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**FARM HOUSEHOLD HETEROGENEITY AND RURAL FINANCIAL MARKETS:
THE CASE OF THAILAND**

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ABSTRACT

Farm households are heterogeneous in their financial needs depending on cash flow patterns, family lifestyle, and perception of investment opportunities. Thailand data show differences in cash flow between borrower and nonborrower households. The current one-sided emphasis on agricultural credit should be broadened to include other rural financial needs.

BIOGRAPHICAL SKETCHES

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Introduction

Policymakers have viewed rural finance largely as a process of channeling agricultural credit to farmers. As a result, the total amount of institutional agricultural credit outstanding had grown to a whopping \$15 billion in 1974 (Donald), and undoubtedly exceeds \$20 billion today. Such large amounts of agricultural credit are justified because of a simplistic view of the role of rural financial markets in development. The traditional view holds that (a) credit is an input in production, (b) everyone needs credit, and (c) no one can or will save. Furthermore, attention is focused almost exclusively on farm enterprises with little interest or concern for nonfarm enterprises in rural areas.

The shortcomings of this traditional view of rural financial markets were recently summarized by Adams and Graham. A new perspective on the role of finance in development is beginning to emerge. The financial needs of farm households, even in low income countries, are becoming recognized as being much more complex than previously assumed. The heterogeneity of the agricultural sector is becoming clearer. It consists of a broad range of units, enterprises and entrepreneurs. For some, the primary need may be institutional credit. For others, however, the primary need is a safe place to deposit surpluses until required. Thus the role of financial markets is much broader than simply channeling credit to farmers.

The objective of this paper is to briefly discuss the great complexity of financial needs of farm households even in low income countries, and the

implications for financial intermediation in rural areas. Data from Thailand are presented to demonstrate the type of heterogeneity which exists among farms.

Financial Intermediation and the Rural Household¹

Two types of heterogeneity in rural areas influence the role of financial markets in development. The first concerns the wide range of firms and households found in rural areas. Farm households range from poor, landless laborers to rich, complex agricultural estates and plantations. But the rural sector also includes small towns with farming and nonfarming households, processing plants, input supply dealers, repair and service centers, retailers, etc. These nonfarm firms and households provide a broad set of forward and backward linkages with farm households, yet they are often overlooked in statistics and policy analysis (Chuta and Liedholm). Their financial needs are also usually overlooked. They usually do not have access to special agricultural credit programs, nor are there many programs designed specifically for their needs.

The second type of heterogeneity is the focus of this paper. It concerns the heterogeneity among farm households themselves, and how this gives rise to opportunities for financial intermediation. One important role of financial intermediation is to even out household cash flow and help synchronize income and expenditures which rarely, if ever, are perfectly synchronized. The irregularity in cash inflow and outflow is obvious in biological production processes of crops and livestock. Inputs for a crop are required several weeks or months before harvest and sale. The period is even longer for most livestock and poultry enterprises. A regular pattern of cash inflow and outflow can be anticipated for some enterprises and expenditures. Consumption expenditures, school expenses and

¹Surprisingly little good literature exists on the role of financial intermediation in the rural household. Three useful references are Lee, Baker, and Adams and Vogel.

some ceremonial obligations, for example, can be anticipated. The household must also consider, however, such unpredictable events as crop failure, market failure, sickness, etc.

The selection of production and marketing alternatives affects the synchronization of cash inflow and outflow. For example, a diversified combination of enterprises may be selected to produce marketable surplus several times during the year. Nonfarm enterprises, such as weaving, blacksmithing, tailoring, and handicraft manufacture, play an important role in many countries in generating income during the dry season when there is slack household labor (Chuta and Liedholm). Forward contracting of production with advance partial payment can be used in some cases to finance input costs. Frequently, households will store basic food commodities for home consumption in the dry season to avoid cash outlays and for future barter or sale when cash is needed.

Adjustments in the timing and magnitude of consumption expenditures can help synchronize inflows and outflows. Cash outlays can be held to a minimum during periods of low income. Then, the purchase of clothing and durable goods, and the holding of traditional religious and ceremonial activities can be deferred until harvest time or whenever major sales are made.

There are limits to the household's ability to manage cash flow problems through production, sales and consumption strategies. The household's need for cash will always vary month by month. Some savings are always required to finance those expenditures which exceed income for some period (Vor. Pischke). In the absence of reliable financial institutions, households in low income countries frequently hold their savings in the form of excess liquid assets. These assets can take the form of crop inventories, livestock and poultry, and gold and silver ornaments and jewelry. But holding excess assets is both unproductive and risky, and causes inefficiencies in resource allocation. A more productive less risky

alternative is to market the assets at a profitable time, and place the receipts in a financial instrument until they are needed. In this way, financial markets meet the heterogeneity in cash needs which occur during the year.

Households have heterogeneous financial needs because of different stages in family lifecycles. Over time, households typically go through an expansion, maintenance, and contraction cycle. In the early years of a family, demands for cash often exceed supply. Child rearing, establishing a home, acquiring desired durables, beginning farming, all require more funds than a young family can easily obtain from annual income. The household becomes a net borrower. As time passes, income rises until it eventually matches and finally surpasses desired expenditures. The household shifts from net borrower to net saver. In low income countries, young families frequently live with parents and in-laws so the older generation can subsidize or lend to the younger one right within the household. The amount of funds may not be sufficient in this internal transfer, however, so a financial intermediary can provide a service by linking savers with borrowers who do not know each other, cannot easily establish personal relationships and may even be separated by great distances.

Another role for financial intermediaries arises due to heterogeneous perceptions of investment opportunities. Some households perceive few opportunities to invest in their current farm and nonfarm enterprises. They feel they have exhausted all alternatives with acceptable levels of income and risk. They lack information on investment opportunities in urban areas. Their best option is to invest in a financial instrument. Simultaneously, another household perceives an opportunity to increase income by adopting new seeds, applying more fertilizer, buying machinery, or starting a new enterprise; but it lacks finances to take advantage of the opportunities it perceives. The former household would gain by decreasing current consumption and providing resources to the borrower

household which would gain by increasing current consumption and repaying the loan out of future income. Both households benefit from a financial institution that mobilizes the savings of one and lends them to the other.

Thus, there are at least three ways in which the heterogeneity of financial needs of farm households give rise to the demand for financial intermediation. One is help synchronize household cash inflows and outflows during the year. For some households, this means finding a safe way to hold savings during cash surplus periods until cash deficit periods. For some households, this means borrowing during cash deficit periods and repayment during surplus periods. A second way is to help transfer resources among households at different stages in their family lifecycles. A third way is to help transfer resources among households with different perceptions of investment opportunities.

The financial needs of households are much more complex than normally assumed in agricultural credit programs. While it is true that for some households the primary need is short and long term loans, for other households the primary need is attractive and safe ways to hold short and long term savings. If all farm households needed to borrow at the same time, then large supplies of central bank or donor credit to rural lenders would be appropriate. But with heterogeneous needs, savings can be mobilized in rural areas while simultaneously lending to local borrowers. The traditional view of agricultural credit misses this important fact and leads to one-sided programs aimed at lending with little concern for local savings mobilization.

Cash Flow Analysis of Thai Farm Households

Few studies collect enough data to analyze the heterogeneity of farm household financial needs described above. An exception is the Rural Off-Farm Employment Assessment Project in Thailand.² This project collected detailed household cash flow data which can be analyzed to show differences in financial needs of households during a year. The data were collected in weekly interviews by local teachers from over 400 households randomly selected in 25 villages. Data editing and processing were done at Kasetsart University.

Tables 1 and 2 report cash flow data for two sets of households. The data represent average values for the households included in each group. These households were located in two widely separated villages in Khon Kaen Province in Northeast Thailand. The villages represent farms with wet season irrigated rice production and a large amount of upland area in sugarcane, cassava and kenaf. Compared to other areas in the Province, the farms are cropped fairly intensively.

These households are a subset selected from the total sample because (a) the data were complete enough for the required analysis, (b) they represented small farms with less than 20 rai (about eight acres), and (c) they had both farm and nonfarm enterprises. Since the farms are small and incomes are low, it was expected that cash management problems would be pronounced and borrowing would be common. The households were divided into a borrower group of five households and a nonborrower group of 14 households. The criterion for the division was

²For a description of this project, see Onchan et al. The project is a joint effort of Kasetsart University in Bangkok, Michigan State University and The Ohio State University.

Table 1. Cash Flow Statement for Borrower Households^a

Item	Month												Total
	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	
Farm Cash Receipts	60	82	56	198	50		90	8	812	6	2,694	1,436	5,492
Operating Expenses	19	98	36	118	58	46	60	496	52	266	34		1,283
Net Cash Farm Income	41	(16)	20	80	(8)	(46)	30	(488)	760	(260)	2,660	1,436	4,209
Net Cash Nonfarm Income	195	594	432	773	418	613	464	777	418	1,496	1,298	546	8,024
Net Capital Sales	(580)										1,700		1,120
Other Cash Receipts	50	110	50	20	40	80	260	410	250	51	50	50	1,421
Family Living Expenditures	1,344	3,507	473	605	333	504	768	549	1,848	660	1,015	718	12,324
Other Cash Expenses	494	1,805	208	73	49	43	45	16	111	14	121	516	3,497
Net Borrowing	1,660	400	200	100	100					(100)	(500)	(2,300)	(440)
Surplus (Deficit)	(472)	(4,224)	21	295	168	100	(59)	134	(531)	513	4,072	(1,504)	(1,487)

^aAll values reported in Baht. U.S. \$1.00 approximately equal to 20 Baht.

Note: Parentheses indicate negative values.

Table 2. Cash Flow Statement for Nonborrower Households^a

Item	March	April	May	June	July	Aug.	Month Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Total
Farm Cash Receipts	364	753	30	533	383	1,312	2,286	329	363	1,061	1,955	748	10,117
Operating Expenses	215	359	327	68	36		21	156	32	30	111	14	1,369
Net Cash Farm Income	149	394	(297)	465	347	1,312	2,265	173	331	1,031	1,844	734	8,748
Net Cash Nonfarm Income	1,987	455	501	1,339	536	1,044	760	772	562	1,639	1,268	1,222	12,085
Net Capital Sales	(419)	(38)		(8)	(40)	(62)	(63)	(6)		(13)	(2)	(357)	(1,008)
Other Cash Receipts	151	152	59	168	304	143	157	397	143	229	270	157	2,330
Family Living Expenditures	1,096	901	577	556	388	479	611	479	412	542	642	877	7,560
Other Cash Expenses	1,345	91	258	293	155	191	424	196	112	463	88	18	3,634
Net Borrowing		(7)			(16)	14	(25)						
Surplus (Deficit)	(573)	(36)	(572)	1,115	588	1,781	2,059	661	512	1,881	2,650	861	10,927

^aAll values reported in Baht. U.S. \$1.00 approximately equal to 20 Baht.

Note: Parentheses indicate negative values.

that the household borrowed a total of at least 500 baht (about \$25) during the year from all sources. Only five of the 19 total households reported at least 500 Baht in borrowing in spite of their small size and low income. This low level of borrowing is consistent with the pattern found throughout the country in spite of recent major agricultural credit projects.

The main rice-growing season begins with planting in June-July and harvest in November-December. Thus the data cover the end of the 1979-80 dry season, the entire 1980 wet season, and the beginning of the 1980-81 dry season. Household cash receipts are subdivided into net cash farm income, net cash nonfarm income (including net income from nonfarm enterprises and off-farm work), net capital sales, and other miscellaneous cash receipts. Household expenditures are reported as family living expenses (food, clothing, education, etc.) and other cash expenses. Net borrowing refers to value of new loans received from all sources minus value of all principal and interest payments made. Total receipts minus total expenditures are reported as cash surpluses or deficits for the month. These amounts represent potential needs for financial intermediation in the form of loans or savings.

These two groups of households are similar in that both earned more income from nonfarm than from farm sources. This is due to the pervasive nature of nonfarm enterprises in rural Thailand as well as their small farm size. The borrower households in Table 1 come closest to the typical situation assumed by agricultural credit planners. Farm cash receipts were lumpy: 75 percent were received from rice and kenaf during the postharvest months of January and February. About 60 percent of the operating expenses occurred in the two months of October and December. Net cash farm income was negative in five months. Nonfarm income was substantial every month, but the largest amounts were earned in December and January because of the employment available in harvesting. Over 50 percent of the total year's living expenses occurred

in the four dry season months of January through April. This is the period when households have the greatest amounts of cash and the major religious festivities occur.

Net borrowing was positive during the months of March through July when kenaf and rice are planted. Repayments exceeded loans in December, January and February. Thus we have what might be called the classical cash flow pattern expected in typical agricultural credit projects: households borrow during the planting period when they experience cash deficits and repay after harvest when they have cash surpluses.

The nonborrower group (Table 2) shows some similarities with the borrower group, but also some sharp differences. Farm cash receipts for nonborrowers were higher and more evenly spread throughout the year than for borrowers. Nonborrowers tended to have a more complex combination of enterprises including cassava and sugarcane, and earned more nonfarm income. Surprisingly, they had lower total family living expenses in spite of their higher incomes and these expenses were somewhat less concentrated in the postharvest months. These households repaid more on old loans than they received in new loans.

Several implications emerge from this analysis. One group of households fit the expected pattern of cash flow for a borrower household. The second group of households, which was larger in number of cases, did not. The nonborrower group was able to increase the level of total household income and reduce variability enough so it didn't need to borrow. The nonborrower group still experienced significant income variability, however, in spite of its production and marketing strategies. There were periods of surplus and deficit cash flow. Thus even though this group was self-financed, it had to hold liquid assets in some form to meet deficit periods.

Thailand is like many countries in that few institutions have tried to mobilize the rural savings which are available even on these small farms. Total supplies of agricultural credit have been sharply increased for commercial banks and cooperatives through funds provided by the Central Bank and foreign donor agencies. Few attempts

have been made to finance the loan needs of farmers through local savings. A few institutions have pushed deposit mobilization in urban areas. They succeeded in mobilizing so many funds for investment in Bangkok that the government passed regulations requiring that a minimum proportion of deposits had to be lent in the local market area of the intermediary. The rural areas, however, have one-sided financial intermediaries with respect to agriculture which specialize in retailing loan funds and may not even accept local deposits.

Conclusion

Cash flow patterns of farm households are heterogeneous because the households are heterogeneous. Besides the Thailand data reported here, the research by Matlon in Nigeria, and Hayami and Ledesma in the Philippines points in the same direction. Households have cash surpluses in some periods, and deficits in others. Sometimes their primary need is to borrow; at other times it is to save. Efforts need to be placed on mobilizing these savings for use in lending programs. Less emphasis should be placed on specialized programs which retail credit provided by Central Banks and donor agencies. Two benefits would be achieved. First, rural savers would benefit from attractive savings opportunities. Second, the financial institutions would be more subject to the rigors of the market rather than continue to rely on subsidized funds from the government. This would help correct many of the problems which now explain the poor performance of many agricultural credit programs and institutions.

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