Research and Reviews: Journal of Agriculture and Allied Sciences
e-ISSN: 2347-226X
p-ISSN: 2319-9857

Extent and Incidence of Agricultural Indebtedness in India

Bhagirath Prakash Baria*

Department of Banking and Insurance, The Maharaja Sayajirao University of Baroda, Gujarat, India

Research Article

Received: 10/08/2021
Accepted: 24/08/2021
Published: 31/08/2021

***For correspondence:**
Bhagirath Prakash Baria, Department of Banking and Insurance, The Maharaja Sayajirao University of Baroda, Gujarat, India

E-mail: bhagirath.baria-bi@msubaroda.ac.in

Keywords: Agriculture, Agricultural indebtedness, Productive indebtedness, Unemployment gap

ABSTRACT

This paper analyzes the extent and incidence of indebtedness among agricultural households in India using state-level data from the National Sample Survey 70th Round on agricultural indebtedness for the year 2011-12. The determinants of the incidence of indebtedness are also investigated. Using an Ordinary Least Squares framework, the paper proposes an empirical model for studying the determinants of incidence of agricultural indebtedness from a structural perspective. Recognizing the fact that indebtedness in itself is not the problem but its unproductive use is, the estimations reveal that improving literacy, reducing gender-based unemployment gap, promoting irrigation, improving the sex ratio, increasing productive investment and reducing poverty rate can help to improve the level and composition of the incidence of indebtedness in rural India. The extent of indebtedness is found to be strongly correlated with the landholding distribution in India, which corroborates the extant findings.

INTRODUCTION

Agriculture continues to be the backbone for sustaining the rural labour market and the standard of living of a sizeable proportion of the Indian rural population. In terms of the source of income and employment, agriculture continues to dominate the occupational structure of the country, though its share in aggregate output has been declining since the economic reforms were set into motion in the 1990s. Hence, while non-farm activities are fast gaining momentum at the cost of mainstream farming activities, from a purer welfare economic perspective, policy interventions in the agricultural sector continue to play a significant role in improving the quantity of material well-being and the quality of life of a large number of people in India. Development policy-interventions in India have been shaped by the objective of inclusive economic progress. Inclusivity has generally been conceptualized in terms of the net gains to those at "the bottom of the economic pyramid" [1]. Consequent to these policy developments, the statistical machinery of the country too has given immense importance to rural economic activities in order to construct a rich set of data collection systems that can inform sound development policy actions at the grass-root levels. From agricultural household consumption surveys to crop-cutting surveys, a sizeable data environment has developed in India that provides rich and diverse information on the "ordinary business of life" (Marshall, 1920) in the rural sector. The "fundamental unit of analysis" of the policy analysis and the academic research on these issues has been the agricultural household. Larger macroeconomic dimensions of rural development are

embedded into the constrained optimization-based decisions of individual agricultural households. This economic unit has thus served as an important foundation of both the development policy narrative of India and the official statistical developments in the country.

Agricultural households are characterized by quite different economic dynamics as compared to other households in the sense that consumption tends to play a major role in shaping the level and price-elasticity of their effective demand. The dependency of the aggregate expenditure of agricultural households on consumption is also in part a result of the concentration of poverty in rural areas and especially among agricultural households [2]. With limited growth in the aggregate income and savings, agricultural households are characterized by considerable dependency on borrowings and external sources of finance for improving and maintaining their standard of living. The dependency on institutional credit is also a matter of concern because the extent of savings, wealth and productivity are generally sub-optimal in the agricultural sector which makes the marginal disutility of every unit increase in the indebtedness higher than any utility that the household may obtain from it. The inability of farmers, for example, to meet their ever-increasing debt obligations and the politics of loan waivers that every successive Government have had to undertake only highlight the immense importance of indebtedness for the well-being of agricultural households. Pure market-driven debt distribution mechanisms have generally failed to correct the sub-optimal allocation of debt across Indian agriculture and this has led to an ever increasing stress on the fiscal space of the Governments, both the centre and major rural-agricultural states.

Accordingly, the literature on agricultural indebtedness has expanded consistently in the Indian context since the economic reforms. While the problem of indebtedness has always been at the forefront of the discourses on rural development in India, the nature of agricultural indebtedness has undergone considerable transformation in recent times. The major suppliers of credit, the kind of players dominating the scene, policy approach of the successive Governments, and many similar transformations have been witnessed by the agricultural credit ecosystem of India. With increased penetration of institutional credit across agricultural households, the organized financial system has gradually taken a lead in bringing financial inclusiveness at the rural forefront, consistently substituting informal sources of finance such as local money lenders. Scheduled Commercial Banks (SCBs) have been at the forefront of this war against poverty and lack of efficient credit in the Indian agricultural sector. Moreover, newer mechanisms of credit allocation have also emerged across the developing world including India, that have complemented the efforts of the mainstream banking system in the delivery of credit products to rural people. Researchers have consequently focused on multiple credit allocation systems ranging from the direct government intervention through the National Bank for Agricultural and Rural Development (NABARD)-financed Self Help Group (SHG) programme to the private Non-Banking Financial Companies specializing in Microfinance.

MATERIALS AND METHODS

This study utilizes state-level secondary data from official published sources. The choice of the variables is dictated by both the conceptual framework adopted and data constraints. This study uses state-level data contained in the NSS 70th round survey report on agricultural indebtedness. NSS data are the only source for the kind of data required in this study. The choice of using cross-sectional data set is made so as to avoid combining data from previous NSS rounds on the same issue. Different NSS rounds even on the same issue differ considerably in terms of the composition of the sample, sampling design, profile of the respondents, definitions of the major variables measured in the survey, time period covered, frequency of data collection and a host of related dimensions. Hence, comparatives between data from distant NSS rounds are not theoretically correct and may result in incorrect inferences. Other than the NSS data, information from the Handbook of Statistics on Indian Economy, Agricultural Statistics at a Glance and rainfall database of the India Meteorological Department are also used in the study.

The variables employed in this study are elaborated as and when they are mentioned for the first time. All the variables are at state-level and the entire empirical exercise in further sections is undertaken using data on 18 selected states which include Andhra Pradesh, Assam, Bihar, Chhattisgarh, Gujarat, Haryana, Jharkhand, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Odisha, Punjab, Rajasthan, Tamil Nadu, Telangana, Uttar Pradesh and West Bengal. These states are focused upon for several reasons. First, data on these states are consistently available in NSS 70th round survey across all the variables required by the theoretical specifications of the estimated models. Second, these states together occupy most of the share in total indebtedness at all-India level. Third, in terms of the all-India agricultural Gross Domestic Product (GDP), these states represented most of the aggregate agricultural GDP of India in the year 2011-12. Lastly, other concerns such as the similarity of agricultural profile of these states and the availability of comparable data on chosen variables dictated the choice of these states for the analysis. In terms of the methodology employed, this study uses a theory-driven framework

to define, functionalize and estimate an Ordinary Least Squares-based linear regression model. The model is grounded into the underlying theory as depicted by the review of the literature and to some extent the beliefs of the authors on this issue. The focus of analysis is directed more towards the signs of the estimated coefficients and their theoretical rationale rather than their magnitude though the same is not completely overlooked either.

RESULTS AND DISCUSSION

This section lays down the empirical findings across the three major issues of interest, namely the analysis of incidence of indebtedness and its determinants, variability in indebtedness and its determinants and inequality in indebtedness and its determinants across agricultural households using state-level data in India.

As noted earlier, incidence and extent are two different ways of looking at the same issue, namely the intensity of the debt burden on agricultural households. Before embarking on the analysis of incidence indebtedness, an overview of the extent of indebtedness can provide some complementary insights [3]. Moreover, the extent of indebtedness for each state across various land-size classes forms the basis for measurement of some variables that are included in the empirical model later. Incidence, while having its own advantages, has an inherent disadvantage when compared to the concept of indebtedness. This is on account of the inability of the concept of 'incidence' to explain the average level of the debt problem across all selected households. It can only express the proportion of households that are indebted but not the quantum of the indebtedness problem for a typical agricultural household.

(Table 1) shows the distribution of debt, both monetary and in kind and across both institutional and informal sources for agricultural households in India. Landholding continues to be a determining factor in case of key rural development indicators such as the level and growth of agricultural per capita GDP, level and growth of rural employment opportunities, performance of farmers across different harvesting seasons, the economic effects of volatile agro-climatic conditions and the ability of farmers to absorb the risks emanating from the same, the ability of farming community to handle market risks and a host of such related matters. Landholding pattern has been skewed in the Indian agricultural sector and this has had many negative welfare implications for the rural sector in the country and has posed a considerably difficult challenge for policy makers. The nature of landholding distribution in India is such that the majority of farmers own relatively smaller size of land while a small proportion of farmers own larger sized cultivable lands. This has led to unequal distribution of the risks and loses emanating from rainfall volatility, agricultural market failures, Government failure, etc. across households owning different sizes of cultivable land. Those at the middle and bottom of the landholding distribution have generally borne much greater impact than those having larger sizes of cultivable land. Accordingly, the distribution of debt differs considerably across households owning different sizes of land as evident from the table below.

Table 1. Distribution of Debt per Agricultural Household based on size class of land across States in 2012-13.

Size class of land possessed	Mean	SD	CV	Min	Max	Median
	(Rs.)	(Rs.)	(Rs.)	(Rs.)	(Rs.)	(Rs.)
<0.01	445.39	713.62	160.22	0	2409	98.5
0.01-0.40	363.78	393.65	108.21	8	1592	179.5
0.41-1.00	489.89	489.33	99.89	24	1944	292
1.01-2.00	751.72	813.64	108.24	67	3467	456
2.01-4.00	1194	1391.1	116.51	71	6070	928.5
4.01-10.00	1821.06	1765.53	96.95	173	7505	1335.5
10.00 +	4458.89	5831.6	130.79	0	22281	2592
all classes	636.89	556.77	87.42	34	2136	464

Clearly, there is a direct positive association between the size of land owned and the extent of indebtedness across the Indian agricultural sector. This is as expected because larger land holdings result in larger demand for credit for productive and investment oriented usages. Large farmers can afford investing in capital and technology such as tractors, irrigation facilities, ploughing machines, etc. Hence they need to invest much larger amounts than those farmers owning smaller land sizes. While this implies larger amounts of borrowings and hence debt; the

composition of debt may be quite different at different points in this distribution. Literature on this issue has found out that smaller and marginal farmers are more likely to borrow for non-investment and unproductive usage such as for personal consumption, marriage expenditure, etc. and hence they are likely to have larger portion of their total borrowings put into such uses. This increases the burden of borrowings on them as there is no compensatory increase in the future income that could have been earned if the borrowings were used for capital investments.

The skewness in the distribution of debt across the agricultural households owning different sizes of land can be seen from the value of the mean being consistently larger than the median across all size-classes of landholdings. States and their households at the extreme ends of the distribution have relatively larger variability in terms of the CV. The minimum and maximum amounts of debt per agricultural household across selected states also shows a broadly increasing pattern as one moves from lower size classes of land owned to the larger ones.

This is consistent with the pattern observed in the mean values of debt per household too. Hence, while larger lands result into larger debts, the composition and the economic impact of the same differs inversely with respect to the size class of the land under consideration [4]. Small and marginal farmers generally have lower revenues, larger indebtedness due to unproductive use of borrowings and lower yields compared to large sized farmers who can adopt capital-intensive production methods. Many of those at the lower and middle end of this distribution are generally the ones who fall below the official poverty lines and hence the negative welfare implications of agricultural indebtedness cannot be overemphasized.

Kerala for example has a relatively lower variability in terms of the value of the CV. West Bengal, Assam and Bihar together have quite high values of CV while not having similarly high extent of debt per household. However, in case of Odisha, both the extent of debt and the variability in agricultural debt are quite high. Clearly, states show different performance in terms of the mean values of debt and the variability in debt. States such as Kerala, Tamil Nadu, Andhra Pradesh, Karnataka and Haryana have performed quite well in keeping the variability in the extent of indebtedness across different size-classes of landholdings compared to states such as Punjab and Odisha.

Incidence of Indebtedness and its Determinants

While the above section elaborated the nature of the extent of indebtedness of agricultural households, this section investigates the other important dimension of indebtedness- namely its incidence. Incidence is differentiated from the extent of indebtedness due to the different aspects of the same problem that these two concepts are designed to capture. While the extent of indebtedness focuses on the monetary quantum of indebtedness, incidence as a concept looks into the pervasiveness of the debt problem.

Compared to the extent of incidence, incidence is a more macrosociological phenomenon and provides a larger perspective due to its definition. While the extent of indebtedness can be analyzed for a single household, incidence of indebtedness requires a perspective transcending across households. Accordingly, this section analyzes the factors that shape the level of incidence of indebtedness across the selected states. Theoretical specification of the model is done by accounting for the findings of the extant literature as well as our own beliefs in the present context.

Gender Equality is measured by the sex ratio (SEXR). Higher sex ratio can, in a macrosociological sense, induce a higher degree of equality of females as compared to males. However, the number of females per male in a state may have a positive or a negative impact on incidence of indebtedness. It can be positive because more females would participate in the agro labour market and this would invariably increase the demand for borrowings and hence the chances of being indebted.

The impact may be negative because of the borrowing and investment habits of female farmers as against their male counterparts. Literature on the economics of microfinance in India has revealed that men are prone to unproductive spending habits in the poorer rural households.

Alcoholism, gambling and other such social ills might be prevalent therein. Hence, more females in the agro labour market could, in theory, allow for better utilization of borrowings and hence reduce the chances of being persistently indebted (Table 2).

Table 2. Expected Signs of the coefficients.

Sr. no.	Coefficient with reference to the independent variable	Expected sign with reference to INDAGH
1	LITR	-
2	SEXR	+ or -
3	UNMFR	+
4	POVR	+
5	GIA	+ or -
6	INV	+

This study uses the ratio of Gross Irrigated Area (GIA) to total land area of states as a measure of technology and infrastructure for agricultural households of the chosen states. Improved irrigation facilities and higher use of technology can allow agricultural households to avoid being over-indebted and utilize the borrowings much more productively. Hence, higher the proportion of GIA to total cultivable land area, lower should be the incidence of indebtedness.

Descriptive Statistics

The variables elaborated above are analyzed in terms of their broad distributional characteristics in this section. Table 3 presents the estimates of key descriptive statistics on the chosen variables (Table 3).

Table 3. Key Descriptive Statistics.

Statistic	INDAGH	LITR	SEXR	UNMFR	POVR	GIA	INV
	%	%	%	%	%	%	Rs.
Mean	55.63	73.6	951.94	170.84	21.93	52.06	566.67
Median	52.35	72.89	948	147.9	19.98	40.59	458
SD	21.03	7.63	48.58	108.5	11.07	28.48	1166.43
CV	37.81	10.36	5.1	63.51	50.48	54.7	205.84
Minimum	17.5	61.8	879	21.83	7.05	11.82	-2987
Maximum	92.9	94	1084	366.67	39.93	99.77	2472
Observations	18	17	17	16	17	18	18

States that have higher cultivable areas under irrigation are also the ones which see incidence of indebtedness. Given the skewed landholding distribution, improved irrigation may be benefitting only those agricultural households who have larger areas of land and better ability to invest in capital. It is thus natural for such households to borrow more, possibly for productive uses rather than unproductive usage. This seems to explain the observed positive sign of this coefficient [5]. Data that allow clean differentiation between households that borrow for productive uses and those that borrow for unproductive uses could perhaps reveal a different direction of relationship. However, such data are not available in the present context. Lastly, higher investments in productive activities (logINV) also tend to increase incidence of indebtedness. But such a relationship should be expected because the additional funds being borrowed might be put to productive use and expansion or improvement of the agro business. Such indebtedness in its own self might not pose a problem but rather indicates the obvious implications of increased entrepreneurship. While the signs of the coefficients reveal important underlying dynamics of the process of indebtedness, the overall features of the estimated model are also motivating. The overall fit of the model is excellent with a value of 89 percent. The model as a whole is significant as revealed by the highly significant F-statistic. The nature of indebtedness problem differs across states. This model has attempted to capture some of those dynamics within a structural framework where the hypothesized structure is located in theoretical beliefs rather than data mining.

CONCLUSION

Given that the estimates are econometrically reliable and theoretically sound, some important policy implications can be derived while recognizing the limitations of this study as pointed earlier. 'Policy' here mainly signifies the developmental interventions by the Central Government in the agriculture sector in India through the Ministry of Agriculture and NABARD. However, if the policy focus is on promoting the productive use of debt, then the policy makers must be careful in inferring the inter-state behaviour of this variable. Possibly, by promoting the spread of irrigation, improving the sex ratio, and promoting investments for productive uses in agriculture, the Government can induce more households to borrow. However, such structural interventions must also simultaneously promote formal credit instead of the informal sources on which many agricultural households rely till date.

REFERENCES

1. Assadi M. Agrarian crisis and farmers suicide in India: Dimension, nature and response of the state in Karnataka. Indian J Labour Economics. 2006;49:799-820.
2. Datta S, et al. An empirical analysis of nature, magnitude and determinants of farmers' indebtedness in India. Int J Soc Eco. 2018;45:888-908.
3. Gill A et al. Farmers suicides and response of public policy: Evidence, diagnosis and alternatives from Punjab. Eco Political Weekly. 2006;41:2762-2768.
4. Hossain S. Is commerialization of microfinance responsible for over-indebtedness? The Case of Andhra Pradesh Crisis. J Eco Sustainable Dev. 2013;4:142-153.
5. Jeromi PD. Impact of agricultural trade liberalization: Farmers indebtedness and suicides in Kerala. Indian J Agr Eco. 2007;62:1-17.