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**MARKET SEGMENTATION
IN THE PHILIPPINE INFORMAL CREDIT MARKETS**

by

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Abstract

The paper explains market segmentation that occurs in the Philippine informal credit markets through the matching of borrowers and lenders by their occupational specializations. The regression results support a predictable pattern of matching farmer lenders with borrowers specialized in non-farm activities and trader lenders with borrowers specialized in farming.

MARKET SEGMENTATION IN THE PHILIPPINE INFORMAL CREDIT MARKETS*

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The informal credit market dominated by trader and farmer lenders became the primary source of rural credit in rice growing areas of the Philippines in the 1980s (Bautista).¹ This market is characterized by different types of informal lenders offering differentiated credit contracts usually involving linkages of credit with labor, land and product markets (Adams and Sandoval; Esguerra and Meyer; Floro and Yotopoulos; and Geron).

The presence of many different credit contracts from various types of lenders suggests a competitive credit market. It has been observed, however, that trader lenders who specialize in trading tend to offer loan contracts to large and asset rich farmers, while farmer lenders who specialize in farming tend to lend to small and asset poor farmers and landless laborers (Esguerra and Meyer; Floro and Yotopoulos). These observed patterns suggest a credit market in which specialized borrowers and lenders are matched through

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¹ The formal credit markets were active during the seventies but there was a severe contraction in formal loans due to the insolvency of many rural banks in the eighties (Blanco and Meyer). Consequently, the informal market has reemerged as an important source of rural credit.

differentiated loan contracts designed to internalize transaction costs based on the occupational specializations of the contracting parties rather than a market characterized by exploitative informal lenders. Indeed, the two way matching of borrowers and lenders by their occupational specialization has two effects: (i) it reduces information problems inherent in credit markets and enhances contract enforcement mechanisms for lenders, and (ii) it increases the quality of services received by specialized borrowers. On the one hand, the risk and transaction costs associated with the contracts that suit the occupational specialization of utility maximizing lenders influence the type of borrowers preferred by them and hence the type of contracts that are accessible to borrowers. On the other hand, the qualitative attributes of the contracts and the costs and risks involved in negotiating these contracts that suit the occupational specialization of utility maximizing borrowers determine their contract choice. Consequently, a one-to-one matching often occurs between specialized borrowers and lenders resulting in a segmented credit market.²

This paper explains the determinants that match lenders and borrowers in the Philippine rural informal credit markets. These determinants will (i) help predict contract access and choice given lender and borrower characteristics, and (ii) provide evidence of market segmentation that may occur due to the occupational specializations of borrowers and lenders. The informal credit market is comprised of various types of lenders including traders, farmers, moneylenders, input dealers, rice millers, retail store owners, and friends

² A conflict in interests among the contracting parties could result in a no matching situation. While there is a possibility of some borrower households to have a singleton or an empty set of accessible contracts for contract choice, there is usually more than one contract and lender available to any borrower. See Nagarajan for a detailed theoretical model.

and relatives. This paper concentrates on rice traders and farmer lenders because they are the primary sources of credit in rice growing villages. In the following sections, a conceptual model is developed to explain the matching of borrowers with lenders in informal credit markets and is tested using data from rice growing areas in the Philippines. The empirical analysis is based on cross sectional data obtained from a survey conducted by the International Rice Research Institute during the period 1985-86 and 1989.³

Description of the Sample

The sample includes 127 randomly selected farm households and 29 lower income landless households that operated no farms. These households resided in two villages located in the major rice growing province of Nueva Ecija in Central Luzon. Table 1 presents a profile of the sample households. The majority of farms are irrigated by gravity irrigation systems and grow two rice crops a year. Furthermore, the farms are small and 83 percent of the land is under land reform beneficiary status.⁴ Before land reform, the farms were large rice haciendas and the majority of farmers were share tenants. While land use and the importance of farm income indicate that the occupational specialization of farm

³ The primary data on farm production, household income and demographic characteristics of the sample households were collected in 1985-86 and in 1988-89, while the data on the credit market transactions were collected in 1989. We appreciate the assistance of IRRI in data collection.

⁴ The land under beneficiary status refers to land under Certificate of Land Transfer (CLT) and Leasehold (LH) tenurial status. Under the land reform of rice and corn lands in 1972, share tenants were supposed to be converted to Leaseholders (LH) by Operation Leasehold when the landlord owned less than 7 ha. of land, or to Certificate of Land Transfer (CLT) holders under Operation Land Transfer when the landlord owned more than 7 ha. of land (Hayami, Quisumbing and Adriano).

households is farming, the observation of more than three non-farm employment sources per landless household suggests their specialization is non-farm activities.

Of the 156 households interviewed, 529 loan contracts were reported in three seasons from 131 different traders and farmer lenders⁵ (Table 2). In general, trader lenders specialize in agricultural trading activities while farmer lenders are large, rich farmers who specialize in farming. The majority of the loans reported by the households were tied with product, labor and land markets. The frequency of linking credit with product markets was higher with traders than with farmer lenders. Although the majority of loans from farmers were also linked with farm products, land and labor links were also used to secure these loans. A typical loan contract from a trader lender required borrowers to repay with farm products (usually rice), and a stipulation 'tampa' additionally requiring them to sell their entire marketable surplus to the lender.⁶ On the other hand, since farmer lenders were directly involved in farming that requires land and labor, they accepted loan repayment in kind but linked credit to land and labor markets. Therefore, farmer lenders did not insist on 'tampa'. Land linked contracts involved the pawning of cultivation rights in which the borrower (pawner) transfers cultivation rights to the lender (pawnee) for a loan and

⁵ The data collected from three seasons during 1989-90 showed that there were a total of 191 different lenders (179 for FHH and 22 for LHH) under 7 different lender types with 774 total loan contracts (688 for FHH and 86 for LHH) during the reference period (double counting of lenders due to multiple seasons was avoided). However, this analysis is restricted to the 2 main lender types of traders and farmers which represented 68 percent of the total loans reported.

⁶ While the condition of 'tampa' is not explicitly stated in the majority of the product linked contracts from trader lenders, it is implicitly assumed by lenders and borrowers.

redeems the rights upon loan repayment. In labor linked contracts, borrowers were required to provide lenders with permanent or temporary labor services.

There were many farmer lender loans, however, with no factor market links, but with an implicit promise of reciprocity. This phenomena is explained by the large percentage of farmer lender contracts with friends, relatives and neighbors, while the majority of trader loans were with business partners and borrowers with no familial ties. In the absence of a formalized contract, long term familial and business relations guarantee a well established informational base that enhances the lender's operational efficiency through effective loan screening and contract enforcement. The frequency of loans obtained for production purposes was higher from traders than from farmer lenders. The majority of trader lenders rolled over defaulted loans with a penalty interest, while farmer lenders pawned in land from delinquent borrowers. The average loan size was higher from traders than farmer lenders, but the average seasonal interest rates were similar across lender types.

Matching of Borrowers and Lenders

The informal credit market is characterized by several specialized lenders providing loans to specific sets of borrowers as a means to facilitate their primary economic activity. The collateral requirements and information gathering mechanisms used by the lenders enhance contract enforcement and promote their primary occupations. It can be postulated that trader lenders tend to prefer farmers who have the capacity and ability to produce a marketable surplus that is large enough to help the trader lenders to maximize their returns. Farmer lenders, on the other hand, prefer farmers with secure land tenure status because cultivation rights may be transferred to them in the event of nonrepayment. Farmer lenders

also prefer lending to households with efficient family labor that is offered as collateral in labor linked contracts. The supply of loans from trader and farmer lenders also depends upon the quality of information about borrowers that is accessible to lenders through long term business and familial relationships. The lenders have different technological abilities to acquire and utilize information. Although the information may not be complete, the cost of obtaining information in the informal credit market is low compared to the formal credit market due to the physical proximity of the participants (Stiglitz).⁷

The borrowers tend to specialize either in farming or in non-farm activities. If each type of lender is assumed to offer only one type of loan contract, then a utility maximizing borrower with access to multiple contracts will choose a contract that is perceived to be advantageous over all others. For instance, assume that a borrower has access to non-exclusive product linked contracts from a trader lender and a farmer lender, and that there is no loan size rationing. The borrower can choose contracts from either the farmer lender or the trader lender to satisfy his loan demand. While the majority of farmer lenders charge lower interest rates than trader lenders, the trader lenders offer marketing services in addition to credit. These services are especially important for farmers who specialize in farming and have a large marketable surplus. Therefore, a borrower specialized in intensive farming and facing an imperfect product market will prefer a trader lender to a farmer

⁷ Familial and business relations that exist in related factor and product market transactions facilitate the flow of information used by lenders to evaluate the borrower's creditworthiness and repayment type. While familial relationships and proximity reduce the endogenous risk of default due to borrower character, long term business relationships help a lender to form expectations about a borrower's ability to manage exogenous risks due to random shocks.

lender if product market access is guaranteed. Furthermore, in the absence of contingent markets, a risk averse borrower in an uncertain production environment will typically prefer a trader lender loan which has a built-in risk sharing mechanism (in terms of loan rollover to the next season) to a farmer lender loan which may involve the loss of cultivation rights in the event of loan default.⁸ In other words, there will be a demand for risk-sharing contractual arrangements that act as insurance in the absence of contingent markets. Conversely, a borrower primarily specializing in non-farm activities will prefer a farmer lender to a trader lender contract because of his comparative advantage in offering labor and land cultivation rights as collateral in exchange for loans.⁹

While the explicit cost of a contract is the primary criteria for a borrower choosing from among the accessible set of contracts, the lender's flexibility in providing loans for borrower specific purposes also influences contract choice. While the tampa stipulation by trader lenders allows little flexibility to divert loans to consumption purposes, farmer lender loans can be used for consumption provided the borrowers implicitly tie loans to land or labor services. Whereas loans are often fungible, the close monitoring by lenders or peers and penalties for default reduce fungibility in informal credit markets (Stiglitz).

⁸ While borrowers generally do not lose their cultivation rights to trader lenders, they suffer a loss in reputation and access to future loans so they try to avoid default.

⁹ However, the possibility cannot be ruled out that a borrower prefers a combination of services provided by traders and farmers so that he borrows from both to satisfy the demand for loans and insurance. This happens when farmer lenders offer flexible emergency credit and maintain an open credit line for their clientele which tends to serve as an insurance substitute.

For these reasons, the matching of lenders and borrowers can be explained by (i) the borrower's ability to offer collateral that is valued by lenders resulting in differential access to specialized lenders, and (ii) the lender's ability to provide borrower specific services leading to the borrower's contract choice from among the accessible set of contracts. Consequently, a predictable pattern of loan contracts emerges that matches heterogeneous borrowers and lenders. It can be posited that trader lenders are matched with borrowers who specialize in farming by operating larger farm sizes that produce a larger marketable surplus. Farmer lenders are matched with borrowers who specialize in non-farm activities, who operate smaller farm sizes and possess fewer total assets, but can provide more labor and secure land ownership rights to the lender. In the following sections, these propositions are tested using the cross sectional data described above.

Econometric Analysis and Results

A single equation logit model was estimated for each lender type using the maximum likelihood method to examine the factors affecting the matching of informal lenders with borrowers. The dependent variable is dichotomous, taking a value of 1 if the contract is from farmer (trader) lenders during 1988-89, and 0 otherwise.

The independent variables are represented by the household's occupational specialization indicated by farm size in hectares (FSIZE), annual gross returns per hectare from rice farming (RETURNS) and annual nonfarm income (NONFARM). Human capital is denoted by the years of schooling of the household head (EDUHH) and the number of eligible laborers in the family (LABOR), and physical capital by the market value of nonland assets (ASSETS) owned by the household. Tenurial status is captured by the

percent of land area under land reform beneficiary status (CLTLH) and under ownership status (OC) to total land operated by the household. The ratio of number of years of residence in the village of the household head to his age (REPUTATION) and a dummy variable that captures the business customer relationship with the lender (DCUST) are proxies for the information available to the lenders. The variable DCUST refers to 1988-89, while all other variables refer to the year 1985 to avoid endogeneity problems.¹⁰

The regression results are presented in Table 3.¹¹ The results for the trader and farmer lender equations generally show opposite signs and confirm the arguments proposed in the paper. The significant positive results for ASSET, RETURNS, and FSIZE and the negative coefficients for NONFARM, LABOR and EDUHH in the trader lender equation indicate that borrowers that specialize in farming and have the ability and capacity to produce a large marketable surplus are matched with trader lenders. Negative coefficients for FSIZE, RETURNS and ASSET, and a significant and positive sign for NONFARM in the farmer lender equation show that borrowers who specialize in non-farm activities tend to be matched with farmer rather than trader lenders. If a significant and positive coefficient for education can be taken as an indication of capacity of a borrower to engage in education specific non-farm activities, there is further support for the specialization hypothesis.

¹⁰ The variable DCUST is 1 if the borrower had a business customer relationship with the lender sometime during the previous 4 years and 0 otherwise.

¹¹ About 18 percent of the FHH and 2 percent of the LHH reported multiple loans from multiple types of lenders. Therefore, there is a possibility of some households borrowing from both trader and farmer lenders contaminating the sample used for the econometric analysis. However, a model run on a subsample that excluded those households that borrowed from both trader and farmer lenders did not have significantly different results.

As predicted, the probability of matching borrowers with trader lenders is positive and significant for those borrowers with previous business relationships, while it is the opposite with farmer lenders. Furthermore, the variable REPUTATION is negative but DCUST is positive for trader lenders. These variables have opposite signs for farmer lenders. These results reveal that a better reputation is more important than long-term customer relationships in matching borrowers with farmer lenders than with trader lenders. This indicates that for poorer borrowers (negative FSIZE and ASSET), farmer lenders use reputation as collateral substitute. This is not surprising because farmer lenders by their physical proximity can accumulate information about borrower creditworthiness through means other than previous customer relationships. The coefficients for CLTLH and OC are negative in the trader lender equation and the variable OC is positive in farmer lender equation suggesting riskiness of lending for the two type of lenders. However, there is little risk of lending to beneficiaries for there are few incentives for reporting illegal pawning transactions.¹²

Conclusions and Policy Implications

The informal credit market is dominated by rice traders and farmer lenders in Philippine rice growing villages, and they employ factor and product market ties and social relations to secure their loans with borrower households. We posited that the matching of informal lenders with borrowers is based on their occupational specializations which leads to market segmentation, and tested this proposition using primary data collected from rice growing villages. The regression results supported this argument. Trader lenders tend to

¹² Otsuka argued that in practice there exists a very low risk of eviction in the study villages due to the lack of incentives for reporting the illegal pawning transactions of land reform beneficiaries.

be matched with borrowers who have a large capacity to produce rice, while the farmer lenders tend to be matched with those borrowers who borrow using land, labor and product links, and are engaged in non-farming activities.

This observed pattern in the matching of lenders with borrowers suggests market segmentation in rural informal credit markets based on occupational specialization. This segmentation, however, limits the effective functioning of a particular type of lender outside his/her specialized field due to the lack of adequate borrower screening technologies and contract enforcement mechanisms. Introducing a formal credit institution into this market will not likely improve small farmer access to credit if it cannot effectively compete with specialized lenders to provide borrower specific services. Since formal credit institutions cannot compete with informal lenders that specialize in trading, farming, etc., they must develop other mechanisms to provide borrower specific services and enhance their borrower screening technology. The well documented failure of the Philippines rural banking system in the early eighties was due in part to this challenge. The experiments now underway in linking formal institutions with various types of informal financial arrangements may prove to be a more promising method to increase access to financial markets and to improve the loan terms and conditions for small farmers.

Table 1 : Socio-Economic Characteristics of the Sample Households

Items	FHH ¹	LHH
Sample Farm Households (Number)	127	29
Area Irrigated (%)	72	-
Rice Cropping Intensity (%)	179	-
Average Farm Size (Ha.)	2.1	-
Area Under Beneficiary Status (%) ²	83.0	-
Area Under Non Beneficiary Status (%) ³	15.0	-
Area Under Share Tenancy (%)	2.0	-
Average Farm Income ('000 P/Yr)	17.4	-
No. of Off and Non-farm Employment Sources/Season	1.6	2.8
Mean Non and Off farm Income ('000 P/Yr)	8.20	3.28
Number of Years of Stay in the Village by the HH head	22.6	15.2

1 FHH = Farm households; LHH = Landless households

2 Refers to land with Certificate of Land Transfer (CLT) or Leasehold (LH) tenurial status; 3 Refers to land with Owner Cultivator (OC) tenurial status.

Table 2 : Loan Contracts of the Sample Farm and Landless Households, by Lender Type.¹

Item	Trader		Farmer	
	FHH ¹	LHH ²	FHH ¹	LHH ²
No. Different Lenders	26	8	85	19
No. of Loan Contracts	247	16	233	33
Contract Linkages (% of contracts)				
Product Link	84	47	58	14
Labor Link	4	22	9	43
Land Link	2	0	8	2
Land+Labor+Product Links	0	11	1	14
No Links	10	20	24	27
Information Base for Lenders (% of Contracts)				
Friends and Relatives	16	23	79	59
Business Partners	55	28	3	17
Neighbors	29	2	16	14
None	0	47	2	10
Purpose for Loans (% of Contracts)				
Farm Production	65	0	49	0
Consumption	35	100	51	100
Ave. Loan Size ('000 P/contract)	6.01	1.03	2.11	0.72
Ave. Seasonal Interest Rate (%/season) ³	25.6	26.2	24.3	20.1

1 FHH = Farm households;

2 LHH = Landless households;

3 Season = 5 months.

Table 3: Single Equation Logit Estimates for the Determinants that Match Borrowers with Trader and Farmer Lenders

VARIABLE	Trader	Farmer
CONSTANT	-0.130 (0.57)	-0.495 (0.48)
FSIZE	0.801 (0.95)	-0.312*** (0.11)
RETURNS	0.102*** (0.02)	-0.159*** (0.03)
EDUHH	-0.116*** (0.04)	0.164*** (0.04)
ASSET	0.965*** (0.29)	-0.121* (0.05)
NONFARM	-0.133 (0.48)	0.248*** (0.11)
LABOR	-0.532 (0.59)	0.434 (0.62)
CLTLH	-0.699* (0.41)	-0.233 (0.30)
OC	-1.603*** (0.59)	0.583 (0.40)
REPUTATION	-0.197 (0.34)	0.379 (0.34)
DCUST	1.652*** (0.28)	-0.517*** (0.19)
Log-likelihood	-290.8	-326.68
Chisquare	143.8	167.68

***, **, * represent significance at 1%, 5% and 10% levels, respectively.
Asymptotic standard errors given in parentheses.

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