Interest rate formation in informal credit markets in India: does level of development matter?

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Abstract

Access by the poor to financial resources on favourable terms and conditions is a necessary pre-requisite for achieving any developmental goal for an economy. However, in India, about 50 percent of the population are financially excluded from the formal banking network. These households avail loans from informal lenders, who generally impose unfavourable terms and conditions on the borrower. This paper, based on an in-depth analysis of *National Sample Survey Organisation (59th round, All India Debt and Investment Survey, 2003)* unit record data, seeks to understand the factors that influence the formation of interest rates in the developed region vis-à-vis the less developed ones, as the latter are seen to experience higher rates of interest. Using an ordered logit model, our analysis shows how in the developed regions the lack of monopoly power of lenders brings down interest rate levels.

Keywords: indebtedness; credit market; formal lending agency; informal lending agency; interest rate; moneylender

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1. Introduction

Accessibility to credit on favourable terms and conditions plays an important role in the overall development of an economy and in poverty eradication. From the time of independence, therefore, the government of India has given special emphasis to improving access to finance, through policies such as priority sector lending (lending to agriculture, small-scale and village industries, artisans, etc.), nationalisation of banks and spread of bank branches to rural areas. Notwithstanding such endeavours, a large percentage of households in India still borrow from informal credit markets. National Sample Survey Organisation (2005a) reveals that in 2002 around 50 percent of borrowers were indebted to informal lending agencies, and that a considerable proportion of these loans were made at an interest rate of 30 percent or above.

It is noteworthy, however, that such high rates of interest do not exist uniformly across the informal market. Features of informal credit markets tend to vary from developed to less developed regions (see Bell and Srinivasan, 1989), and from one moneylender to the other (see Ray and Sengupta, 1989). Indeed, previous studies (Ghatak, 1975, 1977; Iqbal, 1988, Bhattacharyya, 2005) have shown that informal credit markets of developed regions are characterised by lower interest rates than those of less developed regions. However, studies that have compared the issue of interest rate formation across different regions of the country are few and dated (Ghatak, 1975, 1977; Iqbal, 1988). Moreover, although several studies (Ghatak, 1975, 1977; Iqbal, 1988) have noted that interest rate differences exist between developed and less developed regions, there has been almost no effort to identify the factors that explain such differences.

To bridge this gap, the current paper focuses on the factors that determine the rate of interest in informal credit markets. The analysis is conducted by appropriately selecting states to represent different levels of economic development. More precisely, we have selected the states of Punjab and Haryana to represent the features of developed regions, Chattisgarh and Madhya Pradesh are selected to represent less developed region, while West Bengal is considered as a middle performing state. We have used 59th Round (2002-03) unit level 'National Sample Survey Organisation' (NSSO) data pertaining to debt and investment (All India Debt and Investment Survey), which provides information on the debt and investment-related variables of about 143,285 households (all India).[1] The data include samples from both rural and urban areas. While this source provides rich micro level information through a representative sample, there have been a limited number of studies that attempted a rigorous analysis of this data set.

As a backdrop to this main analysis, the paper compares the overall borrowing situation of the households in the selected states. This is done in order to have a basic understanding of the informal credit market of the states, since such an understanding is a prerequisite to understanding the formation of interest rates.[2]

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[1] The data set provides information for 3,975 households of Punjab, 2,630 of Haryana, 2,637 of Chattisgarh, 6,586 households of Madhya Pradesh and 11,120 households of West Bengal.
[2] Informal credit market is only considered, because in India, due to the presence of government regulation, the interest rate in the formal sector is low and does not vary much from one (formal) agency to another. One should also note that relatives and friends have not been considered, as they do not charge interest. In this context, it is important to note that NSSO defines 'relatives and friends' as those who provide interest-free loans. If the loan bears interest, it is considered as having been taken from a moneylender.

Based on this background, the paper is organised as follows. The rationale for the selection of states is elaborated in the next section. The subsequent section makes a comparison of the nature of indebtedness across households of different characteristics (subdivided according to their monthly per capita consumption expenditures) and between the states selected for the analysis. This is followed by the section focusing on econometric specification and variables selected for analysis. The penultimate section brings out the results of the regression analysis. This is followed by a concluding section.

2. Subdivision of households and criteria followed for selection of the states

In this paper, we have subdivided the households into three different classes, according to their monthly per capita consumption expenditures (MPCEs). This helped us to distinguish between comparatively richer households and the poorer ones. As mentioned above, five states are selected to represent developed, middle performing and less developed regions of the country. In particular, Punjab and Haryana are considered as developed states. These two states have similar features. West Bengal (WB) is considered as a middle performing state, while Chattisgarh and Madhya Pradesh (MP) are considered as less developed states.[3]

Punjab and Haryana are considered as developed states because the yield of food grains is higher in both these states as compared to West Bengal (middle performing state), which again is ahead of Madhya Pradesh (MP) and Chattisgarh in this respect. Moreover, states like Punjab and Haryana are in a better position compared to the other states considered here, in terms of the percentage of people living below the poverty line. While in Punjab and Haryana, as of 2004-05, 8.4 and 14.0 percent of the people were below the poverty line, the figures for West Bengal, Chattisgarh, and Madhya Pradesh were 24.7, 38.3, and 40.9 percent, respectively. The number of formal banks per village is also higher in Punjab, Haryana, and West Bengal,[4] compared to Chattisgarh and Madhya Pradesh. Table 1 and Table 2 provide certain features of households of the states considered for analysis.

Table 1 shows the distribution of households in the sample according to their monthly per capita consumption expenditures. It reveals that, compared to the middle performing and less developed states, a larger percentage of the households of developed states are comparatively better off economically. Data also show that distribution of households with respect to MPCE in Punjab is similar to that of Haryana, while Chattisgarh and Madhya Pradesh have similar features.

Table 2 provides information about distribution of households according to their occupation. It is observed that in rural areas, compared to the developed and middle performing states, relatively more households are engaged in agricultural activities in the less developed states.[5] For instance, in rural areas of Punjab 19.4 percent of the households are agricultural labourers and the figure for Madhya Pradesh is 34.2 percent. While considering the figures for urban areas, we find that there are more casual labourers in the less developed and middle performing states, vis-à-vis the

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[3] Chattisgarh was a part of Madhya Pradesh until 2000, after which it became a separate state.
[4] There does not exist much difference between West Bengal and developed states, as far as number of formal banks per village is concerned.
[5] By engagement in agricultural activities, we mean either 'self-employment in agricultural activities' or 'agricultural labourers'.

developed states. On the other hand, in the developed states, more households are self-employed (see Table 2, urban areas).

Table1: Distribution of households according to MPCE

MPCE (Rural)	Punjab	Haryana	West Bengal	Chattisgarh	Madhya Pradesh	India
0-500	26.0	33.6	71.1	86.2	79.1	66.2
500-1000	56.2	55.6	25.5	12.3	19.9	29.7
Above 1000	17.8	10.8	3.4	1.5	1.0	4.1
Total	100	100	100	100	100	100
MPCE (Urban)	Punjab	Haryana	WB	Chattisgarh	Madhya Pradesh	India
0-500	14.9	13.5	26.6	41.9	34.2	24.3
500-1000	49.6	50.4	45.7	35.1	40.1	46.9
Above 1000	35.5	36.1	27.6	23.0	25.7	28.7
Total	100	100	100	100	100	100

Source: Computed using NSSO, 59th Round, All India Debt and Investment Survey (AIDIS)

Table2: Distribution of households according to major economic activities in selected states

Activities (Rural)	Punjab	Haryana	WB	Chattisgarh	MP	India
Self-employed in non-agricultural activities	17.5	14.4	24.1	8.5	10	14.4
Self-employed in agricultural activities	30.5	34.7	32.1	42.2	44.7	37.3
Agricultural labour	19.4	10.7	26.5	37.5	34.2	26.1
Other labour	17.7	22.0	8.8	3.2	4.0	10.8
Others	15.0	18.2	8.6	8.6	7.1	11.3
Total	100	100	100	100	100	100

Activities (Urban)	Punjab	Haryana	WB	Chattisgarh	MP	India
Self-employed	44.4	40.3	40.1	26.2	35.0	36.2
Regular wage/salaried	41.0	44.6	34.6	46.7	42.6	41.9
Casual labour	9.2	10.1	15.3	17.6	11.6	12.0
Others	5.4	5.0	10.0	9.6	10.8	9.9
Total	100.0	100.0	100.0	100.0	100.0	100.0

Note: WB = West Bengal; MP = Madhya Pradesh
Source: Computed using NSSO, 59th Round, All India Debt and Investment Survey (AIDIS).

3. Nature of indebtedness of households across the selected states

To understand the formation of interest rates in informal credit markets, one first needs to have a basic understanding of the nature of indebtedness faced by the households in those states. To look into the nature of indebtedness, we start with the issue of incidence of borrowing. Incidence of borrowing (IOB) for a particular class of households is defined as the percentage of households who have availed loan (within that class interval) during a given year (see NSSO, 2005b). A higher incidence of borrowing may have several implications. First, it may connote higher accessibility to credit. Second, it may also be an outcome of excess dependence on credit (see also Basu, 2006). In this context, one should note that previous studies have used incidence of indebtedness (IOI), defined as percentage of households having loan outstanding on a particular date, as a measure of accessibility (Basu, 2006; Dev, 2006). Incidence of indebtedness, however, includes outstanding loan from fresh borrowing and unsettled past borrowing. Owing to the presence of this second component, IOB may be a better measure of accessibility.

Table 3: Incidence of borrowing (IOB) of cash loan by monthly per capita consumption expenditures (MPCEs) of households during 01.07.2002 to 30.06.2003 in rural and urban areas of each state (percentage of households)

MPCE (Rupees)	Rural				
	Madhya Pradesh	**Chattisgarh**	**West Bengal**	**Punjab**	**Haryana**
0-500	17.4*	13.9	17.5	20.4	13.9
500-1000	20.2	27.0	20.1	31.5	21.9
Above 1000	22.3	4.5	23.6	48.3	18.1
ALL	17.6	15.4	18.4	32.6	20
Urban					
0-500	8.9	7.8	15.8	9.2	23.6
500-1000	7.2	10.3	14.1	9.0	15.4
Above 1000	9.3	13.2	9.4	7.4	7.2
ALL	8.3	10.0	13.2	10.0	15.0

Note: * 17.4 percent of households out of the total households falling in the MPCE class interval (0-500) have borrowed loan in rural areas of MP during 2002-03.
Source: Computed using NSSO, 59th Round, All India Debt and Investment Survey (AIDIS).

If we interpret incidence of borrowing as accessibility, then in the absolute sense, within a state, poorer households (MPCE below Rs. 500) in both rural and urban areas possess low accessibility to credit vis-à-vis households of higher monthly per capita consumption expenditures (see Table 3). We also find that urban households possess lower accessibility to credit compared to their rural counterparts in each state (see Table 3). For instance, while overall IOB in rural areas of Chattisgarh is 15.4 percent, the figure for urban areas is 10 percent. Apart from this, we find that households in developed regions (particularly rural areas) possess more accessibility to credit vis-à-vis less developed ones. (See overall figures in Table 3.)

However, while interpreting Table 3, one aspect has to be kept in mind. In Chattisgarh and Madhya Pradesh a larger section of households falls into the poorest class, compared to Punjab and Haryana (see Table 1). For instance, while in Punjab, 26 percent of households incur monthly per

capita consumption expenditure of below Rs. 500, the figure for Chattisgarh is 86.2 (see Table 1). Therefore, a low value of IOB for the poorest class of households in Chattisgarh and Madhya Pradesh implies that a much larger proportion of total households are not having access to credit.

Therefore, in order to compare the issue of accessibility to credit across the comparatively poorer households of each region, we have computed the IOB of the bottom 10 percent of households (in terms of their MPCEs) (see Table 4). The table shows that access to credit is lower among the poorer households of comparatively less developed states (see Table 4).

Table 4: Incidence of borrowing (IOB) by bottom 10 percent of households (arranged in ascending order according to their monthly per capita consumption expenditures) in each state

	IOB	
States	**Rural**	**Urban**
Punjab	18.7	7.4
Haryana	15.2	30.0
West Bengal	13.2	16.5
Chattisgarh	3.3	3.6
Madhya Pradesh	10.9	9.5

Note: IOB = Incidence of borrowing.
Source: Computed using NSSO, 59th Round, All India Debt and Investment Survey (AIDIS).

The question that arises is why accessibility to credit (captured by IOB) is low in less developed states. Is it due to an inadequate presence of formal lending agencies, leading to higher demand for credit in informal credit markets, or is it due to a lack of sufficient informal lending agencies?

Table 5: Incidence of borrowing by lending agency during 1.07.02 to 30.06.02 (percentages of households)

Rural	Madhya Pradesh		Chattisgarh		West Bengal		Punjab		Haryana	
	1	2	1	2	1	2	1	2	1	2
0-500	8.1*	9.3	6.6	7.3	4.5	13.0	5.4	15.0	5.9	8.0
500-1000	11.7	8.5	20.1	6.9	7.2	13.0	14.8	16.7	10.6	11.3
Above 1000	14	8.3	3.2	1.4	13.5	10.1	32.7	15.6	12.1	6.1
ALL	**8.9**	**9.0**	8.2	7.2	5.5	12.9	**15.6**	**17.0**	9.2	10.2
Urban	Madhya Pradesh		Chattisgarh		West Bengal		Punjab		Haryana	
0-500	1.6	7.4	2.1	5.7	1.6	14.2	1.4	7.8	1.1	22.5
500-1000	3.7	3.5	6.9	3.4	3.5	10.6	2.9	6.1	4.5	10.9
Above 1000	7.7	1.7	11.9	1.4	5.6	3.8	5.5	2.0	4.9	2.4
ALL	4	4.3	6.0	3.9	3.6	9.7	3.6	5.4	4.2	10.8

Note: *8.1 percent of households out of the total households falling in MPCE class of (0-500) in rural areas of Madhya Pradesh have availed loan from formal sources; 1 = formal source, 2 = informal source..
Source: Computed using NSSO, 59th Round, All India Debt and Investment Survey (AIDIS).

Table 5, which provides information about the incidence of borrowing according to lending agency, shows that in rural areas, both formal and informal lending are higher in developed regions than in less developed regions. For instance, while 15.6 and 17 percent of households have borrowed respectively from formal and informal sources in rural areas of Punjab, the figures for Madhya Pradesh are 8.9 and nine percent, respectively (see Table 5). The situation of the middle performing region is somewhat different. In fact, the middle performing region is characterised by very low formal lending and high informal lending (see Table 5). Comparing between urban areas of the regions, we find that urban areas of developed regions are not very different from urban areas of other regions in terms of formal lending. However, there is more informal lending in comparatively developed regions. Thus, based on what has been observed empirically, one can argue that in less developed regions, in addition to inadequate formal lending, there is also less informal lending (see Table 5). Otherwise, the latter group would have fulfilled credit demand to some extent to make accessibility to credit (indicated through IOB) higher.

There may be three possible reasons behind the inadequate informal credit market in the less developed states. First, it is possible that, due to the poor economic conditions of most of the households in less developed regions, the capacity to supply loan may be lower; this in turn may have influenced the size of the informal market adversely in terms of number of lenders and/or size of loans. For instance, using unit record data of NSSO (AIDIS, 59th Round), one finds that in Chattisgarh and Madhya Pradesh, while 1.11 percent of the households have supplied loans, the corresponding figure for Punjab and Haryana is 2.61 percent, while that for West Bengal is 3.91 percent. Secondly, it may be the case that, due to the presence of fewer income-generating activities in Chattisgarh and Madhya Pradesh, lending based on various forms of market inter-linkages (such as trader farmer interlinkages) is less. NSSO does not provides information on market interlinkages, but previous studies (see Bell and Srinivasan, 1989; Jodhka, 1995a; Gill, 2004, Deb and Rajeev, 2007) support the presence of such market interlinkages in the form of trader-farmer (credit with output) linkages in Punjab, Haryana and West Bengal. Thirdly, the inability to repay loans due to poorer economic conditions, may have reduced the creditworthiness of borrowers, which in turn may have adversely affected the loan supply (see Purushotham, 2009; Shah and Sah, 2004).[6] In other words, poorer repayment may have made lending in less developed regions riskier than in developed regions. Table 6 also reveals that repayment is comparatively poorer in the less developed region compared to that of the developed region.[7]

Table 6: Percentage of households reporting repayment of cash loan availed from informal sources during 1.07.2002 to date of survey in selected states

Region	Rural	Urban
Developed	22.8	28.7
Middle	29.3	32.4
Less developed	11.7	23.5

Source: Computed by Authors using 59th Round NSSO (AIDIS).

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6 Shah and Sah (2004) have shown how households of South West Madhya Pradesh suffer from income deficit.

7 'Informal lenders' here excludes relatives and friends.

Differences in accessibility to and repayment of credit may impact on the terms and conditions of loans. For instance, lower accessibility to credit may give higher monopoly power to the lenders. Table 7 provides cross-tabulation on interest rates in informal credit market, and percentage of loan availed by households in different MPCE classes for each region. Since interest rate formation may differ between moneylenders whose principal activity is money lending (professional moneylenders), and others (non-professional moneylenders), we have carried out separate analyses.[8] Chisquare test has been performed to see whether there is any association between rate of interest and type of region. For both professional and non-professional moneylenders, we found the presence of association between interest rate and type of region. In other words, rate of interest in the informal credit market differs with level of development.

Table 7: Prevalence of rate of interest (percentage of loan) by region

7a. MPCE less than Rs. 500

Interest rate range	Professional			Non-professional		
	Developed	Middle	Less developed	Developed	Middle	Less developed
0-6	2.8	10.6	3.7	13.8	56.9	14.0
6-12	1.4	9.5	3.4	3.3	8.9	5.9
12-24	53.1	4.0	24.8	48.9	6.2	27.5
24-36	27.1	11.4	43.3	21.6	6.0	35.1
36-48	1.4	12.5	4.5	1.0	3.8	2.2
48-60	11.8	26.3	18.3	9.5	12.0	13.9
60-72	0.7	5.2	0.0	0.3	1.0	0.2
72-84	0.3	1.5	0.2	0.0	1.0	0
84-96	0	5.6	0.2	0.3	0.7	0
Above 96	1.4	13.4	1.6	1.3	3.6	1.1
ALL	100	100	100	100	100	100
No. of observations	289	736.0	830	305	527	971
Test	Values	d.f	sig.	Values	df	sig.
Pearson chi square	745.8	18.0	0.00	512.49	18.00	0.00
Likelihood ratio	787.5	18.0	0.00	513.43	18.00	0.00
Linear association	4.2	1.0	0.04	16.70	1.00	0.00

Note: d.f implies degrees of freedom.
Source: Computed by Authors using 59th Round NSSO (AIDIS).

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[8] The detailed definition of professional and non-professional moneylenders is considered in Section 4.

7b. MPCE above Rs. 1,000

Interest rate range	Professional			Non-professional		
	Developed	Middle	Less developed	Developed	Middle	Less developed
0-6	7.9	11.3	7.9	18.9	58.5	34.5
6-12	5.0	7.5	10.5	5.5	7.5	17.2
12-24	60.4	1.9	57.9	55.1	11.3	27.6
24-36	15.8	22.6	15.8	15.7	7.5	6.9
36-48	1.0	15.1	0.0	0.8	0.0	3.4
48-60	9.9	30.2	7.9	2.4	9.4	10.3
60-72	0	1.9	0	0.8	0	0
72-84	0	1.9	0	0	0	0
84-96	0	0	0	0	0	0
Above 96	0	7.5	0	0.8	5.7	0
Total	**100**	**100**	**100**	**100**	**100**	**100**
No. of observations	101	53	38	127	68	29
	Values	df	sig.	Values	df	sig.
Pearson chi-square	76.0	16	0.00	58.81	14.00	0.00
Likelihood ratio	88.9	16	0.00	59.77	14.00	0.00
Linear association	1.2	1	0.28	1.63	1.00	0.20

Note: d.f implies degrees of freedom.
Source: Computed by Authors using 59th Round NSSO (AIDIS).

We find that interest rates charged by professional moneylenders to households below MPCE of Rs. 500 in developed regions mostly move in the band of 12 to 24 percent, while in less developed and middle performing regions, interest rates mostly lie above 24 percent (see Table 7a). Thus, the result (relation between rate of interest and development) for professional moneylenders is in line with previous studies (Ghatak, 1977; Iqbal, 1989; Bhattacharyya, 2005), which showed that developed regions are characterised by comparatively low rates of interest, probably due to better repayment.

The figures for non-professional moneylenders are different. In each region, non-professional moneylenders charge relatively less compared to professional moneylenders. Due to the presence of market interlinkages, possibly they have better information and hold over the borrowers, which reduces their risk premium.

Another important feature, as seen from Table 7b, is that in each region, interest on most of the loans to households with MPCE above Rs. 1,000 is mainly below 36 percent. In other words, in both developed and less developed regions, households of higher income groups get loans on comparatively better terms and conditions. Due to better accessibility of credit, it is possible that informal moneylenders face competition when they advance loans to households in higher income groups. It may also be possible that raising rates of interest above a standard rate for households

who possess accessibility to credit from other sources would lead to a reduction in repayment (Karlan and Zinman, 2008), as these households would have the option of availing credit from other sources. Thus, moneylenders may not raise interest rates for these households. On the other hand, due to limited accessibility to credit, moneylenders can exercise monopoly power over poorer households.

Summing up, the descriptive statistics presented in the tables above lead us to the following conclusions. First, accessibility to credit is greater in comparatively developed regions. Secondly, accessibility to credit is greater among households in higher income groups. Thirdly, higher income groups possess accessibility on better terms and conditions. Fourthly, repayment is relatively low in less developed states. Fifthly, we found that urban households possess lower access to credit vis-à-vis their rural counterparts.

The descriptive nature of this study on indebtedness helped us to identify some of the major differences between developed, middle performing and less developed regions in terms of accessibility to credit and in price of loans. We next proceed to identify the factors that influence the price, i.e. the rate of interest in informal credit markets in different types of regions.

4. What determines the interest rate in informal markets?

In order to gain insights into the issue of interest rate determination, a regression analysis was carried out by incorporating interest rate as the dependent variable. Informal credit markets in India may consist of various lenders, such as trader, landlord, professional moneylender, etc. However, since the number of observations for each category of moneylender is not large enough, we have considered two types of moneylenders, viz., professional, and non-professional. Professional moneylenders are those whose principal activity is moneylending. Pawnbrokers and jewellery shops are good examples of this type. Non-professional moneylenders, on the other hand, are those for whom moneylending is not the principal activity. They may have some market interlinkages. In our analysis, landlord, trader-cum-moneylender and agriculturalist-cum-moneylender are considered as non-professional moneylenders. Separate regressions have been done for these two types of moneylenders (professional and non-professional), on the assumption that they face diverse credit market conditions.

4.1 Econometric specification

Rate of interest in informal credit market of the states considered here is not a continuous variable. Instead, it assumes certain specific values (see Table 8). For instance, it is seen that in developed regions around 46.7 percent of loans were given at 24 percent interest, another 15.8 percent of the loans were given at 36 percent interest, and so on (see Table 8).

It is possible that the presence of various social obligations or transaction costs prevent moneylenders from discriminating among the borrowers or charging differentiated interest rates to **each** borrower (see Basu, 1989; Basu and Bell, 1991). Since the dependent variable scatters around specific values, an OLS regression may not be the most appropriate method for identifying

the determinants of the interest rate, as it may lead to a low value of *'goodness of fit'*. The ordered logistic regression model therefore is considered to be more appropriate (see Greene, 2003).

In the present analysis, therefore, rates of interest have been ranked in ascending order. Accordingly, the different orders are 0-6, 6-12, 12-24, 24-36, 36-48, 48-60, 60-72, 72-84, 84-96 and above 96.[9]. Based on the borrowers' characteristics, it is assumed that a moneylender chooses a particular band of interest rate.

Table 8: Distribution of interest rates in informal credit markets of different regions, by number of loans (percentages)

Interest rate	Developed	Middle performing	Less developed
0	7.4	21.2	3.9
12	1.2	2.5	1.4
24	46.7	1.9	26.5
30	7.6	0.5	7.6
36	15.8	9.7	33.9
48	2.2	7.0	3.0
60	10.9	24.4	11.5
72	0.2	4.0	0.01
120	0.6	7.2	1.2
Other values	7.5	21.5	11.0
Total	100.0	100.0	100.0

Source: Computed by authors using 59th Round NSSO (AIDIS).

Given these specifications, the model under consideration is as follows:

$$Y_i^* = X_i' b + u_1 \ldots\ldots\ldots\ldots \quad (1)$$

In this, Yi* is assumed to be an unobserved latent variable (the actual rate of interest the moneylender should charge). Due to the presence of transaction cost, one can assume that the moneylender chooses a particular rate of interest if the unobserved variable (desired interest rate) lies within two specific (threshold) limits. Here, b is the vector of unknown parameters, X_i's are the set of explanatory variable, and u_i is the disturbance term that captures random error and effects of the left out factors.

The relation between the Y_i^* and observable Yi (Yi = 1,2,3,4,5,6,7,8,9,10) can be summarised in the following way:

$$Y_i = 1 \text{ if } Y_i^* \leqq k_1$$
$$= 2 \text{ if } k_1 < Yi^* \leqq k_2 \quad \ldots\ldots\ldots\ldots \quad (2)$$
$$\ldots\ldots\ldots$$

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[9] One should note that the orders are based on the frequency distribution of the rate of interest and the intervals are not uniform.

$$= 10 \text{ if } k_9 \leqq Y_i^*.$$

Here k_i's are the threshold parameters. In this model, the disturbance term is assumed to be logistically distributed. Based on this assumption one can obtain the following probabilities:

$$\Pr(Y_i = 1) = \Pr(X_i' b + u_i \leqq k_1) = 1/[1+ \exp(X_i' b - k_1)] \ldots\ldots\ldots (3)$$

$$\Pr(Y_i = 2) = \Pr(X_i' b + u_i \leqq k_2) - \Pr(X_i' b + u_i \leqq k_1) = 1/\{1+ \exp(X_i' b - k_2)\} - 1/\{1+ \exp(X_i' b - k_1)\}$$

$$\ldots\ldots\ldots$$

$$\Pr(Y_i = 10) = \Pr(k_9 \leqq X_i' b + u_i) = 1 - 1/\{1+ \exp(X_i' b - k_9)\}.$$

The estimation of b as well as the threshold parameter is done here by using maximum likelihood method. Here if b is positive, it implies that the probability of charging a higher rate of interest increases with an increase in the explanatory variable. However, such a statement can only be made with respect to boundary probabilities, i.e. $\Pr(Y_i = 1)$ and $\Pr(Y_i = 10)$.

In ordered logistic models, the joint significance of the variables is tested by likelihood ratio test or Wald test.

Having decided the type of econometric model to be used, the next question that arises is whether one should go for a pooled regression (which includes all the states) with greater degrees of freedom, or for region-specific regressions.

Based on the descriptive analysis of the previous section, we found that features of credit market vary from one region to the other. Therefore, a separate regression (with interest rate as the dependent variable) has been done for each of the regions. Our objective is to see how economic backwardness relates to conditions in the credit market. If economic backwardness has no impact on credit market conditions, the explanatory variables would have the same impact on rate of interest for each region.

4.2 Selection of explanatory variables

One can subdivide the factors that influence the rate of interest into the following categories: cost of providing credit, factors leading to monopoly power, asymmetry in information, and institutional factors.

4.2.1 Cost of providing credit

Ghatak (1975) lists three main components that constitute the cost of providing credit: opportunity cost; administrative cost; and the risk premium. The deposit rate in banks and post offices is generally considered the opportunity cost of lending money. Since this does not show much variability across cross-section observations, it cannot be utilised for our analysis (see also Iqbal 1988). The administrative cost is generally a function of the size of the loan (Iqbal 1988) and the period of the loan. The larger the loan size or loan period, the lower are the unit costs of administration. Risks of non-repayment (in the absence of willful default) can be due to financial

reasons (overall poor economic conditions), technical reasons (sudden shocks from failure of farming or transport), or inflation (which reduces the present value of returns that the moneylender expects to receive) (Ghatak 1975).[10] While a separate estimation of each component is not feasible, due to the lack of data, the economic status of households (captured through their MPCE) and their loan-to-asset ratio can be used as a proxy for capturing the extent of risks. A higher loan-to-asset ratio and a low value of MPCE are expected to increase risk for moneylenders. In the presence of perfect information, extent of default risk leads to rise in interest rate.

Apart from the above-mentioned risks, lenders may also face risk arising from willful default, which happens if the lenders have imperfect information about borrowers. For instance, the presence of alternative sources of credit may lead to non-repayment, even when there is no insolvency (see Karlan and Zinman, 2008). This aspect is discussed in detail in Section 4.2.3.

4.2.2. Monopoly power

A lender, while fixing the rate of interest, may charge a mark-up above the cost of lending. However, this would depend on the type of market in which he/she is operating. If the lender operates in competitive market, he/she would fix a rate of interest that is close to the marginal cost. On the other extreme, if the lender operates in a monopoly market, which generally exists due to presence of segmentation, monopoly price would prevail. Thus rate of interest depends on the extent of competition.

Several factors may influence extent of competition. First, number of lending agencies in a region would determine the extent of competition. The presence of more lending agencies, for instance, is one of the pre-requisites for the existence of a competitive market. Secondly, the extent of competition would depend on the borrower's accessibility to credit. A borrower may face monopoly price, even in the presence of many lenders within a region, if he/she could avail loan only from one lender (see Bhaduri 1977, Basu 1983, 1984a, 1984b, 1987, 1989, Basu and Bell, 1991). Thirdly, the extent of competition would be determined by the total supply of loan vis-à-vis demand (Hattlebakk, 2000). Fourthly, if the supplier does have market power, his pricing exercise would depend on the demand function of the borrower in general, and elasticity of demand in particular. Clearly, a moneylender would charge a higher rate of interest to inelastic borrowers.

To capture each of these factors, a few variables are conceived. We have considered percentage of households availing loan from formal sector in a district as one of the explanatory variables. The presence of more formal lending agencies in a region is expected to increase competition within the informal credit market. A borrower's accessibility to credit is captured using two variables. A household's MPCE, already a variable used to capture risk, may provide an indication about the household's accessibility to credit. A household with a higher MPCE is likely to possess higher accessibility to credit, since it can provide better security. Occupation of the borrower, may also determine accessibility. For instance, self-employed households, who may require credit on a regular basis, are expected to have better accessibility to credit. This is because to obtain permanent/credit-worthy borrowers, moneylenders may compete with each other. In our analysis, therefore self employed households were given the value 1, other households were given the value

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[10] One can describe these risks as the risk of realising low level of output.

zero[11]. To capture the extent of excess demand, we have taken up a proxy variable. On the assumption that self employed households require credit on a regular basis, *the incidence of indebtedness of self-employed households* per district has been used as a variable to capture the extent of excess demand. Lower the incidence of indebtedness in a region higher is the extent of excess demand.

Capturing the fourth aspect, viz., elasticity of demand, is rather a difficult task, as NSSO does not provide any information on the nature of demand. In such circumstances, the purpose of a loan to some extent indicates the elasticity of demand. Households availing loan for urgent needs are expected to be inelastic in demand. We have assigned a value of one to loans taken for urgent needs, such as current expenses in farm and non-farm businesses, and a zero value for others.

Apart from this, the extent of competition that a moneylender within a region faces can also be accessed from the relation between rate of interest and presence of security. If presence of security leads to a higher interest rate, it may imply that the moneylender wants to confiscate the collateral by charging more. Indeed, such phenomena exist if the moneylender possesses higher monopoly power (see Bhaduri, 1977; Sarap, 1990). In the presence of competition, however, this may not happen, since the borrower can always approach some other lender, who charges a lower rate of interest.

4.2.3 Information asymmetry

The presence of information asymmetry may also influence the rate of interest. In a credit market, both the borrower and lender may face the problem of imperfect information. If the borrower does not have sufficient information about his/her options, he may perceive limited accessibility to credit, and thereby would pay a higher interest rate. On the other hand, if a lender faces imperfect information he may end up facing default.

The extent of information a borrower would possess primarily depends on their level of education. An educated borrower, with better knowledge about his/her options, could avail loan on comparatively better terms and conditions. In our analysis, the education level of the borrower is captured by using a dummy variable. If the education of any member of the household is above secondary level, the household has been assigned the value one; zero value was assigned otherwise. Households having (secondary level) educated members are expected to avail credit on better terms and conditions.

In the case of lenders, informational problem may arise concerning two aspects. First, it may arise regarding the creditworthiness of the borrower (see Stiglitz and Weiss, 1981). The presence of informational problem regarding creditworthiness of the borrower at the worst may end up with genuine default. We have discussed such cases in Section 4.2.1 Apart from genuine default, a lender may face willful default from the borrower. This would depend jointly on two factors: future need for credit; and presence of alternative source of credit on favourable terms and conditions. Households not requiring future credit may always find it optimal to default, except under

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[11] However, in the absence of sufficient moneylenders in the market, self-employed households may end up paying a higher rate of interest, since their need for credit is urgent in nature.

circumstances when it has provided security against the loan. On the other hand, a household which frequently requires credit would default willfully only if it could avail credit from other sources on favourable terms and conditions.

It is difficult to capture each one of these effects directly. However, one can presume the self-employed households and households of higher monthly per capita consumption expenditure to possess accessibility to credit from multiple sources. Therefore we expect them to receive credit at comparatively low rates of interest (see Karlan and Zinman, 2008).

The presence of security (as mentioned above) is also expected to solve the problem of imperfect information. If a lender advances loans mostly to unknown borrowers, the presence of security would imply a reduction in the risk of the moneylender, since he is assured of some return even if the borrower defaults. Therefore, it would lead to a low rate of interest. On the other hand, if a lender were to engage in business mostly with known borrowers, he would demand security from a borrower whom he perceives to be risky. Thus, the presence of security is an indication of higher risk in such cases, thereby leading to higher interest rates. For instance, Sarap (1990, 1991) has argued that moneylenders do not demand security from borrowers whose repayment is certain. It is also worth noting that there is a transaction cost associated with taking possession of the collateral and realising its market value.

4.2.4 Institutional factors

Institutional factors can influence rate of interest, by influencing all the above-mentioned factors. 'Institutions are social rules, conventions, and other elements of the structural framework of social interaction' (Bardhan 1989). In the analysis to follow, region-specific and religion-specific variables are incorporated to identify the differences in interest rates due to such institutional factors. For instance, due to religious obligations, Muslim lenders generally do not charge high rates of interest. Keeping this in view, we have assigned a dummy variable for Muslim households.

The complete list of variables used in the analysis, along with its notation and definition, is given in Table 9.

4.3 Endogeneity problem

Since loan size is one of the variables in our analysis, the issue of endogeneity between loan size and rate of interest was also considered before running the final regression (see also Iqbal, 1988). To identify the presence of endogeneity, a Durbin-Wu-Hausman test was performed (see Verbeek, 2004). In the first step, we estimated an ordinary least square regression model by considering loan size as the dependent variable and the exogenous variables were kept in the explanatory part (i.e. we excluded rate of interest from the right-hand side of the model). Using this first model, the residual term and size of the loan were estimated. In the second stage, the estimated residual term of the first regression, along with the estimated loan size, were considered as explanatory variables in the rate of interest equation (ordered logit model). If the coefficient of the residual term was significant, it meant the presence of endogeneity, leading to biased estimates. To correct for the biasedness we considered the steps, which is akin to the method used for solving endogeneity

issues in binary response models with continuous endogenous explanatory variables (see Rivers and Vuong, 1988; Wooldridge, 2002). Consider our model as

$$Y_1^* = X_1' b + c Y_2 + u_1 \ldots (1)$$
$$Y_2 = X_1' d + k X_3 + u_2 \ldots (2)$$

where (u_1, u_2) has a zero mean, bivariate normal distribution and is independent of X. Equation 1 is the structural equation with desired/unobserved rate of interest (Y_1^*) as the dependent variable. On the other hand, equation 2 is the reduced form for Y_2 (loan size) (see also Wooldridge, 2002). Endogeneity between these two equations arises if u1 and u2 are correlated. This may happen if u1 consist of two components, namely u2 and a random component ε1. In other words, one can think the endogeneity as arising from omitting an important variable, i.e. u2. To solve the problem of endogeneity, one can run an ordered logistic regression equation by considering the estimated value of the residual obtained from equation 2 as one of the explanatory variables.

$$Yi^* = X1' b + c Y_2 + \delta u2 + \varepsilon1 \ldots (3)$$

In our analysis, only regression equations for professional moneylenders of less developed regions have shown such endogeneity, which to some extent implies that poorer borrowers are elastic with respect to an interest rate rise (see Dahejia, et al, 2009; Karlan and Zinman, 2008).[12]

Table 9: List of variables used, with notation used

Variables	Notations
Loan size	Loan size
Dummy variable for purpose (1=current expenses, 0=others)	Purpose
Incidence of borrowing from formal sources in a district	Formal
Dummy variable for self-employed households (1=self-employed, 0=others)	Self-employed
Dummy variable for Muslim households (1=Muslim household, 0=others)	Religion
Dummy variable for presence of security (1=absence of security, 0=others)	Collateral
Incidence of indebtedness (self-employed households)	IOI
Loan to asset ratio	Debt asset
Monthly per capita consumption expenditure of the household	MPCE
Period of loan (1=short-term loans, 0=others)	Loan period
Dummy for rural areas (1=rural, 0=others)	Rural
Interaction between rural area and MPCE (rural =1, others=0)	Rural MPCE
Education (secondary education=1, below secondary=0)	Education
State dummy (Chattisgarh =1, Madhya Pradesh=0), (Punjab=1, Haryana=0)	State dummy

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[12] Most borrowers in less developed regions are poor vis-à-vis the other regions considered here.

Table 10.1: Regression result for professional moneylenders

Explanatory variables	Developed			Less developed			West Bengal		
Observations	829			1177			1197		
Wald chi2	116.04*** (14 d.f.)			132.05*** (15 d.f.)			67.63*** (13 d.f.)		
Pseudo R2	0.0467			0.0426			0.0117		
Log pseudo likelihood	-995.61232			-1682.89			-2463.464		
	Coefficient	Robust S.E.	Z	Coefficient	Robust S.E.	Z	Coefficient	Robust S.E.	Z
Formal	0.184	1.472	0.13	3.542***	0.914	3.88	2.832***	1.427	1.98
State dummy	0.536***	0.184	2.91	0.6741**	0.281	2.39	-	-	-
Rural MPCE	0.0001	0.0005	0.26	-0.0005	0.001	-0.66	-0.0006*	0.0003	-1.64
Security	-0.368**	0.17	-2.11	0.4537***	0.157	2.9	-0.451***	0.1344	-3.36
Self-employed	-0.382***	0.151	-2.53	0.2815*	0.157	1.8	-0.2674**	0.1083	-2.47
Loan period	-0.335**	0.145	-2.31	-0.2110	0.217	-0.97	0.12923	0.1108	1.17
Religion	-0.828	0.651	-1.27	0.1368	0.245	0.56	0.26014*	0.1249	2.08
Education	-0.522***	0.144	-3.62	0.3348	0.268	1.25	-0.2519**	0.1314	-1.92
Rural	-0.245	0.431	-0.57	-0.3373	0.393	-0.86	0.42956*	0.2603	1.65
Purpose	-0.258	0.196	-1.31	0.0562	0.174	0.32	0.26003**	0.1433	1.81
Debt asset	-0.173***	0.021	-8.07	0.0021**	0.001	3.84	-0.0021	0.0115	-0.19
MPCE	-0.001	0	-1.06	0.0008	0.001	0.76	3.40E-05	0.0002	0.13
Loan size	-3.0E-06***	1.30E-06	-2.45	1.30E-06***	1.30E-06	-2.65	-3.0E-06*	2.30E-06	-1.47
IOI	1.161***	0.208	5.58	-0.5272***	0.12793	-4.12	0.55344*	0.295	1.87
Residual	-	-		-0.00007**	0.00003	-2.38	-	-	
Cut1	-2.808	0.586		-3.816074	0.45574		-0.784	0.606	
Cut2	-2.148	0.574		-3.290792	0.43966		-0.2031	0.605	
Cut3	1.221	0.561		-1.406055	0.40136		0.10172	0.605	
Cut4	2.894	0.568		0.6509272	0.39431		0.68865	0.606	
Cut5	3.029	0.568		0.8942763	0.39520		1.18654	0.606	
Cut6	5.273	0.645		3.427419	0.43824		2.48919	0.61	
Cut7	5.461	0.652		3.517142	0.44809		2.79082	0.611	
Cut8	5.568	0.663		3.61518	0.45609		2.94277	0.611	
Cut 9	-	-					3.27768	0.613	

Notes: *, ** and *** implies significance at the 10 percent, five percent and one percent levels, respectively.

All the cut points are significant at five percent level of significance.

Table 10.2: Regression result for non-professional moneylenders

	Developed			Less developed			West Bengal		
Observations	961			1218			762		
Wald chi2	59.84 (14 d.f.)			146.99 (14 d.f.)			59.79 (13 d.f.)		
Pseudo R2	0.0239			0.039			0.0239		
Log pseudolikelihood	-1240.1868			-1870.627			-1106.0854		
Explanatory variables	**Coefficient**	**Robust S.E.**	**Z**	**Coefficient**	**Robust S.E.**	**Z**	**Coefficient**	**Robust S.E.**	**Z**
Formal	3.10**	1.258743	2.46	0.23	0.7977	0.29	0.2282	2.20549	0.1
State dummy	0.25	0.166016	1.5	-0.856***	0.17097	-5.01	-	-	
Rural MPCE	0.0002	0.00041	0.56	0.0007	0.00051	1.47	-3.00E-05	0.00041	-0.07
Security	-0.30*	0.166029	-1.81	0.388**	0.15384	2.52	0.28152*	0.1758	1.6
Self-employed	-0.15	0.150805	-0.99	-0.0958	0.10816	-0.89	-0.3235**	0.15184	-2.13
Loan period	-0.33**	0.137755	-2.37	-0.3034***	0.1078	-2.82	-0.7223***	0.15933	-4.53
Religion	-0.80**	0.366099	-2.19	-0.2	0.28056	-0.71	0.39757**	0.18445	2.16
Education	-0.13	0.139775	-0.92	-0.129	0.13032	-0.99	-0.1956	0.18088	-1.08
Rural	0.3	0.375775	0.81	0.387	0.36197	1.07	0.39389	0.28483	1.38
Purpose	-0.25	0.161941	-1.52	-0.203	0.1479	-1.37	0.25602	0.17456	1.47
Debt asset	-0.21	0.186937	-1.1	-0.185***	0.07392	-2.51	-0.0137	0.05743	-0.24
MPCE	-0.001**	0.000309	-2.07	-0.0007**	0.00041	-1.9	2.90E-05	0.00011	0.25
Loan size	0	9.15E-07	1.18	-8.0E-06***	1.51E-06	-5.32	2.60E-06	1.86E-06	1.4
IOI	0.02	0.182623	0.12	-0.3048***	0.09204	-3.31	-0.7534*	0.40294	-1.87
		0.494451							
Cut1	-1.44839	0.496493		-2.492	0.3592		-0.8545	0.82558	
Cut2	-1.30045	0.499936		-2.0291	0.36072		-0.4788	0.82699	
Cut3	1.225385	0.516115		-0.6186	0.35609		-0.172	0.82938	
Cut4	2.742365	0.513813		1.1196	0.36068		0.20799	0.83365	
Cut5	2.883173	0.552534		1.306417	0.36186		0.41104	0.83434	
Cut6	4.763335	0.576519		3.857	0.44104		1.73258	0.85012	
Cut7	5.054729	0.587253		4.0032	0.44836		1.94262	0.86156	
Cut8	5.17373	0.5946					2.16521	0.85974	
Cut 9							2.31528	0.85777	

Notes: *, ** and *** implies significance at the 10 percent, five percent and one percent levels, respectively.

All the cut points are significant at five percent level of significance.

Table 10.3: Regression result with loan size as the dependent variable (done for professional moneylenders of less developed region) for computation of the estimated residual term

Observations	1177		
F (14, 1162)***	10.91		
R squared	0.1079		
Root MSE	31654		
Explanatory variables	Coefficients	t values	S.E.
Formal	-8298.5	-0.51	16271.7
State dummy***	-7862.1	-4.1	1908.3
Rural MPCE	-19.1	-1.1	16.8
Security	2756.4	0.9	2963.9
Self-employed**	4161.6	2.2	1909.0
Loan period***	-7029.4	-4.5	1548.3
Religion	1300.7	0.3	3825.6
Education***	8435.2	3.1	2686.4
Rural	6359.2	0.7	9351.8
Purpose*	-2715.0	-1.7	1625.7
Debt asset***	110.9	5.7	19.5
MPCE**	34.4	2.2	15.4
IOI	2806.5	1.5	1909.2
Loan number*	-1737.9	-1.8	944.5
Constant	781.5	0.1	11164.79

Notes: *, ** and *** implies significance at the 10 percent, five percent and one percent levels, respectively.

Loan number (total number of loan availed by the household) is an additional explanatory variable (not considered in 10.1 and 10.2).[13]

5. Results

The objective of this analysis is to explain the formation of interest rates in the informal credit markets of selected developed, less developed and middle performing states of India. As mentioned earlier, separate regression analysis was carried out for professional and non-professional moneylenders. The results of the regression carried out for professional moneylenders for the three different regions are given in Table 10.1, while Table 10.2 provides the result for non-professional moneylenders.

Our analysis indicates the following major differences in the formation of interest rates across the regions.

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[13] If number of loans is higher, it implies that households have availed loans from multiple sources. Therefore loan size is expected to have a negative relation with this variable.

The results show that in developed and middle performing regions, self-employed households enjoy a higher probability of borrowing at a lower rate of interest, vis-à-vis their non-self-employed counterparts; loans from non-professional moneylenders of developed regions being an exception to this finding. For non-professional moneylenders (developed region) the variable was insignificant, implying that self-employed households do not get any extra privilege vis-à-vis other households. In contrast, in less developed regions the variable was positive. However, it is insignificant for non-professional moneylenders.

Secondly, we have found that in less developed states, the presence of security increases the probability of charging a high rate of interest by both professional and non-professional moneylenders, while in developed states, the presence of security leads to a lower rate of interest for both professional and non-professional lenders. West Bengal, being a middle performing state, lies in between these two types of region. Here, for professional moneylenders, the presence of security increases the probability of charging a low rate of interest, while for non-professional moneylenders, the presence of security leads to charging a higher interest rate.

The possible explanation behind such a phenomenon may be the following. As far as the relation between presence of security and rate of interest is concerned, it appears that in developed states, both professional and non-professional moneylenders face information asymmetry about borrowers. Therefore, the presence of security reduces their risk. Moreover, the negative relation (with rate of interest) indicates that there exists competition among lenders for borrowers who can provide collateral. This is because providing loans to borrowers who can provide collateral reduces the default risk.

In West Bengal, only for professional moneylenders the variable security has a negative relation with rate of interest, implying that borrowers are mostly unknown or there exists asymmetry in information about borrowers (see Table 10.1). For non-professional moneylenders (Table 10.2), who are mostly farmer-cum-moneylenders, however, this relation is positive, indicating the presence of a personalised relationship with most borrowers (see also Bhattacharjee et al, 2009).

The positive relation between presence of security and interest rate in less developed states indicates that both professional and non-professional moneylenders advance loans generally to known borrowers. Therefore, the presence of or insistence on security implies that the borrower is considered risky. The above finding also points to the highly personalised borrower-lender relations in less developed states, which is absent in developed states. However, in this context one cannot refute the theory of confiscation of collateral (see Bhaduri, 1977), whereby both types of moneylender in the less developed states, taking advantage of their bargaining power, charge a higher interest rate for confiscating the collateral.

The relationship between rate of interest and the variable 'self-employed' indicates that due to the presence of several lenders in the market (as mentioned in Section 3), in developed and middle-performing states, the moneylenders face competition from each other while trying to capture the self-employed household market. It is important to note that these borrowers are permanent borrowers (requiring loans on a regular basis). For non-professional moneylenders of developed

states this variable is not significant, because apart from competing to capture the self-employed households, they also try to attract labourers (as there exists excess demand for labour) by lending at lower interest rates (see Jodhka, 1995b). In less developed states, however, due to lack of sufficient lenders, possibly intense competition does not exist, leading to higher rates of interest. In this context, one should note self-employed households require loans on an urgent basis.

It is observed that the presence of more formal loans (in a district) possesses a positive relation with the dependent variable. It seems that the presence of more formal lending in a region increases the number of informal moneylenders or the possible sources from which a borrower could avail credit (due to formal informal market linkages). This in turn increases the chances of default, as the borrower could avail credit from some other sources, even after defaulting. Thus increasing formal lending in a region increases the cost of providing credit, leading to a higher rate of interest (see also Hoff and Stiglitz, 1997; Bose, 1998).

In addition, it is seen that higher IOI of self-employed households (in a district) reduces the probability of charging a higher rate of interest in less developed states. On the other hand, in developed states the opposite phenomenon exists. This may be due to the following reason. In the less developed states, an increase in the value of IOI may reduce the rate of interest due to attainment of higher economies of scale (by reduction in administrative costs). In the developed region, such advantage from economies of scale may have already been exhausted. An increase in borrowing by self-employed households in the developed region therefore leads to an increase in loan prices. In this context, one should note that the average value of IOI and rate of interest differs between developed and less developed states; therefore, a unit change in IOI is expected to have a different impact on rate of interest.

While we expected a negative coefficient for the dummy variable 'religion', the sign was found to be positive for West Bengal (see Table 9.2). It may be due to the following reasons. For Muslim households the probability of paying high interest rates might be more due to the absence of lenders among Muslims, due to religious injunctions. This in turn might have led to the monopoly in the market. A higher interest rate could also be due to the poor economic conditions of Muslim households, which in turn might have reduced their access to credit. This could be the reason for the higher interest rate.[14] However, this variable was found to be insignificant for professional moneylenders (Table 10.1).

Apart from this, we find that households having secondary education possess a higher probability of availing loans at a low rate of interest. However, in the case of less developed regions, and for non-professional moneylenders of developed and middle performing regions, the variable is insignificant, probably due to the presence of a personalised relationship between borrower and lender.

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[14] In this context, one should note that economic conditions of Muslim households are worse in West Bengal compared to the all-India average (Sachar Committee Report, 2006).

6. Conclusion

The paper has looked into the issue of interest rate determination in the informal credit market across selected developed, middle performing and less developed states of India. In order to assess this aspect, the paper first uses descriptive statistics to draw inferences regarding the nature of indebtedness faced by households in different states. Subsequently, regression analysis has been used to identify the various causative factors.

Our analysis suggests that informal lending markets of less developed states consist of fewer lenders having perfect information about borrowers. This in turn has put greater monopoly power in the hands of the moneylenders to raise interest rates. However, developed regions are characterised by the presence of more moneylenders in the market, who do not possess full information about the borrower, as the lender does not possess captured borrowers. The borrower possesses the option of availing credit from multiple sources; therefore raising rates of interest by a lender may lead to default.

From the results of our analysis, it is has been inferred that education among borrowers and increase in economic status are the two most important variables that lead to low interest rates in informal credit markets. Thus, richer borrowers not only have the advantage of availing loans from formal sources, but also avail informal loans on better terms and conditions.

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