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# Social Identity, Local Neighbourhood Effect and Conspicuous Consumption: Evidence From India

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## Abstract

The quest for social status is the driving force behind many human decisions including the expenditure on conspicuous goods. Recent evidence shows that conspicuous consumption patterns vary across social groups. Further, rank-based status signalling models suggest that the income distribution of peers affects conspicuous consumption behaviour. Using recent nationally representative micro-data from India, this paper investigates the caste-based inequality in conspicuous consumption patterns and the role of income distribution of reference groups in explaining these differences. We find that social identity and economic inequality are essential determinants of conspicuous expenditure. Dalits and Adivasis spend around 7% more on conspicuous items than upper caste households. Consistent with the status signalling models, we find that this gap is significantly influenced by the disparities in the average income of the reference group, within-group income inequality and the share of peers with similar income, denoted by local density. Specifically, local density is found to have a strong influence on household conspicuous consumption decisions.

*JEL Classification:* D12, D31, J15

*Keywords:* Conspicuous consumption, Income distribution, Signalling, Social groups, Social Status

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# 1 Introduction

The human appetite for reputation and prestige is an intrinsic feature of all societies. In addition to materialistic concerns, people care to a great deal about the perception of society regarding their social status. Although there is a consensus on the relevance of social status for humans, the exact reason behind these concerns is still a debatable issue. While psychologists argue that the desire for status may be innate and hardwired in the human psyche (see review in (Anderson et al., 2015)), evolutionary literature on status posits that preferences for status have evolved due to survival and reproductive benefits offered by high status (Samuelson, 2004; Rayo and Becker, 2007). Status is also believed to facilitate the attainment of goods that are not allocated through market mechanisms, such as attractive mates and friends, favourable company, respectful audience, an invitation to prestigious clubs and parties, partnership in sports, respect, chivalry, sympathy and agreement (Cole et al., 1992, 1995; Rege, 2008; Corneo and Jeanne, 1999).

Individuals are deeply concerned about their relative position in the income and consumption distribution of the reference group (Duesenberry, 1949; Frank, 1985; Hirsch, 2005; Clark et al., 2008; Alpizar et al., 2005; Powdthavee, 2009; McBride, 2001; Perez-Truglia, 2013; Rojas, 2019; Zimmermann, 2014). The bigger the car or house relative to neighbours', the higher the social status attained by the household (Hopkins and Kornienko, 2004; Kuhlmann, 2020). Following Hirsch (2005), goods whose value depends on the relative position in the consumption distribution are called positional goods. Further, as these goods are often valued because they signal wealth or productivity, they are also known as conspicuous goods (Hopkins and Kornienko, 2004).

Conspicuous consumption is an indisputable component of the household consumption bundle in not only developed nations (Charles et al., 2009; Currid-Halkett et al., 2019) but also in emerging nations (Kaus, 2013; Jenkins, 2016; Chai et al., 2019). For instance, Case et al. (2013) find that South African families spend around thirty percent of their permanent income on funerals. Poor households in China are also found to spend a considerable amount on funerals and gifts to gain social status (Brown et al., 2011). Status-seeking is the central motive behind hosting elaborate wedding functions and gifting expensive dowry items to the groom's family in Indian society (Rao, 2001; Robitaille, 2020). Indian households also spend a significant share of their income on other conspicuous items such as cars, clothing, footwear, vacations, etc. to gain social status (Khamis et al., 2012; Jaikumar and Sarin, 2015).

Interestingly, studies observe that the heterogeneity in conspicuous consumption be-

behaviour is explained by social identity, in addition to other household characteristics (Charles et al., 2009; Khamis et al., 2012; Kaus, 2013; Hwang and Lee, 2017; Harriger-Lin et al., 2020). Besides, as interpersonal comparisons drive this behaviour, conspicuous expenditure behaviour is also found to be significantly affected by the indicators of income distribution of the reference group. Previous studies have established a negative effect of average income of the reference group on household's expenditure on conspicuous goods in India, South Africa and the U.S (Charles et al., 2009; Khamis et al., 2012; Kaus, 2013). Further, a considerable empirical literature has associated household conspicuous spending with income inequality within peer group (Christen and Morgan, 2005; Charles et al., 2009; Khamis et al., 2012; Frank et al., 2014; Jaikumar and Sarin, 2015; Hwang and Lee, 2017; Chai et al., 2019). However, the existing study on conspicuous spending in India does not utilise a formal measure of income inequality within the reference group such as the Gini coefficient (Khamis et al., 2012). In addition, the recent empirical and theoretical findings suggest that local income distribution is a better predictor of household incentives to spend on conspicuous goods (Chai et al., 2019; Hopkins and Kornienko, 2004). However, the empirical evidence on Indian conspicuous expenditure neglects the effect of household-specific local distribution of income on conspicuous expenditure decisions. Hence, in this paper, we attempt to fill these gaps in the literature by empirically estimating the contribution of the reference group and local neighbourhood effects in explaining the differences in household conspicuous spending using the Instrument Variable method.

Our study is motivated by recent empirical and theoretical literature that suggests that in a status race, an agent's incentive to consume conspicuous goods depends on the number of individuals within the reference group having similar income (Chai et al., 2019; Hopkins and Kornienko, 2004). When several peers have comparable income and spending levels, more individuals can be overtaken in the status race and hence the returns from conspicuous consumption are higher. However, when relatively few members in the peer group have comparable income, there is a lower incentive to consume conspicuous goods because of the large income gap between the contenders: It is challenging to increase status because the wealthier competitor is much more affluent. Also, lesser efforts are required to retain status because the poorer contenders are much poorer. This mechanism cannot be captured by group-level income inequality measures alone because a change in equality may increase or decrease a household's local density, depending on its position in the income distribution (Chai et al., 2019).

In light of the above, this paper utilises a household-level nationally representative survey dataset for India for the year 2011-12 to estimate the extent to which the patterns

of household spending among Indian households are affected by social identity (defined by caste groups), group income, income inequality (measured by Gini index) and local density. Following Chai et al. (2019), this paper defines the local density of a household as the proportion of people within the reference group having income within some bandwidth ( $\pm 2.5\%$  and  $\pm 5\%$ ) of that household. Given that the status signalling models assume similar utility functions across groups, we also test the predictions within each caste group. This allows us to understand whether the interplay between local density and conspicuous spending varies across social groups in India.

Our findings suggest that households from Scheduled Castes and Scheduled Tribes categories spend around 7% more on conspicuous goods than their Forward Caste counterparts. We find that these disparities are accounted for by the income distribution within the reference group and local density. The impact of the local density measure is statistically significant for the whole sample and also within each caste group, unlike the group-level Gini coefficient, which is insignificant for Forward caste households. Our empirical findings indicate that belonging to an affluent reference group enhances social status and reduces the incentive to signal social status through conspicuous expenditure. Moreover, signalling motives are strongly affected by local density or the proportion of peers within the reference group earning similar income, thereby suggesting that status race will be fierce in neighbourhoods segregated by income. Further, consistent with the inferences based on the status signalling model, we do not find a systematic relationship between the expenditure on non-conspicuous items and income distribution of the reference group.

Our study is relevant from the perspective of development economics because of the implications of conspicuous spending on household welfare, especially in developing economies. First, excessive expenditure on conspicuous goods by the poor prevents them from spending on productive items such as education and health, due to which they may remain trapped in poverty (Moav and Neeman, 2010). It is evident from anecdotal and empirical evidence that the desire for status signalling motives through conspicuous consumption among the low-income families from developing and backward nations results in households suffering severe financial distress and often falling into a debt trap (Rao, 2001; Bloch et al., 2004; Case et al., 2013). Second, expenses on conspicuous goods put downward pressure on savings, and thus investment, which affects economic growth and development (Banerjee and Duflo, 2007; Kaus, 2013). Thus, an understanding of how conspicuous consumption patterns are associated with social identity, overall income inequality and local density may strengthen the design and implementation of public policies in India.

The rest of the paper is organised as follows. A brief account of the caste system and the relevance of caste identity in India in the context of social comparison is described in Section 2. Section 3 elaborates the theoretical literature on the impact of income distribution on conspicuous spending. Sections 4, 5 and 6 present the data set, estimation methodology and results respectively. Section 7 concludes and discusses the limitations of the study.

## 2 Caste System in India

Social hierarchy is a common phenomenon in all societies. The dominant social group enjoys power, wealth, protection, plentiful and desirable food, and access to suitable housing, health care, leisure, and education (Pratto et al., 2006). Group-based social hierarchical organisation arises out of the differences in the social prestige and power enjoyed by different status groups in society. The arbitrary groups determining hierarchical social status differ across nations. While the Western countries have race-based social stratification, a hierarchy based on caste system has been historically prevalent in India (Berreman, 1972).

Groups based on caste represent discrete classes that separate individuals into a set of non-overlapping and incommensurable categories in Indian society. Caste can be interpreted as the *varna* and the *jati* (Deshpande, 2011). The traditional caste system in India is rooted in the stratification of *Hindus* on the basis of *varna* as *Brahmins*, *Kshatriyas*, *Vaishyas* and the *Shudras* (Bailey, 1963). This social stratification has emerged by virtue of occupational differences, where priests and scholars are grouped as *Brahmins*, warriors as *Kshatriyas*, traders and merchants as *Vaishyas*, and labourers, artisans, and servants as *Shudras*. *Brahmins* are ritually considered to be the most superior in the social ladder because of their knowledge. They are followed by *Kshatriyas* or political rulers and soldiers who were “charged with the protection of the higher *Brahmin* class, with rule over (and unrestricted exploitation of) the lower *Vaishyas*” (Smith et al., 1994). *Vaishyas* are ranked below *Kshatriyas* because they are considered weak in comparison to rulers, and above *Shudras*, owing to their control over commerce. People involved in menial and low-status jobs are distinguished as *Shudras* and considered the lowest category in the caste hierarchy. *Atishudras* or Untouchables are people who were involved in unskilled labour. These are recognised as “the lowliest of the low” and, therefore, unqualified to be a part of the *varna* system (Deshpande, 2011).

The modern social code in Indian society is the classification based on numerous exhaus-

tive and exclusive categories called *jatis* or sub-caste. However, it does not follow the same hierarchical ranking as *varnas* (Deshpande, 2011). In contrast to *varna*, which is an aggregative classification, *jati* is a regional or local sub-classification. Nevertheless, the macro-level data in India is not available at the level of *varna* or *jati*, but on the basis of broad categories defined in the Constitution of India as Scheduled Castes (SCs), Scheduled Tribes (STs) and Socially and Economically Backward Classes (commonly known as the Other Backward Classes or OBCs).

Although the *varnas* do not have a one-to-one equivalence in the new categorisation given by the Constitution of India, this classification can be viewed as a new structure of social hierarchy in India. Forward caste group mostly comprises members from upper castes who hold the highest position in the *varna* hierarchy. The OBCs, the people from other backward classes, can be considered below the forward caste in terms of social status. Scheduled Castes or Dalits being untouchables, and Scheduled Tribes/ Adivasis being the most depressed and backward classes, may be considered to lie at the bottom of the status hierarchy. Moreover, this categorisation is also relevant for self-identity and social comparisons. The empirical evidence from India highlights that individual subjective well-being depends upon a comparison of income with people belonging to the same caste groups (Fontaine and Yamada, 2014). Therefore, social stratification based on caste groups offers an exciting background to study the differences in conspicuous spending behaviour in India.

### 3 Conceptual Framework

Theoretically, the status race is modelled as a competition to possess a higher relative position in the reference group (Frank, 1985; Hopkins and Kornienko, 2004, 2009). Individuals can overtake rivals in the status race by raising their conspicuous consumption. These studies relying on the ordinal notion of status predict a negative impact of income inequality on the consumption of conspicuous goods. With an increase in income equality, it is easier to outperform other individuals in the race for status and hence signalling incentives are stronger. Likewise, an increase in income disparity creates a huge difference between the income levels of a given household and its wealthier competitor in the reference group, thereby making it difficult to increase rank. Hence, the incentives to consume conspicuously are suspected to be lower in groups with larger income inequality. Similar results are derived from research that models status as rank in the

wealth distribution<sup>1</sup>.

Hopkins and Kornienko (2004) show that the prospects of improving status are higher when one is surrounded by a larger number of people with similar incomes. However, the change in income inequality within the reference group has a heterogeneous impact on the local density of peers across households (and thus on signalling incentives), depending on their position in the income distribution. Therefore, measures such as Gini that measure the income inequality within the whole reference group may not be sufficient in explaining this mechanism. This consideration has been taken into account by recent empirical works, which find a significant positive effect of the local density of peers on household conspicuous spending in China (Brown et al., 2011), South Africa (Chai et al., 2019) and the U.S. (Harriger-Lin et al., 2020).

To portray the underlying mechanism behind the impact of income distribution on visible spending, we present the model of conspicuous consumption for status signalling by Hopkins and Kornienko (2004). Suppose agents derive utility from the consumption of a standard good and a positional or conspicuous good. Now consider that the status utility depends on an agent’s consumption of conspicuous goods relative to the consumption by other individuals in the reference group. For instance, suppose Ms. Vidya spends lavishly on her child’s wedding functions to signal social status in her community (reference group). The model posits that the social status bestowed on Ms. Vidya depends on her expenditure relative to the expenditure incurred by the other families in her community in their respective social functions. Assuming that  $x$  is the consumption of a conspicuous/visible/status/positional good and  $y$  is the consumption of a non-positional good, the status function of a household belonging to reference group  $k$  is defined as:

$$S(x, F_k(x)) = \rho F_k(x) + (1 - \rho) F_k^-(x) + m_k, \quad m_k > 0 \text{ and } \rho \in [0, 1) \quad (1)$$

where  $F(x)$  is the mass of individuals consuming lesser or an equal quantity of conspicuous good,  $F^-(x)$  is the mass of individuals consuming strictly lower quantity of conspicuous good<sup>2</sup>, and  $m_k$  represents the minimum status level accrued to all individuals in reference group  $k$ , independent of their consumption level. Assuming that  $V(x, y)$  is a standard utility derived from one’s consumption of goods  $x$  and  $y$ , and  $S(x, F_k(x))$  is the status derived from the consumption of a conspicuous good,  $x$ , the utility function of a household takes the following form:

$$U(x, y, S(x, F_k(x))) = V(x, y) S(x, F_k(x)) \quad (2)$$

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<sup>1</sup>As wealth disparity increases, it becomes difficult for the relatively poor to “catch up with the rich” to increase their status (Corneo and Jeanne, 2001). This, in turn, preserves the status of the relatively rich and reduces their accumulation incentives. Therefore, the act of signalling status by accumulating wealth also responds negatively to an increase in wealth inequality.

<sup>2</sup>This specification ( $\rho \in [0, 1)$ ) ensures that the status from consuming more than everyone else is distinct from status obtained from consuming same consumption as others.



Suppose  $p$  is the price of conspicuous good and the non-positional good is a numeraire. Then, the budget constraint of a household with income level  $z$  is as follows:

$$px + y = z \tag{3}$$

Each agent chooses the consumption level  $x$  and  $y$  to maximise their utility subject to the budget constraint. Hopkins and Kornienko (2004) show that solving this consumer problem yields a symmetric Nash equilibrium strategy  $x(z)$  which is a mapping from individual income to consumption. Moreover, they show that the equilibrium strategy is strictly increasing. In a symmetric equilibrium, the equilibrium strategy is  $x_i = x(z_i)$ . Hence<sup>3</sup>,  $F(x_i) = G(x^{-1}(x_i)) = G(z_i)$ , i.e. the relative position in the distribution of status good ( $F(x)$ ) is equal to the relative position in the distribution of income ( $G(z)$ ).

The First Order Condition from the constrained utility maximisation problem is as follows:

$$V_1(x, z - px) - pV_2(x, z - px) + V(x, z - px) \frac{g(z)}{x'(z)(m_k + G(z))} = 0$$

While the first two terms in the above equation are the typical first order conditions obtained in conventional utility maximisation exercise, the third term represents the status gain or marginal return to the expenditure on conspicuous good in the form of increased status.

Based on the comparative statics analysis of the model, Hopkins and Kornienko (2004) show that conspicuous consumption is decreasing in the minimum status level: *Ceteris paribus*, a higher level of minimum status granted to individuals in a society implies lower marginal status gain from the consumption of conspicuous good. Thus, in reference groups with higher minimum status levels, the social competition for status is less intense and the incentives to consume conspicuously are lower. The minimum status level received by all group members may be approximated by the average income of the reference group (Chai et al., 2019). Consider an affluent social group. The people outside this social group may observe the average income and perceive the households belonging to this social group as rich (Chai et al., 2019). Since social status is positively associated with economic standing, one might expect that higher social status is bestowed on households that belong to rich social groups. Therefore, households from affluent social groups are likely to have lower incentives to signal status through conspicuous consumption.

Under certain assumptions, Hopkins and Kornienko (2004) also suggest that conspicuous

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<sup>3</sup>The probability that an individual  $i$  with conspicuous consumption  $x_i$  consumes more than an individual  $j$  is:  $F(x_i) = F^{-1}(x_i) = P(x_i > x(z_j)) = P(z_j < x^{-1}(x_i)) = G(x^{-1}(x_i))$  or  $G(z_i)$

consumption is increasing in the density mass of the income distribution. Intuitively, an increase in the population density or the number of people earning similar income increases the marginal status gains from conspicuous consumption. Hence, because of the intense social competition, a household would respond to an increase in local competition by increasing its expenditure on status conferring goods. Thus, the larger the local density, the higher the conspicuous consumption.

We, therefore, attempt to test the predictions of the above model by estimating the impact of indicators of local and global income distribution of the reference group, using the data described in the next section.

## 4 Data and descriptive statistics

The data used in this study has been sourced from the India Human Development Survey-II (IHDS-II) collected by the University of Maryland and the National Council of Applied Economic Research (NCAER) for the year 2011-12. IHDS-II is a large-scale household survey containing information from a stratified sample of 42,152 households in villages and urban neighbourhoods from all states and union territories of India, except the Andaman and Nicobar Islands, and Lakshadweep. The estimation is based on a sample of 36,210 households, for which the head of the household is between 18 and 65 years old, the information on caste is available, income is non-negative, and annual income and annual expenditure are not more than Rs. 10,00,000 each in 2011-12 prices. All statistics and estimates are calculated using IHDS sampling weights.

Table (1) presents the descriptive statistics of various socio-economic and demographic characteristics of the sample. Out of 36,210 households, 9,780 households are from Forward caste (General caste including *Brahmins*), 14,697 from Other Backward Class, 8,941 from Scheduled Caste and 3,644 from Scheduled Tribes. Hence, the Forward caste category constitutes about 25% of our sample, while 42% are OBCs, 23% SCs and around 8% STs<sup>4</sup>. The caste composition in our sample is quite comparable to population statistics in Census 2011<sup>5</sup>. Most of the households in this sample are Hindus (83%), followed by Muslims (12%), Christians (2%) and Others (3%).

The summary statistics in Table (1) point to a remarkable contrast in socio-economic characteristics across three caste categories. OBCs, SCs and STs lag far behind the

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<sup>4</sup>As the proportion of ST households in our sample is small, we combine the households from SCs and STs in a single category.

<sup>5</sup>According to the Census of India, 2011, share of SCs and STs in the Indian population is 16% and 8% respectively.

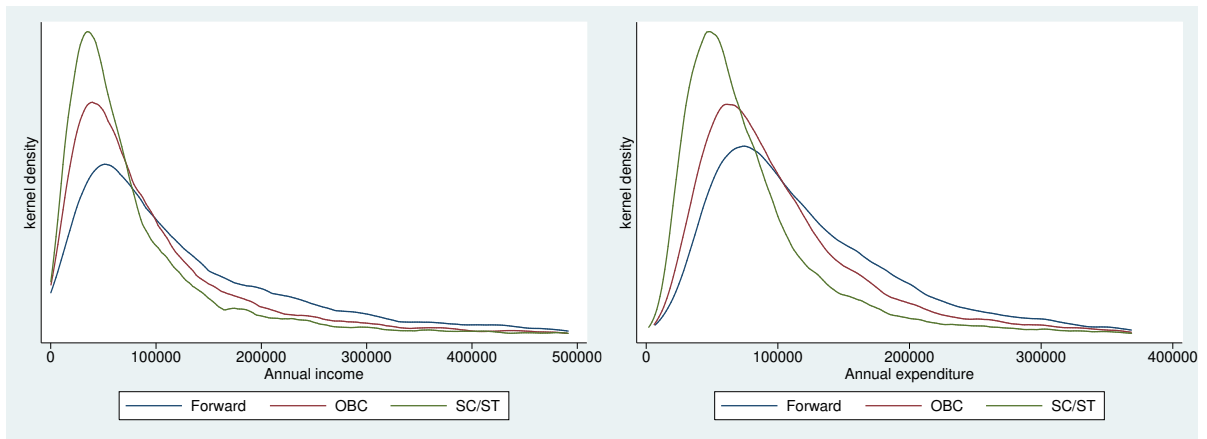
	All	Forward	OBC	SC/ST
Sample size	36210	9780	14697	11248
Religion (%):				
Hindu	82.56	73.75	84	88.66
Muslim	11.79	20.85	14.09	0.53
Christian	2.28	2.5	1.300	3.31
Sikh/Buddhist/Jain/Tribal/Others	3.36	2.9	0.600	7.49
Education of household head	5th grade	7th grade	5th grade	4th grade
Highest education (%):				
Illiterate	32.55	19.69	32.07	43.58
Primary	19.02	15.77	19.67	20.65
Secondary	35.06	40.27	37.05	28.37
Higher secondary	6.210	9.770	5.650	4.140
Graduate	4.280	9.730	3.810	2.280
Post-graduate	2.330	4.770	1.750	0.980
Urban (%)	32.35	43.51	32.92	22.51
Income source (%):				
Cultivators & allied agriculture	24.37	25.78	26.51	20.55
Agricultural wage labourers	12.13	5.520	10.31	20.06
Non-agricultural wage labourers	25.98	15.11	26.56	33.31
Artisan/petty shop/ remittances	16.39	21.87	18.34	9.430
Organized business/salaried/professional	21.13	31.72	18.28	16.66
Annual household income per capita	23667	32924	21779	18505
Annual household expenditure per capita	22732	28841	22535	17794
Age of household head	46	47	46	45
Households with male head (%)	85.81	85.54	85.41	85.83
Marital Status of household head (%):				
Married	82.31	82.95	82.20	82.01
Unmarried/No gauna	1.05	1.41	0.98	0.87
Widowed/separated/divorced/Spouse ab.	16.63	15.64	16.82	17.12
Household size	4.770	4.690	4.850	4.730
Poor households (%)	17.48	10.74	15.28	26.20

*Note:* IHDS sampling weights are used in the analysis.

Table 1: Descriptive Statistics

Forward group in all the parameters of development presented in the Table. There are significant differences in the education level across three social groups. The head of the household is more educated in the Forward caste families than others. Around 14% of the households from the Forward caste have atleast one member who is a graduate or above, whereas the share is approximately 5% and 3% only for OBCs and SCs/STs respectively. Besides, OBC and SC/ST categories consist of a higher percentage of illiterate households as compared to the Forward caste. In terms of occupation, almost one-third of the Forward Caste households are engaged in a better paying organised sector as compared to less than one-fifth in OBC and one-sixth in the SC/ST category. Agriculture is the occupation for the majority of people belonging to SC, ST and OBC groups.

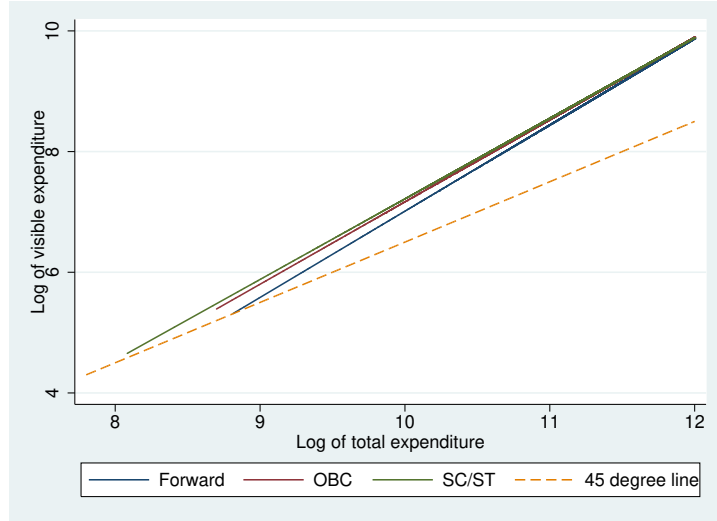
There is a wide divergence in the economic conditions of households across caste groups. The annual average per capita income and per capita expenditure is highest for the Forward caste, followed by OBC and SC/ST households. The kernel densities of annual household income and annual household expenditure displayed in Figure (1) also suggest a striking difference in the income and expenditure distribution across the three social groups. This finding is in line with the previous studies which also encounter a stark inequality between the income distribution across racial groups in the U.S. and South Africa (Charles et al., 2009; Kaus, 2013).



*Notes:* The figure shows the kernel density of annual household income and annual household expenditure across the three caste groups for the sub-sample described in data. For expositional purpose, we restrict the data to households whose income and total expenditure does not exceed the 99th percentile for Scheduled Caste and Scheduled tribes (combined).

Figure 1: Kernel density of Forward, OBC and SC/ST households

In order to study the relevance of the reference group in determining conspicuous consumption, it becomes necessary to identify the goods that are used to signal social status. Goods whose consumption allows to signal wealth or income must be (a) lux-



*Notes:* The figure plots the estimated relationship between logarithm of visible expenditure and total expenditure. These are obtained by performing the regression of log of visible expenditure on the logarithm of total household expenditure using Instrumental Variable Technique. The endogeneity issue in using total expenditure, and instrumental variable technique is discussed in detail in the following section. The data includes the sub-sample described in the data section.

Figure 2: Estimated Engel curve for total expenditure on conspicuous goods

ury, i.e. their consumption must be associated with higher income and, (b) visible, i.e. their consumption must be readily observable even during anonymous interactions (Charles et al., 2009). Based on this definition and a survey conducted in India, Khamis et al. (2012) classify the following goods as conspicuous: personal vehicles, footwear, vacations, furniture and fixtures, social functions, repair and maintenance, house rent, entertainment, clothing and bedding, jewellery and ornaments, recreation goods and personal goods<sup>6</sup>.

Following Khamis et al. (2012), we measure the expenditure on visible or conspicuous goods by adding the expenditure on these twelve items<sup>7</sup>. We test for the luxury nature of this measure of visible goods by studying the relationship between total expenditure and visible expenditure in Figure(2). The slope of the Engel curves exceeds unity for all the caste groups<sup>8</sup>. This validates our assumption regarding the luxury status of these goods.

The annual household expenditure on each category of conspicuous goods is presented in Table (2). The household annual expenditure on conspicuous goods is approximately Rs. 18000 or 12% of their total expenditure. Expenditure on social functions such as weddings, funerals, etc. forms the major component of the conspicuous consumption

<sup>6</sup>Khamis et al. (2012) carried out an anonymous online survey at the Delhi School of Economics in India to elicit the extent to which a consumption item is visible and a marker of status. The items considered observable (even with no or occasional interactions), and positively associated with income, by more than one-fifth of the respondents are designated as conspicuous goods.

<sup>7</sup>We also test our hypothesis using the alternate categorisations based on surveys conducted in the U.S. by Charles et al. (2009) and Hefetz (2011) as robustness tests.

<sup>8</sup>The item-wise Engel curves of various conspicuous items (entertainment, clothing, footwear, personal goods, personal transport, vacations and social functions) exhibited in figure (4) in Appendix also exhibit a slope greater than one.

Item	All	Forward	OBC	SC/ST
All conspicuous goods	18156	24002	18339	12908
Social functions	5667	7191	5820	4242
Clothing	3379	4046	3384	2804
Jewellery	1988	2667	2285	995
Repair	1791	2417	1754	1289
Rent	1448	2109	1464	858
Personal transport	1216	1605	1265	728
Footwear	888	1106	844	769
Personal goods	462	695	414	323
Vacations	421	730	349	261
Furniture	321	535	252	246
Entertainment	344	572	299	212
Recreation	233	328	209	183
Observations	35895	9626	14546	11198

*Note: IHDS sampling weights are used in the analysis.*

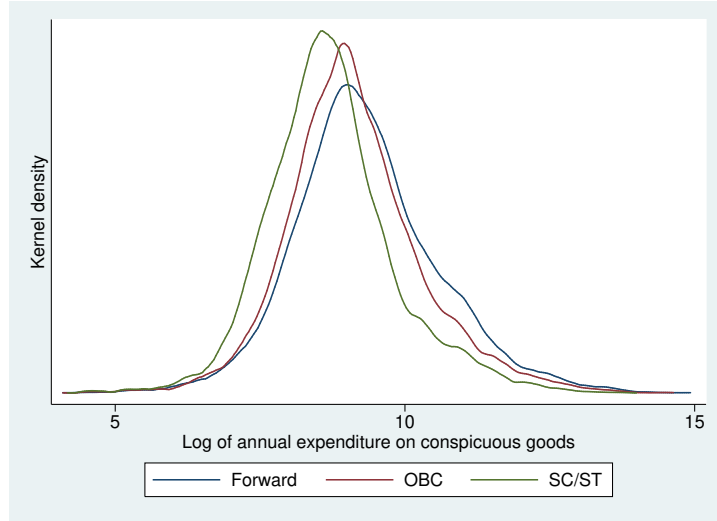
Table 2: Annual expenditure on conspicuous items (in Rs.)

basket, followed by clothing and jewellery. On average, Adivasis and Dalits spend relatively lesser on all conspicuous items as compared to Forward caste and Other Backward Class households.

We also find significant variation in the distribution of conspicuous spending across caste groups. Figure(3) presents the kernel density estimates of the logarithm of expenditure on conspicuous goods by each caste group, using Epanechnikov kernel function. As compared to the forward caste groups, the households belonging to backward categories (OBC and SC/STs) are under-represented at the top and over-represented at the bottom of the distribution of expenditure on conspicuous goods.

## 5 Empirical investigation

In this section, we introduce an empirical model to investigate the patterns of household expenditure on conspicuous goods. Consumption choices are determined by the socioeconomic and demographic attributes of the household. As the economic status of a household is a reflection of the resources available for spending, it is also expected to have a significant impact on expenditure. According to the Permanent Income Hy-



Notes: The bandwidth is based on minimization of the approximate mean integrated squared error of the density estimate (Silverman 1986, pp. 40–48). The figure is based on the sub-sample described in section 4.1.

Figure 3: Distribution of log of annual expenditure on conspicuous goods

pothesis (PIH), consumer demand is dictated by their permanent income, i.e. earnings acquired over the lifetime (Modigliani, 1954; Friedman, 1957). Paraphrasing Friedman (1957), “consumption is determined by rather long-term considerations, so that any transitory changes in income lead primarily to additions to assets or to the use of previously accumulated balances rather than to corresponding changes in consumption”. Therefore, according to economic theory, expenditure on conspicuous goods should be governed by permanent income and other household-specific characteristics, as per the following regression equation:

$$\ln(C_i) = \alpha + \beta_1 OBC_i + \beta_2 SC/ST_i + \gamma_1 \ln(PermanentIncome_i) + \gamma_2 X_i + \epsilon_i \quad (4)$$

where  $i$  denotes household. The dependent variable,  $C_i$  is the natural logarithm of the sum of annual expenditure on twelve conspicuous items (defined earlier) by household  $i$ .  $OBC_i$  and  $SC/ST_i$  are indicator variables for the caste identity.  $OBC_i$  takes value 1 if household  $i$  belongs to the OBC category and 0 otherwise. Similarly, the variable  $SC/ST_i$  is equal to 1 if household  $i$  is identified as either SC or ST, and 0 otherwise. The base category is Forward caste. Hence,  $\beta_1$  is the estimated difference in average (log of) expenditure on conspicuous goods between OBC and Forward caste households. Likewise,  $\beta_2$  signifies the estimated difference in average (log of) expenditure on conspicuous goods between SC/ST and Forward caste households.  $X_i$  denotes a set of control variables for the household-specific factors that include gender, education, marital status, religion, source of income and age of the head of the household, and household size. The square of the age of the household head is also included as a control variable because age is expected to have a non-linear effect on expenditure (Charles et al., 2009). To account

for consumption differences between rural and urban areas, we incorporate a dummy variable to indicate whether a household belongs to an urban or rural region. The place of residence is relevant in defining consumption patterns because of variations in cultural attitudes, housing prices and rent, and availability of status goods across states or cities (Currid-Halkett, 2017). Therefore, the inter-state variations in spending are accounted for, by including the state fixed effects in the empirical model.

Equation (4) requires data on the permanent income of the households. Due to the unavailability of information about permanent income, the estimation of this equation is not feasible. Current income reported in the consumption survey cannot be used to measure permanent income because it is prone to drastic fluctuations from one year to another (Barik et al., 2018). Moreover, the income data available in India suffer from various issues such as measurement errors and under-reporting by high-income households (Barik et al., 2018). As per the Permanent Income Hypothesis, a better proxy for the permanent income of a household is its total expenditure (Charles et al., 2009). We, therefore, replace the permanent income with annual total expenditure in the modified empirical equation described as follows<sup>9</sup>:

$$\ln(C_i) = \alpha + \beta_1 OBC_i + \beta_2 SC/ST_i + \gamma_1 \ln(TotalExpenditure_i) + \gamma_2 X_i + \epsilon_i \quad (5)$$

Notwithstanding that household expenditure is a reliable representative of permanent income, the estimates from the above equation are likely to be biased. The issue with this empirical strategy is that total expenditure is an endogenous variable in the model because the choice regarding total expenditure and expenditure on conspicuous goods is taken simultaneously by a household (Charles et al., 2009). Therefore, estimating regression equation (5) using the method of Ordinary Least Squares will yield biased estimates.

We resolve the problem of endogeneity by using instrumental variables for total expenditure. Previous empirical studies have used current income indicators along with the following variables as instruments for total expenditure: education, industry and occupation codes, agricultural sector participation and non-agricultural business income (Charles et al., 2009; Khamis et al., 2012). For instrument variables to be exogenous in this model, they must affect expenditure on conspicuous goods only through their influence on total expenditure. However, we find that education and occupation have

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<sup>9</sup>We do not use assets as a proxy for permanent income because asset ownership may not be a genuine representation of the economic status of households, for various reasons (Barik et al., 2018). Firstly, the possession or lack of an asset may be contingent on household preferences. Furthermore, since preferences dictate both the asset ownership and expenditure on conspicuous goods, the inclusion of this variable may cause the issue of endogeneity. Also, assets do not necessarily symbolise higher wealth ownership because they may be acquired by virtue of dowry or gift.



a significant impact on visible expenditure. Further, using Hansen’s test for overidentifying restrictions, we reject all the instruments other than indicators of income<sup>10</sup>. To allow for the non-linear effect of household income on household expenditure, we include the logarithm transformation, square and cube of current income as instruments of total expenditure. Using this vector of instruments, we estimate equation (5) by employing the two-step GMM method.

The two-step Generalized Method of Moments (GMM) model is well suited for our analysis for the following reasons: First, we use three instruments, namely the logarithm, square and cube of household income for a single endogenous variable (the logarithm of total expenditure). As the number of instruments exceeds the number of endogenous variables, our model is overidentified and two-step GMM provides efficient estimates for overidentified models. Further, the endogenous variable in our empirical model is non-linear. Unfortunately, the estimates provided by the 2SLS model are inconsistent in the presence of a non-linear endogenous variable. Due to these reasons, the two-step GMM technique is used in our empirical analysis.

Several diagnostic tests are conducted after estimating the empirical model using the two-step GMM method. First, the Difference-in-sargan test is carried out to examine whether our suspicion regarding the endogeneity of total expenditure is true. The null hypothesis of this test is that the total expenditure is exogenous in our model. Then, first-stage regression is implemented to test for the relevance of the instrument variable. The F statistic from this regression is used to test the joint significance of the coefficient of the vector of instrument variables used in our analysis. Lastly, Hansen’s J test is conducted after the GMM estimation to test for the exogeneity of the instrument variables used in the estimation. The null hypothesis of this test is that the instruments are uncorrelated with the error term.

The status signalling model discussed in Section 3 suggests a significant role of income distribution of the reference group in determining household conspicuous consumption. As the social identity in India is characterised by caste, we define reference groups by caste category and state of residence. Thus, the reference group for a household consists of all households belonging to the same caste category and residing in the same state as the household. To account for the income distribution of the reference group, we include the natural logarithm of average group income, Gini coefficient (as a measure of income inequality within the reference group) and local density of peers within the

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<sup>10</sup>The null hypothesis of the test is that instruments are valid. The Hansen J statistic is not significant when we use the following instruments: a logarithm of income, a square of income and a cube of income. Hence, we cannot reject the null hypothesis. In other words, the instruments are valid.

reference group as the explanatory variables in the estimation model. The local density of a household is defined as the number of households within the reference group earning income within a one-sided  $b$  bandwidth of a household's income, as a proportion of the size of the reference group. We study the effect at  $b = 2.5\%$  and  $b = 5\%$ . To construct the variable at one-sided bandwidth of  $2.5\%$ , we include all households that have income within a  $5\%$  income range (or  $\pm 2.5\%$ ) of a specific household<sup>11</sup>. Similarly, at one-sided bandwidth of  $5\%$ , we include all households that have income within a  $10\%$  income range (or  $\pm 5\%$ ) of a specific household. We estimate the following equation to test the predictions of the status signalling model:

$$\begin{aligned} \ln(C_{ik}) = & \alpha + \beta_1 OBC_{ik} + \beta_2 SC/ST_{ik} + \gamma_1 \ln(\widehat{TE}_{ik}) + \gamma_2 X_{ik} \\ & + \delta_1 \ln(GroupIncome_k) + \delta_2 Gini_k + \delta_3 LD_{ik} + \epsilon_{ik} \end{aligned} \quad (6)$$

where  $k$  stands for the reference group of household  $i$ ,  $\ln(GroupIncome_k)$  denotes the natural logarithm of the average income of the reference group  $k$ ,  $Gini_k$  denotes the Gini coefficient of income inequality within the reference group  $k$ , and  $LD_{ik}$  is the local density of peers with comparable income, for a household  $i$  from reference group  $k$ .

## 6 Results

This section summarises the estimates of the empirical models described in the previous section. We start by analysing the inter-caste inequality in conspicuous consumption in India. Then we examine the effect of the income distribution of the reference group on conspicuous expenditure. Finally, we present the results of falsification and robustness tests.

### 6.1 Caste and visible expenditure

The results of regression equation (5) are presented in Table (3). Column 1 in Table (3) shows the estimates without controlling for household characteristics. The negative coefficients on OBC and SC/ST variables suggest that Forward caste households spend more on conspicuous goods than other caste groups. However, it could be driven by the fact that Forward caste households have a higher income and expenditure, as observed

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<sup>11</sup>For example, if the household income is Rs. 50,000 and the chosen bandwidth is 2.5% then the local peer group includes all people whose income is greater than Rs. 48,750 and less than or equal to Rs. 51,250.

in Table (1). The estimates after controlling for total expenditure and other household characteristics are presented in column 2. Surprisingly, the signs on the caste dummies reverse after controlling for the socio-demographic traits and total expenditure of the household. The positive sign on caste dummies suggests that SC/ST and OBC households spend considerably higher amounts on conspicuous goods than their Forward caste counterparts. However, these results are likely to be biased because of the endogeneity of total expenditure. The regression results based on the two-step Generalised Methods of Moments technique are displayed in column 3. The results indicate that the use of instrument variables further escalates the caste differences in conspicuous spending. Further, the estimates after including the state fixed effects are shown in column 4.

The estimates from Table (3) reveal that caste identity plays an important role in determining the expenditure on goods consumed for status motives in India<sup>12</sup>. This result supports the findings obtained by Charles et al. (2009) and Kaus (2013). We conclude that in India, after controlling for all household characteristics and variations across states, Dalits-Adivasis, and Other Backward Class households splurge approximately 7% and 3% more, respectively on the consumption of visible goods than Forward castes. The results also provide estimates of the income elasticity of conspicuous goods. With a 1% increase in permanent income (proxied by total expenditure), the expenditure on conspicuous goods increases by around 1.6%. It is apparent from this finding that the goods included in the conspicuous consumption bundle in the study represent luxury goods.

These findings indicate a significant impact of household size, place of residence, education and occupation of the household head on conspicuous spending. Smaller households, lesser-educated heads of the household, rural inhabitants and heads employed in agriculture and allied sectors (vis-a-vis unorganised sectors such as artisans, petty shop owners, pension holders etc.) are found to spend higher amounts on conspicuous goods. We do not find a significant impact of age and gender of the household head on consumption patterns.

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<sup>12</sup>As a robustness check, we reveal that differences in spending across caste groups persist in different income categories by testing the empirical model separately on households with income below Rs. 52819 (25th percentile), above Rs. 127926 (75th percentile), and between Rs. 52819 and Rs. 127926 (between 25th and 75th percentile), denoted as poor, high-income and medium-income respectively. The results are presented in Table (8) in Appendix. We find that households from SC/ST categories spend higher than Forward caste households in all samples. OBCs spend significantly higher than Forward caste in all except the high-income sample. This is probably because status differences between households from OBC and Forward caste diminish with an increase in income.

Variables	(1) OLS	(2) OLS	(3) GMM	(4) GMM
OBC	-0.190*** (0.0239)	0.0630*** (0.0173)	0.0686*** (0.0177)	0.0332* (0.0180)
SC/ST	-0.510*** (0.0246)	0.0609*** (0.0202)	0.0760*** (0.0215)	0.0666*** (0.0221)
Muslims		-0.0546*** (0.0202)	-0.0468** (0.0206)	-0.00610 (0.0214)
Christians		-0.108*** (0.0387)	-0.125*** (0.0389)	-0.0526 (0.0456)
Other religion		0.0977*** (0.0280)	0.0968*** (0.0286)	0.101*** (0.0303)
Urban		0.0211 (0.0161)	-0.00654 (0.0163)	-0.0379** (0.0165)
Household size		-0.0387*** (0.00351)	-0.0557*** (0.00587)	-0.0663*** (0.00696)
Head's education		-0.00332** (0.00163)	-0.00623*** (0.00170)	-0.00721*** (0.00176)
Agri wage labour		-0.0299 (0.0232)	-0.0264 (0.0233)	-0.0176 (0.0242)
Non-agri. wage labour		-0.0837*** (0.0185)	-0.0733*** (0.0186)	-0.0241 (0.0189)
Unorganised		-0.0766*** (0.0222)	-0.0786*** (0.0223)	-0.0400* (0.0223)
Organised		-0.0631** (0.0255)	-0.0827*** (0.0273)	-0.0372 (0.0273)
ln(Total Expenditure)		1.422*** (0.0162)	1.541*** (0.0379)	1.630*** (0.0466)
Constant	9.200*** (0.0197)	-6.938*** (0.191)	-8.109*** (0.377)	-9.274*** (0.485)
Observations	35,419	35,389	35,389	35,389
R-squared	0.025	0.537	0.535	0.553
State FE		NO	NO	YES

Heteroscedasticity robust standard errors in parentheses. IHDS sampling weights are used.

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Table 3: Caste-based disparities in conspicuous expenditure

## 6.2 Reference group income distribution and visible expenditure

The role of income distribution of reference group in explaining caste differences in visible expenditure is evident in Table (4)<sup>13</sup>. Column 1 shows the estimates from regression equation (5) without controlling for group-level characteristics. Column 2 presents the results from the estimation of equation (6), with local density calculated at the bandwidth of  $\pm 2.5\%$ . We notice that inter-caste variation in visible expenditure disappears after controlling for group factors. This suggests that the income distribution of reference group is a significant predictor of the variability in consumption across caste groups. As speculated by the status signalling model, we find that households from richer reference groups devote lesser income on visible spending as compared to households from a relatively poorer group. In particular, a 10% increase in the average income of the reference group causes a 2.7% decline in visible expenditure. The estimates suggest that the Gini coefficient has a negative impact on visible spending. However, the effect becomes weaker at higher levels of Gini. The negative relationship obtained here is consistent with the ordinal status signalling models that suggest that at higher income inequality, it becomes difficult to increase status, hence the incentives to signal through conspicuous consumption are lowered (Hopkins and Kornienko, 2004; Chai et al., 2019). In line with the prediction from the theoretical model, the density of local peers is found to have a positive and significant impact on the expenditure on conspicuous goods.

To understand whether the marginal effect of local density depends on the level of local density, we include the quadratic of local density in the regression equation. The results are presented in Column 3 in Table (4). Further, the impact of local density constructed at a bandwidth of  $\pm 5\%$  is shown in Column 4. From Columns 3 and 4, we conclude that with an increase in the share of immediate peers, the visible spending increases at a diminishing rate. This result can be interpreted as follows. As the local density increases, the status competition intensifies because increasing rank is easier when the competitors are closer, i.e. when there are more peers with similar income levels. As a result, a household would increase its conspicuous expenditure. However, the negative sign on the quadratic term indicates that the effect of local density on conspicuous spending weakens for a household with a larger size of the local peer group<sup>14</sup>.

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<sup>13</sup>The estimation of average group income, Gini coefficient and local density requires aggregation of each group's household income. However, the small size of reference group may create certain issues in estimating these group-specific variables. Hence, the subsequent analysis is limited to groups with atleast 50 members.

<sup>14</sup>We also test the implications of income distribution on samples categorised according to income as poor, medium-income and high-income. The results presented in Table (9) in Appendix show similar effects of group variables within each sample. Conspicuous consumption disparity between caste groups disappears after controlling for group characteristics, within poor, middle-income and high-income households. Consistent with the earlier results, the average income of the reference group has a negative impact and income inequality within the reference group, depicted by the Gini coefficient has a non-linear effect on conspicuous expenditure within all samples. Although the effect of average

Variables	(1)	(2)	(3)	(4)
OBC	0.0338* (0.0180)	-0.0568 (0.0404)	-0.0493 (0.0406)	-0.0494 (0.0405)
SC/ST	0.0769*** (0.0224)	-0.0425 (0.0514)	-0.0375 (0.0514)	-0.0349 (0.0516)
ln(Group Income)		-0.264** (0.125)	-0.274** (0.125)	-0.275** (0.123)
Gini		-6.007* (3.364)	-6.587* (3.377)	-6.196* (3.356)
Gini <sup>2</sup>		6.854** (3.474)	7.429** (3.486)	7.036* (3.466)
Local Density (2.5%)		1.236** (0.589)	5.257*** (1.363)	
Local Density <sup>2</sup> (2.5%)			-91.94*** (28.44)	
Local Density (5%)				3.199** (0.9866)
Local Density <sup>2</sup> (5%)				-28.74** (12.159)
Constant	-8.353*** (0.366)	-4.027** (1.972)	-3.870** (1.971)	-4.001** (1.961)
Observations	34,979	34,979	34,979	34,979
R-squared	0.554	0.554	0.554	0.553
State FE	YES	YES	YES	YES
Endogeneity test (p value)	0.000	0.000	0.000	0.000
First-stage F statistic	501.109	503.364	509.955	503
Overidentification test (p value)	0.1991	0.1994	0.6435	0.4937

Heteroscedasticity robust standard errors in parentheses. IHDS sampling weights are used.

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Table 4: Impact of income distribution on conspicuous expenditure

After the two-step GMM estimation, we conduct C (Difference-in-sargan) test to affirm the endogeneity of total expenditure. The p-value of the test is presented in Table (4). We find that the test statistic is highly significant implying that total expenditure is indeed an endogenous variable and the estimates using GMM are efficient. Further, we examine whether the vector of instrument variables used in the analysis satisfies the two properties of relevance and exogeneity. First, we verify the relevance of the instrument variables by reporting the results from the first-stage regression. Based on the fact that the F statistic exceeds 10, we conclude that the instruments used in our study are not weak<sup>15</sup>. Then, Hansen’s J test is used to test whether the instruments are exogenous, i.e. uncorrelated with the error term. The test statistic is insignificant which means that the instrument variables used in our estimation are valid.

If households undertake expenditure on conspicuous goods with the objective of status attainment, the income distribution of the reference group must have a similar impact within each social group as well (Charles et al., 2009). To provide support for this conjecture, we test our empirical model separately on each caste category. This allows us to discover whether people from Forward, OBC and SC/ST groups have distinct responses to the change in the reference group’s income distribution.

Table (5) shows the effect of income distribution on conspicuous expenditure within each caste category. The mean income of the reference group and the share of local peers have a significant impact on visible spending for all the caste groups. Although income inequality does not have a significant impact on the Forward caste sample, the effect is positive and non-linear for OBC and SC/ST households respectively<sup>16</sup>. These results are based on the bandwidth of  $\pm 2.5\%$  for calculating the share of local density<sup>17</sup>.

The results in Table (5) indicate that with a 10% increase in the average income of the Forward caste within a state, the conspicuous spending by Forward caste households declines by 4.8%. The effect of mean group income is, however, much lower when the analysis is conducted within OBC and SC/ST samples. Similarly, the effect of local density is also much stronger within the Forward caste sample. This observation reflects that status competition is much fierce within the Brahmins and other Forward caste individuals. The pattern provides evidence of a strong and significant impact of local density on visible spending within all caste groups, even when the coefficient of Gini

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income and Gini is insignificant within some samples, we find that the local neighbourhood density has a statistically significant influence on conspicuous spending within poor, middle and high-income households. This confirms our conjecture that the local density of peers is a stronger determinant of conspicuous expenditure than measures reflecting the overall group’s income distribution.

<sup>15</sup>We refer to the critical values proposed by STAIGER and STOCK (1997) and Stock and Yogo (2005) which is to reject the null hypothesis if the F statistic exceeds 10

<sup>16</sup>Within SC/ST, we obtain an inverse U-shaped relationship between Gini and visible spending, with a turning point at 0.49. However, the relationship is positive for most of the observations.

<sup>17</sup>Similar results are obtained when local density is calculated at the bandwidth of  $\pm 5\%$ .

Variables	Forward	OBC	SC/ST
ln(Group Income)	-0.484*** (0.0518)	-0.222*** (0.0576)	-0.129** (0.0549)
Gini	-5.672 (6.933)	-9.030 (5.802)	19.16*** (3.565)
Gini <sup>2</sup>	5.462 (7.247)	12.27** (5.937)	-19.46*** (3.695)
Local density (2.5%)	9.069** (3.951)	7.766*** (2.217)	4.509** (2.114)
Local density <sup>2</sup> (2.5%)	-204.5* (106.5)	-128.2*** (44.97)	-77.70** (35.75)
Constant	-1.835 (1.439)	-4.172*** (1.431)	-12.43*** (1.289)
Observations	9,461	14,415	11,103
R-squared	0.560	0.523	0.512
State FE	YES	YES	YES

Heteroscedasticity robust standard errors in parentheses. IHDS sampling weights are used.

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Table 5: Impact of income distribution on conspicuous expenditure within each caste group

turns insignificant. Thus, corroborating with the theoretical and empirical findings by Chai et al. (2019), our analysis confirms that the local density of peers is a far better predictor of conspicuous spending than the global density measure (Gini).

### 6.3 Falsification and Robustness Checks

The income distribution of the reference group must affect only conspicuous consumption because it is undertaken to elevate social status in the reference group. Since other goods are consumed for intrinsic benefit without status motives, any change in income distribution is expected to be irrelevant for the expenditure on non-conspicuous goods. Therefore, as a falsification test, we report the impact of income distribution of the reference group on the log of expenditure on non-conspicuous items in Table (6).



Variables	Non- Conspicuous	Education	Health	Food
ln(Group Income)	0.0485*** (0.0161)	0.357 (0.302)	0.241 (0.294)	0.0813*** (0.0279)
Gini	-0.213 (0.631)	-17.99 (12.25)	-3.657 (10.81)	-2.476** (1.098)
Gini <sup>2</sup>	0.0427 (0.654)	20.77 (12.69)	1.747 (11.28)	2.525** (1.153)
Local density (2.5%)	-0.310 (0.262)	-2.191 (5.193)	-5.331 (4.888)	1.341** (0.646)
Local density <sup>2</sup> (2.5%)	5.075 (5.109)	107.6 (115.2)	37.44 (98.85)	-14.62 (11.89)
Constant	0.349 (0.288)	-18.47*** (5.396)	6.531 (5.090)	2.437*** (0.540)
Observations	34,979	34,976	34,985	34,985
R-squared	0.916	0.350	0.091	0.670
State FE	YES	YES	YES	YES

Heteroscedasticity robust standard errors in parentheses. IHDS sampling weights are used.

\*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$

<sup>1</sup> Expenditure on education includes only school and college fee.

<sup>2</sup> Expenditure on health includes expenses on out-patient and in-patient services.

<sup>3</sup> Expenditure on food includes spending on: rice, wheat/flour, sugar, kerosene, other cereals, pulses and pulse products, meat, chicken and fish, sweeteners, edible oil, eggs, milk, milk products, cereal products, vegetables, salt and spices, tea and coffee, processed foods, paan, tobacco, intoxicants, fruits and nuts.

Table 6: Placebo Test: Impact of income distribution on non-conspicuous expenditure

The first column in Table (6) shows the impact on the total expenditure on all non-conspicuous goods (total expenditure net of expenditure on conspicuous goods). Consistent with the hypothesis, we find no systematic effect of indicators of global (Gini) and local density. The effect of the average income of the reference group is negligible. We also report the impact of income distribution on major items of non-conspicuous expenditure, i.e. education, health and food. The average income of the reference group has an insignificant effect on expenditure on all categories, except food. This reinforces our conjecture that the effect of average group income on visible spending is due to status motive. Besides, income inequality within the reference group and the share of local peers do not influence expenditure on any of these items, except food. Although

significant, there is a limited impact of Gini and average group income on food expenditure. The effect of income inequality is possibly driven by the expenditure on less nutritious food which Bellet and Colson-Sihra (2018) find to be significantly affected by the household's relative income deprivation.

Our analysis so far is based on the definition of conspicuous goods offered by Khamis et al. (2012). For robustness check, we also report the impact of group characteristics on goods identified as conspicuous by other surveys conducted in the U.S. in Table (7). Charles et al. (2009) classify personal transport equipment, clothing, footwear, jewellery and items of personal care as conspicuous goods. According to a survey conducted by Heffetz (2011), most of the respondents identify the consumption of cigarettes, cars, clothing, furniture, jewellery, recreation goods such as computers, games, TVs, video, audio, musical and sports equipment, tapes, CDs, and eating food in restaurants as highly visible. We construct two different measures of conspicuous expenditure based on the goods described as conspicuous in these studies.

The effect of income distribution of the reference group on conspicuous expenditure as per the definitions proposed by Khamis et al. (2012), Charles et al. (2009) and Heffetz (2011) is depicted in Table (7). The average income of the reference group, Gini index and local density have a significant effect on the bundle of conspicuous goods defined by Charles et al. (2009). Although the signs of the coefficient of variables of interest are as expected, they seem to be statistically insignificant for the definition offered by Heffetz (2011). Since the expenditure on social functions is reported to be a major component of conspicuous spending for Indian households, we create a new measure of conspicuous spending by adding the expenditure on social functions to the definition by Heffetz (2011). The results described in the last column depict a significant effect of mean income, Gini index and local density on the modified measure. This further confirms that the results are driven by the expenditure on social functions.

Variables	Khamis	Charles	Heffetz 1	Heffetz 2
ln(Group Income)	-0.274** (0.125)	-0.331** (0.145)	-0.0615 (0.127)	-0.164** (0.064)
Gini	-6.587* (3.377)	-15.345*** (4.995)	-6.005 (4.224)	-4.476* (2.548)
Gini <sup>2</sup>	7.429** (3.486)	16.008*** (5.101)	6.247 (4.342)	5.074* (2.641)
Local density (2.5%)	5.257*** (1.363)	5.296*** (1.801)	7.137*** (1.656)	4.514*** (1.057)
Local density <sup>2</sup> (2.5%)	-91.94*** (28.44)	-71.70** (34.78)	-101.06*** (31.97)	-70.92*** (20.81)
Constant	-3.835* (1.972)	-3.357 (2.466)	-8.119*** (2.076)	-5.078*** (1.129)
Observations	34,979	34,985	34,985	34,899
R-squared	0.554	0.334	0.363	0.574
State FE	YES	YES	YES	YES

Heteroscedasticity robust standard errors in parentheses. IHDS sampling weights are used.

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

<sup>1</sup> Column 1: The dependent variable includes personal vehicles, footwear, vacations, furniture and fixtures, social functions, repair and maintenance, house rent, entertainment, clothing and bedding, jewellery and ornaments, recreation goods and personal goods (Khamis et al., 2012).

<sup>2</sup> Column 2: The dependent variable includes expenditure on personal transport equipment, clothing, footwear, jewellery and items of personal care (Charles et al., 2009).

<sup>3</sup> Column 3: The dependent variable includes expenditure on cigarettes, cars, clothing, furniture, jewellery, recreation goods such as computers, games, TVs, video, audio, musical and sports equipment, tapes, CDs, and eating food in restaurants (Heffetz, 2011).

<sup>4</sup> Column 4: The dependent variable includes expenditure on cigarettes, cars, clothing, furniture, jewellery, recreation goods such as computers, games, TVs, video, audio, musical and sports equipment, tapes, CDs, eating food in restaurants and social functions.

Table 7: Robustness Check: Impact of income distribution on alternate definitions on conspicuous goods

## 7 Conclusion

In this paper, we empirically estimate the determinants of household conspicuous expenditure in India using household-level survey data for the year 2011-12. The findings confirm that the members of historically disadvantaged caste groups spend a significantly higher amount on conspicuous goods as compared to the Forward caste households. The

results suggest that inter-caste disparity in conspicuous consumption is significantly explained by the income inequality and average income of the reference group and density of local peers. Particularly, we find that households from poorer reference groups are more likely to spend on conspicuous goods than their counterparts from more affluent groups. We also observe a non-linear relationship between income inequality within the reference group and household expenditure on visible goods. As an important contribution to the literature, we find that household conspicuous expenditure responds significantly to the changes in the local income distribution.

These results offer valuable policy implications. We have shown that conspicuous consumption is more prevalent among minority caste groups. Because such consumption behaviour diverts the resources away from productive channels (Bellet and Colson-Sihra, 2018), it is necessary to counterbalance the lower spending by these households on education, health and other necessities through their public provision. Consequently, it calls for the implementation of public programs such as food subsidies and stamps, health insurance, education aid and other transfers targeted at disadvantaged caste groups. Further, our finding that households from poorer groups spend more on conspicuous goods stresses the importance of policies aimed at improving the economic status of minority sections to lower their conspicuous consumption. In addition, our results pertaining to the importance of local density suggest that redistributive policies aimed at reducing income inequality may have a differential impact on the local density and hence on conspicuous spending. As conspicuous spending depends primarily on local neighbourhood effects, redistributive policies may be less effective in altering consumption behaviour. Overall, our results give policy-makers further reasons to implement affirmative action policies to prevent household spending on conspicuous goods and to compensate for their lower spending on education and healthcare.

The results must be inspected with a bit of caution because of certain limitations. Due to the unavailability of data, we have not accounted for the existing stocks of conspicuous goods which may affect the current expenditure on conspicuous goods. Further, although the goods used to signal social status may vary across social groups and regions because of the differences in history, culture and other attitudes (Heffetz and Frank, 2011; Currid-Halkett et al., 2019), in this paper we utilise the same definition of conspicuous goods for all households<sup>18</sup>. These issues may be resolved by conducting a large-scale household survey to estimate the visibility and the distinctiveness of conspicuous items across groups and regions, as a part of future work.

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<sup>18</sup>As the information on economic and social backgrounds is not available in the survey conducted by Khamis et al. (2012), we cannot account for heterogeneity in conspicuous consumption categories while estimating the patterns in expenditure.

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## A Appendix

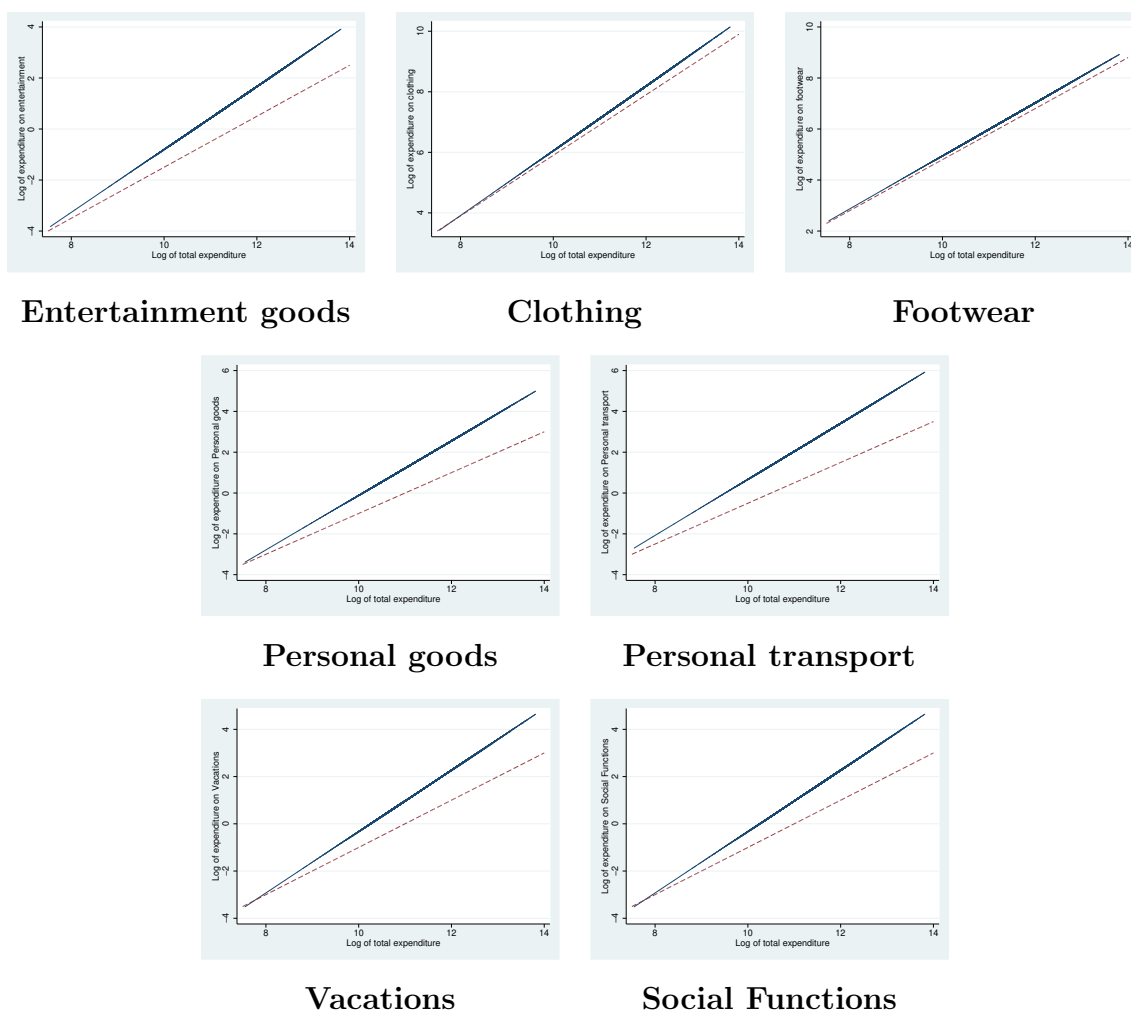


Figure 4: Item-wise Engel curves

Variables	Poor	Medium Income	High Income
OBC	0.0361* (0.0186)	0.0575** (0.0256)	0.0198 (0.0267)
SC/ST	0.0460** (0.0231)	0.0638** (0.0321)	0.0700** (0.0344)
Constant	-8.451*** (0.507)	-11.31*** (2.199)	-7.619*** (1.352)
Observations	27,761	17,909	9,852
R-squared	0.467	0.193	0.337
State FE	YES	YES	YES

Heteroscedasticity robust standard errors in parentheses. IHDS sampling weights are used.

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Table 8: Caste based disparities in conspicuous expenditure: Selected Subsample

Variables	Poor	Medium Income	High Income
OBC	-0.00606 (0.0407)	0.0614 (0.0530)	-0.0813 (0.0600)
SC/ST	-0.0338 (0.0511)	0.0749 (0.0680)	-0.0656 (0.0793)
ln(Group Income)	-0.333** (0.142)	-0.130 (0.218)	-0.274* (0.146)
Gini	-8.655** (3.697)	-7.979* (4.522)	-3.457 (6.757)
Gini <sup>2</sup>	9.590** (3.817)	8.682* (4.670)	4.495 (6.993)
LD (2.5%)	7.947*** (1.664)	7.332*** (1.981)	8.990*** (3.021)
LD <sup>2</sup> (2.5%)	-130.7*** (33.96)	-125.3*** (40.38)	-149.0** (62.43)
Constant	-3.922* (2.300)	-10.03** (4.342)	-7.068** (3.093)
Observations	27,385	17,718	9,668
R-squared	0.466	0.183	0.339
State FE	YES	YES	YES

Heteroscedasticity robust standard errors in parentheses. IHDS sampling weights are used.

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Table 9: Impact of income distribution on conspicuous expenditure: Selected Subsample

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