



Centre for Energy Policy and Economics  
Swiss Federal Institutes of Technology

# Differences in Characteristics of Religious Groups in India: As Seen From Household Survey Data

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**CEPE Working Paper Nr. 26**  
August 2003

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## Abstract

Characteristics of religious groups are an important area that needs to be studied in order to improve the effectiveness of policies aimed at reducing the fertility rate. This paper analyzes the socio-economic characteristics of the religious groups, Hinduism, Muslim, Christianity, and Sikhism, by using a large micro level household survey data set for India. The paper analyzes the characteristics among religious groups not only in terms of averages of religious households but also by using regression models. According to the results of the analyses, there are considerable differences in the socio-economic characteristics among religions. What factors lead to these different characteristics is an important question to be addressed in future studies. The results of this study imply that different policies are needed for different religious groups in order to improve their household conditions and wellbeing.

*Keywords: Micro level household data, Socio-economic characteristics of religious groups, Religion dummy, Religious state dummy.*

**Acknowledgements:** I am officially a doctoral student at the University of Tokyo and worked on this paper as a guest researcher for four months at CEPE, ETH. I would like to thank the AGS, Alliance for Global Sustainability for giving me a chance to work at CEPE, ETH. Especially I want to give special thanks to Prof. Toru Iwami, my adviser at the University of Tokyo, and Prof. Daniel Spreng and Dr. Shonali Pachauri, my advisers at CEPE, for helping me using the data and writing the paper. Furthermore, I would like to acknowledge the National Sample Survey Organisation, Department of Statistics of the Government of India, for supplying a large amount of micro level household survey data.

## 1 Introduction

According to the National Family Health Survey (NFHS), India's population outstripped the one billion-population mark in May 2000<sup>1</sup>. Although the actual number of people in India itself is increasing, the exponential growth rate of population has been decreasing since the 1960s. This change in population growth is a result of change in fertility rate, mortality rate, and movement or migration of people. Since it is impossible to find a place to emigrate a number of people outside India, decrease of fertility rate is the factor that can contribute the most to the reduction of future population growth. However, the total fertility rate of India in 2003 is 2.91<sup>2</sup>, which is far from the 'goal of replacement fertility level' of 1.0<sup>3</sup>.

Several policies such as raising literacy rate, particularly of women, improving the status of women, and spreading knowledge about abortion and contraception are considered effective in reducing fertility. Although many efforts have been made to reduce the fertility rate in India, it seems that there is variation in the effects of these policies between different regions, education and income levels, religions, ages, and so on. Such policies are beneficial in reducing the fertility rate, but the problem is that the way they affect people depends on which social group they belong to. So we may need different programs and policies for each different social group in order to improve their effectiveness. To do this it is necessary to conduct additional studies and learn the characteristics of the social groups before adopting and formulating policies aimed at reducing fertility.

Among various characteristics of social groups in India, I believe those of religious groups are very important and need to be taken account of. There are several reasons for this. First, India being known as a land of spirituality and philosophy and as a birthplace of some of the world's major religions, more than 99% of Indians belonged to some kind of religion in 1999<sup>4</sup>. Therefore, it is conceivable that most Indians are more or less influenced by religion. Second, there are two hypotheses that are prevalent among scholars who study the relationship between religion and contraception. One is the 'pure religion effect,' which supposes the intellectual content of religious belief affects people's contraceptive behaviors<sup>5</sup>. In other words, this is an effect of the peculiar characteristics of each religion seen in its rituals or scriptures upon fertility. The other is the 'characteristics' hypothesis. This hypothesis indicates that what we think as religious differentials in contraceptive behavior may be socio-economic differences between the members of each social group<sup>6</sup>. It suggests that within a religious group, there are social and economic differences among its members, such as differences in education level, income, status of women, and so on. While religion has effects on fertility rate, the effects may be resulted from certain social economic characteristics of the members of religious group. There are many studies that analyze effects of religion on fertility, but not many have been done to examine the characteristics of each religious group.

Therefore, in this paper, characteristics of households affiliated to the religious groups of Hinduism, Muslim, Christianity, and Sikhism are investigated using micro level household data for India. The raw data that are used for the analyses are taken from the National Sample

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<sup>1</sup> International Institute for Population Sciences, 2000: p.4.

<sup>2</sup> CIA, 2003.

<sup>3</sup> International Institute for Population Sciences, 2000: p.4-5.

<sup>4</sup> International Institute for Population Sciences, 2000: p.23.

<sup>5</sup> Iyer, 2002b: p.4.

<sup>6</sup> Iyer, 2002b: p.15.

Survey (NSS) Round 50 for 1993-1994<sup>7</sup>. Using this data, there are mainly two analyses done in the paper.

The first analysis is to find out the characteristics of these religious groups by focusing the analysis in the differences in variables such as the number of children, per capita expenditure, the area covered by the dwelling, the total quantity of land possessed, the literacy of head of household, and other variables that are important to determine the characteristics of households. Regression models have been built to analyze the difference in these variables among religious groups. However, it was not possible to build a meaningful model to analyze the difference in some of the variables since NSS data lack information on factors that are needed in order to apply the variables into models. So the difference in characteristics among religious groups for such variables is analyzed only by comparing the average figures.

The second analysis is an alternative analysis of the first analysis, which examines whether the same characteristics among religious groups as the first analysis can be seen in a state that has a high percentage of a certain religion. This analysis is done in order to ascertain that there do exist certain characteristics among religious groups, since it can be supposed that if there are peculiar characteristics in religious groups, these characteristics should be also seen in a state that has a high percentage of one of the religions.

An analysis on the relationship among socio-economic characteristics of religious groups and fertility is the ultimate goal of my study. As a step toward this purpose, this paper probes into characteristics of the above-mentioned religious groups. In doing so, I use a large sample database. I think this is important because other previous studies of this kind have used small sample data and focused only on education in relation to fertility among different religious groups.

In the first section, previous studies that have been done on the difference in characteristics of religious groups in India will be reviewed and this paper will be placed in the context of the previous studies. In section 2, the data will be described and the differences between religious groups in India will be looked at in terms of simple statistics. In section 3, methods and models that are used in the paper to analyze the characteristics of religious groups will be explained. Section 4 will describe the results of the analysis. Finally, in section 5, some broad conclusions will be drawn.

## 2 Previous studies in this area

Among studies on characteristics of religious groups in India, Sriya Iyer's study is one of the closest to the study of this paper. There are some studies that focus on the effect of religious difference on fertility, but there are only a few that examine other effects on fertility such as education, living conditions, income, and so on. And when it comes to socio-economic characteristics of religious groups in India and their effects on fertility, the definitive works would be those of Sriya Iyer<sup>8</sup>.

Using the household survey data from Ramanagaram, a region in the southern state of Karnataka, she explores the differences in fertility, education, per capita expenditure, and ownership of consumer items among religious groups. The data she collected relates to a total number of 201 households, which consists of 111 Hindu households, 75 Muslim households, and

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<sup>7</sup> NSSO, 1997d.

<sup>8</sup> Iyer, 2002a-d.

15 Christian households. Her study shows that Muslim households have 1.07 more children on average than the Hindu households, and 1.41 more on average than the Christian households<sup>9</sup>, which accounts with the data of 1998-99 NFHS that reveals Muslims to have the highest total fertility rate among all religions. Iyer also compares the religious groups in terms of income and wealth by calculating the mean monthly total expenditure, the mean monthly per capita expenditure, and the ownership of consumer items for each religious group. According to her results, Christian households have higher per capita expenditure and a higher proportion of households owning fans, chairs and benches compared with Hindu and Muslim households. So the Christians in the Ramanagaram region seems to be better off than the Hindus and the Muslims<sup>10</sup>.

This paper will examine not only the differences in fertility between religious groups but also the disparities in terms of other characteristics. What distinguishes this paper from other studies is that it includes also the religious group of Sikhs besides Hindus, Muslims, and Christians and that it uses a large quantity of micro level household data collected from all over India. Previous studies related to characteristics of religious groups in India were mostly focused on one religion or comparisons between Hindus and Muslims based on small sample data. So I believe it is important to analyze the characteristics of religious groups by using large sample data.

### 3 Overview of the data and the characteristics of religious groups

#### 3.1 About the data

The data used for the analyses are from the National Sample Survey (NSS) Round 50 for 1993-1994. It contains 115,354 households located in 6951 villages and 4650 urban blocks and covers the entire area of India with some exceptions in the “interior areas of Nagaland, Andaman & Nicobar Islands, and Ladakh and Kargil districts of Jammu & Kashmir<sup>11</sup>.” The NSS has “information on quantity and value of household consumption with a reference period of last 30 days preceding the data of interview<sup>12</sup>.”

The household samples were chosen by a stratified two-stage sampling design. For the first stage units, census villages were chosen in the rural sector, and Urban Frame Survey blocks and census enumeration blocks were chosen in the urban sector. After certain villages and blocks were determined by the first frame sampling, households were selected randomly according to their affluence level from these villages and blocks chosen as samples in the first stage. The detail of the sampling procedure is described in one of the reports of “Sarvekshana<sup>13</sup>.”

Although it is possible to obtain the data for rural and urban areas separately, the household data for whole India is used in the analysis. The first reason for this is that a comparison of tables 3, 4, and 5 shows that the characteristics of religious groups in both rural and urban areas are quite similar to those of whole India. In every table, Sikhs and Jains have

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<sup>9</sup> Iyer, 2002b: p.18.

<sup>10</sup> Iyer, 2002a: p.86-87.

<sup>11</sup> NSSOa, 1997: p.1.

<sup>12</sup> NSSOa, 1997: p.1.

<sup>13</sup> NSSOa, 1997, p.1

higher monthly expenditure, Christians and Jains have lower percentage of households whose head is illiterate, and Muslims have higher number of children among the religious groups. Second, effects of the rural-urban gap can be analyzed in the model by creating a rural dummy, which shows the difference between households that belong to rural and urban areas. Third, if the analyses were done separately of rural and urban areas, the samples would have been too small. As it will be shown in tables 3 and 4, the samples of other religions are very small compared with Hindus. So it was preferable to use the whole Indian sample in order to increase the sample size of other religions.

The religions that are analyzed in this paper are Hinduism, Muslim, Christianity, and Sikhism. There are also data on other religions such as Buddhism, Jainism, and Zoroastrianism, but as it can be seen in tables 1 and 5, the numbers of the samples for these religions are too small to be used for the analysis. In particular, it would not be meaningful to include these religions in the second analysis, which analyzes the characteristics of religious states by creating the 'religious state dummies'<sup>14</sup>, since there are too many states that have none or few households that belong to these religions<sup>15</sup>. So in this paper the households of these religions are clubbed together in the category of 'others,' which also includes the households with 'other religion' and households without any religion.

### 3.2 Differences between religious groups seen in the survey data

Before introducing the models used in this paper we look at some socio-economic differences of each religious group observable from simple statistical averages such as proportions of each religion in India, and averages of variables that characterize the religious households.

First, to understand the composition of religions in India, see table 1 in the appendix<sup>16</sup>. This table illustrates the distribution of religious groups in each Indian state and in all India<sup>17</sup>. As seen from the bottom of the table, of all the Indian households, 84.28% are Hindus, 10.21% are Muslims, 2.44% are Christians, 1.68% are Sikhs, 0.71% are Buddhists, and only 0.24% are Jains. This distribution of households by religion in NSS Round 50 for 1993-94 is very close to the distribution of religion of households as enumerated in the 1998-99 NFHS<sup>18</sup>.

Now look at the distribution of religious groups in the states. In the NSS data, although the number of household samples in each state corresponds with its population ratio as a proportion to the all-Indian population, the sample of religious households in each state does not accord with the ratio of religions within each state. However, the distribution of three main religions in every state, which can be seen in table 1, is very similar to those observed in the Census of India 1991<sup>19</sup>. So the results of table 1 do reveal much of the real distribution of religious groups among each state. As seen in the table, it seems that religious groups tend to concentrate in certain states. Although more than 80% of the people in India are Hindus, they are minorities in some states like Arunachal Pradesh, Lakshadweep, Mizoram, Nagaland, and Punjab. So it may be possible to hypothetically create a region that is dominated by a certain religion to see if this region with a high percentage of a certain religion has the same

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<sup>14</sup> The details are explained in the next section.

<sup>15</sup> See table 1.

<sup>16</sup> All the tables in this paper are created using the NSS round 50. Percentages and means are calculated using the weights for each individual household, which are provided on the raw data tape.

<sup>17</sup> States that were created after 1993-94 are not included in table 1 because NSS round 50 was done in 1993-94.

<sup>18</sup> "Eighty-two percent of household heads are Hindu, 12 percent are Muslim, 3 percent are Christian, and 2 percent are Sikh" in the NFHS 1998-99 (International Institute for Population Studies, 2000: p.22).

<sup>19</sup> Census of India, 1991.

characteristics as the characteristics shown by that religious group. This will be tested in this paper using the 'religious state dummies.'

The distribution of religious groups also differs in the rural-urban ratio. Table 2 depicts this disparity. About 76% of the Sikhs, and 75% of the Hindus live in rural areas, which illustrates that Sikhs and Hindus live more in rural areas compared with other religions. In contrast, Muslims, Christians, Buddhists, Jains, and Zoroastrians are more concentrated in urban areas. This is conspicuous in Muslims, since they constitute 13% of the urban households, while they occupy 9% of the rural households.

**Table 2 Rural-urban percentages of religious groups and percentages within rural and urban area**

	No Answers	Hinduism	Muslim	Christianity	Sikhism	Buddhism	Jainism	Zoroastrianism	Others
<b>Rural</b>	78.44	74.6	65.84	68.86	75.86	67.48	26.73	0.03	76.09
<b>Urban</b>	21.56	25.4	34.16	31.14	24.14	32.52	73.27	99.97	23.91
<b>Percentages within rural area</b>	0.03	85.64	9.16	2.29	1.73	0.66	0.09	0	0.4
<b>Percentages within urban area</b>	0.03	80.53	13.12	2.86	1.52	0.87	0.67	0.05	0.35

The differences between households located in rural areas and urban areas can be observed in table 3 and table 4. Comparing these tables, it is easy to find out that in all the aspects except in the total quantity of land possessed, households in rural areas are worse off than those in urban areas. To examine this effect from the rural-urban gap, a rural dummy is used in the analysis, which will be explained in the next section.

Finally, see tables 3, 4, and 5 to have an overview of the difference in characteristics among religious groups. These tables illustrate the simple statistical averages of variables analyzed in this paper<sup>20</sup>. In every table, Sikhs and Jains have higher monthly per capita and total expenditure, a higher percentage of households with access to commercial energy, and larger area of dwelling among all the religions. So it seems that Sikhs and Jains are better off compared with other religions. In contrast, in both rural and urban areas, Muslims and Buddhists have poorer living conditions. As seen in all tables, they are worse off in terms of per capita expenditure, area of dwelling, condition of houses, and total quantity of land possessed. However, there are characteristics that are peculiar only in certain religious groups.

Muslims have the largest numbers of children in all tables while Christians have smaller numbers of children in their households. This matches with other studies, where Muslim households have the highest and Christian households have the lowest fertility rate among the religious groups<sup>21</sup>. Muslims having more children in their households is conspicuous when comparing them with Sikhs. Although both Muslims and Sikhs have larger size in their household size compared with other religions, Muslims have more children while Sikhs have more adults in their households.

Christians and Jains have a higher provability of having an educated person as their head of household compared with other religious groups. In every table they have a lower percentage with households whose head is illiterate.

Sikhs are less likely to have access to tap water. This is really a characteristic particularly seen in the Sikh households. Although the Sikhs have higher expenditure, and

<sup>20</sup> Percentages and means in the tables are calculated using the weights for each individual household, which are provided on the raw data tape.

<sup>21</sup> Iyer, 2002b: p.18. International Institute for Population Sciences, 2000.

**Table 3 Average household characteristics among different religious groups in rural area**

	Numbers of households	Mean monthly per capita expenditure (Rupees)	Mean monthly total expenditure (Rupees)	Average total quantity of land possessed (Hectares)	Households with commercial energy (%)	Average size of the households	Average numbers of children	Households whose head is illiterate (%)	Households without sufficient food (%)	Area covered by the dwelling per households (Square feet)	Households dissatisfied with the house (%)	Households with tap water (%)
No answers	24	254.76	1144.09	4.39	12.19	4.49	1.77	25.06	0	387.66	9.06	23.14
Hinduism	56035	278.59	1354.21	1.05	5.18	4.86	1.78	53.74	0.87	464.07	20.48	19.81
Muslim	6054	267.05	1411.78	0.60	4.86	5.29	2.32	58.17	1.62	443.17	26.3	12.6
Christianity	3718	331.17	1473.83	0.71	5.77	4.45	1.41	32.02	0.83	474.47	20.73	23.54
Sikhism	1643	438.04	2315.70	1.68	10.43	5.29	1.78	58.89	0	512.17	14.78	12.83
Buddhism	658	223.67	1032.00	0.57	6.47	4.61	1.76	50.74	2.14	285.59	24.76	40.68
Jainism	71	391.21	1734.69	1.14	40.26	4.43	1.17	37.99	0	552.35	7.32	70.54
Zoroastrianism	1	413.61	4136.10	8.80	100	10.00	3.00	0	0	2400.00	0	100
Others	1002	314.12	1525.86	1.13	4.41	4.86	1.77	56.78	0.08	413.70	16.5	29.68
All	69206	281.40	1377.70	1.01	5.29	4.90	1.82	53.7	0.93	461.91	20.92	19.33

**Table 4 Average household characteristics among different religious groups in urban area**

	Numbers of households	Mean monthly per capita expenditure (Rupees)	Mean monthly total expenditure (Rupees)	Average total quantity of land possessed (Hectares)	Households with commercial energy (%)	Average size of the households	Average numbers of children	Households whose head is illiterate (%)	Households without sufficient food (%)	Area covered by the dwelling per households (Square feet)	Households dissatisfied with the house (%)	Households with tap water (%)
No answers	13	1006.02	3925.51	0.38	32.85	3.90	1.67	0.31	0	650.67	0	77.98
Hinduism	35388	469.20	2035.05	0.17	60.09	4.34	1.39	20.84	0.54	401.21	10.4	71.92
Muslim	6059	349.12	1818.34	0.09	45.69	5.21	2.06	37.46	0.64	356.13	13.53	65.96
Christianity	2794	546.15	2213.97	0.11	55	4.05	1.19	8.84	0.77	461.17	7.75	72.89
Sikhism	934	722.73	3439.69	0.28	74.3	4.76	1.53	18.71	0.54	528.32	3.18	71.5
Buddhism	327	374.48	1700.14	0.04	66.02	4.54	1.54	25.5	0.14	252.98	19.83	89.85
Jainism	373	693.55	3415.76	0.14	94.01	4.93	1.23	1.89	0	708.71	0.85	96.18
Zoroastrianism	35	1156.44	3638.66	0.03	66.02	3.15	0.63	14.36	0	690.99	14.36	100
Others	225	455.90	2019.37	0.32	55.37	4.43	1.50	36.65	0	337.34	20.43	69.73
All	46148	458.04	2040.71	0.16	58.53	4.46	1.48	22.61	0.55	399.71	10.68	71.49

**Table 5 Average household characteristics among different religious groups in all India**

	Numbers of households	Mean monthly per capita expenditure (Rupees)	Mean monthly total expenditure (Rupees)	Average total quantity of land possessed (Hectares)	Households with commercial energy (%)	Average size of the households	Average numbers of children	Households whose head is illiterate (%)	Households without sufficient food (%)	Area covered by the dwelling per households (Square feet)	Households dissatisfied with the house (%)	Households with tap water (%)
No answers	37	399.59	1743.78	3.52	16.65	4.36	1.75	19.72	0	444.37	7.1	34.97
Hinduism	91423	323.00	1527.14	0.82	19.13	4.73	1.68	45.38	0.79	448.11	17.92	33.05
Muslim	12113	294.81	1550.65	0.43	18.81	5.26	2.24	51.1	1.28	413.44	21.93	30.83
Christianity	6512	393.90	1704.35	0.52	21.11	4.33	1.34	24.8	0.81	470.33	16.69	38.91
Sikhism	2577	501.43	2587.04	1.34	25.87	5.16	1.72	49.19	0.13	516.07	11.98	26.99
Buddhism	985	272.18	1249.28	0.40	25.84	4.59	1.69	42.53	1.49	274.98	23.16	56.67
Jainism	444	618.79	2966.33	0.41	79.64	4.79	1.22	11.54	0	666.91	2.58	89.32
Zoroastrianism	36	1155.79	3638.80	0.03	66.03	3.15	0.63	14.36	0	691.46	14.36	100
Others	1227	345.69	1643.86	0.94	16.59	4.76	1.71	51.97	0.06	395.44	17.44	39.26
All	115354	325.18	1553.96	0.78	19.45	4.78	1.73	45.44	0.83	445.37	18.2	33.2



larger quantity of land and area of dwelling in average than the Buddhists, they have a lower provability of having access to tap water in average compared with the Buddhists.

In sum, Sikh, Christian, and Jain households are more likely to fare well in their living conditions compared with Hindu, Muslim, and Buddhist households, and there seems to be a considerable difference in the characteristics of religious group. However, since the figures in the tables are only the average and percentage of households, a further analysis is done in this paper using regression analysis. In the next section, methods and models that are used for the analyses will be explained.

## 4 Methods and models used for the analyses

There are two kinds of analyses done in this paper. The first analysis is to see the difference in characteristics of Hindus, Muslims, Christians, and Sikhs by using religion dummies. The second analysis is to examine whether a region with a high percentage of a certain religion has the same characteristics as those analyzed in the first analysis or not. The models used in the two analyses are the same except in the first analysis religion dummies are used, whereas religious state dummies, which will be explained later, are used in the second analysis. If the results of the analysis using religious state dummies are the same as those of the analysis using religion dummies, it will be revealed that there are certain peculiar characteristics among the religious groups.

Before going into the details of the methods, the models that are used in the analyses will be described. Although building models for every variable in tables 3, 4, and 5 was attempted, it was not possible to make a sensible model to describe the religious difference in some of the variables such as area covered by the dwelling per household, numbers of children per household, and sufficiency of food. This is due to lack of data sources that were necessary to be included in the model in order to analyze the variable. For example, to analyze the numbers of children per household it is necessary to have data on the female education level, contraception rate, and amount of social welfare each household receives but these data are not available in the NSS data. However, models for the monthly per capita expenditure, total quantity of land possessed, access to commercial energy, literacy of the head of household, condition of the house, and access to tap water had quite a good fit. So socio-economic differences among religions are analyzed using models created for these six items.

First, see table 6 in the appendix to understand the definitions of variables that are used in the analyses. These variables are taken from questions on 'household characteristics,' 'particulars of household members,' 'perception of household regarding sufficiency of food,' and 'particulars of dwelling unit' of the NSS. Variables can be organized as the following:

1. Variables for household characteristics  
pcexp, LAND, COME, SELFEMPL, REGEARN, RELIGION<sub>i</sub>
2. Variables for particulars of household members  
hhsz, CHILD, MALE, ILLITERATE
3. Variable for perception of household regarding sufficiency of food  
INSUFFFOOD
4. Variables for particulars of dwelling unit  
area, BADHCOND, TAP

Some of the variables such as LAND, COME, SELFEMPL, and REGEARN are created in a certain way so as to be used in the analysis effectively.

The total possession of 1.0 hectares of land was selected to create the LAND dummy because as seen in table 5, Sikhs were the only religious group that possessed more than 1.0 hectare of total land in average of all India among the four religions. Using this dummy instead of the total quantity of land each household possessed improved the fit of the model, and the difference among religious groups in the possession of land became more apparent.

COME is a dummy variable that distinguishes the household with commercial energy for cooking from the household without it. A household belongs to COME when its primary source of energy for cooking is coke, coal, gas, or kerosene.

SELFEMPL and REGearn are dummy variables created from a question asking the type of occupation of the head of household. The details for this are separate between the rural and the urban area. According to "Difference in Level of Consumption Among Socio-economic Groups<sup>22</sup>," households whose heads are self-employed in rural areas and regular wage/salary earning in urban areas have higher monthly per capita expenditure compared to the other households. So these two dummies are created to see whether households whose heads have well-paid jobs would be better off than the other households or not.

Using these variables, six models are used in this paper to analyze the characteristics of religious groups. All models are analyzed by the use of computer software, SAS version 8.2<sup>23</sup>. Below are the models used for the analyses:

#### Model 1

$$\ln(pc \ exp) = \alpha + \beta_1 LAND + \beta_2 COME + \beta_3 SELFEMPL + \beta_4 REGearn + \beta_5 \ln(hsize) + \beta_6 CHILD + \beta_7 MALE + \beta_8 ILLITERATE + \beta_9 INSUFFFOOD + \beta_{10} \ln(area) + \beta_{11} BADHCOND + \beta_{12} TAP + \beta_{13} RU + \sum \gamma_i RELIGION_i$$

#### Model 2

$$LAND = \alpha + \beta_1 pc \ exp \ thou + \beta_2 COME + \beta_3 SELFEMPL + \beta_4 REGearn + \beta_5 hsize + \beta_6 CHILD + \beta_7 MALE + \beta_8 INSUFFFOOD + \beta_9 area + \beta_{10} BADHCOND + \beta_{11} RU + \sum \gamma_i RELIGION_i$$

#### Model 3

$$COME = \alpha + \beta_1 pc \ exp \ thou + \beta_2 LAND + \beta_3 SELFEMPL + \beta_4 REGearn + \beta_5 hsize + \beta_6 CHILD + \beta_7 MALE + \beta_8 area + \beta_9 BADHCOND + \beta_{10} LAND + \beta_{11} RU + \sum \gamma_i RELIGION_i$$

#### Model 4

$$ILLITERATE = \alpha + \beta_1 pc \ exp \ thou + \beta_2 LAND + \beta_3 SELFEMPL + \beta_4 REGearn + \beta_5 CHILD + \beta_6 MALE + \beta_7 area + \beta_8 BADHCOND + \beta_9 TAP + \beta_{10} RU + \sum \gamma_i RELIGION_i$$

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<sup>22</sup> NSSO, 1997b

<sup>23</sup> SAS-Institute, 2001.

**Model 5**

$$BADHCOND = \alpha + \beta_1 pc \exp thou + \beta_2 LAND + \beta_3 COME + \beta_4 SELFEMPL + \beta_5 REGEARN + \beta_6 hsize + \beta_7 MALE + \beta_8 ILLITERATE + \beta_9 INSUFFFOOD + \beta_{10} area + \beta_{11} TAP + \beta_{12} RU + \sum \gamma_i RELIGION_i$$

**Model 6**

$$TAP = \alpha + \beta_1 pc \exp thou + \beta_2 COME + \beta_3 SELFEMPL + \beta_4 REGEARN + \beta_5 area + \beta_6 BADHCOND + \beta_7 RU + \sum \gamma_i RELIGION_i$$

Model 1 analyzes differences in per capita expenditure among religions. A log function is taken so that the coefficients will be easier to interpret and become more convenient to compare the difference in religious groups than the linear regression equation. Furthermore, the fit was much better when a log function was taken than regressing with a linear function<sup>24</sup>. Model 2 to model 6 are analyzed using logistic models. The logistic model has the form

$$\log\left(\frac{pr}{1-pr}\right) = \alpha + \sum_{j=1}^J \beta_j x_{ij}$$

where  $pr$  is the response probability to be modeled,  $\alpha$  is the intercept parameter,  $\beta$  is the vector of slope parameters, and  $x$  is the vector of explanatory variables. For example, the response variable in model 2 is LAND so that the  $pr$  in this model represents the probability of households having more than 1.0 hectare of land:  $pr(LAND=1)$ . In model 2, the quantity  $\log\left(\frac{pr(LAND=1)}{1-pr(LAND=1)}\right)$  is the odds-ratio of having more than 1.0 hectare of land. In models through 3 to 6, the response variables are COME, ILLITERATE, BADHCOND, and TAP respectively, to analyze the difference among religions in these variables.

As mentioned before, two analyses are examined using these models. In the first analysis, religion-dummies HINDU, MUSLIM, CHRIST, SIKH, and OTHERS, are used for the RELIGION<sub>i</sub> dummy. In this examination, characteristics of religious groups are analyzed using these religion dummies and by comparing their estimated coefficients.

In the second analysis, state-dummies HDST, MUSST, CHST, SIKST, and OTHST, which are defined in table 6, are used for the RELIGION<sub>i</sub> dummy in the model. Since it can be seen from table 1 that the distribution of religions among states varies a lot and religions tend to concentrate in certain states, it is assumed that when a state is dominated by only one religion, that state should have the same characteristics as that one dominating religion. So a state with a high percentage of one religion is distributed into the state of that religion. To have an objective criterion to define that the percentage of a certain religion is relatively high in the state, the distribution of religion in all India is used as the standard percentage. Applying these assumptions, religious state dummies are created in the following way. When a state has a higher percentage of one religion than that of all India, then that state is defined as the state of that religion. Take Dadra & Nagar Haveli for example. This state is categorized as a Hindu state since Hinduism is the only religion that has a higher percentage than the percentage of Hinduism in all India. As seen in table 1, the percentage of Hinduism in this state is 97.99%,

<sup>24</sup> The adjusted R-square rose from 0.1352 to 0.4593 when the log function was taken. By using the log form, the number of observations used for the regression decreased from 115353 to 114901 since there were households with zero area of dwelling but this effect was too small to change the results of the analyses.

which easily excels the percentage of that of all India, 84.28%. However, when a state has a higher percentage in more than one religion, that state is categorized as an 'others state.' States that do not have a high percentage in any of the four religions such as the state of Sikkim is also categorized as 'others state.' For exception, although Christianity is the only religion that has a higher percentage than that of all India in the state of Arunuchal Pradesh, this state is allocated to the 'others state' since more than half of the households in this state belong to the others' religion<sup>25</sup>. Using these methods, all the states in India are allocated to a certain religious state, whose detail is depicted in table 7 in the appendix.

Table 8 shows the distribution of religious groups within the religious states. Since the religious state is created in a way of having a high percentage of that religion, every religious state has a higher percentage in each religion compared with that of all India. However, Muslim states have a lower proportion of its religion compared to other states. This is because Muslims tend to be spread widely rather than being concentrated in one region so it is not possible to create a Muslim state with a higher percentage than the one in the table.

**Table 8 Distribution of religious groups within the religious states**

	Hinduism	Muslim	Christianity	Sikhism	Others
Hindu state	<b>91.01</b>	6.28	1.25	0.42	1.04
Muslim state	82.12	<b>16.6</b>	0.55	0.36	0.37
Christian state	36.93	4.33	<b>53.51</b>	0.18	5.05
Sikh state	56.34	4.3	1.24	<b>37.11</b>	1.01
Others state	<b>84.02</b>	8.65	4.36	0.3	2.67

In every model, one of the religion dummies or state dummies are taken as the benchmark dummy to avoid singularity due to the use of binary dummy variables. The dummy variable that is used for the analyses as a benchmark dummy in each model is illustrated in table 9 in the appendix. The benchmark dummies in the table are chosen so as to have models with the best fit. Taking the benchmark dummy as shown in the table, the differences in characteristics among religious groups have been examined.

## 5 Results of the analysis

The results of the first analysis, an analysis to see the characteristic difference among religions by using the religion dummies, are depicted in table 10 in the appendix. In this analysis, all the coefficients of the variables in the models are significant at the 99% confidence level. Adjusted R-square for the analysis of model 1 and the max-rescaled R-squares for the analyses of models 2 to 6 are also listed in the table.

From model 1, it can be said that households with more land and area of dwelling, having access to commercial energy and tap water, and whose heads are male and literate have higher per capita expenditure. In contrast, households with large family, many children, having not enough food and bad house condition have lower per capita expenditure. Taking households whose religion is Sikhism as the benchmark, model 1 shows that religious group of Sikhs to have higher per capita expenditure compared with other religious groups. This matches with the statistics in tables 3, 4, and 5 where Sikhs have the highest mean monthly per capita expenditure of the four religions. Comparing other religious groups, Christians have higher per capita expenditure than Hindus and Muslims, which also accords with the statistics shown in tables 3, 4, and 5.

<sup>25</sup> See table 1.

Model 2 shows the religious difference in the quantity of land possessed. The quantity of land possessed is higher when a household is located in rural areas. This is not tested but perhaps because the land prices are much lower in rural areas than in urban areas, as is the case in any country. However, it is natural to say that even in urban areas, owning more land is usually connected with wealth. In fact, it is seen in this model that households with higher per capita expenditure tend to own more land. In this model MUSLIM dummy is the benchmark. According to the analysis, it seems that Sikhs and Christians have higher probability of owning more than 1.0 hectare of land compared to Hindus and Muslims. Muslims have lower probability of having more land than Hindus and are the worst in this aspect, but this may be due to a higher percentage of them living in urban areas compared to other religions as shown in table 2. However, it is notable that Christians who tend to live more in urban areas have a higher probability of possessing more than 1.0 hectare of land compared to Hindus who live more in rural areas. This is different from table 5 where Hindus have more land than the Christians in terms of average total quantity of land possessed. However, according to the result of this model, when it comes to households that are wealthy enough to own more than 1.0 hectare of land, Christian households tend to have higher probability of owning more land compared with Hindu households<sup>26</sup>.

Model 3 illustrates the difference in the access to commercial energy for cooking among religious groups. Access to commercial energy for cooking appears to be highly connected to the households' material wealth since households with higher per capita expenditure and households that are located in urban areas have much higher probability of having commercial energy for their primary energy for cooking. Here too, MUSLIM is the benchmark dummy variable. According to the analysis, Sikhs have the highest probability of having access to commercial energy for cooking and this corresponds with the result of model 1 where Sikhs have the highest per capita expenditure of the four religions. In contrast Christians have the lowest probability of having commercial energy for cooking among the four religions although they have high per capita expenditure and live more in the urban areas. This may be because Christians have a different characteristic in their way of living, which affects their use of energy for cooking.

Model 4 demonstrates the difference among religions in households whose head is illiterate. The model shows that in every variable it is important for the head of the household to be literate: the household whose head is illiterate has a lower probability of having high per capita expenditure and good occupation. In rural areas there is a higher probability of having an illiterate person as the head of household. Taking MUSLIM as a benchmark dummy variable, Sikh households have the highest probability of having an illiterate person as their head of household while Christian households have the lowest probability for this. The higher probability of Christian households having their heads to be educated match the findings of 1995 National Family Health Survey where Christians have a higher mean numbers of years of education compared with other religions<sup>27</sup>. However, it is odd that Sikh households have the highest probability of having an illiterate head for their household although they have the highest per capita expenditure of the four religions. This may be due to the peculiarity of the culture, attitudes toward life, work ethic, and so on of Sikh households, which needs to be explored further in another study.

Model 5 reveals that the household whose house is in bad condition is doing worse off not only with its house but also in terms of many other living conditions. Households with bad house condition do not have much per capita expenditure, land, commercial energy, well paid

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<sup>26</sup> In fact the percentages of households with more than 1.0 hectare of land among Hindu, Muslim Christian, and Sikh households are 22.85%, 12.39%, 24.57%, and 33.02% respectively. These figures change to 22.89%, 11.80%, 14.99%, and 30.95% when calculated with the weights. However, it seems that the figures using the weights severely underestimate the Christian households.

<sup>27</sup> Iyer, 2002a: p.77.

jobs, area of dwelling, or access to tap water, and seem also not to have enough food for living. So it can be said that households with bad house condition tend to be poor. According to the results of this model, Muslim and Hindu households are more likely to have bad house condition, which means that Muslim and Hindu households are more likely to be in poverty compared with other religious households. This result coincides with statistics in tables 3, 4, and 5 where the percentage of households dissatisfied with the house condition is higher among Muslim and Hindu households of the four religions.

Model 6 depicts the disparity of religious groups in the access to tap water. Here households with higher per capita expenditure, living in urban areas, and having access to commercial energy have a higher probability of having access to tap water. However, it seems that religious differences stand out from these factors regarding the access to tap water. Although Muslims live more in urban areas and are doing as well as the Hindus in terms of per capita expenditure, Muslims have a lower probability of having access to tap water than Hindus. Furthermore, Sikhs are the worst in terms of the access to tap water although they have the highest per capita expenditure and the highest probability of having commercial energy for cooking among the four religions. These results could be again due to the specific characteristics, living styles, and cultures or the religious belief toward water among Muslim and Sikh households, though the causes cannot be analyzed from this model.

Results of the second analysis, an examination to see whether a region with a high percentage of a certain religion has the same characteristics as those analyzed in the first analysis or not, have similar results to the first analysis, which have been explained above. The only model that did not have a significant result for this analysis was model 5. However, even in model 5, the tendency of estimated coefficients of the religious state dummies were very similar to those of the religion dummies in the first analysis. The tendency where Sikhs and Christians have a lower probability of having a humble house compared with Muslims and Hindus in model 5 of the first analysis is also seen when state dummies are used instead of religion dummies. The detail of the results is illustrated in table 11 in the appendix.

Also in model 4 of this analysis, the dummy variable TAP is not significant. Nevertheless, the state dummies are significant enough to explain the characteristics of religious states and here too the same result as the first analysis where Sikhs have a higher probability of illiterate people as their heads can be seen in the model: Sikh states have the highest probability of illiterate people as their heads among the religious states. Thus from the results of this analysis, it can be said that characteristics seen in the analysis using the religion dummies mostly accords with the analysis using the religious state dummies. Therefore, there do exist certain distinctions among religions in its socio-economic characteristics.

Table 12 is a summary of the two analyses and shows the ranks of religions in all the variables that are analyzed in the models 1 through 6<sup>28</sup>. As seen in the table, although Hindus are doing relatively well in their access to tap water, and literacy of the head of household, their per capita expenditure and condition of house are ranked lower among the four religious groups. This implies that they are more likely to suffer from poverty compared with the Christians and the Sikhs. Muslims are doing poorly in most of the aspects analyzed in this paper. They have lower per capita expenditure, and a little probability of possessing more than 1.0 hectare of land, do not have much access to tap water, and their houses are more likely to be in bad condition. In contrast Christians are doing quite well in every aspect except in their access to commercial energy for cooking. Sikhs are also comparatively well off but lack the literacy of their head of household, and have a low probability of having access to tap water.

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<sup>28</sup> In table 12, the four religions are ranked from the best to the worst by using numbers 1 to 4 for each variable: 1 is the best rank and 4 is the worst. Total points and average points in the table are the total and average of these numbers.

**Table 12 Summary of the analyses****Summary ratings based on results of regression with religion dummies**

	pcexp	Land possession	Commercial energy	Literacy	Condition of house	Tap water	Total points	Average points
Hinduism	4	3	2	2	3	2	16	2.67
Muslim	3	4	3	3	4	3	20	3.3
Christianity	2	2	4	1	2	1	12	2.00
Sikhism	1	1	1	4	1	4	12	2.00

**Summary ratings based on results of regression with state dummies**

	pcexp	Land possession	Commercial energy	Literacy	Condition of house*	Tap water	Total points	Average points
Hindu state	3	3	3	2	4	1	16	2.7
Muslim state	4	4	2	3	3	4	20	3.33
Christian state	2	2	4	1	1	2	12	2.00
Sikh state	1	1	1	4	2	3	12	2.5

\*The results were not significant

## 6 Conclusion

This paper has analyzed the socio-economic characteristics of religious groups, which were abstracted from the micro level household survey data for India. From the analyses based on the use of the religion dummies and religious state dummies, it is shown that there are considerable differences in the socio-economic characteristics among religions.

While Hindus, Christians, and Sikhs do better than other religions in certain variables that are analyzed in this paper such as per capita expenditure, access to commercial energy for cooking, literacy of the head of household, and so on, Muslims fare the worst in most of the variables compared with other religions. However, it is interesting that none of the religions is better off than the others in all the variables. Sikhs have the highest monthly per capita expenditure but the education levels of their household heads are the lowest of the four religions. Furthermore, although having higher per capita expenditure increases the probability of households having access to tap water, Sikhs have lower a probability of households with access to tap water compared with other religions. Christians have a higher probability of having more land, good houses, and literate household heads but are less likely to have access to commercial energy for cooking of the four religions.

In this study, it was not examined what caused these differences in characteristics among religious groups. Since it was shown in this paper that regions with a high percentage of a certain religion have the same characteristics of that dominating religion, it should be important to study whether these characteristics are caused by the effect from the region where the religious groups tend to live or by the peculiarity of religion in its culture, attitudes toward life, work ethic, and so on.

However, it was meaningful to reveal and to learn that each religion has its distinct socio-economic characteristics. It implies that different policies need to be devised for different religious groups to ameliorate their household conditions and wellbeing. In order to seek effective policies for different religious groups, the causes of different characteristics among religious groups have to be defined. To achieve this purpose, it is essential to do field research to obtain more information not only on socio-economic characteristics of religious groups and learn more about their conditions but also on their values and beliefs that may affect their socio-economic conditions.

## Appendix

**Table 1 Distribution of households according to religious groups in India (%)**

	No Answers	Hinduism	Muslim	Christianity	Sikhism	Buddhism	Jainism	Zoroastrianism	Others
Andaman & Nicobar Islands	0	75.52	5.32	17.95	0.7	0.05	0	0	0.44
Andhra Pradesh	0.15	89.83	6.98	2.84	0.01	0	0.03	0	0.16
Arunachal Pradesh	0.12	30.93	0.61	7.59	0.02	8.04	0.1	0	52.58
Assam	0.05	73.08	23.56	2.99	0.11	0	0.03	0	0.19
Bihar	0.03	83.54	14.34	1.69	0.06	0	0.05	0	0.28
Chandigarh	0	79.84	3.5	0	15.79	0	0	0	0.86
Dadra & Nagar Haveli	0	97.99	1.26	0.52	0.17	0	0.04	0.02	0
Daman & Diu	0	91.96	3.12	4.03	0	0	0	0	0.89
Delhi	0	82.32	10.01	0.69	4.82	0.35	0.87	0	0.94
Goa	0	68.06	4.06	27.35	0	0	0	0	0.53
Gujara	0	91.28	6.3	1.17	0.12	0.08	0.7	0.02	0.33
Haryana	0	90.31	4.98	0.32	4.02	0.05	0.05	0	0.28
Himachal Pradesh	0.05	96.23	1.64	0.04	0.67	0.76	0	0	0.6
Jammu & Kashmir	0.12	89.26	7.27	0.21	2.83	0	0.16	0	0.15
Karnataka	0.04	86.71	10	2.21	0.03	0	0.5	0	0.51
Kerala	0	62.09	17.82	19.47	0.03	0	0.03	0	0.5
Lakshadweep	0	4.13	93.53	2.34	0	0	0	0	0
Madhya Pradesh	0.04	94.4	4.05	0.61	0.22	0.1	0.27	0.02	0.28
Maharashtra	0.06	82.86	7.67	1.13	0.12	6.68	1.05	0.1	0.32
Manipur	0.06	54.06	9.34	34.59	0.06	0	0.2	0	1.68
Meghalaya	0.05	13.3	2	72.57	0.35	0	0	0	11.7
Mizoram	0	0.63	0.78	89.52	0	9.06	0	0	0
Nagaland	0	12.57	1.44	85.63	0.25	0	0	0	0.1
Orissa	0	96.1	1.83	1.6	0.05	0	0.01	0	0.41
Pondicherry	0	86.04	2.73	11.23	0	0	0	0	0
Punjab	0.07	41.45	1.28	1.59	55.28	0	0.11	0.03	0.19
Rajasthan	0	90.63	6.79	0.12	1.49	0	0.51	0	0.46
Sikkim	0	73.22	1.75	2.01	0.47	22.24	0.06	0	0.2
Tamil Nadu	0.01	89.45	4.91	5.36	0.01	0	0.07	0	0.2
Tripula	0	88.07	7.23	1.79	0	2.38	0	0	0.5
Uttar Pradesh	0	84.02	15.12	0.03	0.71	0.01	0.05	0	0.06
West Bengal	0	77.22	21.57	0.33	0.03	0.15	0.03	0	0.67
All India	0.03	84.28	10.21	2.44	1.68	0.71	0.24	0.01	0.39



**Table 6 Variable definitions**

pccexp	Monthly per capita expenditure in Rupees
pcexpthou	Monthly per capita expenditure in thousands of Rupees
LAND	A dummy variable which represents a household with more than 1.0 hectares of land when the value is 1 and 0 otherwise
COME	A dummy variable which represents a household with commercial energy for cooking when the value is 1 and 0 otherwise
SELFEMPL	A dummy variable which represents the head of a household in a rural area is selfemployed when the value is 1 and 0 otherwise
REGFEARN	A dummy variable which represents the head of a household in an urban area is regular wage/ salary earning when the value is 1 and 0 otherwise
hsize	Size of the household
CHILD	A dummy variable which represents a household with more than one child when the value is 1 and 0 otherwise
INSUFFFOOD	A dummy variable which represents a household is insufficient with food when the value is 1 and 0 otherwise
MALE	A dummy variable which represents the head of a household is male when the value is 1 and 0 otherwise
ILLITERATE	A dummy variable which represents the head of a household is illiterate when the value is 1 and 0 otherwise
area	Area covered by the dwelling per households in square feet
BADHCOND	A dummy variable which represents the condition of a house is bad when the value is 1 and 0 otherwise
TAP	A dummy variable which represents a household with tap water when the value is 1 and 0 otherwise
RU	A dummy variable which represents a household belongs to a rural area when the value is 1 and 0 otherwise
HINDU	A dummy variable which represents the religion of a household is Hinduism when the value is 1 and 0 otherwise
MUSLIM	A dummy variable which represents the religion of a household is Muslism when the value is 1 and 0 otherwise
CHRIST	A dummy variable which represents the religion of a household is Christianity when the value is 1 and 0 otherwise
SIKH	A dummy variable which represents the religion of a household is Sikhism when the value is 1 and 0 otherwise
OTHERS	A dummy variable which represents the religion of a household is other than Hinduism, Muslism, Christianity, and Sikhism when the value is 1 and 0 otherwise
HDST	A dummy variable which represents a household belongs to the Hindu state when the value is 1 and 0 otherwise
MUSST	A dummy variable which represents a household belongs to the Muslim state when the value is 1 and 0 otherwise
CHST	A dummy variable which represents a household belongs to the Christian state when the value is 1 and 0 otherwise
SIKST	A dummy variable which represents a household belongs to the Sikh state when the value is 1 and 0 otherwise
OTHST	A dummy variable which represents a household belongs to the Others state when the value is 1 and 0 otherwise
RELIGION <sub>i</sub>	Dummy variables for religious groups. A household is HINDU or HDST when i=1, MUSLIM or MUSST when i=2, CHRIST or CHST when i=3, SIKH or SIKST when i=4, and OTHERS or OTHST when i=5

**Table 7 Composition of religious states**

Hindu state	Dadra & Nagar Haveli, Gujara, Himachal Pradesh, Karanataka, Madhya Pradesh, Orissa, Rajasthan, Tripula
Muslim state	Bihar, Lakshadweep, Uttar Pradesh, West Bengal
Christian state	Andaman & Nicobar Islands, Goa, Manipur, Meghalaya, Mizoram, Nagaland
Sikh state	Chandigarh, Dehli, Punjab
Others state	Andra Pradesh, Arunuchal Pradesh, Assam, Darman & Diu, Haryana, Jammu & Kashmir, Kerala, Maharashtra, Pondishery, Sikkim, Tamil Nadu

**Table 9 Religion dummy and religious state dummies taken as the benchmark dummy in each model**

The first analysis	Basic dummy	$\sum RELIGION_i$
Model 1	SIKH	HINDU+MUSLIM+CHRIST+OTHERS
Model 2	MUSLIM	HINDU+CHRIST+SIKH+OTHERS
Model 3	MUSLIM	HINDU+CHRIST+SIKH+OTHERS
Model 4	MUSLIM	HINDU+CHRIST+SIKH+OTHERS
Model 5	MUSLIM	HINDU+CHRIST+SIKH+OTHERS
Model 6	SIKH	HINDU+MUSLIM+CHRIST+OTHERS
The second analysis	Basic dummy	$\sum RELIGION_i$
Model 1	MUSST	HDST+CHST+SIKST+OTHST
Model 2	SIKST	HDST+MUSST+CHST+OTHST
Model 3	CHST	HDST+MUSST+SIKST+OTHST
Model 4	MUSST	HDST+CHST+SIKST+OTHST
Model 5	MUSST	HDST+CHST+SIKST+OTHST
Model 6	SIKST	HDST+MUSST+CHST+OTHST

Table 10 Results of the analysis using the religion dummies

	Model 1 Dependent Variable: log(pcxexp)					Model 2 Response Variable: LAND				Model 3 Response Variable: COME			
	Coefficient	Standard Error	t value	Pr> t	Exponential values for dummies	Coefficient	Standard Error	Wald Chi-square	Pr>ChiSq	Coefficient	Standard Error	Wald Chi-square	Pr>ChiSq
Intercept	6.5931	0.0113	583.46	<.0001	-	-4.9179	0.0589	6975.03	<.0001	-2.1553	0.0469	2109.47	<.0001
pcexpthou	-	-	-	-	-	0.3539	0.0247	204.60	<.0001	1.7436	0.0330	2786.14	<.0001
LAND	0.1372	0.0040	34.58	<.0001	0.1470	-	-	-	-	-0.8443	0.0333	641.30	<.0001
COME	0.3434	0.0040	85.18	<.0001	0.4098	-0.8166	0.0329	615.02	<.0001	-	-	-	-
SELFEMPL	0.0903	0.0039	23.13	<.0001	0.0945	1.8729	0.0213	7721.42	<.0001	-0.3374	0.0348	94.00	<.0001
REGEARN	0.1256	0.0045	28.15	<.0001	0.1339	-1.0260	0.0567	327.25	<.0001	0.6309	0.0221	815.88	<.0001
hhsize	-	-	-	-	-	0.2271	0.0044	2705.79	<.0001	0.055	0.0045	150.08	<.0001
log(hhsize)	-0.3590	0.0033	-108.55	<.0001	-0.3016	-	-	-	-	-	-	-	-
CHILD	-0.1296	0.0038	-33.85	<.0001	-0.1215	-0.2983	0.0235	161.15	<.0001	0.1103	0.0227	23.62	<.0001
MALE	0.0327	0.0048	6.89	<.0001	0.0333	0.5558	0.0353	247.94	<.0001	0.2343	0.0298	61.79	<.0001
ILLITERATE	-0.2331	0.0031	-74.16	<.0001	-0.2079	-	-	-	-	-	-	-	-
INSUFFFOOD	-0.2514	0.0154	-16.29	<.0001	-0.2223	-1.3531	0.1710	62.64	<.0001	-	-	-	-
area	-	-	-	-	-	0.0394	0.0017	545.35	<.0001	0.0158	0.0016	97.01	<.0001
log(area)	0.1246	0.0017	75.38	<.0001	-	-	-	-	-	-	-	-	-
BADHCOND	-0.1649	0.0041	-40.27	<.0001	-0.1520	-0.7728	0.0286	730.59	<.0001	-0.9656	0.0324	888.46	<.0001
TAP	0.1153	0.0033	34.96	<.0001	0.1222	-	-	-	-	0.9708	0.0192	2555.47	<.0001
RU	-0.1464	0.0044	-33.16	<.0001	-0.1362	0.5843	0.0343	290.14	<.0001	-1.9663	0.0268	5369.05	<.0001
HINDU	-0.3756	0.0093	-40.61	<.0001	-0.3131	0.8625	0.0339	645.73	<.0001	0.3461	0.0282	150.44	<.0001
MUSLIM	-0.3755	0.0101	-37.27	<.0001	-0.3131	-	-	-	-	-	-	-	-
CHRIST	-0.2062	0.0108	-19.07	<.0001	-0.1863	1.0621	0.0478	493.53	<.0001	-0.2789	0.0463	36.28	<.0001
SIKH	-	-	-	-	-	1.1620	0.0629	341.01	<.0001	0.8714	0.0652	178.51	<.0001
OTHERS	-0.3190	0.0128	-24.86	<.0001	-0.2731	1.2096	0.0596	412.61	<.0001	0.4841	0.0641	57.11	<.0001
Adj R- Sqr	0.4612					-				-			
Max- rescaled R- Sqr	-					0.4416				0.5512			
	Model 4 Response Variable: ILLITERATE				Model 5 Response Variable: BADHCOND				Model 6 Response Variable: TAP				
	Coefficient	Standard Error	Wald Chi-square	Pr>ChiSq	Coefficient	Standard Error	Wald Chi-square	Pr>ChiSq	Coefficient	Standard Error	Wald Chi-square	Pr>ChiSq	
Intercept	2.2371	0.0401	3116.64	<.0001	0.3085	0.0542	32.40	<.0001	-0.3430	0.0544	39.77	<.0001	
pcexpthou	-2.7185	0.0456	3553.59	<.0001	-2.8168	0.0724	1512.77	<.0001	0.5573	0.0243	524.22	<.0001	
LAND	-	-	-	-	-0.5835	0.0290	405.21	<.0001	-	-	-	-	
COME	-0.9443	0.0234	1625.46	<.0001	-0.6590	0.0334	388.38	<.0001	0.9971	0.0192	2707.31	<.0001	
SELFEMPL	-0.1165	0.0170	47.24	<.0001	-0.3615	0.0234	238.56	<.0001	-0.2112	0.0193	120.09	<.0001	
REGEARN	-0.5718	0.0291	385.34	<.0001	-0.2698	0.0384	49.22	<.0001	0.1776	0.0229	60.01	<.0001	
hhsize	-	-	-	-	-0.1092	0.0048	521.68	<.0001	-	-	-	-	
CHILD	-0.3798	0.0166	523.52	<.0001	-	-	-	-	-	-	-	-	
MALE	-1.3049	0.0243	2893.99	<.0001	0.1354	0.0291	21.64	<.0001	-	-	-	-	
ILLITERATE	-	-	-	-	0.5384	0.0196	757.39	<.0001	-	-	-	-	
INSUFFFOOD	-	-	-	-	1.0105	0.0727	193.30	<.0001	-	-	-	-	
area	-0.0310	0.0016	364.98	<.0001	-0.1148	0.0036	1000.66	<.0001	-0.0162	0.0014	133.01	<.0001	
BADHCOND	0.6070	0.0192	996.69	<.0001	-	-	-	-	-0.4736	0.0218	472.29	<.0001	
TAP	-0.1218	0.0167	53.31	<.0001	-0.4086	0.0224	333.56	<.0001	-	-	-	-	
RU	0.4764	0.0219	475.13	<.0001	0.1087	0.0271	16.08	<.0001	-1.4881	0.0204	5298.16	<.0001	
HINDU	-0.2779	0.0223	155.93	<.0001	-0.1572	0.0276	32.39	<.0001	0.5430	0.0510	113.45	<.0001	
MUSLIM	-	-	-	-	-	-	-	-	0.2177	0.0550	15.65	<.0001	
CHRIST	-1.1249	0.0399	793.56	<.0001	-0.3051	0.0512	35.46	<.0001	0.5527	0.0584	89.60	<.0001	
SIKH	0.5274	0.0514	105.09	<.0001	-0.3519	0.0800	19.36	<.0001	-	-	-	-	
OTHERS	0.2816	0.0495	32.31	<.0001	-0.5007	0.0722	48.14	<.0001	1.6493	0.0674	598.19	<.0001	
Max- rescaled R- Sqr	0.3134				0.2257				0.3675				

Table 11 Results of the analysis using the state dummies

	Model 1 Dependent Variable: log(pcxep)					Model 2 Response Variable: LAND				Model 3 Response Variable: COME			
	Coefficient	Standard Error	t value	Pr> t	Exponential values for dummies	Coefficient	Standard Error	Wald Chi-square	Pr>ChiSq	Coefficient	Standard Error	Wald Chi-square	Pr>ChiSq
Intercept	6.1488	0.0068	900.60	<.0001	-	-3.6491	0.0551	4384.75	<.0001	-2.3648	0.0481	2420.80	<.0001
pcxepthou	-	-	-	-	-	0.3248	0.0247	172.58	<.0001	1.6746	0.0328	2609.73	<.0001
LAND	0.1352	0.0039	34.47	<.0001	0.1448	-	-	-	-	-0.7592	0.0335	514.69	<.0001
COME	0.3345	0.0040	83.34	<.0001	0.3973	-0.8186	0.0330	613.46	<.0001	-	-	-	-
SELFEMPL	0.0962	0.0039	24.81	<.0001	0.1010	1.9400	0.0217	8008.55	<.0001	-0.363	0.0349	107.93	<.0001
REGEARN	0.1278	0.0044	28.95	<.0001	0.1363	-0.9965	0.0568	307.35	<.0001	0.6697	0.0221	915.44	<.0001
hhsize	-	-	-	-	-	0.2267	0.0044	2691.14	<.0001	0.0475	0.0045	111.49	<.0001
log(hhsize)	-0.3608	0.0033	-110.29	<.0001	-	-	-	-	-	-	-	-	-
CHILD	-0.1257	0.0038	-33.13	<.0001	-0.1181	-0.3021	0.0237	162.69	<.0001	0.1132	0.0228	24.68	<.0001
MALE	0.0356	0.0047	7.56	<.0001	0.0363	0.5918	0.0356	276.06	<.0001	0.2502	0.0299	69.85	<.0001
ILLITERATE	-0.2267	0.0031	-72.68	<.0001	-0.2028	-	-	-	-	-	-	-	-
INSUFFFOOD	-0.2707	0.0153	-17.69	<.0001	-0.2372	-1.3724	0.1734	62.62	<.0001	-	-	-	-
area	-	-	-	-	-	0.0424	0.0017	593.59	<.0001	0.0171	0.0016	111.46	<.0001
log(area)	0.1343	0.0017	81.53	<.0001	-	-	-	-	-	-	-	-	-
BADHCOND	-0.1601	0.0041	-39.45	<.0001	-0.1480	-0.7628	0.0289	699.00	<.0001	-0.9905	0.0327	919.71	<.0001
TAP	0.0863	0.0034	25.73	<.0001	0.0901	-	-	-	-	1.0622	0.0200	2832.45	<.0001
RU	-0.1517	0.0044	-34.81	<.0001	-0.1407	0.6779	0.0344	388.85	<.0001	-1.9118	0.0268	5087.79	<.0001
HDST	0.1003	0.0039	25.94	<.0001	0.1055	-0.3968	0.0310	163.85	<.0001	0.2939	0.0325	81.87	<.0001
MUSST	-	-	-	-	-	-1.1964	0.0307	1520.84	<.0001	0.6332	0.0320	392.35	<.0001
CHST	0.2799	0.0062	45.29	<.0001	0.3230	-0.3802	0.0429	78.48	<.0001	-	-	-	-
SIKST	0.3821	0.0068	55.98	<.0001	0.4654	-	-	-	-	1.434	0.0471	928.22	<.0001
OTHST	0.0932	0.0034	27.52	<.0001	0.0977	-0.5541	0.0292	359.78	<.0001	0.4334	0.0293	219.02	<.0001
Adj R-Sqr	0.4711					-				-			
Max-rescaled R-Sqr	-					0.452				0.5559			
	Model 4 Response Variable: ILLITERATE				Model 5 Response Variable: BADHCOND				Model 6 Response Variable: TAP				
	Coefficient	Standard Error	Wald Chi-square	Pr>ChiSq	Coefficient	Standard Error	Wald Chi-square	Pr>ChiSq	Coefficient	Standard Error	Wald Chi-square	Pr>ChiSq	
Intercept	2.1922	0.0372	3476.64	<.0001	0.1987	0.0505	15.48	<.0001	-0.1838	0.0283	42.08	<.0001	
pcxepthou	-2.7132	0.0459	3495.34	<.0001	-2.8123	0.0731	1480.76	<.0001	0.4052	0.0237	291.28	<.0001	
LAND	-	-	-	-	-0.6023	0.0290	431.66	<.0001	-	-	-	-	
COME	-1.0068	0.0237	1805.24	<.0001	-0.6633	0.0336	389.50	<.0001	1.1282	0.0200	3178.46	<.0001	
SELFEMPL	-0.1276	0.0170	56.06	<.0001	-0.3646	0.0235	241.10	<.0001	-0.1139	0.0197	33.42	<.0001	
REGEARN	-0.5999	0.0291	425.00	<.0001	-0.2811	0.0384	53.61	<.0001	0.2154	0.0237	82.42	<.0001	
hhsize	-	-	-	-	-0.1074	0.0048	506.53	<.0001	-	-	-	-	
CHILD	-0.377	0.0166	515.31	<.0001	-	-	-	-	-	-	-	-	
MALE	-1.3297	0.0243	3002.21	<.0001	0.1277	0.0291	19.21	<.0001	-	-	-	-	
ILLITERATE	-	-	-	-	0.5344	0.0196	741.83	<.0001	-	-	-	-	
INSUFFFOOD	-	-	-	-	1.043	0.0731	203.59	<.0001	-	-	-	-	
area	-0.0358	0.0017	467.52	<.0001	-0.1149	0.0037	988.76	<.0001	-0.0076	0.0012	37.57	<.0001	
BADHCOND	0.6034	0.0192	983.14	<.0001	-	-	-	-	-0.4399	0.0223	388.75	<.0001	
TAP	-0.0106	0.0172	0.38	0.5371	-0.4119	0.0230	321.98	<.0001	-	-	-	-	
RU	0.4852	0.0218	497.10	<.0001	0.0819	0.0269	9.24	0.0024	-1.575	0.0211	5547.19	<.0001	
HDST	-0.1721	0.0195	77.77	<.0001	0.0665	0.0250	7.10	0.0077	0.844	0.0268	990.83	<.0001	
MUSST	-	-	-	-	-	-	-	-	-0.7148	0.0270	702.56	<.0001	
CHST	-0.7985	0.0345	535.06	<.0001	-0.2075	0.0478	18.81	<.0001	0.778	0.0362	462.26	<.0001	
SIKST	0.5971	0.0373	255.81	<.0001	-0.0887	0.0554	2.56	0.1096	-	-	-	-	
OTHST	-0.4276	0.0175	598.86	<.0001	-0.065	0.0222	8.54	0.0035	0.8033	0.0248	1047.85	<.0001	
Max-rescaled R-Sqr	0.3148				0.2253				0.4214				

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