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Interest Rates, Borrowing Costs and
Agricultural Loan Demand*

by

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Farmers in low income countries have received large amounts of concessionally priced loans during the past 20 years. These loans have been made at interest rates lower than the regular commercial terms, and often at rates lower than changes in overall price indexes. Negative real rates of interest on formal agricultural loans have been common. Various arguments are used to justify these low interest rate policies. One of the most commonly used is that the demand for agricultural credit, especially among small farmers, is highly sensitive to changes in the contractual rate of interest. Following a Keynesian line of reasoning, policy makers have argued that concessional interest rates are required to induce farmers to borrow for productive purposes, and that higher interest rates would discourage the adoption of new technology, especially among small farmers. Despite the importance of these assumptions, there has been very little evidence presented which confirms that farmers have relatively interest elastic loan demand schedules. In part, this is due to methodological problems associated with loan demand analysis. After discussing some of these problems, we go on to argue that many farmers in low income countries may be quite insensitive to changes in the contractual rates

of interest on their loans. Farm level data from several countries are presented to support this view.

Methodological Problems

Agricultural loan demand analysis has been hampered by at least two major problems. The first is due to data limitations; it is usually very difficult to specify and measure the determinants of loan demand with the data generally available. In many cases, borrowing decisions are based on a mixture of farm-firm and household considerations. In addition, the borrower realizes little direct satisfaction from a loan. The loan simply adds to the liquidity pool from which the firm-household draws for its consumption, production and investment. The utility of the loan is derived from these various uses of the additional liquidity. Adequate data are usually not available to allow extensive analysis of how all these activities affect the demand for loans. As a result, it is difficult to isolate movement along a loan demand schedule due to changes in the price of the loan, from changes in the amount borrowed caused by shifts in the demand schedule.

Because of the lack of data on all economic activities of the firm-household, researchers have been forced to estimate loan demand schedules. This is done by developing marginal efficiency of investment schedules for various activities and then assuming that the aggregation of these schedules estimates the loan demand schedule along which borrowers equate marginal interest rates and marginal returns to productive investments. This approach ignores the universal financing capability of the firm-household and

makes three critical assumptions: (1) farm investments encompass most of the things which the firm-households can do with additional liquidity, (2) borrowers do not apply a risk discount to the expected investment returns before making borrowing decisions, and (3) borrowers perceive the contractual rate of interest on loans to be the price of credit. All three assumptions, particularly the last one, are dubious.

Determining the "price of credit" which should be used in analysis of loan demand elasticities is the second serious methodological problem. In most low income countries, contractual interest rates are heavily administered and change very little over time or among different groups of borrowers. This lack of variation makes it difficult to apply standard statistical tools to loan demand analysis. Moreover, it is not clear if the contractual interest rate is the correct "price" to use in this type of analysis. At least two other measures might be used as the criterion variable in the analysis of loan demand. The first is the real rate of interest. This is the contractual rate of interest adjusted by changes in some price index. If prices in general decrease over the term of the loan, the real rate of interest is larger than the contractual rate. If prices in general increase, the real rate is lower than the contractual rate. If the rate of inflation exceeds the contractual rate, the real rate is negative. Only when general prices do not change over the period of the loan are contractual rates of interest equal to real rates of interest.

A second measure of "credit price" which might be used is the annualized cost of borrowing a unit of money. This measure includes the interest charges, service fees on the loan, and all other costs incurred in transacting the loan. As will be noted later, these transaction costs can be very substantial in some cases. Only when non-interest costs of borrowing are zero, and price indexes do not change, are all three measures of "credit price" equal.

It is an empirical question as to which "price of credit", or combination of prices, ought to be used in loan demand analysis. We will show in the following discussion that there may be substantial differences among these three prices in specific situations. We will also argue that contractual rates of interest may have a weak effect on loan demand, especially among small farmers.

Inflation and Real Rates of Interest

As can be noted in Table 1, inflationary pressures have been particularly strong in recent years. The average change in worldwide consumer prices have ranged from 6 to 15 percent annually over the 1971 to 1975 period. Most industrial countries have experienced lower rates of inflation than have less developed countries (LDC's). From 1971 to 1975, consumer prices accelerated from 11 percent to nearly 30 percent per year in LDC's. In Latin America, for example, inflation in LDC's in the Eastern Hemisphere rose from 15 percent in 1971 to 53 percent in 1975.

In a handful of muslim countries, such as Saudi Arabia, agricultural loans are granted interest free. In several other countries, including Chile, some loans may be indexed to changes in overall prices.

Most LDC's, however, have contractual interest rates on agricultural loans which are fixed and often range between 6 and 18 percent per year.

It is surprisingly difficult to determine the average contractual interest rate charged on formal agricultural credit within many countries or even within a single financial institution. This is due to the different rates charged on various types of loans in most countries. In Brazil, for example, interest rates including service fees, range from 0 to 15 percent annually on various types of agricultural loans. Seldom does a financial institution or a central bank assemble loan information on the basis of interest rates charged. Discounting interest payments in advance, compensatory balances, and various types of service fees further complicate calculation of contractual charges on agricultural loans. Because of these factors, it is difficult to determine from secondary data the weighted average rate of interest charged on formal agricultural credit. There is little doubt, however, that the average contractual rates of interest charged on formal agricultural credit in most LDC's during the past few years have been substantially lower than the rates of inflation. Most borrowers have been paying negative real rates of interest on their loans. In a few countries like Brazil, borrowers of formal agricultural credit have paid negative real rates of interest on their loans for several decades.

Unexpected surges in inflation, such as was experienced in Taiwan in 1974 (Table 1), probably have little effect on borrowing decisions. Persistent inflation which exceeds the contractual rates of interest allowed on formal credit for a number of years clearly does affect

TABLE 18. Weighted Annual Rates of Change in Consumer Prices in the World and Among Various Groups of Countries 1971-1975*

	1971	1972	1973	1974	1975
World	6.0	5.8	9.5	15.1	13.4
Industrial Countries	5.1	4.5	7.5	12.6	10.7
Less Developed Countries	9.6	12.2	20.3	29.4	27.6
Western Hemisphere	16.2	22.1	31.4	38.4	53.0
Middle East	6.2	6.0	11.7	20.2	19.4
Asia	5.6	7.5	16.5	29.8	10.0
Africa	6.4	5.4	9.3	19.2	17.3
Europe	6.3**	5.2**	45.3	54.4	24.4
Brazil	20.2	16.7	12.6	27.5	29.0
Colombia	9.1	14.3	22.8	24.5	26.1
India	12.1	11.8	3.1	23.6	26.2
Taiwan	2.9	3.0	8.2	48.1	5.6

* Weighted by 1970 population figures.

** Changes in consumer price indexes for Pakistan.

borrowers decisions. When borrowers expect negative real rates of interest on their loans, anomalous investment behavior may be common. A large landowner in Chile, for example, with easy access to highly negatively priced credit may find it profitable to buy additional tractors even though he underutilizes the tractors he already owns. With rapid inflation his tractors increase in nominal value faster than the total costs of depreciation and interest charges on his loan for buying the tractor.

Borrowers of negatively priced credit receive an implied income transfer through the loan transaction. An example of how this income transfer might take place is shown in Table 2. It is assumed in Table 2 that a loan for 100 units of money is made for 12 months at 12 percent per year. It is also assumed that the expected and realized rate of inflation is 36 percent over the term of the loan. It is further assumed that the borrower incurs no additional loan transaction costs beyond the interest charges, and that the borrower invests the loan in some non-perishable inventory whose value increases at the same rate as inflation. At the end of the loan period the borrower repays the 100 units of principal plus 12 units of interest. The purchasing power of the 112 units of money expressed in the prices which existed at the time the loan was negotiated, however, is only 82 units of money. The purchasing power of 18 units of money was not returned to the lender, despite the payment of 12 units of interest. If the borrower sold his inventory, which was purchased with the loan, for 136 units of money, and only had to repay 112 of it for the loan, he is left with 24 units of money in

TABLE 2: Income Transfer Example

Assumptions

Loan value t_1	\$100
Annual contractual interest rate	12%
Term of loan t_1 to t_2	12 months
Expected and actual rate of inflation t_1 to t_2	36%
CPI $t_1 = 100$	
CPI $t_2 = 136$	
Additional transaction costs for borrower	\$ 0
Borrower invests loan in additional non-perishable inventory which increase in nominal value at same rate as CPI changes	

Income Transfer

Loan repayment in t_2	\$100	
Interest payment in t_2	\$ 12	
Total	\$112	
Purchasing power in t_1 prices		100
Value of additional inventory t_2	\$136	
Less loan and interest paid	\$112	
Net income transfer	\$ 24	
Purchasing power in t_1 prices		117

profit from the transaction. In prices current at the start of the loan cycle, the borrower has received an income transfer of 18 units of money from the lender.

The opportunity to receive these income transfers can have a very strong impact on the decision to borrow, especially among individuals who incur few non-interest charges in getting loans.

Borrowing Costs

Borrowers may incur three types of transaction costs in negotiating a loan in addition to the contractual interest charges. These are: (1) additional transaction costs collected by the lender beyond the interest charges, (2) transaction costs paid by the borrower to someone other than the lender, and (3) the borrower's time costs of negotiating the loan. A few examples of each of these borrower costs may clarify their nature and importance.

In many countries, lenders are allowed to charge service fees, closing costs, or bill the borrower for loan paperwork. In some cases a payment for interest may be deducted in advance, or the borrower may be forced to maintain a compensatory balance with the lender, or to buy other bank services. These techniques are thinly disguised ways of avoiding usuary regulations and effectively increasing the payment made for the loan. Informal lenders may accomplish the same results by tying the sale of inputs or products to the granting of a loan. They may also require various personal services from the borrower as part of the loan obligation. In some cases these additional transaction costs paid to the lender can be a substantial part of the costs of borrowing.

Formal lenders in a number of low income countries require prospective borrowers to do paperwork outside the lending agency. This may include application charges, certification of various forms, and proof of landownership. In some cases, lenders require the prospective borrower to pay for an independent audit of his assets. In a large number of cases, the applicant must pay a bribe to receive favorable consideration of his loan application. This bribe may be paid to a cosigner of the loan, to the supervised credit technician who approves the farm plan on which the loan is based, to the technician who audits the applicant's assets, or to the local authority who politically approves the loan.

The time costs of getting a loan may make up a large part of total borrower costs. The loan needs of farmers are quite seasonal. Very large numbers of potential borrowers are usually lined up outside the offices of formal lenders several weeks before planting begins. Farmers may spend one or two days waiting in line to negotiate a loan. Typically, loan offices are located at some distance from the residence of borrowers. It may take the borrower a full day or more to go to town each time he must make contact with the formal lender. The borrower may be forced to repeat this trip a number of times as he applies for the loan, returns to see about final approval, returns to receive several payments under the loan, and again returns to make repayment.

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Farm Level Data

There are surprisingly few farm level studies which document borrower costs from formal sources. We know of only three such studies: one in Brazil, one in Bangladesh and one in Colombia. Despite the limited coverage of these studies, it is possible to draw some important tentative policy conclusions from the borrower cost information assembled.

Bangladesh Case

In the mid-1960's, Shahjahan and associates studied credit use among more than 2,500 farmers in what is now Bangladesh [5]. Part of this study reports on borrower costs incurred in negotiating loans from the Agricultural Development Bank of Pakistan. This included calculating transaction costs paid outside the Bank, and estimates of time costs incurred by the borrower in negotiating the loan. During the period of the study, the Agricultural Development Bank charged a uniform 7 percent contractual interest rate on all loans.

Borrower costs derived from the study are summarized in Table 3. All non-interest costs of transacting the loan were lumped together in this study. The transaction costs and the interest rate charges are arranged by average loan size groups. Unfortunately, the study did not report on the average length of term of the loans. As a result, we have calculated interest payments and annualized costs of borrowing based on both six month and 12 month loan periods. Loans made for shorter periods of time would, of course, carry higher rates of annualized costs of borrowing.

As can be noted in columns 5 and 6 of Table 3, interest payments made up a minor portion of the costs of borrowing in most loan size groups for loans of both 6 and 12 months duration. In the smallest loan size group, interest payments made up only 9 percent of total borrowing costs on a 6 month loan, and only 17 percent on a 12 month loan. Even in the largest loan size group, interest payments made up only 40 percent of the borrowing costs of a 6 month loan and 57 percent for a 12 month loan. If the interest rate charged on all loans was doubled from 7 to 14 percent, borrowers of 50 rupees would only experience an increase in their borrowing costs of 9 percent for a 6 month loan and 17 percent on a 12 month loan. At the same time, borrowers in the largest loan size group would see their costs of borrowing increase by 40 and 53 percent respectively.

The annualized costs of borrowing, as a percent of the total amount borrowed, are presented in columns 7 and 8 of Table 1. It can be noted that the rates drop sharply as the size of loan increases. A borrower of 50 rupees (roughly \$10 U.S.) incurs borrowing costs equal to 75 percent of the value of a 6 month loan and 40 percent of the value of a 12 month loan. At the same time borrowers of loans worth 1300 rupees (roughly \$270 U.S.) expended only 18 percent and 12 percent respectively.

Brazilian Case

A sample of 154 farmers in the State of São Paulo, Brazil were interviewed in 1971 about their use of credit []. In the Brazilian context, small farmers made up about half the sample. Approximately 30 percent of the farmers interviewed had formal loans. The average contractual rate of interest plus service charges on

TABLE 3: Farmer Costs of Borrowing in Bangladesh from the Agricultural Development Bank of Pakistan in 1963 by Loan Size Groups

1	2	3	4	5	6	7	8
Average Size of Loan	Non-Interest Costs of Loan ^{1/}	Interest Payment if Loan Held For 6 Months ^{2/}	Interest Payment if Loan Held For 12 Months ^{2/}	Interest Payments as a Percent of Total Costs of Borrowing		Annualized Costs of Borrowing as Percent of Loan	
				6 Month	12 Month	For 6 Months ^{3/}	For 12 Months ^{4/}
	In 1963 Rupees ^{5/}			%	%	%	%
50	16.73	1.75	3.50	9	17	74	40
150	25.54	5.25	10.50	17	29	41	24
250	30.70	8.75	17.50	22	36	32	19
350	38.18	12.25	24.50	24	39	29	18
450	43.59	15.75	31.50	27	42	26	17
550	70.62	19.25	38.50	21	35	33	20
650	56.20	22.75	45.50	29	45	24	16
800	67.10	28.00	56.00	29	45	24	15
1000	67.51	35.00	70.00	34	51	21	14
1300	68.58	45.50	91.00	40	57	18	12

Source: Adapted from Shahjahan, p. 77.

- 1/ Includes application fees, form filling and registration fees, costs for travel and entertainment related to acquiring the loan, and value of borrower time spent in negotiating the loan.
- 2/ In 1963 the Agricultural Development Bank of Pakistan charged 7 percent annually on agricultural loans.
- 3/ Columns two plus three divided by column one and multiplied by a factor of two to convert to annual rate.
- 4/ Columns two plus four divided by column one.
- 5/ In 1963 the exchange rate of rupees for one U.S. dollar was 4.792.

these formal loans were about 13 percent. Table 4 summarizes the borrowing costs of those receiving formal credit in the sample. The information in the table is presented by borrower's farm size. As can be noted, borrowers in the smallest farm size group borrowed an average of 680 cruzeiros (\$136 U.S.) from formal sources. Borrowers in the largest farm size category averaged 6871 cruzeiros (\$1,374. U.S.) in formal loans. The average interest costs of holding the loan 6 and 12 months and the additional transaction costs of acquiring the loan are also shown in the table.

As in the Bangladesh case, interest charges make up a minor part of total borrowing costs among the borrowers of small amounts. For a 6 month loan in the 0 to 20 hectare group, they made up 29 percent of total borrowing costs and 45 percent for a 12 month loan. The largest borrowers incurred 76 percent of their borrowing costs in interest charges on a loan for 6 months and 86 percent on a 12 months loan.

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The information in Table 2 also shows that the annualized costs of borrowing drop sharply as the amount of formal loans increases. Borrowers of the smallest amounts incurred total borrowing costs equal to 44 percent of the value of their 6 month loans and 29 percent of their 12 month loans. The largest borrowers had percentages of only 18 and 15 percent respectively. As Nehman reports, it is little wonder that borrowers of small amounts in the sample made substantial use of informal credit sources. These informal sources charged higher contractual rates of interest, but borrowers generally found their other loan transaction costs to be lower with informal sources than with formal lenders. It appeared that the annualized costs of borrowing small to medium amounts from

TABLE 4: Farmer Costs of Borrowing from Formal Sources
in State of Sao Paulo, Brazil in 1971 by Farm Size Groups

1 Farm Size in Hectares ^{1/}	2 Average Form- al Loan Size	3 Non-Interest Costs of Getting Loan	4		6		8	
			5 Interest Payment if Loan Held for ^{3/}		7 Interest Charges as Percent of Total Costs of Borrowing		9 Annualized Costs of Borrowing as Percent of Loan Value	
			6 Months	12 Months	6 Months ^{4/}	12 Months ^{5/}	6 Months ^{6/}	12 Months ^{7/}
	-In 1971 Cruzeiros ^{2/} -		-Percent-					
0-20	680.00	109.00	44.20	88.40	29	45	44	29
21-50	3665.00	178.00	238.23	476.45	57	73	22	18
Over 50	6871.00	144.00	446.62	893.23	76	86	18	15

Source: Adaptation of Nehman, p. 78.

^{1/} One hectare equals 2.47 acres.

^{2/} In 1971 one cruzeiro equaled .20 dollar U.S.

^{3/} Assumes an average interest rate of 13 percent per year.

^{4/} Column 4 divided by column 3 plus 4.

^{5/} Column 5 divided by 3 plus 5.

^{6/} Columns 3 plus 4 divided by column 2 and multiplied by 2 to convert to annual rate.

^{7/} Columns 3 plus 5 divided by column 2.

formal and informal sources were quite similar, as a result.

Colombian Case

In 1973-74, Villamil did a study of credit use among 63 farmers in the central part of Colombia [6]. All of the farmers in his sample operated less than 20 hectares of land, and most had less than 10 hectares. The area studied is somewhat typical of many low income farming areas clinging to the sides of mountains in Colombia. The study reports on credit use and costs of acquiring credit for 1972 and 1973.

Approximately 30 percent of the loans held by this group of farmers came from formal sources, but about 45 percent of the total amount borrowed were in formal loans. The contractual interest rate plus service fees charged on these formal loans averaged about 13 percent per year. Most of the farmers in the sample borrowed from both formal and informal sources. In part, this was due to excess demand for formal credit. Farmers in the sample planned to request twice as much formal credit in 1974 as they received in 1973, [6, pp. 73-74]. Farmers were getting much less formal credit than they requested. The extensive use of informal credit can also be partially explained by the costs of borrowing from formal sources. Villamil found that contractual interest charges and service fees on formal loans only averaged 30 percent of the costs of borrowing. On an annualized basis, borrowers were incurring 42 percent of the total value of their formal loans in borrowing costs. This was only moderately lower than the average 47 percent which borrowers expended in acquiring all types of loans. As in the Bangladesh and Brazilian cases, small borrowers experienced higher annualized

borrowing costs for their formal loans than did larger borrowers.

New Borrower Costs

Individuals who have not borrowed previously from a formal lender face some interesting decisions about whether to apply for formal credit or whether to stick with informal lenders. Individuals who do not have a credit rating with a formal lender will almost always incur substantially higher transaction costs per unit of money borrowed than will an old customer of the bank. It usually takes the bank longer to assemble information on the new client, the potential borrower must fill out more papers, and the individual usually is forced to visit the bank more times in order to get a loan decision than is true for established clients. A new borrower of formal credit probably faces annualized costs of borrowing for the first loan which are substantially higher per unit of loan than is true for the average formal borrower. Furthermore, a prospective formal borrower may incur a substantial amount of loan transaction costs and then be denied a loan. This is especially true in cases when non-market pricing of formal credit creates substantial amounts of demand for credit which cannot be satisfied by formal sources. Even if the farmer can turn to an informal lender for money after being denied, the loan transaction costs incurred in getting a negative formal loan decision may raise substantially the expected cost of getting a loan. The information presented in Table 5 illustrates a simple form of this decision making process.

TABLE 5: New Borrower

<u>Option I</u>		<u>Option II</u>
Request Loan From An Informal Lender, Assumptions:		Request Loan From A Formal Lender, Assumptions:
1. Amount of Loan	= \$100	1. Amount of Loan = \$100
2. Interest Rate	= 48%	2. Transaction Costs to Get Yes or No Decision = \$15
3. Transaction Costs	= 0	3. Probability of Getting Loan = .5
4. Loan Term	= 12 months	4. Interest Rate = 12%
5. Probability of Getting Loan	= 1.0	5. Transaction Costs After Yes Decision = \$15
6. Annual Costs of Borrowing	= 48%	6. Loan Term = 12 months
		7. Annual Cost of Borrowing = 43%

Option III

Requesting Informal Loan After A No Decision:

1. Annual Cost of Borrowing = 65%

We assume in Table 5 that a farmer who has not borrowed from a formal lender previously is interested in a 12 month loan for \$100. He can be absolutely sure of getting the loan immediately and with no additional transaction costs from an informal lender who lives nearby (Option I). The informal lender insists on an interest rate, however, of 48 percent per year.

At the same time, the farmer has the second option of applying for an identical loan from a formal lender. The interest rate on the formal loan is only 12 percent per year, but because of excess demand for this concessionally priced credit, the probability of the farmer's loan application being approved is only .5. Furthermore, the farmer knows it will cost him \$15 in various costs associated with preparing the loan application before he gets a yes or no decision on his loan. If the loan is approved, he also knows that he must incur another \$15 in loan transaction costs to fully negotiate and repay the loan. His annualized costs of borrowing from the formal lender, assuming his application is approved, is 42 percent per year.

The farmer recognizes, however, that he only has a one-out-of-two chance of getting the formal loan. He also recognizes that he may end up spending \$15 to transact his formal loan application, have his application refused, and end up paying the informal lender \$48 to borrow \$100. The farmer's annualized costs of borrowing under Option III would be 63%. A priori, the farmer would have an expected price for credit via Options II and III of 57.5 percent $[(42 + 63) \times .5]$. In this particular example, the farmer would have a lower expected cost of borrowing if he selected Option I, the informal lender, rather than take his chances with the formal lender.

The example in Table 5 can be made more complex by assuming that the probability of getting an informal loan is less than 1.0, and that the probability of getting an informal loan is lower if the farmer first tries a formal source. These types of factors may explain why small farmers in low income countries prefer informal lenders.

Interest Costs and Total Economic Activity

To this point we have presented data which suggest that interest costs may make up a minor part of borrowing costs among low income farmers. As can be noted in Tables 6 and 7, it also appears that interest payments make up a relatively small proportion of the economic activities of farmers in Taiwan and Korea.

The farm-households in Taiwan, from which data in Table 6 are drawn, make heavy use of credit. In 1960, year-end credit balances amounted to .76 of total farm operating expenses, .36 of total farm-household cash expenses, and .34 of net farm family income. In 1972 these ratios were .58, .24 and .38 respectively. Even though these farm-households made extensive use of credit, total interest payments were a very small part of the total economic activities. In 1960, interest payments amounted to only 1.7 percent of total farm operating expenses, 1.8 percent of total farm-household cash expenses, and only .9 percent of net farm family income. These percentages changed very little in 1966 and 1972.

The ratios in Table 7 indicate that Korean farmers were using relatively less credit than the Taiwan farmers. In 1965, year-end credit balances amounted to 47 percent of farm operating expenses,

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TABLE 6: Ratios of Credit and Interest Payments to Expenses and Family Income Among Farm Record Keeping Households in Taiwan 1960, 1966 and 1972

Year	No. of Households	Total End of Year Credit Balance Divided by			Total Interest Payments Divided by		
		Operating Expenses	Total Cash Expenses	Net Farm Family Income	Operating Expenses	Total Cash Expenses	Net Farm Family Income
1960	95	.76	.36	.34	.017	.008	.009
1966	430	.74	.31	.36	.017	.008	.019
1972	452	.58	.24	.38	.019	.008	.013

Source: Department of Agriculture and Forestry, Provincial Government of Taiwan, Farm Record Keeping Accounts 1960, 1966 and 1972.

16 percent of total farm-household cash expenses, and less than 10 percent of net farm family income. All of these percentages dropped significantly by 1974. Partly because contractual interest rates on formal loans were higher in Korea than in Taiwan, interest payments amounted to a larger percentage of expenses and income in Korea. In 1965 interest charges amounted to seven percent of farm operating expenses, three percent of total farm-household cash expenses, and one percent of net farm family income. All three of these percentages decreased through 1974.

Policy Implications

On the basis of the previous discussion, it might be argued that farmers, especially small farmers in low income countries, are rather insensitive to changes in the contractual rates of interest on formal loans. Farmers may be making loan decisions on some combination of contractual interest rates, expected charges in the purchasing power of money, and loan transaction costs. Very strong inflationary pressures over the past few years have undoubtedly altered many farmers' expectations about the future purchasing power of money. The Bangladesh, Brazilian and Colombian cases indicate that loan transaction costs can be a very large part of total borrower costs, especially for borrowers of small loans. Inflation expectations and transaction cost considerations may overshadow the contractual interest rate when farmers make borrowing decisions. The fact that interest payments make up a small part of the economic activities of most small farmers in low income countries further reinforce the conclusions that contractual interest rates are not a

TABLE 7: Ratios of Credit and Interest Payments to Expenses and Family Income Among Farm Households in Korea 1965, 1968, 1971 and 1974

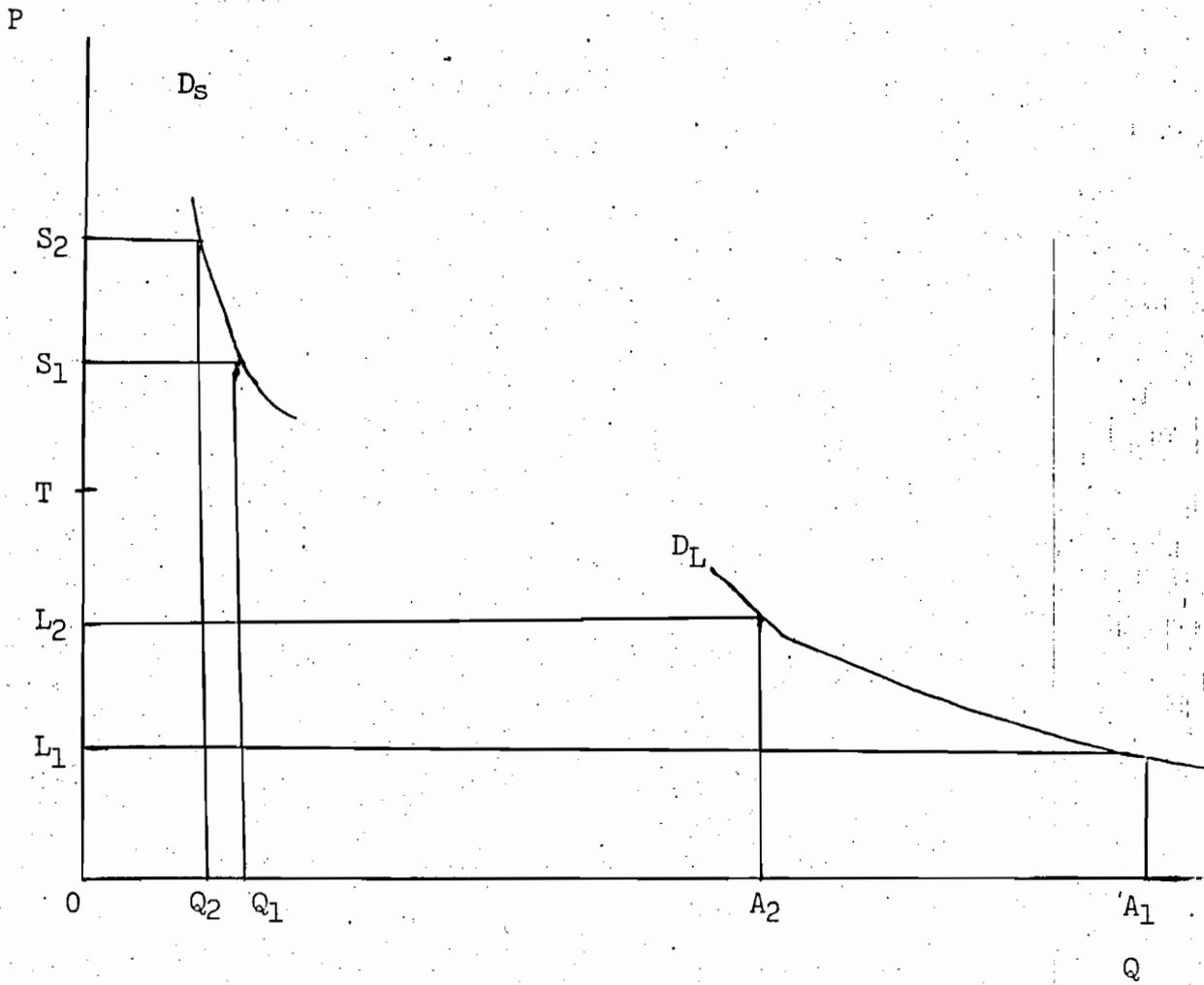
Year	No. of Households	Total End of Year Credit Balance Divided by			Total Interest Payments Divided by		
		Operating Expenses	Total Cash Expenses	Net Farm Family Income	Operating Expenses	Total Cash Expenses	Net Farm Family Income
1965	1172	.47	.16	.09	.07	.025	.014
1968	1181	.44	.14	.08	.08	.023	.013
1971	1180	.24	.06	.03	.07	.017	.008
1974	2515	.27	.08	.04	.06	.018	.009

Source: Ministry of Agriculture and Fisheries, The Republic of Korea, Report on the Results of Farm-Household Economy Survey, various issues 1965-1975.

big factor for most farmers.

What would happen to the demand for formal agricultural credit if contractual interest rates were flexible and tended to rise and fall with changes in inflation expectations? What difference would it make if farmers expected to pay and lenders expected to receive a positive real rate of interest on loans? In almost all cases, this would result in an increase in the contractual rate of interest and a decrease in the income transfer which borrowers expect to realize through negative real rates of interest. A given increase in contractual interest rates, however, would increase borrowing costs of large borrowers proportionately more than the costs of small borrowers. Further, information cited earlier indicated that small borrowers incur higher borrowing costs per unit of money than do large borrowers. One might hypothesize that small borrowers are making decisions over a portion of their loan demand schedule which is much less price elastic than is true for large borrowers. This possibility is illustrated in Figure 1. D_S in the figure depicts the demand for formal loans by small borrowers. D_L shows loan demand by large borrowers. L_1 and S_1 are the costs of borrowing per unit of money for large and small borrowers respectively before any changes in interest charges. L_2 and S_2 are the respective costs of borrowing after contractual interest rates have been doubled. To simplify the example, we assume price-change expectations among both small and large borrowers are zero. We also assume that the transaction costs of acquiring a large loan make up an insignificant part of total borrowing costs.

Figure 1



$$L_1 = r$$

$$S_1 = c + r$$

In Figure 1, $A_2 A_1$ is the decrease in quantity of loans demanded by large borrowers due to the change in interest rate. $Q_2 Q_1$ is the associated decrease in demand by small borrowers. In this example, $A_2 A_1$ is much larger than $Q_2 Q_1$ because of the assumed differences in the price elasticities of the two loan demand schedules.

Other things being equal, $Q_2 Q_1$ plus $A_2 A_1$ is the amount of "surplus funds" which formal lenders have after the increase in interest rates. These surplus funds might be diverted to other sectors through financial markets, or the formal lenders may decide to extend loans to new agricultural borrowers previously not serviced by formal lenders. It is also possible that formal lenders would attempt to induce current clients to use larger loans even though interest rates were higher. With higher interest rates and slack loanable funds, formal lenders may find it to be in their interests to focus on ways to reduce some of the loan transaction costs faced by small borrowers. In Figure 1, these transaction costs are CT for small borrowers.

Although difficult to prove, it may be possible for lenders, with more flexible interest rates, to change procedures and substantially reduce loan transaction costs of small borrowers. In a number of cases, lenders hassle borrowers of small amounts in order to discourage their loan requests. If interest rates were raised, formal lenders may find it profitable to promote more small loan business. This might involve fewer and shorter visits to formal lenders by loan applicants. In some countries mobile banks disburse and collect loans which substantially reduces borrower costs. In some countries formal lenders pay salaries and expenses of

technicians who visit a prospective borrower's farm to audit his assets. The lender may also provide sufficient compensation to the credit technician so that bribes are less necessary. Further research is necessary before this claim can be substantiated but increasing contractual interest rates may actually lower the cost of borrowing formal loans for small farmers!

Conclusions

Interest rates can influence three important sets of activities in rural areas. As we have discussed above, they can affect loan demand. They can also affect the demand for financial assets which, in turn, may strongly influence household consumption-savings behavior. Interest rate policies, at a different level, can also have a substantial impact on the way formal lenders perform. In the past, interest rate policies on agricultural credit have been largely rationalized on the assumed impact which they have on loan demand at the farm-household level. We have attempted to argue in this presentation that because of substantial loan transaction costs, small borrowers are likely to be rather insensitive to changes in contractual interest rates. We have also suggested that low, fixed interest rate policies may induce formal lenders to institute loan application procedures which result in relatively large transaction costs for small borrowers. If interest rates were raised, loan transaction costs for small borrowers may be decreased sufficiently to lower total borrowing costs. If this occurs, small borrowers may increase rather than decrease their use of formal loans.

We feel that the benefits which policy makers claim results from the interaction of low interest rates and loan demand are suspect. We further feel that these interest rate policies cause formal lenders to concentrate concessionally priced credit in the hands of the economically and politically powerful [1]. Further, that cheap credit results in even cheaper financial savings [4]. Low interest rates on financial savings seriously discourages savings at the household level, fragments financial markets, and retards the capital formation process. These adverse effects of concessional interest rate policies appear to outweigh the weak benefits which may be realized on the loan demand side.

Footnotes

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