. . . have quite consistently been connected with the production of livestock and of livestock products. . . improvements in the breeds of livestock and in livestock feed and management have been sufficient to permit animal products to become increasingly important in the farm-product mix, while the investment in productive livestock per dollar of total farm product declined greatly."<sup>9/</sup> This effect remains important. Excluding horses and mules, the number of animal units of breeding livestock on farms in 1967 was the same as in 1919, and somewhat below levels of the 1940's and 1950's. However, production per breeding unit was 116 per cent larger than in 1919, 38 per cent above that of 1950, and up 13 per cent since 1960.<sup>10/</sup> The larger numbers of feeder livestock and poultry have since 1950 required capital flows that varied greatly from year to year, but averaged only \$228 million annually (Table 4).

As with the machinery projections, analysts again apparently differ as to relative future impact on inventories of the divergent

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<sup>9/</sup> Tostlebe, op. cit., p. 126.

<sup>10/</sup> Changes in Farm Production and Efficiency, U.S. Department of Agriculture, June 1955, p. 23, and June 1968, p. 10.

influences of greater consumer demand and increased production efficiency. Heady and Tweeten projected an average annual gain of only 0.75 per cent in the real livestock inventory, which would require yearly expenditures of about \$120 million during the next decade. But Heady and Mayer specifically assumed no further improvement in the inventory-output ratio and thus projected an average real gain of 2.8 per cent annually over 1965-79. Even if livestock prices receded to 1965 levels by 1980, this growth would require expenditures of over \$700 million annually during the 1970's. Brake also projected similar real growth, along with 1980 prices 14 per cent over those of 1965. Annual expenditures of \$600 million would be required to achieve this projection.

Though the projections vary considerably, even a relatively faulty livestock forecast does not introduce a large relative error in projected total capital flows. Projected livestock expenditures have the greatest relative importance in Model B, but even there they account for only 5 per cent of total capital flows anticipated.

Inventory of stored crops. The value of net physical additions to farmers' holdings of stored crops constitute a volatile but minor capital flow that averaged \$144 million annually in 1950-68.

Diverse influences appear to be operating on the long-term trend. Larger livestock production leads to growth in feed inventories, but the rise is moderated by upward trends in the animal output obtained from a given quantity of feed and in the proportion of total feed purchased from commercial mixers. To the extent that feed inventories are held by feed companies and dealers, the associated capital requirement has been transferred to the nonfarm economy.



Each capital model projects a continued small upward trend in real stocks. However, because 1969 inventories represent a considerable bulge over the long-term trend (one of several sizable fluctuations exhibited over the postwar period), these projections translate into a small amount of disinvestment between 1969 and 1980.

Financial assets. Farmers must hold money balances to carry on their business transactions, primarily involving payment for current operating and family living expenses. Historically, these balances have risen both absolutely and as a proportion of total assets, reflecting the growth of cash operating expenses as each farm unit has become less self-sufficient and more dependent on purchases from other farms or from the nonfarm sector.

During 1950-65, however, growth in money holdings was at least temporarily interrupted as farmers reduced their demand deposits and currency by \$1.1 billion, or 16 per cent. The upward trend in operating expenses continued during these years, but offsetting influences on money stocks were apparently more powerful. The decline in the number of farms and in the farm population must be numbered among the latter. In addition, an upward movement in interest rates put an increasing opportunity cost on cash balances. Ready availability of seasonal production credit may also have enabled farmers to reduce the relative amount of cash assets held on January 1, the day on which these stocks are estimated for the Balance Sheet.

In response to higher interest rates paid on time and savings deposits and perhaps also as a result of improved farm financial management, farmers may have been more likely to hold seasonally-idle working

capital in these forms rather than as demand deposits. Thus the change in these assets, which tended to increase during the postwar period, has been included among capital requirements. At the same time, farmers have reduced their holdings of a roughly equivalent asset, U.S. savings bonds, which has also been included among the financial assets here enumerated.

Projection of financial balances must contend with these diverse influences. Heady and Tweeten projected a 23 per cent total real gain in "cash for operating expenses" between 1960 and 1980. To achieve this real growth as prices paid by farmers rise by an assumed 2 per cent yearly, farmers would have to add \$917 million per year to their holdings of the financial assets listed herein. This estimate is used in Models HT and HM. But Brake projected a slow rise, in current dollars. Farmers would have to add only \$36 million annually to financial assets to fulfill his projection, which is used in Model B.

Real estate purchases. Most farm real estate is owned by individuals and is transferred from one owner to the next by sale rather than inheritance. Of the total number of transfers in the year ending March 1, 1969, for example, only 13 per cent were inheritance or gift transfers. Voluntary sales by retiring or retired farmers and others and by executors of estates averaged \$5.5 billion annually over the four years ending on March 1, 1969.<sup>11/</sup> Thus annual land purchases are somewhat larger than expenditures for vehicles and machinery.

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<sup>11/</sup> Farm Real Estate Market Developments, U.S. Department of Agriculture, August 1969, p.22; March 1969, p.11; April 1968, p. 14; June 1967, p. 13.

Capital flows required by land transfers are lower than the value of sales, however. The total capital flow required equals the money removed from the agricultural production sector by sellers who are retiring or retired farmers, nonfarmer heirs, or nonfarmer investors withdrawing from farmland ownership. To calculate the capital flow, **therefore**, the value of sales must be adjusted for the amount of outstanding debt on the property, which is either assumed by the purchaser or is repaid as a result of the sale, and also for the proceeds of land sales that are used to buy other farm land.

There is little data on which to estimate these adjustments and so derive required capital flows from value of sales. One indication of the amount of outstanding debt is provided by a 1967 survey showing that assumption of outstanding property mortgages accounted for 9 per cent of credit involved in land transfers, which puts assumptions at about 5 per cent of transfer value. A 1964 survey indicated that about 10 per cent of total voluntary sales were made by farmers who continued in farming after the sale, and who therefore may have bought other tracts with the proceeds.<sup>12/</sup> No data seem available on debt repayments or on the subsequent activity of non-farmer sellers.

For our capital flow estimates, land sales were adjusted downward by 25 per cent to obtain the capital flow required. In 1965-68, capital flows associated with real estate transfers were therefore estimated to average \$4.2 billion per year, or 38 per cent of total farm capital flows.

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<sup>12/</sup> Farm Real Estate Market Developments, U.S. Department of Agriculture, December 1968, p. 23; August 1965, p. 31.

For years prior to 1965, estimates are made still more difficult by lack of data on the value of real estate sales. For these years, only transfer rates and total real estate values are provided by the USDA. Since in 1965-68 the value of sales averaged 78 per cent of the figure obtained by multiplying the transfer rate by total value, this relationship was used to estimate capital flows required in 1950-64, as shown in Table 7. The estimates indicate a steady upward trend that about doubled the required flow between 1950 and 1968, as the effect of higher land prices easily overwhelmed the effect of lower transfer rates.

The same relationships were used in projecting future capital flows. With a continued small decline in the transfer rate, required annual capital flows would average about 2.2 per cent of any projected value of the real estate stock. Thus if the value of land and buildings were to stabilize at the 1969 level, as in Model NC, required transfer capital would be \$4.5 billion per year. In the other models, the capital flows depend on the projected course of real estate prices.

Table 7  
 Alternative Projected Capital Flows Required by Real Estate Purchases  
 (Billions of dollars)

	<u>1950-54</u>	<u>1955-59</u>	<u>1960-64</u>	<u>1965-69</u>	<u>1970-74</u>	<u>1975-79</u>
	<u>A. Five-year total</u>					
Estimated actual . . . . .	11.0	13.5	16.0	20.7*		
Model NC . . . . .					22.7	22.6
Model HT . . . . .					28.1	37.3
Model B . . . . .					24.9	28.0
Model HM . . . . .					25.4	29.3
	<u>B. Annual average</u>					
Estimated actual . . . . .	2.2	2.7	3.2	4.2		
Model NC . . . . .					4.5	4.5
Model HT . . . . .					5.6	7.5
Model B . . . . .					5.0	5.6
Model HM . . . . .					5.1	5.9

\*Estimated flows in 1965-68 multiplied by 1.25.

An econometric study by Tweeten and Nelson that attempted to measure the relative strength of pressures on farm land prices in 1950-63 ascribed 52 per cent to farm enlargement (of which an unspecified portion was thought due to government programs), 20 per cent to demand for non-farm uses, 17 per cent to the expectation of further capital gains, and most of the remainder to reduction in quantity of land.<sup>13/</sup> Since the land price index was deflated by the wholesale price index prior to analysis, participation by farm land in a general price uptrend was additionally assumed. Because of the many alternative ways in which a land price model could be specified and estimated, this one study is not definitive. But perhaps it serves to indicate the principal forces bearing on land prices, and through them exerting a major influence on capital and credit requirements.

In this view, the basic factor behind land price increases is technological change. First, innovations have increased the productivity of land. Higher crop yields resulting from new technology and better management have tended, ceteris paribus, to lower unit production costs and increase net returns. Second, other new technology--principally larger tractors and machines--has permitted a farmer to operate a larger land area, and thereby also lower unit overhead costs.<sup>14/</sup> This incentive to enlarge farm units has created an active demand for land.

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<sup>13/</sup> Luther G. Tweeten and Ted R. Nelson, Sources and Repercussions of Changing U. S. Farm Real Estate Values, Technical Bulletin T-120, Oklahoma State University Experiment Station, April 1966, p. 18.

<sup>14/</sup> Tweeten and Nelson, op. cit., pp. 45-47.

Competitive bidding among the more successful farmers--those able to achieve above-average net returns from each added tract--has led to increased prices; in effect, the higher net returns have been capitalized into land prices.<sup>15/</sup> Also, as this experience prevails over many years, the upward course of land prices is probably further reinforced as buyers discount expected future advances in technology and therefore in net returns--or, what is equivalent if less sophisticated, discount capital gains from an expected future upward trend in land prices.<sup>16/</sup>

Much of the same new technology that reduced unit costs, however, also tended to increase total farm output.<sup>17/</sup> Output gains could occur both through improvement in inputs and farming practices and as farm consolidation placed more of the total resources into the hands of the more efficient and specialized operators. Government output control programs kept the potential output increase from being fully achieved, but the gain has been sufficiently large relative to the slower expansion of demand to exert a depressing influence on output prices. The latter effect tended to offset the favorable impact of unit cost reductions on net returns, and would have been more pronounced in the absence of the government programs.<sup>18/</sup>

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<sup>15/</sup> Albert A. Montgomery and Joseph R. Tarbet, "Land Returns and Real Estate Values," Agricultural Economics Research, January 1968, pp. 5-16.

William H. Scofield, "Land Prices and Farm Earnings," Farm Real Estate Market Developments, U. S. Department of Agriculture, October 1964, pp. 39-42.

<sup>16/</sup> Tweeten and Nelson, op. cit., pp. 19-22.

<sup>17/</sup> Gene L. Swackhamer, "Agriculture and Technology," Monthly Review, Federal Reserve Bank of Kansas City, May-June 1967, pp. 5-6.

<sup>18/</sup> Tweeten and Nelson, op. cit., pp. 23-25.

In these circumstances the commodity programs, by restricting total production and either maintaining output prices or supplementing net incomes, have allowed a higher portion of the benefits of cost-reducing technology to accrue to farmers rather than consumers. To the extent that government programs have thus preserved the technologically-induced gains in net returns that have in turn been capitalized into land prices, they may be considered a contributor to the rise in the latter.<sup>19/</sup> The effect has been particularly obvious in cases where benefits of an effective program have been tied to specific parcels of land; for instance, land with a tobacco allotment has been valued at several times the price of similar land that lacked an allotment.<sup>20/</sup>

Insofar as the future course of real estate values depends on technological advances and the extent to which these foster further farm enlargement, their direction in the relatively near future does not seem in doubt. Numerous studies continue to indicate that optimum family farm sizes, given known technology, are far above present averages. It is reasonable that price projections to 1980, as made in the three models, be based mainly on the upward thrust from this source, but with realization that prices can be materially affected within that time by changes in the nature and extent of government programs and in export levels, general price trends, and the degree to which expected land price increases are discounted. Over a longer period, changes in the rate and nature of technological advances--particularly in the extent to which they would continue to foster enlargement of the land area of

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<sup>19/</sup> Ibid., pp. 15-18, p. 47.

<sup>20/</sup> William H. Scofield, "Land Returns and Farm Income," Farm Real Estate Market Developments, U. S. Department of Agriculture, August 1965, p. 51.



individual farms--become a greater source of uncertainty.<sup>21/</sup> Changes in population growth and in the nature of urban appetites for residential and recreational lands also become larger considerations.

Of the projected real estate values, that of Model HT represents most closely an extension of the past historical relationship between land prices and farm enlargement. Prices are projected to rise by 6.2 per cent annually, causing required transfer capital flow to rise rapidly to an annual average of \$7.5 billion in 1975-79 (Table 7). In Model HM, on the other hand, an average yearly price increase of 3.3 per cent is derived by assuming that land values will reflect projected increases in the economic rent to cropland as well as general price inflation averaging 2 per cent yearly. Annual capital flows required by this model attain an average level of only \$5.9 billion in 1975-79. Model B reflects Brake's assumption that land prices will rise by an average of 3 per cent yearly, with implied capital flows therefore similar to those of Model HM.

Total capital flows, 1950-79

Total capital flows--past, present, and projected--are summarized in Table 8.

In the 1950's, total flows averaged \$7.3 billion annually. Real estate purchases rose throughout the decade, but in the second half machinery expenditures and additions to livestock inventory slackened sufficiently to stabilize the total. In 1960-64, additions to machinery and livestock holdings were resumed and together with increasing real estate purchases raised total flows to

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<sup>21/</sup> Bruce B. Johnson, "An Active Land Market in Perspective," Farm Real Estate Market Developments, U.S. Department of Agriculture, December 1968, pp. 34-35.

Table 8  
Alternative Projected Total Capital Flows  
(Billions of dollars)

	<u>1950-54</u>	<u>1955-59</u>	<u>1960-64</u>	<u>1965-69</u>	<u>1970-74</u>	<u>1975-79</u>
	<u>A. Five-year total</u>					
Estimated actual. . . . .	37.4	35.1	39.4	54.2*		
Model NC. . . . .					56.2	56.8
Model HT. . . . .					63.7	76.8
Model B . . . . .					59.0	64.0
Model HM. . . . .					75.9	94.4
	<u>B. Annual average</u>					
Estimated actual. . . . .	7.5	7.0	7.9	10.8		
Model NC. . . . .					11.2	11.4
Model HT. . . . .					12.7	15.4
Model B . . . . .					11.8	12.8
Model HM. . . . .					15.2	18.9

\*Estimated flows for 1965-68 multiplied by 1.25.

an average of \$7.9 billion per year. Then in 1965-68, a sharp increase in machinery expenditures and a steady rise in land prices combined to raise capital flows to an annual average of \$10.8 billion.

If the capital stock were to be stabilized at the level existing at the beginning of 1969, both in real terms and in current dollars as Model NC assumes, future capital flows would average \$11.3 billion per year. About two-fifths of this sum would arise from real estate transfers, a similar share from expenditures required to maintain the stock of vehicles and machinery, and the remaining one-fifth from maintenance of the stock of buildings and land improvements.

It is evident, therefore, that any further increases in prices of capital goods and any further additions to the physical plant would raise total capital flows above the present level. Each of the other three models envision some price and real increases during the next decade and therefore project higher capital requirements. They differ only in the magnitude of the increases expected.

Model B, which projects moderate land price increases and small gains in machinery expenditures, envisions only a moderate gain in the required capital flow. By the second half of the next decade, annual flows would average \$12.8 billion. Real estate transfers would rise somewhat in relative importance, to 44 per cent of the total, from 38 per cent in 1965-68.

Model HT projects only moderate gains in machinery expenditures and very small additions to livestock inventories, but strong increases in farm land prices. By 1975-79, required capital flows would consequently average \$15.4 billion per year, with real estate transfers

contributing 49 per cent of this total.

Model HM, on the other hand, projects moderate increases in land prices, but very large real additions to machinery stocks. Because of the latter, the capital flows projected are the largest of the three models, averaging \$18.9 billion annually during the late 1970's. Of this total, 52 per cent would consist of machinery expenditures and only 31 per cent would stem from real estate purchases.

The projections differ considerably. But to emphasize the differences, and the unknowns that they reflect, would be to lose the principal message the estimates convey. Recall that over the past ten years annual capital flows rose by \$4 billion; in relative terms, by 54 per cent. The projections for the next decade show annual requirements rising by \$2 to \$8 billion; in relative terms, by 19 to 75 per cent. The message is clear: capital demands will rise further from the high level of the last few years; in number of additional dollars, the gain could easily exceed that of the last 10 years; relative to the new high level of current requirements, the additional demands may represent a somewhat slower advance, but under some conditions might equal or exceed the recent sharp rise.

The unanimous projection of a significant further increase in capital flows appears well grounded. The two primary sources of future capital flows--machinery purchases and farm enlargement--have a common root in technological advance. The fund of technological knowledge now available but not yet applied and the high likelihood of additional discoveries indicate that growth in total investment and

investment per farm will continue for some time.<sup>22/</sup> The National Advisory Commission on Food and Fiber recently summarized these expectations as follows:

There is little doubt that farming will continue to use more capital in the future.

First, science and technology are continually advancing not only in application to farming but throughout the economy.

Second, reflecting increased productivity, the relative cost of capital keeps declining. Capital becomes continually cheaper, compared with labor and land, so farmers will continue to use more capital.

These changes not only make it possible for the individual farmer to increase his volume of operations--they make it necessary for him to do so. He must expand his investment and then spread costs over more units of product to remain competitive.<sup>23/</sup>

Thus even though agriculture is already one of the more capital-intensive sectors of the American economy, further rise in the capital-output ratio (in current prices) seems certain. The ratio of the value of farm productive assets to the gross national product produced in agriculture has been estimated as at least 6:1 in the 1950's compared with a ratio of about 1.5:1 in the nonfarm economy.<sup>24/</sup> By 1964-66, the ratio in agriculture averaged 8:1. These data hint that the annual capital demands of farming place a relatively severe and rising strain on the income flows from which they are either initially or ultimately

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<sup>22/</sup> Federal Reserve Bank of Kansas City, "Financial Requirements of Agriculture," Monthly Review, September-October 1964, pp. 5-7.

<sup>23/</sup> National Advisory Commission on Food and Fiber, Food and Fiber for the Future, July 1967, p. 240.

<sup>24/</sup> D. Gale Johnson, op. cit., p. 355.

financed. These relationships are next examined--first as they have evolved since 1950, and then as they might develop under each of the alternative capital projections.

V. CREDIT REQUIREMENTS, 1950-1979

Given the prospect of substantial capital flow requirements, the task of this chapter is to project the share that will be financed from cash flow--depreciation allowances and net income--as opposed to the share financed by expanded use of credit. Thus one preliminary task is to project depreciation and net income, and the other is to project the share of these amounts that may be allocated toward meeting capital needs. After examination of the postwar history of these series, such projections of internal financing are made here. They are then compared with the projected capital flows to secure estimates of future credit demands and farm debt expansion.

How have capital requirements been financed?

It is analytically useful to view capital flows required by the farm production sector (including nonfarm landlords) as being met either (1) from a cash flow consisting of income remaining after operating expenses are paid or (2) by borrowing.<sup>25/</sup>

Financing from cash flow. Cash flow is herein estimated as the sum of net farm income of operators and landlords, plus the capital consumption allowances that were included in estimated production expenses (estimated depreciation of buildings, land improvements, vehicles, machinery, and equipment, as well as accidental damage to these capital goods), plus nonfarm income of the farm population. Nonfarm income is included in cash flow because most farm families apparently continue to pool farm and nonfarm income prior to meeting

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<sup>25/</sup> Tostlebe, op. cit., p. 132.

living and capital investment needs. Nonfarm income of farm landlords is not included as it seems likely that such investment is expected to pay its own way from farm income and land price appreciation.

Of total annual cash flow averaging \$32.5 billion in 1965-68, net farm income represented 50 per cent, capital consumption allowances 17 per cent, and nonfarm income 33 per cent (Table 9). Though the principal component remains net farm income, its relative importance has been declining. Fifteen years earlier it contributed 61 per cent, while capital consumption allowances represented 13 per cent and nonfarm income only 26 per cent.

Cash flow averaged \$24.4 billion annually in the first five years of the 1950's, declined slightly when farm income dropped in the next five year period, more than made up this loss during the first half of the 1960's and then jumped to an annual rate of \$32.5 billion in 1965-68. In this last period, however, the relative gains in cash flow did not keep up with those in required capital flows. Whereas capital flow averaged 30 per cent of cash flow in the 1950's and early 1960's, this ratio increased to 33 per cent in 1965-68 (Table 9). Thus the burden posed by capital requirements, viewed in relation to the cash flow from which they might be financed, has recently increased.

Over the 1950's, when the relative capital burden was running at about 30 per cent of cash flow, farmers progressively reduced the proportion of cash flow they devoted to meeting capital requirements. In the first half of the 1950's, 27 per cent of cash flow was used for capital purposes, and this met the bulk of capital



Table 9  
Financing of Capital Flows, 1950-69

	<u>1950-54</u>	<u>1955-59</u>	<u>1960-64</u>	<u>1965-69</u>
<u>A. Five-year total (billions of dollars)*</u>				
<u>Sources of capital financing</u>				
Increase in debt . . . . .	4.7	8.2	12.4	20.0
From cash flow . . . . .	32.7	27.0	27.0	34.3
Total capital flow . . . . .	<u>37.4</u>	<u>35.1</u>	<u>39.4</u>	<u>54.2</u>
<u>Sources of cash flow</u>				
Capital consumption allowances . . . . .	16.2	19.6	22.0	27.7
Net farm income . . . . .	73.9	63.3	68.3	80.9
Nonfarm income . . . . .	31.9	33.1	40.7	54.0
Total cash flow . . . . .	<u>122.0</u>	<u>116.0</u>	<u>131.0</u>	<u>162.5</u>
<u>B. Annual average (billions of dollars)</u>				
<u>Sources of capital financing</u>				
Increase in debt . . . . .	.9	1.6	2.5	4.0
From cash flow . . . . .	6.5	5.4	5.4	6.9
Total capital flow . . . . .	<u>7.5</u>	<u>7.0</u>	<u>7.9</u>	<u>10.8</u>
<u>Sources of cash flow</u>				
Capital consumption allowances . . . . .	3.2	3.9	4.4	5.5
Net farm income . . . . .	14.8	12.7	13.7	16.2
Nonfarm income . . . . .	6.4	6.6	8.1	10.8
Total cash flow . . . . .	<u>24.4</u>	<u>23.2</u>	<u>26.2</u>	<u>32.5</u>
<u>C. Per cent</u>				
<u>Analytical ratios</u>				
Capital flow/Cash flow . . . . .	31	30	30	33
Proportion of cash flow used for capital . . . . .	27	23	21	21
Average annual growth rate during period:				
Selected assets (Table 2) . . . . .	4.5	4.5	3.4	5.9
Debt . . . . .	7.6	8.9	8.8	9.6
Debt/Assets, end of period . . . . .	10.2	12.5	16.1	18.5**

\* Data shown for 1965-69 are estimates for 1965-68 multiplied by 1.25 to facilitate comparison with previous five-year periods.

\*\*As of January 1, 1968.

Source: Capital flows from Table 4, debt from Table 14, assets from Table 2, cash flow components from Farm Income Situation, U.S. Department of Agriculture, July 1969, pp. 48, 52, 57, and 61.

requirements. By the early 1960's however, only 21 per cent of cash flow was being used for capital purchases, and the same share was so used in 1965-68 in spite of the relatively greater capital spending that then occurred.

Relative reliance on credit, 1950-1968. Credit thus became increasingly important as a source of funds for capital expenditures. In the early 1950's, only 13 per cent of capital flows were met by an increase in debt. Ten years later this ratio had risen to 32 per cent, and by 1965-68 it averaged 37 per cent.

One must go back 50 years to find a similar degree of reliance on credit. Writing in the 1950's, Tostlebe noted:

To a remarkable degree, farmers have financed the increase in farm capital with their own incomes and savings. A comparison of the volume of new capital that was financed by loans and bank credits with that which was financed with funds derived from gross farm income and savings shows that in every decade for which we have information, save the one immediately preceding 1920, farmers supplied by far the greater part of the funds that financed the capital acquisitions.<sup>26/</sup>

A few years later, Johnson was still able to state:

...even when it is assumed that all increases in loans and credit were used to increase agricultural assets, their contribution has generally been less important over the past two decades [1940-59] than either depreciation or net income as a source of financing.<sup>27/</sup>

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<sup>26/</sup> Ibid., p. 19.

<sup>27/</sup> D. Gale Johnson, op. cit., p. 377.

According to our estimates, however, in 1958 credit became a more important source of capital than net income. In fact, increases in debt have recently rivaled depreciation allowances for the lead in supplying capital, whereas ten years before they were only one-third as large.

Thus in projecting credit demands it is not enough to cite the capital flows anticipated. It appears equally important to project the cash flow and also the proportion of that flow which farmers will be willing or forced to apply to satisfaction of the projected capital needs. In so doing, additional uncertainties are obvious. Is a major change in net income probable? Has the postwar trend toward less internal financing reached its lowest point? How probable is a higher savings rate in the near future?

Current factors affecting credit use. In the last period of markedly increased participation of creditors in the financing of agriculture, that of 1900-1920, Tostlebe found two primary factors in operation. One was the pressure of financing farm transfers at the newly-inflated prices.<sup>28/</sup> Physical farm enlargement was not a major factor, but average dollar value of assets per farm rose by 79 per cent between 1900 and 1910, and by 91 per cent between 1910 and 1920.<sup>29/</sup> Tostlebe also speculates that family living offered stiff competition for available funds:

First, and most important, inflated expenditures for family living probably made heavy inroads on the incomes of many farmers. The rise in prices of that period made necessary much greater outlays to maintain the prewar level of living. But more than that, the prosperity of the times encouraged farmers to spend freely, so that the level of living for many farmers was substantially higher during this period than before.<sup>30/</sup>

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<sup>28/</sup> Tostlebe, op. cit., pp. 140, 145-147. <sup>29</sup> Ibid., p. 85.

<sup>30/</sup> Ibid., p. 145.

These elements appear in the current situation, though they do not seem to dominate it. Typical farms are now so large that an average person seeking to enter farming through purchase necessarily has to borrow a large portion of the funds required. Also, family farms approaching optimum size increasingly represent a quantity of assets that a typical farmer is not expected to save during a lifetime, so farmers are more likely to remain indebted throughout their career. On the other hand, in these circumstances, alternatives to the use of credit--leasing of land and equipment from nonfarm investors, vertical integration, corporate ownership--are spreading and lessening the credit demands made directly by farmers, though probably increasing credit demands of these other entities of the farm production sector.

The desire to raise family living levels may also be a powerful factor in current borrowing. National television networks have exposed farmers to consumer amenities. Among land owners, income after depreciation and expansion allowances might not permit a significant rise in living conditions, but paper capital gains may have imparted a sense of financial prosperity reflected in spending. Several authors have noted that short of selling their land, farmers can tap these gains only by offering them as collateral for increased debt. This process has probably occurred in subtle ways. Perhaps depreciation allowances, which after all look just like net income, are consumed in current living, and the tractors that were purchased for cash ten years ago are today replaced on the instalment plan. Or, instead of saving toward a down-payment on the adjacent 80, a farmer simply plans to use his inflated equity in his present holdings to effect a completely

debt-financed purchase.

The attitudes of farmers and lenders toward the future of farming and toward what constitutes appropriate uses and terms of farm credit are obviously important determinants of the proportion of capital needs financed by debt. Farmers must be willing to borrow and lenders to lend if outstanding credit is to increase--and both were obviously willing over the last 20 years. The outlook for product and land prices must be important in the determination of these attitudes. In recent years, lenders that identify their interests most closely with those of agriculture--retiring farmers and the cooperative credit system--have provided a larger share of credit, and other lenders have employed more agriculturally-trained loan officers. Thus it is not surprising that the outlook and attitudes of borrowers and lenders have apparently tended to coincide.

The question of attitudes leads into the dominant feature of the present situation--farm enlargement--that was largely absent in the previous period. According to Tostlebe, average physical assets per farm nationally remained virtually unchanged between 1870 and 1940, though their composition was altered.<sup>31/</sup> A slow decline in the size of southern farms concealed a slow increase in the size of midwest and western enterprises, but nowhere did expansion match that which started in the 1940's. Since then the benefits of, or competitive necessity for, enlargement became more obvious to farm lenders. In fact, numerous

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31/Ibid., p. 85.

educational efforts attempted not only to instruct lenders in these matters, but also to advise them to tell farmers about the need to expand in order to raise income, and how credit could assist this endeavor. Greater appreciation of the leverage that could be attained through credit was instilled in lender and farmer alike.

The importance of these considerations emerged in the 1960 Sample Survey of Agriculture, in which a large national sample of farmers was for the first time asked to enumerate debts owed to various sources. About 58 per cent of all farmers were indebted to varying degrees. When Garlock compared indebted operators to those without debt, he found that:

Regardless of whether the farmers were classified by age, years on the farm, tenure, or type of farm they operated, the indebted farmers, on the average, conducted larger-scale operations than the debt-free farmers. The value of the land and buildings they operated was greater, they leased more land, and they owned more land. Also they sold products of greater value, earned more net cash income from farming, and had larger off-farm incomes and more net income from all sources than did the debt-free farmers.

Although credit was indispensable to indebted farmers in building up and operating large farm businesses, it is questionable whether use of credit was fundamentally responsible for their larger, more profitable operations. What the data probably mean is that the farmers who used credit were more energetic and aggressive, more willing to take risks, and less willing to work only with the assets they owned outright than were the debt-free farmers. This is indicated by their more extensive use of leased land as well as by their use of credit.

These expansionist characteristics of the credit users--particularly the heavy credit users--are pointed up more sharply when farmers are classified according to the extent of their indebtedness. ...Despite their small equities, the most heavily indebted farmers owned farms of nearly as high value as those owned by the debt-free farmers. But the most significant point is the extent to which the indebted farmers used their equities as a fulcrum for developing larger operations than their own financial resources would support. The most heavily indebted farmers owned 3-1/2 times as much land, and operated 6 times as much land, as they could have owned or operated without borrowing and leasing. By using these methods of expanding operations, they raised their net cash farm incomes to levels approximating those of the other groups whose equities were much greater.<sup>32/</sup>

In times past, these expansionary desires, grounded in the economics cited by Garlock, might have been **financed** in larger part by **saving**. But given that many farmers have come to regard credit as an appropriate tool for achieving these ends, that lenders encourage this use of credit, and that both young farmers and the holders of paper gains are probably disinclined to postpone attainment of family living goals, a continued high or perhaps even increased use of credit relative to required capital flow seems probable as long as the factors forcing farm **enlargement** continue operative. These have been found rooted in technological innovation, and seem in no danger of expiring before 1980. They have already been found responsible for higher capital requirements, and now are also found responsible for greater relative use of credit in meeting these requirements, given the farm income situation since 1950. Barring a drastic rise in net farm

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<sup>32/</sup> Fred L. Garlock, Farmers and Their Debts...The role of credit in the farm economy, Agricultural Economic Report No. 93, U. S. Department of Agriculture, June 1966, pp. 8-9.

income, it seems reasonable to expect a savings rate no higher than that of the 1960's. On the other hand, if real net income per farm rises at a reasonable pace, neither would there be great pressure to reduce the savings rate. The credit projections that follow incorporate this reasoning.

Projected credit requirements, 1970-1979

The analytical framework outlined above and exemplified by Table 9 can be used to project credit requirements to 1980 under the various capital models that have been developed. For each past period shown in Table 9, capital flow, capital consumption, net income, and increase in debt were all "known," and thus the amount of cash flow that was used to meet capital requirements could be obtained by subtraction. For the projections, however, only the capital flows and the capital consumption allowances that are consistent with these flows are initially given. But if the course of net farm and nonfarm income is projected, the total cash flow becomes known. Then, if a further projection is made about how much of cash flow farmers will devote to meeting capital requirements, the amount of increase in borrowing--the credit requirement--can be solved for as the residual.

Internal financing in the 1970's. To project internal financing, the course of net farm income, nonfarm income of farmers, and the savings rate must first be estimated.

Instinctively, one wants to project total net farm income by projecting gross farm income and production expenses and calculating the difference. But a different approach is taken here, based on the



belief that over a period of years (1) advances in real per farm income will parallel gains in per capita income achieved in the nonfarm economy; (2) technological advances will cause farm numbers to decline independently of the course of farm income; and (3) the general price level will tend to rise.

These trends have been in evidence over the postwar period. Between 1958 and 1968, for example, operators' real net farm income per farm (income adjusted for changes in the index of prices paid by farmers) rose by 3.3 per cent annually, while national per capita real personal income rose at a yearly rate of 3.4 per cent. However, the number of farms decreased by 3.2 per cent annually, and so total real operators' net farm income was unchanged. But prices paid by farmers rose at an average annual rate of 1.6 per cent, and so total net farm income in current dollars increased at the same rate.

For the 1970's the National Planning Association projects an annual advance of 3.25 per cent in national per capita real personal income.<sup>33/</sup> In the longer run, the interplay of competitive and political forces will tend to ensure that farmers participate to roughly the same extent in this advance in the national level of living. At the same time, as farm enlargement continues and farm numbers therefore decline, this rate of gain in real income per farm may be achieved by a merely stable total real net income. However, if prices paid by farmers tend to rise by an average of 2 per cent annually, as is

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<sup>33/</sup> Ahmad Al-Samarrie, Morris Cobern, and Takeshi Hari, National Economic Projections to 1978/79, National Planning Association, Washington, January 1969, p. 117.

projected in Models HT and HM, total net farm income would also have to rise by 2 per cent annually to yield the projected real gains.

Note that this projection of net farm income implicitly requires that gross income rise sufficiently to provide not only the increase in net income, but also to cover any rise in production expenses (including interest payments on projected increases in debt) and in projected depreciation allowances.

Total nonfarm income of the farm population has been rising rapidly and the trend is expected to continue as nonfarm employment and investment opportunities become increasingly available to rural residents. Between 1958 and 1968, nonfarm income rose at an annual rate of 5.8 per cent in spite of an average yearly drop of 4.8 per cent in the farm population. For the 1970's, we project total nonfarm income to increase by 5 per cent annually, with two-fifths of the gain reflecting projected price inflation.

To summarize the cash flow projections, net farm income is projected to increase from \$16.1 billion in 1968 to an annual average of \$17.4 billion in 1970-74 and \$19.3 billion in 1975-79. Annual nonfarm income is projected to rise from \$11.8 billion in 1968 to an average of \$14.3 billion in 1970-74 and \$18.3 billion in 1975-79. Capital consumption allowances, which vary among the capital models according to the growth of the machine stock foreseen, are projected at annual levels of \$7 to \$8 billion in 1970-74 and \$7 to \$10 billion in 1975-79. Total cash flow, which was \$34 billion in 1968, is therefore projected to rise to about \$39 billion per year in 1970-74, and about \$45 billion in 1975-79, with some variation among models as shown in Tables 10 and 11.

Table 10  
 Projected Financing of Alternative Capital Flows  
 1970-74

	Model <u>NC</u>	Model <u>HT</u>	Model <u>B</u>	Model <u>HM</u>
<u>A. Five-year total (billions of dollars)</u>				
<u>Sources of capital financing</u>				
From cash flow (21% of cash flow) . . . .	40.4	40.8	40.5	41.5
Increase in debt . . . . .	<u>15.8</u>	<u>22.9</u>	<u>18.5</u>	<u>34.4</u>
Total capital flow . . . . .	56.2	63.7	59.0	75.9
<u>Sources of cash flow</u>				
Capital consumption allowances . . . . .	33.6	35.5	34.3	38.9
Net farm income . . . . .	87.1	87.1	87.1	87.1
Nonfarm income . . . . .	<u>71.7</u>	<u>71.7</u>	<u>71.7</u>	<u>71.7</u>
Total cash flow . . . . .	192.4	194.3	193.1	197.7
<u>B. Annual average (billions of dollars)</u>				
<u>Sources of capital financing</u>				
From cash flow (21% of cash flow) . . . .	8.1	8.2	8.1	8.3
Increase in debt . . . . .	<u>3.2</u>	<u>4.6</u>	<u>3.7</u>	<u>6.9</u>
Total capital flow . . . . .	11.2	12.7	11.8	15.2
<u>Sources of cash flow</u>				
Capital consumption allowances . . . . .	6.7	7.1	6.9	7.8
Net farm income . . . . .	17.4	17.4	17.4	17.4
Nonfarm income . . . . .	<u>14.3</u>	<u>14.3</u>	<u>14.3</u>	<u>14.3</u>
Total cash flow . . . . .	38.5	38.9	38.6	39.5
<u>C. End of period (billions of dollars)</u>				
Selected assets . . . . .	281.1	378.6	320.5	344.2
Outstanding debt . . . . .	71.5	78.9	74.3	92.3
<u>D. Per cent</u>				
<u>Analytical ratios</u>				
Capital flow/Cash flow . . . . .	29	33	31	38
Increase in debt/Capital flow . . . . .	28	36	31	45
Average annual change during period:				
Selected assets . . . . .	0	5.1	2.2	3.4
Outstanding debt . . . . .	5.1	7.1	5.9	9.8
Debt/Assets, end of period . . . . .	25.4	20.8	23.2	26.8

Table 11  
 Projected Financing of Alternative Capital Flows  
 1975-79

	Model <u>NC</u>	Model <u>HT</u>	Model <u>B</u>	Model <u>HM</u>
<u>A. Five year total (billions of dollars)</u>				
<u>Sources of capital financing</u>				
From cash flow (21% of cash flow) . . . . .	46.7	47.6	47.0	49.9
Increase in debt . . . . .	<u>10.0</u>	<u>29.3</u>	<u>17.0</u>	<u>44.5</u>
Total capital flow . . . . .	56.8	76.8	64.0	94.4
<u>Sources of cash flow</u>				
Capital consumption allowances . . . . .	34.5	38.4	35.8	49.6
Net farm income . . . . .	96.5	96.5	96.5	96.5
Nonfarm income . . . . .	<u>91.5</u>	<u>91.5</u>	<u>91.5</u>	<u>91.5</u>
Total cash flow . . . . .	222.5	226.4	223.9	237.6
<u>B. Annual average (billions of dollars)</u>				
<u>Sources of capital financing</u>				
From cash flow (21% of cash flow) . . . . .	9.3	9.5	9.4	10.0
Increase in debt . . . . .	<u>2.0</u>	<u>5.9</u>	<u>3.4</u>	<u>8.9</u>
Total capital flow . . . . .	11.4	15.4	12.8	18.9
<u>Sources of cash flow</u>				
Capital consumption allowances . . . . .	6.9	7.7	7.2	9.9
Net farm income . . . . .	19.3	19.3	19.3	19.3
Nonfarm income . . . . .	<u>18.3</u>	<u>18.3</u>	<u>18.3</u>	<u>18.3</u>
Total cash flow . . . . .	44.5	45.3	44.8	47.5
<u>C. End of period (billions of dollars)</u>				
Selected assets . . . . .	281.1	490.1	358.9	409.7
Outstanding debt . . . . .	81.6	108.1	91.3	136.8
<u>D. Per cent</u>				
<u>Analytical ratios</u>				
Capital flow/Cash flow . . . . .	26	34	29	40
Increase in debt/Capital flow . . . . .	18	38	27	47
Average annual change during period:				
Selected assets . . . . .	0	5.3	2.3	3.5
Outstanding debt . . . . .	2.7	6.5	4.2	8.2
Debt/Assets, end of period . . . . .	29.0	22.1	25.4	33.4

Of this cash flow, 21 per cent is projected to be allocated to meeting capital requirements, the same proportion as was so allocated on average during 1960-68. Internal financing of capital flow is thus expected to average about \$8 billion per year in 1970-74 and \$9 to \$10 billion in 1975-79, up from the average of \$6.9 billion in 1965-68.

Projected debt expansion under alternative capital models.

For each capital model, the projected increase in outstanding farm debt consists of the difference between the capital flow and the internal financing projected by that model. These calculations are shown in Tables 10 and 11, and the resulting debt projections are summarized in Table 12.

Under Model NC, in which farm assets remain unchanged in value, substantial but decreasing annual additions to debt would still be required, and outstanding debt would reach \$81.6 billion in 1980, up from \$52.0 billion in 1969. Thus it appears that farmers would for some time tend to incur sizable amounts of new debt simply in the course of replacement and transfer of today's capital plant at today's prices.

In Model B, in which capital flows advance moderately, outstanding farm debt would reach \$91.3 billion in 1980. The rate of debt expansion would fall to an annual rate of about 4 per cent by 1980, compared to the actual rate of 9.6 per cent in 1965-68. However, debt would grow more than twice as rapidly as assets and in 1980 would constitute 25 per cent of assets, compared to 19 per cent in 1968.

The relatively greater land price increases projected in Model HT lead to an outstanding farm debt of \$108.1 billion in 1980. Annual gains in debt would average about 7 per cent; in dollars, the annual increase during 1975-79 would average \$5.9 billion. However,

Table 12  
Alternative Projected Credit Requirements

	<u>1950-54</u>	<u>1955-59</u>	<u>1960-64</u>	<u>1965-69</u>	<u>1970-74</u>	<u>1975-79</u>
<u>A. Increase in debt during period (billions of dollars)</u>						
Actual. . . . .	4.7	8.2	12.4	20.0*		
Model NC. . . . .					15.8	10.0
Model HT. . . . .					22.9	29.3
Model B . . . . .					18.5	17.0
Model HM. . . . .					34.4	44.5
<u>B. Average annual increase in debt (billions of dollars)</u>						
Actual. . . . .	.9	1.6	2.5	4.0*		
Model NC. . . . .					3.2	2.0
Model HT. . . . .					4.6	5.9
Model B . . . . .					3.7	3.4
Model HM. . . . .					6.9	8.9
<u>C. Outstanding debt at end of period (billions of dollars)</u>						
Actual. . . . .	15.4	23.6	36.0	56.0*		
Model NC. . . . .					71.5	81.6
Model HT. . . . .					78.9	108.1
Model B . . . . .					74.3	91.3
Model HM. . . . .					92.3	136.8
<u>D. Annual growth rate of outstanding debt during period (per cent)</u>						
Actual. . . . .	7.6	8.9	8.8	9.2*		
Model NC. . . . .					5.1	2.7
Model HT. . . . .					7.1	6.5
Model B . . . . .					5.9	4.2
Model HM. . . . .					9.8	8.2
<u>E. Debt/Asset ratio at end of period (per cent)</u>						
Actual. . . . .	10	12	16	19**		
Model NC. . . . .					25	29
Model HT. . . . .					21	22
Model B . . . . .					23	25
Model HM. . . . .					27	33

\*Estimate based on data in Table 9.

\*\*As of January 1, 1968.

because of the large rise in farm real estate values projected by this model, the ratio of debt to assets would rise only slowly, to perhaps 22 per cent in 1980.

Model HM represents the greatest increase in capital flows, resulting mainly from large real additions to farm machine stocks. Outstanding debt would continue to grow almost as fast as in recent years, and would reach \$136.8 billion in 1980. In 1975-79, annual additions to debt would average \$8.9 billion. The rise in debt would far outpace growth in the value of farm assets, so that the debt-asset ratio would rise to 33 per cent by 1980.

In comparison with the experience of recent years, these projected credit demands represent somewhat slower rates of expansion in debt. However, no model represents continuation of the combination of capital growth that has actually prevailed in 1963-68--significant real additions to machine stocks plus relatively rapid increases in land values. If similar experience were to continue through all the years to 1980, credit demands would probably prove larger than any of those projected. But the historical perspective on capital flows provided in Chapter IV indicates this to be a somewhat extreme expectation.

Sizable increases in debt and in the debt-asset ratio are projected by each model. The levels reached in each by 1980 are not so large as to be impossible, but neither can the process continue indefinitely, especially at the rate represented by Model HM. At some point, capital flows may recede and/or farmers' savings may increase. Or nonfarmers may supply significantly more of the capital needed. A watch should be maintained for the occurrence of such structural changes on a significant scale, as these events would alter credit demands.

## VI. SOURCES OF CREDIT, 1950-1979

From 1950 through 1968, \$41.3 billion of additional credit was supplied to farmers by a great many individual and institutional lenders. As will be shown below, the share supplied by some lender groups increased over this period, while other groups became less important sources. Commercial banks, however, maintained about the same relative role over the entire period.

In the preceding chapter, further sizable increases in total farm debt were projected for the 1970's. To continue to provide their recent historical share of such expansion, banks would have to continue to expand their farm lending substantially. The amount of increase necessary to achieve this target varies among models, as it depends on the projected size of total credit requirements and also on how much of the credit is incurred to support non-real-estate rather than real estate spending. These projections of required bank credit growth are made here for each of three alternative models that have been presented--Models HT, B, and HM.

Attention then turns to the supply of funds at rural banks, to examine how banks have been able to increase farm lending rapidly since 1950, and whether they will be able to continue the pace. Future deposit growth is projected and then compared with the various projections of future farm loan demands, to provide an indication of the degree to which internal growth of rural banks is or is not likely to be adequate to meet farm credit demands arising in a variety of possible future farm capital situations.



Sources of outstanding debt, 1950-1968

Credit to farmers is provided by a large number of individuals, dealers, and institutions. Estimates of the amount outstanding from each of several classes of lenders are published annually by the U.S. Department of Agriculture. For the major institutional lenders, these estimates are based on lender reports submitted at least annually. Commercial banks hold the largest outstanding farm loan total among these reporting lenders. Other institutions in this group are insurance companies, the Farmers Home Administration, and the agencies (Federal Land Banks, Federal Intermediate Credit Banks, and production credit associations) that comprise the cooperative credit system supervised by the Farm Credit Administration.

Many other lending institutions make small amounts of loans to farmers, but in general they do not report their volume of farm loans. In the USDA estimates of farm lending, their loans are grouped with credit provided by individuals.

Taken together, individuals, dealers, and these non-reporting institutions are the most important source of farm credit. Retiring farmers and other sellers of farms, in particular, provide large amounts of credit to the purchasers by taking mortgages or land contracts. Merchants, dealers, and individuals such as farm landlords also supply large amounts of non-real-estate credit to finance purchases of production inputs, machinery, and livestock. In this group, national farm supply and machinery corporations have emerged as a major source of financing. In general, these creditors do not report their loan volume annually, and so USDA estimates of the debt they hold may contain relatively large errors. This is particularly true of recent yearly changes, as census surveys of

farm debt made in 1960 and 1965 have permitted improved evaluation of the relative longer-term role of these lenders.

Holders of outstanding debt.  Outstanding farm debt on January 1, 1969 totaled \$52.0 billion, up from \$23.6 billion at the start of the decade and \$10.7 billion in 1950 (Table 13). Individuals, dealers, and non-reporting institutions held about two-fifths of the outstanding debt throughout this period. Among the major lending institutions, commercial banks ranked first with \$13.6 billion in 1969, about one-fourth of the total farm debt. Outstanding loans at banks had also increased markedly from \$6.5 billion in 1960 and \$3.0 billion in 1950.

The cooperative credit system held nearly one-fifth of outstanding farm debt in 1969. Its volume of \$10.1 billion represented a rapid rise from \$3.8 billion in 1960 and \$1.4 billion in 1950. Life insurance companies held \$5.8 billion of farm mortgage loans in 1969, representing 11 per cent of total farm debt. Finally, the Farmers Home Administration held 3 per cent of the total debt.

Farm debt has been rising by about 9 per cent yearly since the mid-1950's (Table 14). During 1965-68, total debt rose at an annual rate of 9.6 per cent, paced by annual gains of 13.5 per cent in outstandings held by the cooperative credit system and assisted by rapid expansion of farm loans at each of the other principal lenders. Expansion at banks averaged 8.9 per cent annually during 1965-68 and 8.4 per cent during 1960-64, in each case only slightly below the growth rate of total farm debt.

Table 13  
 Outstanding Farm Debt by Lender Groups, 1950-69  
 (excluding CCC)

	<u>1950</u>	<u>1955</u>	<u>1960</u>	<u>1965</u>	<u>1969</u>
<u>A. Billions of dollars</u>					
Banks . . . . .	3.0	4.1	6.5	9.7	13.6
Cooperative credit system . . . . .	1.4	1.9	3.8	6.1	10.1
Life insurance companies . . . . .	1.2	2.1	2.8	4.3	5.8
Dealers & individuals (non-real-estate)* . . . . .	2.3	3.2	4.9	7.1	10.3
Individuals (real estate)* . . . . .	2.3	3.4	4.9	7.6	10.9
Farmers Home Administration . . . . .	.5	.7	.8	1.3	1.3
Total . . . . .	10.7	15.4	23.6	36.0	52.0
<u>B. Per cent of total</u>					
Banks . . . . .	28	27	27	27	26
Cooperative credit system . . . . .	13	12	16	17	19
Life insurance companies . . . . .	11	13	12	12	11
Dealers & individuals (non-real-estate)* . . . . .	22	21	21	20	20
Individuals (real estate)* . . . . .	22	22	21	21	21
Farmers Home Administration . . . . .	5	5	4	4	3
Total . . . . .	100	100	100	100	100

\*Includes other non-reporting lenders.

Source: Agricultural Finance Review, U. S. Department of Agriculture, April, 1969, pp. 2 and 22-23. The Balance Sheet of Agriculture, 1968, U. S. Department of Agriculture, January 1969, pp. 13 and 15. Data are as of January 1 of each year.

Table 14  
Average Annual Growth Rate of Outstanding  
Farm Debt, by Lender Groups (excluding CCC), 1950-68  
(per cent)

	<u>1950-54</u>	<u>1955-59</u>	<u>1960-64</u>	<u>1965-68</u>
Banks . . . . .	6.8	9.2	8.4	8.9
Cooperative credit system . . . . .	6.4	14.6	10.0	13.5
Life insurance companies . . . . .	11.8	6.6	8.7	7.7
Dealers & individuals (non-real-estate)*	6.6	8.7	7.9	9.8
Individuals (real estate)* . . . . .	8.1	7.3	9.5	9.4
Farmers Home Administration . . . . .	5.5	3.5	8.6	1.0
Total . . . . .	7.6	8.9	8.8	9.6

---

\*Includes other non-reporting lenders.

Source: Table 13.

Sources of additions to debt. Another perspective on farm credit is provided by examination of the sources of net additions to outstanding debt, which are shown in Table 15 for five-year intervals since 1950. In each five-year period, dealers and individuals provided about two-fifths of the increase, while banks provided about one-fourth. The increase at the cooperative credit system was low in 1950-54, when real estate lending by the Federal Land Banks was restrained by appraisal methods that proved outmoded. More recently, the cooperative credit system has been supplying around 20 to 25 per cent of the additions to farm credit. In 1965-68, banks and the cooperative credit system each supplied 25 per cent of the total increase. After providing 19 per cent of the gain in farm credit in 1950-54, the share of life insurance companies dropped to about 10 per cent in subsequent periods.

Relative role of banks, 1950-1968.

New insights into the relative role of various lenders, as well as a better basis for projection of future roles, may be secured by further aggregation of lenders into groups with key common characteristics. Thus we find it useful to group three lender classes--the cooperative credit system, life insurance companies, and the non-reporting creditors who supply non-real-estate credit--into one category we call "money market lenders" because the supply and the real or opportunity cost of the credit provided by each is influenced by conditions in the national money market. The cooperative credit system obtains its funds by selling money market instruments. Such instruments also comprise a major alternative investment for funds of life insurance companies. And, the non-real-estate lending volume of non-reporting creditors is dominated by national

Table 15  
Sources of Additions to Farm Debt, 1950-69  
(excluding CCC)

	<u>1950-54</u>	<u>1955-59</u>	<u>1960-64</u>	<u>1965-69*</u>
<u>A. Five-year total (billions of dollars)</u>				
Banks . . . . .	1.2	2.3	3.2	4.9
Cooperative credit system . . . . .	.5	1.9	2.3	5.0
Life insurance companies . . . . .	.9	.8	1.5	1.8
Dealers & individuals (non-real-estate)**.	.9	1.7	2.2	4.0
Individuals (real estate)**.	1.1	1.4	2.8	4.1
Farmers Home Administration . . . . .	.2	.1	.4	.1
Total . . . . .	4.7	8.2	12.4	20.0
<u>B. Annual average (billions of dollars)</u>				
Banks . . . . .	.2	.5	.6	1.0
Cooperative credit system . . . . .	.1	.4	.5	1.0
Life insurance companies . . . . .	.2	.2	.3	.4
Dealers & individuals (non-real-estate)**.	.2	.3	.5	.8
Individuals (real estate)**.	.2	.3	.6	.8
Farmers Home Administration . . . . .	0	0	.1	0
Total . . . . .	.9	1.6	2.5	4.0
<u>C. Per cent of total</u>				
Banks . . . . .	25	28	26	25
Cooperative credit system . . . . .	11	23	19	25
Life insurance companies . . . . .	19	9	12	9
Dealers & individuals (non-real-estate)**.	19	20	18	20
Individuals (real estate)**.	24	18	22	21
Farmers Home Administration . . . . .	3	2	3	0
Total . . . . .	100	100	100	100

\*Data shown for 1965-69 are actual values for 1965-68 multiplied by 1.25 to facilitate comparison with previous five-year periods.

\*\*Includes other non-reporting lenders. Source: Table 13.

corporations that supply production inputs to farmers, and such concerns are likely to have obtained funds for these loans in the money market or by borrowing from money market banks. Local merchant credit remains in this category as separate data are not available, but the amount of this misclassification is relatively small.

After this consolidation, four groups of farm lenders remain. In addition to (1) the money-market lenders, there are (2) individuals who hold real estate debt, (3) banks, and (4) the Farmers Home Administration.

Individual holders of real estate debt are sellers of farms who took mortgages or sold by land contract for tax reasons, to make the sale, to obtain a higher price, or because they were attracted to a continuing investment in their farm. Their volume of lending depends on the strength of these considerations and on prices and activity in the farm real estate market.

Banks are set apart as a third major lender group because their farm lending is significantly affected by factors different from either sellers of farms or the money-market lenders. Loans for real estate purchases constitute only 15 per cent of their farm lending, and so land market considerations are less important in determining loan volume than in the case of sellers of farms. Also, the bulk of banks active in farm lending find it difficult to participate effectively in national money markets under present conditions and so are dependent on local sources of funds. Thus, whereas money market participants active in farm lending face a very elastic supply function, in that their demands on the money market constitute only a small portion of total national demands for funds, most rural banks face a relatively

inelastic supply. In seeking to enhance the growth of their lending resources, they are limited both by legal ceilings on interest rates they can offer on deposits and by the overall economic growth being achieved by their community. In the long run, therefore, constraints are thereby placed on growth of farm lending at most rural banks, given present institutional arrangements that exclude such banks from effective participation in the money market.

The Farmers Home Administration completes our list of four lender groups. In its direct farm lending program, this agency makes supervised loans to farmers unable to obtain credit from the other lenders. The outstanding volume of these loans failed to increase during 1965-68 and consequently declined to 3 per cent of total outstanding farm debt. In the projections that follow, it is assumed that the volume of farm lending by the Farmers Home Administration will remain unchanged over the next decade.

Share of outstanding debt. As outstanding farm debt rose from \$10.7 billion in 1950 to \$52.0 billion in 1969, the share consisting of real estate debt held by individuals fluctuated narrowly between 20 and 22 per cent of the total. The share held by banks declined slowly from 30 per cent in 1952 to 26 per cent in 1969. Conversely, the portion held by money market lenders rose from 46 per cent in 1950 to 50 per cent in 1969 (Table 16).

Of the total debt held only by banks and money market lenders, the share held by banks declined from 39 per cent in 1952 to 34 per cent by 1969. In eight of the years from 1950 to 1968, bank credit grew faster than credit from money market lenders, but on average



Table 16

Outstanding Farm Debt, by Major Lender Groups  
(excluding CCC), 1950-69

	<u>1950</u>	<u>1955</u>	<u>1960</u>	<u>1965</u>	<u>1969</u>
<u>A. Billions of dollars</u>					
Banks. . . . .	3.0	4.1	6.5	9.7	13.6
Money market lenders * . . . . .	4.9	7.2	11.5	17.5	26.2
Individuals (real estate).** . . . . .	2.3	3.4	4.9	7.6	10.9
Farmers Home Administration. . . . .	<u>.5</u>	<u>.7</u>	<u>.8</u>	<u>1.3</u>	<u>1.3</u>
Total. . . . .	10.7	15.4	23.6	36.0	52.0
<u>B. Per cent of total</u>					
Banks. . . . .	23	27	27	27	26
Money market lenders * . . . . .	46	46	49	49	50
Individuals (real estate).** . . . . .	22	22	21	21	21
Farmers Home Administration. . . . .	<u>5</u>	<u>5</u>	<u>4</u>	<u>4</u>	<u>3</u>
Total. . . . .	100	100	100	100	100
<u>C. Per cent of bank and money market total</u>					
Banks. . . . .	38	37	36	36	34
Money market lenders * . . . . .	<u>62</u>	<u>63</u>	<u>64</u>	<u>64</u>	<u>66</u>
Total. . . . .	100	100	100	100	100

\* Includes debt held by the cooperative credit system and life insurance companies, and non-real-estate debt held by farm supply corporations, dealers, individuals, and other non-reporting lenders.

\*\* Also includes real estate debt held by other non-reporting lenders.

Source: Table 13.

the latter tended to expand more rapidly throughout the period. In the last four years, 1965-68, debt at banks rose by 8.9 per cent annually, while debt held by money market lenders grew at a rate of 10.6 per cent. (Table 17).

Share of additions to debt. While the share of outstanding debt held by banks eroded slowly over the entire period since 1950, banks' share of additions to farm credit showed no downward trend during 1950-64. Though year-to-year fluctuations were large, banks on average provided slightly over one-fourth of the total increase in farm credit and slightly over one-third of the total gain at banks and money market lenders. These shares of new credit were slightly below the shares of outstanding credit with which banks entered the period, which accounts for the erosion in the latter statistics.

In 1965-68, banks' share of additions to credit dropped to 25 per cent of the grand total and to 31 per cent of the sum provided by banks and money market lenders. The share provided by money market lenders increased (Table 18).

#### Projected credit expansion by major lenders, 1970-1979

The preceding chapter presented three alternative projections of increases in farm debt to 1980, based on three different capital models and a single farm income and savings rate projection. Given these projected additions to total farm credit, estimates are here made of the corresponding increases in farm lending by banks that would be necessary for banks to maintain their recent historical share--about one-third--of the total credit expansion projected for banks and money market lenders together.

Credit from sellers of farms. As a preliminary step, it is necessary to estimate the amount of additional real estate credit

Table 17  
 Average Annual Growth Rate of Outstanding Farm Debt,  
 by Major Lender Groups (excluding CCC), 1950-68  
 (per cent)

	<u>1950-54</u>	<u>1955-59</u>	<u>1960-64</u>	<u>1965-68</u>
Banks. . . . .	6.8	9.3	8.4	8.9
Money market lenders * . . . . .	8.0	9.8	8.8	10.6
Individuals (real estate)** . . . . .	8.1	7.3	9.5	9.4
Farmers Home Administration. . . . .	<u>5.5</u>	<u>3.5</u>	<u>8.6</u>	<u>1.0</u>
Total. . . . .	7.6	8.9	8.8	9.6

---

\* Includes debt held by the cooperative credit system and life insurance companies, and non-real-estate debt held by farm supply corporations, dealers, individuals, and other non-reporting lenders.

\*\* Also includes real estate debt held by other non-reporting lenders.

Source: Table 16

Table 18

Sources of Additions to Farm Debt, by Major Lender Groups (excluding CCC), 1950-69

	<u>1950-54</u>	<u>1955-59</u>	<u>1960-64</u>	<u>1965-69*</u>
<u>A. Five-year total (billions of dollars)</u>				
Banks . . . . .	1.2	2.3	3.2	4.9
Money-market lenders**	2.3	4.3	6.0	10.9
Individuals (real estate)***	1.1	1.4	2.8	4.1
Farmers Home Administration.	<u>.2</u>	<u>.1</u>	<u>.4</u>	<u>.1</u>
Total . . . . .	4.7	8.2	12.4	20.0
<u>B. Annual average (billions of dollars)</u>				
Banks . . . . .	.2	.5	.6	1.0
Money-market lenders**	.7	.9	1.2	2.2
Individuals (real estate)***	.2	.3	.6	.8
Farmers Home Administration.	<u>.0</u>	<u>.0</u>	<u>.1</u>	<u>.0</u>
Total . . . . .	.9	1.6	2.5	4.0
<u>C. Per cent of total</u>				
Banks . . . . .	25	28	26	25
Money-market lenders**	48	52	48	54
Individuals (real estate)***	23	18	22	21
Farmers Home Administration.	<u>3</u>	<u>2</u>	<u>3</u>	<u>0</u>
Total . . . . .	100	100	100	100
<u>D. Per cent of bank and money market total</u>				
Banks . . . . .	34	35	35	31
Money market lenders**	<u>66</u>	<u>65</u>	<u>65</u>	<u>69</u>
Total . . . . .	100	100	100	100

\* Data shown for 1965-69 are actual values for 1965-68 multiplied by 1.25 to facilitate comparison with previous five-year periods.

\*\* Includes debt held by the cooperative credit system and life insurance companies, and non-real-estate debt held by farm supply corporations, dealers, individuals, and other non-reporting lenders.

\*\*\* Also includes real estate debt held by other non-reporting lenders.

Source: Table 16

that may be provided by individuals, particularly sellers of farms. Credit from this source is virtually certain to be related to the value of farms transferred by sale; thus more would be expected if land prices rise rapidly, as projected by Model HT, than if they rise more moderately as projected by Models B and HM. In addition, credit provided by sellers has recently been increasing relative to the value of transfers. We estimate that such credit may have equalled 18 per cent of the value of real estate sales in 1955, 22 per cent in 1960, 24 per cent in 1965, and 29 per cent in 1968. Several factors have contributed to this increase, chief among them substantial capital gains tax advantages to sellers who provide credit under a land contract and the ability of sellers to offer lower downpayments than most institutional lenders. Again, the future trend of this ratio ~~seems~~ likely to be positively related to the rate of gain in real estate values.

With these considerations in mind, past increases in real estate credit provided by individuals were related to estimated capital flows required by real estate transfers. **This ratio was** estimated at 11 per cent in 1955-59, 17 per cent in 1960-64, and 20 per cent in 1965-67. For Models B and HM, the ratio was projected to average 22 per cent in 1970-74 and 24 per cent in 1975-79. For Model HT, in view of its more rapid rise in land prices, the ratio was projected at 25 and 29 per cent, respectively. These relationships were applied to the value of real estate capital flows projected by these models (Table 7) to obtain the estimated amounts of additional real estate credit that may be supplied by individuals and other non-reporting lenders. The estimates are shown in the second column of Table 19.

Projected loan demands on banks. Subtraction of the projected seller-supplied credit from the total credit requirements shown in the

Table 19

Alternative Projected Farm Loan Expansion at Major  
Lender Groups, 1970-79  
(billions of dollars)

	Total	Individuals (real estate)	Banks and money market lenders	At banks to maintain relative share
<u>A. Five-year total</u>				
<u>Model HT</u>				
1970-74. . . . .	22.9	7.0	15.9	5.4
1975-79. . . . .	29.3	11.0	18.3	6.3
<u>Model B</u>				
1970-74. . . . .	18.5	5.5	13.0	4.4
1975-79. . . . .	17.0	6.7	10.3	3.5
<u>Model HM</u>				
1970-74. . . . .	34.4	5.6	28.8	9.8
1975-79. . . . .	44.5	7.0	37.5	12.8
<u>B. Annual average</u>				
<u>Model HT</u>				
1970-74. . . . .	4.6	1.4	3.2	1.1
1975-79. . . . .	5.9	2.2	3.7	1.3
<u>Model B</u>				
1970-74. . . . .	3.7	1.1	2.6	.9
1975-79. . . . .	3.4	1.3	2.1	.7
<u>Model HM</u>				
1970-74. . . . .	6.9	1.1	5.8	2.0
1975-79. . . . .	8.9	1.4	7.5	2.6

first column of Table 19 (copied from Tables 10 and 11) yields projections of the amounts to be supplied by banks and money market lenders together. If banks are to supply one-third of the latter totals, they would have to increase their farm loans by the amounts shown in the last column of Table 19.

In Table 20, the required additions to farm lending by banks are shown in a more familiar context, as the sum that outstanding farm loans would reach in 1975 and 1980 (Panel C) and as the average annual rate of increase in outstandings in each five-year interval (Panel D). Outstanding loan volume required in 1980 ranges from \$22.5 billion (Model B) to \$37.9 billion (Model HM). These sums may be compared to outstanding volume of \$13.6 billion in 1969. The projections show that credit demands on banks would be very large if the high rate of machinery investment projected by Model HM should materialize. Rapidly rising land prices, as represented by Model HT, would have more moderate effect on credit demands on banks, because the projected increase in seller-financing of real estate transfers meets a significant portion of credit demands arising from that source.

Under the moderately greater capital flows of Models B and HT, and given the projected internal financing, annual rates of farm loan expansion averaging 6 per cent would suffice to maintain the relative role of banks in farm lending during 1970-74. This pace would be significantly below actual rates of farm loan expansion at banks since 1955. But with the much greater capital flows represented by Model HM, farm loans at banks have to expand at an annual rate of 10 per cent, or even faster than they have been growing since 1955.

Table 20

Alternative Projected Farm Loan Expansion Required at Banks  
to Maintain Banks' Relative Role in Farm Lending, 1970-79

	1950-54	1955-59	1960-64	1965-69	1970-74	1975-79
<u>A. Increase in outstanding loans during period (billions of dollars)</u>						
Actual. . . . .	1.2	2.3	3.2	4.9*		
Model HT. . . . .					5.4	6.3
Model B . . . . .					4.4	3.5
Model HM. . . . .					9.8	12.8
<u>B. Average annual increase in outstanding loans (billions of dollars)</u>						
Actual. . . . .	.2	.5	.6	.8*		
Model HT. . . . .					1.1	1.3
Model B . . . . .					.9	.7
Model HM. . . . .					2.0	2.6
<u>C. Outstanding loans at end of period (billions of dollars)</u>						
Actual. . . . .	4.1	6.5	9.7	14.6*		
Model HT. . . . .					20.0	26.3
Model B . . . . .					19.0	22.5
Model HM. . . . .					25.1	37.9
<u>D. Annual growth rate of outstanding loans during period (per cent)</u>						
Actual. . . . .	6.8	9.3	8.4	8.5*		
Model HT. . . . .					6.5	5.6
Model B . . . . .					5.5	3.4
Model HM. . . . .					10.5	8.6

\*Estimate based on data shown in Table 13.



Supply of funds at rural banks

Would it be easy or difficult for banks to expand farm lending at the various rates projected above, and thereby to maintain their share of the farm credit market? At present, expansion of lending resources of rural banks depends primarily on growth in their deposits, most of which originate locally.

Farmers' deposits. To some extent, banks act as financial intermediaries among farmers. In the early 1950's, the outstanding loans to farmers represented about one-half of farmers' deposits, and at that time overall farm lending activity at banks could be viewed as being on average sustained completely from the deposits of farmers themselves. By 1960, however, the volume of farm loans was almost equal to that of deposits, and in 1968 it was 43 per cent larger (Table 21). It is evident that banks have been making farm loans from funds received from sources other than farmers alone.

The discussion of farmers' cash assets in Chapter IV turned up conflicting views on the extent of the growth that banks can expect in farmers' deposits during the next decade. As farmers purchase more inputs, cash working capital has become more important in farm operation, but farmers have also learned how to economize on these balances. If these offsetting trends continue, farmers' demand deposits may show only moderate growth. It is possible, however, that banks could achieve more significant expansion in time deposits of farmers by attracting current and past savings away from alternative investments.

Table 21  
Commercial Bank Farm Loans Compared with Farmers' Deposits,  
1950 - 69

	<u>Billions of dollars</u>		Farmers' loans as per cent of farmers' deposits
	Bank loans to farmers	Demand and time deposits of farmers	
1950. . . . .	3.0	6.6	45
1955. . . . .	4.1	7.2	57
1960. . . . .	6.5	7.2	90
1965. . . . .	9.7	7.7	126
1969. . . . .	13.6	9.5	143

Source: Agricultural Finance Review, U.S. Department of Agriculture, April 1969, pp. 2 and 22-23. The Balance Sheet of Agriculture, 1968, U.S. Department of Agriculture, January 1969, pp. 10, 13, and 15.

Total deposit growth, 1950-1968. Fortunately, total deposits at rural banks increased at a faster pace than farmers' deposits alone. An indication of this is provided by the USDA's index of "deposits of country banks," which measures changes in deposits at banks in towns with population under 15,000 in 20 agricultural states. These primarily rural banks achieved annual growth in total deposits averaging 3.4 per cent in the 1950's, 5.8 per cent in 1960-64, and 8.5 per cent in 1965-68 (Table 22).

The very significant recent acceleration in the growth of total deposits at these banks can be traced primarily to the expansion of time deposits. Since 1950, demand deposits have increased slowly, with annual expansion averaging less than 3 per cent. Time deposits, however, rose at an average annual rate of about 10 per cent in the 1950's and 15 per cent in 1960-68. At first, these rapid rates of expansion did not contribute much to total deposit growth, because time deposits represented only a small fraction--13 per cent in 1950--of total deposits at these banks. But as the rapid pace continued, time deposits became more important, reaching 44 per cent of total deposits in January 1969. With this sizable component growing at 15 per cent annually, total deposits rose by 8.5 per cent yearly in 1965-68 even though annual demand deposit growth averaged only 4.2 per cent during these years.

Deposit and farm loan growth compared, 1950-1968. Data on farm loan growth at the universe of banks used in compiling the USDA index of country bank deposits are not available. It is likely, however, that it parallels the course of farm loans at all banks, and that impressions obtained from a comparison of the deposit index with total farm loan growth will not be misleading.

Table 22  
 Deposits of Selected Country Banks, 1950-69\*

	Total	Demand	Time
<u>A. Index of volume (1947-49=100)</u>			
1950. . . . .	102	103	103
1955. . . . .	124	122	152
1960. . . . .	142	127	260
1965. . . . .	188	144	502
1969. . . . .	<b>261</b>	170	883
<u>B. Average annual growth rate (per cent)</u>			
1950-54 . . . . .	4.0	3.4	8.1
1955-59 . . . . .	2.7	.8	11.3
1960-64 . . . . .	5.8	2.5	14.1
1965-68 . . . . .	8.5	4.2	15.2

\*Data are for banks in towns with population under 15,000 in 20 agricultural states, as compiled and published by the U.S. Department of Agriculture. Data for 1950-65 are averages for January of each year. Data for 1969 are as of January 1.

Source: Agricultural Finance Branch, U.S. Department of Agriculture.

Such comparison shows that farm loans have tended to increase faster than rural bank deposits (Table 23). The gap was especially large in 1955-59, was reduced somewhat by faster deposit growth in 1960-64, and then almost closed by still faster deposit growth in 1965-68. In these last **four** years, deposits rose by 8.5 per cent annually while farm loans expanded at a rate of 8.9 per cent.

Confirmation of these recent relationships between loans and deposits is afforded by data from surveys of banks active in agricultural lending, made annually since 1962 by The American Bankers Association. From 1962 to 1965, loan-deposit ratios at these banks tended to move upward. In 1968, however, the distribution of banks by loan-deposit ratio was still much the same as in 1965 (Table 24). At the national "median" bank covered by the ABA surveys, the 58 per cent gain in farm loans in 1963-68 was virtually identical to the 59 per cent increase in total deposits. At banks in the Plains states, however, deposits had risen by only 26 per cent compared to farm loan growth of 67 per cent.<sup>34/</sup>

Projected deposit growth, 1970-1979. It seems reasonable to believe that demand deposit growth at rural banks in 1970-79 may resemble postwar expansion to date, averaging perhaps 3 per cent annually. This projection reflects the growing money needs of an expanding rural economy. However, the rate of money expansion is somewhat below the anticipated

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<sup>34/</sup> Trends in Agricultural Banking: Report of Midyear 1968 Agricultural Credit Situation Survey, Agricultural Committee, The American Bankers Association, New York, 1968, p.8.

Table 23  
Deposit and Farm Loan Growth Compared, 1950-68

	<u>Average annual growth rate (per cent)</u>	
	<u>Total deposits of selected country banks</u>	<u>Total farm loans at all banks</u>
1950-54. . . . .	4.0	6.8
1955-59. . . . .	2.7	9.2
1960-64. . . . .	5.8	8.4
1965-68. . . . .	8.5	8.9

Source: Table 15 (loans) and table 22 (deposits).

Table 24

Percentage Distribution of ABA Agricultural Banks by Loan-Deposit Ratio, Midyear 1962-68\*

	<u>Loans as percentage of deposits</u>		
	<u>Under 50</u>	<u>50 to 59</u>	<u>60 and over</u>
1962. . . . .	41	34	25
1963. . . . .	38	33	29
1964. . . . .	31	35	34
1965. . . . .	27	32	41
1966. . . . .	27	31	42
1967. . . . .	21	33	46
1968. . . . .	25	33	42

\*Data are for banks designated as "agricultural" banks by The American Bankers Association and thereby covered by the midyear agricultural credit situation survey. Agricultural banks are defined as banks with under \$5 million in assets having 5 per cent or more of their assets outstanding in farm loans, and banks with \$5 million or over in assets having 1 per cent or more of their assets in farm loans. Approximately two-thirds of all insured commercial banks qualify as agricultural banks under these criteria.

Source: Trends in Agricultural Banking; Report of Midyear 1968 Agricultural Credit Situation Survey, Agricultural Committee, The American Bankers Association, New York, 1968, p. 8.

rate of economic growth, as persons and businesses continue to economize on the money balances they find necessary relative to their volume of transactions.

Projection of time deposit growth seems more speculative. To some extent, the large recent gains represent an adjustment by the public to increased attractiveness of time deposits relative to both demand deposits and non-bank investments. First, ceiling interest rates prescribed by regulatory authorities on passbook and other time deposits were raised to a level more competitive with those paid by non-bank financial intermediaries such as savings and loan associations and with rates on U.S. savings bonds and marketable securities. Second, in response to their increased loan requests and reduced liquidity, many banks began to offer time certificates of deposit on which they were permitted to pay higher rates of interest than on passbook savings accounts. Small banks, while unable to participate in the sale of large-denomination certificates which have become a popular short-term investment for businesses with surplus cash, have been quite successful in marketing small-denomination certificates and passbook-notice accounts to the public.

From one point of view, further reallocation of personal savings to time deposits could occur, if time deposits continue attractive. Nationally, time deposits at banks still constitute a relatively small share of the total financial assets of households--in 1968, less than 10 per cent of the total. Thus even relatively small shifts of funds from other assets into time deposits would enable the latter to increase at a very rapid rate, and this process could conceivably continue for many years.



However, there is a second and probably dominant consideration that militates against such expectations. The rate of time deposit growth is obviously an important influence on the rate at which total bank credit can expand--and expansion of total bank credit will continue to be greatly influenced by national economic policies seeking full employment without price inflation. Thus policies of the Federal Reserve System can be expected to result in rates of bank credit expansion consistent with potential real economic growth, while taking into account trends toward greater relative use of credit. In this environment, total deposit growth at banks will at times be encouraged and at other times restrained, as appropriate in the light of national economic goals and current business conditions. The relative attractiveness of time deposit rates is likely to be regulated accordingly. On average, an annual increase of 6.5 per cent in total deposits may represent a reasonable projection.

This reasoning implies that a slowdown from recent rates of time deposit growth must be projected, with the estimated future gains dependent on the growth actually experienced in demand deposits. If the latter do increase at an average rate of 3 per cent annually at rural banks covered by the USDA index, the following annual rates of time deposit growth at these banks would yield the projected 6.5 per cent increase in total deposits in the 1970's: 11 per cent in 1969, 10 per cent in 1970-74, and 9 per cent in 1975-79.

Projected deposit and farm loan growth compared, 1970-1979.

If farm credit demands on banks were to increase at the same rate as deposits, it may be assumed that on average banks would be able to meet these demands without excessive difficulty; that is, on the average, banks could increase farm loans at this rate without (1) increasing the proportion

of farm loans in their loan portfolios, or (2) increasing their overall loan-deposit ratio in order to make the additional farm loans. Farm loan expansion at a yearly rate of 6.5 per cent during the 1970's would increase outstanding farm loans at banks by about \$5.4 billion in 1970-74 and \$7.3 billion in 1975-79. Table 25 shows how these amounts compare with expansion that would have to take place under the various capital models in order that banks maintain their relative share of farm lending.

In only one of the model situations would this rate of increase in farm credit availability at banks exceed the credit demand projected. This result occurs in Model B, which combined a stable real stock of farm machinery with a moderate 3 per cent yearly increase in land prices.

In the other situations projected, in which one of these capital projections is different--either real machinery stocks increase (Model HM) or land prices rise faster (Model HT)--expansion of deposits and loans at 6.5 per cent yearly would at best just permit banks to maintain their one-third share of total bank and money-market lending (Model HT) or funds would fall substantially short of this goal (Model HM). As these capital trends may easily continue, the **projections** on balance point toward probable difficulty for banks as they try to meet the farm loan **demands of their present** customers. If, as in Model HT, projected national supply and demand for bank credit are roughly in balance, a significant proportion of banks can still be expected to be out-of-balance because of differing local conditions. In the situation projected by Model HM, a majority

Table 25  
 Projected Farm Loan Expansion at Banks Compared to Banks'  
 Internal Resource Growth, 1970-79

Increase in outstanding loans (billions of dollars)			Banks' share of total farm loan expansion if bank expansion is--		
Required to maintain banks' relative role in farm lending	Supported by annual deposit growth of 6.5 per cent	Excess of required amount over expansion supported by internal growth	Sufficient to maintain relative role	6.5 per cent annually	
<u>Five-year total</u>					
<u>Model HT</u>					
1970-74 . . .	5.4	5.4	.1	24	23
1975-79 . . .	6.3	7.3	-1.1	21	25
<u>Model B</u>					
1970-74 . . .	4.4	5.4	- .9	24	29
1975-79 . . .	3.5	7.3	-3.8	21	43
<u>Model HM</u>					
1970-74 . . .	9.8	5.4	4.5	29	16
1970-79 . . .	12.8	7.3	5.5	29	16
<u>Annual average</u>					
<u>Model HT</u>					
1970-74 . . .	1.1	1.1	0	24	23
1975-79 . . .	1.3	1.5	.2	21	25
<u>Model B</u>					
1970-74 . . .	.9	1.1	- .2	24	29
1975-79 . . .	.7	1.5	- .8	21	43
<u>Model HM</u>					
1970-74 . . .	2.0	1.1	.9	29	16
1975-79 . . .	2.6	1.5	1.1	29	16

of rural banks would experience farm lending difficulty.

On balance, the analysis and projections indicate a fairly high probability that rural banks may be unable to maintain their usual share of farm lending on the basis of growth in their deposits. True, low farm capital requirements would reduce credit demands to a rate that could be met by probable deposit growth. Or, a continued very high rate of increase in time deposits would enable higher credit demands to be met. But more probable events appear likely to result in a shortage of internally-originated loanable funds relative to farm credit demands on rural banks.

## VII. SEASONAL PRODUCTION CREDIT

In addition to using credit to maintain, add to, and transfer capital assets, farmers demand seasonal credit to carry on production processes not financed from their stock of cash and very liquid assets. Seasonal credit extensions particularly require recognition here because the preceding analysis employed capital stocks and debt measured as of January 1, whereas the national seasonal peak in the demand for farm working capital occurs in the spring and summer.

Unfortunately, seasonality of total expenses and working capital has not been measured. Only annual estimates of farm expenditures and capital are available.

Data on seasonal credit extensions are also incomplete. Such credit is provided mainly by three lender groups: merchants and dealers, commercial banks, and production credit associations (PCA's). Advances and outstanding debt at PCA's are reported monthly, but PCA's hold only about one-sixth of total non-real-estate debt. Loans from commercial banks, which represent two-fifths of the total, have been reported only semiannually in recent years. Debt outstanding at merchants, dealers, and other individuals is estimated only as of January 1.

But though the magnitude of seasonal capital and credit requirements is not known, the rate at which such demands have been expanding can be estimated with the help of some plausible assumptions. For instance, the growth rate of operating expenses

that clearly have a significant seasonal component can be computed. If the relative seasonality of these expenses is assumed to have remained roughly unchanged, that growth rate becomes an estimate of the rate at which seasonal capital requirements have been rising.

On the credit extension side of the puzzle, the January-July variation in loans outstanding at PCA's and banks, after adjustment for trend, can serve as an index of seasonal credit extensions by these lenders. The assumption here is that a change in the amount of seasonal lending would change the difference between January and July outstandings by about the same proportion. Thus, the growth rate of that difference becomes an estimate of the growth rate of total seasonal lending by these institutions. The validity of this estimate may be helped by the fact that January is the low month and July the high month in outstanding farm debt nationally, as indicated by data for PCA's.

#### Seasonal capital requirements

Operating expenditures with major seasonal elements include purchases of seed, fertilizer, and lime; operation and repair of motor vehicles and machinery; and wages and perquisites paid to hired workers who do not reside on the farm by which they are employed. These expenses are tabulated in Table 26. Purchases of feed and livestock are omitted from this list both because additions to these inventories have been included in capital requirements previously considered and because the national seasonal

Table 26

Selected Current Farm Operating Expenses

	<u>Total</u>	<u>Seed purchased</u>	<u>Fertilizer and lime</u>	<u>Operation and repair of vehicles and machinery</u>	<u>Wages to non resident workers</u>
Expenditures in 1968 (millions of dollars) . . .	8,788	668	2,095	3,916	2,109
Increase from 1956-58 to 1966-68 (per cent):					
Total . . . . .	38.2	28.3	74.2	19.8	53.3
Average annual rate . . . . .	3.3	2.5	5.7	1.8	4.4
Average annual rate of change in specified period (per cent):					
1950-54 . . . . .	3.2	- .7	6.2	4.1	.1
1955-59 . . . . .	3.4	-1.4	1.3	3.7	6.6
1960-64 . . . . .	2.2	2.9	5.7	- .3	4.0
1965-68 . . . . .	4.6	4.2	5.3	4.5	4.0

Source: U. S. Department of Agriculture, Farm Income Situation, July 1969, pp. 56, 58, and 59.

peak in credit extended for these items likely occurs near the January 1 date on which capital stocks and debt were measured for the preceding analysis. Repairs and maintenance of buildings and land improvements are omitted on the conjecture that they did not have a strong seasonal element. For the same reason, wages paid to hired workers who reside on the farm are also excluded.

The selected expenses totaled \$8.8 billion in 1968, and over the past decade had risen at an average annual rate of about 3.3 per cent. An exponential least-squares trend for 1950-68 rises by 3.1 per cent yearly. Data for each component, as shown in Table 26, reveal that these longer-term averages are depressed by the relative stability in vehicle and machinery expenses during the early 1960's. With such expenses advancing more rapidly in the last few years, the total selected costs rose by 4.6 per cent annually during 1965-68.

If the degree of seasonality in these expenditures has not changed in recent years, the seasonal capital requirement that underlies demand for seasonal production credit has also been advancing at these rates--less than half as fast as total outstanding farm debt. However, seasonal credit demands may also have increased because farmers wanted to finance a higher proportion of their seasonal costs by borrowing. Further evidence is provided by examination of the seasonality in non-real-estate debt.



Seasonal credit extensions

Semiannual variation in outstanding non-real-estate farm debt held by reporting lending institutions was calculated by averaging the amounts outstanding at the beginning and end of each year and subtracting this average from the amount outstanding on July 1, with results as shown in Table 27. The seasonal credit increase thus obtained has an upward trend both in total and at banks and PCA's separately; however, the year-to-year fluctuations have been so large that the trend is not properly revealed by use of the five-year periods that this study has employed. Exponential trend curves fitted by the least-squares technique to data for 1950-68 were found more useful in showing average annual growth rates, along with the longer-term changes presented in Table 28.

The estimated seasonal component of total institutional non-real-estate debt reached \$1,030 million in 1968, and exhibited an average annual growth of 4.4 per cent over 1950-68. The upward trend thus exceeded the annual average growth of 3.1 per cent estimated for seasonal production expenses. The excess may be explained by a seasonal element in intermediate-term credit that has been captured in the calculated seasonal component of debt--farmers tend to buy machinery in the spring, and debt incurred for this purpose would be paid down somewhat by year-end. However, farmers may also have been increasing the proportion of their seasonal production expenses financed by debt.

Table 27

Semiannual Variation in Institutional Non-real-estate  
Debt Owed by Farmers, 1949-1968

Year	July debt exceeded average of debt at beginning and end of year by--					
	Millions of dollars			Per Cent		
	Total*	Bank	PCA	Total	Bank	PCA
1949. .	437	271	146	11.6	13.6	38.7
1950. .	269	127	108	8.7	5.6	25.8
1951. .	464	247	171	12.5	8.8	33.8
1952. .	680	418	211	16.4	13.2	36.4
1953. .	634	400	191	15.9	13.4	33.5
1954. .	609	354	171	15.8	12.4	30.5
1955. .	664	385	185	15.8	12.3	30.3
1956. .	640	363	183	14.4	11.0	27.2
1957. .	473	222	161	10.0	6.4	20.3
1958. .	530	255	178	9.9	6.6	17.8
1959. .	686	336	262	11.0	7.5	21.2
1960. .	650	329	241	9.5	6.7	17.0
1961. .	626	311	244	8.6	6.0	15.6
1962. .	627	278	243	7.8	4.9	14.0
1963. .	872	425	313	9.7	6.7	15.9
1964. .	956	500	324	9.8	7.3	14.8
1965. .	781	326	299	7.4	4.4	12.3
1966. .	855	385	324	7.3	4.8	11.6
1967. .	940	433	356	7.2	4.9	10.9
1968. .	1,030	485	393	7.3	5.1	10.7

\* Total non-real-estate loans to farmers held by all operating banks, production credit associations, Federal Intermediate Credit Banks, and the Farmers Home Administration, excluding loans guaranteed by the Commodity Credit Corporation.

Source: Agricultural Finance Review, U.S. Department of Agriculture, October 1957, pp. 30-31; April 1969, pp. 22-23.

Table 28

Amount of and Relative Change in Selected Current Expenses and in Seasonal Component of Debt, 1950-1968 (per cent)

Period	Selected current expenses	Seasonal component of institutional non-real-estate debt		
		Total	Bank	PCA
<u>A. Annual average (millions of dollars)</u>				
1950-54 . . . .	5,332	531	309	170
1955-59 . . . .	6,182	599	312	194
1960-64 . . . .	6,998	746	369	273
1965-68 . . . .	8,328	902	407	343
<u>B. Change from previous period (per cent)</u>				
1950-54 . . . .	--	--	--	--
1955-59 . . . .	15.9	12.8	1.0	14.1
1960-64 . . . .	13.2	12.5	18.3	40.7
1965-68 . . . .	19.0	20.9	10.3	25.6
<u>C. Change from specified period to 1965-68 (per cent)</u>				
1950-54 . . . .	56.2	69.9	31.7	101.8
1955-59 . . . .	34.7	50.6	30.4	76.8
1960-64 . . . .	19.0	20.9	10.3	25.6

The increase in the seasonal component of outstanding debt fell far short of keeping pace with the rise in total non-real-estate debt at institutional lenders. In the late 1950's July debt was about 10 per cent higher than the January-December average, but by the late 1960's the average difference was reduced to 7 per cent.

Given the expectation that farm production will continue to rise at modest rates that primarily reflect domestic population growth and higher consumer living levels, seasonal farm operating costs can reasonably be expected to continue to increase at rates approximating those of the recent past, in which the same influences were dominant. The historical record indicates that seasonal credit demands can be expected to reflect this increase, and thus to rise by perhaps 3 to 5 per cent annually. At this rate, the trend-adjusted January-July increase in non-real-estate farm debt might range from \$1.3 to \$1.7 billion around 1980. But if total non-real-estate debt should meanwhile increase in line with projections for total farm debt, this seasonal fluctuation would represent only about 4 to 5 per cent of outstandings.

This analysis and projection indicates that provision of quantities of seasonal credit desired by farmers as a whole will not be a major or growing problem. However, this prognosis is not likely to apply to each farming region. As will be shown next, there is great regional variation in relative seasonal farm credit demands, and in some regions the seasonal factor can only be classified as huge. In these areas, any shortfall in total credit supply is

synonymous with a shortage of seasonal credit. Also, changes in regional production patterns--particularly increasing specialization in a seasonal commodity--will continue to place at least temporary strains on seasonal credit resources in some areas from time to time.

Institutional sources of seasonal credit

As estimated seasonal lending at banks and PCA's together has recently been rising somewhat faster than estimated seasonal capital requirements, one might reason that these institutional lenders have been responsive to farmers' seasonal demands. However, the increased credit demands have been met more vigorously by PCA's than banks. The large year-to-year fluctuations in the calculated seasonal component, particularly in the bank debt series, precludes explicit judgments, but it appears that during the last two decades PCA's may have provided additional seasonal credit that surpassed the volume supplied by banks, in spite of the PCA's lesser role in total non-real-estate lending (Table 28). The 1950-68 least-squares trend shows that the seasonal component of non-real-estate loans at banks rose at an average annual rate of only 3.0 per cent, whereas that at PCA's rose by 5.5 per cent annually.

At both PCA's and banks, seasonal credit extensions have become a substantially smaller proportion of outstanding credit. The semiannual variation at PCA's fell from 18 per cent of outstandings in 1958 to 11 per cent in 1968, while at banks it decreased from 7 per cent to 5 per cent (Table 27). As already noted, however, the amount of seasonal funds provided by both lenders actually

increased and the seasonal role of PCA's rose in relation to that of banks. The ratios give the wrong impression because total farm lending (1) increased greatly at both lenders and (2) grew faster at PCA's than at banks.

PCA credit exhibits greater seasonality than bank non-real-estate credit in all major production areas except the Appalachian and Southeast states (Table 29). The same relationship is found in many important farm states--in 1968, PCA's showed larger relative seasonal variation in 18 of the 29 states in which bank non-real-estate farm loans exceeded \$100 million, while in 1966 the proportion was 20 of 28 states. Seasonality in farm loans is greatest in Southern, Plains, and Western states. In the Mississippi delta states, for example, the semi-annual variation in 1968 was 26 per cent of outstandings at banks and 54 per cent at PCA's.

These regional data indicate the continued great importance of seasonal credit in some farming areas. From the historical trends previously noted, it appears that PCA's have been better able than banks to meet seasonal credit demands where these have been large and increasing.

Table 29

Semiannual Variation in Bank and PCA Non-real-estate Debt Owed by  
Farmers, by Farm Production Areas, 1968

Area	July debt exceeded average of debt at beginning and end of year by--			
	Per Cent		Millions of dollars	
	Bank	PCA	Bank	PCA
United States . . . . .	5.1	10.7	485	393
Northeast . . . . .	.8	-1.5	3	4
Lake States . . . . .	4.3	4.9	37	20
Corn Belt . . . . .	1.4	7.0	35	51
Northern Plains . . . . .	- .3	3.3	4	13
Appalachian . . . . .	14.6	9.3	66	39
Southeast . . . . .	9.9	6.0	29	20
Delta States . . . . .	26.3	53.8	74	117
Southern Plains . . . . .	4.1	13.4	40	40
Mountain . . . . .	6.4	13.7	65	50
Pacific . . . . .	12.8	16.3	140	40

Source: Agricultural Finance Review, U.S. Department of Agriculture, April 1969, pp. 24-25.

PART B. PROPOSALS TO INCREASE AVAILABILITY OF BANK CREDIT

VIII. INTRODUCTION

Part A of this paper outlined two important projections: (1) the agricultural sector will likely continue to seek significantly larger amounts of credit, and (2) the ability of rural banks to provide their historical share of such increases and adequately finance their communities from their own resources is likely to be further impaired.

To maintain their role as a leading farm lender, commercial banks will therefore increasingly have to assume the role of intermediaries who channel nonlocal--urban and money market--capital into agricultural loans of either a term or seasonal character. The avenues for securing such funds fall into two general categories: (1) discount or sale of assets--in particular, of loans; and (2) borrowing, such as by purchase of Federal funds or sale of time certificates of deposit.

These avenues for obtaining reserves to support additional lending have been partly or totally closed to many banks that are extensively engaged in rural lending. Whereas secondary markets have been developed for some bank paper, such as acceptances and mortgages, there is virtually no market for many rural loans. Thus most banks that make a high percentage of their loans to agriculture and for other rural purposes are unable to obtain any significant volume of reserves through rediscount or sale of notes. Their volume of lending is reduced by this imperfection in financial markets.

Borrowing--the second route by which additional reserves can be secured--has been employed in significant proportions by large banks but is much less available to small institutions. Present markets in such instruments as Federal funds, time certificates of deposit, and



Eurodollars are largely designed to meet efficiently the needs of large banks. Thus small banks, including most banks engaged primarily in rural lending, are in many cases virtually precluded from participation or can participate only as effectively as the interest of their city correspondent permits. The ability of small or isolated banks to employ these sources of funds is further restricted by lack of managerial skills in this area, lack or relatively high cost of market information, and the relative lack of geographical and economic diversification of their resources, which outside investors tend to view as prima facie evidence of higher risk.

These imperfections in financial markets prevent an optimum allocation of money market resources, with attendant social cost. Economic sectors that must deal with the disadvantaged banks--industries such as agriculture, with large numbers of small firms located in isolated areas--are placed at a relative disadvantage in obtaining funds to finance expansion, new technology, or seasonal production processes.

In the next three chapters, imperfections in specific banking mechanisms and financial markets are considered in somewhat greater detail to determine whether the flow of funds into rural areas is obstructed. Some thoughts are offered on how procedures might be changed or new mechanisms established to improve the mobility of funds and thereby increase the potential lending ability of rural banks.

First, the efficacy of correspondent banking--the present mechanism by which funds are moved within the commercial banking system--is reviewed and appraised. Evidence from Federal Reserve studies is

presented to question whether correspondent banking makes a net contribution to the flow of funds into rural areas, and to examine whether its contribution could be improved by altering the manner in which most correspondents are compensated for their services.

To complement the evaluation of correspondent banking, which is most highly developed in unit banking states, the rural lending performance of branch banking is also examined. While the conversion of small rural banks into arms of larger institutions is shown to present important advantages, several offsetting conditions and circumstances are also noted.

The second question raised is whether present central banking mechanisms--the open-market and discount operations of the Federal Reserve System--succeed in providing an equitable proportion of reserves to rural sectors. An optimum distribution of reserves provided either for seasonal fluctuations or for long-term growth is thought unlikely given the present state of financial markets, with funds reaching small and isolated banks with considerable lag, if at all. Therefore, a number of suggestions for improving present markets or compensating for their deficiencies are offered.

Third, as a fundamental means for moving money market funds into rural lending via the banking system, development of secondary markets in rural bank portfolio items is proposed. Organizational considerations and operational methods are briefly outlined for new regional agencies--unified markets--that would make trading in such items feasible by neutralizing certain disadvantages that rural banks face in current money markets. Regional unified markets would provide rural banks with information

and trading facilities for all financial instruments, and thereby place rural banks on a more nearly equal footing with other institutions in the nation's financial arena.

## IX. CORRESPONDENT AND BRANCH BANKING

In the context of this study, correspondent and branch banking constitute existing mechanisms by which the advantages of large banks can potentially be enjoyed in rural areas. Both mechanisms are inherently capable of improving the flow of funds, both between money market and rural banks and among rural banks. In this process the net flow of funds can be either into or away from rural areas. Unfortunately, national evidence on the net effect is meager. Relevant considerations and some recent research findings are discussed in this chapter.

One other aspect of correspondent and branch banking deserves special mention: among the mechanisms considered in this and subsequent chapters, these alone provide a means to cope with the problem of farm loans that exceed the legal lending limits of present rural banks.

### Correspondent banking

The correspondent banking mechanism helps to provide more effective financial services to rural areas. City banks may handle overline loans, provide seasonal credit, advise on investment policies, help with accounting and management problems, execute security transactions, and clear checks. In exchange for such services, country banks maintain deposits with their city correspondents. This traditional method of payment drains funds from rural areas by tending to offset, or in many cases exceed, funds provided through credit services.

Our interest in correspondent banking centers on the effectiveness and cost of the credit services rendered to rural areas.

Insofar as available information and data permit, the following questions will be investigated:

- (1) Are the credit services responsive to rural needs?
- (2) What is the ratio between funds provided to and drawn from rural areas?
- (3) Should credit services be paid for by deposit balances?

Correspondent credit services. Intensive interviews about correspondent relationships were conducted with a number of rural banks in 1966.<sup>35/</sup> These banks regarded the handling of overline loans as the most important credit service rendered by their city correspondents, and nearly all were using or had used their correspondents in this way. In a few instances, a customer had been referred to a correspondent, and in some cases the banks had also obtained loans from the city banks. But on the whole, most of the credit was obtained in the form of participations in loans originated by the country bank, and most participations were sought because the loan exceeded the legal lending limit of the country bank.

Two earlier but broader surveys confirm this finding. A national survey of correspondent banking conducted in 1963 found that the bulk of correspondent credit was provided through participation loans.<sup>36/</sup> In the 1963 midyear farm credit survey by The American Bankers

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<sup>35/</sup> A total of 29 country bankers in Iowa, Illinois, Colorado, Kansas, and Oklahoma were interviewed by personnel of the Federal Reserve Banks of Chicago and Kansas City.

<sup>36/</sup> A Report on the Correspondent Banking System, Subcommittee on Domestic Finance, Committee on Banking and Currency, House of Representatives, 88th Congress, 2d Session, December 10, 1964, pp. 2-4.

Association (ABA), 84 per cent of country bankers and 74 per cent of city bankers rated participation in overline loans as the most important correspondent bank service to agriculture.<sup>37/</sup>

Participations are also used to obtain correspondent credit even when overlines are not involved. For example, one banker has described how his bank obtains seasonal credit through sale of participation certificates in a block of farm loans. This procedure was found more convenient than the sale of individual notes.<sup>38/</sup>

Extent of the overline loan problem. Legal lending limits fix the maximum outstanding credit that a bank may extend to an individual and are intended to avoid serious financial difficulty should one borrower default. For national banks, the legal limit is 10 per cent of the bank's capital and surplus, except that loans secured by livestock may go to 25 per cent. Laws governing banks chartered by state governments generally also impose lending limits based on similar criteria, though they vary among states.

Rapid postwar growth in the size of individual farms has resulted in numerous farm loan requests that exceed the legal lending limit of the bank at which they are made. The market value of average assets per farm in the United States, for instance, more than doubled both in 1946-56 and 1956-66. The average amount of credit used per

<sup>37/</sup> T. P. Axton, "Introductory Remarks," Correspondent Agribanking: Proceedings of the Correspondent Agribanking Forum, Agricultural Committee, The American Bankers Association, New York, 1963, pp. 5-6.

<sup>38/</sup> Robert L. Walton, "Overcoming Pressure of Seasonal Loan Demand," Agricultural Banking and Finance, November-December 1967, pp. 28-31.

farm more than tripled during each of these periods. The assets and capital of most rural banks did not grow as rapidly. Thus in many areas, a significant proportion of farms grew much faster than the banks by which they were being financed.

Therefore, overline loan requests persist even though lending limits of rural banks have been moving upward. Between 1962 and 1968, ABA surveys found that the proportion of agricultural banks with loan limits under \$50,000 declined from 43 to 23 per cent and the proportion with limits of \$150,000 and above increased from 25 to 37 per cent. However, the proportion of agricultural banks that received one or more overline requests in the first half of the year increased from about one-fourth in 1962 to 29 per cent in 1968. In surveys made each year since 1962, this proportion has ranged between 26 and 34 per cent.<sup>39/</sup>

Overline loans are particularly common at rural banks in Western states that prohibit or severely restrict branch banking. Farms in these states tend to be large, and the rural banks tend to be small. In the 1968 ABA survey, 41 per cent of agricultural banks in the Plains states had received at least one excess farm loan application.

The Federal Reserve's 1966 survey of farm lending confirmed both the widespread occurrence and the geographical concentration of overline farm loan requests. Of all insured commercial banks, 14 per cent had received at least one overline request during the 12 months ending in June 1966. Among banks with capital and surplus below \$300,000,

<sup>39/</sup> Trends in Agricultural Banking: Report of Midyear 1968 Agricultural Credit Survey, Agricultural Committee, The American Bankers Association, New York, pp. 11-13, and similar publications for earlier years. The ABA defines agricultural banks as banks with under \$5 million in assets having 5 per cent or more of their assets outstanding in farm loans, and larger banks with 1 per cent or more of their assets in farm loans. In 1968, 840 of these banks participated in the sample survey.

one-fourth had received overline requests .

Nationally, there were about 12,000 requests totaling \$330 million. They equalled 0.3 per cent of the number and 3 per cent of the volume of all farm loans outstanding on the day of the survey. At the banks that received the requests, however, the overline requests equalled 1.9 per cent of the number and 15 per cent of the dollar volume of outstanding farm loans. In both relative volume and number, overline requests were about five times more important at small than at large banks.<sup>40/</sup>

In the Northern Plains states--Kansas, Nebraska, and the Dakotas--the dollar volume of overline requests received during the year totaled 7 per cent of farm loans outstanding on the survey date, compared with the national average of 3 per cent. Overline requests also occurred with above-average frequency in the Southern Plains and Mountain states.<sup>41/</sup>

Responsiveness to rural credit needs. The ABA midyear survey of agricultural banks has consistently shown that a high percentage of overline requests has been handled through the correspondent system. In 1968, for instance, 86 per cent of the dollar volume of excess loan applications was handled on a participation basis with correspondent banks. Another 5 per cent was referred entirely to a correspondent, so that only 9 per cent was lost to other lenders.

<sup>40/</sup> Emanuel Melichar, "Bank Financing of Agriculture," Federal Reserve Bulletin, pp. 929-930.

<sup>41/</sup> Ibid., p. 943.



During 1962-68, the proportion of dollar value handled through the banking system has ranged from 88 to 97 per cent, and has most generally been at 94 to 95 per cent.<sup>42/</sup>

The 1966 Federal Reserve survey did not ask about the disposition of overline requests, but did show a relationship between these requests and outstanding participation loans. Of the banks with overline requests during the year ending in June 1966, one-half had at least one participation loan outstanding on June 30. At banks with overline requests, participation loans represented a tenth of the outstanding farm loan business, about double the proportion found at all banks. Participation loans were relatively most important in those areas--the Plains and Mountain states--in which overline requests were most frequent.

The survey found \$574 million of farm participation loans outstanding on June 30, 1966, of which the participating banks' share was \$304 million. Participation activity was widespread, as 2,500 banks had originated at least one of these outstanding loans, and 1,100 banks were participating in them. Since a similar survey in 1956, the number of originating and participating banks had tripled, and the dollar volume of participation credit had increased by 607 per cent.<sup>43/</sup>

In general, the 29 rural bankers interviewed in 1966 were pleased with their correspondent relationships, which echoed attitudes

<sup>42/</sup> Agricultural Banking Developments, 1962-1967, Agricultural Committee, The American Bankers Association, New York, 1967, pp. 13-14.

<sup>43/</sup> Melichar, op. cit., p. 937. For another discussion of overlins and participations, see "Lending Limits of Commercial Banks" in Swackhamer, Gene L., and Doll, Raymond J., Financing Modern Agriculture: Banking's Problems and Challenges, Federal Reserve Bank of Kansas City, 1969, pp. 40-53.

generally expressed by bankers in the 1963 national survey of correspondent banking.<sup>44/</sup> Several bankers indicated that their correspondent had always responded favorably when asked to take overlines. However, there were indications that correspondent credit services may suffer as city banks reach less liquid positions. Several rural bankers had been told to hold credit extensions requiring overline participations to a minimum. Further questioning revealed that the banks that were asked to restrict credit in 1966--a year of general credit tightness--had generally tended to use their correspondents extensively, whereas those reporting no restrictions had never asked their correspondent to take more in overlines or other loans than the amount of their demand balance with the correspondent.

The Federal Reserve's 1966 national survey of farm lending provided additional insights into the resource pressures on city banks that might adversely affect their credit services to country banks. An estimated 83 per cent of participation funds came from banks with loan-deposit ratios of 60 per cent or higher. Also, 27 per cent of these funds were extended by banks that reported difficulty in financing their own farm customers.<sup>45/</sup>

Cost of correspondent credit services. City correspondent banks are usually "paid" for their correspondent services by having the use of demand deposits that rural banks keep with them. This flow of funds from country to city counters the flow of correspondent credit from city to country.

<sup>44/</sup> Correspondent Relations: A Survey of Banker Opinion, Subcommittee on Domestic Finance, Committee on Banking and Currency, House of Representatives, 88th Congress, 2d Session, October 21, 1964, pp. 6-7.

<sup>45/</sup> Emanuel Melichar, op. cit., pp. 940-941.

How do the two flows compare in volume? Some indication is provided by comparing farm loan participations and demand balances outstanding on June 30, 1966. Because only data on farm loan participations were obtained in this survey, this comparison must be restricted to banks whose lending business consists primarily of loans to farmers. Banks with more than one-half of their total loans in loans to farmers were chosen. The analysis also concentrates on member banks, thereby avoiding the complicating factor that nonmember banks hold balances in other banks to meet reserve requirements. (However, Table 30 provides data for both member and nonmember banks.)

At the 855 member banks meeting the farm loan criterion, farm participations averaged 22 per cent of demand balances with other banks, while at the 2,069 nonmember banks the ratio was 16 per cent. Thus the balances exceeded the credit received by over four times, which agrees with other impressions that the net flow of funds is from the country to the city. For the heavily agricultural banks in this analysis, a reasonable allowance for nonfarm participations and for nonparticipation credit would still leave correspondent balances far ahead of correspondent credit.

A more detailed analysis of these data reveals wide variation in the ratio of participations to balances among individual banks, indicating that managerial inertia at country banks may be an important factor contributing to the unfavorable direction of the net fund flow.

If a country banker is operating at a low loan-deposit ratio, city banks can hardly be faulted for attempting to obtain relatively large balances from him even though they are not called upon for proportionately large credit services. A distribution of the heavily-agricultural member banks by loan-deposit ratio is particularly revealing. Those banks with loan-deposit ratios under 50 per cent had outstanding participations

Table 30  
 Farm Loan Participations Received from Other Banks  
 Compared with Deposit Balances Held in Other Banks,  
 Banks at which Farm Loans Comprised  
 50 per cent or more of Total Loans,  
 June 30, 1966

Classification, capital, and liquidity status of bank	Millions of dollars		Farm loan participa- tions as per cent of--		Balances as per cent of--	
	Farm loan participations	Balances	Balances	Farm loans	Deposits	Farm loans
<u>A. Member banks</u>						
Total. . . . .	58	262	22	4.6	7.3	21
Capital and surplus (thousands of dollars):						
Under 200. . . . .	7	51	13	3.1	8.5	24
200-299. . . . .	16	63	26	5.7	7.5	22
300-499. . . . .	17	82	21	4.4	7.3	21
500 and over . . . . .	18	66	27	4.8	6.4	18
Loan-deposit ratio (per cent):						
Under 30 . . . . .	2	20	8	5.9	11.5	72
30-39. . . . .	1	36	3	1.1	7.9	33
40-49. . . . .	4	59	7	1.8	7.6	26
50-59. . . . .	14	69	20	3.9	7.3	20
60-69. . . . .	16	56	29	4.7	6.7	16
70 and over. . . . .	21	22	97	10.4	5.4	11
<u>B. Nonmember banks</u>						
Total. . . . .	91	574	16	4.7	10.7	30
Capital and surplus (thousands of dollars):						
Under 200. . . . .	52	264	20	6.3	11.5	32
200-299. . . . .	15	130	12	3.3	9.9	35
300-499. . . . .	18	123	15	4.1	10.3	28
500 and over . . . . .	6	58	10	3.0	10.7	29
Loan-deposit ratio (per cent):						
Under 30 . . . . .	1	31	4	3.9	15.2	89
30-39. . . . .	1	80	1	.4	11.7	49
40-49. . . . .	11	126	9	3.1	10.9	36
50-59. . . . .	10	161	6	1.8	10.3	28
60-69. . . . .	44	116	38	9.0	10.2	24
70 and over. . . . .	23	61	38	7.4	10.3	19

averaging less than 10 per cent of the balances they held in correspondent banks. The ratio of participations to balances rose with higher loan-deposit ratios until it reached 97 per cent at banks with loan-deposit ratios of 70 per cent and over. The latter banks kept correspondent balances averaging only 5.4 per cent of their deposits, compared to an average of 7.3 per cent for all the member banks in this analysis. A similar though less marked relationship was found at nonmember banks.

It is evident that some banks can obtain a relatively high volume of correspondent credit relative to balances. A further breakdown of the data cited shows that the larger banks among those with high loan-deposit ratios had the higher ratio of participations to balances (Table 31). Better managerial skills at larger banks may have played a part in this result, along with the greater pressure that larger banks can presumably exert to get their needs met.

To some extent, fund outflow from rural communities is accentuated by complementary deposit accounts that rural bankers keep with city banks that are not called upon for correspondent credit, and that in many cases are rarely called upon for services of any kind. Of the 29 rural banks interviewed in 1966, for instance, each was maintaining accounts with from 2 to 12 city banks; however, only 1 to 3 of these accounts were active. Some of these bankers did report that they were reducing their number of inactive accounts.

However, there is ample evidence that provision of correspondent credit is directly dependent upon maintenance of deposit balances and is related to the amount of such balances. For instance, one Illinois bank, in return for use of an anticipated \$300,000 of seasonal

Table 31  
Farm Loan Participations Received as Percentage of  
Deposit Balances Held in Other Banks, Member  
Banks at which Farm Loans Comprised 50 per  
cent or more of Total Loans, June 30, 1966

Loan-deposit ratio (per cent)	Capital and surplus (thousands of dollars)		
	Under 200	200 to 499	500 and over
Under 50 . . . . .	18	3	1
50-69 . . . . .	3	38	11
70 and over . . . . .	32	73	146

participation credit (maximum \$800,000), agreed to "keep with the correspondent an average of \$150,000 in excess deposits above and beyond that needed to break even on a normal correspondent relationship."<sup>46/</sup> In a normal year, the city bank would apparently provide \$300,000 for perhaps six months, on which it would receive interest "at 1/4 per cent above the prime rate." In effect, the country bank gave the city bank a yearly average of \$150,000 interest-free in return for the privilege of borrowing \$300,000 at slightly above the prime rate for perhaps six months. On a yearly average basis, the city bank's average commitment of its own funds was zero. If it could invest the balances at the prime rate, its annual earnings from the arrangement were equal to the prime rate times \$300,000. Nevertheless, this country banker was pleased with this correspondent arrangement. With his bank fully invested, he found it necessary to pay this relatively high price for seasonal credit.

City bankers **traditionally** have viewed deposit balances as additional compensation for provision of participation credit. For example, one banker with a large farm participation business, whose bank was therefore presumably offering participations on terms competitive with other city banks, made this statement in 1963:

We will not accept an overline from a country bank unless we have a deposit relationship with that bank. We expect some correlation between the amount of deposit relationship and the amount of overline accommodation. ...We want the country banker to participate substantially in any loan he asks us to carry <sup>47/</sup>

<sup>46/</sup> Robert L. Walton, op. cit., p. 30.

<sup>47/</sup> Morris F. Miller, "Our Bank's Agricultural Program," Correspondent Agribanking, Agricultural Committee, The American Bankers Association, New York, 1963, p. 36.

Apparently, farm loans **obtained through** correspondents were not **viewed** as a sufficiently profitable investment, even though the country banks were incurring most of the cost of originating the loans and were sharing the risks involved. Another city banker has more recently affirmed this view:

Where lies the glamour for Mr. City Banker to send funds to Farmer Smith through his banker in western Illinois at the prime rate, with no deposit balance? If, on the other hand, the same funds can be placed locally at the same rate with 20% compensating balances and some good trust business in prospect, where would your stockholders expect the money to go?"48/

Similar attitudes on the part of city banks are likely to become even more common as more city banks encounter tighter liquidity conditions, with inherent conflict between the loan demands of their own customers and the credit needs of their country correspondents. If the latter needs are met, it seems evident that the correspondent system will exact a considerable toll for this service.

A proposal to minimize drains on rural funds. Though the use of deposit balances to pay for correspondent services drains funds from rural areas, in a number of common circumstances this means of payment constitutes an efficient use of rural banking resources. For many nonmember banks, correspondent balances also serve to meet state reserve requirements, and thus the funds **would** be unavailable for

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48/ Robert E. Hamilton, "Farm Credit--It Should Be Supplied by Bankers, But Agriculture Must Compete for Funds on the Same Basis as Any Other Industry," Mid-Continent Banker, November 1968, p. 49.



lending anyway. Also, at banks with funds in excess of loan demands, no immediate diminution of lending capability results when balances are used to pay for overline participations and other services. Or, if a city bank is content to be paid for seasonal credit extensions by balances received only in the rural bank's off-season, and the rural bank would not be fully-invested at that time in any event, payment through balances may not adversely affect the local credit service provided by the rural bank.

These circumstances are present in many correspondent relationships, and may help to explain why many country bankers in 1963 expressed a preference for balances over fees as means of payment for correspondent services.<sup>49/</sup> Also, it is natural for these bankers to favor a traditional technique to which they are accustomed. But with the increasing shortage of loanable funds and more sophisticated management, more country banks may question the use of correspondent balances to pay for overline or seasonal participations. In many instances, community needs might be better served if rural banks made additional local loans with the funds they now are using to maintain correspondent balances and used the returns on these loans to pay for correspondent services on a fee basis. Fees for credit accommodation should prove reasonable, as interest rates charged by city banks on participations and other farm loans should be high enough to make them a profitable investment in their own right.

If city correspondents are able to adapt to the changed liquidity position of rural banks, and at the same time maintain or expand credit services provided to rural areas, they will continue to constitute a useful

49/Correspondent Relations: A Survey of Banker Opinion, op. cit., pp. 10-12.

farm credit mechanism. However, an inevitable conflict may arise as both country and city banks simultaneously approach less liquid positions. Thus at the same time that country banks are interested in reducing correspondent balances and increasing credit services, city banks probably have more interest in increasing balances and less interest in providing credit. Given these circumstances, it seems unlikely that the traditional correspondent banking system can become the means whereby substantially larger quantities of urban funds are channeled into agriculture.<sup>50/</sup> However, correspondent banking could contribute materially to this flow if city banks prove interested in becoming brokers for funds that country banks will need to maintain their role in rural finance.

#### Branch banking

In the heart of the nation's agricultural areas--the western Corn Belt, Plains, and eastern Rocky Mountain states--branch banking is prohibited or severely restricted. One-half of the banking system's farm loans are in this region. Farm loan demands in the area have increased rapidly as crop farm acreages have been enlarged and livestock production increased. In consequence, many agricultural banks have reached high loan-deposit ratios and some have expressed concern over their future capacity to finance agriculture. Also, large farming operations are common in this area, so that overline loan requests are frequently received. Continued availability of participation credit from larger correspondent banks is essential in this environment.

In contrast, the 1966 survey of farm lending found that overline requests and general farm financing present markedly smaller

50/Further evidence and evaluation of credit flows through the correspondent banking system has been provided by a Federal Reserve staff task force headed by Ernest Baughman and Dorothy Nichols, Federal Reserve Bank of Chicago. Some data and conclusions from this study are presented by Bernard Shull in Reappraisal of the Federal Reserve Discount Mechanism: Report on Research Undertaken in Connection with a System Study, Board of Governors of the Federal Reserve System, August 1968, pp. 30-32.

problems in rural areas served by large branch bank systems. The most striking evidence was contained in reports from the Pacific states, where very large farms predominate. But because the banks here were also relatively large, overline requests were virtually nonexistent, and few banks thought that farm loan demands pressed unduly against their resources.

In addition to being less likely to receive farm loan requests exceeding their legal lending limit, large branch banks are potentially able to improve rural credit services in several other ways. Their greater lending volume can support employment of specialists in farming and farm lending. Their lending practices and terms can therefore stay abreast of modern developments. Overall management of the bank's resources is also likely to be better than that achieved by many small banks. A typical branch system is likely to operate at a higher loan-deposit ratio than the average of an equivalent group of unit banks, partly because its geographically diversified lending reduces the overall risk. More loans can therefore be made from the same banking resources. Within a branch system, funds can be shifted to offices facing the greater loan demand. Consequently, in communities where credit needs are greatest loans may easily exceed deposits. Finally, the larger banks are more likely to be able to tap national money markets for additional funds.<sup>51/</sup>

On the other hand, there are reasons to question whether branch banking can be relied upon to improve the flow of bank credit to

51/ As part of the overall discount study, Federal Reserve staff studies of fund flows within branch banking systems were undertaken by Verle Johnson, Harmon Haymes, and Margaret Beekel. A brief statement of the findings is presented by Bernard Shull in Reappraisal of the Federal Reserve Discount Mechanism: Report on Research Undertaken in Connection with a System Study, op. cit., p. 32.

agriculture. To be most effective, a system should cover an area sufficiently broad and diversified to include both capital surplus and deficit regions between which funds can be moved. With branching limited to statewide systems at best, it is doubtful that this condition is met in some agricultural states. A more meaningful contribution could be expected if branching were permitted over a larger economic area, or were delineated by national or regional economic sectors rather than state lines.

A second major concern is that the management of branch systems, because of unfamiliarity with rural finance, may not implement the policies that would lead to the potential lending improvements cited above. In a branch system covering a diversified area, rural lending may be a less important activity than in a unit bank in a rural community. Top managers will properly allocate less of their time to this phase of their bank's business. Nevertheless, such a bank can perform an outstanding rural credit job if top management is interested in developing its rural business along with its other endeavors and employs capable technical staff to work in rural credits. But if such lending is neglected by a large branch system, many rural communities may be adversely affected. The potential limitations should be recognized along with the advantages.

Finally, a realistic appraisal must note that state legislation now prohibiting branch banking seems likely to be changed quite slowly, if at all. While a gradual nationwide trend toward reduction of restrictions can be detected, it has made little or no progress in

many nonmetropolitan states. Meanwhile, it may prove desirable to implement other measures to improve the ability of the banking system to finance agriculture.

## X. FEDERAL RESERVE CREDIT

Since the early 1930's, the Federal Reserve System has relied mainly on open market operations to provide reserves to support a growing volume of money and bank credit, as well as to offset seasonal and other fluctuations affecting bank reserves. Recently, only about 2 per cent of total reserve bank credit has on average been supplied through the discount window.

Making reserve bank credit available through open market operations and letting market forces determine its allocation has much appeal, providing distributive mechanisms in the financial markets enable a near-optimum allocation to be achieved. Imperfection in present mechanisms, however, may lead to less-than-optimum distribution of new reserves among different economic and geographic sectors or may cause long lags before an optimum allocation is attained. Empirical evidence tends to verify these fears.<sup>52/</sup>

To compensate for inequities that thus arise from the present structure of banking and of financial markets, more Reserve Bank credit could be provided directly to rural banks.

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<sup>52/</sup> After empirical work that included comparisons of portfolio behavior at reserve city and country banks, Goldfeld concluded that in operations providing for reserve growth, "There is...no assurance that reserves generated by open-market purchases will find their way to banks in need of funds. ...open-market operations are likely to affect country banks only indirectly" (p.52). Similarly, in operations offsetting reserve losses, "there is no assurance that the reserves created by open-market purchases will be distributed among member banks in proportion to the reserve losses which they are intended to replace" (p.183). Additional evidence is presented on pp. 149-150. See Stephan M. Goldfeld, Commercial Bank Behavior and Economic Activity: A Structural Study of Monetary Policy in the Postwar United States, North-Holland Publishing Company, Amsterdam, 1966.

Through the discount mechanism, member banks in need of reserves have had access to credit for short periods of time--too short in most cases to provide effective support for farm lending.

Data on intra-year flows of loans and deposits show that many rural banks could each year use adjustment credit provided for the entire length of a farm production season. Such credit could be supplied through a discount mechanism redesigned to incorporate a seasonal borrowing privilege. The extent to which alternative types of such privileges might improve farm credit availability at banks is examined in this chapter.

The analysis also reveals that over one-half of member banks in relatively tight liquidity positions face a year-round rather than seasonal strain on their lending resources. Furthermore, many rural banks are not members of the Federal Reserve System, and if they so remained, they would not be eligible for seasonal discount credit. Two possible Federal Reserve actions to assist both groups of banks are examined: (1) longer term credit through the discount or open-market mechanisms and (2) improvement of markets for assets and liabilities of rural banks.

#### Seasonal discount credit

Banks in nonmetropolitan areas frequently experience a seasonal squeeze on funds through simultaneous withdrawal of deposits and expansion of loan demands. Because of their small size and geographic isolation, rural banks frequently are ill-equipped to utilize their resources effectively in a highly seasonal environment. During the off-peak

season of the year, funds that might otherwise have been committed to financing intermediate-term rural needs instead tend to be maintained in short-term Government securities, city bank accounts, or other forms that provide a high degree of liquidity, but that represent inefficient use of the financial resources of the community. Twenty, or perhaps even ten, years ago, when most banks had ample stocks of liquid assets even at seasonal peaks, this situation caused little concern. Now, however, many banks are hard-pressed to meet the loan demands of their area. With discount policy revised to allow



rural banks to borrow a substantial portion of the funds required to meet seasonal outflows, these banks would have more funds for meeting community needs and would be able to handle their investment portfolios more satisfactorily.

The existing regulation permits extension of short-term discount credit for seasonal requirements "...beyond those which can reasonably be met by use of the bank's own resources." This regulation has usually been interpreted to mean that a bank is expected to meet seasonal outflows of historically-average amplitude through its own portfolio adjustments. And when borrowing for seasonal needs has been permitted, the assistance has usually been of shorter term than the period of the bank's need. A helpful revision of the rule would permit Federal Reserve Banks to establish seasonal borrowing privileges for their member banks for meeting a portion of normal seasonal needs, with maturities geared to the length of need. This recommendation again seeks to remedy partially the inability of small and isolated rural banks to tap national money markets effectively for short and intermediate-term funds. The discussion that follows demonstrates the scope of the seasonal lending problem at such banks, and the extent to which assistance through the discount window might be helpful.

An example of seasonal fund flows at rural banks. Not all rural banks experience seasonal loan demand and deposit withdrawals that are large in relation to the size of the bank. But at some banks, principally those in crop production areas, such fund outflows can be violent. To illustrate a situation of this kind, actual data for three small banks in Nebraska, each with large seasonal flows

relative to its size, were averaged to obtain data for a composite rural bank, as shown in Table 32.

Over three-fourths of the loans at this bank consisted of loans to farmers, both in December and in June. But farm loans increased by 64 per cent between December 1965 and June 1966. In the same interval, deposits of individuals, partnerships, and corporations (IPC deposits) decreased by 17 per cent. Even after adjustment for an upward growth trend in deposits and loans, the combined semiannual fund outflow from increases in all loans and withdrawal of IPC deposits was equal to 48 per cent of the December level of total deposits.

Other data in Table 32 indicate that as this bank received an inflow of deposits in the second half of the year, the money was placed primarily in U.S. Government securities, and to a lesser extent was held as balances at other banks. In the spring, deposits flowed out of the community, and in addition farmers borrowed for production purposes. To accommodate these seasonal demands, the bank sold the securities that had been purchased the previous fall and also drew down its balances with other banks. The combined trend-adjusted semiannual change in these two assets totaled 44 per cent of total December deposits, almost equal to the relative semiannual outflow of 48 per cent.

It is thus evident that this bank financed the seasonal demands of its community from its own resources; i.e., from the resources of the community. Funds deposited in the fall were merely stored in anticipation of the certain outflow of the following spring. The bank had a loan-deposit ratio of 75 per cent in June, at which time its resources were

Table 32

Seasonal Fund Flows at a Composite Rural Bank\*

	Amount outstanding (thousands of dollars)			Trend-adjusted January-June change as per cent of December total deposits
	June 1965	December 1965	June 1966	
Farm loans . . . . .	1,867	1,295	2,124	+22
Total loans . . . . .	2,414	1,664	2,485	+25
Deposits (IPC) . . . . .	2,684	3,549	2,952	-23
Balances at other banks . . .	324	555	398	- 6
U.S. Gov't. securities . . .	687	1,847	611	-38
<hr/>				
Loans as per cent of total deposits . . . . .	77.8	40.4	74.9	

\*Average of data for three rural banks experiencing relatively large seasonal flows of funds.

relatively fully employed. In December, however, its loan-deposit ratio was only 40 per cent.

Community consequences of large seasonal flows. The composite rural bank of the preceding example had nearly a maximum year-round level of loans consistent with meeting the indicated seasonal outflow from its own resources. If it had additional year-round loan demand, such as for farm machinery and equipment purchases or from nonfarm businesses, it could in theory operate in a different fashion and still meet the same seasonal outflow: it could commit its own funds to the additional year-round loans and borrow an equivalent sum during the spring and summer to meet the seasonal demand. However, given the present structure of money markets this could be a difficult course for a small bank in Nebraska.

On the other hand, if this bank were able to obtain seasonal funds from its Reserve Bank in sufficient quantity to cover a significant portion of its seasonal outflow for the entire period of the outflow, it could operate in just that fashion. It could increase its year-round lending for legitimate community needs with complete assurance that funds would be available for the vital seasonal demands.

In addition, it is possible that this bank, in spite of the large seasonal outflow, is not meeting the full seasonal loan requirements of its customers. Faced with increasing demand for both year-round and seasonal credit, perhaps the latter is being curtailed instead of or in addition to the former. In this event, seasonal borrowing from the Federal Reserve Bank would enable the bank to meet more adequately the complete seasonal needs of the

community. After several years the real seasonal pattern would be evident, and the bank could obtain still greater seasonal sums from the Federal Reserve, thereby releasing the community's own resources for more year-round loans.

Community benefits from a seasonal discount privilege can thus be expected in situations where banks (1) are experiencing a significant seasonal outflow of funds relative to their size, and (2) are operating at a relatively loaned-up position at the peak of the seasonal outflow, which tends to indicate that term and/or seasonal loan demands are not being fully met, or that such a situation may soon develop. The following sections attempt to measure the prevalence of these circumstances among rural member banks, and to estimate the impact that seasonal discount arrangements might have on farm lending at these banks.

Prevalence of large relative seasonal outflows. Fund flow data for all banks, similar to those shown for the composite rural bank, indicate that banks involved in financing agriculture to the extent of at least 25 per cent of their total loan volume (hereafter referred to as "agricultural" banks) are more likely than other banks to have semiannual fund outflows. As Table 33 indicates, 26 per cent of agricultural banks experienced a semiannual fund outflow equal to at least one-tenth of deposit volume. Only 11 per cent of other banks had relative outflow of this magnitude. Also, an additional 32 per cent of agricultural banks had semiannual fund outflows of from 5 to 9 per cent of deposits, still a slightly higher proportion than found among other banks.

Table 33

Distribution of Member Banks by Relative Semiannual Fund Outflow  
and by Importance of Farm Lending  
1965 - 66

Relative semiannual fund outflow, 1965-66 (per cent)	Total	Farm loans as percentage of total loans		
		Under 1	1 to 24	25 and over
<u>A. Number of member banks</u>				
All member banks . . . . .	6,151	1,388	2,713	2,050
Under 5 . . . . .	3,398	867	1,665	866
5 to 9 . . . . .	1,784	344	786	654
10 and over . . . . .	969	177	262	530
<u>B. Percentage distribution by relative outflow</u>				
All member banks . . . . .	100	100	100	100
Under 5 . . . . .	55	62	61	42
5 to 9 . . . . .	29	25	29	32
10 and over . . . . .	16	13	10	26
<u>C. Percentage distribution by farm loan ratio</u>				
All member banks . . . . .	100	23	44	33
Under 5 . . . . .	100	26	49	25
5 to 9 . . . . .	100	19	44	37
10 and over . . . . .	100	18	27	55

As of June 1966, agricultural banks comprised one-third of all member banks. But of member banks with relative semiannual outflow equal to 10 per cent or more of deposits, 55 per cent were agricultural banks. Of banks at which outflow comprised 5 to 9 per cent of deposits, 37 per cent were agricultural banks. Thus relatively large seasonal fund outflows were more prevalent among agricultural banks--many of which were precisely the banks unable to cope with such seasonal flows except by keeping their own resources available for this event.

Potential impact of specific seasonal discount proposals.

In any arrangement that permits banks to borrow from Federal Reserve Banks to meet part or all of seasonal outflows, specific rules would be needed to guide the definition and measurement of seasonal outflows, and to indicate the proportion of outflows that could be met by borrowing. Formulation and execution of such rules could, and undoubtedly would, employ more detailed banking data than the semiannual statistics shown thus far. The particular regulations adopted would influence the total amount of seasonal credit extended by the Federal Reserve System, as well as the amount that could be obtained by agricultural banks.

An indication of the proportion and amount of borrowing that might be done by agricultural banks, however, can be obtained from the semiannual data that is now readily available for all banks. Suppose, therefore, that seasonal outflow is defined as in the example involving the composite rural bank, and that banks are allowed to borrow funds equal to all outflow exceeding either (a) 5 per cent or

(b) 10 per cent of average deposits. The extent to which agricultural banks could participate in seasonal borrowing and the relationship between their potential borrowings and their volume of farm lending can be calculated to show the potential impact of the seasonal discount credit on farm lending. Selected data of this kind are shown in Table 34.

Under the 10 per cent plan, 16 per cent of member banks could borrow, and 55 per cent of these would be agricultural banks. The 5 per cent plan would broaden potential borrowing to 45 per cent of member banks, of which 43 per cent would still be agricultural banks.

Though dominant in numbers, the borrowing agricultural banks would tend to be smaller than other borrowing banks. Thus of total potential seasonal borrowings of \$461 million under the 10 per cent plan, 26 per cent would be obtained by agricultural banks, while under the 5 per cent plan they would obtain 14 per cent of total borrowings of \$2,130 million. But though agricultural banks would get a smaller portion of the total credit extended under the latter plan, they would obtain a much larger sum, \$307 million versus only \$120 million under the 10 per cent plan.

Under either plan, however, the potential borrowings would have more potential impact on the agricultural banks than on the other banks, reflecting the fact that seasonal outflows are proportionately greater at agricultural banks. Borrowings by agricultural banks under the 10 per cent plan could potentially equal 5.5 per



Table 34

Estimated Maximum Seasonal Borrowing at Agricultural and Other Banks  
Under Alternative Discount Plans,  
1965 - 66

	Total	Farm loans as percentage of total loans		
		Under 1	1 to 24	25 and over
A. Number of banks eligible:				
With deductible at 10% . . . . .	969	177	262	530
With deductible at 5% . . . . .	2,753	521	1,048	1,184
B. Distribution of banks eligible: (per cent):				
With deductible at 10% . . . . .	100	18	27	55
With deductible at 5% . . . . .	100	19	38	43
C. Borrowings (millions of dollars):				
With deductible at 10% . . . . .	461	157	185	120
With deductible at 5% . . . . .	2,130	1,022	801	307
D. Distribution of borrowings (per cent):				
With deductible at 10% . . . . .	100	34	40	26
With deductible at 5% . . . . .	100	48	38	14
E. Borrowings as per cent of deposits at eligible banks:				
With deductible at 10% . . . . .	4.1	3.0	4.8	5.5
With deductible at 5% . . . . .	3.0	2.6	3.1	5.3
F. Borrowings as per cent of farm loans at eligible banks:				
With deductible at 10% . . . . .	59.4	--	97.0	20.5
With deductible at 5% . . . . .	87.3	--	82.4	21.9
G. Farm loans at eligible banks as per cent of farm loans at all insured banks:				
With deductible at 10% . . . . .	7.0	--	4.0	9.9
With deductible at 5% . . . . .	22.3	--	20.1	23.8
H. Borrowings as per cent of farm loans at all insured banks:				
With deductible at 10% . . . . .	4.2	--	3.8	2.0
With deductible at 5% . . . . .	19.5	--	16.6	5.2

cent of deposits at the eligible banks, against only 3.0 per cent at eligible banks with few or no farm loans. The 5 per cent plan yields the same difference in potential impact. Thus seasonal borrowing arrangements would not only benefit a greater proportion of agricultural banks than of other banks, but would also be of relatively greater importance to the agricultural banks among the banks eligible to borrow.

At the eligible agricultural banks, potential borrowings under either plan would equal about one-fifth of present farm loan volume. The proposal could thus have a significant impact on farm lending at these banks.

The impact on total farm lending by all insured commercial banks would be much smaller, but still potentially significant, especially under the 5 per cent plan. Member banks eligible to borrow under the 10 per cent plan would have 7.0 per cent of total farm loans outstanding at all insured banks, while under the 5 per cent plan the proportion rises to 22.3 per cent. Member agricultural banks eligible to borrow under the alternative plans would hold 9.9 per cent and 23.8 per cent, respectively, of total farm loan volume at all insured agricultural banks. Potential borrowings are equal to 2.0 per cent and 5.2 per cent, respectively, of the total farm loan volume at all insured agricultural banks. The potential impact on total farm lending is restrained because (1) agricultural banks with large seasonal outflows tend to be small banks, and (2) two-thirds of all agricultural banks, as well as of agricultural banks with large seasonal outflows, are nonmember banks who would not be eligible for seasonal discount credit from the Federal Reserve System unless

they became members, or unless a basic legislative change permitted such borrowing by nonmembers.

Impact of bank liquidity on potential borrowing. It seems reasonable that banks with little liquidity, particularly at the peak of seasonal outflows, would be most likely to utilize a seasonal borrowing arrangement effectively. The 1966 farm loan survey indicated that banks began to experience significantly increased difficulty in financing their farm borrowers when loan-deposit ratios exceeded 60 per cent. Table 35 indicates that about 34 per cent of agricultural banks eligible to borrow under the 10 per cent plan, and a slightly smaller portion of those eligible under the 5 per cent plan, were illiquid to this degree at their seasonal peak. Another 30 per cent had loan-deposit ratios in the 50 to 59 per cent range, indicating that they might soon be more seriously concerned with liquidity, and perhaps might already be able to benefit from some seasonal borrowing.

At over one-third of agricultural member banks with large relative seasonal outflows, however, loan-deposit ratios are apparently under 50 per cent--at many banks, under 40 per cent--even at the seasonal peak. Though some of these banks might exercise a seasonal borrowing privilege and perhaps thereby improve their farm lending service, their present liquidity would permit them to do so even in the absence of such arrangements. An analysis performed by the Federal Reserve Bank of Kansas City showed that many such banks do not seem to lack farm lending opportunities in their communities. Many had neighboring banks in the same or adjacent towns with much higher loan-deposit ratios, some of which were expressing concern about

Table 35

Distribution of Agricultural Member Banks with Fund Outflow  
in January-June 1966, by Relative Size of Outflow and  
by Loan-deposit Ratio on June 30, 1966

Relative fund outflow (per cent)	Total	Loan-deposit ratio (per cent)				
		Under 40	40-49	50-59	60-69	70 and over
<u>A. Number of banks</u>						
Total. . . . .	1,663	304	376	472	355	156
Under 5. . . . .	602	118	143	156	125	60
5 to 9 . . . . .	568	102	138	170	116	42
10 and over. . . . .	493	84	95	146	114	54
<u>B. Percentage distribution by loan-deposit ratio</u>						
Total. . . . .	100	18	23	28	21	9
Under 5. . . . .	100	20	24	26	21	10
5 to 9 . . . . .	100	18	24	30	20	7
10 and over. . . . .	100	17	19	30	23	11

their inability to meet the legitimate loan demands of the area. Greater educational and other efforts to overcome the managerial inertia thus evidenced would be of service to the communities affected.

Latent seasonal demands. The preceding evidence on the potential assistance of seasonal discount credit to farm lending necessarily shows only how it could help banks to cope with the seasonal loan demands that they have actually filled in the past. It is probable, however, that some--perhaps many--banks have seasonal loan demands in their communities which have not been met because of lack of funds. Again, at progressive banks this situation is likely to occur more frequently as liquidity is exhausted.

But though banking statistics alone cannot reveal latent seasonal demands, some indications of their existence and relative significance were already noted in Chapter VII, where the trend in the amount of seasonal credit provided by banks was compared with trends in seasonal operating expenses (Table 26) and in seasonal credit provided by PCA's (Table 28).

Expenditures for current farm operating expenses with significant seasonal components increased by 3.3 per cent annually during 1950-68. Over the same period, the semiannual variation in total institutional non-real-estate debt rose at an average yearly rate of 4.4 per cent. Though this comparison is far from complete, the evidence is nevertheless consistent with the hypothesis that increased farm seasonal credit demands are being met by institutional lenders.

During the same period, however, the amount of the semi-annual variation in bank non-real-estate loans rose at an

average annual rate of 3.0 per cent, whereas at PCA's the average annual gain was 5.5 per cent. PCA's probably provided more additional seasonal credit than did banks over this period. In 1950-54, for instance, the average January-June loan increase at banks amounted to \$309 million, while at PCA's the amount was \$170 million. By 1965-68, the amount at banks had risen to \$407 million, or by 32 per cent, whereas the amount at PCA's had doubled to \$343 million.

These data are consistent with the hypothesis that banks have encountered greater difficulty in financing seasonal credit demands of farmers, presumably because increased year-round loan demands have reduced liquidity from which seasonal demands could be met. Increased seasonal demands upon PCA's were readily financed by short-term borrowings in the central money market, while rural banks could not easily tap this source for significant amounts. It is conceivable that some farm borrowers switched from banks to PCA's primarily because the latter were more inclined to meet their seasonal requests--not because PCA's had a more favorable attitude toward the wisdom of such borrowing, but simply because they were much better able to cope with these demands. A seasonal discount arrangement for member banks would restore their ability to compete with PCA's in seasonal lending.

Supplemental adjustment credit. To encourage rural banks to take advantage of their eligibility for seasonal discount credit under any plan that is implemented, such plan should clearly indicate

that banks using seasonal credit remain equally eligible for additional short-term adjustment credit should circumstances make use of the latter advisable. Otherwise, at least until other financial mechanisms are improved, rural banks might be reluctant to make full use of the seasonal privilege for fear of unexpectedly finding themselves in an illiquid position.

Rural banks on the whole have not made effective use of present short-term adjustment credit available through the discount window. Clarification and simplification of the terms of and Federal Reserve attitudes toward this privilege would be desirable to promote such use, as conditions that present no problem to sophisticated money market banks may have deterred many rural bankers. Similarly, any new regulations to govern seasonal credit extensions should be comprehensible and suitable to the rural bankers that these arrangements are intended to serve.

#### Longer-term credit

Many rural banks face year-round rather than only seasonal strains on their lending resources, according to loan-deposit ratios that have been examined (Table 35). Structural factors at present limit the access of these banks to financial markets in which larger and less isolated banks in the same circumstances are able to obtain funds by selling their assets and liabilities. To compensate for the market imperfections, the Federal Reserve System conceivably could provide reserves directly to the rural banks on a long-term basis. One might propose that particular rural banks be allowed to borrow at the discount window for indefinite periods, or that the Federal

Reserve purchase certain assets or liabilities of these banks, such as farm loans, debentures secured by farm loans, or certificates of deposit.

However, in contrast to seasonal or other temporary assistance, provision of long-term Federal Reserve credit directly to specific banks presents severe operational and conceptual difficulties. In principle, given the situation outlined above, the Federal Reserve could try to provide the quantities of funds that rural banks might obtain if they had better access to financial markets, and could try to charge the rate of interest they would have to pay in the market. But what these quantities and rates might be and how they might be altered from time to time by changes in general monetary conditions and other factors would not be easy to determine within acceptable limits.

Should a program of direct compensatory assistance nevertheless be implemented, it would undoubtedly improve the availability of bank credit to farmers, obviously a goal of its proponents. Paradoxically, this effect, though it might be in the public interest, creates a fatal conceptual difficulty. As a principle of sound monetary policy, the Federal Reserve will not knowingly enter upon programs in which its credit-creating powers are used for the special benefit of a particular sector of the economy, or in which it is called upon to allocate credit among specific uses. Through the years, Congress has reinforced this view of the proper Federal Reserve role by turning to or creating nonbank financial institutions to augment credit supplies **for** specific economic sectors judged to be in need thereof, rather than by asking the Federal Reserve to deliberately influence the



allocation of credit to these uses. Since it would be difficult to determine the point at which compensation for market imperfections ends and favoritism toward farm credit begins, it is also difficult to visualize the Federal Reserve embarking upon a direct program of long-term assistance.

This conclusion about direct long-term credit, however, does not negate the fact that a central bank can obtain equitable and satisfactory results in supplying reserves mainly through open market operations only if financial markets are well developed, as they generally are in the United States. Thus the Federal Reserve has an implicit stake in the development and maintenance of financial markets that serve all sectors of the economy. It should work toward perfection of markets on which the fairness and success of its procedures depend, and has done so on numerous occasions. In the face of decreased rural bank liquidity, and given that unit banking is required in many primarily agricultural states, the Federal Reserve should now undertake to secure improvement of secondary markets for assets and liabilities of rural banks, including agricultural paper and debentures secured by agricultural paper. The Federal Reserve has the knowledge and resources to take an active role in the development of secondary markets such as those outlined in the next chapter. If necessary, for example, the Federal Open Market Committee (FOMC) could extend material support to an embryonic market through a controlled volume of trading in its instruments, similar to the manner in which the FOMC has helped to establish the market for

bankers' acceptances.<sup>53/</sup> The Federal Reserve System and its FOMC ought not ignore the structural imperfections in financial markets and instruments that discriminate against small and isolated banks.

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<sup>53/</sup> Much of the Federal Reserve System's rationale for purchases of bankers' acceptances and its procedures and experience in this market appear transferable to the proposed dealings in rural bank paper or an instrument secured by such paper. For instance, in describing operations in bankers' acceptances, Roosa states "the Federal Open Market Committee, in recognition of the potentialities for further use of bankers' acceptances that may be inherent in the expanding role of the United States in financing world trade, and for other reasons, decided to resume the acquisitions of a portfolio in bankers' acceptances for the System itself. ...The Federal Reserve has not, as a matter of practice, sold acceptances out of its portfolio. ...there are almost always some acceptances maturing every day, and in a relatively short time maturities alone can run the holdings down as far as might be appropriate in conforming to the direction of other credit policy action. ...the job of the acceptance clerks is...one of...verifying the negotiability... as well as inquiring, under some circumstances, into the credit standing of the business concern drawing the acceptance. Because of the nature of this paper, however, the principal reliance as to its soundness is placed upon the name of the accepting bank and the added endorsement which the acceptance carries. Current lists are maintained of all banks in the United States engaged in extending acceptance credits, and the condition of each such bank is periodically reviewed." See Robert V. Roosa, Federal Reserve Operations in the Money and Government Securities Markets, Federal Reserve Bank of New York, 1956, pp. 87-90. Recent year-end Federal Reserve holdings of bankers' acceptances have approached \$200 million.

## XI. UNIFIED MARKETS TO SERVE RURAL BANKS

Unified markets--in which small and rural banks could obtain market information and conduct trading in a wide variety of portfolio items in units which correspond to their needs--would improve the flow of funds to rural areas. These institutions could provide rural banks with both market information and trading facilities for purchases and sales of Federal funds and government securities, placement and secondary marketing of certificates of deposit, and secondary marketing of loan paper. With these services centralized in one location, rural bank managers would have the market options now effectively available only to larger banks, as well as the information necessary for proper decisions--for example, whether to raise funds by selling bonds, discounting loan paper, or participating in a certificate of deposit issue. More transactions would become profitable--some are not now economical because of the small amounts involved and the numerous telephone calls to different markets required--and rural banks would enjoy an enhanced ability to respond to changing loan demands and other conditions.

Structural and operational aspects of a unified market are considered in this chapter. First, some ideas for its basic organization are advanced. Next, the approach the agency might use in providing a secondary market for rural bank paper is analyzed in some detail. Although the unified market would be most effective if all major types of commercial bank loan paper were traded, only non-real-estate agricultural loan paper is covered herein, because the primary concern is with availability of credit to farmers. However, much of the analysis also applies to trading in other types of paper. Finally, the prospective

role of the unified market in trading in other instruments--Federal funds, certificates of deposit, and bonds--is briefly discussed 54/

### Organization

The cardinal principle in organization of a unified market should be to provide rural bankers with a maximum amount of information and service for a minimum of expense and effort on their part, just as present money markets are organized to invite and expedite trading by larger institutions. Reasonably convenient facilities, adequate capital, and a knowledgeable operating staff are essential, as are a competent research staff and appropriate information gathering and disseminating facilities.

To attain these goals most effectively and efficiently, operations of regional unified markets should be coordinated and supervised by a national agency. Given present and foreseeable developments in communications and computer technology, a national network of unified markets can constitute a practical and desirable addition to the nation's financial mechanisms.

### A Secondary Market for Rural Bank Loans

Successful secondary markets for loans made by rural banks would materially increase their ability to finance rural communities. Development of such outlets would be a primary goal of unified markets.

There are two basic ways in which a market for such paper could be provided. First, the unified market could simply bring together buyers and sellers of the notes themselves. Or the market, acting as an

54/ For additional discussion of the unified market concept, see Doll, Raymond J., "Unified Markets for Rural Banks," Banking, Journal of the American Bankers Association, January 1969, pp 63-65; and "Unified Markets to Facilitate Exchange of Bank Assets and Liabilities," Bank News Magazine, June 1969, pp 13-18.

agency, could sell debentures and use the proceeds to purchase rural bank paper. By either method, if the market is effective, a bank that is loaned-up could obtain funds by selling notes from its portfolio. It could then use these funds to make additional loans.

Trading in loan paper. Direct sale of loan paper to investors avoids the more complicated process of issuing debentures, with the market itself becoming directly involved with questions of risk. However, the market for such paper might prove quite thin, as most of the notes are small and frequently in odd amounts and maturities. But even if direct sales were restricted to the larger farm notes of borrowers for whom financial and credit ratings are readily available, significant sums might be obtained and rural banks would be especially encouraged to provide adequate financing for the larger farms and other firms in their community.

To increase the marketability of loan paper, the unified markets could provide or arrange for some form of insurance that would reduce or eliminate the risk of loss to the purchaser of an individual note (alternative insurance plans are discussed below). In so doing, however, the markets would probably become involved in risk determination to about the same extent as they would if they bought the paper themselves in a debenture operation.

Sale of debentures. The alternative method--sale of debentures secured by loans--would resemble the present operations of the cooperative Farm Credit System, particularly those of the Federal Intermediate Credit Banks. These Banks have been able to raise funds in national capital markets and use the proceeds to discount agricultural paper of the production credit associations. This process has proven efficient, and much of the experience would be transferable to the operations of unified markets. Also, favorable investor experience

with these issues should improve initial marketability of unified market debentures.

The unified markets could logically use both approaches. They could act as direct brokers, where feasible, in bringing together buyers and sellers of rural bank paper, and in addition could issue debentures to raise funds for purchase of such paper from commercial banks. These debentures should be joint obligations of all unified markets--with only the paper purchased by these unified markets being used as security.

The primary advantage of debentures is that they would enjoy a much broader market than individual notes because they would be issued in standard sizes, have more diversified security than individual notes, and would not require a new investigation by the potential investor for each purchase. Thus they could undoubtedly be sold in larger volume and at lower interest rates than individual notes.

Insurance mechanisms. The attitudes of bankers and bank examiners make it unlikely that significant amounts of discounting can be done if bankers must retain the risk on the paper sold. It seems desirable, therefore, that all sales be made on a nonrecourse basis, with controls established to prevent bankers from ignoring the credit risks. One such control is insurance. Sellers could be required to buy insurance on each note sold to the markets, with the rate depending on the note's risk classification, but high enough to build up an adequate reserve.<sup>55/</sup> Such insurance could be funded by the markets them-

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<sup>55/</sup> Available evidence indicates that default losses on bank agricultural loans average less than 0.5 per cent. Average insurance rates would, of course, have to be slightly higher to cover other insurance costs, although the insurance rate charged for high-quality loans might still be less than 0.5 per cent.

selves or handled by private insurance companies. The markets could underwrite the insurance by acting through a central body to achieve geographical diversification. While the principle of insurance is applicable whether loan paper is traded or debentures are issued, insurance would be of particular benefit--or be virtually required--in the former case, where it would reduce risk differentials and greatly increase the probable number of market participants.

Alternatively, the markets could provide for risk differences by varying the offering price according to their risk classification of each note. Prices could be adjusted so that, after allowance for probable losses, the rate of return on all notes would be the same. Over the long run, the price differences would exactly compensate for losses. Administrative costs of insurance would be saved, but the risk classification process would entail some costs and difficulties.

The insurance problem might be better handled by a third alternative, the establishment of a reserve account for each bank. For instance, if a bank's actual losses average 0.5 per cent, payment into its reserve account might proceed at the rate of 1 per cent of new loans sold until the reserve equaled 2.5 per cent of total loans sold and still outstanding. Payments into the account would then cease until there was either a net increase in the bank's activity or a loss on one of its notes--in which case, they would be resumed at a rate of 1 per cent of new sales. The relative size of the reserve would be varied according to losses experienced over an appropriate period.

Losses larger than the reserve account would be borne by the markets, so the procedure would be equivalent to sales on a limited-liability basis. Bankers who sold very high-quality paper would be

rewarded by very low insurance costs once the reserve was established. Among the possible disadvantages is the possibility that some bankers might be reluctant to change an established volume of loan sales because this would require additional payments into their reserve accounts. The accounts also would require continual supervision, but total administrative costs might well be lower than in the preceding alternatives because individual notes would not have to be evaluated for risk.

Education. To realize the full potential of secondary marketing of loan paper, a major educational program would initially be desirable to demonstrate the need for and benefits of secondary markets to bankers and their customers. Such mutual understanding would help preclude damage to customer relationships when banks market loan paper.

Unfortunately, the mere existence of a secondary market for rural bank paper would not alone eliminate the managerial inertia which exists in some rural banks. However, these banks would be placed under more pressure than at present, from their competitors and customers, to improve their credit services to their communities.

#### Other services of unified markets

Federal funds. Inclusion of Federal funds activity in the unified markets would assure rural banks of greater access to the funds market, particularly on the buying side. Currently, participation by small banks is largely dependent on the willingness of city correspondent banks to act as brokers or dealers in Federal funds. Accommodation hinges largely on whether the correspondent has complementary reserve needs or can match the wishes of two country correspondents. Under other circumstances,



correspondent banks appear much less willing to accommodate small transactions in Federal funds. By acting as a dealer, a unified market could give small banks access to the Federal funds market on a basis which is continuous, certain, and independent of their choice of correspondent.

Unified markets probably could provide most effective service in Federal funds by taking dealer positions. This would enable them to accommodate transactions of differing size and would allow them to offset net buying or selling by their customers through trading in the national market--in effect, by acting as wholesalers of Federal funds. In addition, a dealer operation would stimulate trading because a selling bank would not have to concern itself with the solvency of a different small bank each time it sold or to establish restrictive lists of banks to which it would sell.

The minimum trading unit needs to be relatively small if banks serving rural areas are to be able to participate effectively. Also, small banks might arrange to have the markets buy or sell funds for them for specified periods of time on some automatic basis. For example, a bank might place a standing order for purchases or sales whenever its excess reserves vary by one trading unit from a specified amount. Another more sophisticated approach would rely on daily computer analysis by the unified market of each bank's reserve account, with decisions about whether and how much to trade being based on recent patterns of its reserves and of Federal funds rates, the stage in the settlement

period, and the existing Federal funds rate as well as the bank's current reserve position. The unified market would need ready access to the most recent information about each bank's position for this approach to be most effective. Arrangements could probably be made, with authorization from the commercial banks concerned, for unified markets to obtain current reserve status data directly from Federal Reserve Banks at which these accounts are kept, via a real-time information system.<sup>56/</sup>

Certificates of deposit. Unified markets could further improve the geographical distribution of credit by facilitating the issue of certificates of deposit by rural banks. Rural commercial banks have been excluded from the market for negotiable certificates primarily by the standard size of the certificates. For a bank with \$5-\$10 million in deposits, a \$1 million certificate (or, for that matter, even a \$100,000 certificate) simply is not a satisfactory instrument; it is too large, relative to the bank's needs and resources, to be attractive either to the bank or to potential investors.<sup>57/</sup>

A unified market could enable smaller banks to compete for time deposit money by offering certificates in which a number of affiliated banks participate. Such certificates, of course, would be only partly

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<sup>56/</sup> For more information on the present structure of the Federal funds market and some other suggestions for improvement, see Parker B. Willis, Fundamental Reappraisal of the Discount Mechanism; A Study of the Market for Federal Funds, Board of Governors of the Federal Reserve System, Washington, D.C., 1967.

<sup>57/</sup> Description and evaluation of the present secondary market for negotiable certificates of deposit and review of numerous suggestions for improvement are provided by Parker B. Willis in Fundamental Reappraisal of the Discount Mechanism; The Secondary Market for Negotiable Certificates of Deposit, Board of Governors of the Federal Reserve System, Washington, D. C., 1967.

insured at present by the Federal Deposit Insurance Corporation, and so a prospective purchaser might need to investigate a number of banks in order to evaluate the total risk inherent in a given certificate. To make such certificates marketable, it might be necessary for the unified market to accept liability for them. With proper supervision, unified markets should be able to guarantee such instruments with minimum risk. If insurance or guarantees were secured, the certificates almost certainly could be traded in the existing market.

But if the unified markets cannot guarantee certificates issued jointly by small banks, it might still be possible to establish a new market for such issues. The certificates would be classified as nonprime and thus expected to carry a slightly higher rate of interest than prime-name certificates. Also, many relatively small certificates would likely be sold to allow issuing banks to obtain maturities of desired length and diversity. With sufficient effort, a new group of investors might be attracted to these higher-yielding small issues, including smaller corporations, banks, other financial institutions, and even individuals.

The volatility of demand for small certificates could prove less than that experienced in the present large-certificate market, thus making these instruments a more appropriate source of funds for small banks. And in particular, banks with well-established seasonal patterns in local deposits and/or loans could meet seasonal outflows by timing the maturity of certificates to coincide with periods of loan repayment or deposit inflows.

The development of a strong demand for these small, joint-issue certificates of deposit will be very dependent on a good secondary market for them, thus making it important for the unified markets to act as brokers in their resale as well as original issue. The Federal Reserve System could contribute to market development by making its wire facilities available for transfer of certificates. If offices of the unified market also stored and redeemed certificates, costly mail transfers would be avoided and marketability thereby enhanced.

Bond services. Another activity valuable to participating banks would be information and brokerage services in U.S. Government securities and municipal bonds. Unified markets could provide up-to-the-minute bond quotations along with analysis of bond market trends and conditions. Using this and other information provided by the markets, bankers could choose the alternative for raising or investing funds which was best suited to their specific situation.

## XII. CONCLUDING COMMENTS

If rural banks are to finance rural capital investment effectively in the future, they must increasingly assume the role of intermediaries that facilitate flows of funds from money market centers. But present banking and money market mechanisms are ill suited to the needs of progressive rural bankers who undertake this task.

With many rural banks encountering liquidity problems today-- and such situations likely to intensify as well as multiply in the future--the Federal Reserve System should act promptly to provide more reserves directly to such banks, while simultaneously seeking to perfect market mechanisms. Rediscount procedures should be immediately revised to provide a greater volume of seasonal credit on a more appropriate basis than heretofore. Discount procedures in general should be revised as necessary to encourage and facilitate use of this source of funds by rural banks.

These measures, promptly instituted, would buy time during which financial market mechanisms could be improved to accommodate the needs of small and isolated banks. The Federal Reserve System, and particularly its Federal Open Market Committee, should face up to indications that such banks are unable to compete for funds with money market banks and other agencies. Federal Reserve distaste for providing long-term discounts to disadvantaged banks, or for open-market purchases of their securities, is justified only if financial markets are

structured to permit such banks to compete for available funds. The Federal Reserve System thus has both an obligation and a stake in securing market perfections that make more significant and equitable participation by small banks possible.

One of the more effective ways to overcome present deficiencies might be through establishment of a network of unified markets to handle transactions in the assets and liabilities of small banks. A device to permit these banks to market farm and other notes should constitute a vital part of the services provided by such markets. In this and other financial instruments, unified markets could provide one-stop information and service to small banks.

As these various measures are taken, a considerable number of rural bankers would, as judged from present liquidity levels and trends, be waiting to utilize them. However, perhaps an equal number, judging from the same banking statistics, are not now serving the loan demands of their communities as well as their present liquidity status would permit. Federal Reserve Banks could render valuable service by conducting educational programs aimed at overcoming or minimizing managerial inertia at such banks, both now and especially as improved sources of funds are established. As knowledge of the latter spreads, more community pressure on inert banks could also be expected.

The Federal Reserve System can make a real contribution to rural finance by helping to achieve the legislative, regulatory, and market changes required by these recommendations, as well as by arousing private individuals and institutions to face the challenges presented. The proposals are revolutionary in their implications for city correspondent banks, for rural banks characterized by managerial

inertia, and for the discount officers and the Federal Open Market Committee of the Federal Reserve System, but no more so than the sweeping changes in rural economies that have made them necessary.