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Religiosity in India: Censored Regression Estimation of Household Religious Expenditure

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Abstract: Very few or nobody is without any religious affiliation. In every religious household, the expenditure on religion is a part of household expenditure. Using the 68th round NSSO data and applying the censored regression method, this paper analyses the socioeconomic determinants and their effects on religious expenditure in India. The estimated empirical results reveal that in almost every religious household, there exists a positive relationship between income and religious expenditure. Among the major religious groups in India, Christians spend more on religion relative to the Hindus and Muslims. The study also finds that the size of the family and literacy have a negative effect on religious spending, while the presence of elders in the household increases religious expenditure. The picture of religious expenditure of households does not vary much even if controlled for religion, social group and education.

Keywords: Religious expenditure, Income, Socio-economic background, Religion, Censored regression

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Introduction

India, the largest democracy and the second most populated country is also a multi-ethnic, multi-cultural, multi-religious and multi-language society. According to the 2011 Census of India, about 80.55% of the Indian population are Hindus, followed by 13.4% of Muslims, 2.3% of Christians and a sizable number of Sikhs, Jains, Buddhists, and other small religious minorities like Parsis, Zoroastrians. Globally, Hindus constitute 15% of the world population, compared to Christians 31.5%, Muslims 23.2%, Buddhists 7.1%, and Jews 0.2% around the globe in 2010 (Iyer, 2016; 2018). There also exists enormous diversity within each religious group in India such as sects, castes and sub-castes with vast and distinctive social identities,

cultures, customs, norms, values and practices. Many of the major world religions had their origins in India. Apart from the largest dominant, there are a number of mind-blowing and interesting facts about the major religions of India, such as India has almost as many Muslims as Pakistan, more Christians than the population of Australia, more Buddhists than Tibet, more Sikhs, Jains, and Parsis than any country in the world. There are very few without religious affiliation. Any major Indian database or population records by any organisation have religion recorded immediately after gender or age. Though this is the true condition, religion as a factor in either individual behaviour or economic development has never been explored as other topics like gender, poverty or even marriage do. Almost all religious groups and religious individuals spend substantial amounts on religious festivals and rituals. There are wide differences in religious expenditures among different religious and social groups, ranging from simple tribal practices to more elaborate and expensive pujas in wealthy households and religious congregations. Though many studies focus on religious beliefs and practices, the relationship between income and religious expenditure is an under-studied topic. Since Indian society is strictly bound to religion and religion pervades every aspect of an individual's life, it is interesting to see how people spend on their religious practices.

Therefore, the primary objective of this paper is to identify the socioeconomic and demographic determinants of religious expenditure of different religious groups and to analyse their effects on religious expenditures in India. The data used in this study is the 68th round of NSSO data, which deals with consumer expenditure, including religious expenditure, in India. The nationwide NSSO database has 1,01,651 observations. The data on religious expenditure consists of extreme expenditure ranging from zero to millions. Some observations of higher religious expenditures are outliers. Therefore, applying OLS to the inconsistent distribution with outliers will produce biased estimates. Hence, the econometric method applied in this paper is the censored regression model.

Review of Literature

There exists a sizable literature on the determinants of religiosity since Adam Smith. Adam Smith laid the foundation for the economic analysis of religion in a largely ignored chapter of Wealth of Nations. Smith argues that self-interest motivates clergy, and hence market forces constrain churches, just as they do secular firms and producers. Therefore, the benefits of competition, the burdens of monopoly, and the hazards of government regulation are as real for religion as for any other

sector of the economy. Almost two decades later, since the 1970s, economists and sociologists have returned to Smith's insights. Viewing religious behaviour as an instance of rational choice, rather than an exception to it, they have analysed religious behaviour at the individual, group, and market levels. Understanding religious behaviour is important as it provides information about a neglected area of nonmarket behaviour, addressing questions about beliefs, norms, customs, morals, values and culture, and how religion affects economic attitudes and activities of individuals, groups, and societies, and eventually economic development.

Azzi and Ehrenberg (1975) and Ehrenberg (1977) provide the theoretical foundations of the Economics of Religion, wherein religious behaviour is interpreted from an economic perspective, applying microeconomic theory and techniques. It is shown in a simple model of choice between economic goods and devotional goods across time that church attendance falls with an increase in income (Azzi and Ehrenberg, 1975; Iannaccone, 1998). In empirical studies, this choice theoretic microeconomic approach is used to explain patterns of religious behaviour among individuals, groups, and cultures. Lehrer (2004) critically reviews and synthesises research on the role of religion on various aspects of the economic and demographic behaviour of individuals and families in the United States, including the choice of marital partner, union formation and dissolution, fertility, female time allocation, education, wages, and wealth.

Azzi and Ehrenberg (1975), using the US General Social Survey data on self-reported religious beliefs and behaviour and applying the Tobit regression model, show that church attendance rises with wealth and falls with income. As wage rates increase, religious participation becomes more money-intensive, with rates of church contributions rising. In addition, a significant positive relationship between income and religious expenditure as well as age and amount of contribution to church are also observed. The results imply that the opportunity cost of time does affect religious behaviour.

Iannaccone (1998) finds that styles of religion do vary with income and education, and belief and religious activity tend not to decline with income, and most rates increase with education. An interesting result is that college professors are, on average, somewhat less religious than the general public.

Lehrer (2004), analysing the US 1987-88 National Survey of Families and Households data, following the theoretical framework of Gary Becker's (1981) economics of the family, shows that religious affiliation affects family outcomes because it has an impact on the costs and benefits of many interrelated decisions that people make over the life cycle. In addition, for behaviours that pertain to

married couple households, affiliation matters because it is a complementary trait within the context of marriage. It is also observed that religiosity, another dimension of religion, also affects economic and demographic outcomes, partly because it accentuates differences by religious affiliation, and partly because of the generally beneficial effects that religious involvement has on health and well-being.

Gruber (2004) analyses the impact of charitable subsidies on religious participation and religious giving, using the US General Social Survey and the Consumer Expenditure Survey data and applying OLS and probit regression methods. It is argued that subsidising charitable contributions generates positive externalities of charitable activities, particularly from the religious institutions which are the largest recipients of charitable giving. Religious participation can either be a complement to, or a substitute for, the level of charitable giving. The study shows strong evidence that religious giving and religious attendance are substitutes: larger subsidies to charitable giving lead to more religious giving, but less religious attendance. The results validate economic models of religious participation in that charitable giving and religiosity are substitutes.

Blomberg, DeLeire and Hess (2006) explicitly model the investment aspect of religious expenditure and some storage value of holiness through lifetime stock of religious contributions. Focusing on expenditures rather than time considerations in religious activity, a dynamic life cycle consumer utility optimisation model is developed with mortality in which intra-temporal utility stems from both ordinary consumption and religious consumption i.e. people decide how to allocate their resources between religious expenditures and other consumption expenditures. Religious expenditure not only includes 'this life consumption value', but also an 'afterlife investment value'. A noteworthy aspect of this approach is that the framework allows for the possibility that the stock of religious contributions can be stored and provide value after death. The probability of survival or the occurrence of death is also explicitly modelled.

Bettendorf and Dijkgraaf (2011), using microdata from the Netherlands, investigate the relationship between income and religion, measuring religiosity by membership and attendance in church. The single equation estimates show that both religious measures are inversely related to income. However, simultaneous equation results show insignificant results for both church membership and attendance, rejecting the bicasual relationship between income and religiosity.

Though the literature on the economics of religion is mature and vast in developed countries, countries that are mostly Christian, very little is known about the relationship between religion and economics in developing countries that are multi-

religious, multi-sect, and multi-ethnic societies. In India, the second most populated and the home of Hinduism, virtually no evidence is available on the economic effects of religion. Western religious traditions like Christianity and Islam emphasise exclusivity and organisational affiliation like church membership, claiming that there is one and only correct spiritual path, whereas Eastern religions like Hinduism and Buddhism are non-exclusive and the emphasis is on personal behaviour rather than on organisational affiliation. Most religious practices in developing countries preach the central importance of prayer and meditation as a means for achieving religious goals, even for people who have no specific religious affiliation.

Miller (2000) is an early Asian religious study (indeed Hinduism) which is very rare in this regard. This paper explores the relationship between risk preference and religiosity from a cross-national perspective. Using the World Values Survey data and applying OLS and Logit regressions, the study observes that being irreligious only represents risk-taking behaviour in Western societies whereas in Eastern societies' non-participation in the mainstream religion does not necessarily constitute risk-taking behaviour.

There are some studies which do not study on economics of religion directly, but take religion or social identity as an important part of it. These studies analyse the impact of religion and expenditure on it along with other aspects of human life such as philanthropy and donations to a charitable cause. Such philanthropic donation can be to a charity organisation, religious institution or public goods. An altruistic household will choose a rational level of donations along with other consumption expenditures subject to budget and utility maximisation constraints.

Yen (2002), applying a censored system of donation equations by full-information maximum likelihood method on the 1995 US Consumer Expenditure Survey data finds a positive effect of income, age and education on all categories of donations. Specifically, the donors of charity are those households with high levels of income, headed by older and educated individuals.

Benjamin, Choi and Fisher (2013) apply a game theoretic framework to study the identity effects of religion on economic behaviour among Cornell University students. Applying OLS and interval regression models, the study finds that religious identity salience causes Protestants to increase and Catholics to decrease contributions to public goods, expect others to contribute less to public goods, and become less risk averse. Jews more strongly reciprocate as an employees in a bilateral labour market gift exchange game. Atheists and agnostics become less risk-averse. They also find no evidence of religious identity salience effects on the disutility of work effort, discount rates, or generosity in a dictator game.

Khamis, Prakash and Siddique (2010) study social identity and expenditure on status-signalling goods in India, focusing on social groups as Indian society is characterised by social stratification based onthe caste system of Hinduism. Using consumption data from the India Human Development Survey (IHDS-2005) and applying a double log regression model, this study finds that among Hindus the disadvantaged caste groups such as OBCs spend 9% more on visible consumption than high caste groups, while social groups like Muslims spend 11% less. Such social and religious group differences are significant and robust.

Thus, the literature on the economics of religion provides more insights into the non-market, philanthropic and social aspects of human behaviour. More specifically, the literature shows how economic models can fruitfully address questions about belief, norms, and values, and explore how religion (and, by extension, morals and culture) affect economic attitudes and activities of individuals, groups, and societies. Being a behavioural science, economics views religious behaviour as an instance of rational choice, rather than an exception to it, and religious expenditures as investments. The analyses of religious behaviour at the individual, group, and social levels show that religious behaviour generates some utility for expenditure on religion, and there exists a positive relation between income and religious expenditure.

Data and Methodology

This paper uses the 68th round (July 2011-June 2012) of the NSSO data on household consumer expenditure. The 68th round (Type 2) NSSO data consists of 1,01,651 nationwide observations. In this data set, 9,914 households reported positive spending on religious activities. Among the states, in Meghalaya and Kerala, 33% and 32%of households have incurred religious expenditure, followed by Tamil Nadu (22%) and Orissa (20%). Surprisingly there is one union territory with zero religious expenditure- D&N Haveli. Among the religious groups, 44% of Christians, 25% of Muslims, and 25% of Hindus spend on religion. On average, a household in India is spending Rs.93 per month on religious activities. The average religious spending by Christians is Rs.177 per month, whereas Muslims spend only Rs.67 for the same. The Hindu households spend Rs.80 per month and other religious groups spend Rs.81 per month on religion.

The dependent variable of this paper, household religious expenditure, is distributed over the range of Rs. 2 to Rs. 7000 per month, with a mean expenditure of Rs.93 and a standard deviation of Rs.288. The distribution of religious expenditure shows a skewed distribution with values highly concentrated on the left side of the

mean value. Hence, applying OLS to a skewed distribution may lead to a biased estimation because of the rightward outliers. Moreover, the mean value itself lies away from the right extreme end. Hence, to avoid the effect of outliers, the censored regression method is applied for the empirical analysis of religious expenditure. It is observed from the distribution of religious expenditure that about 90% of observations fall below or equal to Rs.165 per month. Therefore, an artificial right censoring of data at the point of Rs.165 per month is considered to take the mean value plus 1/4th of the standard deviation (93+72=165). The censoring has left 1022 censored observations out of 9914 total observations. All the higher values are reduced to Rs.165.

Censored Regression Model

The censored regression model is essentially a missing data problem, but with some information about missing variables, whether the outcome variable is above or below a known threshold value. In the censored regression model the values of the explanatory variables are observed of all observations, but, the true values of the dependent variable are observed only for a restricted range of observations. Instead, the values of the dependent variable for certain observations are reported as a single value or clustered around a value, say c. Generally, the censored (resembles the Tobit model) is defined as an index function or latent variable model given by,

$$y^* = \beta x + u \tag{1}$$

$$y = c \text{ if } y^* \geq c$$

$$y = y^* \text{ otherwise}$$

where c is a constant (threshold value), β is a k x 1 vector of unknown parameters; x is a k x 1 set of independent variables, and u is the residuals that are independently and normally distributed, with mean zero and a common variance σ^2. Normally, $E[y \mid x] = 0$. With censoring, $E[y \mid x] \neq 0$, and OLS estimation is biased. Defining the density function for u condition on y ≤ c,

$$\phi = \phi(u \mid y \leq c) = \phi(u \mid u \leq c - \beta x) = \frac{\phi(u)}{p(u \leq c - \beta x)} \tag{3}$$

$$= \frac{\phi(u)}{P\left(\frac{u}{\sigma} \leq \frac{c-\beta x}{\sigma}\right)} = \frac{\phi(u)}{\Phi\left(\frac{c-\beta x}{\sigma}\right)} = \frac{1}{\Phi\left(\frac{c-\beta x}{\sigma}\right)} \frac{1}{\sqrt{2\pi\sigma^2}} e^{-\frac{u^2}{2\sigma^2}} = \frac{\frac{1}{\sigma}\phi\frac{u}{\sigma}}{\Phi\left(\frac{c-\beta x}{\sigma}\right)} \tag{4}$$

$$E[y|x] = \Phi\left(\frac{\beta x}{\sigma}\right)(\beta x + \sigma\lambda) \tag{5}$$

where $\lambda = \phi(\beta x/\sigma)/\ \Phi(\beta x/\sigma)$, ϕ and Φ denotes density and cumulative distribution functions of *u*. Defining,

$$\Phi(\beta, x, \sigma^2) = \int_{-\infty}^{\beta x} \frac{1}{\sigma\sqrt{2\pi}} e^{\left(-\frac{(\beta x)^2}{2\sigma^2}\right)} \tag{6}$$

$$\phi = \phi(\beta, x, \sigma^2) = \frac{1}{\sigma\sqrt{2\pi}} e^{\left(-\frac{(\beta x)^2}{2\sigma^2}\right)(\beta x)^2} \tag{7}$$

$$\Phi = \Phi(\beta, x, \sigma^2) = \int_{-\infty}^{\beta x/\sigma} \frac{1}{\sigma\sqrt{2\pi}} e^{\left(-\frac{(\beta x)^2}{2\sigma^2}\right)} dt \tag{8}$$

For the observations y_i that are zero,

$$P(y_i) = 0 = P(u < -\beta x_i) = (1 - \Phi_i) \tag{9}$$

For the observations y_i that are greater than zero,

$$P(y_i) > 0 = \phi(y_i \mid y_i > 0) = \frac{1}{\sqrt{2\pi\sigma^2}} e^{\left(-\frac{1}{2\sigma^2}\right)(y_i - \beta x)^2} \tag{10}$$

Hence, the likelihood contribution of i[th] observation is given by,

$$L_i = \frac{\frac{1}{\sigma}\phi\frac{(y_i - \beta x_i)}{\sigma}}{\Phi\left(\frac{\beta x_i}{\sigma}\right)} \tag{11}$$

Then, the likelihood function is given by,

$$LogL(\beta, \sigma) = \Sigma_{i=1}^{n} L_i = -\frac{n}{2}[\log(2\pi) + \log(\sigma^2)] - \frac{1}{2\sigma^2}\Sigma_{i=1}^{n} u_i^2 - \Sigma_{i=1}^{n} \log\left[\Phi\left(\frac{\beta x_i}{\sigma}\right)\right] \tag{12}$$

$$L = \Pi_0(1 - \Phi_i)\Pi_1 \frac{1}{\sqrt{2\pi\sigma^2}} e^{\left(-\frac{1}{2\sigma^2}\right)(y_i - \beta x)^2} \tag{13}$$

where the first product is over the observations for which y_i= c and the second product is over observations for which $0 < y_i \leq$ c.

Empirical Results

Viewing religious spending as an instance of consumer expenditure, this paper empirically estimates the determinants of religious expenditure by the censored regression model. The distribution of household religious expenditure presented in Table 1 shows that approximately 90% of households spend under Rs.165 per month, and only 10% of households spend more than that on religion. Most households, around 50%, spend less than Rs.30 per month on religion-related activities. Figure 1 reveals that the variable is highly concentrated to the left of the mean, and on the right side the distribution is negligible. This situation may lead to a biased estimation because of the rightward outliers. Moreover, the mean value of the religious expenditure (Rs.93) itself lies away from the right extreme. Hence, to avoid the effect of outliers, an artificial censoring at the point of Rs. 165 is considered, covering 90% of the data, and all the upper values are reduced to Rs.165. More comprehensively, though, the dependent variable, religious expenditure is distributed over a range of Rs. 2 to Rs. 7000 per month, the summary statistics of the data show the mean value is 93 and the standard deviation is 288, which means the values are concentrated to the range of Rs.90-100 with the maximum value as 7000.The table of frequency distribution for Religious expenditure also shows that 90% of observations fall to less than or equal to Rs.165 i.e. mean value plus l/4th of standard deviation (93+72=165). This is the condition where an artificial censoring limit is reformed. So censoring the values greater than or equal to 165 to 165 (censoring limit) provides 1022 censored observations out of 9,914 (upper censoring or right censoring case).

Table 1: Distribution of Household by Religious Expenditure (Rs. per month)

Uncensored sample			*Censored sample*		
Religious expenditure	*Households*	*percent*	*Religious expenditure*	*Households*	*percent*
2 to 9	853	8.59	2 to 9	853	8.59
10 to 19	2098	21.16	10 to 19	2098	21.16
20 to 29	1893	19.09	20 to 29	1893	19.09
30 to 48	1074	10.83	30 to 48	1074	10.83
50 to 99	1812	18.27	50 to 99	1812	18.27
100 to 175	1183	11.92	100 to 108	785	7.92
180 to 306	505	5.09	110 to l60	377	3.79
310 to 7000	496	5.05	165 to highest	1022	10.35
Total	9914	100	Total	9914	100

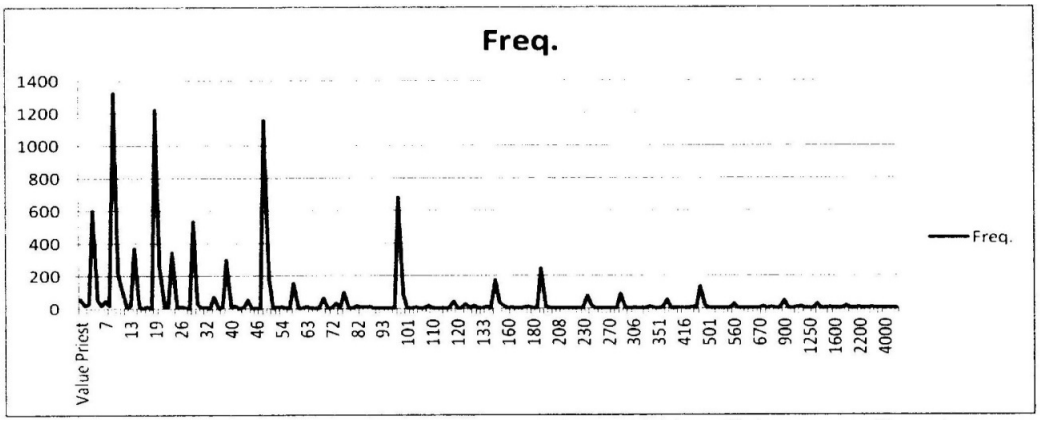

Figure 1: Distribution of Religious Expenditure in India

As shown in Table 2, among the households that spend on religion, 70% are Hindus, 14.55% are Christians, and 13.55%t are Muslims. However, the average religious expenditures by Hindus Rs.80.78 per month and Rs.67.40 per month by Muslims are much less than the mean religious expenditure of Rs.177.36 per month by the Christian households. The other religious households spend similar to the Hindu religion on religion.

Table 2: Average Religious Expenditure of Households (Rs. per month)

Religion	*Percent of households*	*Average expenditure*
Hindus	70.00	80.78
Christians	14.55	177.36
Muslins	13.55	67.40
Others	2.00	81.76

Much in the same way as differences in religious expenditure patterns across religions, Table 3 shows that more urban households report religious expenditure than rural households. While 36% of urban self-employed households spend on religious festivals, about 26% of both self-employed agricultural and non-agricultural households in rural areas spend on religion. Among the regular wage/salary earning households, while about 36% in urban areas spend on religious activities, only 21% in rural areas are spending on religion. A sizable 14% of non-agricultural casual labour households report expenditure on religion. It is also to be noted that more non-salary worker households, 68%, spend on religion than 32% of regular salary-earning households. About 88% of households having own shelter are spending on religion compared to the households without own dwelling spending on religion.

Overall, urban, salaried, Christians and households with own dwelling spend more on religion than the households with other characteristics.

Table 3: Distribution of Religious Households by Characteristics (percent)

Characteristics			*Percent of households*
Residence	Rural	Self-employed agriculture	26.94
		Self-employed non-agriculture	26.18
		Agriculture casual labour	6.45
		Non-agriculture – casual labour	13.78
		Wage/salary worker	20.83
		Others	5.82
	Urban	Self-employed	36.0
		Wage/salary worker	39.0
		Casual labour	14.0
		Others	11.0
Salaried			31.74
Not salaried			68.26
Own dwelling			87.63
No own dwelling			12.37

The definition and descriptive statistics of the variables in the empirical analysis are presented in Table 4. On average, a household spends Rs.93 per month on religious practices, with the range of religious expenditure from Rs.2 to Rs. 7000 per month and the standard deviation of Rs.288 per month. With censoring at Rs.165 per month, the average monthly religious expenditure is Rs.50 per month, with a deviation of Rs. 50 per month. In this paper, as the NSSO data does not provide income directly, household expenditure is used as a proxy for household income. A household has an average monthly expenditure of Rs.10,909 per month, excluding religious expenditure. Among the households in the data, 71% are Hindus, 14% are Muslims, 13% are Christians and 2% belong to other religions such as Buddhism, Jainism, Sikhism, etc. In the same way, the mean values of social group dummies show that 42% of households belong to the OBC category, 34% are from other social groups, 13% ST category and 11%are from the SC category. Nearly 88% of households are headed by males and about 76 of the heads are educated. While 87 households have their own dwellings, the average household size is 4.7. While there are children below 14 years in 59%, elders are present in 33% of households.

Table 4: Descriptive Statistics of Variables

Variable	*Description*	*Mean*	*Std. dev.*
Religious expenditure	Total amount paid in cash and payment made in kind like an item or items of food, pan, tobacco, intoxicants, fuel, clothing, etc. towards religious purpose (Rs.).	93.062	288.08
Religious expenditure1	Censored religious expenditure (upper censoring at Rs.165)	51.014	50.849
Income	Monthly expenditure of a household excluding expenditure on religion (Rs.)	10908.62	10448.93
Log of income	Natural logarithm of income (expenditure)	9.082	0.638
Household size	Number of persons living in a family	4.7087	2.2480
Hindu	If Hindu = 1, 0 otherwise	0.7016	0.4577
Muslim	If Muslim = 1, 0 otherwise	0.1438	0.3509
Christian	If Christian = 1, 0 otherwise	0.1355	0.3422
Other religion	If Other religion = 1, 0 otherwise	0.0192	0.1371
ST	If ST = 1, 0 otherwise	0.1366	0.3434
SC	If SC = 1, 0 otherwise	0.1108	0.3138
OBC	If OBC = 1, 0 otherwise	0.4201	0.4936
Other social group	If Other social group = 1, 0 otherwise	0.3326	0.4712
South	If Southern India = l, 0 otherwise	0.2349	0.4239
West	If Western India = l, 0 otherwise	0.2297	0.3688
North	If Northern India = l, 0 otherwise	0.2687	0.4433
East	If Eastern = l, 0 otherwise	0.3339	0.4716
Own dwelling	If residing in own house = 1, 0 otherwise	0.8763	0.3292
No own dwelling	If no own house = 1, 0 otherwise	0.1237	0.3292
Child	If children <14 years present = 1, 0 otherwise	0. 5883	0.4922
Adult	If adults aged 18-59 years present =1, 0 otherwise	0. 9708	0.1682
Elder	If elders aged > 60 years present = 1, 0 otherwise	0. 3359	0.4724
Uneducated	If head of household illiterate = 1, 0 otherwise	0. 2344	0.4236
Educated	If head of household literate = 1, 0 otherwise	0.7656	0.4236
Male head	If male head of household = 1, 0 otherwise	0.8815	0.3232
Female head	If female head of household = 1, 0 otherwise	0.1185	0.3232
Number of observations		9914	

Table 5 presents the OLS and censored regression estimates of the socioeconomic determinants of household religious expenditure in India. The censored regression model estimates show a relatively much better fit and more significant coefficient estimates compared to the OLS estimates. The estimated results show that household income and religious spending are positively and

significantly related. A one percentage increase in household income will lead to a Rs. 41.68 per month increase in religious expenditure. The effect of household size on religious expenditure is significantly negative. An increase in household size will lead to a decrease in spending on religion by Rs.2.65 per month. The religious expenditure of Hindu households is Rs.3.77 less, whereas the religious expenditure of Christian households is significantly Rs.24.61 more compared to Muslim households. The other religious households are also spending Rs.17.74 more on religion than Muslims. However, the effect of the Hindu religion on religious expenditure is statistically significant at the 10% level only. These results show the non-institutionalised religious practice of Hindus, compared to the Christians Muslims and even other religious groups. The religious expenditure of scheduled tribes is Rs.11.11 more and that of scheduled castes is Rs.5 less than that of other social groups. The OBC household is also spending Rs.6 less on religion compared to other social groups. The coefficients of the community dummies are statistically significant. Further, there are also regional disparities in the country in household religious expenditure. Relative to eastern India, south Indian households

Table 5: OLS and Censored Regression Estimates of Religious Expenditure in India

Variable	*OLS*	*Censored regression*
Log income	141.61 * (27.80)	41.68* (46.20)
Household size	-10.17* (6.72)	-2.65* (10.6)
Hindu	14.35*** (1.68)	-3.77*** (2.54)
Christian	69.53* (5.49)	24.61 * (11.41)
Other religion	46.29** (2.11)	17.74* (4.63)
ST	26.44** (2.36)	11.11* (5.68)
SC	4.94 (0.49)	-4.99* (2.86)
OBC	-12.55*** (1.82)	-5.98* (5.00)
North	-19.42** (2.28)	-1.95 (1.33)
West	36.03* (3.27)	15.13* (7.89)
South	2.87 (0.38)	9.38* (7.10)
Educated	-11.13 (1.43)	-2.38*** (1.76)
Elder	8.30 (1.24)	3.76* (3.23)
Adult	-56.77* (3.01)	-17.82* (5.42)
Female head	21.07** (2.38)	9.56* (6.19)
Own dwelling	19.13** (2.23)	7.43* (4.99)
Constant	-1121.96* (24.31)	-306.35* (37.63)
Prob>F / Prob>Chi2	0.000	0.000
R^2 / Log likelihood	0.0995	-48205.664

Note: Absolute t-values are in parentheses. *, **, *** Significant at 1, 5, 10% levels

spend more on religion by Rs.9.38 per month, while the households in western India spend even higher Rs.15.13 more on religion. However, the north Indian households spend Rs.2 less on religion compared to east India, but the effect is not significant statistically.

The effect of education on religious expenditure is negative. In the case of the education of the household head, a literate household head spends Rs.2.38 less than an illiterate household head, which is significant at the 10% level. Households with adults spend Rs.17.82 less and households with elders spend Rs.3.76 more per month relative to households with children less than 14 years. These results are also significant at the 1% level. This implies elderly spend relatively more on religious activities compared to earning people. The gender of the family head plays a crucial role in religious expenditure. A female-headed household is spending Rs.9.56 more on religion compared to a male-headed household. It is also significant at the 1% level. The expenditure on religion will increase by Rs.7.43 if the household has own dwelling compared to a household without own dwelling.

As Hinduism is the dominant religion of India and is followed by more than 80% of the population, controlling for religion may reveal more insights. Table 6 presents the estimated results of the censored regression model by religion. In all the estimates, the coefficient of income is positive and statistically significant. A one percentage increase in household income will lead rise in religious expenditure by Rs.39 per month in Hindu households, Rs.38 in Muslim, and Rs.61.35 in Christian and other religious households. While an increase in household members reduces religious expenditure, the presence of elders will raise religious expenditure in all religions.

The estimated results by community and education presented in Tables 7 and 8 also reveal broadly the same picture. Household income has a significant positive effect on religious expenditure, whereas household size has a significantly negative effect on religious spending. A one percentage increase in household income will lead to a 65% increase in religious expenditure in ST households, 40% in SC households and 37.5% in OBC households. The presence of elders in the household increases religious expenditure, the dummy for adults has a negative impact on religious spending in both cases. While Christians belonging to ST and ST communities reduce religious expenditure, OBC Christians spend more on religion. However, educated Christians spend less on religion. Both the educated Hindus and Hindus belonging to different communities spend less on religious expenditure. But, female heads belonging to various communities, irrespective of education, incur more religious expenditure. Having own dwelling increases the religious expenditure of all communities except STs, whether educated or not.

Table 6: Censored Regression Estimates of Religious Expenditure by Religion

Variable	*Hindu*	*Muslim*	*Christian*	*Other religions*
Log income	38.96* (39.20)	37.54* (14.93)	61.35* (17.40)	60.99* (7.54)
Household size	-2.60* (8.83)	-1.86* (3.10)	-5.10* (4.58)	-3.93 (1.50)
ST	-1.51 (0.56)	32.26* (5.52)	-37.29* (3.27)	29.46** (2.36)
SC	-6.18* (3.50)	25.78 (1.15)	-6.44 (0.47)	18.93 (1.15)
OBC	-6.57* (4.97)	-7.51* (2.63)	-6.18 (1.05)	26.56 (1.60)
North	6.40* (3.87)	-15.02* (4.89)	-112.95* (3.54)	-61.94* (5.45)
West	19.96* (10.34)	-6.77 (1.01)	-66.71 (1.58)	-10.59 (0.38)
South	12.91* (9.16)	5.13 (1.20)	-48.05* (4.40)	-61.39*** (1.9)
Educated	-4.01 * (2.56)	-3.03 (1.12)	8.67 (1.37)	8.49 (0.82)
Elder	4.59* (3.53)	2.63 (0.94)	5.68 (1.27)	12.02 (1.19)
Adult	-18.04* (5.11)	-15.65 (1.26)	0.55 (0.05)	59.24 (1.06)
Female head	8.86* (5.02)	8.76** (2.25)	5.31 (1.07)	10.47 (0.54)
Own Dwelling	9.67* (6.01)	0.31 (0.07)	-2.72 (0.49)	11.33 (0.60)
Constant	-288.8* (32.8)	-260.04* (10.96)	-414.51* (l 2.10)	-537.65* (5.96)
Prob>Chi2	0.000	0.000	0.000	0.000
Log-likelihood	-34141.239	-6963.7152	-6024.0853	-859.81308
Observations	6954	1425	1342	189

Note: Absolute t-values are in parentheses. *, **, *** Significant at 1, 5, 10% levels

Table 7: Censored Regression Estimates of Religious Expenditure by Community

Variable	*ST*	*SC*	*OBC*	*Others*
Log income	65.06* (19.05)	39.93 * (17.12)	37.50* (29.13)	40.01* (25.08)
Household size	-3.94* (-4.22)	-3.14* (4.54)	-2.39* (6.32)	-2.72* (5.89)
Hindu	-40.80* (4.85)	-31.92 (1.54)	-1.44 (0.70)	-3.93***(1.68)
Christian	-16.99** (1.98)	-10.70 (0.48)	22.50* (6.23)	22.06* (4.95)
Other religion	-0.20 (0.02)	-29.84 (l .31)	3.30 (0.33)	-0.62 (0.08)
North	-37.20* (5.91)	1.79 (0.51)	5.13** (2.06)	-0.29 (0.13)
West	4.50 (0.54)	15.35* (3.03)	15.51* (5.46)	21.10* (6.66)
South	-12.95*** (1.89)	8.96* (3.00)	10.95* (5.65)	15.42* (5.87)
Educated	-2.07 (0.46)	-6.47** (2.26)	-3.06 (1.57)	-0.90 (0.34)
Elder	3.57 (0.85)	4.55 (1.49)	3.34** (1.98)	5.23* (2.63)
Adult	-33.83*** (1.95)	-1.94 (0.19)	-17.13* (3.73)	-14.72* (2.78)
Female head	-1.39 (0.27)	5.81 (1.49)	6.53* (3.00)	16.64* (5.81)
Own dwelling	-16.30* (2.75)	9.31** (2.81)	11.67* (5.74)	5.95** (2.17)
Constant	-419.54* (12.57)	-279.99* (9.21)	-282.79* (25.17)	-296.80* (20.8)
Prob>Chi2	0.000	0.000	0.000	0.000
Log-likelihood	-6169.6249	-5339.64	-20513.102	-16065.14
Observations	1353	1097	4164	3296

Note: Absolute t-values are in parentheses. *, **, *** Significant at 1, 5, 10% levels

Table 8: Censored Regression Estimates of Religious Expenditure by Education

Variable	*Literate household*	*Illiterate household*
Log Income	41.98* (41.90)	40.80* (19.32)
Household size	-2.58* (8.40)	-2.87* (5.66)
Hindu	-4.14** (2.39)	-2.03 (0.71)
Christian	25.32* (10.13)	10.63** (2.01)
Other religion	21.27* (4.67)	7.55 (1.12)
ST	12.22* (5.47)	7.49*** (1.84)
SC	-6.06* (2.98)	-1.97 (0.57)
OBC	-6.73* (5.05)	-2.41 (0.86)
North	-2.44 (1.43)	-1.23 (0.44)
West	16.01* (7.43)	10.78* (2.60)
South	10.22* (6.89)	6.69** (2.26)
Elder	4.65* (3.52)	1.11 (0.47)
Adult	-15.79* (4.00)	-22.20* (3.83)
Female head	10.89* (5.77)	5.77** (2.30)
Own dwelling	7.02* (4.34)	9.52** (2.40)
Constant	-313.69* (32.90)	-294.37* (17.03)
Prob>Chi2	0.000	0.000
Log-likelihood	-39687.066	-8477.0595
No. of observations	8178	1732

Note: Absolute t-values are in parentheses. *, **, *** Significant at 1, 5, 10% levels

Conclusion

In almost every religion around the world, the expenditure on religious ceremonies, pilgrimage, festivals, pujas and donations is a part of household expenditure. In fact, religion dominates every aspect of the social and economic life of almost every individual. In most religions, like Christianity, expenditure on such religious activities is institutionalised. Hindus, being the dominant religious community as well as the population segment of India also spend on religion, but such expenditures are mostly voluntary and not institutionalised. In almost all religious households, there is a positive relation between income and religious expenditure. This paper has also observed the same. Among the major religious groups in India, Christians spend more on religion. The Hindus, a major religion of India, and Muslims, a minor backward community of India, spend approximately 50% and 70% less expenditure

on religion compared to Christians. The study also finds that the size of the family and literacy have a negative relation with spending on religion, while the presence of elders in the household increases religious expenditure. The picture of religious expenditure of households does not vary much even if controlled for religion, social group and education.

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