THE DEMAND FOR FUNDS AMONG AGRICULTURAL HOUSEHOLDS IN THE PHILIPPINES

Raquel B. Clar de Jesus and Carlos E. Cuevas

WORKING PAPER SERIES NO. 88-21

This paper is also being circulated as ACPC Working Paper Series No. 88-13 by the Agricultural Credit Policy Council.

October 1988

Philippine Institute for Development Studies

ACKNOWLEDGEMENT

We wish to acknowledge the financial support provided by the Agricultural Credit Policy Council (ACPC), the Philippine Institute for Development Studies (PIDS), the Ohio State University (OSU) and the United States Agency for International Development (USAID). This study was made possible with the cooperation of financial institutions included in this study. We cannot enumerate their names here for confidentiality.

Thanks are due to Dr. Ponciano S. Intal, Jr. (NEDA), Dr. Richard L. Meyer (OSU), and Dr. V. Bruce J. Tolentino (ACPC) for their valuable comments.

The Authors

TABLE OF CONTENTS

LIST OF TABLES

THE DEMAND FOR FUNDS AMONG AGRICULTURAL HOUSEHOLDS IN THE PHILIPPINES*

by

Raquel B. Clar de Jesus and Carlos E. Cuevas**

I. INTRODUCTION

The policies on agricultural credit currently observed by the Philippine government have been widely publicized and criticized by some sectors. The shift from concessionary lending rates to free market rates, from direct lending to loan guarantee schemes, and from credit allocation by commodity/sector to the no-loan-targetting stance taken by the government has triggered controversy and debate. In the eyes of most of the Rural Banks which depended on cheap government funds, these

---

*Paper presented during the ACPC-PIDS-OSU sponsored seminar-workshop on "Financial Intermediation in the Rural Sector: Research Results and Policy Issues" held on 26-27 September 1988 at the Cuaderno Hall, Central Bank of the Philippines. This is part of a larger study on comparative bank analysis jointly conducted by the Agricultural Credit Policy Council (ACPC), Philippine Institute for Development Studies (PIDS) and Ohio State University (OSU). The project was coordinated by Dr. Mario B. Lamberte (PIDS) and Dr. V. Bruce J. Tolentino (ACPC).

**Respectively, Division Chief, Special Study and Analysis Division, ACPC and Professor, OSU.

The views expressed in this study are those of the authors and do not necessarily reflect those of the Institute.

policies are punitive measures for the huge loan delinquencies which these Rural Banks accumulated over the past decade. To the government and to the general banking sector, however, the policy actions are merely in recognition of the lessons painfully learned from the country's dismal experience with agricultural credit programs.

The general failure of the past agricultural credit programs in the Philippines exhibits three important facets: (a) the deterioration of the liquidity position of Rural Banks, the major supporters of the supervised credit programs; (b) the worsening loan repayment problems of farmers; and (c) the shortcomings in the design and implementation of the credit programs.

One of the many inadequacies in the design and implementation of the credit programs in question was the apparent neglect of an understanding of the demand for funds of the intended beneficiaries of the program. The little research on this aspect focuses only on the beneficiaries' demand for loans and confines the analysis only to credit flows associated with the "production needs" of the household. These studies fail to consider the interdependence of the household's decisions regarding production and consumption, borrowing and savings/ investment.

The credit programs of the past were designed to cater solely to the operating capital requirements of the farm households. Restrictions were imposed in an effort to ensure

that the loans would be channelled to production alone. Credit requirements for production were estimated for the intended beneficiaries with little attention to the structures of their income, assets, borrowings and savings.

In a household however, decisions on production, borrowing, consumption, saving and/or investment are closely interwoven. In making credit decisions, farm households also consider their "internal funds", i.e. liquidity that can be obtained from financial savings or other liquid assets. Consequently, credit demand should be analyzed within a framework that considers all these interrelated decisions. It should be approached from the point of view of the household's total liquidity requirement for the financing of all activities, i.e., production, consumption, saving and investment. It should not be confined to production credit alone. Moreover, the framework should also consider the ability of the household for self-finance.

This paper addresses the interdependency of farm household decisions by quantifying a demand for credit that considers not only the household's loan needs but its overall liquidity position. Section 2 presents the issues raised in the study. This is followed by the description of the methodology and a definition of variables in Section 3. Section 4 starts with a brief discussion of the saving, borrowing and asset structure of the sample households, followed by a discussion of the results of the empirical analysis of the demand for credit. Finally, Section 5 presents the conclusions and policy implications of the study.

II. MAIN ISSUES

Several key issues surrounding the interdependent-decisions approach are discussed here. First, the controversy about simultaneity in farm household models is reviewed. Then a preview of the linkages between different components of the household's liquidity management is presented. Finally, the section discusses the variables likely to influence the demand for funds under interdependency of farm decisions.

Issue 1: Are Farm Household Decisions Simultaneous?

The relevant approach in the analysis of farm household decisions (i.e., whether separable, recursive or simultaneous) has often been a subject of controversy. In the separable approach, decisions are assumed to be unrelated and analysis of one activity (e.g., production) does not need any rationalization of the other (e.g., consumption). It has been used extensively because of the ease it provides in econometric estimation. The recursive method is also relatively easy to handle empirically because the decisions can be "arranged" and analyzed in a sequential order, thus making estimation procedure similar to the first approach.

However, the above approaches are warranted only under assumptions of perfect market competition (Singh, Squire and Strauss 1986). In LDCs, however, separability or recursiveness of farm household decisions are deemed strong assumptions given the prevalence of market imperfections. For

these economies, therefore, the simultaneous approach in analyzing decisions has been suggested (David and Meyer 1979, Iqbal 1980). In this approach, activities are analyzed at one time since the decisions are assumed to be done simultaneously. Why opt for the more complicated simultaneous approach in analyzing farm household decisions? Several reasons are offered below.

a. Rural financial markets in LDCs are highly imperfect. Government policies in LDCs create distortions in formal financial markets. Preferential rates, lending quotas, rediscount arrangements and special credit programs are some of the financial market imperfections in LDCs. Also, lenders in these economies are selective in providing credit. Individual characteristics of borrowers are regarded as credit screening devices by these lenders and may affect the decision of loan approval or the size of the loan. As early as 1958, Hirschleifer already suggested the simultaneous determination of the optimal levels of production, consumption and borrowings in cases where the interest rates increase with the scale of borrowings.

b. Actual observations of farm household activities indicate the interdependence of decisions. The production, consumption and labor activities among farm families are observed to be interlinked (Singh, Squire and Strauss 1986). Production activities determine the level of income of a farm household. The level of income influences the household's consumption and the labor it supplies to the labor market. Moreover, income and

consumption levels determine the surplus funds of the farm family and their decisions on whether these funds are saved or invested. In truly subsistence-level farms, the simultaneous approach is strictly required because in these farms, the productive activities of the household are basically oriented towards the satisfaction of its consumption needs. For semi-commercial farm-households, decisions can be "separated" since the household consumes part of its output, sells the rest and supplies some of the inputs and buys the rest. Such separability allows the household's decisions to be analyzed sequentially when simultaneity cannot be established between certain variables.

c. Credit is fungible. Another argument for approaches with simultaneity of farm decisions rests on the fungible characteristic of credit. Fungibility refers to the interchangeability of money (Von Pischke and Adams 1980). Because credit may not always be channelled to a productive activity, rather, it may be used to finance an activity that provides the borrower with the greatest utility (David and Meyer 1979), the fungibility of credit supports the use of a simultaneous approach in analyzing credit decisions.

Issue 2: What patterns characterize the borrowings, savings, and assets of agricultural households in the country? How can these patterns be linked to their demand for funds?

Patterns regarding the borrowings, assets and savings of farmers have been reported by previous studies (TBAC and UPBRF 1979, TBAC 1981). These patterns reveal limited liquidity among farm households because most assets are kept as fixed and

intermediate assets relatively essential to production operations. TBAC-UPBRF data for 1975 to 1978 reports that 40 percent of total assets are in fixed household assets and 30 percent in farmland. The TBAC (1981) study estimated the proportion of fixed assets at 70 percent of total assets. In contrast, financial assets comprised only two percent of the households' asset portfolios (TBAC 1981). Landowners showed the highest levels of total assets and also the highest fixed capital. Sharetenants and leaseholders, on the other hand, tend to accumulate farm tools and equipment.

Bank deposits in the period 1975 to 1978 averaged from only ₱100.00 - ₱200.00 per household (TBAC - UPBRF 1979). Most of the loans were sourced from banks (about 54 percent of loans) and varied in size according to the economic conditions of the different geographical areas.

The studies referred to above had several different objectives and their data were collected at a time when the credit market was characterized by abundant cheap government funds and loan delinquency problems. The financial reforms of the early 1980s are likely to have had an effect on the financial status of the farm households, and justify a reassessment of the status of these households in terms of savings, assets and borrowings. The structure of savings, assets and borrowings determine the liquidity position of rural households and is closely related to their demand for funds. A better understanding of the behaviour of farm households may help

design future loan programs and may provide some explanations for the failure of past credit programs.

Issue 3: Given the interdependency of farm decisions, what variables influence the demand for funds of agricultural households?

Based on an exhaustive review of credit studies, a listing of the different variables which influence credit demand is compiled in Table 1 (Clar de Jesus 1988). The review raised some reservations on the literature, to wit:

1. Most of the studies do not consider the interdependency between credit and other farm household decisions;

2. Borrowings are defined as external loans only and do not take into account the "internal funds" or self-financing capacity of the borrowers;

3. The interest rate variables used do not approximate the actual borrowing costs of the borrowing farm household.

This study attempts to overcome these shortcomings by analyzing the demand for funds in a framework of interdependent farm decisions. Also, this study will define borrowings considering the household's capacity to self finance its activities and the actual borrowing costs will be specified in the empirical model. The results of the empirical analysis can be used to shed light on the present government policies on agricultural lending.

Table 1: A LISTING OF VARIABLES WHICH INFLUENCE CREDIT DEMAND

Variables	Surrogate Measure	Relationship derived in previous studies */
1. Interest rate	- Nominal interest rate on formal loans	negative
2. Initial Endowment	. wealth/assets	negative
	. volume of savings	negative
	. ratio of money balances to gross farm expense	negative
	. total land owned	negative
3. Expenditures	. capital expenditures/ family expenditures	positive
4. Investment Opportunities	. technology	negative
	. capital appreciation	positive
	. research expenditures in agriculture	positive
	. education of Household head	negative/ positive
5. Transitory Income	. ratio of gross production to value of land	negative
6. Wage Rate	. agricultural wage rate	negative
7. Outstanding Debts	. outstanding debts	positive
8. Household Characteristics	. farm size	positive
	. household size	positive
	. health index	negative
	. dependency ratio	positive

*/ See Clar de Jesus, 1988.

III. METHODOLOGY AND DEFINITION OF VARIABLES

The theoretical approach of this study follows and extends the model proposed by Iqbal (1980).[1/] An important inclusion contributed here is the explicit consideration of the informal sector.

The informal market sector in the Philippines plays a significant role in agricultural financing. In these informal credit markets, interest rate variations are common. While empirical evidence is lacking, it is believed that household characteristics are likely to affect the price of credit, the approval or non-approval of a loan and size of the loan. In the formal sector, even though lower nominal rates may have been intended for borrowers of smaller loans compared to borrowers of larger loans, the high transactions costs attendant to small loans more than offset this differential, thus making the effective rates inversely proportional to the borrower's scale of operations. This indicates that interest rates even in the formal sector are a function of certain characteristics of the borrowing household.

The hypothesis that the level of borrowings depends on certain household attributes which likewise affect the interest rates faced by the household implies that both equations in the empirical model, i.e., the interest rate equation and the demand for funds equation are interdependent, i.e., B = B

1/ See Clar de Jesus, 1988.

(r) and r = r(B). Hence, the analysis uses a two-stage simultaneous equation method.

The following econometric model was specified for the analysis:

$$B = a_o + a_1 AREA + a_2 W + a_3 IRR + a_4 EDUC + a_5 ORG^* + a_6 PURPOSE^* + a_7 LAND + a_8 RE_f + a_9 RE_i + a_{10} AGE2 + a_{11} TEN + a_{12} DEP + U_o$$

$$RE_f = r_o + r_1 LAMOUNT + r_2 PURPOSE^* + r_3 B + r_4 LAND + r_5 PP^* + r_6 EDUC + r_7 TENURE^* + r_8 DIST + U_1$$

$$RE_i = s_o + s_1 LAMOUNT + s_2 PURPOSE + s_3 B + s_4 LAND + s_5 PP^* + s_6 EDUC + s_7 TENURE + s_8 DIST + r_9 EXPEC^* + U_2$$

where the dependent variables B, RE_f, and RE_i are defined as the level of borrowings, the effective interest rates in the formal credit market, and the effective interest rate in the informal credit market, respectively. The explanatory variables used in the three models are defined in Tables 2 and 3. The effective interest rate for each market is simply the sum of the nominal annual interest rate (comprised by the principal,

Table 2: EXPLANATORY VARIABLES USED IN THE INTEREST RATE FUNCTION

DEPENDENT VARIABLE	INDEPENDENT VARIABLE	SURROGATE MEASURE	ACRONYM USED	EXPECTED SIGN
Effective interest rate	Non transactions cost variables	Loan Amount	LAMOUNT	+
		Loan Purpose	PURPOSE*	indeter-minate
	Borrowing	Level of Borrowing	B	-
	Household characteristics	Previous patronage with bank/ lender	PP*	indeter-minate
		Distance of bank from household	DIST	indeter-minate
		Education of house-hold head	EDUC	indeter-minate
		Tenure	TENURE*	indeter-minate
	Wealth	Total land owned	LAND	indeter-minate

* Dummy variables which take the value of:

1 if the purpose for the loan is production, 0 otherwise;

1 if the respondent is a previous bank patron, 0 otherwise

1 if respondent is a landowner, 0 otherwise.

Table 3: EXPLANATORY VARIABLES USED IN THE DEMAND FOR FUNDS EQUATION

DEPENDENT VARIABLE	INDEPENDENT VARIABLE	SURROGATE MEASURE	ACRONYM USED	EXPECTED SIGN
Level of borrowing	Initial Endowment	Area cultivated	AREA	-
	Current wage	Average agricultural wage rate	W	ambiguous
	Investment opportunity measures	Total irrigated area	IRR	+
		Education of head	EDUC	+
		Membership in farm organization	ORG*	+
		Expectation of better income	EXPEC*	+
	Cost of Borrowing	Effective interest rate	REF/REI	ambiguous
	Household characteristics	Age of household head	AGE	indeterminate
		Dependency ratio	DEP	+

* Dummy variables which take the value of:

1 if a member of a farm organization, 0 otherwise;

1 if the household expects better income in the coming year, 0 otherwise.

service and other charges made by the bank), and the annualized peso value of the total borrowing costs incurred during the transactions for a loan (e.g. transportation cost, bribes, cash and peso value of non cash outlays) expressed as a proportion to the loan amount.

The definition of effective interest rate in this study may not be consistent with Abiad, Graham and Cuevas (1988). While the opportunity cost of time which should rightfully be included in the definition of effective interest rates was included in the Abiad, Graham and Cuevas study, this variable was not included in the present study due to time constraints. An attempt, however, is being made to include the variable in the analysis, the results for which shall be reported in a forthcoming paper.

As indicated above, the level of borrowings is defined to consider net changes in external borrowing, external lending, financial assets and the value of household assets. Thus, B represents the net demand for funds and is defined as follows:

$$B = EB - EL - FA - CD$$

where EB = external borrowings

EL = external lending

-CD = net change in the value of consumer durables

-FA = net change in the value of financial assets

The amount of external borrowing of the farm family (EB) is obtained by examining the amount of external loans from both formal and informal sources received by the household at the

start of the year and the amount of its outstanding loan at the end of the year. For each loan source, external borrowing is measured as:

a. equal to the outstanding balance of the loan (EB = loans outstanding) if the loans were made in 1986 and the outstanding balances at year end is not equal to zero;

b. equal to zero (EB = Ø) if the loans were made in 1986 but were fully paid by the end of the year;

c. equal to the total loans outstanding at year end (EB = loans outstanding) if the loans were received prior to 1986 and the amount received is greater than the amount outstanding. This study assumed that payments for the loan were made in 1986.

The sum of external borrowing from both sectors (formal and informal) comprises the external borrowing component of the total demand for funds of an agricultural household.

External Lending (EL) refers to the loans granted by the farm-household to others. Because of data limitations, several assumptions were made in measuring the external lending component of the total demand for funds. External lending, in this study is assumed to be:

a. equal to zero (EL = Ø) if the loan granted by the household in 1986 has no amount collectible at the end of the year;

b. equal to the amount collectible (EL = loan collectible) if the loan granted in 1986 has an amount collectible not equal to zero;

Due to data constraints, the outstanding balance of the deposits of farm households was used as a measure for net change in financial assets (FA). This variable serves as a proxy for

increases in financial assets (or positive savings), but does not capture decreases in financial assets (dissaving).

Cash outflows on consumer durables was seen to be the more relevant measure for net change in consumer durables of the farm family (CD). This is based on the observation that among rural households, acquisition of consumer durables is common whereas sale of such items is rare. Hence, the study assumed that the households made no sales of consumer durables during the period covered, and total purchases in 1986 were used as a measure of net change in consumer durables.

IV. MAJOR FINDINGS

The data used in this study came from a survey of 1,057 farm households from six provinces in the Philippines. Only households with crops as their major production activity were included in the sample.[2/] These households comprised a total of 472 observations.

A. On the assets, savings and borrowings of crop households

1. <u>The asset structures of the farm families indicate an apparent accumulation of fixed and intermediate assets and shows lesser amounts of the more liquid financial assets</u> (Table 4). About 426 households or close to 90 percent of the total households surveyed possess residential lots. More than half

---

2/ See Clar de Jesus (1988) for a complete description of the sample. See ACPC Agenda (Feb. 1988) for a full description of the household survey.

Table 4: ASSET STRUCTURE OF AGRICULTURAL HOUSEHOLDS BY TYPE OF ASSETS
As of December 1986

Type of Assets	Number Reporting No.	% to Total Sample	Value of Assets Total Amount	Average Amount a/	Overall Sample Average b Amount	% Share
A. Farm Assets			13,627,800		28,872	52.9
Farm Land	253	53.6	10,660,250	42,135	22,585	41.4
Farm Structure	88	18.6	223,001	2,354	472	0.9
Machinery/Tools	261	55.3	777,741	2,980	1,648	3.0
Livestock and Poultry	280	59.3	1,825,983	6,521	3,869	7.1
Crops Inventory	68	14.4	140,825	2,071	298	0.5
B. Fixed Physical Assets						
House and Lot	426	90.3	9,581,100	22,491	20,299	37.2
C. Consumer Durables	362	76.7	1,714,935	4,737	3,633	6.7
D. Financial Holdings	107	22.7	840,149	21,311	1,780	3.3
Bank Savings	48	10.2	208,943	4,353	443	0.8
Non Bank Savings	12	2.5	7,860	655	17	0.0
Insurance	39	8.3	620,119	15,900	1,314	2.4
Bonds/stocks	8	1.7	3,227	403	7	0.0
Total Observations	472		25,763,984		54,585	100.0

a/ Average amount held by those reporting non-zero amounts.

b/ Average amount for all respondents in the sample (i.e. for the "average household").

possess farmland. Some 77 percent report ownership of consumer durables. Although household possessions are mostly held in fixed forms, an important proportion of farm households maintain some assets in more liquid forms such as livestock and poultry. These assets could provide the household with the funds during periods of income troughs or emergencies. A striking contrast is provided by the number of households that report financial assets. Only 23 percent of the households in the sample maintain financial assets, of which bank savings and insurance are the most common.

2. Across provinces, the mean values of the different forms of assets are consistently higher in Batangas, Pangasinan and Iloilo (Table 5). The result is not unusual in the case of Batangas considering that among the provinces covered, Batangas ranks first in terms of annual gross income and per capita income. Furthermore, farmlands in Batangas are valued higher because the valuation includes plantation crops to which most of the lands in the area are devoted.

3. Landowners maintain more farm assets and consumer durables but the values of these assets are not as large as those kept by leaseholders (Table 6). Landowners have the strongest incentive to increase income from production which is translated through increased investment in the farm. Leaseholders, on the other hand, because of the temporary nature of a leasehold contract, tend to hold higher values of non-land farm assets and consumer durables.

Table 5: ASSET STRUCTURE OF FARM HOUSEHOLDS BY PROVINCE
As of December 1986
(Values in Pesos)

Type of Assets	PROVINCE																All Areas		
	Batangas			Camarines Sur			Iloilo			Mis. Oriental			Negros Oriental			Pangasinan				
	No.	% to Total Observations	Mean Value	No.	% to Total Observations	Mean Value	No.	% to Total Observations	Mean Value	No.	% to Total Observations	Mean Value	No.	% to Total Observations	Mean Value	No.	% to Total Observations	Mean Value	No.	% to Total Observations	Mean Value
A. Farm Assets																					
Farm Land	17	31.5	59,059	54	60.7	28,102	42	49.4	104,686	52	65.8	16,954	41	53.9	25,643	47	52.8	38,489	253	53.6	42,135
Farm Structure	7	13.0	1,631	10	11.2	1,280	18	21.2	1,070	17	21.5	410	14	18.4	1,058	22	24.7	7,170	88	18.6	2,354
Machinery/Tools	15	27.8	703	39	43.8	2,261	49	57.6	5,573	42	53.2	487	44	57.9	1,010	72	80.9	4,736	261	55.3	2,980
Livestock and Poultry	17	31.5	6,354	39	43.8	4,205	30	35.3	3,613	66	83.5	4,405	68	89.5	5,930	60	67.4	12,525	280	59.3	6,521
Crops Inventory	4	7.4	3,363	6	6.7	1,038	8	9.4	702	20	25.3	710	0	0.0	0	30	33.7	3,378	68	14.4	2,071
B. Fixed Physical Assets																					
House and Lot	40	74.1	49,330	80	89.9	21,359	81	95.3	27,145	72	91.1	8,047	69	90.8	7,432	84	94.4	31,050	426	90.3	22,491
C. Consumer Durables	41	75.9	5,563	61	68.5	2,117	71	83.5	6,134	64	81.0	4,199	48	63.2	1,325	77	86.5	7,933	362	76.7	4,737
D. Financial Holdings																					
Bank Savings	7	13.0	8,121	4	4.5	4,875	12	14.1	4,489	2	2.5	2,816	9	11.8	4,213	14	15.7	2,512	48	10.2	4,353
Non Bank Savings	0	0.0	0	1	1.1	2,070	1	1.2	40	5	6.3	718	4	5.3	213	1	1.1	1,312	12	2.5	655
Insurance	2	3.7	21,500	7	7.9	6,593	11	12.9	6,064	9	11.4	6,693	3	3.9	10,000	7	7.9	53,431	39	8.3	15,990
Bonds/stocks	0	0.0	0	0	0.0	0	0	0.0	0	5	6.3	166	2	2.6	1,252	1	1.1	1	8	1.7	403
Total Observation	54			89			85			79			76			89			472		

Table 6: ASSET STRUCTURE OF AGRICULTURAL HOUSEHOLDS, BY TENURE
As of December 1986
(Values in Pesos)

Type of Assets	TENURE STATUS												All Types	
	Owner		Amortizing Owner		Leaseholder		Share Tenant		Part Owner		Others			
	No.	Mean Value	No.	Mean Value	No.	Mean Value	No.	Mean Value	No.	Mean Value	No.	Mean Value	No.	Mean Value
A. Farm Assets														
Farm Land	166	45,586	13	46,615	19	62,336	10	25,100	37	21,689	8	31,144	253	42,135
Farm-Structure	44	1,235	0	0	12	11,334	6	619	18	1,320	0	658	82	2,354
Machinery/Tools	101	3,319	10	1,944	43	8,321	16	653	88	620	9	461	261	2,980
Livestock and Poultry	119	6,367	8	3,155	29	5,558	14	2,543	96	8,302	14	3,243	280	6,521
Crops Inventory	27	2,351	1	1,658	13	3,307	3	457	22	1,314	2	1,212	68	2,071
B. Fixed Physical Assets														
House and Lot	169	31,460	13	24,092	56	18,319	21	13,974	137	16,738	30	11,630	426	22,491
C. Consumer Durables	153	6,316	11	5,888	46	6,514	16	1,876	107	2,768	25	2,007	360	4,737
D. Financial Holdings														
Bank Savings	23	5,221	2	2,500	4	563	1	200	11	2,198	7	8,176	48	4,353
Non Bank Savings	7	195	0	0	0	0	2	2,096	2	1,125	1	50	12	655
Insurance	23	21,360	1	3,000	4	11,316	2	3,010	6	10,605	3	3,638	39	15,900
Bonds/stocks	6	515	0	0	0	0	1	1	1	135	0	0	8	403

4. In terms of deposits, banks are still preferred over informal saving institutions such as the ROSCA (Table 7). About 60 households or 13 percent of all households report outstanding deposit balances in either a bank or a non-bank saving institution. Of these depositors, 80 percent keep their money in a bank while about 20 percent save in an informal saving institution. These savers are mostly farmers from Pangasinan and Iloilo. The small proportion of savers in the province of Batangas may be explained by the fact that commerce in the area is fairly active and the labor participation of agricultural households is fairly extensive. Perhaps, the farm families find these commercial activities more profitable than keeping their surplus funds in a bank or in a non-bank savings institution.

5. The average outstanding deposit in banks of the overall sample is ₱4,353.00 per household. The deposits in non-banks average only ₱655.00 per household (Table 8).

6. Most of the savers are small landowners and sharetenants (Tables 9 and 10). The information on the landowners confirms the observation that landowners face incentives to produce more (and subsequently save more) because they own the land from which their income is derived. In the case of sharetenants, a similar argument applies. Sharetenants have been accorded a special status in this country. They enjoy the same protection provided by law to landowners. Furthermore, because the tenancy rights are usually passed on through generations of only one family, tenants tend to attach greater value to the

Table 7: DISTRIBUTION OF AGRICULTURAL HOUSEHOLDS REPORTING SAVINGS, BY PROVINCE
As of December 1986

Province	No. of Observations	Number Reporting: Zero Deposits	Number Reporting: Bank Deposits	Number Reporting: Non Bank Deposits	Proportion to No. of Observations: Zero Deposits	Proportion to No. of Observations: Bank Deposits	Proportion to No. of Observations: Non Bank Deposits	Proportion to No. with Positive Deposits: Bank Deposits	Proportion to No. with Positive Deposits: Non Bank Deposits
Batangas	54	47	7	0	87.0	13.0	0.0	100.0	0.0
Camarines Sur	89	84	4	1	94.4	4.5	1.1	80.0	20.0
Iloilo	85	72	12	1	84.7	14.1	1.2	92.3	7.7
Misamis Oriental	79	72	2	5	91.1	2.5	6.3	28.6	71.4
Negros Oriental	76	63	9	4	82.9	11.8	5.3	69.2	30.8
Pangasinan	89	74	14	1	83.1	15.7	1.1	93.3	6.7
ALL AREAS	472	412	48	12	87.3	10.2	2.5	80.0	20.0

TABLE 8: AVERAGE AMOUNT OF DEPOSIT BALANCES OF AGRICULTURAL HOUSEHOLDS, BY PROVINCE
As of December 1986
(Values in Pesos)

Province	No. Reporting Deposits		Average Amount of Outstanding Deposits/HH	
	No.	% Distribution	In Banks	In Non-Banks
Batangas	7	11.7	8,121	0
Camarines Sur	5	8.3	4,875	2,070
Iloilo	13	21.7	4,490	40
Misamis Oriental	7	11.7	2,816	718
Negros Oriental	13	21.7	4,213	213
Pangasinan	15	25.0	2,512	1,312
ALL AREAS	60	100.0	4,353	655

TABLE 9: AVERAGE AMOUNT OF DEPOSITS OF AGRICULTURAL HOUSEHOLDS, BY TENURE STATUS
As of December 1986
(Values in Pesos)

Tenure Status	No. Reporting Deposits		Average Amount of Outstanding Deposits/HH	
	No.	% Distribution	In Banks	In Non Banks
Owner	30	50.0	5,221	195
Amortising Owner	2	3.3	2,000	0
Part Owner	3	5.0	200	2,096
Leaseholder	4	6.7	566	0
Share tenant	13	21.7	2,198	1,125
Others	8	13.3	8,176	50
ALL TYPES	60	100.0	4,353	655

TABLE 10: AVERAGE AMOUNT OF DEPOSITS OF AGRICULTURAL HOUSEHOLDS, BY FARM SIZE
As of December 1986
(Values in Pesos)

Farm Size	No. Reporting Deposits		Average Amount of Outstanding Deposits/HH	
	No.	% Distribution	In Banks	In Non Banks
0 - 1.0 hectare	32	53.3	4,397	830
1.1 - 1.9 hectares	6	10.0	880	150
2.0 - 2.9 hectares	11	18.3	2,648	584
3.0 - 3.9 hectares	6	10.0	3,982	0
4.0 - 4.9 hectares	3	5.0	13,473	0
5.0 and above	2	3.3	5,000	0
ALL SIZES	60	100.0	4,353	655

land they till. Thus, the tenancy arrangement does not restrain them from producing and saving.

7. Despite relatively higher nominal and effective interest rates in the informal market, the data shows that more loans are provided by informal lenders than banks and other formal lending institutions (Tables 11 and 12). Out of 226 observations that report cash loans (representing nearly half of the total sample) only 19 percent were served by banks. The bulk or 81 percent were served by relatives, moneylenders and other informal lenders. The smaller size of an informal loan relative to a formal loan may explain the higher effective rate in the informal sector. Small loans (which are sourced mostly from the informal sector) bear higher transactions costs making the effective rate inversely proportional to the size of the loan.

8. The average size of formal loan to the sample households is about twice as large as the average loan granted by private moneylenders (Table 13). The average bank loan amounts to ₱5,983.00 per household whereas those provided by informal lenders averages ₱3,172.00.

9. The province of Iloilo has the largest number of formal and informal borrowers (Table 12) and its banks provide the largest loan sizes (Table 13). The average bank loan ranges from ₱2,275.00 (Misamis Oriental) to ₱7,145.00 (Iloilo). The average informal loans, on the other hand, ranges from ₱113.00 (Negros Oriental) to ₱6,214.00 (Batangas) per household (Table

TABLE 11: AVERAGE NOMINAL AND EFFECTIVE INTEREST RATES ON LOANS FACED BY SAMPLE AGRICULTURAL HOUSEHOLDS, ALL AREAS
As of December 1986

	Nominal Rates (%)	Effective Rates (%)
Formal Loans	21.0	21.0
Informal Loans	39.9	42.9

* Due to time constraints, the opportunity costs of time was excluded from the definition of effective interest rates. An attempt to include the variable in the definition is being undertaken and shall be reported in a forthcoming paper.

12: DISTRIBUTION OF AGRICULTURAL HOUSEHOLDS REPORTING CASH LOANS IN 1986, BY SOURCE OF LOANS

Province	Number of Observations	Number Reporting Loans			Proportion to Total of	
		Formal	Informal	Total	Formal (%)	Informal (%)
Batangas	54	2	18	20	10.0	90.0
Camarines Sur	89	8	40	48	16.7	83.3
Iloilo	85	16	58	74	21.6	78.4
Misamis Oriental	79	4	25	29	13.8	86.2
Negros Oriental	76	3	14	17	17.7	82.3
Pangasinan	89	10	28	38	26.3	73.7
ALL AREAS	472	43	183	226	19.0	81.0

13). In contrast, Batangas' informal lenders grant the largest loans. Being the most economically progressive among the six provinces surveyed, Iloilo and Batangas offer a wide range of productive activities and consumer goods which may account for the larger loans that households require in these areas.

10. Full owners and amortizing owners of land borrow larger amounts than leaseholders and sharetenants (Table 14). Moreover, full owners derive larger loans from formal sources while amortizing owners prefer informal sources. This indicates that landowners exploit their land to the full and finance their production inputs, particularly intermediate farm assets through credit. On the other hand, the large loan amounts to landowners reflect the banks' bias towards collateralized loans since the fully-owned farmlands serve as acceptable collaterals.

B. On the variables that influence the demand for funds.

The results of the empirical analysis of the demand for funds are presented in this section. The discussion focusses on three major equations used in the econometric model: the demand for funds; the interest rate in the formal sector; and the interest rate in the informal sector.

Two alternative regressions were done in the analysis. The first set, Model 1, utilizes predicted values on interest rates for only the non-reporting sample and different variables are used to explain interest rates in the formal and informal sectors. The second model is a variant of the first, includes

Table 13: TOTAL AND AVERAGE AMOUNT OF LOANS RECEIVED BY AGRICULTURAL HOUSEHOLDS, BY SOURCE, BY PROVINCE (In Pesos)

Province	Loan Source								
	Formal			Informal			All Sources		
	No. Reporting	Total	Average	No. Reporting	Total	Average	No. Reporting	Total	Average
Batangas	2	6,200	3,100	18	111,850	6,214	20	118,050	5,902
Camarines Sur	8	44,180	5,523	40	90,207	2,255	48	134,387	2,800
Iloilo	16	114,315	7,145	58	243,420	4,197	74	357,735	4,834
Misamis Oriental	4	9,100	2,275	25	24,610	984	29	33,710	1,162
Negros Oriental	3	13,150	4,383	14	1,580	113	17	14,730	867
Pangasinan	10	66,448	6,645	28	108,760	3,884	38	175,208	4,610
ALL AREAS	43	253,393	5,983	183	580,427	3,172	226	833,820	3,690

TABLE 14: TOTAL AND AVERAGE AMOUNT OF LOANS RECEIVED BY AGRICULTURAL HOUSEHOLDS, BY TENURE GROUP
(In Pesos)

Tenure Status	Formal Loans			Informal Loans		
	No. Reporting	Total	Average	No. Reporting	Total	Average
Owner	28	209,520	7,483	60	160,370	2,673
Amortizing Owner	2	3,535	1,768	9	64,200	7,133
Part Owner	0	-	-	13	11,200	862
Leaseholder	7	24,455	3,494	36	131,220	3,645
Share tenant	4	13,283	3,320	49	171,930	3,509
Others	2	2,600	1,300	16	41,507	2,594
ALL TYPES	43	253,393	5,893	183	580,427	3,172

borrowing in the interest rate equation, and tenure as explanatory variable in the demand for fund. This model uses the same variables in both formal and informal interest rate equations. The discussion in this section is limited to the variables with statistical significance.

B.1 The determinants of the demand for funds.

In the study, most of the variables, to wit: total land owned, area cultivated, area irrigated, education, age and dependency ratio yielded results consistent with a priori expectations (Table 15). Their effects on the demand for funds were however statistically insignificant.

1. Membership in farm organization and loan purpose emerged as significant variables in the demand for funds equation. The signs of the parameter coefficients of both variables were negative. The results of membership in a farm organization is quite surprising. It reduced the demand for funds. It was hypothesized in the study that a farm organization may be an appropriate venue for technology transfer, information dissemination and easier access to credit which may be reflected by an increase in the household's demand for funds. The results, however, show otherwise. Detailed information for this variable is lacking from the data set, but it is suspected that the respondents who reported membership in farm organizations were able to internally finance their production needs.

TABLE 15: THE DEMAND FOR FUNDS OF FARM HOUSEHOLDS

	Model 1		Model 2	
	Coefficient	T values	Coefficient	T values
Intercept	-20490.2	-1.78	-21628.1	-1.77
Wage rate	-13.5	-0.07	75.0	0.59
Cultivated area	-18763.0	-1.04		
Irrigated area	-818.13	-0.26		
Ratio of irrig. to total			9258.4	1.21
Total land owned	18499.9	1.03	384.4	0.73
Effective interest rate on formal loans	719.4	4.3 *	550.8	4.7 *
Effective interest rate on informal loans	395.0	2.85 *	279.1	4.1 *
Membership in farm organization	-708.7	-2.54 *	-267.8	-1.20
Loan Purpose	-13960.6	-2.34 *	-9514.3	-1.96 *
Tenure	-3644.6	-0.91	-2466.8	0.67
Education of HH	2729.9	1.48	589.4	0.37
Age^2	2.0	1.11	0.46	0.28
Dependency ratio	4761.0	0.31	3244.9	0.25
R^2	0.80		0.84	
F ratio	4.95		6.64	

Model 1 uses predicted values on interest rates for only the non reporting sample, dependent variables in REF and REI are not the same.

Model 2 is a variant of model 1 but the dependent variables in REF and REI are the same, cultivated area and irrigated area were excluded in the demand equation and replaced with % of irrigated to total.

* significant variables

2. Loans intended for production tend to reduce the demand for funds. The greater risks attached to production loans may be responsible for the reduction in the demand for funds with respect to loan purpose. At first glance, the higher interest rates attached to production loans compared to other loan types (because of the relative riskiness and transactions cost that accompany production loans) may be suspected to cause the decline in the demand for funds. However, since the interest rate is also included in the equation and is therefore controlled for, the observed effect may be just reflecting a supply-side effect which is specified in the interest rate equation and discussed in the next subsection.

3. Interest rates, the most important variable in this study yielded surprising results. This variable was found to influence the demand for funds positively. It should be emphasized, however, that most of previous studies which established a negative relationship between the quantity of credit and its price used nominal interest rates in their analysis. The use of effective interest rate in this study may account for the surprising, positive result. Although the negative effect of nominal interest rates on external loans appears to be conclusive, the results from this study suggest that the impacts of effective interest rates on the demand for funds has yet to be established.

The positive results may reflect the larger effect of internal financing (i.e. combined effect of EL, FA, and CD) vis-à-vis external financing on borrowings (B). An increase in the

effective interest rate may directly reduce EB. However, it also increases the opportunity costs of lending, deposit-making, or purchasing consumer durables. Therefore the chances that the farm-household will lend to others, make deposits or buy consumer durables are lower because these activities are relatively more expensive. This is translated through reductions in EL, FA and CD by the household and increased internal financing of its activities. The combined reductions in EL, FA and CD may be larger than the expected decrease in EB resulting from the increase in effective interest rate. The combined effect is represented as increases in B (since the signs of the internal sources of financing are all negative).

The same results may reflect, on the other hand, the effect of the transactions cost component of interest rate on the size of the loan. Loan sizes may be increased to cover not only the actual credit needs of the household but the anticipated transactions cost as well.

Furthermore, the formulation for the econometric model may require a more sophisticated specification rather than the linear relationship used. Further analysis is thus strongly suggested.

B.2 The determinants of formal and informal interest rates.

The interest rate equations provide a number of interesting insights into the supply of loans in both the formal and informal credit markets (Table 16).

Table 16: INTEREST RATE FOR FORMAL & INFORMAL LOANS OF FARM HOUSEHOLDS

	Formal				Informal			
	Model 1		Model 2		Model 1		Model 2	
	Coefficient	T values	Coefficient	T values	Coefficient	T values	Coefficient	T values
Intercept	16.61	2.34	14.32	2.0	-8.2	-0.65	10.31	1.06
Loan amount	0.0005	0.83	0.0002	0.41	0.0009	1.65	-0.002	-1.29
Loan purpose	18.52	2.43 *	14.12	1.76	-	-	10.80	1.01
Prev. patronage	26.1	2.84 *	22.3	2.47 *	-	-	-29.8	-2.53 *
Education of HH	-5.69	-2.15 *	-3.78	-1.18	-	-	3.3	0.86
Total land owned	-0.06	-0.06	-0.12	-0.15	-	-	0.39	0.34
Distance of bank	0.37	0.45	-0.14	-0.16	1.24	1.25	-0.36	-0.31
Borrowings	-	-	0.0007	2.22 *	-	-	0.025	3.70 *
Tenure	-	-	-3.13	-0.40	-	-	10.2	0.96
Wage rate	-	-	-	-	0.85	3.71 *	-	
Irrigated area	-	-	-	-	16.18	3.74 *	-	
Expectation of better Y	-	-	-	-	-3.98	-0.37	-	
Age^2	-	-	-	-	-0.005	-1.33	-	
R^2	0.58		0.68		0.66		0.69	
F ratio	4.92		4.51		6.99		4.81	

Model 1 uses predicted values on interest rates for only the non reporting sample, dependent variables in REF and REI are not the same.

Model 2 is a variant of model 1 but the dependent variables in REF and REI are the same, cultivated area and irrigated area were excluded in the demand equation and replaced with % of irrigated to total.

* significant variables

1. The effect of loan purpose (which dummies production loans) on the interest rates of both credit markets is uniformly positive. However, it is not significant for the informal market. The positive effect of loan purpose is indicating that lenders may attach high interest rates to production loans for two reasons: one, the seasonality of production makes loans for this activity very risky; and second, production loans entail greater transactions costs for the lender and the borrower. Transactions cost for production to the lender increase because of high administration costs. Loan processing requires substantial paperwork and extensive investigation to establish the creditworthiness of the borrower. Once the loan is granted, the bank has to frequently monitor the loans through regular visits.

The results further indicate that loan purpose is used as a screening device only by the formal lender. Interactions between informal lenders and borrowers are more direct and personal, hence, information on the purpose of the loan may not be necessary to assess the riskiness of the loan operation. In informal lending, the variability of total income of the farm family matters more than loan purpose. Informal lenders are therefore likely to provide loans regardless of the purpose to which these loans are applied. Furthermore, loan purpose may not be a crucial factor in informal lending because credit and output marketing tie-ups normally exist in these informal credit arrangements.

2. The results of previous bank patronage suggest that former bank patrons end up getting higher-priced loans from the formal market and interest rate discounts from the informal market. The effect of previous patronage of a bank on formal interest rate is positive and significant. The same variable influences informal interest rates significantly but the relationship is negative. A good screening procedure on good and bad credit risks among informal lenders is also implied in these results. Based on the observation that Filipino borrowers tend to repay informal loans first compared to formal loans, "bad borrowers" (because of loan defaults) to formal lenders may still maintain their good credit standing with informal lenders. It is highly probable that the high interest rates offered to previous bank patrons for their current formal loans are indicative of a penalty for their loan default records. Conversely, interest rate discounts provided by informal lenders are "awards" to these borrowers for their good repayment record in the informal credit market.

3. Education of the household head has a negative impact on formal interest rates and a positive and insignificant impact on informal rates. The former result suggests that lower rates are attached to loans of better-educated borrowers than the less educated clients. This result confirms the conjecture that education is used as an indicator of managerial capability of the borrower by formal lenders. Among informal lenders, however, education of the borrower does not appear to matter. Personal contacts between the informal lender and the borrower suffice.

4. The amount of external borrowings increases the interest rate in the formal market and reduces the rate in the informal market. However, the associations are weak The effects confirm results of previous studies that report increases in interest rates as the size of formal loan increases.

5. The effect of wealth, proxied by total land owned, is weak. However, the signs of the coefficient imply that wealth reduces interest rates only on loans provided by formal creditors. In the informal market, wealth influences the interest rate in the opposite direction. Because these variables lack statistical significance in both models, the exact relationship could not be fully established.

6. The effect of borrowing (using total funds concept) on both the formal and informal interest rates is positive and statistically significant. The same result is also obtained in the demand for funds equation. The results are attributed to the transactions cost component of the interest rate and the increased self finance (i.e., reductions in EL, FA, CD) associated with a smaller EB (the magnitude of which is lesser than the combined reductions in EL, FA, and CD) which results from the higher effective rate.

7. Only 58 percent and 68 percent of the variations in formal interest rate are explained by the two models, respectively, while in the informal market, 67 percent of the variations on effective interest rates can be explained by the model.

V. CONCLUSIONS AND POLICY IMPLICATIONS

By redefining the concept of credit demand into a comprehensive concept that encompasses the household's full range of activities, the savings, investment, and borrowings of agricultural households are linked to their total demand for funds.

The empirical analysis specifies a simultaneous equations model comprised by the interest rate (price determination) equations (supply side) and the demand for funds equation (demand side). The descriptive analysis of the assets structure of the household showed a general preference for fixed physical assets and consumer durables. Households held a minor proportion of their portfolios in liquid financial assets. Where financial assets exist, these are mostly in the form of bank savings.

Borrowers are about four times more numerous than savers, but unlike the case of depositors who preferred mostly banks as depository institutions, borrowers used primarily informal lenders when internal funds do not sufficiently finance their production activities.

The explanatory variables with significant effects on the demand for funds and the interest rate are summarized in Table 17. The conclusions are discussed with reference to this table.

Table 17: EXPLANATORY VARIABLES WITH SIGNIFICANT EFFECTS ON THE DEMAND FOR FUNDS AND THE INTEREST RATES.

Dependent Variable	Variables w/ Reducing Effect	Variables w/ Increasing Effect
Demand For Funds	membership in farm organization (ORG)	effective interest rate on formal loans (RE_f)
	loan purpose (PURPOSE)	effective interest rate on informal loans (RE_i)
Formal Interest Rate	education of the household head (EDUC)	loan purpose (PURPOSE)
		previous patronage with a bank (PP)
Informal Interest Rate	previous patronage of a bank (PP)	level of borrowings
		wage rate (WAGE)
		irrigated area (IRR)

The following conclusions and policy implications can be derived from the empirical analysis: First, on the demand side, membership in farm organizations emerged as one of the significant variables that reduce the demand for funds. This suggests the ability of farm organizations to finance the needs of its farmer-members and the relative efficiency of farm organizations in providing both financing and marketing services to its members. Thus, the present thrust of the Philippine government towards strengthening existing viable cooperatives

through access to financing deserves positive attention.[3/]

Second, the significant positive effect of effective interest rates reflects the interplay of external borrowing and internal financing in the total demand for funds by the farm-household. It also validates the importance of the total funds approach in the analysis of farm-households. The total funds approach provides the household with: (a) mobility in the source and use of its funds, and (b) flexibility in the management of its funds flow. In discussing the first, it is clear that mobility of funds allows the household to monetize its needs quickly. When effective interest rates increase and farm operations are threatened by the low levels of external financing resulting from the increase in interest rate, farm-households can supplement their inadequate funds with either EL, FA or CD. Hence, the farm family can maintain relative stability in production, income and consumption despite effects of unfavorable weather conditions or price fluctuations. It can even anticipate risk and adjust cash flows, accordingly, so as to maintain the same levels of production and consumption.

The need to promote flexibility in funds flow management is also suggested in the results since the farm household is provided with several options which it can tap in financing its

---

3/ The present government policy of providing cooperatives access to the Comprehensive Agricultural Loan Fund (CALF) via the one-third-guarantee, one-third-equity and one-third-bank financing scheme is an example of this positive attention.

activities. This flexibility enables rational choices on the type and combination of inputs that would allow farm families to maximize profits. Farmers, being rational decision makers, are aware of the returns from additional input use and may seek the cheapest means of financing their farm operations even if these would mean tapping financial assets or converting intermediate assets into liquid form.

Third, the variables incorporating loan purpose, education, previous bank patronage and borrowings were found to be the most important variables determining the effective interest rates on loans to agricultural households. Loan purpose and education are used as indicators by formal lenders in screening their clientele. Wealth is also a screening device among formal lenders but the effect of this variable is very weak. These variables are not, however, very crucial in informal lending because transactions are more personal and marketing tie-ups normally accompany informal lending arrangements. Furthermore, the significant effect of borrowings on effective interest rates validated the relevance of the simultaneous approach in analyzing farm household decisions.

Lastly, the study supports the interdependent approach in analyzing farm households' demand for funds. The approach is important particularly because most, if not all, of the screening devices used by formal lenders in choosing good credit risks from bad credit risks are lacking in Philippine farm households and secondly, because crop production in the country is under the mercy of unpredictable weather and price

fluctuations. Therefore, the approach on rural finance by policymakers should be comprehensive and not limited to "agricultural credit programs". Policies should foster and help flexibility in funds management at the farm level rather than impose constraints to it.

Flexibility in flow of funds breeds rational choices of inputs and increased profits. This cycle self-perpetuates and spurs economic development because the increase in income among farm households would generate more surplus funds which, when saved, may be tapped and mobilized by the financial system. A rich and robust financial system implies more investments and an efficient delivery of more consumer goods and services, triggering welfare increases and development.

The policies of the government should therefore be geared towards the enhancement of funds flows. Policies and programs which increase the cash flow of the households, such as risk-reduction programs, the provision of off-farm income and employment opportunities and other measures that will increase the cash holdings of farm families and increase the financial flows in the community are called for. However, caution must be taken on the last measure (i.e., increased financial flows). Because of the freedom of movement of funds, providing an adequate supply of credit to farm households may only substitute for the personal or internal funds available to the household. Though such may be favorable from the point of view of social welfare, it may do more harm than good to the market because

potential inefficiencies in the allocation of funds are tolerated.

Furthermore, in an environment characterized by fragmented markets such as those prevalent in developing countries, funds flow may be enhanced through measures that reduce fragmentation. These measures may come in the form of policies that allow freedom of movement (i.e., free market forces), lower transactions costs and minimum market constraints (financial liberalization). Moreover, approaching rural finance "comprehensively" implies that priority must be given to the efficient handling of goods and services, particularly farm support services like irrigation, infrastructure, etc. rather than merely providing access to credit. This can be achieved by strengthening government institutions which provide these services.

BIBLIOGRAPHY

Agricultural Credit Policy Council. RSM Research Program Design. ACPC Agenda Material, February 1988.

Araujo, P. F. De. "An Economic Study of Factors Affecting the Demand for Agricultural Credit at the Farm Level." Unpublished Master's Thesis, Ohio State University, 1967.

Cañete, C. C. "The Income Level and Income Distribution Impacts of Masagana 99 Program in Central Luzon, Philippines." Unpublished Ph. D. dissertation, Purdue University, 1978.

Cordova, V., P. Masicat and R. W. Herdt. "Use of Institutional Farm Credit in Three Locations of the Philippines: 1975-1977." Unpublished paper, International Rice Research Institute, Laguna, Philippines, 1978.

Clar De Jesus, Raquel B. "Savings and Investment Decisions of Farm-Households: Their Implications on the Demand For Funds." Unpublished M.S. Thesis. University of the Philippines at Los Baños, College, Laguna, Philippines, 1988.

David, C. C. and R. L. Meyer. "A Review of Empirical Studies on Demand for Agricultural Credit." Unpublished paper presented at the Second International Conference on Rural Finance Research Issues, Calgary, Canada, August 29-Sept. 1, 1979. ESO #603, Department of Agricultural Economics and Rural Sociology, OSU, 1979.

Desai, B. M. "The Relationship of Consumption and Production in Changing Agriculture: A Study in Surat District, India." Occasional Paper No. 80, Department of Agricultural Economics, Cornell University, 1975.

Evangelista, F. U. "Short Term Agricultural Credit: An Empirical Validation of Its Roles in Philippine Farm Households." Unpublished Ph. D. Dissertation. College of Business Administration, University of the Philippines, 1980.

Fischer I. The Theory of Interest. MacMillan Co.: New York, 1930.

Herdt, R. W. and L. A. Gonzales. Reaction to "A Study on the Benefits and Costs of Masagana 99 Program." Paper presented at the Fifth National Agricultural Credit Workshop, Zamboanga City, March 1981.

Hesser, L. F. and E. Schuh. The Demand for Agricultural Mortgage Credit. Journal of Farm Economics Vol. 44 No. 5 (1962).

Hirschleifer, J. "On the Theory of Optional Investment Decision." Journal of Political Economy Vol. 66 No.4 (1958).

Iqbal, F. A. "The Demand and Supply of Funds Among Agricultural Households." Unpublished Ph. D. dissertation, Yale University, 1980.

Ladman, J. R. "An Expanded View of the Demand For Short Term Capital." Canadian Journal of Agricultural Economics 18 (1972-1974).

Link, D. A. "Determinants of Net Changes in Farm Real Estate Debt." Agricultural Economics Research Vol. 24 (January 1972).

Long, M. F. "Why Peasant Farmers Borrow." American Journal of Agricultural Economics Vol. 50 No. 4 (November 1968).

Nyanin, O. O. "Credit and Small Farmers in South Korea, 1968-70." Unpublished M. S. Thesis, Ohio State University, 1978.

Pani, P. K. "Cultivator's Demand For Credit: A Cross Section Analysis." International Economic Review Vol. 7 No. 2 (1966).

Pindyk, R. S. and D. L. Rubinfeld. Econometric Models and Economic Forecasts. McGraw Hill International Book Company, 1981.

Pollard, S. "Estimation of the Demand for Credit Among Small Farmers in St. Elizabeth, Jamaica: A Production Function Approach." Unpublished M. S. Thesis, Ohio State University, 1980.

Quintana, V. U. "A Study on the Demand for Medium and Long Term Agricultural Credit for Small Farmers in 20 Rural Banks." The Philippine Agriculturist Vol. XLIX No. 8 (1966).

Rosegrant, M. "Choice of Technology, Productions and Income for Philippine Rice Farmers: Agricultural Policy and Farmers Decision Making, 1978." Unpublished Ph. D. dissertation. University of Michigan, USA, 1978.

Salundaguit, L. T. "Socio-economic Analysis of Credit Requirements for Agrarian Reform Beneficiaries in Leyte Province." Unpublished M. S. Thesis. UP Los Baños. College, Laguna, Philippines, 1980.

Singh, I., Squire, L. and J. Strauss (eds.) Agricultural Household Models: Extensions, Applications and Policy. John Hopkins University Press: Baltimore, U.S.A., 1986.

Technical Board for Agricultural Credit. "The Farm and The Household: The Microworld of the Farmer." Presidential Committee on Agricultural Credit, Manila, 1981.

_____ and UP Business Research Foundation (TBAC-UPBRF). "Research Project on the Rural Financial Markets in the Philippines," 1979.

Vergara, S. "The Demand For Medium and Long Term Agricultural Credit in the Philippines." Unpublished M. S. Thesis, UP Los Baños, College, Laguna, Philippines, 1973.

Von Pischke, J. D. and D. Adams. "Fungibility and the Design and Evaluation of Agricultural Credit Projects" in Rural Financial Markets in Developing Countries by J. D. Von Pischke, D. W. Adams and G. Donald (eds.) John Hopkins University Press: Baltimore, Maryland USA, 1983.

Young, R. "Institutional Credit in the Rural Sector: An Explanatory Analysis of Demand and Supply." Canadian Journal of Agricultural Economics, 1973.

PIDS WORKING PAPERS

W.P. No. 88-01 A General Assessment of Foreign Trade Barriers to Philippine Exports. *Erlinda M. Medalla* (₱23.00)

W.P. No. 88-02 Economics of Upland Resource Depletion: Shifting Cultivation in the Philippines. *Marian S. delos Angeles* (₱23.00)

W.P. No. 88-03 The Size, Financing and Impact of the Public Sector Deficit, 1975-1984. *Rosario G. Manasan* (₱17.00)

W.P. No. 88-04 An Analysis of the Role of Pawnshops in the Financial System. *Mario B. Lamberte* (₱14.00)

W.P. No. 88-05 The Financial Markets in Low-Income Urban Communities: The Case of Sapang Palay. *Mario B. Lamberte* (₱26.00)

W.P. No. 88-06 Informal Savings and Credit Institutions in the Urban Areas: The Case of Cooperative Credit Unions. *Mario B. Lamberte* and *Joven Z. Balbosa* (₱40.00)

W.P. No. 88-07 The Manufacturing Sector and the Informal Credit Markets: The Case of Trade Credits in the Footwear Industry. *Mario B. Lamberte* and *Anita Abad Jose* (₱35.00)

W.P. No. 88-08 Japan's Aid to ASEAN: Present Realities and Future Challenges. *Filologo Pante, Jr.* (₱15.00)

W.P. No. 88-09 The Effect of an Exchange Rate Devaluation on a Small Open Economy with an External Debt Overhang. *Josef T. Yap* (₱9.00)

W.P. No. 88-10 Financing the Budget Deficit in a Small Open Economy: The Case of the Philippines, 1981-86. *Ma. Socorro S. Gochoco* (₱26.00)

W.P. No. 88-11 The On-site and Downstream Costs of Soil Erosion. *Wilfrido D. Cruz/ Herminia A. Francisco/ Zenaida Tapawan-Conway* (₱61.00)

W.P. No. 88-12 A Review of Policies Impinging on the Informal Credit Markets. *Meliza H. Agabin* (₱30.00)

W.P. No. 88-13 Flexible Functional Form Estimates of Philippine Demand Elasticities for Nutrition Policy Simulation. *Agnes Quisumbing* (₱50.00)

W.P. No. 88-14 Political Economy of Credit Availability and Financial Liberalization: Notes on the Philippine Experience. *V. Bruce J. Tolentino* (₱15.00)

W.P. No. 88-15 Rural Deposit Mobilization in the Philippines, 1977-1986. *Rhenee Blanco* and *Richard Meyer* (₱17.00)

W.P. No. 88-16 Comparative Management Structure and Institutional Performance in Rural Banking Institutions. *Cesar G. Saldaña* (₱30.00)

W.P. No. 88-17 Borrower Transaction Costs and Credit Rationing in Rural Financial Markets: The Philippine, Case. *Virginia G. Abiad, Carlos E. Cuevas* and *Douglas H. Graham.* (₱27.00)

W.P. No. 88-18 Transactions Costs and the Viability of Rural Financial Intermediaries. *Teodoro S. Untalan* and *Carlos E. Cuevas* (₱24.00)

W.P. No. 88-19 Credit Rationing Under a Deregulated Financial System. *Ma.* Lucila *A. Lapar* and *Douglas H. Graham* (₱13.00)

W.P. No. 88-20 The Analysis of Savings Behaviour: The Case of Rural Households in the Philippines. *Jocelyn Alma Rodriguez* and *Richard L. Meyer* (₱23.00)

W.P. No. 88-21 The Demand for Funds Among Agricultural Households in the Philippines. *Raquel B. Clar de Jesus* and *Carlos E. Cuevas* (₱28.00)

W.P. No. 88-22 Funds Transfer Operation: Boon or Bane to the Viability of Rural Financial Intermediaries. *Julius P. Relampagos* and *Mario B. Lamberte* (₱17.00)

W.P. No. 88-25 The Urban Informal Credit Markets: An Integrative Report. *Mario B. Lamberte* (₱19.00)

W.P. No. 88-26 The 1989 Program of Government Expenditures in Perspective. *Rosario G. Manasan* (₱17.00)

W.P. No. 88-27 A Review of Investment Incentives in ASEAN Countries. *Rosario G. Manasan* (₱17.00)

W.P. No. 88-28 Science and Technology and Economic Development. *Mario B. Lamberte* (₱13.00)

W.P. No. 88-29 The Impact of Trade, Trade Policy and External Shocks on the Philippine Economy Based on the PIDS-NEDA Macroeconometric Model. *Winnie M. Constantino* and *Josef T. Yap* (₱13.00)

Copies may be obtained at the:

RESEARCH INFORMATION STAFF (RIS)
PHILIPPINE INSTITUTE FOR DEVELOPMENT STUDIES
ROOM 307, NEDA SA MAKATI BUILDING
106 AMORSOLO STREET, LEGASPI VILLAGE
MAKATI 1200, METRO MANILA, PHILIPPINES
TELS: 86-57-05 / 88-40-59