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MATCHING OF LENDERS AND BORROWERS IN INFORMAL CREDIT MARKETS: ACCESS TO AND CHOICE OF CREDIT CONTRACTS IN THE PHILIPPINES

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Abstract

The paper examines the determinants of access to and choice of contracts that results in the matching of heterogenous informal lenders with borrowers in the Philippines. The regression results suggest a predictable pattern of matching farmer and trader lenders with borrowers based on occupational specialization of lenders and borrower characteristics.

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The informal credit market has become the primary source of rural credit in the Philippines in the 1980s, and traders and farmers are the major sources of funds (Bautista and Magno). While the formal credit markets were active during the seventies, 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. Although several studies describe informal credit markets in the Philippines (Adams and Sandoval; Agabin et al.; Larson), there is little empirical analysis that explains credit contracts or the behavior of the participants.

Esguerra and Meyer, Floro, and Geron documented the presence in the Philippines of different types of informal lenders offering heterogenous credit contracts in rural areas, usually involving interlinkages of credit with labor, land and product markets. They argued that lender *specialization* and *sorting* affect borrower access to credit, and empirically validated the proposition using data on observed credit contracts. Empirical studies often use data on observed borrower credit contracts to examine borrower access to or choice of credit contracts. These studies ignore the fact that the observed contracts result from the **matching** of interests between borrowers and lenders, and this **matching** is determined by a two step process involving borrower access to and choice of credit contracts. While the assumption of symmetry between the determinants of access to and choice of contracts is

valid for a single lender offering homogenous contracts, the assumption is incorrect for a credit market characterized by different types of lenders offering heterogenous contracts. When the participants and loans are not homogenous, it is incorrect to equate the determinants of access to credit contracts with contract choice. Therefore, the determinants of borrower access to contracts or contract choice cannot be directly estimated from data on observed credit contracts.

This paper examines the borrower and lender characteristics that determine access to and contract choice in informal credit markets in rural Philippines. The data available through typical surveys of informal credit markets allow for only the empirical estimation of the determinants of the matching of lenders with borrowers, rather than the direct estimation of access to or contract choice. The informal credit market is comprised of heterogenous lenders including traders, farmers, money lenders, input dealers, rice millers, retail store owners, and friends and relatives [1]. We concentrate on rice trader and farmer lenders who are the primary sources of credit in rice growing villages. The empirical analysis is based on cross section data obtained from an intensive survey conducted by the International Rice Research Institute during the period 1985-86 and 1989 [2]. The sample includes 127 randomly selected farm households in two villages located in the major rice growing province of Nueva Ecija in Central Luzon.

The next section describes the study villages, and is followed by a section discussing the matching of borrowers with lenders in informal credit markets. Section four presents the econometric analysis used to explain the determinants that match lenders with borrowers, and section five concludes the paper.

Description of Study Villages and Sample Households

Table 1 presents a profile of the sample households. While the sample village V1 is fully irrigated by gravity irrigation systems and grows two rice crops a year, V2 is characterized by favorable rainfed conditions with only a few farms practicing double cropping. Therefore, average rice yields and farm income are significantly higher in V1 than in V2. The majority of farms are small and 83 percent of the land is under land reform beneficiary status [3]. Before land reform, the farms were large rice haciendas and the majority of farmers were share tenants.

Of the 127 households interviewed, 112 reported borrowing from 132 different trader and farmer lenders [4] (Table 2). The majority of the 502 credit contracts reported by the households were tied with product, labor and land markets. In general, the product linked loans required the borrowers to repay with farm products (usually rice), and the labor linked contracts required the borrowers to provide the lender with permanent or temporary labor services. The stipulation 'tampa' in the product linked contracts with trader lenders additionally required the borrowers to sell their entire marketable surplus to the lender [5]. The contracts linked with land involved the pawning of cultivation rights through which the borrower transfers the cultivation rights to the pawnee for a loan and redeems the rights upon loan repayment (Nagarajan, David and Meyer). The frequency of linking credit with farm products was higher with traders than farmer lenders. Although the majority of loans from farmers were linked with farm products, land and labor links were also used to secure these loans. 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 for the lenders. The frequency of loans obtained for production purposes was higher with traders than with farmer lenders.

The above observations demonstrate the presence of several trader and farmer lenders offering nonhomogeneous contracts in these villages. The determinants that match lenders with borrowers include differences in the information base of the lenders, and different purposes for borrowing.

The Matching of Borrowers and Lenders in Informal Credit Markets

The matching of borrowers and lenders can be explained by a two stage process involving a) borrower access to, and b) choice of credit contract. In the first stage, lender specialization by primary economic activity creates differences in accessibility to credit contracts by borrowers. In the second stage, given a borrower's accessibility to contracts/lenders, a borrower chooses a contract from his/her potential set of lenders based upon his/her characteristics and the attributes of the contract.

The occupational specialization of profit maximizing lenders leads to differential access by borrowers to credit contracts, i.e., the potential set of contracts available is determined by a borrower's ability to facilitate the lender's primary economic activity. Therefore, contracts from farmer lenders are available to labor abundant households due to the farmers need to secure labor services during peak seasons, while trader lender

contracts are available to farmers with a large marketable rice surplus. Furthermore, accessibility to trader and farmer lenders also depends on the informational base used by lenders to screen borrowers. It can be postulated that access to trader contracts is restricted to those borrowers with a large capacity to produce farm output, while farmer lender contracts are accessible to labor abundant households and to borrowers able to pawn land. Farm size is positively associated with contracts from either source, but land tenure status is more important to farmer lenders than to traders because cultivation rights may be permanently transferred in the event of default [6].

Given the set of contracts available to him/her, the utility maximizing borrower chooses from the set based on the specific services offered by the contract. Although it is not uncommon for a borrower to have only one or no choice, most have multiple choices due to the presence of several lenders in each village. While the stipulation 'tampa' by trader lenders allows little flexibility to divert loans to consumption purposes, farmer lender loans can be used for consumption provided the borrowers tie loans to land or labor services. Whereas loans are often fungible, close monitoring by lenders and peers and penalties for default reduce fungibility in informal credit markets. Furthermore, proximity and close social relations also minimize asymmetric information and fungibility. Ceteris paribus, the choice of contract from among the potential set depends upon the lender's flexibility to provide borrower specific services. We can hypothesize that a borrower chooses a trader lender contract when the loan is for production purposes and the borrower is fully engaged in farming. Farmer lender contracts will be chosen when the borrower intends to

use the loan for consumption and the borrower has an ability to engage in nonfarming activities apart from farming that can generate income for repaying loans.

Access to credit contracts is contingent upon the borrower's ability to facilitate the lender's primary economic activity, while contract choice by borrowers is contingent, first, on access to the contract and, second, the attributes of the contracts. When there are differentiated contracts offered by multiple lenders, it is difficult to separately estimate the determinants of access from the determinants of contract choice. In typical farm surveys, we observe the ex-post realization of the two stage process that results in the matching of specific lenders with specific borrowers. Thus, we are limited to estimating the determinants of the function that matches lenders with borrowers in a given institutional setting.

Econometric Analysis

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 borrower received a loan from farmer (trader) lenders during 1988-89, and 0 otherwise.

The independent variables include the household's income earning capacity as measured by farm size in hectares (FSIZE), and annual gross returns per hectare from rice farming (RETURNS), human capital denoted by years of schooling (EDUHH), experience in farming (AGEHH), market value of nonland assets (ASSETS), share of nonfarm income in total household income (NONSHARE), and ratio of eligible laborers to total family members (LABRATIO). The tenurial status of land owned is captured by the percent of

land area under beneficiary status (CLTLH) and under nonbeneficiary status (OC). The number of years in the village by the household head (STAY) and a dummy variable that captures the business customer relationship with the lender (DCUST) are proxies for the information of the lenders. The productive purpose of the loan is represented as a dummy variable (DP). The variables DCUST and DP refer to 1988-89, while all other variables refer to the year 1985 to avoid endogeneity problems [7].

The regression results are presented in Table 3. The significant positive results for FSIZE, RETURNS, ASSET and LABRATIO, and the negative coefficient for NONSHARE indicate that borrowers with a large capacity to fully engage in rice farming are matched with trader lenders. As expected, the probability of matching borrowers with trader lenders is positive and significant for those who borrow for rice production purposes with previous business relationships, while it is the opposite with farmer lenders. Furthermore, the variable STAY is negative and significant for trader lenders but positive and significant for farmer lenders. Borrowers with familial relationships who borrow for consumption purposes are matched with farmer lenders, while those with business relations borrow from trader lenders. The variables EDUHH, AGEHH, ASSET, NONSHARE, and LABRATIO have the expected signs in column 4 and support the hypotheses that households capable of performing nonfarm activities and endowed with abundant labor are matched with farmer lenders. A significant positive coefficient for RETURNS and negative coefficient for FSIZE indicates that households with smaller marketable rice surplus are matched with farmer lenders through product links. The coefficient for CLTLH is negative and significant in the farmer lender equation suggesting riskiness of lending, but in fact there is little risk of

lending to beneficiaries for there are few incentives for reporting illegal pawning transactions in the sample villages [8].

Conclusions and Policy Implications

The informal credit market has reemerged as a primary source of rural credit in the Philippines. Rice traders and farmer lenders are the major types of informal lenders in 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 occupational specialization of these informal lenders and specific borrower characteristics result in the observed matching of lenders with borrowers, and tested these propositions using primary data collected from rice growing villages. The regression results suggest a predictable pattern of matching heterogenous lenders with borrowers. Trader lenders tend to be matched with borrowers having a large capacity to produce rice and who borrow for rice production purposes. Farmer lenders are matched with borrowers who borrow for consumption purposes using land, labor and product links, and who are engaged in nonfarming activities.

The observed pattern in the matching of lenders with borrowers suggests specialization in rural informal credit markets based on lender's occupation and information base. This specialization, however, limits the effective functioning of a particular type of lender outside his/her specialized field due to the lack of incentives and borrower screening technologies. Therefore, the presence of several heterogenous lenders offering nonhomogeneous credit contracts in a village is not evidence of a competitive market. Introducing a formal credit institution into this market will not likely improve the distribution of credit to

small farmers if formal lenders cannot effectively compete with specialized lenders to provide borrower - specific services. Since it is not possible for formal credit institutions to specialize in trading, farming, etc., in order to compete with informal lenders, they must develop mechanisms that reduce asymmetric information and enhance their borrower screening technology.

End Notes

1. The occupational specialization of different types of informal lenders lead to differences in their objective functions and heterogeneity among the lenders.

2. Primary data on farm production, household income and demographic characteristics of the sample households were collected in 1985-86 and in 1988-89. An intensive survey on the credit market transactions of the sample households was conducted by the senior author in 1989.

3. 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).

4. There were a total of 180 different lenders under 7 different lender types offering 688 credit contracts during the reference period. However, this analysis is restricted to the 2 main lender types of trader and farmer lenders.

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

6. The Land reform restricts the transfer of ownership title of the reform beneficiaries to only their legal heirs. Hence, land pawning contracts by land reform beneficiaries are considered illegal. While the temporary transfer of land cultivation rights by the beneficiaries can be disguised as a simple credit contract, it is not the case with a permanent transfer of cultivation rights which is similar to sale of land rights. If these illegal transactions are detected, the pawned land is supposed to be confiscated by the land reform agency. This risk of eviction may restrict the lenders to pawn land from borrowers with secured land ownership rights or from borrowers with a large capacity to repay loans (See Nagarajan, David and Meyer for further details).

7. 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. The variable DP is 1 if the loan is taken for farm production purposes and 0 otherwise.

8. 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 in Operation Land Transfer areas. Furthermore, there were only a few pawning transactions and hence the negative and significant result does not reveal a significant risk for the beneficiary lands.

Table 1 : Socio-Economic Characteristics of the Sample Households

Items	V1	V2	Total Sample
Sample Farm Households	80	47	127
Percent Area Irrigated	100	21	72
Rice Cropping Intensity	209	120	179
Average Farm Size (Ha.)	2.2	1.9	2.1
Percent Area Under Beneficiary Status [1]	84.0	82.0	83.0
Percent Area Under Non Beneficiary Status [2]	14.0	18.0	15.0
Percent Area Under Share Tenancy	2.0	1.0	2.0
Average Rice Yield ('000 Ton/ha)	4.6	3.9	4.1
Average Farm income ('000 P)	17.9	4.4	10.1
Average Nonfarm Income ('000 P)	9.2	11.1	10.2
Value of Nonland Assets Owned ('000 P)	48.8	28.8	41.9
Average Age of the Household Head (Yrs.)	49.8	45.5	48.1
Average Schooling of the Household Head (Yrs.)	6.4	6.3	6.4
Total No. of Household Members	6.0	5.0	5.0
Number of Years of Stay in the Village by the HH head	24.2	21.4	22.6

1 Refers to land with Certificate of Land Transfer (CLT) and Leasehold (LH) tenurial status.

2 Refers to land with Owner Cultivator (OC) tenurial status.

Table 2 : Credit Contracts of the Sample Households, by Trader and Farmer Lender Type.

Item	Traders	Farmers	Total
No. Borrower Households	112	110	112[1]
No. Different Lenders	30	102	132
No. of Credit Contracts	249	253	502
% With Product Link	81	49	65
% With Labor Link	1	6	3
% With Land Link	2	8	6
% Land+Labor+Product Links	0	1	1
% No Links	16	36	26
Relationship Between Participants (Percent of Contracts)			
Friends and Relatives	16	79	47
Business Partners	28	2	15
Neighbors	2	14	8
None	54	6	30
% Contracts for Farm Production	65	41	52
Mean Loan Size [2]	6003 (9332)	5192 (3412)	
Mean Seasonal Interest rate (Season = 5 months)	25.6 (12.9)	22.6 (16.3)	

1 Since some households borrow from both farmer and trader lenders, the total does not add up to 222.
2 Standard deviations are given in parentheses.

Table 3: Single Equation Logit Estimates for the Determinants of the Matching of Borrowers and Lenders

Particulars	Trader Lender		Farmer Lender	
	Coeff.	T-Ratio	Coeff.	T-Ratio
CONSTANT	-0.931	-1.709*	1.833	2.867**
FSIZE	0.168	1.785*	-0.171	-1.730*
RETURNS	0.204	2.405*	0.141	1.717*
EDUHH	-0.126	-1.032	0.671	1.887*
AGEHH	-0.136	-1.558	-0.209	-2.231*
ASSET	0.146	5.010**	-0.871	-2.568**
NONSHARE	-0.291	-0.579	0.583	1.712*
LABRATIO	0.989	1.396*	0.459	1.102
CLTLH	0.937	0.405	-1.371	-1.975*
OC	-0.367	-0.924	-0.866	-1.035
STAY	-0.118	-2.032*	0.128	1.938*
DCUST	1.853	6.394**	-2.119	-4.338**
DP	0.818	4.422**	-0.809	-4.492**
Chi-Square	140.59		152.56	
Log Likelihood	-375.16		-372.49	

**, * represent significance at 1% and 10%, respectively.

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