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RURAL CREDIT AND SUICIDES IN MAHARASHTRA, INDIA: A CASE-CONTROL STUDY

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Abstract

There has been decline in the role formal institutions and an increase in the role of informal institutions in the rural financial markets. A comparison between suicide case and non-suicide control households indicates that credit (outstanding debt) is an important risk factor that explains the differences between the two groups. One policy implication from this is the need to revive the rural financial markets.

Key words: Case-control comparison, financial institutions, and outstanding debt.

JEL Codes: G21, Q12 and Q14

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1. Introduction

In recent years, the rural credit delivery scenario in Maharashtra, as also in India, is changing. The formal credit institutions whether in the form of scheduled commercial banks or through the cooperative banks are reducing their operations in rural areas. Immediate fallout of this is an increasing reliance on informal sources of credit, particularly moneylenders, with a higher interest/debt burden. Increasing indebtedness has been cited as one of the important risk factors associated with suicide of farmers (Bhalla et al, 1998; Dandekar et al, 2005; Deshpande, 2002; Government of Andhra Pradesh, 2004; Iyer and Manick, 2000; Mishra, 2005, 2006; Mohan Rao, 2004; Mohanty, 2001, 2005; and Mohanty and Shroff, 2004 among others). In Maharashtra, suicide of farmers is particularly acute in the cotton growing districts of Vidarbha. The suicide mortality rate (SMR, suicide deaths for 100000 persons) for male farmers in Amravati division in 2004 at 140 is nearly seven times higher than the age-adjusted SMR for males in Maharashtra state (Mishra, 2006). The present paper draws from Mishra (2006) and discusses certain aspects of the rural credit delivery. It is structured in the following way. Section 2 gives a brief overview of the state of formal financial institutions in Maharashtra. Section 3 analyses the data – it differs from Mishra (2006) in the sense that the present discussion is restricted to a complete case-control analysis of 87 pairs of households from which we could get information on credit. Section 4 concludes.

2. Formal Credit Institutions in Rural Maharashtra

2.1 Scheduled Commercial Banks[2]

The number of rural branches for all scheduled commercial banks in Maharashtra decreased from 2324 in March 1999 to 2241 in March 2004. The growth of branches continues in urban areas where the volume of transaction is much higher. In fact, Mumbai alone accounts for nearly 80 per cent of the transactions (deposits as well as credit utilization) in the state in 2004.

After excluding Mumbai, the number of rural branches as proportion of total branches for all scheduled commercial banks declined from 56.4 per cent in 1995 to 51.7 per cent in 2004 and in the same period rural deposits as proportion of total deposits decreased from 14.3 per cent to 12.8 per cent. The distribution of credit as per utilization indicates that from 1991 to 2004 there has been a decline in the proportions for agriculture (from 20.5 per cent to 11.2 per

[2] All the estimates in this sub-section have been calculated from data provided by the EPWRF.

cent), industry (from 48.3 per cent to 39.4 per cent) and transport operators (from 3.9 per cent to 0.1 per cent); there has been an increase in the proportions for professional and other services (from 12.2 per cent to 29.4 per cent – this is largely because of personal loan for which independent data available for some recent years indicate that it increased from 10.6 per cent in 1996 to 25.3 per cent in 2004), trade (from 9.7 per cent to 12.1 per cent) and finance (from 0.7 per cent to 1.0 per cent); and all others remained around 5.0 per cent.

In Mumbai, credit utilization as a proportion of total credit utilization in the state has increased from 72 per cent in 1991 to 78 per cent in 2004 and this increase has happened across all sectors, but for trade and the 'others' category. This trend is particularly evident in agriculture where it increased from 5 per cent in 1991 to 48 per cent in 2004. Another aspect of agricultural credit in Maharashtra is that the proportion given as direct finance has reduced from 79 per cent in 1991 to 51 per cent in 2004.

Division wise distribution of agricultural credit as per utilization, after excluding Mumbai, shows that from triennium ending (TE) 1993 to TE 2004 there has been a decline in the share of Amravati (from 11.9 per cent to 9.7 per cent), Nagpur (from 11.0 per cent to 7.4 per cent) and Nasik (from 23.2 per cent to 21.5 per cent) divisions and increase in the share of Aurangabad (from 15.3 per cent to 18.0 per cent), Konkan (from 6.0 per cent to 9.3 per cent) and Pune (from 32.0 per cent to 34.2 per cent) divisions. The decline in shares is through direct as well as indirect finance in Amravati and Nagpur whereas it is only through indirect finance in Nasik. The increase is only through direct finance in Aurangabad, only through indirect finance in Konkan and both direct and indirect finance in Pune.

Recent developments with regard to agricultural credit in Maharashtra indicate the following. Credit utilization to agriculture as a proportion of total credit utilization in the state is declining. Agricultural credit utilization is shifting from rural regions to urban areas (particularly, Mumbai). There is also a shift from direct finance to indirect finance. Division wise distribution shows decline in the share of both direct and indirect finance components of agricultural credit in Vidarbha.

2.2 Cooperative Credit

In Maharashtra, the cooperative banks have been an important source of credit, particularly for agricultural purposes, in rural areas. The National Sample Survey Organisation (NSSO,

59th round) survey of January-December 2003 indicates that in Maharashtra nearly half of the loans are from co-operative societies compared to about one-fifth for the all India average (National Sample Survey Organisation, 2005).[3]

Over the years, the cooperative credit institutions were faced with a number of problems. The three-tier structure - apex bank for the state, district cooperative banks and then the primary agricultural cooperative credit societies at the village – entailed that interest rate was added at each level increasing the burden of the final debtor, the farmer. In Maharashtra, interest payment for agricultural loans cannot be more than the principal, but this is not applicable for the cooperative society. This means that a primary credit society can at the most get double the principal amount, but might have to pay more to the district cooperative banks. Further, primary credit societies repay as a single entity, but they receive payments from their members independently. This means that a defaulter's interest payment has to be adjusted against principal payment of some other member. The book keeping anomalies have cumulated, but it cannot be recovered from anyone. Besides, the management of cooperative societies was not professional, accounting practices were not rationalized, certain appointments were political postings through intervention by the state Government, and the societies did not come under the regulation of the Reserve Bank of India (Government of India, 2004).

A recent study in Yavatmal district of Amravati division of Vidarbha indicates a greater proportion of outstanding loans from cooperative societies. This is so because more than half the members are defaulters with their credit lines chocked from one to many years (Sarangi, 2004). In fact, for current loans there is an increasing reliance on informal sources like the moneylenders. We will elaborate on this in our analysis of field survey data.

3. Data and analysis

3.1 Field Survey

In the study on 'Suicide of Farmers in Maharashtra' our field survey was largely conducted in the districts of Wardha, Washim and Yavatmal. First we identified villages with farmers' suicide in 2004 and January 2005 based on a list provided by the Government of

[3] Another observation from the NSSO 59th round survey is that nearly three-fourths of the outstanding loan is for farm business, which is 15 percentage points greater than the all India average.

Maharashtra. Suicide being a rare event we could rarely find two cases in one village or even in neighbouring villages - at times we had to travel 30-40 kilometres to get another case. Despite this difficulty, we conducted the intensive survey in 108 villages of the above three districts and one village from Amravati district. In our intensive survey, we canvassed schedules in the suicide case household and a non-suicide control household in the same village, conducted focus group discussions in the village and also collected some basic village level information.[4] After cleaning of data, the analysis in Mishra (2006) used 111 suicide case and 106 non-suicide control households obtained from 105 villages. In the current analysis we restrict ourselves to a complete case-control analysis of 87 pairs of households for whom we have credit-related information.

3.2 Basic Particulars

Basic particulars of the 87 suicide cases indicate that 93 per cent were males, 59 per cent were above 40 years of age, 80 per cent were currently married, 39 per cent had completed their matriculation and 53 per cent had more than 10 years of experience in farming. Outstanding debt is on average Rs.40828/- (this includes seven cases with no outstanding debt). Across various sub-groups outstanding debt is higher than the overall average for males among gender, for 21-30 years (Rs.51833/-), 41-50 years (Rs.44488/-) and 51-60 years (Rs.49744/-) among age groups, for currently married (Rs.43757/-) among marital status, for HSC (Rs.69792/-) and graduate and above (Rs.180000/-) among educational categories and for those with farming experience of more than ten years (Rs.51322/-: in fact, average indebtedness seems to be increasing with years of farming experience).

At the aggregate level, average outstanding debt from formal sector (Rs.39052/-, N=48) is higher than that from the informal sector (Rs.29430/-, N=57). This is not true for some sub-groups where average outstanding debt is higher from the informal sector. These sub-groups are females among gender, all the age groups below 41 years, widow(er) among marital status, illiterates and matriculates among educational categories, and those with 6-10 or 41-60 years of experience in farming.

[4] The non-suicide control household chosen by us in each village was restricted to some similarity with that of the suicide case household of the village. This was based on suggestions given to us by the participants in our FGD conducted in the village - similar land size and caste were important benchmarks used. The non-suicide control household is not meant to be a representative one for the whole village.

3.3 Comparing Suicide Case with Non-suicide Controls

After including the deceased individual, the average family size in suicide case households is 5.7 whereas in non-suicide controls it is 5.1. The difference is largely because of female members. For children (less than or equal to 14 years), the size of average female children is 1.7 in suicide case households whereas it is 1.3 in non-suicide control households. The size of average male children per household is 1.4 in both the groups of households.

Comparing suicide case with non-suicide controls, average outstanding debt is higher in the former by more than three and a half times and after normalizing for family size and land size it is higher by three times. These average differences between suicide case non-suicide control households are also statistically significant.

Across districts and across size-class of land the average outstanding debt is much higher in suicide case households when compared with non-suicide controls. Between the three districts, average outstanding debt is the highest in Wardha and the least in Washim. These differences with regard to total outstanding debt are also statistically significant for Yavatmal district and for small size-class of holding.

Table 1
Average Outstanding Amount by Source across Districts/Size-class of Land/Per Household/Per Person/Per Acre

District/Size-class of Land/Per Household		Suicide Case						Non-suicide Control					
		Formal	N	Infor-mal	N	Total	N	Formal	N	Infor-mal	N	Total	N
District	Wardha	52033	12	44545	11	69650	16	36860	5	34000	3	17894	16
	Washim	16364	11	17038	13	19119	21	15857	7	9929	7	8595	21
	Yavatmal*	32921	24	28625	32	34818	49	13941	16	18212	17	10871	49
Size-class of Land	Marginal	9033	6	20222	9	18169	13	12150	4	6833	6	5973	15
	Small*	27943	21	30423	26	39366	35	10042	12	19162	13	9989	37
	Semi-Medium	21722	9	20333	12	24417	18	26966	7	23333	3	15221	17
	Medium	48444	9	62167	6	62231	13	32625	4	25333	3	20650	10
	Large	200667	3	50000	1	163000	4	30000	1	-	-	7500	4
	Not Available	-	-	12500	3	9375	4	-	-	22500	2	11250	4
All *#		39052	48	29430	57	40828	87	18513	28	17819	27	11488	87
Per Person*#		6834	48	5917	57	7647	87	4063	28	3953	27	2534	87
Per Acre*#$		4884	48	6460	54	7027	83	3735	28	4020	25	2471	83

Notes: N indicates number of households. Formal sources of indebtedness are Cooperative Societies, Rural Banks and Scheduled Commercial Banks whereas informal sources of indebtedness are Landlord/Employer, Moneylenders, Relatives/Friends, Self Help Groups and Traders among others. * For total outstanding debt the difference between suicide cases and non-suicide control households is statistically significant at 95% CI. # Total includes seven instances in suicide case and 38 instances in non-suicide control households where the outstanding debt is zero. $ Excludes households whose land ownership status was not available.
Source: Field Survey conducted for Mishra (2006).

We have 80 suicide case households with outstanding debt from 138 transactions and 49 non-suicide control households with outstanding debt from 64 transactions. Thus, the average number of transactions is higher with suicide cases (1.7) when compared with non-suicide controls (1.3). Analysis of source of loan indicates greater reliance of Co-operatives in the formal sector and Moneylenders in the informal sector (Table 2).

Table 2
Average Outstanding Debt per Transaction across Source

Source	Suicide Case		Non-suicide Control	
	Amount	No.	Amount	No.
Commercial Bank	95000	4	11500	1
Rural Bank	12200	6	40800	4
Cooperative Bank	32871	44	14319	24
Moneylender	23038	52	12709	23
Relatives/Friends	16761	23	-	-
Self Help Group	4500	2	14000	1
Trader	5000	1	20000	1
Land Lord/Employer	2000	1	10000	1
Others	12000	4	16089	9
Not Available	5000	1	-	-
Total	25739	138	15617	64

Note: N indicates the number of transactions with outstanding debt. The transactions are from 80 suicide cases and 49 non-suicide controls.
Source: As in Table 1.

The reliance on Moneylender's and Friends/Relatives is higher for suicide cases (54 per cent of 138 transactions) than non-suicide controls (36 per cent of 64 transactions). A very high amount is indicated for suicide case households under commercial bank because a large farmer (owning 28 acres) having an outstanding loan of Rs.2.5 lakh which was incurred for marriage in the family (in fact, the individual had taken a loan of Rs.5 lakh and had already returned Rs.2.5 lakh). After excluding this extreme case, the distribution of total outstanding debt indicates that 44 per cent is from cooperative banks, 36 per cent is from moneylenders and 12 per cent is from relatives/friends. In non-suicide control households, after excluding a loan transaction with outstanding debt of Rs.98200 from a rural bank, the distribution of total outstanding debt indicates that 38 per cent is from cooperative bank, 32 per cent is from moneylenders, 16 per cent is from other unspecified informal sources and 15 per cent is from self-help groups.

The purpose of credit for outstanding debt by source is given in Table 3. After excluding the transactions where purpose is not available, 70 per cent of transactions in the suicide cases and 89 per cent of transactions in the non-suicide controls are for agricultural purposes only.

This proportion further increases if we take into consideration transactions from formal sources only (88 per cent in suicide cases and 96 per cent in non-suicide controls).

Table 3
Average Outstanding Debt per Transaction by Source across Purpose of Loan

Purpose/Year	Suicide Case						Non-suicide Control					
	Formal	N	Infor-mal	N	Total	N	Formal	N	Infor-mal	N	Total	N
Agr	31695	42	21311	45	26324	87	18934	25	12704	25	15819	50
Marriage	250000	1	31107	14	45700	15	-	-	25000	4	25000	4
Consumption	-	-	5400	5	5400	5	-	-	-	-	-	-
House	-	-	5000	1	5000	1	-	-	-	-	-	-
Education	30000	1	50000	1	40000	2	5000	1	-	-	5000	1
Health	150000	1	-	-	150000	1	-	-	5000	1	5000	1
Nonfarm	-	-	15000	1	15000	1	-	-	-	-	-	-
Livestock	1400	1	-	-	1400	1	-	-	-	-	-	-
Agr+Cons	-	-	5000	1	5000	1	-	-	-	-	-	-
Agr+Marriage	14905	1	-	-	14905	1	-	-	-	-	-	-
Agr+Other	-	-	10000	1	10000	1	-	-	-	-	-	-
Other	15000	1	15000	7	15000	8	-	-	-	-	-	-
Not available	17833	6	5125	8	10571	14	13333	3	11700	5	12313	8
Total	35176	54	19673	84	25739	138	17874	29	13746	35	15617	64

Notes: N indicates number of transactions. Agr and Cons indicate agriculture and consumption respectively.
Source: As in Table 1.

Next to agriculture is marriage, which is mostly from informal sources. For each specific purpose the number of transactions with outstanding debt and the average outstanding debt per transaction is higher in suicide case households when compared with non-suicide control households. The average amount of outstanding debt per transaction for agricultural purposes is greater than Rs.10000/-. For marriage, after excluding an extreme observation with outstanding debt of Rs.250000/- from a commercial bank by a suicide case household, the gap is greater than Rs.6000/-. There is an instance in suicide case households where loan for health expenditure was to the tune of Rs.1.5 lakh. From total outstanding debt (including those where purpose is not available), agriculture being the sole purpose accounts for 64 per cent of the outstanding debt in suicide case households and 79 per cent in non-suicide control households. Marriage being the sole purpose accounts for 19 per cent of the total outstanding debt in suicide case households (reduces to 13 per cent if we exclude the extreme case of Rs.2.5 lakh outstanding debt) and 10 per cent of the total outstanding debt in non-suicide control households.

Year wise outstanding debt by source is given in Table 4. The proportion of outstanding debt that is more than one year old (incurred in 2004 or earlier) is 69 per cent in suicide cases and

59 per cent in non-suicide controls. Overall, 53 per cent of the outstanding debt in suicide case households and 52 per cent of outstanding debt in non-suicide control households are from formal sources, but for 2004, the most recent year, only 30 per cent of the outstanding debt in suicide case households is from formal sources. In fact, the number of transactions with outstanding debt in suicide case households has been increasing over the years. In 2005, all the transactions reported (this are before the start of the agricultural season, as our survey was conducted during March/April 2005) are from informal sources. In suicide case households, reliance on informal sources seems to have increased in recent years.

Table 4
Average Outstanding Loan per Transaction by Source across Year of Loan

Year	Suicide Case						Non-suicide Control					
	Formal	N	Infor-mal	N	Total	N	Formal	N	Infor-mal	N	Total	N
2005	-	-	15000	2	15000	2	-	-	50000	1	50000	1
2004	17262	13	15286	35	15821	48	18442	12	10317	12	14379	24
2003	33733	15	17152	23	23697	38	10080	7	17278	9	14129	16
2002	18810	11	23733	15	21650	26	17083	6	10717	6	13900	12
2001	38560	5	21000	4	30756	9	22500	2	15000	5	17143	7
2000 & earlier	72771	7	200000	1	88675	8	39500	2	-	-	39500	2
Not Available	86667	3	13250	4	44714	7	-	-	6250	2	6250	2
Total	35176	54	19673	84	25739	138	17874	29	13746	35	15617	64

Note: N indicates number of transactions.
Source: As in Table 1.

3.4 Modus Operandi of Moneylenders[5]

We explain some of the modus operandi of informal sources of credit. This is based on focus group discussions (FGDs) from 98 villages. Most of the participants indicated of having some outstanding loans taken either from formal or informal sources. They also indicated that whenever they can repay some debt they prefer to repay those from the informal sources first.[6] Current operational loans are likely to be from moneylenders. There are a number of them operating from district headquarters, taluka headquarters and smaller ones operating at the village level. The village moneylender in turn could have taken loans from larger moneylenders or input dealers operating at the taluka/district level. The ones operating at the village level are either economically or politically or socially dominant. This made it difficult to obtain specific details about the informal moneylender in a village. One participants remark during an FGD that "Gentleman, you will go away after this discussion. It is we who

[5] This has been taken from section 2.6 in Mishra (2006).
[6] The reasons given are to reduce greater interest burden and to ensure credit availability in subsequent times. Besides, the creditor also keeps a close tab on when the debtor can repay and acts accordingly to recover his dues. For instance, the creditor will send a reminder immediately after the harvesting is done.

have to stay in the village. Please do not probe further into the details. Further revelation by us will make our stay in the village difficult." In 70 per cent of the FGDs, the availability of the informal loans in the village was mentioned and in 29 per cent of the FGDs the difficulty in getting a formal loan was also mentioned.

Informal loan transactions could be in *dedhi*. The debtor has to return the loan around harvest (within four to six months) and pay Rs.150 for loan of Rs.100. Similarly, there is *sawai* (payment of Rs.125 for loan of Rs.100).

Another popular form of loans for agricultural and social purposes is at an interest rate of Rs.10/Rs.5 per month. In this case the interest is calculated after the principal is returned. For a loan that is repaid in 4-6 months, Rs.10 interest is similar to *dedhi* whereas Rs.5 interest is similar to *sawai*. The difference crops in if for some unforeseen reasons like crop failure the loan is not repaid. Non-payment virtually leads to rewriting of a fresh loan with some additional credit being given during the start of the next agricultural season. The cumulative interest paid will be lower under *dedhi/sawai* than under an interest rate of Rs.10/Rs.5 per month.

The rewriting of old loans as fresh loans makes the debtor feel that the old loan is written off and he is being given a new loan. During this rewriting of loan the debtor is also given some additional credit. Thus, the debtor is made to understand that on the loan he is taking he pays an interest of *dedhi*, *sawai*, or Rs.10/Rs.5 per month. As against this, loans from formal sector cumulate over time and the absolute difference between amount taken and amount repaid can become higher than *dedhi*/*sawai*. For instance, at 14 per cent compound interest per annum, non-payment of loan for a little more than 3 years (say, 38 months) will be higher than *dedhi* and non-payment for 2 years will be higher than *sawai*.

A conventional form of giving loan is through mortgaging of land. Creditors now consider it risky because fatality like suicides can lead to cancellation of such contracts. They have come up with a new design. They insist on sale of land with a verbal (not legal) promise that it will be sold back to the debtor after the loan is repaid. If required, legal registration expenses on both counts are borne by the debtor. Land seizure/mortgage was mentioned in 17 per cent of FGDs.

Some of the moneylenders would also be traders. Loan taken could be for purchase of an input and repayment through sale of produce. Interlocking of credit, input and output markets are not necessarily enforced by the trader-moneylender, but operating with a single trader-moneylender, would save transaction costs to the farmer.

3.5 Further Case-Control Comparison: A Statistical Exercise

We consider the households suicide status as a binary dependent variable, Y, where suicide case household (=1) and non-suicide control household (=0). To identify relative risk factors, we compare these two types of households by taking the independent variables of outstanding debt per household in rupees (X_1) or outstanding debt per person per household in rupees (X_2). The two variables are somewhat similar and can be correlated, but they differ in the sense that the latter is normalized for family size (X_3).[7]

Using the above-mentioned variables, we estimate step-wise logistic regression

$$\ln[p/(1-p)]=\alpha+\beta_1 X_1+ \beta_1 X_1+u;\ i=1,\ldots 3.$$

where ln is natural logarithm, p is probability of obtaining a suicide case household, ln[p/(1-p)] is the log odds ratio of a suicide case household, α is a coefficient on the constant term, β_i's are the coefficients of the independent variables, X_i's, and u is error term.

The results were estimated using STATA. The step-wise logistic regression method uses the chi-square differences to determine automatically which variable to add or drop.[8] While discussing results, instead of coefficients, we give odds ratio, $e^{\beta i}$. We do so because the interpretation of odds ratio is more intuitive. It would mean that for a unit increase in the independent variable there would be a corresponding change in the odds ratio (probability of suicide household/probability of a non-suicide household). Further, one can also calculate the probability from the odds ratio.

[7] In the current exercise we restricted ourselves to complete case-control analysis of 87 pairs of households from whom we have credit related information. Other important variables, as analysed in Mishra (2006), are ownership of bullocks (an important productive as well as liquid asset), land size and value of produce.

[8] In our restriction a variable is added if it increases chi-square significance by 0.05 and it is dropped if it increases chi-square significance by 0.1.

The results of the step-wise logistic regressions estimated under some selected restrictions are given in Table 5. First, we estimate for 87 pairs households for whom we have credit related information. It suggests that outstanding debt is statistically significant in explaining the differences between the suicide case and the non-suicide control households. It suggests that if outstanding debt increases by Rs.1000/- then the odds that the household is one with a suicide victim increases by 4 per cent.

Second, we estimate by controlling for land size owned (the land size of non-suicide control household not differing from the suicide case household by more than 25 per cent). The estimation for 64 pairs of observations suggests that if outstanding debt increases by Rs.1000/- then the odds that the household is one with a suicide victim increases by 6 per cent.

Table 5
Results (Odds Ratio) of Stepwise Logistic Regression Analysis

	Complete Case-Control Analysis	Similar land size	Deceased's age was less than or equal to 40 years	Deceased was Male with education of Matriculation or above
N	174	128	72	68
Outstanding Debt per Household	1.000042	1.000061		
	(0.0000099)	(0.0000141)		
	[0.000]	[0.000]		
Outstanding Debt per Person per Household			1.000262	1.000128
			(0.0000875)	(0.0000574)
			[0.003]	[0.033]
Log Likelihood	-105.28465	-74.435033	-42.030943	-42.01675
LR Chi2	30.65	28.58	15.75	10.23
Prob >Chi2	0.0000	0.0000	0.0001	0.0014
PseudoR2	0.1270	0.1610	0.1578	0.1086

Note: Logistic regression is $\ln(p/(1-p))=a+b_iX_i+u$. The overall odds ratio $(p/(1-p)=e^{(a+biXi+u)}$. For each coefficient associated with a variable, odds ratio is e^{bi}. Thus, if b_i is positive then odds ratio>1, whereas if b_i is negative then 0<odds ratio<1. Round brackets give standard error, square brackets give prob > |z|. Similar land size indicates that the land size of non-suicide control household not differing from the suicide case household by more than 25 per cent. Family size was not chosen in any of the estimations.

We do many other permutation and combination controlling for gender, age, martial status, education and experience in farming of the deceased individual. The results were somewhat similar to the first two estimates. In two instances, outstanding debt per person turned out to

be statistically significant in explaining the differences between the suicide case and the non-suicide control households. The results indicate the following.

If we restrict ourselves to the deceased individual's age to less than or equal to 40 years then estimation for 36 pairs of observations suggests that if outstanding debt per person per household increases by Rs.1000/- then the odds that the household is one with a suicide victim increases by 26 per cent. Similarly, if we restrict ourselves to the deceased individual being male and with education of matriculation and above then estimation for 34 pairs of observations suggests that if outstanding debt per person per household increases by Rs.1000/- then the odds that the household is one with a suicide victim increases by 13 per cent.

4. Conclusions

Our analysis shows that there has been a decline in the role of formal financial institutions (including cooperative societies/banks) in rural Maharashtra. This is also evident in terms of disbursement of agricultural credit. The presence of large number of informal sources indicates that this was not because of an absence of demand. Excessive reliance on informal sources can increase the debt burden. In fact, credit (outstanding debt) turns out to be an important risk factor that explains the differences between suicide case and non-suicide control households. One policy implication from this is the need to revive the rural financial markets.

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