Caste, Inequality, and Poverty in India: A Re-Assessment

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Caste, Inequality, and Poverty in India: A Re-Assessment

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1. Introduction

The measurement of disparity between households in the context of inequality and poverty raises the important issue of group bias. In the context of households being grouped according to some immutable characteristic – race in the USA, caste in India - are households from some (racial or caste) groups *ceteris paribus* more likely to find themselves at the bottom of the pile than households from other groups? Does the capacity to generate resources depend not just upon relevant attributes (like education and assets) but also upon irrelevant features like group identity? In terms of answering this question, the focus of this paper is on India and its caste structure.

The contextual background to the study is the division of Indian society into a number of social groups delineated by caste and religion. There is, first, the caste system, which stratifies Hindus, who constitute eighty per cent of India's population, into mutually exclusive caste groups, membership of which is determined entirely by birth. Very broadly, one can think of four subgroups: *brahmins*; *kshatriyas*; *vaisyas*; and *sudras.* Brahmins, who were traditionally priests and teachers, represent the highest caste; *Kshatriyas* (traditionally, warriors and rulers) and *Vaisyas* (traditionally, moneylenders and traders) are "high caste" Hindus; the *Sudras* (traditionally performing menial jobs) constitute the "other backward classes" (OBC).

Then there are those persons (mostly Hindu, but some who have converted to Buddhism or Christianity) whom Hindus belonging to the four caste groups (listed above) regard as being outside the caste system because they are 'untouchable' in the sense that physical contact with them - most usually the acceptance of food or water - is polluting or unclean. In response to the burden of social stigma and economic backwardness borne by persons belonging to India's 'untouchable castes', the Constitution of India allows for special provisions for members of these castes[1]. Articles 341 and 342 include a list of *castes* entitled to such benefits and all those groups included in this list – and subsequent modifications to this list – are referred to as, respectively, 'Scheduled Castes'. For all practical purposes the term "Scheduled Castes" is synonymous with the former "untouchable" castes. Articles 341 and 342 also include a list of *tribes* entitled to similar benefits and all those groups included in this list – and subsequent modifications to this list – are referred to as, respectively, 'Scheduled Tribes'.

Although in most developed countries, studies of wellbeing and poverty are based on income data, which are available in many large national representative surveys, Meyer and Sullivan (2009, 2011) argue that analysis based on consumption, instead of income, provides more insight on well-being. The World Bank (Haughton and Khandker, 2009) echoes these feelings. Although income, defined in principle as *consumption + change in net worth*, is generally used as a measure of welfare in developed countries, it tends to be seriously understated in less developed countries. Consumption in developing countries is measured with greater accuracy and comes closer to measuring 'permanent income'. Following these observations, this paper analyses the *per-capita monthly consumption expenditure* (MCE) of Indian households. The data for the analysis was obtained from the household file of the Indian Human Development Survey (IHDS) which provided information, pertaining to 2004, on over 41,000 households spread over India.[2]

The richness of the information supplied by the IHDS allowed us to explore a number of areas neglected by other researchers. First, most economic studies of caste in India focus on the SC versus non-SC distinction. In other words, these studies lose sight of the considerable heterogeneity

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[1] Mainly in the form of reserved seats in the national parliament, state legislatures, municipality boards and village councils (*panchayats*); job reservations in the public sector; and reserved places in public higher educational institutions

[2] Available from the Inter-University Consortium for Political and Social Research (ICPSR), http://www.icpsr.umich.edu

that exists within the non-SC category.[3] In particular, this latter category of non-SC persons comprises both high caste Hindus (*brahmins*; *kshatriyas*; *vaisyas*) as well as those belonging to the OBC (*sudras*). In addition, even within the group of persons who regards themselves as belonging to the OBC, there is a useful distinction to be made between Hindu OBCs and Muslim OBCs. For example, The Sachar Committee Report (2006) refers to the caste system applying also to Muslims with the *ashraf* (meaning 'noble') referring to high-born Muslims and converts to Islam from the higher castes and the *ajlaf* (meaning 'degraded' or 'unholy') referring to converts to Islam from the lower castes. Following the Mandal Commission Report of 1990, adopted by the Government of India, reservation in jobs and education was extended to Hindus, but not to Muslims, from the OBC.[4]

In this paper we subdivide India's households into the following groups: high caste Hindus (hereafter, HCH), OBC Hindus (hereafter, HOBC), Scheduled Castes (hereafter, SC), Scheduled Tribe (hereafter, ST), OBC Muslims (hereafter, MOBC), high caste Muslims (hereafter, HCM). Those households which were in none of these six groups were placed in a residual 'other' group category (hereafter, OTG): these were mostly (non-SC) Christian, Sikhs, and Jains. So, by distinguishing between three caste groups – HCH (Brahmins, *Kshatriyas,* and *Vaisyas*); the HOBC (*sudras*) and the SC (outside the caste system) we employ a richer caste breakdown of Hindus compared to the usual SC non-SC distinction adopted by other studies. Similarly, by distinguishing between Muslims from the OBC (MOBC) and high caste Muslims (HCM), we depart from the usual stereotype of Muslims as a homogenous community.

Second, because of the richness of the data contained in the IHDS, we could, compared to other studies, link the MCE of households more tightly to asset ownership. For example, the only physical asset considered by Gang *et. al.* (2008), in explaining consumption expenditure for SC, ST, and non-SC/ST households, was land ownership; the remaining variables were human capital variables relating to education, and outcome variables relating to occupation. A similar point can be made about Kijima (2006). Likewise, Bhaumik and Chakrabarty (2010) did not use any information on physical assets in explaining the consumption expenditure of non-SC, SC, and Muslim households. By contrast, in explaining household MCE, we are able to employ – in addition to information on land ownership - a set of information relating to information of ownership of tractors, threshers, tubewells, electric and diesel pumps, and draught and dairy livestock.

An important policy issue in the developmental literature on inequality and poverty is the relation between them, the general belief being that there is a trade-off between inequality and poverty: less poverty requires more inequality and, conversely, a more equal distribution of resources necessitates greater poverty. In the development literature, this relationship is often posited in the form of what Ravallion (2005) terms the 'poverty-inequality trade off' (PIT): higher levels of inequality are associated with lower levels of poverty and, conversely, lower inequality could be associated with higher poverty levels. A PIT would occur if both poverty and inequality were related to growth, with higher growth leading to poverty reduction while, in the initial stages of development, à la Kuznet's (1955) 'inverted U-curve hypothesis', higher growth being associated with rising inequality. Consequently, through their association with a third factor – growth – one could expect an inverse relationship between levels of inequality and poverty or, in other words, a PIT.

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[3] For example, the NSS defines four broad social groups: Scheduled Castes, Scheduled Tribes , Other Backward Classes (OBCs) and `Others'. `Others' is a reasonable approximation of the upper castes.
[4] The 1980 report of the "Mandal" Commission recommended that, in addition to the 23 percent of government jobs reserved for the SC and ST, a *further* 27 percent be reserved for the OBC. In 1990, the V.P. Singh announced plans to implement this recommendation triggering a wave of "anti-Mandal" rioting in India. In 1992, India's Supreme Court, in *Sawhney v The Union of India*, upheld jobs reservation for the OBC but ruled that: (i) reservation was not to extend to more than 50 percent of the population and (ii) that groups within the OBC category who were manifestly not disadvantaged (the "creamy layer") were to be excluded from reservation.

Ravallion (2005) has examined the empirical validity of a PIT. His conclusion was that in cross-section studies of countries there was evidence of a PIT: countries with higher mean incomes had higher levels of income inequality and lower levels of poverty. However, time series analysis of individual countries did not support a PIT provided inequality was measured by *relative inequality*. Under relative inequality, there was "only a weak positive correlation between growth in per capita consumption and the proportionate change in relative inequality". However, if inequality was measured in terms of *absolute inequality* then growth and inequality were positively related, leading to a PIT being observed. This is because if relative inequality remained unchanged, with all incomes growing by the same proportion, then absolute inequality would increase as the absolute gap between incomes widened.

In measures of relative inequality, the relevant building block is the *ratio* of individual incomes to mean income. If all incomes change by the same *proportion*, relative inequality remains unchanged.[5] In measures of absolute inequality, the relevant building block is the *difference* between individual incomes and mean income. If all incomes change by the same *amount*, absolute inequality remains unchanged. So, for example, in a two household economy, if the rich household earns Rs.100,000 and the poor household earns Rs.10,000 and both incomes double then relative inequality will remain unchanged since the rich household will continue to have an income 10 times that of the poor household. However, under this doubling, the *absolute* gap in incomes will increase from Rs.90,000 to Rs.180,000. So, absolute inequality will increase.

Indeed, Ravallion and Chen (2004) question whether even China can be viewed as an example of a PIT. First, periods of rapid growth in China did not bring about sharp increases in inequality; indeed, periods of falling inequality were associated with the highest growth rates of household incomes. Secondly, the provinces which experienced the sharpest rise in inequality saw the smaller reductions in poverty compared to provinces in which inequality increases were smaller. Consequently, Ravallion's (2005) conclusion is that "looking at the experience of 70 developing and transition economies in the 1990s, there is no sign of a systematic trade-off between absolute poverty incidence and relative inequality. Indeed lower (higher) poverty tends to come hand in hand with lower (higher) inequality. The main reason why the trade-off is not found in these data is that economic growth shows little correlation with changes in *relative* [emphasis added] inequality" (p. 179).

In the context of these theoretical considerations, the empirical part of the paper begins in section 2 by setting out the salient features of the households sampled in terms of their social, economic, and demographic characteristics. Section 3 then quantifies, using econometric estimation, the strength of the various factors which influence household MCE. Section 4 uses the econometric results to decompose inter-group differences in mean MCE into a term which reflects inter-group differences in *attribute endowment* and another term which reflects inter-group differences in *attribute return*.[6] The thinking behind these decompositions is that the difference in mean MCE, between households belonging to different groups, may be partly due to the fact that different groups have, on average, different endowments of consumption-enhancing attributes and, in part, due to households from different groups receiving, on average, unequal returns on their attributes.

Section 5 looks at inequality between households in their consumption expenditure. The basic question that we ask is how much of overall inter-household inequality in consumption can be explained by the caste factor? How much can be explained by the regional factor? And how much can

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[5] Inequality is usually measured in relative terms and the most popular measure for measuring (relative) inequality is the *Gini coefficient*.
[6] Differences due to asset return can, in many instances, be plausibly attributed to discrimination between households in the different groups.

be explained by differences in education?   Section 6 analyses the probabilities of households of being 'poor' (in the sense that their MCE is below a critical threshold) and section 7 examines the contribution that households from the different groups make to overall poverty and their different 'risks' of being poor. Section 8 concludes the paper.

2. Inter-Caste Disparities in Households' Monthly, Per Capita Consumption Expenditure

The data used in this paper are from the India Human Development Survey (IHDS), which was conducted in 2004-5 by the University of Maryland in collaboration with the National Council of Applied Economic Research, New Delhi between November 2004 and October 2005. The nationally representative data covers 1504 villages and 971 urban areas across 33 states and union territories of India. The survey covering 41,554 households was carried out through face-to-face interviews by pairs of male and female enumerators in local languages. The respondents included a person who was knowledgeable about the household economic situation (usually the male head of the household) and an ever-married woman aged 15-49. The detailed modules of the survey provide answers to a wide range of questions relating to economic activity, income and consumption expenditure, asset ownership, social capital, education, health, marriage and fertility etc.

Table 1 provides information on the caste and religion of households in the IHDS. Of the total of 41,554 households: 23% (9,540 households) were HCH; 34% (13,875 households) were HOBC; 20% (8,333 households) were SC; 8% (3,439 households) were ST; 5% (2,014 households) were MOBC; 6% (2,694 households) were HCM; and 4% (1,659 households) were in the 'Other' (OTG) group.

Table 1: Caste and Religion of Households in the IHDS

	Upper Caste Hindus	OBC Hindus	Scheduled Castes[*]	Scheduled Tribes[**]	OBC Muslims	High Caste Muslims	Others	All Groups
Number of Households (Rural + Urban)	9,540	13,875	8,333	3,439	2,014	2,694	1,659	41,554
Number of Households (Rural)	5,022	9,543	6,011	2,940	1,055	1,472	968	27,011
Number of Households (Urban)	4,518	4,332	2,322	499	959	1,222	691	14,543

[*] Of the 8,333 SC households, 7,724 were Hindus and the rest were Buddhist, Christian, or Sikh.
[**] Of the 3,439 ST households, 2,488 were Hindus, 484 were Christian, and 412 were Tribal.

Table 2 provides information on the income and assets of *rural* households in India, by social group. This shows that OTG households had the highest MCE (₨.1,356), followed by HCH households (₨.1,037). At the other end of the scale, rural ST households had the lowest MCE (₨.511), followed by SC households (₨.657), MOBC households (₨.727), HCM households (₨.743), and HOBC households (₨.748).   So, the mean MCE of ST and SC households were, respectively, 49% and 63% of the mean MCE of HCH households. The advantage of HCH and OTG households, over SC, ST, HOBC, MOBC, and HCM households, extended also to asset ownership. For example, 74% of HCH households owned land compared to only 65% of HOBC households, 44% of SC households, 62% of ST households, 44% of MOBC households, and 54% of HCM households.

Although only 56% of OTG households owned land, their average landholding was considerably larger than for other households. Setting the land area owned by HCH households at 100, Table 2 shows that the average area owned by OTG households was 627, or in other words, 6.27

times that of HCH households. At the other end of the scale, the average land holding of SC and HCM households was only one-fourth that of HCH households; the average land holding of MOBC households was half that of HCH households; and the average land holding of HOBC and ST households was three-fourths that of HCH households. In terms of non-land assets as well, SC and ST households were the worst off compared to HCH households. For example: 96 per cent of SC, and 97% of ST, households, *did not* own a tube-well, compared to 86% of HCH households and 78% of OTG households; 52% of SC, and 64% of ST, households, *did not* own a buffalo, compared to 42% of HCH households and 37% of OTG households.

Table 3 shows the mean MCE of urban households by caste and religion. This shows that HCH and OTG households had, on average, the highest MCE at, respectively, Rs.1,683 and Rs.1,653; on the other hand, MOBC households had the lowest average MCE (Rs.804), followed by SC households (Rs.981). An interesting feature of Table 3 is that while HCM households had a significantly higher MCE than their MOBC counterparts (Rs.1,047 versus Rs.804), their MCE, on average was significantly lower than that of HCH households (Rs.1,047 versus Rs.1,683). Table 3 also shows that average household MCE was considerably higher in metro (Mumbai, Delhi, Kolkata, Chennai, Bangalore, and Hyderabad) compared to non-metro areas (Rs.1,526 versus Rs.1,218) and considerably lower in slum areas compared to non-slum areas (Rs.1,306 versus Rs.937). However, in all these various situations, HCH and OTG households were able to maintain considerable distance between their MCE and the MCE of households from the other social groups.

A comparison of Tables 2 and 3 reveals an interesting feature: ST households have the lowest MCE in a rural setting but one of the highest MCEs in an urban setting. Indeed, in a rural context, the average MCE of ST households was 77% of that of SC households (Rs.511 versus Rs.657) but, in an urban context, the average MCE of a ST household was 7% higher than that of a SC household (Rs.1,047 versus Rs.981). This is because the ST comprise two distinct groups: the economically and socially deprived *Adivasis* from the states of Jharkhand, Madhya Pradesh, Chhattisgarh, and Orissa, who are characterised by high rates of illiteracy and ill-health, and the highly educated tribes from the North-Eastern states of India (the *Khasi*, *Garo*, *Lushai*, *Mizo* etc.) who, more often than not, are relatively fluent in English. The former, living in rural areas, fare very badly, and the latter, living largely in urban areas, do very well, on India's economic ladder.

Table 2: Rural Households' per-capita Monthly Consumption Expenditure and Assets, by Caste and Religion

	Upper Caste Hindus	Other Backward Classes	Scheduled Castes[*]	Scheduled Tribes	OBC Muslims	High Caste Muslims	Other Groups	All Groups
Number of Households	5,018	9,536	6,002	2,936	1,055	1,470	964	26,981
Mean number of persons in a household	5.39	5.34	5.25	5.09	6.15	5.89	5.21	5.36
Mean Household per capita consumption (Rs.)	1,037	748	657	511	727	743	1356	776
Proportion of households owning or cultivating **land**	74	65	44	62	44	54	56	60
Average area owned (High caste=100)	100	78	25	75	51	26	627	64
Percentage of owned area that is cultivated	84	87	84	89	85	90	85	86
Proportion of households not owning a tubewell **(%)**	86	89	96	97	94	92	78	91
Proportion of households not owning an electric pump **(%)**	86	91	97	96	96	97	73	92
Proportion of households not owning a diesel pump **(%)**	93	94	97	97	97	93	83	95
Proportion of households not owning a bullock cart **(%)**	89	90	97	93	97	95	86	92
Proportion of households not owning a tractor **(%)**	95	97	99	99	98	98	87	97
Proportion of households not owning a thresher **(%)**	96	98	99	99	99	98	97	98
Proportion of households not owning a cow **(%)**	43	48	50	52	54	49	53	49
Proportion of households not owning a buffalo **(%)**	42	52	52	64	49	58	37	51

Table 3: Urban Households' per-capita Monthly Consumption Expenditure, by Caste and Religion

	Upper Caste Hindus	Other Backward Classes	Scheduled Castes*	Scheduled Tribes	OBC Muslims	High Caste Muslims	Other Groups	All Groups
Number of Households	4,498	4,327	2,320	497	957	1,222	689	14,510
Mean number of persons in a household	4.5	4.8	5.0	4.9	5.9	5.6	4.5	4.9
Mean Household per capita consumption (Rs.)	1,683	1,176	981	1,124	804	1,047	1,653	1,288
Mean Household per capita consumption (Rs.): Metro	1,819	1,424	1,141	1,209	1,016	1,126	2,137	1,526
Mean Household per capita consumption (Rs.): non-Metro	1,627	1,119	930	1,120	783	1,019	1,514	1,218
Mean Household per capita consumption (Rs.): Slum	1,500	951	860	681	628	1,080	1,280	937
Mean Household per capita consumption (Rs.): non-Slum	1,685	1,188	993	1,170	820	1,044	1,664	1,306

4. Modelling Differences in Inter-Group Differences in MCE

The previous section set out the salient features of the households in the sample in terms of their social, demographic, and economic background. This section draws these diverse threads together to estimate the relative strengths of the different factors affecting households' MCE. To keep the analysis tractable, the analysis is confined to *rural Hindu* households, that is HCH, HOBC, or SC households.[7] It was hypothesised that a household's MCE would *inter alia* depend upon the following factors:

1. The caste of the household: HCH, HOBC, or SC
2. Whether the household contained a literate person
3. The highest education level of an adult in the household:
a) Low, if up to class 5;
b) Medium, if higher than class 5 but less than class 10 (Matric);

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[7] Of the 6,011 SC households in the rural sample, 5,498 households (91%) were Hindus, 78 households were Christian, 228 households were Sikh, and 165 households were Buddhist.

c) High, if Matric or above.[8]
4. Whether the household owned any of the following assets:
(i) Tube well
(ii) Electric pump
(iii) Diesel pump
(iv) Bullock cart
(v) Tractor
(vi) Thresher
(vii) Cows, including the number of cows
(viii) Buffaloes, including the number of buffaloes
5. The region in which the household lived: Central; South; West; East; and North[9].

The coefficient on each of the variables listed under 2-5, above, was allowed to vary according to the caste of the household (which is variable 1, above). Consequently, if X_i represents the value of the value of an explanatory variable for household i, $(i=1....N)$, then the equations that were estimated took the form:

$$MCE_i = \alpha_1 \times HCH_i + \alpha_2 \times OBC_i + \alpha_3 \times SC_i$$
$$+ \beta_1 \times X_i + \beta_2 \times (X_i \times OBC_i) + \beta_3 \times (X_i \times SC_i) + \varepsilon_i \tag{1}$$

Where there are N households, indexed $i=1...N$ such that:
a. MCE_i is the monthly per capita consumption expenditure of household i
b. $HCH_i=1$, the if household i is a high caste Hindu household, 0 otherwise
c. $HOBC_i=1$, if household i is an Hindu OBC household, 0 otherwise
d. $SC_i=1$, if household i is a Scheduled Caste household, 0 otherwise
e. X_i is the value of the explanatory variable for household i
f. The α and β are coefficients

The interpretation of the coefficients in equation (1) is as follows:
1. The coefficients α_1, α_2, and α_3 are the intercept terms associated with HCH, HOBC, and SC households. The presence of these terms ensures that the equation passes through the mean. In other words, if all the explanatory variables took as values their sample means, the predicted value of income would be the mean consumption.
2. The coefficient β_1 is the effect associated with the explanatory variable *for all households*.
3. The coefficient β_2 is the *additional* effect associated with the explanatory variable for *HOBC households only*.
   If β_2 is significantly different from zero, then this means that the variable has a (statistically significant) different effect on HOBC households compared to its effect on HCH households. If β_2 is not significantly different from zero, then this means that there is no (statistically significant) difference in the variable's effect between HOBC and HCH households.
4. The coefficient β_3 is the *additional* effect associated with the explanatory variable for *SC households only*.

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[8] "Matric" is a term commonly used in India to refer to the final year of high school, which ends at tenth standard (tenth grade); the qualification received after passing the "matriculation exams", usually at the age of 15-16 years, is referred to as "matric (passed)".
[9] The Central region, comprising Bihar, Madhya Pradesh, Rajasthan and Uttar Pradesh; the South, comprising Andhra Pradesh, Karnataka, Kerala and Tamil Nadu; the West, comprising Maharashtra and Gujarat; the East, comprising Assam, Bengal and Orissa; and the North, comprising Haryana, Himachal Pradesh and Punjab.

If β_3 is significantly different from zero, then this means that the variable has a (statistically significant) different effect on SC households compared to its effect on HCH households. If β_3 is not significantly different from zero, then this means that there is no (statistically significant) difference in the variable's effect between SC and HCH households.

Table 4 shows the results of estimating equation (1) using rural Hindu households' MCE as the dependent variable. Using the results of Table 4, Table 5 shows that the monthly MCE of a rural HCH household, living in the East, and without any assets (education, land, non-land productive assets) would be Rs.664. Acquiring educational assets in the form of a literate person in the household would add Rs.27 to this and acquiring educational assets in the form of an adult in the household educated to the level of matric (or higher) would add Rs.407.

Households that owned or cultivated land would add Rs.91 to their MCE and the further acquisition of complementary non-land productive assets would increase MCE as shown below, the largest increase (Rs.264) going to households who acquired a tractor followed by an increase of Rs.107 for households owning a diesel pump. Owning cows and buffalos increased MCE, with the increase per animal being considerably greater for buffalos (Rs.38) compared to cows (Rs.5).

A household's MCE also depended on the region in which it lived. With the East as the reference region, living in the North *added* Rs.279, and living in the South added Rs.194, to MCE. On the other hand, compared to living in the East, living in the West and in the Centre *reduced* MCE by, respectively, Rs.187 and Rs.218.

Table 4: Regression Estimates for the MCE Generating Equation for Rural Households[*]

Household type↓	Coefficient Estimate	Standard Error	T value
High Caste Hindu	663.63	35.52	18.68
HOBC Hindu	514.68	26.58	19.37
Scheduled Castes	583.27	25.79	22.62
Literate in household	27.42	13.50	2.03
Highest education level for adult in household is higher than Matric	407.29	24.31	16.76
Highest education level for adult in HOBC household is higher than Matric	-135.28	31.32	-4.32
Highest education level for adult in SC household is higher than Matric	-112.96	37.54	-3.01
Household owns land	91.00	29.01	3.14
HOBC household owns land	-50.01	34.00	-1.47
SC household owns land	-114.41	35.83	-3.19
Household owns a tubewell	54.15	22.81	2.37
Household owns an electric pump	50.44	23.18	2.18
Household owns a diesel pump	107.39	28.46	3.77
Household owns a tractor	264.42	43.64	6.06
Household owns a thresher	54.29	45.65	1.19
Household owns cows	5.33	3.96	1.35
Household owns buffalos	37.80	5.76	6.56
HOBC household owns buffalos	-28.29	6.12	-4.62
SC household owns buffalos	-41.67	6.35	-6.56
North	279.03	28.67	9.73
SC Households in the North	-70.69	44.99	-1.57
South	193.72	23.19	8.35
SC Households in the South	-178.89	37.53	-4.77
West	-187.32	34.09	-5.49
HOBC Households in the West	278.05	39.51	7.04
SC Households in the West	238.15	53.60	4.44
Central	-217.82	33.04	-6.59
HOBC Households in the Central	147.63	34.68	4.26
SC Households in the Central	111.06	43.32	2.56
Equation Statistics			
Number of observations	17,829		
Adjusted R^2	0.546		
F(14,16905)	738.8		
Root Mean Square Error	742		

[*]Dependent variable is per capita monthly consumption (MCE)

Table 5: Monthly (per capita) Consumption Expenditure of HCH households

Source	Amount (Rs.)
Intercept	664
Literate in Household adds:	27
Matric or more of highest educated adult adds:	407
Owning/cultivating land adds:	91
Owning a tubewell adds:	54
Owning an electric pump adds:	50
Owning a diesel pump adds:	107
Owning a tractor adds:	264
Owning a thresher adds:	54
Owning 2.58 cows adds:	Rs.5×2.58=13
Owning 2.66 buffaloes adds	Rs.37×2.66=98
Living in the North adds:	279
Living in the South adds:	194
Living in the West adds:	-187
Living in the Centre adds:	-218

These results pertain to a HCH household. They change with respect to HOBC and SC household in several respects:

1. Compared to HCH households, the return on matric (or higher) level education is lower for HOBC and SC households: for HCH households, the presence of an adult educated to matric (or higher) level added Rs.407 to MCE; for HOBC and SC households, this added only Rs.272 and Rs.294, respectively.[10]

2. Compared to HCH households, the return on owning/cultivating land is lower for HOBC and SC households: for HCH households, owning/cultivating land added Rs.91 to MCE; for HOBC households, owning/cultivating land increased MCE by Rs.40 while, for SC households, owning/cultivating land reduced MCE by Rs.23.

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[10] The null hypothesis that the coefficients on $OBC \times X$ and $SC \times X$ being equal could not be rejected with an $F(1,16907)=0.56$, where X is the variable, "the highest level of education for an adult in the household is greater than matric".

3. Compared to HCH households, the return on owning buffalos is lower for HOBC and SC households: for HCH households, owning a buffalo added Rs.38 to MCE; for HOBC households, owning a buffalo increased MCE just Rs.10 while, for SC households, owning a buffalo reduced MCE by Rs.4.

4. Compared to living in the East, living in the North, increased the MCE of HCH households by Rs.279 but it increased the income of SC households by only Rs.208; again compared to living in the East, living in the South, increased the MCE of HCH households by Rs.194 but it increased the MCE of SC households by Rs.15. In other words, the advantage of living in the more prosperous parts of India, in terms of higher MCE, was significantly greater for HCH households than it was for SC households.

5. However, compared to HCH households in the East, the MCE of HCH households in the West was Rs.187 lower; the same comparison made for HOBC and SC households, with equivalent households in the East, shows, however, that MCE was higher by, respectively, Rs.278 and Rs.238.

It is difficult to compare the results set out above with those from other studies because, in explaining households' MCE, the specification employed here (see Table 4 and Table 5) contains many more asset variables than hitherto used by researchers. Unlike previous studies (Kijima 2006; Gang *et. al.* 2008; Bhaumik and Chakrabarty 2010), which focused on education, occupation, and land ownership, this paper exploits – in addition to information on land ownership - a rich set of data relating to ownership of (non-land) physical assets: tractors, tubewells, electric and diesel pumps, and draught and dairy livestock. Using this information, this study presents a more nuanced explanation of inter-household variations in MCE than hitherto attempted for India.

Table 4 makes clear that, in rural India, a household's MCE is significantly and considerably increased when ownership of land is buttressed by ownership of cultivation-related, productivity-enhancing, physical assets. For example, the expenditure-boosting effects of tractors and diesel pumps are greater than that of land ownership *per se* and tubewells, threshers, and electric pumps, by raising the productivity of agricultural land, substantially increase a rural Indian household's MCE. So this paper suggests that previous studies of consumption expenditure in India, which included land as an explanatory variable, but did not take account of ancillary, productivity-enhancing inputs to land, were misspecified in terms of omitting key variables.

The effects of *land* ownership on household consumption varied across the caste groups (see point 2, above) but the effects of *non-land* asset ownership were 'caste neutral' in that there was no evidence of significant inter-caste disparity in their consumption-enhancing effects. There was, however, an exception to his general finding and this related to the ownership of buffaloes: these milch animals offered HCH households a significantly higher return than they did to HOBC and SC households – the excess return quantified in point 3, above. Thorat *et. al.* (2010) point out that because of the perceived 'impure status' of the lower castes, upper caste Hindus avoided buying edible products – particularly milk and vegetables – from them. In a survey conducted by them, out of 16 HCH households who would not buy milk from SC households, 11 said it was because they considered the SC to be 'unclean and polluting'. A feature of our results is that it offers econometric corroboration, based on a large sample size, of such grassroots findings.

5. The Decomposition of Inter-Caste Differences in per capita Household Monthly Consumption Expenditure (MCE)

The preceding section showed that the attributes which resulted in a higher level of MCE by households were not uniformly rewarded across the different caste groups. So, for example, a high

level of education of adults in a household would result in a higher MCE for *all* households but, compared to HCH households, this effect would be smaller for HOBC and SC households.[11] Or, in other words, the returns to education, in terms of higher MCE, were significantly greater for HCH households compared to HOBC and SC households. So, one reason for inter-caste disparities in MCE is differences in *rates of return on assets*: education, land, non-land productive assets, and region of residence. However, another reason for such inter-caste disparities might be that there are systematic differences in *asset endowments* between households in the different caste groups (as evidenced in Table 1) so that, for example, compared to HCH households, a smaller proportion of SC households contain an adult who is a matric (or higher).

These observations require one to distinguish empirically between the contribution of inter-caste differences *in asset rates of return,* and inter-caste differences in *asset ownership,* to the overall difference between households, belonging to the different caste groups, in their MCE. The problem is that households from the HCH, HOBC, and the SC groups differ in terms of both attributes and coefficients. So the first step is to ask what the HCH/SC difference (and the HCH/HOBC difference) would have been if both sets of attributes were evaluated at a *common* coefficient vector. This difference could then be entirely ascribed to a difference in attributes since coefficient differences would have been neutralised. Call this the *difference due to asset ownership* or the *explained difference*. Then the *observed* difference less the *explained difference* (due to asset ownership) is the *residual* or *unexplained* difference.[12]

Decomposition Results: Aggregate

Table 6 show the results from decomposing the difference in MCE between HCH rural households and SC rural households.[13] The table shows two decompositions: the first decomposition relates to evaluating what the difference *would have been* if SC assets had received HCH rates of return; the second decomposition relates to evaluating what the difference would have been if HCH assets had received SC rates of return.

Table 6: The Decomposition of the Difference in Mean Per Capita Consumption Expenditure between HCH and SC households

	Value	Standard Error	z value	P>z
HCH: Mean household per capita expenditure	1020.17	17.86	57.10	0
SC: Mean household per capita expenditure	644.94	7.85	82.12	0
Difference between HCH and SC households	375.23	19.52	19.23	0
Decomposition of the Difference between HCH and SC Households using HCH coefficient vector				
Explained	141.83	19.30	7.35	0
Unexplained	233.39	26.27	8.88	0
Decomposition of the Difference between HCH and SC Households using SC coefficient vector				
Explained	165.12	38.98	4.24	0
Unexplained	210.11	42.53	4.94	0

Decomposition using 9,561 observations

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[11] Similarly, in the context of physical assets, the returns to ownership/cultivation of land and the ownership of buffalos were significantly greater for HCH households compared to OBC and SC households. In terms of geography, the returns to living in the North and the South of India, in terms of higher MCE, were significantly greater for HCH households compared to OBC and SC households.

[12] See Oaxaca (1973), Blinder (1973), and Jann (2008).

[13] We also carried out an equivalent analysis for HOBC households but in order to economise on space these results are not shown though they may be obtained from the corresponding author.

Table 6 shows that when SC and HCH assets were evaluated using the HCH coefficient (asset returns) vector, of the total difference of Rs.375.23 in MCE between HCH and SC rural households, Rs.141.83 (38%) could be explained by differences in asset endowments between the two groups of households. However, when SC and HCH assets were evaluated using the SC coefficient (asset returns) vector, Rs.165.12 (44%) of the total difference of Rs.375.23 could be explained by differences in asset endowments between the two groups of households. [14]

The results of Table 6 show aggregate results: they quantify the extent to which differences in asset endowments and differences in asset returns between two groups of households *contributed in aggregate* to differences between them in their MCE. However, this begs the question: which of the specific assets (and their returns) made the largest contribution to the aggregate picture? The following subsection answers this question.

Asset Endowment and Returns Breakdown: HCH versus SC households

Table 7 breaks down the aggregate results for the HCH and SC difference (shown in Table 6) into the contributions made by the individual variables. The estimates in Table 7 are obtained by pooling the observations to estimate the common coefficient vector. These show that when the observations were pooled to obtain a common coefficient vector, of the overall difference of Rs.375.23 in MCE between HCH and SC rural households, Rs.172.80 (46%) could be explained by inter-group differences in asset endowments while the remainder of Rs.198.41 (54%) was the "unexplained" part caused by differences in asset returns.

Of the aggregate asset endowment effect of Rs.172.80, Rs.99.56 (58%) was caused by differences between HCH and SC groups in the proportion of their respective households in which the highest level of education of an adult was Matric or higher. Differences in the proportion of households with a literate in the household contributed Rs.15.44 (9%). Consequently, of the aggregate asset endowment effect of Rs.164.26, more than two-thirds (67%) was due to differences in educational endowments between HCH and SC rural households. Another 13% was contributed by differences in the endowment of land (Rs.22.61); tubewells (Rs.6.46), diesel pumps (Rs.3.58), and tractors (Rs.12.39) collectively contributed 13%. Lastly, differences between HCH and SC rural households in their region of residence contributed Rs.16.38 (9%).[15]

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[14] The remaining difference of, respectively, 61% and 54% was the "unexplained difference", which is the term *V* in equation (3.8).

[15] North: ₹17.69; South: ₹-4.18; West: ₹-7.60; and Central: ₹10.47.

Table 7: Individual Contributions to the Decomposition of the Difference in Mean Per Capita Consumption Expenditure between HCH and SC Households, Pooled Estimates

	Value	Standard Error	z value	P>z
HCH: Mean household per capita expenditure	1020.17	17.84	57.20	0
SC: Mean household per capita expenditure	644.94	7.84	82.22	0
Difference between HCH and SC households	375.23	19.48	19.26	0
Explained Difference				
Literate in household	15.44	3.37	4.58	0.00
Highest education level of adult in household is ≥ Matric	99.56	7.63	13.04	0.00
Household owns land	22.61	6.41	3.53	0.00
Household owns tubewell	6.46	8.22	0.79	0.43
Household owns electric pump	-0.93	4.76	-0.20	0.85
Household owns diesel pump	3.58	2.15	1.66	0.10
Household owns tractor	12.39	5.24	2.37	0.02
Household owns thresher	-0.44	1.61	-0.27	0.78
Household owns cows	-0.62	1.00	-0.62	0.53
Household owns buffalo	-1.62	1.04	-1.55	0.12
Household lives in north	17.69	2.99	5.92	0.00
Household lives in south	-4.18	2.43	-1.72	0.09
Household lives in west	-7.60	3.88	-1.96	0.05
Household lives in central	10.47	1.94	5.39	0.00
Total	172.80	10.91	15.83	0.00

5. Inter-Household Inequality in Monthly (per capita) Consumption Expenditure (MCE)

The previous two sections examined the determinants of MCE in terms asset ownership and asset returns. A related issue is how asset ownership and asset returns coalesce to produce inequality between households in terms of their consumption expenditure. What are the determinants of inter-household inequality? Does it depend upon their social identity? On where they live? On their level of education? And if it does depend, at least in part, on these items, how much do these contribute to overall inequality? These questions are answered in this section using the tool of inequality decomposition.

A summary measure of inequality is provided by the Kuznet's (1955) ratio which measures the ratio of income (or consumption) share accruing to the richest 20%, to the share accruing to the poorest 20%, of households. The mean MCE of the richest and poorest 20% of the total of 26,981 *rural* households analysed were, respectively, Rs.1,795 and Rs.265, yielding a Kuznet's ratio of 6.8. For urban India, the mean MCE of the richest and poorest 20% of the total of 14,510 *urban* households analysed were, respectively, Rs.2,995 and Rs.427, yielding a Kuznet's ratio of 7.0.

The computation of the Kuznet's ratio, with its focus on households in the top and bottom quintiles leads us to examine the proportionate presence of the three caste groups in the bottom (poorest) and the top (richest) quintiles of household MCE. HCH households comprise 18.6% of the total number of rural households (5,018 out of 26,981 households) but they comprise only 7.2% of households in the lowest quintile of rural MCE (390 out of 5,427) and 31% of households in the highest quintile of rural MCE (1,673 out of 5,394). At the other end of the scale, ST households comprise 10.9% of the total number of rural households (2,936 out of 26,981 households) but they comprise 24.2% of households in the lowest quintile of rural MCE (1,313 out of 5,427) and only 4.6% of households in the highest quintile of rural MCE (246 out of 5,394).

A similar story can be told with respect to urban households: HCH households comprise 31% of the total number of urban households (4,498 out of 14,510 households) but they comprise only 12.7% of households in the lowest quintile of urban MCE (369 out of 2,910) and over half of all households in the highest quintile of rural MCE (1,456 out of 2,902).   At the other end of the scale, SC households comprise 16% of the total number of urban households (2,320 out of 14,510 households) but they comprise 24.4% of households in the lowest quintile of urban MCE (710 out of 2,910) and only 8% of households in the highest quintile of urban MCE (233 out of 2,902).

Even in the lowest quintile of MCE, HCH households had a higher mean MCE than SC, ST, or MOBC households: for rural areas, Rs.285 for HCH households versus Rs.273 for SC households, Rs.238 for ST households, and Rs.268 for MOBC households; for urban areas, Rs.446 for HCH households versus Rs.418 for SC households, Rs.406 for ST households, and Rs.414 for MOBC households. Equally, in the highest quintile of MCE, HCH households had a higher mean MCE than SC, ST, or MOBC households: for rural areas, Rs.1,896 for HCH households versus Rs.1,650 for SC households, Rs.1,630 for ST households, and Rs.1,686 for MOBC households; for urban areas, Rs.3,103 for HCH households versus Rs.2,829 for SC households, Rs.2,684 for ST households, and Rs.2,631 for MOBC households.

The Decomposition of Inequality

When one observes a certain level of inequality between households (for the present discussion, in their MCE) we would like to know what 'explains' it. Is it due to the fact that households are segmented into social groups? In that case we would expect that some of the observed inequality can be explained by differences *between* social groups because households from some groups have, on average, a lower MCE compared to households from other groups. But not all of inequality can be explained by differences between groups – some of the observed overall inequality will be due to to the fact that there is inequality *within* household groups: for example, not all households *within* a particular group have the same MCE. Of course, one need not subdivide households by caste – one could, equally well, have subdivided them by region (North, South, East, West, and Central) or by education (literate or illiterate). Whenever, and however, one subdivides households there are two sources of inequality: *between-group* and *within-group*. The method of inequality decomposition attempts to separate (or decompose) overall inequality into its constituent parts: between-group and within-group. When the decomposition is *additive*, overall inequality can be written as the *sum* of within group and between group inequality:

$$\underset{\text{overall ineqality}}{I} = \underset{\text{within group inequality}}{A} + \underset{\text{between group inequality}}{B}$$

When inequality is additively decomposed then one can say that the basis on which the households were subdivided (say, caste/religion) contributed [(B/I)×100]% to overall inequality, the remaining inequality, [(A/I)×100]%, being due to inequality *within* the caste/religion groups. If one subdivided the households by *caste/religion* and *region*, so that one had 35 categories, then by additively decomposing inequality, as above, one could say that caste/religion *and* region collectively accounted for [(B/I)×100]% of overall inequality, the remaining inequality being due to inequality within the 35 categories.[16] So, Inequality decomposition provides a way of analysing the extent to which inter-household inequality is 'explained' by a constellation of factors. For example, it allows one to answer how much of the observed inequality in household MCE can be accounted for by

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[16] Seven social (caste/religion) groups × five regions.

differences - either singly or collectively - in caste, education, and region. Suffice it to say here that in order to decompose inequality *additively*, inequality has to be measured in a very specific way.[17]

Table 8 shows the results from decomposing households' MCE by subdividing the sample of *rural* and *urban* households along one of the following lines:

a) Caste/religion: HCH, HOBC, SC, St, MOBC, HCH, and OTG
b) Region: Central, North, South, West, and East
c) Highest education of adult in household: Matric (or higher) or non-Matric

Table 8: Percentage Within- and Between-Group Contributions to Inequality in per-capita Household MCE

	MLD value *(Gini Value)*	Within Group Contribution	Between Group Contribution
Rural Households			
Decomposition by↓			
Caste/Religion: 26,981 households	0.251 *(0.388)*	89%	11%
Region: 25,534 households	0.248 *(0.386)*	90%	10%
High education level of adult in household: 23,880 households	0.252 *(0.390)*	88%	12%
All three combined: 22,728 households	0.252 *(0.389)*	75%	25%
Urban Households			
Caste/Religion: 14,510 households	0.256 *(0.393)*	89%	11%
Region: 13,578 households	0.261 *(0.397)*	97%	3%
High education level of adult in household: 12,338 households	0.268 *(0.402)*	75%	25%
All three combined: 11,582 households	0.271 *(0.404)*	69%	31%

The first point that emerges from Table 8 is that the level of inequality was slightly, but consistently, higher for urban, compared to rural, households. The second point is that social division in the form of caste/religion played the same role in explaining urban and rural, inequality in household MCE: 11% of total inequality in both rural and urban areas could be explained by social division. The third point is that the region of residence played a relatively major role in explaining rural, compared to urban, disparities in household MCE: 10% compared to 3%. The fourth point is that a high level of education played a major role in explaining urban, compared to rural, inequality in household MCE: 25% compared to 12%. The fifth, and final point, was that when all three factors – caste, region, education – were considered collectively, they together explained 25% of rural, and 31% of urban, inequality between households in their MCE.

6. Caste/Religion and Poverty

The previous section was concerned with inequality – the gap between households. But, as we have argued in section 2, another item of interest is poverty – the shortfall that households experience in terms of an adequate bundle of consumption. This section moves from an analysis of inequality to an examination of poverty.

In two seminal papers, Basu (2001, 2006) proposes a *quintile axiom*, according to which "we should focus attention on the per-capita income of the poorest 20% of the population ('quintile

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[17] This involves using an inequality index from the family of *Generalised Entropy Indices*.

income') and the growth rate of the per-capita income of the poorest 20% ('quintile growth') (Basu, 2001, p. 66). Using this axiom, we define a rural/urban household as being 'poor' if its MCE places it in the bottom 20% of the distribution of MCE across rural/urban households. So, according to this definition, a rural household in our sample of rural households is 'poor' if its MCE is less than Rs.353 and an urban household is 'poor' if its MCE is less than Rs.568.[18] We define the variable POVR *for rural households only* as taking the value 1for a rural household if its MCE ≤ Rs.353, POVR=0 if a rural households MCE > Rs.353. Similarly, we define the variable POVU *for urban households only* as taking the value 1for an urban household if its MCE ≤ Rs.568, POVU=0 if a urban household's MCE > Rs.568.

Following from this, we estimated logit equations with, respectively, POVR and POVU as dependent variables, to answer two questions: (i) what was the relative strength of the different factors, relating to the households, which exercised a significant influence – either positively or negatively - on their probability of being poor? (ii) After taking these factors into account was there still significant correlation between the households' caste/religious group and their probability of being poor? In other words, in terms of (i), we may discover that illiteracy is a cause of poverty and surmise that the reason we observe a greater proportion of SC, relative to HCH, households that are poor is that, compared to HCH households, a greater proportion of SC households are all-illiterate households. So, the fact that a larger proportion of SC households are poor has nothing to do with caste and everything to do with illiteracy: remove illiteracy and the caste basis for poverty will be eliminated. However, in response to point (ii), if we discover, after comparing two sets of all-illiterate households, one from the SC and the other from HCH, that the probability of being poor is significantly higher for SC households than for HCH households, we can say that, even controlling for illiteracy, caste significantly affects the probability of being poor.

A further point connected to point (i) is the following: given that illiteracy positively affects the likelihood of all households being poor, does it affect this probability more for say, SC households than for say, HCH households? If the answer to this is yes, then that, too, provides a caste basis for being poor: illiteracy is bad in terms of consigning households to poverty but it is worse for SC households than for HCH households. In order to uncover points such as these – in which a variable has differential effect on households, from different groups, in their probabilities of being poor – we estimate the logit equations including, as described in equation (1), interaction terms.

In a rural context, 8% of HCH households, 19% of HOBC households, 23% of SC households, 45% of ST households, 19% of MOBC households, and 17% of HCM households were in the lowest quintile of MCE. in an urban context, 8% of HCH households, 22% of HOBC households, 31% of SC households, 25% of ST households, 41% of MOBC households, and 26% of HCM households were in the lowest quintile of MCE. These figures may be interpreted as the *likelihood of being poor* for rural and urban households in the different social groups.

A natural question to ask from the logit model is how the likelihood of being poor (that is, being in the lowest quintile of MCE) would *change* in response to a change in the value of a 'poverty influencing' variable *ceteris paribus*. These changes to the probabilities (or likelihood) of being poor are termed *marginal probabilities*. The marginal probability associated with a variable refers to the *change* in the outcome probability consequent upon a unit change in the value of the variable, *the*

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[18] In this analysis we exclude households from the 'other' groups (OTG). That is, we focus on HCH, HOBC, SC, ST, MOBC, and HCM households.

values of the other variables remaining unchanged.[19] For discrete variables (as, indeed, are all the variables reported above), the unit change in the value of a variable refers to a move *from a situation in which the variable takes the value unity* to *a situation in which the variable takes the value zero*, the values of the other variables remaining unchanged.[20]

These marginal probabilities are reported in Tables 9 and 10 for, respectively, rural and urban households. These show that – *after controlling for other factors[21]* - caste and religion significantly *increased* the probability of being poor for *rural and urban* HOBC, SC, ST, MOBC, and HCM households, compared to their HCH counterparts, where households from the HCH comprise the *residual* category. In other words, compared to HCH households, households from all other social groups, whether rural or urban, were more likely to be poor, even after equalising for non-caste/religious attributes. For example, for a rural SC household, the probability of being poor was increased by nine percentage points over that for a rural HCH household (Table 9) and, for an urban SC household, the probability of being poor was increased by 13 percentage points over that for an urban HCH household (Table 10). Similarly, for a rural MOBC household, the probability of being poor was increased by 11 percentage points over that for a rural HCH household and, for an urban MOBC household, the probability of being poor was increased by 12 percentage points over that for an urban HCH household.

Furthermore, Tables 9 and 10 show that several poverty reducing factors impacted differently on the different social groups. For example, in the context of a household having an adult educated up to Matric or higher, urban HCH households benefited by significantly more from this achievement than households from the other groups; similarly, rural HCH households benefited by significantly more from this achievement than their SC counterparts. For example, in a rural context, having a Matric in a household served to reduce the probability of being poor by 24 points for HCH households, but by only 16 points for SC households. In an urban context, having a Matric in a household served to reduce the probability of being poor by 35 points for HCH households, but by 25 points for HOBC households, 27 points for SC households, 22 points for ST households, 23 points for MOBC households, and by 29 points for HCM households. [22]

Table 9 also emphasises a point made earlier relating to the reluctance of upper caste Hindus to buy food products from persons from the SC: owning a buffalo reduced the likelihood of being poor by 1.3 points for rural HCH households but by only 0.3 points for rural SC households. A final point that Tables 9 and 10 highlight is that the likelihood of a household being poor falls as the number of adults in it increases. Every additional adult leads to a fall of 4 points in the probability of rural households being poor and to a fall of 5 points in the probability of urban households being poor. However, in an urban context, the additional benefit of another adult, in terms of reducing the probability of being poor, is less for SC and HCM households – by, respectively, 1.2 and 1.7 points – than for HCH households.

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[19] More formally, $\Pr(POVR_j = 1) = e^z / (1 + e^z)$ and the marginal probability with respect to variable k is:

$$\frac{\partial \Pr(POVR_j = 1)}{\partial X_{jk}}$$

[20] In the calculations reported here, the values of the other variables were held *at their mean values* in the sample.

[21] These were: mother's education, household income, main source of household income, age, region of residence, rural/urban location.

[22] Table 3.13: 23.5-7.4. Table 3.14: 35.1 – the relevant interaction term coefficient estimate.

Table 9: Marginal Probabilities of Being a Poor Rural Household

	Marginal Probability	Standard Error	Z value	P score: Probability>z
OBC Hindu	0.092	0.017	5.34	0.00
Scheduled Caste	0.093	0.021	4.32	0.00
Scheduled Tribe	0.268	0.020	13.38	0.00
OBC Muslim	0.114	0.022	5.11	0.00
High Caste Muslim	0.104	0.021	4.84	0.00
Literate in Household	-0.024	0.007	-3.40	0.00
ST× Literate in Household	-0.045	0.014	-3.24	0.00
Highest education level of adult in household (medium)	-0.085	0.008	-10.50	0.00
SC× Highest education level of adult in household (medium)	0.052	0.014	3.75	0.00
Highest of adult in household (high)	-0.235	0.011	-21.47	0.00
SC×Highest education level of adult in household (high)	0.074	0.021	3.50	0.00
Household owns land	-0.039	0.019	-2.05	0.04
OBC Hindu× household owns land	0.044	0.021	2.12	0.03
SC× household owns land	0.043	0.021	1.99	0.05
ST× household owns land	0.061	0.023	2.70	0.01
OBC Muslim× household owns land	-0.053	0.032	-1.64	0.10
High Caste Muslim× household owns land	-0.065	0.029	-2.26	0.02
Household owns tubewell	-0.072	0.014	-5.33	0.00
Household owns diesel pump	-0.043	0.015	-2.83	0.01
Household owns electric pump	-0.075	0.014	-5.45	0.00
Household owns bullock cart	-0.014	0.011	-1.30	0.19
Household owns thresher	-0.131	0.035	-3.72	0.00
Household owns tractor	-0.180	0.040	-4.45	0.00
Household owns cow	0.004	0.002	1.97	0.05
Household owns draft animal	-0.010	0.002	-5.99	0.00
Household owns bulffalo	-0.013	0.002	-6.50	0.00
SC× household owns bulffalo	0.010	0.002	4.45	0.00
Number of adults in household	0.043	0.002	17.71	0.00

Table 10: Marginal Probabilities of Being a Poor Urban Household

	Marginal Probability	Standard Error	Z value	P score: Probability>z
OBC Hindu	0.042	0.015	2.83	0.01
Scheduled Caste	0.130	0.020	6.40	0.00
Scheduled Tribe	0.122	0.021	5.82	0.00
OBC Muslim	0.120	0.015	8.07	0.00
High Caste Muslim	0.105	0.023	4.50	0.00
Literate in Household	-0.047	0.010	-4.68	0.00
Highest education level of adult in household (medium)	-0.075	0.011	-7.15	0.00
OBC Hindu× highest education level	0.037	0.016	2.34	0.02

of adult in household (medium)				
Highest education level of adult in household (high)	-0.351	0.016	-21.41	0.00
OBC Hindu×Highest education of adult in household (high)	0.106	0.022	4.91	0.00
SC×Highest education level of adult in household (High)	0.078	0.025	3.07	0.00
ST×Highest education level of adult in household (high)	-0.131	0.056	-2.35	0.02
OBC Muslim×Highest education level of adult in household (high)	0.126	0.030	4.19	0.00
High Caste Muslim×Highest education level of adult in household (high)	0.059	0.034	1.73	0.08
Number of adults in household	0.049	0.003	15.82	0.00
SC×Number of adults in household	-0.012	0.007	-1.85	0.07
High caste Muslims×Number of adults in household	-0.017	0.007	-2.32	0.02

7. The Risk of Poverty Decomposition of Inter-Caste Differences in the Probability of Being Poor

The most usual method of identifying the poor is to establish a cut-off point, Rs.z (also termed the 'poverty line') and to regard a household as poor if its resources (income or consumption) are less than or equal to Rs.z. In the above analysis, we identified a household as being poor if it was placed in the lowest quintile of per-capita monthly consumption expenditure (MCE), the implied poverty line being Rs.353 for rural, and Rs.568 for urban, households. Having identified poor households, the next step is to *measure* poverty by means of an aggregate measure which summarises the amount of poverty in a geographical area (district, region, state, country). The simplest, and most commonly used, measure is the head count ratio (HCR) which is the proportion of households in an area that are "poor". The analysis of the previous section used the HCR to measure poverty

The problem with the HCR is that it does not pay attention to the "depth of poverty" or in other words to the distance between the MCE of poor households and the poverty line: so, two areas may have the same HCR (that is, the same proportion of households that are poor) but the depth of poverty may be much greater in one region than the other. Another aspect of poverty, pointed out by Sen (1976), was 'relative deprivation' as captured by inequality in the MCE of *poor* households: the greater this inequality among the poor, the greater the level of poverty. Consequently, as Sen (1976) pointed out in his seminal paper, a good measure of poverty should embody all three dimensions. It should contain a measure of the number of poor ("what is the proportion of poor households?"); it should include a measure of the depth of poverty ("how poor are the poor?"); and it should encapsulate 'relative deprivation' ("how much inequality is there between the poor"?). A fourth desirable property is that of decomposition: if society can be subdivided into mutually exclusive groups can we express *aggregate* poverty as the sum of the poverty of the groups?

Foster, Greer and Thorbecke (1984) proposed a measure which embodied all four dimensions. This index is referred to here as the FGT index and denoted *FGT(α)*, for a parameter *α≥0*: when *α=0*, *FGT(0)* is the headcount ratio – it measures the proportion of households that are poor; when *α=1*, *FGT(1)* is the aggregate poverty gap; and when when *α=2*, *FGT(2)* incorporates, in addition to the *head count* and the *aggregate poverty gap*, relative deprivation (as measured by inequality among the poor). The property of the FGT index that concerns this paper is that of decomposability. Suppose that a population of *N* households can be subdivided into *K* subgroups (indexed, *k=1…K*) with N_k

households in each subgroup. Then by the decomposability property, the aggregate FGT index can be written as the weighted average of the FGT index for each group.

$$FGT(\alpha) = \sum_{k=}^{K} \left(\frac{N_k}{N} \right) FGT^k(\alpha)$$

Where $FGT(\alpha)$ is the index calculated over all the households, $FGT^k(\alpha)$ is the index calculated over households in group k ($k=1...K$), and α is the parameter of the index.

The *percentage contribution* that group k makes to overall poverty is defined as:

$$\frac{\left[\frac{N_k}{N} \times FGT^k(\alpha) \right]}{FGT(\alpha)} \times 100$$

The *risk of poverty* of group k, denoted ρ_k, is defined as the ratio of the group FGT value to the overall FGT value:

$$\rho_k = \frac{FGT^k(\alpha)}{FGT(\alpha)}$$

$\rho_k > 1$ implies that poverty in group k is greater than poverty in the population; conversely, $\rho_k < 1$ implies that poverty in group k is less than poverty in the population.

Table 11 shows that the largest contribution to rural and urban poverty - regardless of whether poverty was measured by the HCR (α=0), or by the HCR *and* the depth of poverty (α=1), or by the HCR *and* the depth of poverty *and* 'relative deprivation' (α=2) – was made by Hindu households from the HOBC: about one-third to overall poverty was contributed to by this group. The next largest contributor to poverty was SC households: about one-fourth of overall rural and urban poverty was contributed to by this group.   An interesting feature of the results in Table 11 is that the contribution of ST households to overall rural poverty was 24% on the HCR but rose to 32% when, in addition to the HCR, the depth of poverty was taken into account and then to 36% when in addition to the HCR and the depth of poverty, 'relative deprivation was also taken into account.

If one compares the contribution of the different groups to poverty, as measured by the HCR, with their respective shares in the total number of households, then ST households made a disproportionately large contribution to rural poverty (24% versus 11%) and SC, MOBC and HCM households made a disproportionately large contribution to urban poverty (SC: 24% versus 16%; MOBC: 14% versus 4%; HCM: 11% versus 6%). On the other hand, HCH and OTG households made a disproportionately small contribution to rural and to urban poverty: 7% versus 19% for HCH rural and 31% versus 13% for HCH urban.

This disproportionality is reflected in Table 12 which shows that, among rural households, the risk of poverty was highest for ST households (the rural ST poverty rate was 2.2 times the overall rural poverty rate) and that, among urban households, the risk of poverty was highest for MOBC households (the urban MOBC poverty rate was twice the overall urban poverty rate) followed by SC and HCM households.

Table 11: Percentage Contributions by Households in Different Groups to Overall Poverty

	Rural Households				Urban Households			
	α=0	α=1	α=2	Household Share (%)	α=0	α=1	α=2	Household share (%)
High Caste Hindus	7.2	5.5	4.9	19	12.6	11.0	10.8	31
OBC Hindus	33.9	32.5	31.3	35	32.4	30.4	29.5	30
Scheduled Castes	25.5	23.3	21.6	22	24.4	26.0	26.4	16
Scheduled Tribes	24.3	31.5	36.2	11	4.2	4.9	5.4	3
OBC Muslims	3.7	3.5	3.3	4	13.5	14.7	15.0	7
High Caste Muslims	4.7	3.1	2.2	6	11.1	11.8	12.2	8
Other Groups	0.8	0.6	0.5	4	1.9	1.3	0.8	5

Note: when α=0, poverty is measured by FGT(0) which is the HCR; when α=1, the poverty measure, FGT(1), incorporates the HCR and the 'depth of poverty'; when α=2, the poverty measure , FGT(2), incorporates the HCR, the 'depth of poverty', and 'relative deprivation'.

Table 12: Risk of Poverty of the Households in Different Groups

	Rural Households			Urban Households		
	α=0	α=1	α=2	α=0	α=1	α=2
High Caste Hindus	0.39	0.30	0.27	0.41	0.35	0.35
OBC Hindus	0.96	0.92	0.88	1.09	1.02	0.99
Scheduled Castes	1.15	1.05	0.97	1.52	1.63	1.65
Scheduled Tribes	2.23	2.90	3.33	1.24	1.42	1.56
OBC Muslims	0.94	0.89	0.84	2.05	2.23	2.28
High Caste Muslims	0.87	0.57	0.41	1.31	1.40	1.44
Other Groups	0.21	0.17	0.14	0.39	0.26	0.18

See note to Table 11

8. Conclusions

The contribution of this paper was to study the twin issues of inequality and poverty of households in India from the perspective of households' per capita monthly consumption expenditure. After setting out briefly the theoretical relational between inequality and poverty, the *empirical* question that this paper examined was whether there was a 'caste/religion basis' to inequality and poverty in India or whether distributional and deprivation outcomes were "caste/religion blind" so that they were entirely determined by the attributes of the individual households. Our overarching conclusion was that, alas, households' outcomes with respect to their position on the distributional ladder, or with respect to their chances of being poor, were dependent in large measure on their caste or religion. So SC, ST, and Muslim households were more likely to be in the lowest quintile of consumption than high caste Hindu households.

Within this context, the two significant contributions of this paper were, firstly, to use data relating to ownership of (non-land) physical assets - tractors, tubewells, electric and diesel pumps, and draught and dairy livestock – to present a more nuanced explanation of inter-household differences in consumption than hitherto attempted for India and secondly, to allow the effects of consumption-determining factors to vary systematically by the caste of the households. The primary determinants of a household's consumption were its assets where these 'productive' assets took four forms: education, land, and physical assets like tubewells and tractors, and labour assets in the form of adult

members. In this context, caste/religion disadvantage stemmed from two sources: compared to high caste Hindu households, households from other groups (OBC Hindus, SC, ST, OBC Muslims, and high caste Muslims) were not as well endowed with assets but, even when they did have comparable assets, these were rewarded at a lower rate than that obtained by HCH households.

A glaring example of this was education, particularly when the educational level attained was Matric or above. A high level of education boosted a household's consumption but, compared to HCH households, SC and HOBC households obtained much less leverage from a good education in terms of higher consumption. Another example was that of households owning buffalos. The sale of milk from buffalos served to raise household consumption but 'untouchability' issues relating to the purchase and sale of food items meant that buffalos did not earn as much for SC households as they did for HCH households.

As Basu (2001) notes, the debate on the goals of development is inching towards a consensus – moving from an unhealthy preoccupation with growth rates in GDP to a more holistic view couched in terms of 'inclusive growth' or 'comprehensive development'. A major part of any strategy for increasing the 'inclusivity' part of 'inclusive growth' must be to improve the capabilities of persons who populate the lower parts of the income distribution. This involves increasing their endowment of assets, both in terms of human and physical capital, and buttressing these private assets with public goods in the form of good, affordable education, health care, and public utilities. Achieving all this is difficult enough but, in the Indian context, this is made more difficult by the hierarchal and fractured nature of Indian society. This means that many people who are poor suffer a double jeopardy: they are at the bottom of both the income ladder and the social hierarchy. This means that, for many of India's poor, asset acquisition *per se* is not enough to rescue them from poverty. Their way is also blocked by discriminatory attitudes stemming from a feeling of caste and religious superiority. It is these blockages that must also be cleared before India's poor can begin their long march out of poverty.

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