Demand, Segmentation and Rationing in the Rural Credit Markets of Puri

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INTRODUCTION AND SUMMARY

Rural households in developing countries like India have volatile and low incomes. A majority of these households are engaged in agriculture using conservative production techniques. These households suffer from income shocks due to fluctuations in weather and consumption prices. They are also vulnerable to risk from other causes such as business failure, recession, illness etc. Such households try to smooth income by making traditional production and employment choices and diversifying economic activities. By making such choices the households choose lower expected profits for lower risk. This risk averse behaviour of the households and their reluctance in adopting new technologies and taking advantage of new economic opportunities is costly. In case an income shock occurs these farm households also smooth consumption by borrowing and saving. They also adjust their non-financial assets and labour supply and use formal and informal insurance arrangements.

It is widely believed that farm households are credit constrained and the provision of credit would lead to an increase in production and income. Most of the government interventions in the rural credit markets are based on this premise and they have been further justified on the basis of improving the distribution of rural incomes. However, these interventions have not really succeeded in fulfilling these objectives. It has been estimated that only 5 percent of the farmers in Africa and about 15 percent in Asia and Latin America have had access to formal credit; and on an average across developing countries 5 percent of the borrowers have received 80 percent of the credit.[1] Most of the Asian policymakers pursued rural credit

[1] See, for example, Gonzalez Vega(1983), Adams and Vogel (1986) and Braverman and Guasch (1986).

policies (for over three decades), which had the following nine components. Lending interest rates were subsidised and loans to small farmers were fixed at very low interest rates. The main sources of funds were governments and donors but not local savings and these policies increased the supply of loans made to farmers without focussing on institutional sustainability. Moreover, credit was treated as input for agriculture, often used for productive purposes and lending for consumption purposes was ignored. Co-operatives were used to distribute credit in an attempt to target the small farmers and were often the primary credit channel, although in some countries commercial banks and agricultural development banks were more important. However, in some recent programs the target groups have been extended to the rural poor. Finally, transaction costs for lenders and borrowers in supplying and accessing financial services were also largely ignored (Meyer and Nagarajan, 2000a, 2000b).

The Rural Credit Markets continue to be characterised by the co-existence of formal institutions lending at subsidised interest rates and the informal lenders charging high interest rates. Despite the government interventions and efforts for over three decades, their positive impact on rural income and distribution has been limited (Braverman and Guasch, 1993). In general, formal lending has an asset bias and is in favour of economically and politically powerful farm households, with a high correlation between the formal borrowers and the size of landholdings (Braverman and Guasch 1986). This is believed to have led to a further widening of the income inequalities (Adam et al. 1984, Eswaran and Kotwal 1989, Braverman and Stiglitz 1989 and Gonzalez-Vega 1984).

This thesis investigates some of the aspects of the rural credit markets. It is a collection of four self-contained essays, which can be read independent of each other. Chapter II gives a description of the survey data collected by the author in Puri district of India. It is this data that is used in the empirical analysis of the subsequent chapters. The sequence in which the papers are presented is deliberate and the treatment of the credit market evolves as we progress along the chapters. Chapter III, investigates the demand and supply of credit for the households in the rural credit markets of Puri assuming a homogenous lender. Chapter IV looks for evidence on the existence of segmentation in the rural credit market. It further investigates the presence of any systematic association between the type of collateral offered by the household and the interest rate. The final essay tries to determine the degree of credit rationing by the formal sector under three different sets of assumptions given that the rural credit markets are divided into the formal and the informal sector.

The Demand and Supply of Credit for Households

A crucial component in the development of agriculture is the financial planning and the proper understanding of the rural credit markets. This essay investigates the demand and the supply of credit for investment and consumption in the rural credit markets of Puri. The research on the quantitative analysis of factors influencing rural loan demand is quite limited.[2]

Furthermore, some of the studies that try to estimate loan demand suffer from bias due to data truncation (Hesser and Schuh, 1962; Pani, 1966; Long 1968; Ghatak, 1976) and simultaneity bias arising from the endogeniety of interest rate. Moreover, with the exception of a few studies (Nagarajan, Meyer and Hushak, 1995) most of the analysis takes only single loan

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[2] Desai and Mellor (1993) state that, ‘ There are only seven studies that examine this issue quantitatively (Pani 1966; Long 1968; Araujo 1967; Paulson 1984; Nyanin 1969; Hesser and Schuh 1962; and Lins 1972). These studies provide 14 cases -- 4 in India, 3 in Kenya, 5 in United States, and 1 each in Brazil and Republic of Korea.’ Apart from this they mention about the studies of Iqbal (1982) but do not use it for their analysis.

transactions into account, neglecting multiple loans borrowed by the household. This study fills this gap especially for the Puri district and produces empirical results based on recently collected data trying to correct for some of the above-mentioned empirical problems.

The underlying theoretical model is an intertemporal utility maximisation model. The households in this model are farm households that are engaged in farm production and consume a part of their produce. The rate of interest is endogenously determined as a function of both the amount of loan and the quality of the borrower. This is in lieu with the semi-commercialised and highly personalised atmosphere of the credit markets in developing economies, where the capital markets do not function smoothly.

Two different models are estimated for the demand and supply of credit. The type three Tobit model is initially estimated, which deals with the problems of sample selectivity bias and the endogeniety of the interest rate and loan size. Finally, a Double Hurdle model that explicitly takes the credit supply constraints into account is estimated.

The results of the Double Hurdle model are sharply different from the type 3 Tobit model.[3] The type 3 Tobit results show that apart from the interest rate the household characteristics like the net wealth owned, family size, dependency ratio and the primary activity of the household's head were important determinants of demand. In addition, the price of output and the area of operational holdings were also significant determinants on the demand side. Net wealth, loan size, operational holding and the dependency ratio are important determinants of the interest rate function. In contrast, the interest rate and the wage rate are the only two significant variables affecting demand as shown by the Double Hurdle model. Net-wealth of the household is no longer an important determinant of demand though it does affect the interest rate charged to the borrower. Further, education and land quality are also emerge as significant determinants of interest rate.

The most important result from the Double Hurdle model is that land owned plays a crucial role in determining whether the borrower receives a loan or not. If this is true then the landless, the agricultural labourers and the marginal and small farmers may continue to face difficulty to get a loan because of lack of access to credit. It is precisely this group that the government wants to target, with its subsidised credit programs through the formal institutions. The futility of the current lending policies (for instance, provision of cheap credit) in benefiting the disadvantaged rural households has been well recorded in literature not just for India but also other countries in Asia, Africa and Latin America. The analysis in this paper is limited by the assumption of a homogenous lender. However, the aggregation of the formal and the informal lending institutions, still reflects the asset based lending policies in the rural credit markets of Puri.

Segmentation, Interest rate and the Collateral

The segmentation of the rural credit market may be defined as the "existence of several sub-markets separated by boundaries across which the flow of credit is impeded by information barriers. Thus an increase in the supply of funds in one segment does not necessarily increase the availability or reduce the price of credit in another, although some funds do flow between segments." (Ghate et. al, 1992). This paper investigates the existence of segmentation in the rural credit markets of Puri district, in India. It further examines whether there is any

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[3] The diagnostics of the Double Hurdle model does not necessarily reveal better results than the type 3 Tobit model, which is probably a result of the rather strong assumptions of the model.

systematic association between the type of collateral offered by the household and the rate of interest at which it borrows the loan. The type of collateral that the lender requires and the

lack of suitable collateral that a borrower can offer have been identified as important determinants of the loan contract (Binswanger and Sillers, 1983, Binswanger and Rosenzweig, 1986a). Furthermore, credit can also be rationed in terms of the ability to offer collateral (Von Pischke et al. 1983, Rudra 1982). The terms, on which credit is obtained, may also depend on the type of collateral and the inelasticity of the loan, which is further, reflected in the purpose of borrowing[4]. The formal credit institutions face a high cost in acquiring information about their borrowers and an excess demand created by the subsidised interest rates. These institutions lend mainly for productive purposes with the requirement of collateral, thus excluding the group of borrowers who cannot meet these conditions. The informal lenders, on the other hand, charge higher interest rates and incur lower administrative costs. They have information on the borrower's capacity and willingness to repay, based on their geographic and social proximity to the borrower. They tend to lend more for consumption purposes sometimes even without explicit collateral. These distinct characteristics of the formal and the informal sector are consistent with the explanation for the existence of the segmented rural credit markets (Yadav, Otsuka and David, 1992).

There exists a substantial area of literature, which explains the segmentation in the rural credit markets, and the high interest rates in terms of the quality or lack of collateral that the borrower can offer to the lender. Bhaduri (1977, 1983) argues an extreme case where the lender transfers the entire risk of the default on to the borrower through the mechanism of under pricing the collateral and encouraging asset transfer. This is possible due to the

[4] Loans for medical purposes or social emergencies like marriage, birth or death are inelastic and difficult to postpone.

personalised relations[5], the restricted size of the credit market, the associated monopoly power accruing to the lender and the inter linkages with the other markets.

The investigation of the Puri credit market in this paper indicates the existence of segmentation. The formal and the informal sectors show distinct characteristics with the formal sector lending mainly for productive purposes at subsidised interest rates. The informal sector on the other hand lends small loans for consumption purposes also, at comparatively higher interest rates. Furthermore, there is evidence of an inverse relationship between the interest rate and the marketability of the collateral that is offered by the household to secure the loan from the informal sector and the moneylender. However, this pattern is not clearly visible for the households borrowing from the formal sector. The distinct characteristics of the formal and the informal sector and the widely held belief in the literature that the subsidised formal sector credit rations a large percentage of households prompted the investigation of credit rationing in the next paper.

Choice of Lender and Credit Rationing

The government policies of several developing countries have inferred in the past that the farm household's are credit constrained resulting in the use of traditional technology and low investment in agriculture. Therefore, the focus of the government policies has been to multiply the presence and the lending by the formal credit institutions, which would lend for agricultural purposes at uniformly low interest rates. It is widely believed in the literature that the farm households have limited access to the formal sector. However, in some recent literature it has been asserted that the degree of effective credit rationing is not as high as is generally suggested and that farm households have a low demand for credit (Kochar 1997).

[5]The personal relationship between the borrower and the lender are based on the social interaction and the personal knowledge.

This paper is an empirical investigation into the extent of effective credit rationing by the formal sector in the rural credit markets of Puri. It is based on the Kochar (1991, 1997) where the household is free to choose between the formal and the informal sector. Moreover, the empirical model is modified to include the additional information on the 'access to credit' that is available in the survey data. Another important contribution of the paper is to update the information on the extent of formal credit rationing existing in the rural credit markets in Puri. Three different models of formal credit rationing are estimated. The first model assumes that the probability of borrowing from the formal sector is determined by the bank's decision on access. Two assumptions are made here. First, that the formal sector provides the cheaper source of credit. And second, that all households have a positive demand for formal credit. The second model drops the latter assumption and the probability of borrowing from the formal sector is jointly determined by the demand for credit and the bank's decision on access. Finally, the third model considers a two-sector model (formal and informal credit sector) with the household choosing to borrow from the cheaper source of credit.

The estimation of the three models confirms the general belief in literature that a considerable number of households are credit rationed by the formal sector. The degree of the effective rationing suggested by the three models is 71 percent (Model I), 60 percent (Model II) and 72 percent (Model III).

The results in this paper therefore support the literature that states that credit policies still have an important role to play in agricultural development. Given the high demand for credit and the limited access to formal credit in Puri, the degree of effective credit rationing in Puri is very high. This result holds even when we relax the assumptions that all households have a positive demand for formal credit and that the formal sector is the cheaper source of credit.

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