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## **Structure of Indebtedness of Households in Semi-Arid Tropics of India**

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### **Abstract**

The credit delivery system in India comprises both formal and informal institutions. The formal system comprises commercial banks, regional rural banks and cooperatives, while the predominant informal sources of credit are commission agents, traders, friends and relatives, chit funds and more recently, self-help groups. This paper has examined aspects like (i) who gets cheaper and who gets costly loans? (ii) how different borrowers and lenders are matched to each other? (iii) for what purpose households borrow (production, consumption, investment, social)? and lastly, (iv) are informal sources exploitative? The paper has used Village Dynamic Studies in South Asia data for 18 Semi-Arid Tropics villages in India comprising 857 households for the year 2009. The study has found that informal borrowings from relatives, friends, traders and commission agents continue to form a major source of total borrowings in the rural India. Generally, borrowings from formal sources are for large amounts at a lower interest rate compared to from informal borrowings. However, the majority of formal borrowings are skewed towards large landholders, and upper caste households who can offer collateral securities and also benefit from crop loans, for which basic eligibility criteria for getting loans is land. The borrowings from informal sources have been found distributed across all class and caste groups uniformly as these are mostly inter-personal borrowings with no collateral securities. About half of the borrowings from friends and traders carry no interest rate, but for very small amounts and for a shorter duration. However, on average informal sources have been found charging three-times interest rates that of formal sources if we account for product-input-credit market linkages.

**Key words:** Rural finance, interest rates, indebtedness, India

**JEL Classification:** G2

### **Introduction**

In 2003, about 48.6 per cent of rural households were indebted in India. Households in the states falling in the Semi-Arid Tropics (SAT) have a higher level of indebtedness, the highest being in Andhra Pradesh (82.0%), followed by Karnataka (61.6%), Maharashtra (54.8%), Gujarat (51.9%) and Madhya Pradesh (50.8%). The average size of loan was also highest in Andhra Pradesh (₹ 23965), followed by Karnataka

(₹ 18135), Maharashtra (₹ 16973), Gujarat (₹ 15526) and Madhya Pradesh (₹ 14218), when compared to all-India level of 12585 (NSSO, 2003). Borrowing from formal financial sources in many ways is not exploitative, but, from informal sources, it is exploitative (Binswanger and Sillers, 2002). Hence, banking sector in India has been attempting to limit most forms of informal finance by regulating them, banning them and allowing certain types of microfinance institutions. The latter policy aims to increase the availability of credit to low-income households and eliminate their reliance on usurious

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financing. Nonetheless, informal sector continues to dominate in the rural credit market (Tsai, 2004). The expert group feels that the objectives would be served better if farmers, especially small and marginal farmers, are organized through collectives like self-help groups (SHGs) and cooperatives (GoI, 2007; Reddy, 2006). Besides credit delivery, these collectives and formal institutional networks are expected to help the farmers in improving their farming practices through better accessing of appropriate technology, extension services, improved processing and marketing capabilities and risk management. However, the facts show that even after many financial reforms from both government and Reserve Bank of India in the past few decades, efforts to replace the informal financial sector with formal sector either through RRBs, cooperatives or even linking villagers with SHGs have not been fruitful. Obviously, there are some comparative advantages, that the informal financial service providers (like relatives, friends, traders, commission agents, input dealers, etc.) have in the rural areas like timely supply of credit, no procedural delays, mutual understanding, symmetric and complete information between borrower and lender through daily social interactions in different markets (like credit-labour-commodity markets).

The analysis of the coexistence of formal and informal credit providers for such a long period with their own competitive advantages like the former with lower interest rates (about 7 - 9% per annum) and the later with convenience but with higher interest rates (24 - 36% per annum) is the key challenge of theoretical and empirical work to provide a framework for understanding the rural credit markets in India. Why are there such higher rates of interest for at least some borrowers? How do large differences persist among interest rates of different borrowers? Why is there such a diversity of contract forms and intermediary structures? and why do such highly variable interest rates persist in equilibrium across borrowers? Keeping these broader theoretical and empirical questions, the paper addresses the following specific objectives: (i) who gets cheaper loans and who gets costly loans? (ii) how are different borrowers and lenders matched to each other? (iii) why households are borrowing (production, consumption, investment, social needs)?, and lastly (iv) are informal sources exploitative?

### Data and Methodology

The data used in this paper were obtained from a larger research project entitled "Village Dynamic

Studies in South Asia (VDSA), in which ICRISAT research team collected a range of data from households of 18 selected villages from SAT India for the year 2009. The 18 villages in the VDSA studies of ICRISAT were selected from five states (Andhra Pradesh, Maharashtra, Madhya Pradesh, Gujarat and Karnataka), which represent the broad agro-climatic sub-regions in the semi-arid tropics of India. The selected villages were: Aurepalle, Dokur, JC Agharam and Pamidipadu from Andhra Pradesh; Babrol, Karamdi Chingaria, Chatha, Makhiyala from Gujarat; Belladamadugu, Kappanimargi, Markabhinahalli, Tharati from Karnataka; Shirapur, Kalman, Kanzara, Kinkheda from Maharashtra; and Papda and Rampur Kalan from Madhya Pradesh. The descriptive statistics and logistic regression models (step-wise regression) were used to find the extent of formal and informal borrowings among different sections of society and factors influencing the formal and informal borrowings.

### Results and Discussion

In the ICRISAT sample data for the year 2009, out of 857 households, about 79 per cent were borrowers, and 21 per cent were non-borrowers from all sources (Table 1). It was important to see that about 51 per cent of households had not borrowed from the formal sector and only 36 per cent households had not borrowed from the informal sources. It indicated that still the majority of households borrow from the informal sources compared to formal sources in SAT-India (Table 2). About 46 per cent of total households had taken multiple loans — 13 per cent from formal sources and 26 per cent from informal sources and 7 per cent from both formal and informal sources. It was found that the share of upper caste and large landholders was higher in multiple loans from formal sources, while small and medium farmers had more multiple loans from informal sources. About 52 per cent of large landholders had taken multiple loans — 29 per cent from formal sources, 19 per cent from informal sources and 4 per cent from both formal and informal sources. It also indicated that the large landholders as well as upper caste households were able to get multiple loans from formal sources as they had more land to show as collateral and had significant influence on formal sources of credit. Multiple loans from the formal sources were less in the case of landless, scheduled

**Table 1. Percentage of households with multiple loans from all sources in SAT-India: 2009**

Household group	Non-borrowers (%)	Number of times borrowed						Total borrowers	Borrowers with multiple loans (%)	Total
		One	Two	Three	Four	Five	Six			
Landless	33	38	19	7	2	2	0	68	29	100
Small	17	29	27	18	7	0	0	81	54	100
Medium	20	35	22	12	9	1	0	79	45	100
Large	16	32	26	12	9	4	0	83	52	100
OBC	21	40	22	10	6	2	0	80	39	100
ST	29	23	21	17	9	0	1	71	48	100
SC	23	39	22	8	6	2	0	77	38	100
Others	15	22	31	19	9	3	1	85	63	100
All	21	33	24	13	7	2	0	79	46	100
total sample	179	283	202	110	59	15	2	671	388	850

**Table 2. Percentage of households with multiple loans from formal and informal sources in SAT-India: 2009**

Household group	Formal sources						Informal sources						Total
	Non-borrowers	Number of times borrowed				Multiple borrowers	Non-borrowers	Number of times borrowed				Multiple borrowers	
		One	two	Three	Four			One	two	Three	Four		
Landless	75	22	3	0	0	3	43	38	13	5	1	19	100
Small	50	41	8	1	0	9	28	37	31	4	0	35	100
Medium	48	40	11	1	0	12	36	39	18	5	1	24	100
Large	35	37	26	2	1	29	43	38	12	6	1	19	100
OBC	51	36	12	0	0	12	39	44	14	3	0	17	100
ST	60	32	9	0	0	9	35	30	28	6	1	35	100
SC	65	29	5	1	0	6	35	40	16	7	2	25	100
Others	40	42	16	2	0	18	33	28	31	6	2	39	100
All	51	36	12	1	0	13	36	38	20	5	1	26	100
Total sample	437	306	99	7	1	107	310	324	168	41	7	216	850

tribes and scheduled castes, hence they had to invariably depend on the informal sector as they were not able to provide the necessary collateral security to get loans from the formal sources.

Most of the borrowers had taken loans from the informal sources like relatives, friends, traders, commission agents, etc., but the borrowed amount was small and interest rates were high (Table 3). While the amount borrowed from the formal sources (commercial banks, RRBs and cooperative) was large and with lower interest rates. The average interest rates for borrowings from formal sources were lower — commercial banks, 9 per cent; cooperatives and RRBs, 7 per cent; as against 15 per cent from SHGs, 16 per cent from

relatives and friends, 21 per cent from traders and commission agents, 20 per cent from mutual funds, 25 per cent from landlords, 20 per cent from others, and 5 per cent from employers. The average amount borrowed was highest from commercial banks (₹ 105298) for the duration of 20 months, followed by from RRBs (₹ 46893) for 15 months, chit funds (₹ 45142) for 19 months, landlords (₹ 39917) for 17 months, cooperatives (₹ 27131) for 14 months, employers (₹ 24765) for 7 months, from relatives (₹ 22921) for 12 months, from traders (₹ 16360) for 8 months and the least was from SHGs (₹ 9031) for 10 months. Overall, it was revealed that the borrowing from formal sources was for large amounts with longer

**Table 3. Sources of finance, amount, duration and interest rate**

Source	Description	Average amount ( $\text{₹}$ )	Duration (months)	Interest rate per annum (%)
<b>Formal sources</b>				
Commercial banks	Borrowings from private, public and MNC banks operating in India	105298	20	9
RRBs	Borrowings from Grameena Banks functioning under the Regional Rural Banks Act, 1976	46893	15	7
Cooperatives	Borrowings from cooperative banks	27131	14	7
<b>Informal sources</b>				
SHGs	Borrowings from self-help groups promoted by NGOs, banks, government. As they are mostly linked to banking system or MFIs, it is more appropriate to call them as "semi-formal sources".	9031	10	15
Relatives	Interpersonal borrowings – borrowings among friends, relatives, neighbours or colleagues. Financial authorities do not interfere with casual, interest-free lending	22921	12	16
Traders	Merchandise borrowings from traders, commission agents, shopkeepers, input dealers to villagers (which include trade credit, forward sales)	16360	8	21
Chit funds	Borrowings from indigenously organized savings and credit groups, registered as companies, partnerships and sole proprietorships	45142	19	20
Landlords	Borrowings from landlords	39917	17	25

durations and also at lower interest rate as compared to from informal sources.

Most of the borrowers had used a major proportion of their borrowings for productive purposes, especially those who had borrowed from the formal sources (Table 4). Out of total households, 42 per cent had borrowed from relatives and friends, 32 per cent had borrowed from traders and commission agents, 22 per cent had borrowed from cooperatives, 15 per cent had borrowed from commercial banks, 8 per cent had borrowed from RRBs and the remaining 11 per cent had borrowed from other sources like chit funds, employer, etc. While households which had borrowed from informal sources (relatives, friends, SHGs and traders) had also spent a considerable amount on consumption purpose, some borrowers from relatives and friends also spent on social purpose. All together, agriculture followed by consumption were the major purposes for which households borrowed money.

It was interesting to see that more than half of the borrowers from relatives and friends had borrowed at

zero rate of interest; and the same was applicable to borrowers from traders and commission agents (Table 5). However, field-level observations showed that there was prevalence of agricultural produce-input supply-labour-credit market linkages in most of the villages; hence if we take into account these linkages, the interest rates from traders and commission agents were higher than of commercial banks. It was also confirmed by the high interest rates charged by the relatives and traders, averaging about 32 per cent and 43 per cent, respectively for the remaining half of the borrowers. These figures also show that at least for some borrowers, the interest rates charged by relatives and traders were not exploitative and were convenient for both borrowers and lenders for small borrowings for duration of up to 8 months. About 60 per cent of borrowers from SHGs borrowed at below 12 per cent interest and 40 per cent at above 12 per cent interest, indicating that the SHGs linked with formal sources lend at lower interest rates.

The borrowings from commercial banks were for large amounts mainly for agricultural purposes like

**Table 4. Sources of credit and purpose for taking a loan**

		(% of total households)							
Broad purpose	Loan utilization	Relatives	Traders	Cooperatives	SHGs	Banks	RRBs	Others	% of households
Production /investment	Agriculture	11	7	21	4	7	7	2	59
	Starting business	1	1	0	1	1	0	0	4
	Purchasing of livestock	1	0	0	1	0	0	0	2
Consumption	Consumption	10	19	0	7	0	0	4	40
	Medical care	4	2	0	0	0	0	0	6
	Education	2	1	0	1	0	0	0	4
Social	Social functions	2	0	0	0	0	0	1	5
	Other obligations	11	3	1	2	3	0	4	24
	Borrower households	42	32	22	15	12	8	11	80
	Non-borrower households	58	68	78	85	88	92	97	20

*Note:* Others include employers, chit funds and landlords

**Table 5. Source of credit amount, interest and duration**

Source of credit	Amount (₹)	Duration (months)	Number of samples	Interest (%) per annum				
				Minimum	Maximum	Mean	Standard deviation	CV (%)
Relatives (Interest=0)	11780	8	205					
Relatives (Interest>0)	33962	15	201	2	72	32	11	34
Traders (Interest=0)	3478	4	157					
Traders (Interest>0)	29826	7	149	9	120	43	19	44
Cooperatives	27131	14	199	3	24	7	4	52
SHGs	9031	10	145	3	36	15	10	64
Commercial banks	105298	20	114	3	24	9	4	49
RRBs	46893	15	71	2	18	7	4	49
Employers	17959	6	31	0	36	5	11	222
Others	15236	13	26	0	36	20	8	38
Landlords	31542	18	24	0	36	25	11	42
Chit funds	39917	17	19	12	36	25	9	45

drilling of bore-wells and purchasing of farm implements, land and livestock and were for a longer duration, up to 144 months (Table 6). The loan amount for consumption purpose was small and was for a shorter duration, 12-34 months. Next to commercial banks, the average amount borrowed was high from cooperatives. A major share of borrowings from the cooperatives was used for consumption and social purposes, while the borrowings from RRBs were almost entirely used for agricultural purpose and very few were for other purposes.

In general, borrowings of large amounts were maximum for agriculture, followed by social purpose and the least for consumption purpose from informal sources (Table 7). The average amount of borrowings from relatives was larger than from traders and the smallest in the case of borrowings from SHGs. Among all the borrowings, purchase of farm implements and drilling of bore-wells involved a larger amount and long period of repayment. Under the category of consumption, borrowings were more for education, followed by medical purpose.



Table 6. Purpose-wise amount, interest and duration from formal sources of credit

Purpose	Utilization	Commercial Banks			Cooperatives			RRBs		
		Average amount (₹)	Duration (months)	Interest rate per annum (%)	Average amount (₹)	Duration (months)	Interest rate per annum (%)	Average amount (₹)	Duration (months)	Interest rate per annum (%)
Production and investment	Agriculture	77317	7	15	25208	7	12	46777	7	10
	Drilling of bore well	45333	10	17						
	Purchase of implements	66000	11	144	100000	7	12			
	Purchase of land	114000	10	23						
	Purchase of livestock	27500	12	15	38667	7	32	15000	12	24
Consumption	Starting business	35100	11	17				17500	8	12
	Education, investment on human capital				12000	3	12			
	Consumption	26250	12	18	150000	18	27			
	Medical care	30000	9	12						
	Others	76000	11	34	50200	11	10	200000	12	180
Social	Payment of dowry	41250	10	15	95000	12	24			
	Social functions	25000	9	12	6000	9	24			
Others	Repayment of old debt	200000	8	36						

Table 7. Purpose-wise amount, interest and duration from informal sources of credit

Purpose	Loan utilization			SHGs			Traders & commission agents			Relatives & friends		
	Average amount (₹)	Duration (months)	Interest rate per annum (%)	Average amount (₹)	Duration (months)	Interest rate per annum (%)	Average amount (₹)	Duration (months)	Interest rate per annum (%)	Average amount (₹)	Duration (months)	Interest rate per annum (%)
Production and investment	Agriculture	9695	14	12	26638	37	8	15024	18	9		
	Drilling of bore-well	10000	36	6				265000	18	18		
	Major repairs	15000	24	6	14375	34	12	31444	14	13		
	Starting business	11700	9	7	13040	58	9	19500	3	13		
	Purchase of implements	44000	3	12	49700	62	15	70000	36	12		
	Purchase of land							25000	2	16		
Consumption	Purchase of livestock	13333	9	17				26250	27	8		
	Consumption	3799	14	8	2200	3	4	4547	9	6		
	Education	10625	20	9	14671	27	10	22617	18	12		
	Medical care	5000	3	12	23771	39	13	14200	11	12		
	Others	15000	24	10	52208	24	11	38858	19	17		
	Social											
Others	Payment of dowry	18875	7	18	32225	48	11	38800	24	17		
	Repayment of old debt	11625	24	8	21150	66	10	14375	18	16		



It is interesting to see that large landholders, forward caste households and higher-educated households borrowed large amounts from formal sources compared with their counterparts (Table 8). It was also seen that the large landholders and forward-

caste households could influence the banking officials to get a higher amount of loan as it is mostly at a lower interest rates and many a times it is waived off due to political, economic and other considerations. It is also true that most of the large landholders do cultivate large

**Table 8. Borrowings from formal sources by social group**

Item	Category	Commercial banks			RRBs			Cooperatives		
		Average amount (₹)	Duration (months)	Interest rate per annum (%)	Average amount (₹)	Duration (months)	Interest rate per annum (%)	Average amount (₹)	Duration (months)	Interest rate per annum (%)
Farm-size	Landless	52083	10	30	49208	11	27	21375	7	14
	Small	58252	10	18	35033	9	12	21898	8	12
	Medium	71922	9	18	39107	8	13	31668	8	15
	Large	160955	8	14	56604	8	11	37757	7	13
Caste	OBC	133801	8	15	46690	8	13	24151	7	15
	SC	55873	10	26	26417	11	12	17495	9	10
	ST	72167	8	14	20000	6	12	31872	8	14
	Others	100813	9	19	56274	10	13	34091	7	12
Religion	Hindu	113058	9	16	47606	9	13	28810	8	14
	Muslim	35467	6	38	32000	5	12	27883	6	12
	Others	47500	11	27	-	-	-	14817	11	7
Educational attainment of household-head	Illiterate	46198	9	16	38872	8	9	24217	7	11
	Primary	56932	8	17	50466	8	11	31689	8	14
	Middle	78778	10	30	46883	9	12	22806	8	17
	Inter (10+2)	66369	10	19	42007	8	20	47240	8	14
	Higher middle	190746	9	15	54283	9	17	31995	8	13
	Higher educated	214785	9	15	78333	9	11	26086	7	12
Age group (years)	Young (below 25)	34000	10	6	43500	7	12	10700	11	7
	Middle-aged (26-35)	289090	8	16	53821	8	17	26684	7	12
	Middle-aged (36-45)	86568	9	16	53054	9	10	22336	8	12
	Aged (45-60)	77160	9	18	42980	9	13	31227	8	15
	Old (>60)	55047	9	18	45833	9	13	34991	7	13
Main occupation of households	Farming	131027	9	16	47470	9	13	30577	8	14
	Farm labour	33754	8	34	17000	8	11	15833	7	11
	Livestock	71500	11	11	15000	12	24	11117	7	10
	Caste occupation	29100	8	8	23000	8	6	19450	5	9
	Non-farm labour	19417	11	14	34500	8	6	23333	7	13
	Business + Others	50400	11	16	83500	10	28	24844	8	11
	Salaried	127111	11	14	20000	12	6	51232	9	17
	Domestic work	23333	8	13	18500	5	8	9813	8	12
No work	263125	10	53	41167	8	11	57200	8	18	

area which requires more working and fixed capital. Hence, under normal circumstances mere outstanding indebtedness with formal sector may not be a distress phenomenon in most of the cases but only indicates their requirement for carrying out productive activities.

While the villagers can take loan for any purpose from the informal sources (Table 9) and generally they

don't require any collateral security. Informal borrowings are generally for smaller amounts and for a shorter duration but at higher interest rates. As is evident from Table 9, these are accessible to all households, irrespective of their landholding class, caste and educational level. However, it was interesting to see that there was no significant difference in the

**Table 9. Borrowings from informal sources by social group**

Item	Category	SHGs			Relatives & friends			Traders & commission agents		
		Average amount (₹)	Duration (months)	Interest rate per annum (%)	Average amount (₹)	Duration (months)	Interest rate per annum (%)	Average amount (₹)	Duration (months)	Interest rate per annum (%)
Farm-size	Landless	9213	13	14	17326	16	12	10764	20	9
	Small	9539	16	12	15810	9	9	6531	13	6
	Medium	8857	15	12	31744	17	12	20455	24	8
	Large	9108	17	10	48397	21	12	35393	29	10
Caste	OBC	8759	16	12	33280	21	14	26778	31	10
	SC	8377	12	11	19553	22	11	14074	31	9
	ST	11829	22	10	12356	3	8	3788	7	5
	Others	9897	15	12	22130	5	8	7615	7	5
Religion	Hindu	9110	16	12	26055	15	11	15685	20	8
	Muslim	18000	24	13	21823	8	8	7217	17	7
	Others	8500	10	14	8715	12	14	14863	32	6
Educational attainment of household-head	Illiterate	7409	16	11	26612	19	11	16551	22	8
	Primary	8179	16	11	17418	10	10	12163	16	7
	10+2	14469	21	10	27370	9	9	5930	13	6
	Higher middle	10326	15	13	35087	13	13	18913	18	8
	Higher educated	10875	13	11	25121	7	10	18260	15	8
Age group (years)	Young (below 25)	9129	15	12	4000	0	12	3000	60	3
	Middle-aged (26-35)	7474	18	11	28936	19	12	17069	26	9
	Middle-aged (36-45)	9979	16	12	20452	12	10	15280	16	7
	Aged (45-60)	8801	15	12	26120	14	11	16229	22	8
	Old (>60)	10151	14	13	30018	15	12	13585	17	7
Main occupation of households	Farming	9052	16	12	33018	15	12	20113	24	8
	Farm labour	4352	17	8	10030	11	9	8183	14	7
	Livestock	9525	14	11	11974	12	10	7274	20	8
	Caste occupation	8033	16	12	29990	31	12	7900	28	7
	Non-farm labour	8250	14	15	22488	21	13	10513	17	8
	Business +others	11752	14	13	25643	10	12	18801	16	9
	Salaried	13889	15	14	18603	11	9	9043	16	7
	Domestic work	7975	20	14	10771	11	8	6571	11	6
No work	23875	25	8	21186	10	11	9348	8	5	

**Table 10. Factors influencing the formal and informal borrowings by households**

Independent variables	Formal		Informal	
	Unstandardized coefficients	t-statistics	Unstandardized coefficients	t-statistics
Constant	0.408	7.5	1.038	20.6
Market distance (km)	-0.007	-2.6	-0.024	-10.0
Education of household-head (years)	0.009	2.6	-0.008	-2.5
Cotton-based cropping systems dummy	0.126	2.4	0.176	3.6
Value of assets (₹)	0.0000006	3.2		
Area (acre)	0.006	1.9		
Land ownership status dummy (Owned =1; Leased=0)			-0.062	-4.7
Cultivating annual crops (Yes =1; No=0)	0.165	3.6		
Cultivating perennial crops (Yes=1; No=0)	-0.091	-2.9		
Cultivating <i>rabi</i> crops (Yes=1; No=0)	0.042	2.1		
Cultivating cereal mixed cropping systems (Yes=1; No=0)	-0.212	-4.8		
Cultivating commercial crops (Yes=1; No=0)			0.142	7.3
Cultivating pulse-based cropping systems (Yes=1; No=0)			0.073	3.4
R squared	0.127		0.159	
Adjusted R squared	0.117		0.153	

Note: Step-wise logistic regression was run; hence only significant variables were included in the regression model.

interest rates for different classes of landholders and caste groups from informal sources. This indicates that the informal sources are more egalitarian at least if we don't consider the inter-linked markets of credit-labour and commodity markets.

### Regression Analysis

We had run two logistic regressions, one for formal borrowings and the other for informal borrowings. The results of logistic regression are presented in Table 10. The dependent variables were binary for the formal borrowing model (formal borrowing: Yes=1; No=0) and for informal borrowing (informal borrowing: Yes=1; No=0). As expected, the years of education of household-head influenced the probability of borrowing positively from formal sources, and negatively from informal sources. The probability of borrowing from both formal and informal sources was seen higher among cotton-growing farmers. Market distance negatively influenced the probability of both formal and informal borrowings. Area and total assets had a positive influence on probability of formal borrowing, but had no influence on informal borrowing. Owning land depicted a negative influence on probability of borrowings from informal sources.

The probability of getting formal borrowings was also higher for the households growing *rabi* crops. Farmers growing commercial and pulses based cropping systems mostly borrowed from informal sources. We tested three physical capital indicators (height, weight and arm circumference), only height had a significant negative influence on savings (results not presented here). Irrigated area and the value of other assets depicted a positive influence on the amount of borrowing, which indicates that the demand for borrowings is higher from irrigated crops.

### Conclusions

The study has revealed that as agriculture and rural areas are being exposed to more commercialization, the financial transactions of the rural households are increasing. More rural households are borrowing now than in earlier years. The indebtedness of the sample households has been higher compared to the indebtedness reported by NSSO in Situation Assessment Survey of Farmers in the SAT States. The majority of households borrow more from informal sources (like relatives, friends, traders and commission agents) than from formal sources of credit. The majority of households borrow for productive purposes like for

agriculture, investment in bore-wells, purchase of livestock and cattle, etc, only a few take loans to meet their households' consumption and social needs.

The study has indicated that about 80 per cent of rural households have borrowed from either formal or informal sources and about 46 per cent of households have taken multiple loans. The relatives and traders have been found important players in credit field and they even supply credit at zero per cent interest for about 50 per cent of their customers. This shows the inter-linked credit-commodity-labour markets. It also indicates that it is a social necessity in the rural India, as they dominate in small loans for a shorter duration and with probably with a low transaction cost. However, the relatives and traders charges high interest rates for the another group of borrowers, which indicates they take the advantage of scarcity of credit in the rural areas from formal sources. The borrowings from formal sources are for larger amount of money with longer periods at lower interest rates, and are mostly favourable to large landholders, upper caste households, and irrigated land owners as they possess necessary collateral securities of land and other assets.

Cropping system has been found to play an important role in the sources of borrowings; for example, cotton farmers borrow more from both formal and informal sources. They also require more credit as their working and fixed capital needs are very high. These results have been confirmed with the regression analysis that the asset value, land area, and irrigated area are important demand-side factors. Regression results have also shown that interest rate of the formal

sector is insignificant in households' borrowing decisions.

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