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► **To cite this version:**

Augendra Bhukuth, Jérôme Ballet, Katia Radja. An Analysis of Social Proximity and Interest Rate in Rural South India. *Economics & Sociology*, 2018, 11 (1), pp.156 - 171. 10.14254/2071-789X.2018/11-1/10 . hal-01877007

HAL Id: hal-01877007

<https://hal.science/hal-01877007>

Submitted on 11 Dec 2023

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ECONOMICS

Sociology

Bhukuth, A., Ballet, J., and Radja, K. (2018). An Analysis of Social Proximity and Interest Rate in Rural South India. *Economics and Sociology*, 11(1), 156-171.
doi:10.14254/2071-789X.2018/11-1/10

AN ANALYSIS OF SOCIAL PROXIMITY AND INTEREST RATE IN RURAL SOUTH INDIA

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ABSTRACT. In this article we present the role of social proximity in the formation of the interest rate in the informal credit market in the state of Tamil Nadu, India. This paper is unique in the sense that it deals with social proximity and the formation of interest rate. If a lot of articles deal with the interest rate and social capital, none of them have attempted to link the two variables. A qualitative and quantitative survey was conducted on debt bondage in 2003-2004. The impact of social proximity defined as strong and weak is captured by a simple regression model. We show that a strong social proximity has a negative impact on the interest rate. Furthermore, the frequency of transactions has a positive impact on the interest rate, which means that asymmetrical information does not play a central role in our study. We then explain the relation between social proximity and interest rate by using the concept of rights and obligations.

Received: September, 2017
1st Revision: December, 2017
Accepted: February, 2018

DOI: 10.14254/2071-
789X.2018/11-1/10

JEL Classification:R10, I32,

Keywords: India; Social proximity; Social Capital; Interest rate; Poverty Indebtedness; Seasonal migrants.

Introduction

For many poor households, in the rural regions of developing countries, getting access to credit is an essential condition. This not only enables the financing of productive capital; thereby providing a means of getting out of poverty, but also provides the opportunity to smooth consumption. Very often, these households cannot get access to formal credit since they are not in possession of sufficient resources to serve as guarantee, a prerequisite to obtaining a credit (Hoff and Stiglitz, 1993).

Due to this situation, the governments of many developing countries have deployed efforts to facilitate the access of credit in the rural regions, either through the direct link of their state banks, or by the regulation of the commercial banks. For example, in India, the

banking policy has come across different phases, each aiming at improving access to credit to rural populations (Ramachandran and Swaminathan, 2001).

Thus, in 1969 the government of India nationalised banks in order to encourage these institutions to promote access to bank credits to the rural population. This policy has led to an increase in the bank credits granted to land owners (whatever the size of their holding) at preferential interest rates (Basu, 2005). The aim of this policy is to modernise the rural sector, and to increase its growth rate. However, Chavan (2007) reports that access to the credit market by *dalits* decreased in the 1990s. Poor households, most of whom are landless, are denied access to the credit market because they have no savings and so do not have a bank account.

In such context, microfinance is an alternative way for poor people. The proclamation in 2005, by the General Assembly of the United Nations, of the international year of microfinance, and the Nobel Peace Prize awarded to Muhammad Yunus in 2006 for his work in this field, has highlighted this approach. However, microfinance does not fully solve the problem. Extremely poor households, particularly seasonal migrant households, have no access to microfinance (Churchill and Guérin, 2004).

We should not forget, however, that there are other ways of accessing credit. The informal credit market is one of them. This market offers a series of possible sources of credit that may take several forms, including "personal relationships" characterised by credit given to family members, loans from employers, and also credit given by shop owners, traders and wealthier people within the community to which the borrower belongs, etc.

The informal credit market is often considered as an exploitative market since interest rate is sometimes very high and always higher than in the formal credit market (Bottomley, 1963; Krishna *et al.*, 2003), although, studies in rural India have found evidence of the existence of interest rates close to zero (Bardhan and Rudra, 1978; Guérin *et al.*, 2007, 2004 and Bhukuth, 2006). The divergence of results on interest rate may emanate from the diversity of sources of credit in the informal credit market. Furthermore, it is also often segmented. (Nagarajan *et al.*, 1995; Ghosh *et al.*, 2000). The influence of certain variables on the interest rate on the informal credit market in India is then analysed. More specifically, on the basis of a study conducted in 2003 and 2004 in South India, we analyse the role that the two forms of social proximity (weak and strong) play in determining the interest rate in the informal credit market.

The rest of this paper is organised as follows: in the first section we relate the paper with the previous literature. In the second section we present the methodology. In the third section we present the main statistical facts about how the informal credit market is accessed. In the fourth section, the influence of social relationships on determining the interest rate is analysed, distinguishing between strong and weak social proximity. In particular, we show that lower interest is associated with strong social proximity.

1. Literature review

The informal credit market revolves around two main questions which are, on one side the existence of the market and, on the other side the understanding of the interest rates of this market.

The existence of the informal credit market is often analysed based on two alternative hypotheses: the existence of high transaction costs or the rationing of credit on the formal market.

The first hypothesis shows that the inhabitants of villages located in rural regions, due to the absence of formal credit institutions, are compelled to commute to the nearest towns

where the formal credit institutions are located. Getting access to a credit may imply several trips and therefore infer high costs of transaction. For example, Giné (2010) estimates that the costs of transaction to have access to formal credit in Thailand may reach up to US \$130. The informal credit market reduces the costs of transaction due to the geographical convenience between borrower and lender. In the same study, Giné (2010) considers that nearly no transaction costs are implied on the informal market.

If it is clearly noted that there is insufficient access to formal credit in rural zones of developing countries (Braverman and Guash, 1986), government policies aiming at increasing access to credit to the populations of these zones have largely been developed. However, the expansion of formal credit in the rural zones has not significantly reduced the scale of informal credit (Timberg and Aiyan, 1980; Bell, 1990; Chakrabarty and Chaudhuri, 2001).

Therefore the hypothesis of costs of transaction is not sufficient. Based on the article of Stiglitz and Weiss (1981) on the adverse selection of the credit market, the second hypothesis analyses the existence of the informal credit market by using the phenomenon of rationing on the formal market. In asymmetrical information, formal financial institutions, in order to reduce portfolio risk and to reach a better composition constraint the borrowers. Households which are the most affected by rationing are those which cannot guarantee repayment, and therefore represent the least risks of repayment, in particular the poorest households. These households turn to the other financing mechanisms offered by the informal credit market. In this market, the relationships between lenders and borrowers allow lenders to get information on borrowers and to manage at best the risks; this does not mean that the informal credit market does not practice credit rationing¹. However, the politics of government in developing countries have enabled the reduction of rationing, particularly through the expansion of non commercial banks. And as Kochar (1997) highlights in the case of India, credit rationing in the formal credit market is weaker than it is generally assumed.

These two hypotheses are not alternatives but rather complementary. Guirkingier (2008), in the case of Peru, shows for instance that the use of informal credit can be explained both by rationing in the formal market and high costs of transaction. Households actually use formal market or informal market for different reasons. Households who want to take loan for increasing the productive capacity and those who already possess some assets that they can pledge to reassure the lenders will use formal market. They then assume that transaction costs of the credit they want to receive is quite high and will allow accumulation of capital. Households who want a credit to smooth consumption, in the event they are experiencing a loss of income, must assure expenses of ceremonies or to face any shock, instead have recourse to the informal market. The planned expenses not being directly productive, households avoid having to pay more transaction costs.

The complementarity of both analyses allows us to understand that rich households, i.e. those possessing assets that can be offered as collateral, have at the same time used formal and informal market, whereas poorer households are excluded from formal market and only have recourse to informal market, which finally reduces their capacity to accumulate since credits in this market mainly concern credit for smoothing consumption. This finding has been demonstrated in several studies, for example Diagne (1999) in Malawi, Barslund (2007) in Vietnam or Krishna *et al.* (2003, 2004), Sriram and Parhi (2006), Bhukuth *et al.* (2007) in India.

Beyond the existence of informal credit market, the particularly high level of interest rate in this market has been one of the major issues (Bottomley, 1963; Krishna *et al.*, 2003). Lenders in the informal market deal with households with greater difficulty of repayment and

¹ Zeller (1994) has shown that in Madagascar the informal credit market has also been experiencing a rationing linked mainly to households income.

are rejected by the formal market, therefore, the interest rate constitute a premium for risk for lenders (Bottomley, 1963). Under such conditions, a policy aiming at promoting access to the formal market by offering cheap credits would provoke an adverse effect of composition which would degrade the terms of credit provided in the informal market, thereby increasing the interest rate on this market (Bose, 1998).

This premium of risk can be very high because of imperfect competition on the informal credit market where lenders may exert an influence on the rate (Nisbet, 1967; Aleem, 1990; Basu, 1991)². At the hands of macro rationing on the formal market, lenders can also proceed to a micro rationing on the informal market. They propose a low level of credit at a very high interest rate at the first visit of a customer, then release the constraint as one goes along with contractual relationships provided any default of payment is found (Ghosh and Ray, 2001). Repeated interactions thus allow lenders to be acquainted with the clients and to personalize the transactions, so that the risk of default payment is reduced (Swaminathan, 1991). One of the characteristics of the informal credit market would be precisely the extent of personalisation of credit, thereby laying exclusively on long term relationships and with repeated credits (Ghosh *et al.*, 2000).

However, not much emphasis has been laid on the role of the personalisation of transactions on the level of interest rates. This is precisely what is being dealt within this article.

Since Granovetter's work (1973), considerable studies have produced results corroborating the essential role of social networks in the labour market (see for instance and amongst others: Granovetter, 1982; Fischer, 1982; Marsden, 1987; Calvo-Armengol and Jackson, 2005; Wahba and Zenou, 2005). Several studies have also recently linked market conditions (notably price, and methods of repayment) to social relationships. For instance, van Bastelear and Leathers (2006) have studied the impact of social relationships on the repayment of seed loans among the joint liability groups in Southern Zambia, and have shown that trust generated by social relationship helps to reduce the transaction cost. Kirman and Vriend (2001) have shown, in the case of the fish market in Marseille [France], that the prices set on the market are linked to social relationships.

Leading on from this research, this article proposes to analyse interest rates in the informal market, and to relate this value to the social relationships between lenders and borrowers. In other words, it sets out to find to what extent interest rates in the informal credit market depend on social proximity. By social proximity we mean the degree of connection between people through relationships. The term 'social proximity' we use is different from that of social distance (Bhandari, 2007). Social distance measures the distance between people in terms of status, employment, cast and so on (objective characteristics) whereas social proximity just underlines the frequency of social interactions between people without taking into account the social distance. For instance, people from very different employment may be in touch frequently. This is the case of people who buy food to the grocery every day. They are in relation with the shopkeeper and may build a social proximity with him. Our concept of social proximity just underlines the subjective aspect of relationships.

More particularly we seek to determine whether social proximity is different from the reduction of asymmetrical information. According to Ghosh and Ray (2001) the frequency of transactions reduces asymmetrical information and thus affects the interest rate. We attempt to verify if the type of lenders exerts an influence independently to the frequency of transaction,

² A different but complementary analysis of the high level of interest rate in the informal credit market emanates from the role of corruption in the formal market. In the event applicants must pay a bribe to the officers who manage and provide credit for obtaining a credit on this market, then it makes sense that the interest rate may be high in the informal market (Gupta et Chaudhuri, 1997).

and if the frequency of transactions exerts an influence on the interest rate. If on the one side, the frequency of transactions does not exert any influence to lower the interest rate, and on the other side the type of lender has an influence on the interest rate, then it can be inferred that social proximity is not reduced to knowledge of information but implies others mechanisms of social nature such as the rights and obligations of a community (Mahieu, 2001).

2. Methodological approach

2.1. Data collection

We surveyed 255 poor households in their villages, in the State of Tamil Nadu, in 2003-2004, no new research has been conducted in the state since now. Therefore, we are unable to present new data on debt bondage and the situation of households. The survey is not representative to the whole country. Several researches were carried out in Tamil Nadu in different industries (sugarcane industry, rice industry and others) to understand the mechanism of debt bondage, their effects on households' well-being. The state of Tamil Nadu is one of the most developed states in India, despite good economic performances poverty and debt bondage still prevails in Tamil Nadu. Individuals and households in the situation of debt bondage are bonded labourers. They take advances from *maistries* (labour brokers) in the villages and are compelled to work for the (*maistries* or the employers) to reimburse their debt. For more information on how the individuals are recruited and debt bondage takes place in rural areas in Tamil Nadu see for example (Bhukuth *et al.*, 2006), Guérin *et al.*, 2004). The research was conducted by the team of the French Institute of Pondicherry (FIP) was led by Isabelle Guérin was financed by the ILO and FIP (Guérien *et al.*, 2004). The ILO is concerned with the issue of debt bondage and bonded labour in India. According to Guérin *et al.* (2012) the advance system is practiced by the construction and brick kiln industries to impose low wages and to control labourers. The study analyses the mechanism of getting trapped into debt bondage and the exploitative characteristics of bonded labour. The forces in action bonding people in rural areas and how to escape from the trap were the main interests of the research project. One of the aims of the research project was to study debt bondage and the role microfinance could play to eliminate this phenomenon.

As the study was on debt bondage a three-step survey was conducted in order to understand the phenomenon.

Firstly, a survey was carried out on debt bondage in brick kiln industries in the state of Tamil Nadu where we have identified the workers. Their address was asked. A systematic sample was used. However, since the workers were not free to express themselves on the site of production, and in order to obtain accurate information on their financial situation, working conditions, the relationship between labour brokers (*maistries*) and employers, the workers were surveyed in their respective villages located in the district of Villupuram in Tamil Nadu. The aim of this study was to analyse the financial and living conditions of people living in extreme poverty. Regular visits to the village were realised for identifying the brokers and the labourers. During the visits, the labourers have presented their teams and their peers. In total 211 households working in the brick kiln accepted to be part of the study and were surveyed. This sample represents 25% of the total families in 10 villages and it covered all communities and the length of their job involvement (Bhukuth *et al.*, 2016).

At the second stage of the study we used qualitative and quantitative methods to explore all aspect of these households. For the qualitative study an open questionnaire was

used. Heads of households were interviewed both collectively (focus group survey³) and individually. To avoid gender bias, the head was interviewed informally (qualitative survey) at the tea shop or at home after the work. The latter's information was cross checked with that of his wife to ensure the accuracy of the information gathered. The qualitative survey was intended to complement the quantitative questionnaire, and it gave the heads of households an opportunity to describe their situation in greater details, and to give more detailed arguments instead of just answering "yes" or "no" to a series of questions.

The third step consisted of designing a quantitative questionnaire with the information obtained from the villagers. Among the 255 households surveyed, 211 were seasonal migrants, the remaining 44 households are non migrant households. The 44 non migrant villagers were chosen randomly. Questions were asked on debt bondage, bonded labour, child labour, financial practices, living conditions. It was asked to the interviewees how much interest they pay for loan taken with different sources. For more detail on the question design, complete methodology of the research see for example Guérin *et al.* (2004). The financial practices were the main concern of the study as it is linked with debt bondage. The financial aspect of the study revolved around the borrowing practices of households, their saving habits, and also their lending practices. In this paper, we consider the quantitative and qualitative evidence together, in an attempt to determine the importance of social proximity in determining interest rates.

2.2. Financial sources in the villages

As Bhende (1986) underlines, sources of credit vary according to villages. In the village we surveyed, there are several different potential sources of finance (formal and informal) from which households may borrow. This means that they can borrow from different sources for their different expenses, thus accumulating debt. But in the end they will have to repay all their debts. There are at least nine sources of finance available in the village: relatives/friends, *maistries* (labour brokers), shopkeepers or shop-owners (grocery shop/vessel shop), wealthier individuals within the village, moneylenders, pawnbrokers, and a bank. As we are only concerned with informal sources of credit we have ignored the bank. Microfinance is expanding all around India and such institutions are now offering their services to poor households, but some households, such as those surveyed in this sample, have no access to these financial services. This has led us to eliminate 16 financial operations associated with microfinance and banks out of the total of 770 credit operations, leaving 754 informal credit operations.

We have divided the sources of finance into two groups: the first group corresponds to a strong social proximity, and it comprises relatives/friends, *maistries* and shopowners or shopkeepers. The second group of sources of finance consists of the wealthier individuals in the village, moneylenders and pawnbrokers. It constitutes the weak social proximity group. These groups are distinguished on the basis of the proximity of the relationship between borrowers and lenders. In the first group, the relationship between the lenders and the borrowers is very frequent, whereas in the second it is only restricted to financial transactions.

Maistries are the main source of credit for households. These brokers recruit seasonal labourers mainly to work in the brick kiln industry. The recruiting process is based on a system of advances. In this system, the broker lends money to the labourers he recruits, and in

³ The aim of the focus group survey is to get an insight of the social relation of indebted households with the *maistries*, employers, and the villagers.

exchange hires their labour. The labourers will then have to work for the broker for one season.

However, lending money to labourers is risky, and so to minimize the risk, brokers recruit labourers mainly from a close network: family members, neighbours, members of their own caste (Bhukuth *et al.*, 2007). Brokers therefore actually recruit labourers over whom they have some control, and some financial and moral influence. But it is also risky for labourer taking loan from a broker. If the labourer is unable to repay the entire debt, he falls into debt bondage. This means that he has to work for the same broker again the next season, and he is not allowed to take any advance payment from any other *maistry* in the village. This system is basically the same as the phenomenon observed by Bhardan (1980) and Braverman and Stiglitz (1982) in the interlinked credit labour market in rural areas. The sole difference resides in the indirect aspect of the recruiting process. Households permanently in need of money prefer this system of credit⁴. To avoid falling into debt bondage, and to increase the possibility to be employ for the next season, labourers build strong relationships with the brokers (Bhukuth 2006 and Bhukuth *et al.*, 2007).

The second source of finance within the strong social proximity group consists of relatives and friends. Households ask for small loans from their friends and relatives. If the amount borrowed is higher than expected the lenders charge the borrower interest, to compensate for the opportunity cost of lending. The interest rates imposed do not exceed 5%. This finding is similar to other studies carried out by Krishna *et al.* (2003, 2004), and Sriram and Parhi (2006). These studies show that relatives and friends hide their wealth to avoid having to lend money to other members of their family and community. In our village, lending money circulates and is based on reciprocity. When a household has enough money to satisfy its expenses, it can lend to a family member who is in need, and may charge interest if the amount requested is higher than usual. The borrowing and lending relationship is based on reciprocity, which is justified by the fact that there is not enough employment for everyone in the village, and so anyone could need money. In these circumstances, people first turn to *maistries* and family members to satisfy their needs.

The last source of finance in the strong social proximity group is the shopkeepers and shopowners (Grocery shop/Vessel shop/Cloth merchant). The relationship with these sources of credit is quite strong, as the head of the households, their wives and even their children, all spend time in the shop buying goods and talking to other villagers. Shops are meeting places and sites of social life. Hence, the frequency of contact is high, and this is a factor creating trust relationships, and thus maintaining or even enhancing the social relationships with other villagers and with the shopkeepers and owners.

The weak social proximity group is comprised of the wealthier individuals in the village, moneylenders and pawnbrokers. Moneylenders are alternative sources of credit in rural villages. There are two kinds of moneylenders: professionals and non-professionals. The former have a good reputation among the villagers, whereas the latter are known for their misdemeanours, and have a bad reputation. The professional moneylenders are well known, established institutions. They have a licence to operate as moneylenders, which is not the case of the non-professional ones. In most cases, legal moneylenders operate from their shops, whereas the others roam from village to village to lend their money, and demand a higher rate of interest. Even when households maintain a good relationship with the professional moneylenders, their relationship remains mainly professional with regard to credit. The good relationship can give households some bargaining power about the interest rate and the delay of payment. Professional moneylenders adopt a flexible approach, depending on the situation

⁴ For a complete analysis of the brokerage system, see Bhukuth *et al.* (2006).

of the household (Guérin *et al.*, 2004). Non-professional moneylenders do not do this, and if a debt is not repaid, they use physical violence and moral harassment to get their money back. For example, they may threaten the debtor at home, informing his neighbours about his situation, and complain to their family and *panchayat*. They may even be aggressive with the debtor (Guérin *et al.*, 2004). In this case, there is obviously no social proximity between the non-professional moneylender and the villager. The former, who has saved some money, only thinks about making more money by lending to households who are deeply in need of money. These moneylenders do not ask for any guarantee, such as mortgaging assets, which tempts households who have very few assets to pledge. This contrasts with the behaviour of professional moneylenders and pawnbrokers, who guarantee against the risk of defaulting by adopting a flexible approach and asking for mortgaging assets. They have recourse to legal means to recover their money. The interest rate is bargained with the professional moneylenders and pawnbrokers, but this is rarely the case with non-professional moneylenders.

3. Statistical facts and estimate results

In this section, only the statistical findings which relate to the factors that have been taken into consideration, will be presented. A linear model (OLS) was used to estimate interest rate in relation with its explaining factors. In the model the predicates of the interest rate are: frequency of taking loan, social proximity and compounding debt. These explaining factors can influence the interest rate.

3.1. The frequency of borrowing and the interest rate

The table below describes the frequency of financial transactions realised by the interviewees. The table can be read as follows: for example 7 financial operations are realised on a weekly basis with relatives/friends. By the same token, the figures in the table correspond to demand for credits from different financial sources available in the village. The 255 households surveyed have been involved in 754 financial transactions with different financial sources.

The frequency of borrowing from different sources gives a good insight of the demand for loans. *Table 1* shows that poor households take loan from financial sources “only once or twice a year”, representing 328 financial operations and also “several times in a year” which represents 288 operations. When the frequency of taking loan is “several times per year” then mainly households borrow from *maistries* (82 financial operations recorded), pawnbrokers (85) and relatives (72). When the frequency is “Once or twice a year”, households take loan from *maistries* (95), pawnbrokers (85) and “wealthier person of the village” (72). This frequency of taking loans from the *maistries* matches the findings of Bhukuth *et al.* (2006). Borrowing from moneylender and pawnbrokers “once or twice a year” signifies that these agents are not the main source of credit in the village. Hence, households do seek loans from their relatives more often (in a monthly basis for 43 credit operations, and several times a year in 73 cases). The household diversifies the sources of credit for not being dependant to only one source. Moreover the diversification of sources is part of logic of survival very carefully planned, in the sense that the household borrows from one source to pay another one. But the constraint is the household is permanently indebted.

Table 1. Frequency of borrowing from different sources of credit

SOURCES OF CREDIT	FREQUENCY				Total
	Weekly	Monthly	Several times per year	Only once or twice a year	
Relatives/Friends(In Tamil: kaimathu)	7	43	73	12	135
Wealthy people in the neighbourhood	4	6	6	72	88
Money Lenders		10	18	55	83
Maistry	2	24	82	96	204
Shopkeeper	8	10	5		23
Grocery shop / Vessel shop / Cloth merchant	10	8	19	8	45
Pawnbroker(Adagu place)	1	5	85	85	176
Total	32	106	288	328	754

3.2. The outstanding debt

Table 2 presents the number of financial operations realised with two sources of credit which we have categorised under the items strong and weak. These two sources of credit represent social proximity; strong means that social relations maintained by economic agents are strong and weak implies that social relations are weak. N represents the number of financial operations realised. 339 operations have been realised with lenders classified under the category of strong and 415 credit operations with lenders in the weak category out of a total of 754 credit operations. The table presents the mean of minimum and maximum credits provided by sources of credit (strong and weak) as well as the debt of households.

Households take only small loans from their relatives and friends, because they have limited funds and cannot lend too much. Households borrow more from wealthier individuals in the village, and from the *maistries* and pawnbrokers. Since the frequencies of taking loan from these sources are not high, this suggests that households only contract loans in exceptional circumstances, except in the case of the *maistries*.

Table 2. Social proximity and debt

SOCIAL proximity	N	MIN AMOUNT		MAX AMOUNT		OUSTANDING DEBT	
		MEAN	STANDARD DEVIATION	MEAN	STANDARD DEVIATION	MEAN	STANDARD DEVIATION
Strong	339	1406,34	2838,75	4596,61	7020,27	4500,00	5657,52
Weak	415	1201,05	2515,76	5406,14	7431,54	3771,67	5669,81
TOTAL	754	1293,35	2665,97	5042,18	7255,96	4099,13	5672,12

Taking consequent loans both from the strong social proximity and the weak social proximity groups does not enable households to avoid being indebted. On average, the outstanding debt is higher for the households who have borrowed from the strong social proximity group than from the weak social proximity group. They get indebted in the former group to the *maistries*, and in the latter group to the wealthier individuals in the village, who are mainly the local landlords. The consequence of having huge debt to these kinds of sources of finance is to be caught in debt bondage. In the case of being indebted to *maistries*, this involves the loss of their freedom to sell their labour and work seasonally for other *maistries*.

The households can repay their debts by working for the *maistry* concerned. The risk of having huge debt with the moneylenders and pawnbrokers is that of losing the asset mortgaged. But as we have already seen, borrowers and lenders have established customary relationships, and the lenders usually deal with these situations by adopting a flexible approach. They either reduce the amount of credit granted, or the interest rate in order not to struggle the households.

In the case of 567 credit operations with an average debt of Rs 5,105, the interest rate was not compounded, whereas it was for 187 credit operations with an average loan of Rs1,048. The average debt incurred by most of the households remains unchanged, because they have learnt to manage the risk of indebtedness. In fact, the households are permanently indebted. They try to repay the debt by small instalments to give a positive signal to the creditors. This is the only way they can ensure a relationship of trust with their creditors. The indebted household also contract out loans from one creditor to pay back another one, and this process continues until they migrate to work. The main activity that enables them to repay their debt is working for the *maistries* as seasonal workers. These households can earn enough money, to accumulate material assets, and to repay their debt. Bhukuth *et al.* (2007) have shown that the probability of earning money from the seasonal activity depends on the *maistry*-labourer relationship.

3.3. The relation between indebtedness and interest rate

As shown in *Table 2*, the average outstanding debt is Rs. 4099,13, with a standard deviation of Rs. 5672,13. The discrepancy between the mean and the standard deviation is explained by the fact that some households borrow more than others.

The households that have contracted higher loans have huge debts, as they are unable to repay all their debts. A high level of debt is linked to the highest interest rate. Seven credit operations have an average loan of Rs.13,714, with a standard deviation of Rs.6,343, at a 15% interest rate. The credit operations with a 15% interest rate were enacted with the wealthier people in the village (four credit operations), one with a moneylender, and two with pawnbrokers. The outstanding debt is also high at low interest rates (2 and 3%). This is explained by the fact that as the interest rate is not high, households contract greater amount of loans. The highest loan received is Rs50,000.

3.4. Relationship between interest rate and social proximity

The table below presents the relation between interest rate and social relations. The average interest rate provided by lenders with whom the borrowers have a weak social relation is 4,54% whereas it is at 0,11% in the case of strong social relation. The interest rate is thus almost nil for credits borrowed from lenders maintaining strong social relationship with borrowers. The interest rates are negotiated on a weekly basis. The borrowers bargain for the interest rate with lenders. The payment of debt on a weekly basis becomes less constraining since the interest rate is low whilst being high on a monthly basis. For instance an interest rate of 5% weekly matches with 20% monthly. It is more constraining to pay a credit at 20% interest rate. The lender has the guarantee of being paid on a weekly basis rather than on a monthly basis.

We have assumed that the interest rate depends more on social relation. In other words, the stronger the social relation the lower is the interest rate and inversely. It is also assumed that the borrowers can bargain for preferential interest rate. It is easier to bargain with lenders who are closed to or with whom the borrower maintains proximity relations.

At this stage two alternative hypotheses can be formulated. Either the relation of proximity reduces information asymmetry and the interest rate decreases due to the reduction of risk premium; or proximity relations get entangled in a system of rights and obligations (Mahieu 2001) and the weakness of the interest rate is explained from such a system. For instance, for exchange of preferential interest rates, the borrower could be in the obligation to work in the fields of lenders or to be available at any time required. The borrowers are perfectly informed of the fact that they would be driven to execute duties or work for the lender. These services provided allow the consolidation of proximity social relations. A person refusing to be subjugated would be in a social exclusion situation.

Fieldwork tends towards the second hypothesis and its pertinence is verified in the following section.

Table 3. Interest rate and social proximity

Social proximity	Mean	N	Std. Deviation
WEAK	4,54	415	3,27
STRONG	0,11	339	0,62
TOTAL	2,55	754	3,31

4. Estimates of the interest rate in terms of social proximity

In this section we test the relationship between the interest rate and social proximity. Social proximity is an explanatory factor for the interest rate. The model presented makes it possible to determine the factors that influence the interest rate presented in equation 3 above. We use a simple linear regression model. This model is relevant to understanding how the proximity of the relationship determines the interest rate. Social proximity is a binary factor, and can take the form of strong or weak social proximity. The hypothesis is that when the household is more often in connection with the lender this will reduce the interest rate, in other words, strong social proximity has a negative impact on the interest rate, and inversely, weak social proximity has a positive impact on the interest rate.

Social proximity (StrongSP) is a dummy variable taking the value 1 for strong relationship and 0 for weak relationship. The exogenous variables of the model are minimum of loan taken (min Amount), the frequencies of loan taken (Frequency) and the loan that has been compounded (CompoundinDebt). The latter variable is dummy variable taking the value 1 for Yes if the debt has been compounded and 0 if not. This variable takes into account whether the debt has increased. If the answer is Yes then it is considered that the debt is increased. In rural areas, households living in extreme poverty take small amount of amount in a high frequency. These variables influence the formation of the interest rate which is negotiated with the loan suppliers. The minimum amount of credit is taken as an exogenous variable for the simple reason that we want to test the dependant relation it can have on the interest rate. The borrowers take smaller amount of loan with lenders whose social proximity is strong. They may borrow several times with the same lender. Thus, it consists of determining the sign of the coefficient of estimation to capture the influence of this variable on the dependant variable. Stiglitz and Weiss (1981) explain that banks in information asymmetry fix a high interest rate to ration the credit. We can consider that a high amount of credit may increase interest rate to hedge against the risk. Inversely, a low interest rate may be associated with low credit.

The explaining variables are a mix of quantitative and qualitative variables. Two of the variables social proximity (strong and weak) and compounding are dummy variables. The

other variables are quantitative (Frequency and min Amount). Therefore, a linear estimate model (OLS) is chosen instead of a logit model. Indeed if the explained variables were qualitative and specially a dummy variable the logit model would be chosen. As the interest rate is a quantitative variable the OLS model was chosen. The model shows the relationship between the independent variables and the dependent variables. It is interesting to understand the independent variables having an impact on the interest rate.

The model tested is as follows:

$$i_t = \beta_0 + \beta_1 StrongSP_t + \beta_2 Frequency_{ij} + \beta_3 \min Amount_t + \beta_4 CompoundingDebt_t + \varepsilon_1$$

The index t in the model represents the period of transaction. The financial transactions were realised during a period of time t which represents one year. Therefore, the variable “frequency” has a double index which indicates the different frequencies of credit taken during the time t. thus, j represents, weekly, monthly, several times a year, only once or twice a year.

Prior to testing this relation, the correlation between variables is verified. *Table 4* of Pearson correlation shows that there is no correlation between exogenous variables. The explaining variables do not present any problem of endogeneity. They can be a predicate explaining the formation of interest rate.

Table 4. Pearson Correlation

	Rate of Interest	Minimum	Frequencies	Compounding	Proximity strong
Interest Rate	1,000				
Minimum	,092	1,000			
Frequencies	,318	,269	1,000		
compounding	,559	-,183	,179	1,000	
proximity strong	-,668	,038	-,153	-,420	1,000

The results of the regression model are then shown in *Table 5* below. The explanatory variables of the model are all significant at $P \leq 0.05$. Indeed, the compounding debt has a positive impact on the interest rate. It means that when the household’s debt situation has been worsen-off, the creditor increases the interest rate in order to limit the demand for credit. It has been stated that lenders adapt their behaviour according to the indebtedness of household, this hypothesis is confirmed by our estimates. Moneylenders, pawnbrokers and wealthy individuals in the village adopt a flexible approach, depending on the financial situation of the household.

Moreover, what emerges, therefore, is that the frequency of taking loans has a positive impact on the interest rate, which is significant. This variable explains why lenders try to limit the debtors to asking for credit in a regular way, because they are not able to repay their debt. The more they want to borrow, the higher the interest rate. Lenders want to avoid an over-indebtedness situation, which is unsolvable both for the household and for the lender. What limits the request for credit is not the indebtedness situation of the household, but the frequency with which credit is requested and whether the situation has been deteriorated. This result contradicts the hypothesis of micro rationing of Ghosh and Ray (2001) who both state that the interest rate decreases with the frequency of transactions because the lender acquires information on the borrowers. Our result may suggest that the question of social proximity does not reduce the problem of asymmetry of information, but that others phenomena could be determinant, for example like the feeling of being more or less oblige to realise

transactions according to social proximity. An effect of belonging to a community appurtenance could exist which could distinguish different types of lenders. Such a hypothesis could be assimilated to the notion of rights and obligations of economic anthropology (Mahieu, 2001).

Moreover, the amount of loan taken also plays an important role in the formation of the interest rate. In rural areas characterised by absolute poverty credit transactions are based on small amount on a short term basis. The accumulation of small amount of credit can lead to over-indebtedness. In fact, the minimum amount of loan has a positive impact on the interest rate. Indeed, households take small amount of loan several times per period. A positive high interest rate can have the effect of discouraging the demand for credit. It regulates the supply and demand for credit on the informal credit market.

The estimates indicate that strong proximity is significant and its estimate coefficient is negative. Hence, strong social proximity negatively influences the rate of interest, whereas weak social proximity has a positive impact on the interest rate. The hypotheses associated with the interest rate and social proximity are verified. In other words, since the borrowers know the lenders because of the social proximity then can bargain for lower interest rate. The lender and the borrower are committed in a reciprocal relationship.

Table 5. The results of the estimate

Source	SS	df	MS	Number of obs = 754
Model	4852.10106	4	1213.02526	F(4, 749) = 268.92
Residual	3378.58329	749	4.51079212	Prob > F = 0.0000
				R-squared = 0.5895
				Adj R-squared = 0.5873
Total	8230.68435	753	10.9305237	Root MSE = 2.1239

Interest rate	Coef.	P>t
Minimum Amount	.0001693 (5.44)	0.000
Frequency	.5612783 (5.66)	0.000
Compounding	2.644081 (12.93)	0.000
Strong Proximity	-3.36394 (-19.55)	0.000
Constant	1.385342 (4.15)	0.000

t student is indicated in brackets.

Conclusion

Our study shows that poor populations have recourse to the informal credit market to smoothing their consumption, and to cope with crises. Access to the informal credit market is closely related to social proximity of these poor populations. The access to a credit with a low rate of interest depends on their ability to constitute and maintain their social relationship, which may involve some expenditure on regular social contacts to keep this social relationship active. Hence, the high level of social expenses relative to income in poor households (Banerjee and Duflo, 2007) can find some justification.

Murdoch (2000) states that microfinance is a substitute for informal credit because the interest rates charged by moneylenders are higher than those of the microfinance institutions.

Tsai (2004) finds evidence of four complementary factors between microfinance and informal finances in China and India, which contribute to strengthening the practice of informal finance in these countries. However, none of the analyses of informal finance shed light on the relationship between lenders and borrowers. If households fail to repay the debt, they cannot get loans from microfinance institutions. Moreover, our study took place in a context in which there were no sources of microfinance. In such a context, we can question the impact of introducing microfinance, notably as potential substitutes for informal credit, and their effects in terms of expenses for the poor. Assuming everything else remains equal in other respects, this could possibly reduce the expenses currently devoted to constituting social proximity. In this case, and according to this hypothesis, the introduction of microfinance could have an ambiguous effect. On the one hand, this would have the positive effect of reducing the weight of social expenses in the income of poor households, and on the other hand, possibly more randomly in the medium term, possibly by modifying social relationships within the villages.

Finally, our study shows that the asymmetrical information cannot explain by itself the value of interest rate on the informal credit market. Our study does not corroborate with the result of Ghosh and Ray (2001). The frequency of transaction is not associated with a decrease in interest rate. On the contrary, it exerts a positive effect on the interest rate. Social proximity exerts an influence which is thus not reduced to information asymmetry. It should rather be understood in a logic of rights and obligations of the relationship between individuals.

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