

Consumption and Social Identity: Evidence from India*

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Abstract

We examine spending on consumption items which have signaling value in social interactions across groups with distinctive social identities in India, where social identities are defined by caste and religious affiliations. The classification of such items was done by eliciting responses to a survey in India. We match the results of our survey with nationally representative micro data on household consumption expenditures. We find that disadvantaged caste groups such as Other Backward Castes spend nine percent more on visible consumption than Brahmin and High Caste groups while social groups such as Muslims spend eleven percent less, after controlling for differences in permanent income and demographic composition of households. These differences are significant and robust. Additionally, we find that these differences can be partly explained as a result of the status signaling nature of such consumption items.

JEL Classification: D12, D70, O10

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1 Introduction

Pramod: We were an underdeveloped country. Now we are a developing country. Since the last ten years, status is coming up: car, TV.

Ila: A car, bungalow, a lot of money. If you have a lot of money, then your status is high. Whether you have good children, a good wife, credit in the society, [all that] is secondary.

Pramod: Earlier, money was important, but it was spent on gold and land, not on luxury items.

Ila: Now, one should have a washing machine, a refrigerator, motorcycles, a nice house, decorations.’[18]

Progress made towards achieving the Millenium Development Goal of reducing the number of people living under one and two dollars a day has been largely due to the rise in incomes that has taken place in India and China. Income growth in India has been consistently high since India’s trade liberalization and opening of the economy. With changing income distributions, there may be a race towards consumption to signal status that has important and adverse welfare consequences (by causing negative externalities and leading to inefficient equilibrium outcomes as described in Frank[10] or by its role in poverty traps as described in Moav and Neeman[16]).

There is a long and well established literature within theoretical economics of consumption as a means of status signaling, first described by Veblen[19] and formalized in work by Basu[6], Ireland[14] and Bagwell and Bernheim[2]. A smaller but growing empirical literature tests for status signaling consumption; recent papers studying the role of status signaling consumption in a developed country context are Kuhn et al[15] and Ravina[17]. Charles et al[7] study status signaling consumption across racial and ethnic groups in the US. They find that African Americans, with lower incomes on average than whites, spend *more* on visible consumption and that these patterns of consumption spending can be completely described by status signaling.

Consumption to signal status is also undertaken by the poor in developing countries. In the Indian context, Banerjee and Duflo[4] show that median households in Udaipur spend ten percent of their annual budget on festivals and five percent on tobacco and alcohol. This is despite that eighty six percent of the population in this area lives below the poverty line. Bloch et al[5] also provide evidence of status signaling consumption by rural Indian households in Karnataka by examining spending on

wedding expenditures.

Our work draws inspiration from and uses a similar empirical strategy as that in Charles et al[7] to identify visible consumption and to identify differential spending across groups with distinctive social identities in this consumption. Our study is the first to examine visible consumption in India across a wide range of consumption items using nationally representative data. We find large and significant differentials in visible consumption across groups with distinctive social identities. We also test the implications of models that describe such visible consumption as a means to signal status, and find that these implications are satisfied. However, we cannot explain all the patterns of consumption spending we observe across groups with status signaling alone, indicating that preferences and norms in visible consumption across groups may also be playing an important role.

By their nature, status signaling consumptions depend on what others believe about an individual's income. The beliefs of individual income in turn depend on the distribution of income of the reference group to which an individual is perceived to belong to. In the Indian context the relevant reference groups are those with distinctive identities defined by caste and religion which are visible in a variety of social interactions. Caste and religious affiliations prescribe customs, rules and norms of behavior, including naming conventions so that such affiliations are visible in all non-anonymous social interactions. Caste and religious affiliations also prescribe group specific rituals and traditions such as wearing of turbans by Sikh men, wearing beards by Muslim men, as well as rules for purity in the caste system which necessitate that low caste status be apparent so that such affiliations are visible in anonymous social interactions as well. We define the relevant reference group for the study of status signaling consumption as others in the district who belong to the same caste and religious group.

The focus of our study is spending on visible consumption items; these are items which are associated with high income and are easily observable in social interactions as a sign of luxury or a signal of wealth. The categorization of such items depends on the social context. We categorize such items in the Indian context by directly carrying out a survey in India. We combine the results of our survey with nationally representative micro data on household consumption in the 2005 Indian Human Development Survey (IHDS) to study differences in conspicuous consumption across groups with distinctive social identities. We find that disadvantaged low caste groups also known as Other Backward Castes (OBC), spend significantly *more* on status signaling consumption than Brahmin and High Caste groups with a higher

social standing in society once we control for permanent income and demographic characteristics of households. At the same time we find that Muslims, a social group very similar to the OBC in income and total expenditure distributions, spend significantly *less* on visible consumption items than Brahmin and High Caste households.

We find that OBC households spend approximately nine percent more on visible consumption than High Caste and Brahmin households with similar permanent income and household demographics. Muslim households spend eleven percent less on visible consumption than High Caste and Brahmin households. Examining specific components of visible consumptions we find that the higher spending of OBC households comes from higher spending on personal transport, social functions, jewelry, personal goods and house rent, while the lower spending of Muslim households comes from their lower spending on footwear, social functions and clothing. We find the same patterns of consumption spending when we restrict the sample to rural households or when we use an alternative measure of visible consumption. The high expenditures on visible consumption by the OBC are diverted from education expenditures while Muslim households divert spending from visible consumption and education towards food expenditures. Part of the gap in visible consumption that we observe across groups with distinctive social identities can be explained as a result of the status signaling nature of this consumption. The OBC spend more on visible consumption to distinguish themselves from others in their reference group (defined as other OBCs in the same district). However, we cannot explain the lower spending on visible consumption by Muslim households compared to other social groups by status signaling models alone, which suggests that differences in preferences and norms across social groups against such spending (or in the enforcement of these norms) may also play an important role. The differences that we observe may also be arising from differences in marriage rules and customs between and across social groups which in turn impact the incentive to visibly consume to attract a better partner.

Our work has policy importance in the debate on how to transform economic growth to include disadvantaged social groups. Increases in income are not necessarily spent on items such as education and health; disproportionately consumption spending may be diverted to signal status. Such diversion may be more important for some groups in society compared to others and may be symptomatic of dynamic inefficiencies in the economy.

The remainder of this paper is organized as follows. Section 2 provides background on social groups

in India. Section 3 describes the data. Section 4 presents the empirical framework. Section 5 presents the result on consumption spending by groups with distinctive social identities in India. Section 6 concludes.

2 Background

A multi-ethnic and multi-cultural society, India has a variety of religions and cultures. The dominant religious group is the Hindu religion (according to the 2001 Census of India approximately 80.5% of the population is Hindu), but there are also large numbers of Muslims (13.5% of the population), Christians (2.3% of the population), Sikhs (1.9% of the population) and other religious groups. Some of these groups are regionally concentrated (for instance Christians in the North East and in the states of Goa and Kerala, Sikhs in the Northern states of Punjab, New Delhi and Haryana). All of these are groups with very distinctive social identities, cultures, customs and norms. Another important and historically disadvantaged group which is outside the Hindu religion and the caste system is the Tribals (now referred as Adivasis or Scheduled Tribes).

Within the Hindus, there are important distinctions across caste. The caste system is a system of social stratification in which classes are defined by endogamous hereditary groups, often termed jatis or castes. The caste system is believed to be as old as 3000 years. The word caste derives from the Portuguese ‘casta’, meaning breed, race, or kind. Among the Indian terms that are sometimes translated as caste are varna, jati, jat, biradri, and samaj. All of these terms refer to ranked groups of various sizes and breadth. Varna, or color, actually refers to large divisions that include various castes; the other terms include castes and subdivisions of castes sometimes called sub-castes.

The caste system consists of the following broad divisions (or varnas): Brahmins (Priests), Kshatriyas (Warriors), Vaisyas (Merchant), Sudras (Servants), and Untouchables (outcasts, lowest menial jobs, now referred as Dalits or Scheduled Castes). In independent India, Other Backward Classes is added as a new category (OBC). The OBC category consists of castes that are just above the Dalits and largely belong to the upper sections of Shudra category, with a few lower ranking Kshatriyas jatis being included. Each of the five caste groups are distinguished based on their own customs and rules which define an

individual's status, behavior, rituals, occupation, food, and marriage among other characteristics.¹

There exists some correlation between ritual rank on the caste hierarchy and economic prosperity. Members of higher-ranking castes tend, on the whole, to be more prosperous than members of lower-ranking castes. Many low-caste people live in conditions of great poverty and social disadvantage.² In independent India, affirmative action policies have been geared towards the Dalits, Adivasis and OBC.

3 Data

3.1 India Human Development Survey

We use consumption data from the 2005 India Human Development Survey (IHDS), a nationally representative household data set collected by the National Council of Applied Economic Research in New Delhi and the University of Maryland (Desai, Reeve and NCAER 2009).³

The advantage of using this survey is that it includes many questions that are not asked in the larger and more commonly used Indian household survey, the National Sample Survey (NSS). In particular, detailed questions on income and on social group status are asked in the IHDS, which the NSS does not include. This survey is the first, to our knowledge, which includes detailed information on incomes and on caste and religious groups after the 1931 census. Our analysis exploits the information on social groups contained in this dataset, together with information on each household's consumption expenditures and incomes.

There are forty seven consumption categories in the IHDS, which are based on the short form questions in the NSS. Thirty of the consumption categories, which are frequently purchased items, use a thirty day time frame while the other seventeen use a three hundred and sixty five day time frame. We convert all expenditures to the annual time frame before estimation. The income measure that we use in our estimations is constructed as the sum total (for each household) of wages and salaries, non-farm business income, net agricultural income, remittances, property and other income and public benefits.

¹Brahmins, Kshatriya, and Vaishya are considered higher in status than Shudras because adolescent males from these varnas undergo a thread ceremony making them 'twice born', a privilege not available to Shudras. Brahmins are conceptualized as being at the top of the stratification system, superseding the the Kshatriyas in spite of the latter's worldly power and wealth as the ruling caste.

²see Desai 2008 for detailed discussion on caste in 21st century India.

³The survey covered all the states and union territories of India except Andaman and Nicobar and Lakshadweep, two union territories which together account for less than 0.05% of India's population.

Each of these incomes are in turn constructed from more than fifty different sources of income queried in the IHDS.

Our estimation sample consists of 36,664 households: these are households in the IHDS where we have individual level information for household heads and for which household head is between 18 and 65 years of age. Our estimation sample has 2,009 Brahmin households, 6,134 high caste households, 12,408 OBC households, 7,613 Dalit households, 3,207 Adivasi households, 4,231 Muslim households, 563 Sikh and Jain households and 606 Christian households.

There are some differences in demographic composition of households by social group, as given in table 1. While the average age of the household head varies between 43 and 47 years, Dalit and Adivasi household heads are the youngest while Sikh/Jain and Christian household heads are the eldest, on average. Approximately 88% of households of all social groups have married household heads. Also, 91% of households of all social groups have male household heads, this fraction being the highest for Sikh/Jain households and lowest for Christian households. There is also some demographic variation in household size across the different social groups; while the average family size is 5.2, Muslim households have an average which is the highest at 5.8 and Christian households have an average which is the lowest, at just 4.3. There is less variation in number of adults in the households, the average number of adults across all social groups is 2.7, with the highest average number of adults for Sikh/Jain households.

The variation in education across the different social groups is quite striking: Brahmin households do particularly well, with higher education for household heads and greater proportion of households with college graduates than any other group (41% in comparison to the next highest which is 28%); Dalit and Adivasi households do particularly badly with the lowest education for household heads and lowest proportion of college graduates. OBC and Muslim households also do relatively badly; the household heads have less education and there are smaller proportions of college graduates. High caste households as well as Sikh/Jain and Christian households do relatively better with more education attained by household heads and higher proportions of college graduates.

Overall household income and consumption across social groups in our sample is in line with estimates from other sources: we find household income and consumption to be the highest for Brahmin, High Caste, Sikh/Jain and Christian households, lower but similar for OBC and Muslim households and lowest for Dalit and Adivasi households. In our estimation sample we also drop all households which either

report household income of more than 500,000 Rupees per year (133 households) or total household expenditure of more than 500,000 Rupees per year (42 households). Figures 1 and 2 give kernel density plots of income and consumption, for all households and selected social groups (the Brahmin and High Caste group, OBC and Muslims) in the estimation sample. Again, while Brahmin and High Caste groups have higher household income and consumption, the OBC and Muslim households have very similar distributions of household income and consumption.

The mean annual household income for all households in the sample is Rs. 51,200. There is a large variation in mean income across social groups, with Brahmin households having a mean income of Rs. 81,700 and Dalit households having a mean income of Rs. 38,900. The highest mean incomes are those of Brahmin households and of Sikh/Jain households. Next are mean incomes of Christian and High Caste households. OBC and Muslim households have similar mean incomes and the lowest mean incomes are those for Dalit and Adivasi households. The mean household expenditures also show similar variation across the different social groups. For OBC, Dalit and Muslim households, the mean of total expenditure exceeds the mean of total household incomes. Indeed, the different households also have a substantial outstanding debt, with this debt being particularly large (as a proportion of income) for OBC households. The proportion of households that are below the poverty line is approximately 20 percent for the overall sample and highest at 41 percent for Adivasi households. It is also high for Dalit and Muslim households at 25 and 26 percent.

Among the different consumption categories, a little more more than half of the total expenditures are spent on food. OBC households (unconditionally) spend approximately the overall average on the different consumption categories, while Muslim households spend less than the overall average on visible and other consumption and more on food than the overall average.

As a robustness check to our findings on differential spending on different consumption items, we also restrict the overall sample to include only households in rural areas; upon making this restriction we are left with approximately two thirds of the original sample, with 23,280 households.

3.2 Categorizing Consumption

We are interested in items which people are quick to observe and which they associate with high income, so that such items confer status on those who consume them ('conspicuous consumption'). The

classification of such items depends on the cultures, customs and norms of the society in which such items are consumed. Recent studies have classified items on visibility using survey instruments, by directly asking survey respondents whether the consumption of such items is observed and whether such items are associated with higher income (Charles et al[7] and Heffetz[12]). However, these surveys have been implemented in the US, where the cultures, customs and norms of the society are very different from the Indian context in which we are interested. To categorize expenditures as conspicuous, we implement a survey instrument in India which is similar as those which have been carried out in the US; the actual wording of the questions that we use is the same as used in Charles et al[7].

Our survey instrument was implemented as an anonymous online survey; we solicited participation from 411 Masters students at the Delhi School of Economics (Department of Economics) of which 163 Masters students took the survey. The respondents were asked basic demographic information (as summarized in appendix table A.1). They were then asked to rate lists of consumption items on visibility and association with income.

The wording of the question to identify visibility was: ‘In this question we are trying to determine how easy it is to observe the amount that someone spends on each of the following consumption items. Consider a person who lives in a household and community similar to yours. Imagine that their household is not different from other similar households except that they like to, and do, consistently spend more than average on the following item. How closely would you have to interact with them in order to observe the consistently above average spending on each of the following consumption items?’ to which the respondent could choose ‘1: No Interaction’, ‘2: Occasional Interaction’, ‘3: Friend’, ‘4: Close Friend’ or ‘5: No matter how much one Interacts’.

The wording of the question to identify association with income was: ‘In this question we are trying to determine one’s perception about the relationship between income and consumption for each of the following consumption items. Consider a randomly chosen person in society. Imagine that this person’s lifetime income suddenly increased by 20 percent. For each item below, tell us how you would expect the person’s spending to change’ to which the respondent could choose ‘1: Fall’, ‘2: Stay the same’, ‘3: Increase by less than 20 percent’, ‘4: Increase by 20 percent’ or ‘5: Increase by more than 20 percent’.

The list of items we used was chosen to approximate the consumption categories in the IHDS.

We categorize an item as visible if more than 20% of the respondents say they can observe consump-

tion of the item even if they have no interaction or only occasional interaction with the person consuming the item (responses 1 or 2 to the visibility question). We categorize an item as being associated with higher income if more than 20% of the respondents say the consumption of the item would increase the same or more than an increase in income if income were to rise (responses 3 or 4 to the income question). Conspicuous consumption items are then those items which are both visible and additionally associated with higher income. All such items are given in table A.2: personal transport equipment, footwear, vacations, furniture and fixtures, social functions, repair and maintenance, house rent and rent, entertainment, clothing and bedding, jewelry and ornaments, recreation goods and personal goods. All these goods are also ones that one would intuitively categorize as ‘conspicuous consumption’ and indeed there is also a great deal of correspondence to our categorization and categorizations which use similar surveys in the US. We find particularly high proportions of respondents who categorize personal transport equipment and footwear as visible while vacations, entertainment and jewelry are categorized as being associated with high incomes by around half the respondents. Very few respondents associate consumption on food at home items such as salt and spices with high income or categorize consumption on insurance premiums as visible.

Since our use of a 20 percent cutoff to categorize these expenditures may be considered subjective, we also construct an alternative measure of conspicuous consumption in which we add the proportions of respondents who categorize an item as visible and the proportion of respondents who categorize an item as being associated with high income. We then create weights using this sum for all items and construct our alternative measure which is the weighted sum of all consumption items, where the weights indicate the ‘conspicuousness’ of the item. We also carry out all subsequent estimations using this weighted measure, and we find our results to be robust to the alternative categorization and measure of conspicuous consumption (the results using our alternative measure are reported in the Appendix B and described in section 5 of the paper).

4 Empirical Framework

We categorized consumption items as visible consumption with signaling value in social interactions, as described in section 3.2. We are ultimately interested in whether different social groups (defined by

caste and religion) spend differentially on visible consumption; we investigate this by running simple OLS regressions on the log of spending on visible consumption items in Rupees at the household level.

The possible variables that may have an impact on visible consumption across social groups are permanent income and household demographics. While the latter is easy to control for using data from the IHDS, the former is less simple.

We begin by estimating the following baseline OLS regression:

$$\ln Visible_i = \alpha + \beta_1 OBC_i + \beta_2 Dalit_i + \beta_3 Adivasi_i + \beta_4 Muslim_i + \beta_5 SikhJain_i + \beta_6 Christian_i + \varepsilon_i \quad (1)$$

where i is the household. The β coefficients on the social group dummy variables in equation (1) give us the gap in social group spending on visible consumption relative to Brahmin and Other High Caste groups. While the coefficients in (1) are important, we also want to examine how these gaps change when we control for differences in permanent income and household demographics across the different social groups.

We begin by including controls for current income in our baseline specification as given in (1):

$$\ln Visible_i = \alpha + \beta_1 OBC_i + \beta_2 Dalit_i + \beta_3 Adivasi_i + \beta_4 Muslim_i + \beta_5 SikhJain_i + \beta_6 Christian_i + \varphi \ln I_i + \varepsilon_i \quad (2)$$

where I_i is a vector of the log of current income, the square of current income, the cube of current income, an indicator variable for agricultural sector participation (whether the household owned or cultivated land), an indicator variable for non-agricultural business income (whether the household earned any income from first, second or third non-agricultural business), a set of education dummies and a measure of subjective well being (whether the household's conditions were worse, same or better than they were ten years ago).

Unfortunately the specification in (2) does not allow us to control directly for differences in permanent income across social groups, given the permanent income hypothesis. Since total expenditures can be

used as a proxy for permanent income instead, we next estimate the following specification:

$$\ln Visible_i = \alpha + \beta_1 OBC_i + \beta_2 Dalit_i + \beta_3 Adivasi_i + \beta_4 Muslim_i + \beta_5 SikhJain_i + \beta_6 Christian_i + \omega \ln TotExp_i + \varepsilon_i \quad (3)$$

where $TotExp_i$ is the total expenditure by household i .

The concern with using total expenditure as a proxy for permanent income is that if households make decisions on different consumptions jointly then total expenditure is potentially endogenous with expenditure on visible consumption as given in (3). Therefore we estimate a specification which instruments for total expenditure, as given by:

$$\ln Visible_i = \alpha + \beta_1 OBC_i + \beta_2 Dalit_i + \beta_3 Adivasi_i + \beta_4 Muslim_i + \beta_5 SikhJain_i + \beta_6 Christian_i + \theta \ln \widehat{TotExp}_i + \varepsilon_i \quad (4)$$

where $TotExp$ is instrumented by the vector of income controls, I (as described in previous paragraphs).

In our final specification, we include demographic controls as well as controls for permanent income by estimating:

$$\ln Visible_i = \alpha + \beta_1 OBC_i + \beta_2 Dalit_i + \beta_3 Adivasi_i + \beta_4 Muslim_i + \beta_5 SikhJain_i + \beta_6 Christian_i + \theta \ln \widehat{TotExp}_i + \gamma X_i + \varepsilon_i \quad (5)$$

where \widehat{TotExp} is instrumented by I ; X includes controls for household assets, gender and age of household head, household size and a dummy variable for whether the household is located in an urban area. The β coefficients in our final specification (5) give the gaps in social group spending in visible con-

sumption relative to Brahmin and Other High Caste groups, once we have controlled for differences in demographic characteristics and permanent income across social groups.

5 Consumption Differentials

5.1 Main Results

Table 2 gives the estimation results of the regressions we specified in the previous section. We find from the baseline specification and without permanent income and demographic controls that relative to Brahmin and High Caste households, the OBC, Dalit, Adivasi and Muslim households all spend significantly less on visible consumption than Brahmin and High Castes. Sikh and Jain households spend significantly more on visible consumption goods relative to Brahmin and High Caste households while Christians do not spend significantly differently.

In the next specification we add controls for log of current income, the square of current income, the cube of current income, non-agricultural business income, agriculture land possessed or cultivated, a set of education dummies and a measure of subjective well-being. All the gaps in visible spending relative to Brahmin and High Caste groups are reduced from the baseline specification but not eliminated. We find (as in the baseline specification) that the OBC, Dalit, Adivasi and Muslim households all spend significantly less on visible consumption than Brahmin and High Caste households. Sikh and Jain households spend significantly more on visible consumption goods relative to Brahmin and High Caste households while Christians do not spend significantly differently.

If we directly control for total expenditures in our baseline specification, we also find that the gap in spending on visible consumption is reduced for all social groups. For OBC households there is no longer lower spending on visible consumption items relative to Brahmin and High Caste households, but this gap is not significantly different from zero. For Sikh/Jain households relative to Brahmin and High Caste households, the gap in visible spending is now negative and significant at the 5% level.

If we control for permanent income in our baseline specification we find that OBC households spend significantly more than Brahmin and High Caste households on visible consumption items. Dalit, Muslim and Sikh/Jain households spend significantly less on visible consumption items than do Brahmin and High Caste households, while Adivasi and Christian households do not spend significantly differently.

When we control for demographic variables (gender and age of household head, household size and a dummy variable for whether the household is located in an urban area) and household assets in addition to permanent income we find that OBC households spend significantly more on visible consumption items than Brahmin and High Caste households but that Muslim and Sikh/Jain households spend significantly less.

Our finding that OBC and Muslim households in particular exhibit such differences in spending behavior is interesting given that these groups are similar along many dimensions (for instance, recall the similarity in household income and consumption distributions for these two groups as given in figures 1 and 2). The differences in spending on visible consumption between these groups can also be seen in figure 3 which plots the kernel density of the log of visible spending for all households, for Brahmin and High Caste households, for OBC households and for Muslim households. While the unconditional spending on visible consumption is highest for Brahmin and High Caste households, note that OBC households have higher visible consumption spending than Muslim households. The difference in spending across the two groups can also be seen in figure 4 which plots the Engel curves for all households, for Brahmin and High Caste households, for OBC households and for Muslim households. Engel curves are constructed by estimation of locally weighted regressions of log of visible spending on log of total expenditures, where the log of total expenditures is instrumented by the vector I (as described in section 4). From figure 4, OBC households spend more on visible items at all levels of expenditures than Muslim households.

If OBC households spend more on visible consumption items and Muslim households spend less on visible consumption items, then how does their spending differ on other expenditure categories? We also examine expenditures on education, health and food items across these social groups by constructing Engel curves given in figures 5, 6 and 7. We find that Brahmin and High Caste households spend more on education at every level of expenditure than OBC households but that Muslim households spend less than OBC households on education. However, we also find that Muslim households spend more than OBC households on health and food expenditures, particularly at higher expenditure levels. This suggests that OBC households may be spending more on visible consumption by diverting spending from education while Muslim households spend more on health and food by diverting spending from education spending as well as visible consumption.

We also carry out two different robustness checks. First we restrict our sample to rural areas only, the

results reported in table B.1. While the coefficients on our social group dummies are somewhat smaller than for the overall sample we find that the sign and significance of the coefficients is remarkably robust: we continue to find that OBC households spend significantly more and Muslim households significantly less on visible consumption than the Brahmin and High Caste groups. Second we use a weighted measure of visible spending where weights are assigned to all consumption goods and these weights indicate the ‘conspicuousness’ of the item, the results reported in table B.2 (weights are constructed as described in section 3.2). We again find that the sign and significance of our coefficients is robust to our alternative categorization of visible spending: we continue to find that OBC households spend significantly more and Muslim households significantly less than the Brahmin and High Caste groups.

In table 3 we also report the social group gaps in visible spending on each of the specific categories that are used to construct the overall measure of visible spending, after including controls for permanent income and demographic composition of households. We find that OBC households spend significantly more than Brahmin and High Caste households in expenditures on personal transport, social functions, jewelry, recreation goods, personal goods and house rent. We also find Muslim households spend significantly less on social functions and on clothing. Both OBC and Muslim households spend significantly less on footwear than Brahmin and High Caste households, while Sikh/Jain households spend significantly more. Dalit and Adivasi households also spend significantly more on personal transport and personal goods than do Brahmin and High Caste households. Adivasi households spend significantly more on social functions and less on clothing than do Brahmin and High Caste households after controlling for differences in permanent income and demographic composition of households.

Our finding regarding social functions (such as wedding celebrations) is interesting and important; we find that OBC households spend significantly more than Brahmin and High Caste households and that Muslims spend significantly less than Brahmin and High Caste households on social functions. Some of our results may also be driven by younger people in the household who wish to signal status in the marriage market; differences in marriage rules and customs between and across social groups may also explain some of our results.

We next turn to the underlying mechanisms behind the gaps that we observe.

5.2 Underlying Mechanisms

We find that OBC households spend more on visible consumption than Brahmin and High Caste households after we control for permanent income and demographic composition of the household, and that this result is robust to restricting our sample to rural households or to using an alternative measure of visible consumption. We also find that Muslims, who are otherwise similar to OBC households, spend less on visible consumption than Brahmin and High Caste households, after controlling for permanent income and demographic composition of households. Can these consumption spending patterns be explained as a means of status signaling?

Among the variables available to us, which we construct at the district level, is the mean and dispersion in incomes of households belonging to groups with distinctive social identities in the district. Using these constructed variables allows us to test implications of status signaling models such as in Glazer and Konrad[11].⁴

Status signaling consumption is derived from the utility that individuals gain from status, which depends on the beliefs of others regarding their income and wealth. Others cannot observe income and wealth directly but they can easily observe conspicuous consumption. Spending by households on conspicuous consumption then depends on the distribution of income of the reference group to which a household is perceived to belong to. We assume in our empirical analysis that the social group (defined by caste and religion) in ones own district is the relevant reference group. Thus, an OBC or a Muslim household's spending on conspicuous consumption will depend on the income distribution of other OBC or Muslim households in the same district.

We use groups with distinctive identities defined by caste and religious affiliations as the relevant reference group because such affiliations are visible in a variety of social interactions in India. Caste and religious affiliations prescribe customs, rules and norms of behavior. Caste and religious affiliations prescribe naming conventions so that such affiliations are visible in all non-anonymous social interactions. Caste and religious affiliations also prescribe group specific rituals and traditions such as wearing of turbans by Sikh men, wearing beards by Muslim men, as well as rules for purity in the caste system which necessitate that low caste status be apparent so that such affiliations are visible in anonymous

⁴Glazer and Konrad[11] examine status signaling by making charitable contributions, in this context we examine status signaling by spending on conspicuous consumption items.

social interactions as well.

There are several implications of status signaling consumption that we can empirically test using our data. One implication of such models is that if poorer people are added to the reference group then people spend more to signal status to distinguish themselves from others in this reference group. This suggests we should observe spending on visible consumption items which are associated with higher income to be declining in reference group income. As we show, we are able to verify this implication using our data.

Another implication of status signaling models is that the effect of an increase in the dispersion of reference group income is theoretically ambiguous. For instance, if income is transferred to a richer person then the conspicuous consumption of the rich person increases and that of the person from whom income is taken away falls but the relative magnitudes of the two depend on the curvature of the relationship between conspicuous consumption and incomes, which may either be concave or convex.

In order to test these implications, we construct the mean and dispersion in income of households from the same reference group in the district MI_{sd} and DI_{sd} where s is the social identity of the household and d is the district in which the household resides. We then estimate the following OLS regressions:

$$\ln Visible_i = \alpha + \beta_1 OBC_i + \beta_2 Dalit_i + \beta_3 Adivasi_i + \beta_4 Muslim_i + \beta_5 SikhJain_i + \beta_6 Christian_i + \theta \ln \widehat{TotExp}_i + \gamma X_i + \eta \ln MI_{sd} + \chi DI_{sd} + \varepsilon_i \quad (6)$$

We find the implications of the status signaling models are satisfied using the IHDS data. The results are reported in table 4. We find the coefficient on mean income of own reference group to be negative and significant, as implied by status signaling models. This is the case when we only include mean income of own reference group and when we include dispersion in this income as well as mean income of own reference group.

We also estimate whether another prediction of status signaling models, that visible spending should be declining in reference group income within each group with a distinctive social identity, by running a set of regressions reported in table 5. We find that we satisfy this prediction for each of the groups except for Sikh/Jains and Christians where there is either a negative insignificant relation between visible

spending and mean income of reference group or a positive insignificant relation. The likely explanation for this is that there are few Sikh/Jain and Christian households in our sample and moreover their geographical dispersion across India is concentrated in just a few regions. When we include dispersion in income of reference group as well as mean income, the negative and significant relation between conspicuous consumption and mean income of reference group persists. The coefficient on dispersion in reference group income is positive and significant for Brahmin and High Caste as well as OBC but insignificant for all other social groups.

We find that controlling for reference group income does not reduce the social group gap in visible spending for all groups, reducing it for OBC and Adivasi but increasing it for Dalit, Muslim, Sikh/Jain and Christian households. We take this as evidence that while there is status signaling associated with spending on visible consumption items, there are also other factors which have a strong impact on social group spending on visible consumption items which we are unable to control for. This is strongly suggestive that preferences and norms may play an important role in spending on visible consumption across groups. For instance, Muslim households spend less on visible consumption items than Brahmin and High Caste households, once we control for permanent income, demographic composition of the household and reference group characteristics. This would be consistent with Muslim households having a norm against conspicuous spending (or differences across social groups in the enforcement of such norms).

6 Conclusion

We study consumption spending on items which have signaling value in social interactions across different social groups in India. We find that there are important differences in such spending across groups, in particular we find that OBC households spend significantly more and Muslim households spend significantly less on visible consumption after we control for differences in demographic composition and permanent income. Part of these differences can be explained as a result of the status signaling nature of these consumptions; we find that the implications of status signaling models hold in our data, in that spending on visible consumption items is declining in the mean income of own reference group within each social group. However, we continue to find gaps in visible spending across social groups

even after we control for reference group characteristics, which indicates the importance of differences in preferences in such spending across groups.

There are important implications of our results for policy: we have shown that status signaling spending may be quite large among groups which are relatively poor and that people are myopic, driven by norms and signaling. Giving cash transfers/cash benefits to these groups might not lead to spending on education and health but also on visible consumption. So, for this context, vouchers may be preferable to cash transfers.

In future work and extensions of this paper we intend to investigate more the underlying mechanisms which result in persistent differences across groups in spending on visible consumption and the impacts of such differences on well-being, wealth and savings.

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TABLE 1
Means of selected variables in the 2005 India Human Development Survey (IHDS), Estimation Sample

	All	Brahmin	High Caste	OBC	Dalit	Adivasi	Muslim	Sikh/Jain	Christian
Age of HH Head	44.4	45.8	45.5	44.6	43.4	43.5	43.4	46.7	46.7
Marital Status of HH Head	0.88	0.89	0.89	0.88	0.88	0.87	0.88	0.89	0.86
% with Male HH Head	0.91	0.92	0.91	0.91	0.91	0.90	0.91	0.93	0.88
Highest Level of Adult Education in HH, of which	7.5	11.4	9.7	7.5	6.0	5.2	6.2	10.5	10.6
% with No Education	0.21	0.04	0.09	0.19	0.30	0.37	0.28	0.07	0.04
% with Primary Education	0.07	0.06	0.06	0.08	0.08	0.08	0.08	0.05	0.03
% with Matric.	0.13	0.16	0.16	0.14	0.10	0.08	0.10	0.22	0.22
% with Secondary	0.09	0.14	0.13	0.09	0.07	0.05	0.07	0.16	0.16
% with Graduate	0.15	0.41	0.25	0.12	0.07	0.07	0.09	0.28	0.27
HH size	5.2	4.9	4.9	5.1	5.2	5.1	5.8	5.1	4.3
Number of adults in HH	2.7	2.8	2.8	2.7	2.6	2.5	2.7	3.1	2.7
Annual HH income	51,200	81,700	71,400	46,000	38,900	36,900	46,700	95,700	68,600
Annual HH consumption, of which	51,900	75,200	66,700	48,700	42,800	32,100	52,100	88,200	67,800
% spent on Education	0.04	0.06	0.05	0.04	0.03	0.03	0.03	0.06	0.05
% spent on Food	0.53	0.46	0.48	0.52	0.55	0.61	0.57	0.45	0.43
% spent on Fuel	0.06	0.06	0.06	0.06	0.05	0.05	0.07	0.10	0.07
% spent on Health	0.08	0.07	0.07	0.09	0.09	0.06	0.08	0.05	0.11
% spent on Paan, Tobacco and Intoxicants	0.02	0.01	0.02	0.02	0.03	0.04	0.02	0.01	0.01
% spent on Visible Consumption	0.14	0.16	0.16	0.14	0.12	0.11	0.12	0.15	0.15
% spent on Other	0.14	0.18	0.17	0.13	0.12	0.11	0.11	0.18	0.17
Outstanding HH Debt	22,600	28,000	27,900	26,300	14,500	9,000	18,700	33,800	56,500
% Poor	0.20	0.06	0.08	0.18	0.25	0.41	0.26	0.02	0.10
Sample Size, N	36,664	2,009	6,134	12,408	7,613	3,100	4,231	563	606

¹ Source: Authors' calculations based on the India Human Development Survey 2004-05.

² Means of income, consumption and debt rounded to nearest 100 Rupee.

TABLE 2

Estimated Other Social Group-Brahmin/High Caste Gap in Log Visible Expenditure

Regression Controls Included	OBC	Dalit	Adivasi	Muslim	Sikh/Jain	Christian
(1) No additional controls	-0.3867*** [0.0212]	-0.7196*** [0.0225]	-1.1328*** [0.0309]	-0.4965*** [0.0304]	0.3610*** [0.0550]	-0.1096 [0.0623]
(2) Controls for Income	-0.0600*** [0.0195]	-0.2371*** [0.0210]	-0.6123*** [0.0288]	-0.1241*** [0.0272]	0.1192** [0.0485]	-0.0566 [0.0509]
(3) Controls for Total Expenditure	0.0265 [0.0142]	-0.0992*** [0.0158]	-0.1000*** [0.0240]	-0.1703*** [0.0190]	-0.0783* [0.0362]	-0.0521 [0.0390]
(4) Instrumenting for Total Expenditure using Income	0.0600*** [0.0145]	-0.0488*** [0.0167]	-0.0157 [0.0249]	-0.1438*** [0.0191]	-0.1139*** [0.0364]	-0.0474 [0.0405]
(5) Specification (4) plus demographic and other controls	0.0861*** [0.0149]	-0.0193 [0.0174]	0.0546* [0.0270]	-0.1077*** [0.0202]	-0.1144*** [0.0358]	-0.0544 [0.0439]

¹ Source: Authors' calculations based on the India Human Development Survey 2004-05, selected sub-sample as described in the paper.

² Heteroscedasticity corrected robust standard errors reported in brackets.

³ * significant at 5%, ** significant at 2.5%, *** significant at 1%

⁴ Base Group: Brahmin and Other High Caste combined.

⁵ Specification (1) includes only social group dummies in a regression on $\ln(\text{Visible Spending})$. Specification (2) estimates (1) with the addition of controls for $\ln(\text{Current Income})$, the square of current income, the cube of current income, non-agricultural business income, agriculture land possessed or cultivated, a set of education dummies and a measure of subjective well-being. Specification (3) estimates (1) with the addition of controls for $\ln(\text{Total Expenditure})$. Specification (4) estimates (1) with the addition of instruments for $\ln(\text{Total Expenditure})$; instruments include $\ln(\text{Current Income})$, the square of current income, the cube of current income, non-agricultural business income, agriculture land possessed or cultivated, a set of education dummies and a measure of subjective well-being. Specification (5) estimates (4) with the addition of controls for household assets, gender and age of household head, household size and a dummy variable for whether the household is located in an urban area.

TABLE 3

Estimated Other Social Group-Brahmin/High Caste Gap in Log Visible Expenditure, Specific Items

Dependent Variable	OBC	Dalit	Adivasi	Muslim	Sikh/Jain	Christian
(1) ln(Personal Transport)	0.1187*** [0.0422]	0.1260*** [0.0442]	0.4877*** [0.0593]	-0.0116 [0.0485]	0.0592 [0.0861]	0.1265 [0.1446]
(2) ln(Footwear)	-0.1622*** [0.0140]	-0.0697*** [0.0167]	0.0219 [0.0266]	-0.1139*** [0.0180]	0.1448*** [0.0313]	-0.2014*** [0.0375]
(3) ln(Vacations)	-0.0972 [0.0497]	-0.1196* [0.0557]	-0.0820 [0.0695]	-0.0735 [0.0579]	-0.1467 [0.1440]	-0.2719 [0.1405]
(4) ln(Furniture)	-0.0188 [0.0607]	0.0412 [0.0778]	0.1343 [0.0797]	-0.1284 [0.0766]	-0.3530 [0.1972]	-0.0141 [0.1393]
(5) ln(Social Functions)	0.0758*** [0.0243]	-0.0164 [0.0284]	0.1201*** [0.0400]	-0.1372*** [0.0293]	0.0574 [0.0644]	0.0673 [0.0474]
(6) ln(Repairs)	0.0335 [0.0607]	-0.0187 [0.0653]	-0.0070 [0.0988]	0.1071 [0.0671]	0.2301 [0.1417]	0.5072*** [0.1512]
(7) ln(Clothing)	-0.0012 [0.0146]	0.0138 [0.0176]	-0.1170*** [0.0273]	-0.0854*** [0.0205]	0.0111 [0.0366]	-0.0045 [0.0384]
(8) ln(Jewelry)	0.3536*** [0.0704]	0.0947 [0.0954]	0.1195 [0.1174]	0.1202 [0.0912]	-0.2804 [0.1501]	0.7395*** [0.1701]
(9) ln(Recreation Goods)	0.1673* [0.0836]	0.0957 [0.1187]	0.0631 [0.1296]	0.0770 [0.1263]	0.2854 [0.3298]	0.3886 [0.2772]
(10) ln(Personal Goods)	0.1237*** [0.0332]	0.1032** [0.0420]	0.6000*** [0.0641]	0.0680 [0.0441]	0.2546* [0.1162]	0.6875*** [0.1011]
(11) ln(House Rent)	0.1450*** [0.0551]	-0.0544 [0.0681]	-0.3695 [0.3320]	-0.1010 [0.0806]	0.0440 [0.1685]	0.3142*** [0.1191]
(12) ln(Entertainment)	-0.0140 [0.0410]	0.0814 [0.0536]	0.1154 [0.0674]	-0.0830 [0.0471]	0.0515 [0.1015]	0.0917 [0.0733]

¹ Source: Authors' calculations based on the India Human Development Survey 2004-05, selected sub-sample as described in the paper.

² Heteroscedasticity corrected robust standard errors are reported in brackets.

³ * significant at 5%, ** significant at 2.5%, *** significant at 1%

⁴ Base Group: Brahmin and Other High Caste combined.

⁵ Every regression uses specification (5) in table 2 for the given dependent variable.

TABLE 4

Estimated Other Social Group-Brahmin/High Caste
Gap in Log Visible Expenditure, District level controls

Variable	(I)	(II)
OBC	0.0418*** [0.0157]	0.0328* [0.0158]
Dalit	-0.0800*** [0.0188]	-0.0826*** [0.0187]
Adivasi	0.0034 [0.0273]	0.0021 [0.0276]
Muslim	-0.1550*** [0.0211]	-0.1603*** [0.0212]
Sikh/Jain	-0.0950*** [0.0360]	-0.0924** [0.0374]
Christian	-0.0610 [0.0459]	-0.0488 [0.0473]
$\ln(MI_{SD})$	-0.1372*** [0.0146]	-0.1553*** [0.0145]
DI_{SD}		0.0509*** [0.0162]

¹ Source: Authors' calculations based on the India Human Development Survey 2004-05, selected sub-sample as described in the paper.

² Heteroscedasticity corrected robust standard errors are reported in brackets.

³ * significant at 5%, ** significant at 2.5%, *** significant at 1%

⁴ Base Group: Brahmin and Other High Caste combined.

⁵ Specification (I) estimates specification (5) in table 2 with the addition of mean income of own social group in the district. Specification (II) estimates specification (5) in table 2 with the addition of mean income of own social group in the district and also the dispersion in income of own social group in the district.

TABLE 5

Estimated variation in Log Visible Expenditure with mean income of reference group, each social group

Social Group	(I)	(II)	
	Coefficient on Mean Income of Reference Group	Coefficient on Mean Income of Reference Group	Coefficient on Dispersion in Income of Reference Group
Brahmin and High Caste	-0.1090*** [0.0306]	-0.1266*** [0.0315]	0.1458*** [0.0275]
OBC	-0.0925*** [0.0273]	-0.1041*** [0.0269]	0.0828*** [0.0293]
Dalit	-0.1756*** [0.0339]	-0.1836*** [0.0307]	-0.0434 [0.0462]
Adivasi	-0.2397*** [0.0473]	-0.2660*** [0.0499]	0.0332 [0.0485]
Muslim	-0.1452*** [0.0428]	-0.1559*** [0.0451]	0.0116 [0.0465]
Sikh/Jain	-0.0219 [0.1053]	-0.0662 [0.1609]	0.0834 [0.1173]
Christian	0.1197 [0.0774]	0.2092* [0.1031]	-0.4326 [0.1073]

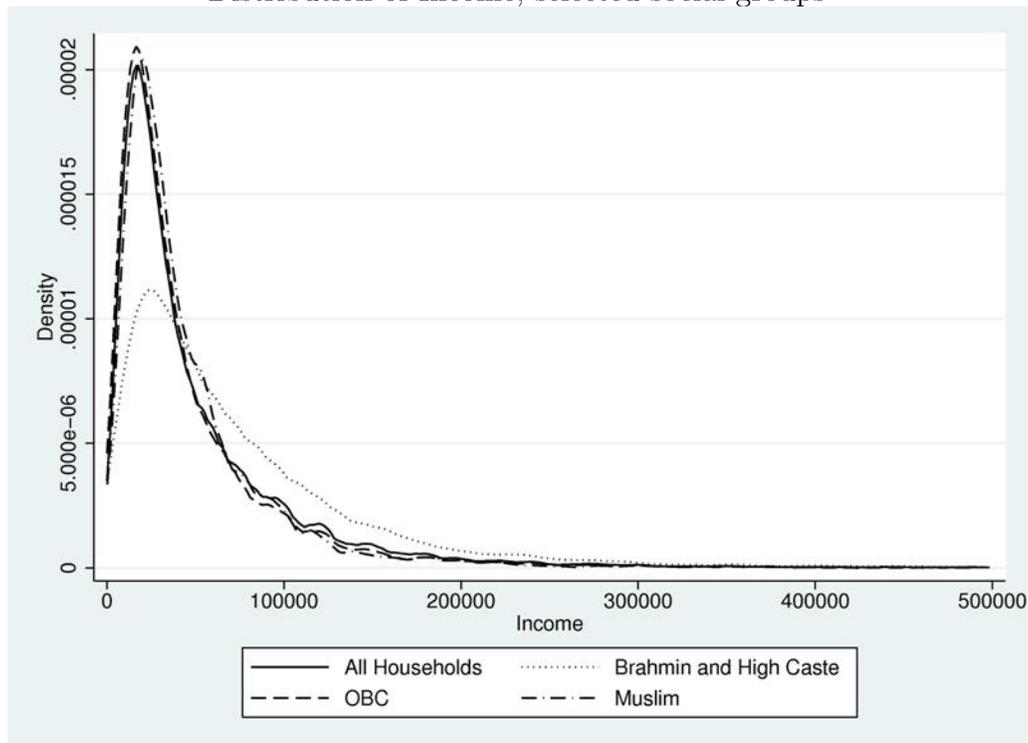
¹ Source: Authors' calculations based on the India Human Development Survey 2004-05, selected sub-sample as described in the paper.

² Heteroscedasticity corrected robust standard errors are reported in brackets.

³ * significant at 5%, ** significant at 2.5%, *** significant at 1%

⁴ In (I), every coefficient is based on a separate regression estimated on the sub-sample of the given social group, where the specification is the same as specification (5) in table 2 with the inclusion of mean income of own social group in the district. In (II), every coefficient is based on a separate regression estimated on the sub-sample of the given social group, where the specification is the same as specification (5) in table 2 with the inclusion of mean income and dispersion in income of own social group in the district.

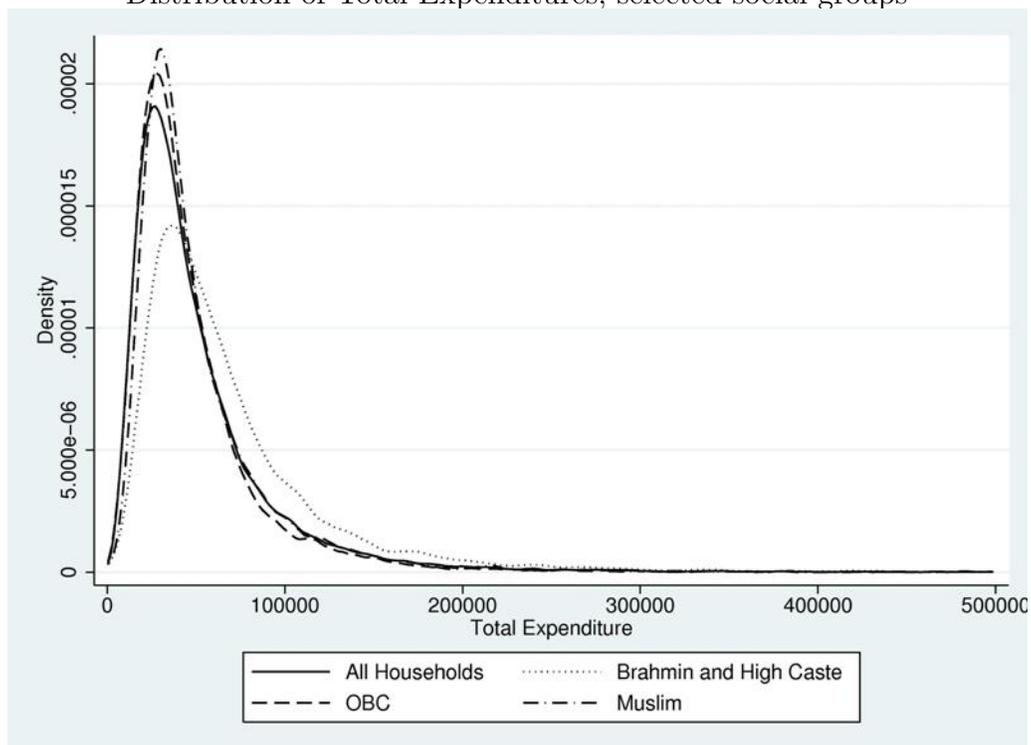
Figure 1
Distribution of Income, selected social groups



¹ Source: Authors' calculations based on the India Human Development Survey 2004-05, selected sub-sample as described in the paper.

² Distribution estimated by using Epanechnikov Kernel.

Figure 2
Distribution of Total Expenditures, selected social groups

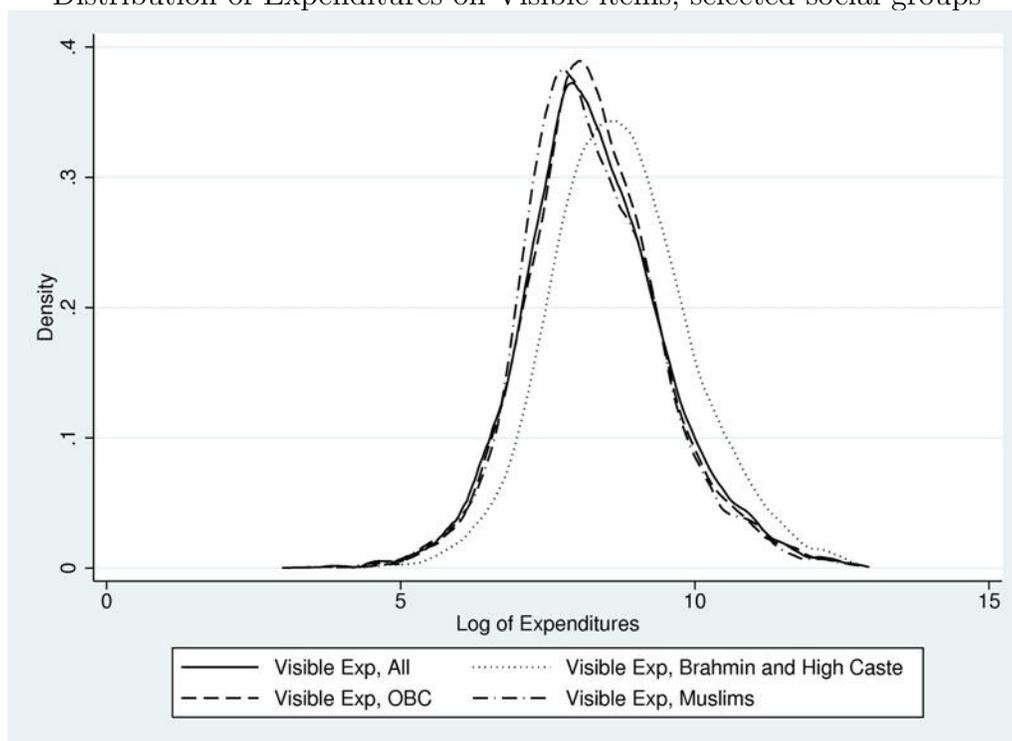


¹ Source: Authors' calculations based on the India Human Development Survey 2004-05, selected sub-sample as described in the paper.

² Distribution estimated by using Epanechnikov Kernel.

Figure 3

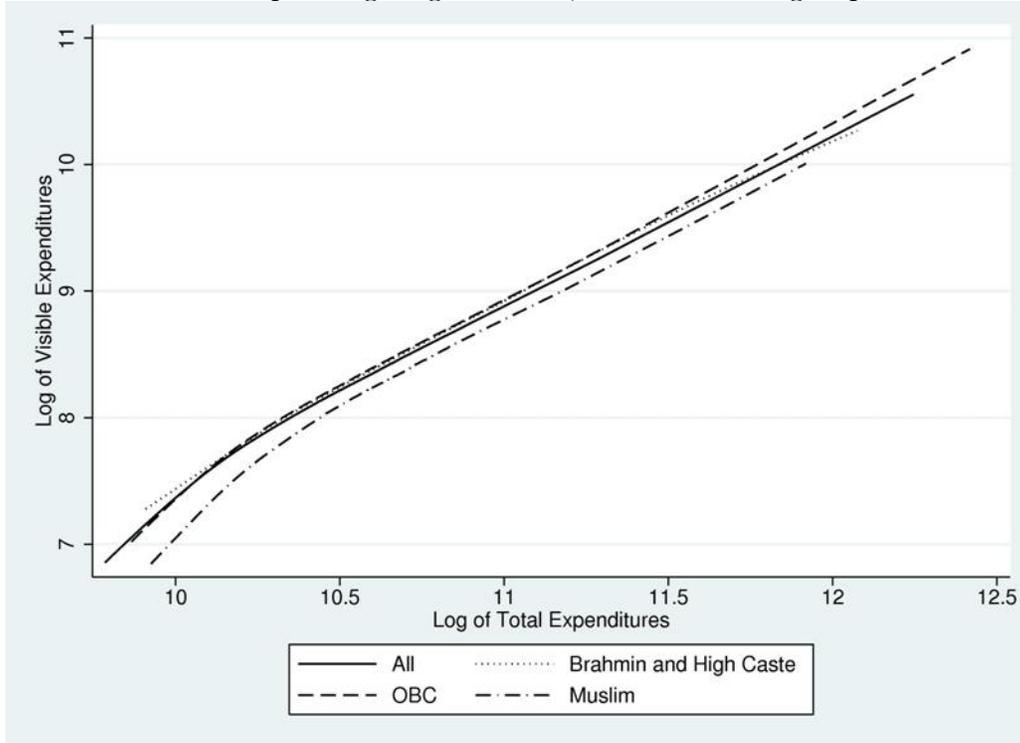
Distribution of Expenditures on Visible items, selected social groups



¹ Source: Authors' calculations based on the India Human Development Survey 2004-05, selected sub-sample as described in the paper.

² Distribution estimated by using Epanechnikov Kernel.

Figure 4
Visible Spending Engel Curves, selected social groups

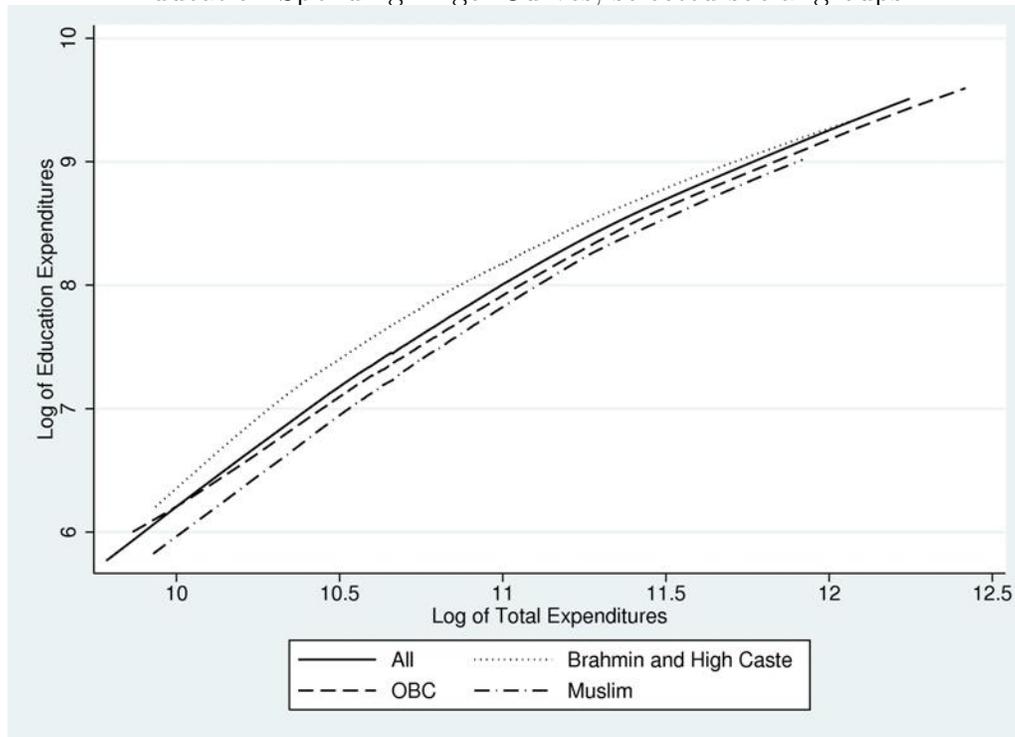


¹ Source: Authors' calculations based on the India Human Development Survey 2004-05, selected sub-sample as described in the paper.

² Expenditures on visible spending are the sum of (annualized) household expenditures on personal transport equipment, footwear, vacations, furniture and fixtures, social functions, repair and maintenance, house rent and rent, entertainment, clothing and bedding, jewelry and ornaments, recreation goods and personal goods.

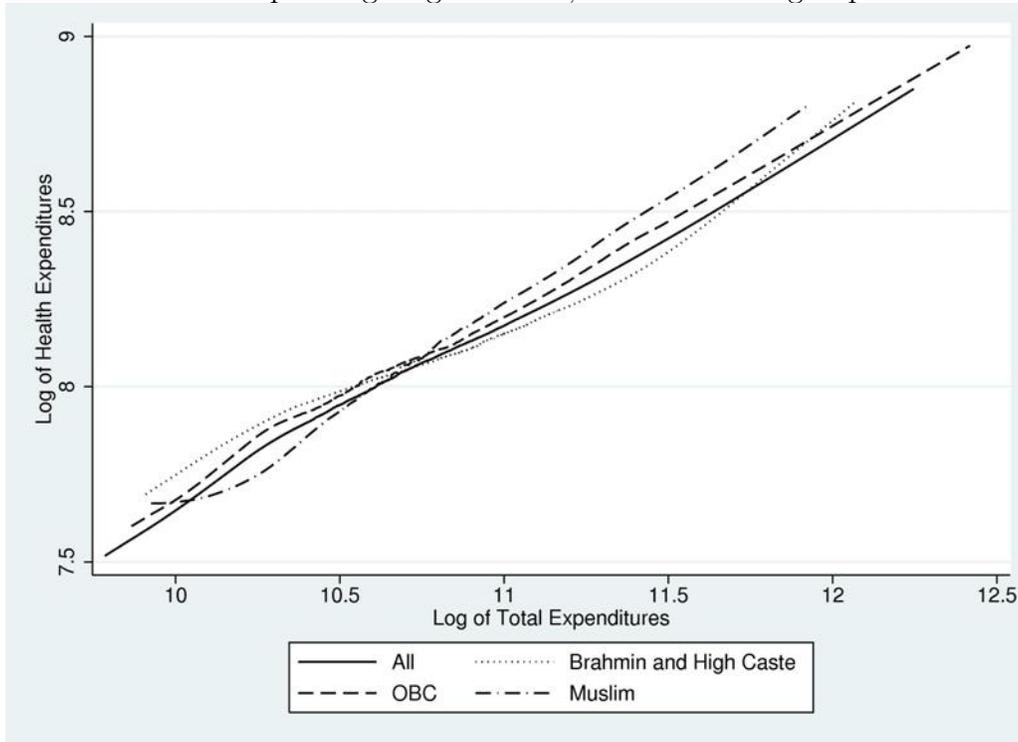
³ Engel curves are estimated for each social group by estimating locally weighted regression of $\ln(\text{Visible Spending})$ on $\ln(\text{Total Expenditure})$. $\ln(\text{Total Expenditure})$ is instrumented using the vector I ($\ln(\text{Current Income})$, the square of current income, the cube of current income, non-agricultural business income, agriculture land possessed or cultivated, a set of education dummies and a measure of subjective well-being).

Figure 5
Education Spending Engel Curves, selected social groups



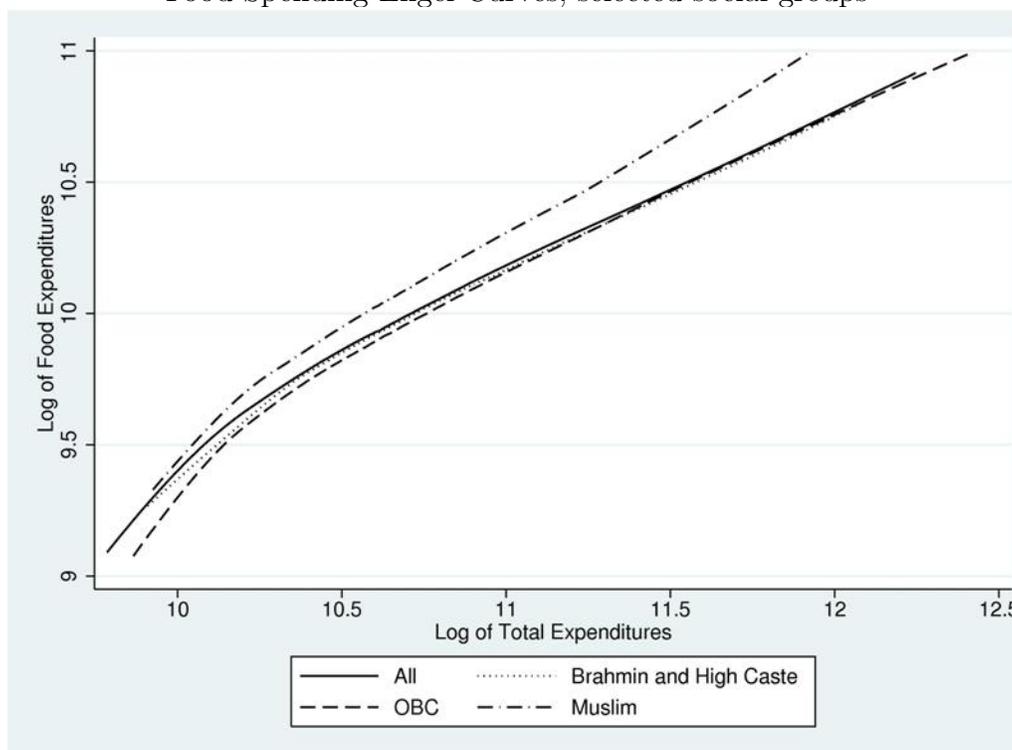
- ¹ Source: Authors' calculations based on the India Human Development Survey 2004-05, selected sub-sample as described in the paper.
- ² Expenditures on education are the sum of (annualized) household expenditures on school/private tuition fees (including private tutor, school/college tuition fees) and on school books and other educational articles (including newspaper, library charges, stationary and internet charges).
- ³ Engel curves are estimated for each social group by estimating locally weighted regression of $\ln(\text{Education Spending})$ on $\ln(\text{Total Expenditure})$. $\ln(\text{Total Expenditure})$ is instrumented using the vector I ($\ln(\text{Current Income})$, the square of current income, the cube of current income, non-agricultural business income, agriculture land possessed or cultivated, a set of education dummies and a measure of subjective well-being).

Figure 6
Health Spending Engel Curves, selected social groups



- ¹ Source: Authors' calculations based on the India Human Development Survey 2004-05, selected sub-sample as described in the paper.
- ² Expenditures on Health are the sum of (annualized) household expenditures on medical expenses (out patient services) and medical in-patient expenses.
- ³ Engel curves are estimated for each social group by estimating locally weighted regression of $\ln(\text{Health Spending})$ on $\ln(\text{Total Expenditure})$. $\ln(\text{Total Expenditure})$ is instrumented using the vector I ($\ln(\text{Current Income})$, the square of current income, the cube of current income, non-agricultural business income, agriculture land possessed or cultivated, a set of education dummies and a measure of subjective well-being).

Figure 7
Food Spending Engel Curves, selected social groups



¹ Source: Authors' calculations based on the India Human Development Survey 2004-05, selected sub-sample as described in the paper.

² Expenditures on Food are the sum of (annualized) household expenditures on rice, wheat, kerosene, other cereals, cereal products, pulse and pulse products, meat chicken and fish, gur and other sweeteners, edible oil and vanaspiti, eggs, milk, milk products, salt and spices, processed foods and fruits and nuts.

³ Engel curves are estimated for each social group by estimating locally weighted regression of $\ln(\text{Food Spending})$ on $\ln(\text{Total Expenditure})$. $\ln(\text{Total Expenditure})$ is instrumented using the vector I ($\ln(\text{Current Income})$, the square of current income, the cube of current income, non-agricultural business income, agriculture land possessed or cultivated, a set of education dummies and a measure of subjective well-being).

A Categorizing Consumption

TABLE A.1
Descriptive Statistics, Delhi School of Economics Survey
($N = 163$)

Female		57.41
Married		2.6
Religion		
	Christian	1.26
	Hindu	93.08
	Jain	1.89
	Muslim	0.63
	Sikh	3.14
	Other	1.26
Social Group		
	Scheduled Caste	3.82
	Scheduled Tribe	2.55
	Other Backward Caste	5.73
	Brahmin	27.66
	High Caste (other than Brahmin)	45.86
	Other	20.38

¹ All items in percentages.

TABLE A.2

Item Visibility and association with Income for selected items, Delhi School of Economics Survey
($N = 163$)

(I) Item	(II) % reporting (I) is easily observable	(III) % reporting (I) has income elasticity ≥ 1
Personal transport equipment	52.83	31.37
Footwear	39.42	23.30
Vacations	33.02	48.08
Furniture and fixtures	32.08	25.24
Social Functions	28.85	35.92
Repair and maintenance	27.36	22.12
House rent, rent	25.71	25.96
Entertainment	23.81	50.49
Clothing and bedding	23.81	27.18
Jewelry and ornaments	22.86	53.40
Recreation goods	20.95	45.63
Personal goods	20.95	44.12
Paan, tobacco, intoxicants	35.85	19.23
Services	33.96	18.27
Food at restaurants	19.23	44.23
Salt and Spices	22.64	3.88
Fuel and light	20.75	16.35
Telephone, cable, internet	18.87	27.45
Personal care	16.19	11.54
Insurance premiums	2.91	31.07

¹ (II) % of respondents who answered 1 or 2 to question on whether they can observe spending on specific item.

² (III) % of respondents answered 4 or 5 to question on how spending changes when income changes on specific item.

Details of the Visible Consumption Items:

Personal Transport Equipment- includes bicycle, scooter, car, tyres, etc.

Footwear

Vacations

Furniture and Fixtures- includes bedstead, almirah, suitcase, carpet, paintings, etc.

Social Functions- marriage, funerals, gifts, etc.

Repair and maintenance- of residential buildings, bathroom equipment, etc.

House rent, rent- also for rented household appliances, furniture, etc.

Entertainment- includes cinema, picnic, sports, club fees, video cassettes.

Clothing and bedding

Jewelry and ornaments

Recreation goods- includes TV, radio, Tape recorder, musical instruments

Personal goods- includes clock, watch, PC, telephone, mobile, etc.

B Robustness Appendix

TABLE B.1

Estimated Other Social Group-High Caste Gap in Log Visible Expenditure, Rural Sample

Regression Controls Included	OBC	Dalit	Adivasi	Muslim	Sikh/Jain	Christian
(1) No additional controls	-0.2765*** [0.0292]	-0.5836*** [0.0300]	-0.9516*** [0.0354]	-0.3915*** [0.0438]	0.4426*** [0.0775]	-0.0934 [0.0837]
(2) Controls for Income	-0.0381 [0.0266]	-0.1726*** [0.0284]	-0.5697*** [0.0328]	-0.1056*** [0.0388]	0.2734*** [0.0701]	-0.0518 [0.0709]
(3) Controls for Total Expenditure	0.0222 [0.0191]	-0.0967*** [0.0204]	-0.0887*** [0.0264]	-0.1923*** [0.0276]	-0.0776 [0.0525]	-0.1015 [0.0560]
(4) Instrumenting for Total Expenditure using Income	0.0544*** [0.0194]	-0.0443* [0.0215]	0.0042 [0.0282]	-0.1709*** [0.0273]	-0.1336** [0.0535]	-0.1024 [0.0598]
(5) Specification (4) plus demographic and other controls	0.0696*** [0.0200]	-0.0247 [0.0226]	0.0698* [0.0320]	-0.1561*** [0.0287]	-0.1489*** [0.0527]	-0.1245 [0.0667]

¹ Source: Authors' calculations based on the India Human Development Survey 2004-05, selected sub-sample as described in the paper.

² Heteroscedasticity corrected robust standard errors reported in brackets.

³ * significant at 5%, ** significant at 2.5%, *** significant at 1%

⁴ Base Group: Brahmin and Other High Caste combined.

⁵ Specification (1) includes only social group dummies in a regression on $\ln(\text{Visible Spending})$. Specification (2) estimates (1) with the addition of controls for $\ln(\text{Current Income})$, the square of current income, the cube of current income, non-agricultural business income, agriculture land possessed or cultivated, a set of education dummies and a measure of subjective well-being. Specification (3) estimates (1) with the addition of controls for $\ln(\text{Total Expenditure})$. Specification (4) estimates (1) with the addition of instruments for $\ln(\text{Total Expenditure})$; instruments include $\ln(\text{Current Income})$, the square of current income, the cube of current income, non-agricultural business income, agriculture land possessed or cultivated, a set of education dummies and a measure of subjective well-being. Specification (5) estimates (4) with the addition of controls for household assets, gender and age of household head, household size and a dummy variable for whether the household is located in an urban area.

TABLE B.2

Estimated Other Social Group-High Caste Gap in Log of weighted Visible Expenditure

Regression Controls Included	OBC	Dalit	Adivasi	Muslim	Sikh/Jain	Christian
(1) No additional controls	-0.3980*** [0.0164]	-0.6272*** [0.0179]	-1.0340*** [0.0237]	-0.4150*** [0.0220]	0.3819*** [0.0432]	0.0294 [0.0551]
(2) Controls for Income	-0.0989*** [0.0140]	-0.1972*** [0.0162]	-0.5538*** [0.0218]	-0.0867*** [0.0188]	0.1518*** [0.0333]	-0.0683 [0.0418]
(3) Controls for Total Expenditure	-0.0007 [0.0043]	-0.0307*** [0.0048]	-0.0406*** [0.0066]	-0.1014*** [0.0059]	-0.0404*** [0.0118]	0.0846*** [0.0093]
(4) Instrumenting for Total Expenditure using Income	0.0025 [0.0044]	-0.0259*** [0.0049]	-0.0325*** [0.0070]	-0.0988*** [0.0060]	-0.0439*** [0.0118]	0.0851*** [0.0095]
(5) Specification (4) plus demographic and other controls	0.0302*** [0.0041]	-0.0094* [0.0047]	0.0036 [0.0071]	-0.0496*** [0.0061]	-0.0655*** [0.0105]	0.0499*** [0.0087]

¹ Source: Authors' calculations based on the India Human Development Survey 2004-05, selected sub-sample as described in the paper.

² Heteroscedasticity corrected robust standard errors reported in brackets.

³ * significant at 5%, ** significant at 2.5%, *** significant at 1%

⁴ Base Group: Brahmin and Other High Caste combined.

⁵ Specification (1) includes only social group dummies in a regression on $\ln(\text{Weighted Visible Spending})$ where the weights are constructed as described in section 3.2 of the paper. Specification (2) estimates (1) with the addition of controls for $\ln(\text{Current Income})$, the square of current income, the cube of current income, non-agricultural business income, agriculture land possessed or cultivated, a set of education dummies and a measure of subjective well-being. Specification (3) estimates (1) with the addition of controls for $\ln(\text{Total Expenditure})$. Specification (4) estimates (1) with the addition of instruments for $\ln(\text{Total Expenditure})$; instruments include $\ln(\text{Current Income})$, the square of current income, the cube of current income, non-agricultural business income, agriculture land possessed or cultivated, a set of education dummies and a measure of subjective well-being. Specification (5) estimates (4) with the addition of controls for household assets, gender and age of household head, household size and a dummy variable for whether the household is located in an urban area.