Less Food for More Status: Caste Inequality and Conspicuous Consumption in India

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Abstract

Even under the direst necessity, Indian households do not seem to spend their budget in a rational of survival: households from lower castes choose to consume less food and more visible items than similar households from high castes, and this difference is stronger for the poor. Using variations in upper caste wealth across regions, we show that disadvantaged castes substitute visible consumption for food when upper castes are relatively richer. In regions where Upper Castes are twice richer, low caste households spend up to 8% more on visible and similarly less on food. For households under $2 dollars a day, it corresponds to a daily budget reallocation of 15 dollar cents. We argue that consumption choices can be partly explained by a preference for status, which depends on inequality between caste groups. Importantly, preferences are upward-looking between castes: the high caste is society's reference group, and households outside of the caste system are not affected by it. Our results are not driven by general equilibrium effects on prices and no similar effect is observed on other expenditures. They underline the relevance of caste-targeted policies in the process of development.

Keywords: status, reference-dependent preferences, group inequality, malnutrition

JEL Classification: D01, D12, D91, J15, Z13

1   Introduction

Compared to households from historically privileged groups, similar households from under-privileged social groups spend a higher share of their budget on non-essential visible consumption. Controlling for permanent income, Charles et al. (2009) find that Blacks and Hispanics in the US spend roughly 25% more on visible goods, and less on food, education and health. Khamis et al. (2012) find similar results for India. Another puzzle for consumption theory is that even when undernourished, "the poor do see themselves as having a significant amount of choice, but they choose not to exercise that choice in the direction of spending more on food". Quite on the opposite, they allocate a substantial portion of their budget to visible items such as tobacco or festivals (Banerjee and Duflo, 2007).

Several explanations have been discussed to explain these puzzles, among which the preference for status. We empirically explore the effect of status deprivation on consumption in the context of the caste system in India. For Weber (1922), status groups result from a process of social stratification where individuals can be ranked in a hierarchy on the basis of non-economic qualities: the ranking is maintained by birth and some easily identifiable conditions (name for gentry and caste, phenotype for race, etc.). Ridgeway (2014) explores how status inequality interacts and reinforces other types of inequality such as inequality of ressources or power: holding a higher status rank generates prestige and access to privileges in return. We take a similar approach by studying a specific interaction between status and economic inequality: the way consumer behaviors are affected by the underlying status hierarchy. The individuals who are deprived of status may wish to compensate by spending more on items consumed by higher ranked individuals, an idea also developed by Veblen (1899). This behavior may prevent them, in turn, to spend more on long-term investments such as food or education. In this article, we test to what extent an increase in the relative wealth of the highest ranked group explains a substitution effect of lower ranked groups between visible consumption and food.

We exploit the 66th round (2009-2010) of the Indian National Sample Surveys on Consumption and Expenditure (NSS) in order to explore the empirical implications of status concern in the consumption decisions of individuals across castes. We first present several stylized facts on the link between caste affiliation and economic status in contemporary India. We then replicate the empirical approach adopted by Charles et al. (2009) and Khamis et al. (2012), who control for permanent income, but find slightly different results: low castes have a higher propensity to spend on conspicuous items than similar high castes, but the gap is especially wide at low income levels and disappears for high income levels. Controlling for local prices and other supply factors, which is a novelty in our approach, does not qualitatively affect the results. Low castes also spend significantly less on food, education and other expenditures.

To explore the role of inequality between groups, we first present cross-sectionnal correlations which reveal that the regional expenditure share of low-castes households in visible goods like toiletries (perfume, body cream, soap, etc.) is positively correlated to the relative total

expenditure of high castes, while the consumption of high calorie products is negatively correlated with it. We then document the presence of a substitution effect between conspicuous consumption and food due to the status externality that high castes inflict on lower castes. To do so, we exploit the geographical variation in high castes' level of total expenditures across NSS Indian regions and explore its effect on low castes' expenditures, controlling for other factors such as own caste group mean expenditure and local prices. We find that the expenditures on conspicuous consumption and food is respectively a positive and a negative function of the mean expenditures of high castes.

Several robustness checks confirm these findings: we do not observe any substitution effect on other categories of expenditures, which further supports the argument that substitution takes place between visible goods which have a high immediate status return, and expenditure on food. Once controlling for high castes' expenditure, we also do not observe any significant effect of own group's expenditure on the conspicuous consumption of lower castes, contrary to previous findings of Charles et al. (2009) and Khamis et al. (2012). We provide further evidence that the substitution effect is indeed driven by upward-looking comparisons between castes due to the presence of a caste hierarchy. We show that the relative consumption of the high castes does not affect the consumption behavior of groups outside of the caste system such as Muslims or Scheduled Tribes. We also find that the effect is not a class effect as the regional variation in top income concentration is not significant.

Charles et al. (2009) also proposes to explain conspicuous consumption in the US by preferences for status. In particular, they show a negative relationship between the local mean income of one's race and one's level of conspicuous consumption. They explain this relationship by a signalling theory of conspicuous consumption where the individual has more incentive to spend on visible consumption when her group is poorer, hence signalling more her wealth difference. There are two potential issues with this approach: the first one is that it does not take into account between-group inequality and hence sets one's own social group as the reference – we show, however, that inequality between social groups drives most of the effect. The second is that in a signalling framework, the individual spends increasingly more of her budget on conspicuous consumption while she gets richer (Heffetz, 2011), and it is therefore puzzling to see the poorest people spending such a large share of their budget on what is qualified as non-essential.

This article therefore sheds light on the empirics of status concerns using Indian data: is conspicuous consumption a mere signalling device or is it influenced by inequality? If inequality is a driving factor, does it act through local supply or status preferences? Is the effect different across the income distribution? What consumption items do people substitute when spending more on conspicuous goods? Focusing on India is particularly interesting because of the low inclusiveness of the growth process in the last decades, as well as the rise in income inequality since the 1990s (Banerjee and Piketty, 2005). The rigid caste structure of the society can help to identify the group of reference for status, and to explore the strength of status concern. India

also remains a society characterized by very poor indicators in terms of poverty reduction and nutrition: Deaton and Drèze (2009) highlight the striking fact that malnutrition is still prevalent after the high growth rate of the past two decades, and calorie consumption has decreased for all income classes.

Besides, systematic patterns in the consumption of underprivileged social groups may have long-term welfare implications. First, between-group inequality can be thought as putting a negative externality on consumption, which makes people spend more on certain goods that what is socially optimal (Frank, 2005). Second, several instances in the literature underline the difference between hunger and malnutrition. If the former leads to death, the latter can be prevalent in the population with a significant effect on individual future productivity (Dasgupta and Ray, 1986). The long-term effects of malnutrition on physical work capacity includes diminishing muscular strength, growth retardation, increased illness and vulnerability to disease or decreased brain growth and development (Dasgupta, 1997). While people tend to think of food as a pure necessity, an individual under malnutrition could have a certain amount of choice on how to spend her budget without starving. It however could lead to unforeseen long-term consequences such as the prevalence of malnutrition and poverty for those who choose to favour short-term investments, under the form of conspicuous consumption, rather than long-term investments such as food or education.

Ultimately, identifying the source of conspicuous consumption and the resulting distortions in preferences is critical for policy implications. In a society where concern for status affects the investment decisions of the most disadvantaged groups, redistribution alone may not modify their persistent feeling of status deprivation, and may not be enough to dampen group inequalities. Furthermore, the status externality being driven by the behavior of the high ranked group, pro-poor growth policies may not alter significantly the distortions in consumption choices, contrary to policies focusing on transfers from the top group to the bottom ranked group. One may thus be more inclined to address the concern itself by introducing policies targeting specific groups.

The article is organized as follow: in Section 2, we provide a detailed literature review of the different branches related to this article along with a brief review of the caste system. In Section 3, we present the database along with important stylized facts on conspicuous consumption and inequality between caste groups in India. In Section 4 we first show that different caste groups make different consumption choices. We then test if caste inequality influences the patterns of consumption of the lower castes, and confront it with alternative explanations. Section 5 concludes.

2   Literature Review

2.1   Concern for Status and Conspicuous Consumption

In his Theory of the Leisure Class (1899), Veblen explains that the concern for status is rooted in the need to be esteemed, or honourable, in society. What governs social esteem is a set of practices which are wasteful in nature and reinforce the status of individuals or social groups performing them. These practices are referred to as conspicuous consumption and conspicuous leisure. Being unable to perform these practices means becoming an outcast, a perspective unpleasant enough so that Veblen qualifies the practices as needs.

In most societies, we also observe status-based differences: social groups ordered according to a status hierarchy maintained by birth and some easily identifiable conditions (name for gentry and caste, phenotype for race, etc.) in order to restrain access to privileges (Weber, 1922). Social hierarchy can be reinforced by conspicuous consumption if low-status groups feel the need to compensate their lack of historical status by spending more on wasteful items. This phenomenon would indeed leave them with less budget for investing in non-visible goods such as adequate nutrition, a guarantee of higher health and wealth in the future.

Heffetz and Frank (2008) provides a review on the preference for status in economics and define status by two major ingredients. First, status is a positional good in the sense that the satisfaction one gets from acquiring it depends on how it affects one's relative rank in society. This component underlines the signalling motive in conspicuous consumption. Second, status is desirable, meaning agents should be ready to waste resources to improve it. In other words, they should be ready to substitute between visible consumption and other less visible items such as food or education. The second component tells us that the preference for status is not a mere signalling device, but also a relative deprivation feeling which could be fed by others' visible consumption. The article focuses more on this particular aspect of status. To summarize, status is either instrumental to the achievements of positive goals, or acts as a negative externality on those who are deprived from it. Status preference likely possesses both components, and disentangling them as well as testing them empirically is critical in order to understand consumption choices.

Theoretical formalizations of Veblen (1899)'s idea of conspicuous consumption have been made by Duesenberry (1949), Clark et al. (2008), Frank (2005), Frank et al. (2005), Kolm (1995), Becker and Rayo (2006), Heffetz (2011), Ray and Robson (2012) or Bowles and Park (2005). In these models, status seeking preferences affect choices households make, for example by disincentivizing people to save (Becker and Rayo, 2006) or spending more time on labour and less on leisure (Bowles and Park, 2005). The empirical evidence on the existence of upward-looking effects is large. Easterlin (1995) first provided evidence for social status positioning in terms of income. More recent and notable contributions include Luttmer (2004), Dynan and Ravina (2007) and Oishi et al. (2011). Carr and Jayadev (2014) or Bertrand and Morse (2013) have identified relative income effects on consumption and debt based on survey data, and have underlined the role of inequality in these trickle-down effects. Previous works have also shown evidence of reference-dependent preferences in India for conspicuous consumption (Khamis et al. (2012), though using a different dataset), wedding expenditures

(Bloch et al., 2004) or happiness (Fontaine and Yamada, 2013). The later example highlights the interesting fact that between-caste comparisons reduce well-being more than within-caste comparisons. This suggests that inter-group comparisons matter in the race for status.

Heffetz (2011) and Charles et al. (2009) contributed importantly to the empirical identification of the impact of status-seeking preference on consumption. The latter focus on American racial groups and test the predictions of a signalling game to show that variations in the mean income of one's own racial group explain most of the variation in conspicuous consumption between races. Such models predict that individuals spend more on conspicuous items when their group of reference is relatively poorer, as they have to distinguish themselves more from their group of reference. Also, the poorest have no incentive to consume more conspicuously than if there was no signalling motive. Our approach differs from the specification of Charles et al. (2009) in two respects: we allow for the effect of other groups on one's conspicuous consumption, and we integrate local prices in the empirical analysis. Our results favour the interpretation of status as not a signal but an endogenous external habit (or relative deprivation).

2.2 Inequality and Malnutrition

This article is related to the literature on malnutrition and inequality, which relies on the pioneering work of Leibenstein (1957) on food intake, work capacity and unemployment. Dasgupta and Ray (1986) develop a timeless theoretical framework to link involuntary unemployment to the incidence of malnutrition, and relates them in turn to inequality in the distribution of assets. They emphasise the importance of intertemporal substitution betwen past nutritional status and present and future productivity. In the context of this article, the substitution between visible consumption and adequate nutrition is intratemporal and may not fully take into account the gains in future, or dynastic, productivity. This could constitute a source of intertemporal inefficiency, and a perpetuating factor of inequality. Baland and Ray (1991) offer a demand-side mechanism to the links between inequality and malnutrition through the competition between luxuries and basic goods for the use of the same scarce resources. As inequality grows, the demand for luxuries increases and the demand for basic goods is limited due to resources scarcity. The demand-side mechanism presented in Baland and Ray (1991) highlights the potential effect of inequality on prices and the economic environment, which may well explain malnutrition. We address this concern in the paper as we introduce local price indexes in addition to supply side controls in the empirical analysis.

On the relationship between income and adequate nutrition, even though the literature acknowledges that the income elasticity of calories is not zero (as previously suggested by studies such as Behrman and Deolalikar (1987a)), the estimated upper bound is between .3 and .5 (Subramanian and Deaton, 1996) and is not much higher for people living with less than \$1 per day, even when they report being under malnutrition (Banerjee and Duflo, 2007). Recent works also suggest that other parameters than hunger have an important impact on food choices, even when households are under malnutrition (Atkin, 2013a,b). This evidence suggests that even the

extremely poor spend their budget while internalizing other constraints than maximizing nutrition. Subramanian and Deaton (1996) report that the calories necessary for daily activity cost less than 5 percent of the daily wage in rural India. Other estimates show similar results, making it quite implausible that nutrition directly constraints income (Swamy (1997) for a review).

In the specific case of India, the relationship between income and calorie is even more of a puzzle: the last decades witnessed a decrease in calorie intake along with non-increasing real food expenditures, despite rapid economic growth. The Indian calorie consumption decline has been explained as a consequence of the improved epidemiological environment and the reduction of physical activity (Deaton and Drèze, 2009), or the increase in non-food essential expenditures such as education and health as well as a decline in home-grown food production (Basu and Basole, 2012). These mechanical explanations do not fully account for the prevalence of malnutrition in India[1], especially given the amount of choice that the individuals face in their budget allocation.

We contribute to this literature by establishing the link between lower spendings on food and inequality through a demand-driven channel. We explain the heterogeneity of nutritional choice by the allocation bias induced by inequality: low status groups substitute more conspicuous consumption to food in places where the high status (reference) group is comparatively wealthier. The choice of spending on conspicuous consumption instead of adequate nutrition represents an intra-temporal choice between high current status versus high future returns. This mechanism takes into account the fact that nutrition determines long-term outcomes, but also that individuals do not maximize their nutrition at all levels of income: we can simultaneously observe individuals under malnutrition and spending a substantial amount of their income on non-essential items, two facts that the aforementioned literature underlines. The status externality may contribute, in return, to the perpetuation of inequality, as preferences biased towards current status undermine future outcomes.

2.3   Caste system and Status Hierarchy

The Indian caste system has been widely studied and debated between different competing theories about its formation, rigidity and historical evolution. We do not enter into the complexity of the concept of caste in this article, but rather would use broad definitions enabling us to highlight interesting trends produced by such a society in terms of status and economic choices.

Caste is an English term referring to two divisions: *varna* and *jati*. The jati is in fact the operative category which defines codes and social relationships within the Indian society. There exist over 3,000 Jatis. Jatis are localized, hereditary, endogamous and characterized by the

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[1]The last thirty years have seen a reduction of around fifty percent in the prevalence of severe undernutrition, as well as a sharp decline in the prevalence of clinical signs of nutritional deficiency. Despite this improvement, the overall levels of undernutrition in India are still very high. Close to half of all Indian children are underweight (some of them even in better-off households), and about half suffer from anemia. Also, thirty-six percent of adult women suffer from low Body Mass Index (below 18.5). The anthropometric indicators have improved at a very slow pace compared to other countries (Deaton and Drèze, 2009).

status acquired through their occupation as well as through a specific set of codes and customs (food, rituals, etc.). The rules of conduct are linked to a specific degree of purity or prestige vis-à-vis the members of the other jatis with which one lives or meets (Jaffrelot, 2014). The family name of an individual, in many cases, may specify the jati to which he belongs. It is to be noted that even in urban India, arranged wedding – preserving endogamy – is much more the norm than the exception (Deshpande, 2011). Jatis roughly align themselves with the scale of status determined by the *varnas*[2]. *Varna* is often translated from Sanskrit as *colour*, though this word could be misleading as the concept of caste is well distinguished from the one of race. The word appeared as early as in the Rigveda (hymn XC, on *Purusha*). The society is divided by occupations between Brahmin (priests and teachers), Kshatriya (warriors and royalty), Vaisya (traders, merchants, moneylenders) and Shudra (engaged in menial, lowly jobs). A fifth category, the Atishudra – so called Untouchables –, is considered as part of the varna system by being excluded from it.

In Post-independence India, Caste- and religious-based discriminative behavior is formally forbidden and Untouchability abolished (Articles 15 and 17 of the Indian Constitution, 1950). Various measures of positive action have been implemented since then, especially targeting the *Dalits* (name that the Atishudra have given to themselves, meaning "oppressed") and the tribal communities of India (*Adivasis*). Quota policies reserve seats in the State legislative assemblies and the Parliament, as well as in the public sector and all public education establishments. The corresponding administrative categories, which we will use in this article, are *Scheduled Castes* (SC) for Dalits and *Scheduled Tribes* (ST) for Adivasis. To simplify notations, we will refer to high caste for the Brahmin and Other upper castes, middle caste for the Other Backward Classes and low caste for the Scheduled Castes.

The lower castes in the Indian hierarchy, and especially the Dalits, have a long history of persecution and prevention of access to public space and public resources. Regarding the Dalits, Ambedkar reports in a manuscript entitled *Untouchables or The Children of India's Ghetto* that it is an offence to acquire wealth such as land and cattle, to build a house with tiled roof, to put on a clean dress, wear shoes, put on a watch or gold ornaments, to give high sounding names to their children, to speak a cultured language. These customs and characteristics are closely related to the implicit status hierarchy: a Dalit is supposed to conform to the status of an inferior, and must wear visible marks of his inferiority for the public to know and identify him.

This hierarchy of status causes a mimicry of customs and practices in a cascade from the locally dominant caste to the lowest ranking one in a chain reaction. Srinivas (1956) formed the concept of Sanskritization as the process through which a low caste could potentially, in a generation or two, rise to a higher position in the hierarchy by adopting the customs, rites, and beliefs of the Brahmins, and the adoption of the Brahminic way of life. Srinivas underlines, however, that the process of imitation is observed even among untouchables, who have no hope

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[2]However, the hierarchy and rules of conduct followed by the jatis are much more complex and do not match perfectly the rank determined by the varna system (Deshpande, 2011).

in seeing their status increase (movements across castes occur in the middle regions of the hierarchy). It therefore seems that despite very low caste mobility, the aspiration to visibly appear of a higher status is widespread in the society. He writes: "The entire way of life of the top castes seeps down the hierarchy. And the language, cooking, clothing, jewelry, and way of life of the Brahmans spreads eventually to the entire society."

These observations are consistent with the view that status concern could be thought of as an externality imposing a feeling of relative deprivation to the disadvantaged, and not simply instrumental.

3   Database and Stylized Facts

3.1   Database

The database we use is the National Sample Survey on Consumption and Expenditure, collecting socio-economic data and consumer expenditures. These surveys are cross-sections and do not contain information on income, though the information on total and specific expenditures is very detailed. They also provide detailed economic, demographic and social characteristics for households and individuals. They are representative at the regional level, which is formed of several districts and smaller than a State (88 regions for 29 States and 7 union territories). Regions have been constructed so as to gather territories sharing similar agro-climatic and population characteristics within each State. We present results from the 66th thick round (2009-2010) in the analysis of consumption patterns across social groups. Subsequent works will use five thick rounds (three decades) of the NSS surveys.

3.2   Definition of expenditure groups

The issue we face with the definition of expenditures is to determine what is conspicuous. Heffetz (2011) largely contributed to the recent advances in the definition of conspicuous consumption and its empirical implications. He shows that conspicuous goods are also more visible goods which correspond to goods with a high income elasticity. His visibility measure predicts up to one-third of the observed variation in income elasticities across consumption categories in U.S. data. Following the type of survey that Heffetz introduced, Charles et al. (2009) conducted a survey of 320 American students, and determined a set of visible items: expenditures on apparel (including accessories), personal care and vehicles. They exclude expenditure on housing given a potential differential treatment on the housing market depending on race. We choose to do the same in our analysis, as housing segregation is also documented in India across castes and religions (Jaffrelot, 2014). Khamis et al. (2012) follows the same approach than Charles et al. (2009) by conducting a survey on 163 Indian students in Economics, and take on a higher number of items as visible: personal goods, transport equipment, footwear, vacations, furniture and fixtures, social functions, repair and maintenance, house rent and rent, entertainment, clothing and bedding, jewelry and ornaments and recreation goods. Their list contains items disposed within houses or consumed during social occasions, which could be the sign that Indian society has stronger social ties across neighbourhoods. We reproduce their table in table 10 (appendix).

The expenditure we refer to as visible adds to the visible expenditures list of Charles et al. (2009) the items considered by Khamis et al. (2012), which are more visible in repeated interactions among neighbours such as house furnitures. Our approach considers conspicuousness under the insights of Veblen, with the central idea of wastefulness of consumption. Focusing on visible personal components could limit the phenomenon to relatively mobile areas. In the rural Indian context with very low mobility and strong social ties, it is very likely that visible consumption could be extended to household possessions.

Our measure of visible (or conspicuous) consumption in the empirical analysis includes clothing, footwear, bedding, conveyance expenses, transport equipment, personal goods, toiletries, beauty and tailoring services, furniture and fixtures. We exclude jewellery as in the case of India, jewels are mostly used as an asset and a source of savings[3].

Our measure of food consumption contains all categories of aliments, from meat, fish and eggs to vegetables or cereals. We construct other aggregates of expenditures which will be used a placebo tests: education and health, services and other less visible goods.

3.3   Group inequality in India

The caste system attempts to distribute tasks to each individual in society not on the basis of their aptitudes but of the social status of their parents. It has been argued that with development

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[3]Note that our results are robust to the inclusion of jewels

and liberalization of Indian, caste does not determine occupations and social position anymore. However, Deshpande (2011) shows that the *Upper Castes* (high caste in our own terminology) still hold over prestigious, better-paying occupations and that the change in the occupational structure brought by economic growth continues to show a substantial discrimination on the basis of hereditary status. If the upper castes have maintained a high wealth level and high connectivity to the Indian elite, it is not so surprising that economic growth and openness do not change drastically the structure of the Indian society.

Table 1: Descriptive Statistics of NSS 66th Round Household Expenditure

	Scheduled Castes	OBCs	Hindu Upper Castes	Muslims
	mean	mean	mean	mean
Head Age	44.70	46.49	47.86	45.41
Head Literate	0.63	0.75	0.88	0.67
Head Higher Education	0.07	0.11	0.24	0.07
Household size	4.63	4.56	4.36	5.29
Rural households	0.66	0.61	0.46	0.52
Monthly Per Capita Expenditure	1124.12	1359.43	2023.03	1282.33
Land owned (ha)	0.31	0.69	0.71	0.31
Observations	16225	32894	23679	12445

Table 1 gives a few descriptive statistics about economic outcomes by main caste and religious groups (Hindu Upper Castes, OBC, SC, and Muslims). The striking fact is that the levels of education and wealth seem to follow the underlying caste structure : the head of the household has a higher education diploma for 24% of high caste households, while only 11% of the middle caste and 7% of the low caste and Muslim achieve such a level. The monthly per capita expenditure of an average upper caste household is 1.5 times the one of an average middle caste household and 1.8 times of a low caste household. High caste households are also notably more urbanized, a fact which could explain part of the difference in annual incomes. The total land owned follows a similar trend hierarchy.
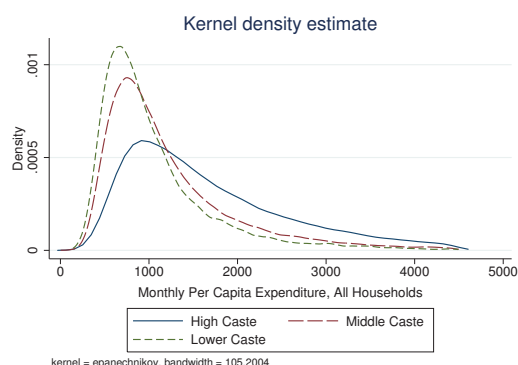

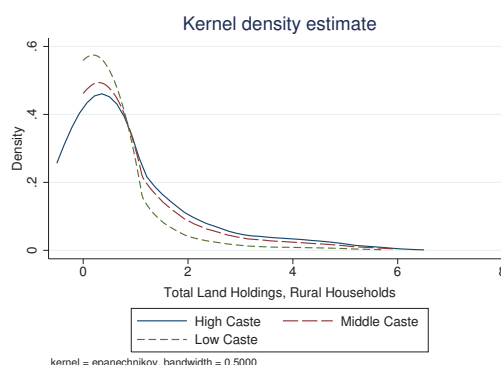Figure 1: Kernel Density – MPCE by Social Groups

Figure 2: Kernel Density – Land Holding by Social Groups

Figures 1 and 2 draw the kernel density for monthly per capita expenditure and land ownership across social groups. Here again, the economic status varies across social groups: upper

caste households are less numerous in the poorer sections of society, and their consumption and land densities have much thicker tails on the right than for other social groups. We notice, as Deshpande (2011), that even a broad decomposition in varna and religious affiliations in India provides evidence that the link between social group and economic status is not broken in contemporary India. More than 90% of the regions in our sample are dominated by high caste when it comes to average per capita expenditures.

(a) Relative Consumption of high castes Households

(b) Relative Consumption of low castes Households
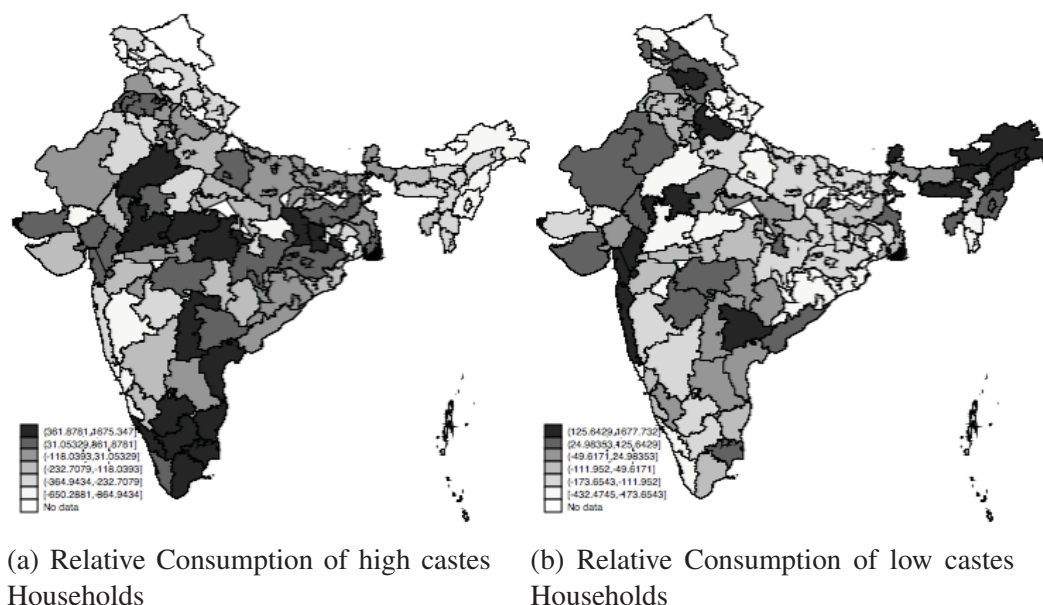
Figure 3: Residual Variation in group MPCE across Indian Regions Controlling for Regional MPCE, NSS 66

However, there are important variations across region in the importance of this dominance. Figure 3 maps the residual variation in high caste and low caste mean per capita expenditure (or relative consumption), after controlling for general variation in regional mean expenditure. Importantly, regions where the mean expenditure of high caste is higher seem to be regions where the mean expenditure of low caste is lower, which is why it is critical to control for the mean regional per capita expenditure of own caste group in the empirical analysis. We use these variations in the empirical analysis to infer how local economic inequality affects consumption choices of disadvantaged groups within a structural status hierarchy.

3.4 Regional expenditure shares and group inequality

Looking at the correlation between regional relative consumption of the high castes and consumption share of the low castes for different categories, we find interesting patterns. Controlling for average regional consumption, Figure 4 shows that the relative consumption of the high caste is negatively correlated with necessary goods such as calorie intensive animal products (meat, fish, dairy or eggs), but positively correlated with the consumption of more luxurious and visible goods such as perfume or beauty cream.

This could simply be a systemic effect affecting all households similarly. Indeed, a higher

relative consumption of high caste households could be correlated to higher levels of advertisement, higher urbanization rates or standard supply side channels such as relative prices of toiletries. However, Figure 5 (appendix) shows that even in the absence of controls, we do not find such correlations between the relative consumption of the high castes in a given region and their own consumption share of such products. This simple stylized fact shows a potential effect of between-group inequality on consumption patterns.

(a) Toiletries (perfume, soap or body cream)   (b) Animal Products (meat, fish, eggs or dairy)
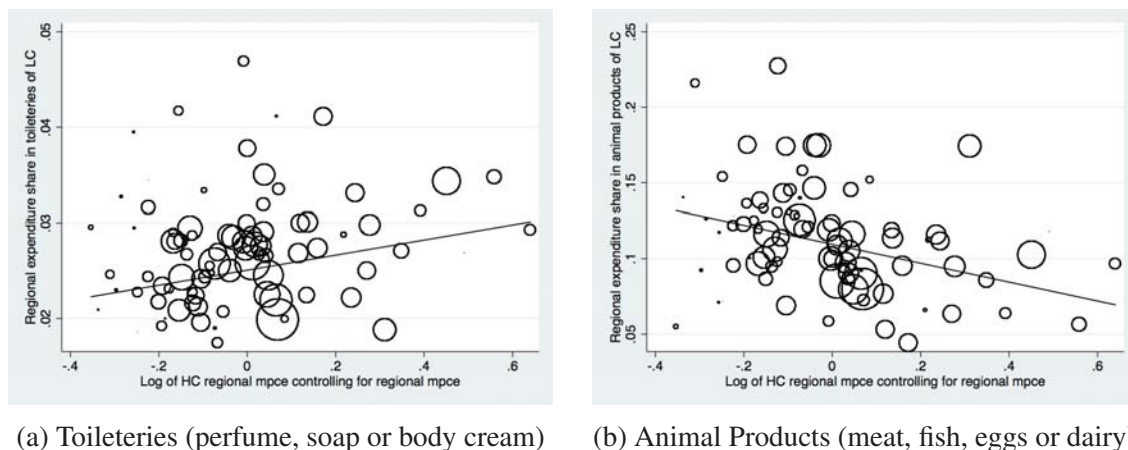
Figure 4: LC regional expenditures shares vs. HC regional income (mean regional income control)

Interestingly, it seems to be specific to the caste hierarchy. Indeed, if we look at social groups which are outside of the Hindu caste system such as Muslims, we find no correlation on toiletries items and a much lower effect on calorie-intensive food expenditures (Figure 6 in the Appendix). This is striking considering the fact that Muslims are similarly segregated than the low-caste in India and have fairly equivalent economic characteristics. The empirical analysis investigates whether caste hierarchy does play a role in explaining such findings.

4   Empirical Analysis

4.1   Different consumption choices across caste groups

We first assess whether lower caste households consume more conspicuous items and less food compared to households from higher castes. From Heffetz (2011), we identify conspicuous goods as those which have the highest visibility. Our results are robust to variations in our measure of visible consumption, in particular whether or not we weight each category of visible items according to its visibility index from survey data. The first equation is meant to compare households who are different only in their caste group, but have similar demographic and economic characteristics. Following Charles et al. (2009), we use a log-log model of demand and estimate:

$$\ln(X_{ih}) = \beta_0 + \gamma_i ln(E_h) + \sum_k \alpha_{i,k}\text{caste}_{h,k} + \sum_k \beta_{i,k}\text{caste}_{h,k} ln(E_h) + \sum_j \gamma_j \ln(price_{jh}) + \delta H_h + \epsilon_{ih}$$

(1)

where $\ln(X_{ih,kl})$ is the logarithm of the expenditure on item i spent by household h belonging to social group k; $ln(E_h)$ is the household's total expenditure, $\text{caste}_{k,h}$ are dummy variables denoting whether a household belongs to middle caste, low caste or other social groups (the default being high caste); $\ln(price_{jh})$ is the price of the jth item; H_h is a vector of household attributes and geographical controls that we describe below.

The α_k parameters correspond to the taste (intercept) of each social group k for item i. In other words, it captures how much more (or less) of expenditure X_{ih} other castes consume compared to similar high caste households. We expect these parameters to be positive on visible consumption and negative on food for Low and middle castes. while the $beta_k$ parameters capture the difference in income elasticity compared to the high caste households. The latter set of parameters is a novelty of our approach, aimed at capturing differences across castes in the relative deprivation and signalling components of consumption. If we think of relative deprivation as setting a social subsistence level, we expect poor households to be more affected by the caste hierarchy than rich ones, i.e. the difference in consumption choices between a poor low caste and a poor high caste is larger than the difference in consumption choices for the rich households. If this hypothesis holds, the relative deprivation hypothesis (status externality) is more likely than the signalling one.

We do not observe income in the NSS databases, but total expenditure usually provides a good proxy for permanent income under the assumption of consumption-smoothing behaviour. This is the standard method in developing countries where data on income either do not exist or are extremely biased. However, there are two classical problems with this measure of permanent income: first, there is a simultaneity issue as both components of expenditures are jointly determined in decisions over the life cycle, which usually creates an upward bias (Subramanian and Deaton, 1996), and second, measurement errors in sub-categories of expenditures and total expenditure are likely to be correlated, which leads to an errors-in-variables problem with a usual downward bias (Hausman, 2001). Due to these biases, there is a long tradition in using permanent income instrumental variables for the estimation of Engel curves (Liviatan, 1961) and more generally in cross-sectionnal analysis (Mayer, 1972). Section 6.1 in the Appendix discusses further the literature on this issue and describes the IV specification. The later reinforces our results but no instrument can fully respect the exclusion restriction in this case[4]. Therefore, we keep the OLS specification as our main specification in the article.

Table 2 shows the gap in visible and food expenditures captured by the OLS specification with and without household and supply controls. Since visible expenditure is likely to have

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[4]In a future version of the paper, it could be possible to estimate income matching NSS data with IHDS income data as a robustness check.

an income elasticity above unity and food expenditure below unity, it is crucial to control for characteristics that make households similar on every dimension but the social group one. Otherwise, high caste households should mechanically spend a higher share of their income on visible goods and a lower share on food compared to lower castes, simply because they are richer or have different characteristics. In addition to total expenditure in columns 1 and 4 (for visible and food expenditure respectively), we introduce household attributes H_h used by Subramanian and Deaton (1996) in columns 2 and 5: log of hh size, fraction of people by age and gender, household type, education and occupation head. We also add a fixed effect for each of the four sub-rounds of the survey, which controls for seasonal variations and measurement errors as households are interviewed in different months during the year.

Lastly, there may be local price variations related to between-caste inequality, either through general equilibrium effects (Baland and Ray, 1991), or due to price discriminations. We introduce prices in the demand specification, but do not use the price that the household paid because of endogeneity issues. We thus follow Atkin (2013b) and compute at the village level a median price index for nine subcategories of expenditures (cereals, animal products, fruits and vegetables, oils and spices, processed food, visible goods, durables, services, other goods). Columns 3 and 6 introduce the logarithm of the median village price for each category. As expected, introducing the price lowers down the caste-specific coefficients, but they remain qualitatively equivalent.

We may face other problems of endogeneity, for example in the case where individuals or jatis who enjoy relatively more consuming conspicuously, or have a preference for these items, self-select into particular locations. Munshi and Rosenzweig (2009) show that spatial mobility is extremely low in rural India due to the efficiency of jati-based networks to insure individuals against temporary income shocks and smooth consumption over time. Assuming zero mobility is therefore a common assumption for empirical works on India.

Another issue could arise from the federal structure of India, each Indian State implementing regulations in specific domains. Also, there is a wide difference of access to coastal regions, fertility and irrigation or weather endowments across India. We therefore add fixed effects for Indian states or NSS agro-climatic regions (a sub unit of States) in our specification. Within each State or region, districts and villages may not have access to a similar set of goods, or the same varieties of a good. This is likely to be a function of population density and urbanization, so we also add these two controls at the district level to capture localized supply effects, along with whether the household lives in and urban or rural area.

Without controls, we do not find a significant difference in visible consumption between low and high caste households. As soon as we add household and spatial controls, the sign on $\alpha_{i,k}$ becomes positive for visible consumption and remains negative for food. The interaction between the caste dummy and total consumption is of opposite sign, which means that the difference between low and high caste households is stronger for the poor than for the rich. Besides, the coefficients are also stronger and more significant for the low caste households

Table 2: Visible and food expenditures gap between low caste and and high caste households, NSS 66

	OLS (1) visible	OLS (2) visible	OLS (3) visible	OLS (4) food	OLS (5) food	OLS (6) food
log total expenditure	1.029***	0.951***	0.982***	0.731***	0.666***	0.514***
	(0.0130)	(0.0135)	(0.0318)	(0.00974)	(0.00885)	(0.0177)
Low Castes	0.191	0.299**	0.272**	-1.130***	-0.762***	-0.731***
	(0.154)	(0.136)	(0.133)	(0.108)	(0.0811)	(0.0757)
Middle Castes	0.153	0.230*	0.208*	-0.708***	-0.392***	-0.407***
	(0.151)	(0.126)	(0.123)	(0.111)	(0.0770)	(0.0714)
Muslims	-0.465***	0.0329	0.0194	-0.732***	-0.495***	-0.486***
	(0.167)	(0.167)	(0.162)	(0.108)	(0.0856)	(0.0801)
Low Castes x log total expenditure	-0.0221	-0.0364**	-0.0337**	0.141***	0.0889***	0.0854***
	(0.0187)	(0.0162)	(0.0159)	(0.0131)	(0.00967)	(0.00903)
Middle Castes x log total expenditure	-0.0164	-0.0284*	-0.0254*	0.0878***	0.0453***	0.0471***
	(0.0182)	(0.0149)	(0.0145)	(0.0134)	(0.00910)	(0.00842)
Muslims x log total expenditure	0.0527***	-0.00523	-0.00211	0.0988***	0.0615***	0.0597***
	(0.0199)	(0.0196)	(0.0190)	(0.0129)	(0.0101)	(0.00949)
Observations	100831	91862	90482	100824	91862	90482
Adjusted R^2	0.733	0.752	0.771	0.828	0.877	0.885
Household Controls	No	Yes	Yes	No	Yes	Yes
State FE	No	Yes	Yes	No	Yes	Yes
Supply Side Controls	No	No	Yes	No	No	Yes

Notes. The table reports the OLS estimations of equation (1) on our measure of visible consumption and food expenditures. The regression is performed on the entire sample. It reports the gap in expenditures of LC, MC and Muslim households compared to HC households. Visible and food consumption are regressed on the log of total expenditure of each household, interacted with a caste dummy. Specifications (1) and (4) only controls for household total expenditure. Specifications (2) and (5) adds state fixed effects, household controls (log of hh size, fraction of people by age and gender, household type, education and occupation head) and fixed effect for each of the four sub-rounds. Specification (3) and (6) also includes supply side controls (mean regional consumption, population and urbanization at district levels, sector, local price indexes). Sampling weights are included. Robust standard errors (clustered at the village level) are reported in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

compared to the middle caste households. These results indicates that poor households belonging to social groups which are placed lower in the status hierarchy increase their level of visible consumption and consume relatively less in food. The fact that the Veblen effect weights more heavily on the poorest households suggests that the externality is a combination of structural status hierarchies between group and conjectural status given a certain level of income.

Interestingly, if we look at the visible and food expenditure gap of Muslims compared to high caste households, there is no significant effect for visible consumption and the effect on food is much smaller, even after including controls. Muslims households are good candidates for a placebo check on the relevance of caste hierarchy. Indeed, similarly to low caste households (scheduled castes), Muslims have been historically discriminated. They are also close to lower castes in terms of economic characteristics. The fact that we do not observe any difference in choices for visible consumption and a smaller effect on food supports the hypothesis that groups outside of the caste hierarchy are not affected by it.

4.2   Testing the Veblen Hypothesis

Veblen (1899)'s theory of leisure and consumption argues that individuals try to reach an acceptable level of decency given specific visible attributes in order to be esteemed by their peers and within society as a whole. This decency level is endogenous: it is determined by the consumption habits of the highest social and pecuniary class, defined by Veblen as the Leisure Class. This approach differs from the classical one which considers conspicuous consumption as a mere signal for status and wealth. In Veblen's theory, individuals belonging to lower castes or classes would consume more conspicuously to make up for the lower relative status attributed to them. The higher is the gap separating one's own group from the leisure class, the higher the effect should be.

To identify the persistent effect of group inequality on consumption choices, we follow a similar approach than Charles et al. (2009) and exploit regional variations in social groups' economic status, evidenced in Figure 3. As in Section 4.1, we take the average monthly expenditure per capita of a group in each region as a proxy for its mean income. Besides, consumption captures the visible part of income, which is typically what matters for between-group comparisons. Contrary to previous studies in the literature on the Veblen effect, we test whether caste hierarchy matters and if group comparison is upward-looking.

We focus on three major Indian caste groups: high caste (Brahmin and Other Upper Castes), middle caste (Other Backward Classes) and low caste (Scheduled Caste), that can be ranked from higher structural status to lower structural status. We perform the empirical analysis on the two disadvantaged social groups which inherit a low level of structural status, the middle caste (MC) and the low caste (LC). We test whether variations in the local level of high caste's economic status can explain the gap in visible consumption and food expenditure of the lower caste households. The lower geographical unit for a representative sample of households in our data is the agro-climatic region, so we compute the average regional consumption level of each caste group for the 87 Indian agro-climatic regions. Unless one controls for the average income of the household's own group (signalling theory) and for the general variation in regional income, the coefficient is biased. Indeed, high caste's economic status could otherwise capture a higher regional wealth or the gap with the low caste's economic status. This distinguishes our strategy from Charles et al. (2009) and Khamis et al. (2012). We use the following specification:

$$\ln(\text{X}_{ih}) = \beta_0 + \gamma_i ln(\text{E}_h) + \beta_{HC} ln(\text{E}_{HC,r}) + \beta_{own} ln(\text{E}_{own,r}) + \sum_j \gamma_j \ln(price_{jh}) + \delta H_h + \epsilon_{ih} \quad (2)$$

The coefficient γ_i captures how the expenditure on item i (typically visible consumption or food) varies with the total expenditure of the household h. The β_{own} is what Charles et al. (2009) and Khamis et al. (2012) identify based on an approach of status as signalling. They test a signalling theory in which only one's own group matters and do not address the issue of between group inequality. To assess whether our model is better at understanding patterns of conspicuous consumption than a signalling model, we add the regional mean per capita expenditures of the

high caste households, captured by the coefficient β_{HC}. This allows us to discriminate between the signalling and the relative deprivation approach. In the relative deprivation hypothesis, a higher economic status of the high caste would bias low castes' expenditure towards visible consumption, we therefore expect β_{HC} to be positive for visible expenditure and negative for food. If the signalling hypothesis does not hold once we control for regional and high caste economic status, β_{own} should be insignificant.

We use the same vector X_i of household controls as in Equation (1). We add state fixed effects to control for institutional differences between states and a vector of regional controls which includes the regional fraction of total Indian population, the regional fraction of urban households and the mean expenditure level in each region to make sure β_{HC} and β_{own} do not capture any regional trend.

Table 3 shows the results on conspicuous consumption and food expenditures. The tables include the results with local price indexes (columns (2) and (4) of Table 3). The inclusion of prices distinguishes our work from the previous empirical studies on conspicuous consumption which do not directly control for the influence of inequality on prices. In particular, following Baland and Ray (1991), this effect is likely to produce an upward bias on visible expenditures and a downward bias on food expenditure as a higher level of inequality is predicted to reduce the relative price of luxury goods compared to necessities.

The results of Table 3 are in favour of a relative deprivation theory of consumption rather than a signalling one. The coefficient β_{uc} is positive and highly significant for visible expenditure. There is also evidence of a substitution effect with food, with a negative and highly significant coefficient on β_{uc}. The average economic status of one's own caste is either positive or not significant, contrary to Charles et al. (2009) and Khamis et al. (2012).

The results are robust to other explanations such as the effect of inequality on prices, or the insurance effect of jati-based networks (Mazzocco and Saini, 2012)). The effect is stronger on low castes households than on middle caste households, in line with the Veblen hypothesis on the importance of hierarchy and upward-looking comparison effects between castes. As expected, the addition of local price indexes reduces the significance and magnitude of the effect of inequality, but it remains significant. This supports the view that unless one controls for prices, the positive impact of group inequality on consumption choices is upwardly biased. The absence of a significant positive effect on visible or food expenditures deters the possibility of a positive correlation between household consumption and the one of its own caste due to a group-based insurance network at the regional level.

The first stage regression in Section 1 showed that choices are especially biased for the lower income households within a low caste. In table 4, we test whether the Veblen effect of between-group inequality is stronger for below median households belonging to low and middle caste. It appears that the effect on visible consumption is concentrated on below median households who are fairly poor and under malnutrition. This result is an additional source of concern that the feeling of relative deprivation could hurt the destitute the most.

Table 3: Effect of between-group inequality on visible and food expenditure by middle castes and low castes

	(1) lvisible	(2) lvisible	(3) lfood	(4) lfood
log total expenditure	1.130***	1.015***	0.771***	0.794***
	(0.0959)	(0.0833)	(0.0456)	(0.0399)
log mean expenditure HC	0.125***	0.0651*	-0.0884***	-0.0782***
	(0.0370)	(0.0347)	(0.0186)	(0.0178)
log mean expenditure HC x MC dummy	-0.0552**	-0.0441**	-0.0135	-0.0102
	(0.0229)	(0.0216)	(0.0113)	(0.0110)
LC dummy	-0.395**	-0.315**	-0.120	-0.0932
	(0.170)	(0.161)	(0.0839)	(0.0818)
log mean expenditure own caste	0.0642	0.109**	-0.0327	-0.0288
	(0.0592)	(0.0489)	(0.0268)	(0.0227)
log regional expenditure	-0.243***	-0.183***	0.146***	0.129***
	(0.0506)	(0.0492)	(0.0277)	(0.0272)
Observations	43879	43879	43878	43878
Adjusted R^2	0.713	0.740	0.870	0.874
Household Controls	Yes	Yes	Yes	Yes
State FE	Yes	Yes	Yes	Yes
Spatial Controls	Yes	Yes	Yes	Yes
Local Price Controls	No	Yes	No	Yes

Notes. The table reports estimations of equation (2) on our measure of visible consumption and food expenditures. The regression is performed on the subsample of Middle Caste (MC) and Low Caste (LC). Visible and food consumption are regressed on the log of mean regional monthly per capita expenditure (MPCE) of the corresponding High Caste (interacted with a caste dummy for MC) and on the log of mean regional monthly per capita expenditure (MPCE) of household's own caste. In addition to state fixed effects, we control for the economic level of the NSS region by introducing the log of mean MPCE in each regression. All regressions include household controls (log of hh size, fraction of people by age and gender, household type, education and occupation head. We also add a fixed effect for each of the four sub-rounds) and spatial controls (population and urbanization at district levels, sector). Local price indexes are added in specification (2) and (4). Sampling weights are included. Robust standard errors (clustered at the village level) are reported in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Lastly, the effect on conspicuous consumption is robust to the measure of visible goods that we use. Table 5 shows that the effect is stronger on the most visible items, typically clothing and footwear or residential goods reported as highly visible in the Indian context by Khamis et al. (2012). The decomposition of food expenditure also reveals that households seem to substitute within food items. They spend less on protein-intensive products such as meat and dairy products (which are more expensive) and more on calorie-intensive items such as cereals, which are also cheaper.

To check whether between-caste inequality explains the difference in consumption choices from Section 4.1, we add the interaction between caste dummies from specification (1) and the mean regional consumption of high caste households. The specification allows us to use regional fixed effects in order to control any other structural component of consumption choices apart from differences in between-caste inequality. Table 6 shows that the choice difference disappears for visible consumption and is reduced for food expenditures. On the contrary, the coefficients on Muslims do not vary significantly compared to Table 2.

Table 4: Decomposition of Veblen effect on below median vs. above median households

	(1) lvisible	(2) lvisible	(3) lfood	(4) lfood
log total expenditure	1.307***	1.110***	0.742***	0.765***
	(0.168)	(0.131)	(0.0788)	(0.0629)
log mean expenditure HC	0.129***	0.0751**	-0.0964***	-0.0808***
	(0.0346)	(0.0316)	(0.0174)	(0.0165)
log mean expenditure HC x Above median	-0.119***	-0.108***	-0.000967	-0.00648
	(0.0246)	(0.0215)	(0.0124)	(0.0115)
LC dummy	0.0443***	0.0288**	-0.0245***	-0.0218***
	(0.0151)	(0.0143)	(0.00735)	(0.00714)
log mean expenditure own caste	0.0458	0.0919**	-0.0388	-0.0338
	(0.0580)	(0.0466)	(0.0260)	(0.0217)
log regional expenditure	-0.209***	-0.158***	0.148***	0.130***
	(0.0496)	(0.0476)	(0.0268)	(0.0265)
Observations	43879	43879	43878	43878
Adjusted R^2	0.702	0.739	0.871	0.875
Household Controls	Yes	Yes	Yes	Yes
State FE	Yes	Yes	Yes	Yes
Local Price Controls	No	Yes	No	Yes

Notes. The table reports estimations of equation (2) on our measure of visible consumption and food expenditures. The regression is performed on the subsample of Middle Caste (MC) and Low Caste (LC). Visible and food consumption are regressed on the log of mean regional monthly per capita expenditure (MPCE) of the corresponding High Caste (interacted with a dummy for below median households) and on the log of mean regional monthly per capita expenditure (MPCE) of household's own caste. In addition to state fixed effects, we control for the economic level of the NSS region by introducing the log of mean MPCE in each regression. All regressions include household controls (caste, log of hh size, fraction of people by age and gender, household type, education and occupation head. We also add a fixed effect for each of the four sub-rounds) and spatial controls (population and urbanization at district levels, sector). Local price indexes are added in specification (2) and (4). Sampling weights are included. Robust standard errors (clustered at the village level) are reported in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

The Veblen analysis is therefore supported by empirical evidence. There may be alternative hypotheses with similar explanatory power such as the misidentification of the group of reference. In the following section, we run a series of placebo checks to test for alternative explanations that would invalidate our results.

Table 5: Decomposition of Veblen effect on subcategories of visible and food expenditures

	(1) lclothing	(2) lclothing	(3) lresidential	(4) lresidential	(5) lanimal	(6) lanimal	(7) lcereal	(8) lcereal
log total expenditure	0.849***	0.729***	2.838***	2.214***	1.897***	1.793***	0.587***	0.745***
	(0.116)	(0.102)	(0.399)	(0.334)	(0.162)	(0.141)	(0.110)	(0.0940)
log mean expenditure HC	0.161***	0.0853*	0.433**	0.375**	-0.536***	-0.549***	0.0226	0.0465
	(0.0470)	(0.0443)	(0.185)	(0.148)	(0.0668)	(0.0639)	(0.0457)	(0.0433)
log mean expenditure HC x MC dummy	-0.0409	-0.0292	0.239*	0.145	-0.133***	-0.113***	0.0416	0.0428*
	(0.0280)	(0.0269)	(0.126)	(0.105)	(0.0420)	(0.0405)	(0.0266)	(0.0257)
LC dummy	-0.281	-0.204	1.836**	1.176	-1.084***	-0.902***	0.312	0.318*
	(0.208)	(0.200)	(0.930)	(0.770)	(0.316)	(0.306)	(0.198)	(0.191)
log mean expenditure own caste	0.0987	0.110*	-0.818***	-0.283	-0.381***	-0.180**	0.00172	-0.0715
	(0.0747)	(0.0623)	(0.286)	(0.205)	(0.0942)	(0.0754)	(0.0606)	(0.0490)
log regional expenditure	-0.340***	-0.251***	-0.303	-0.386*	1.031***	1.007***	-0.146**	-0.171***
	(0.0671)	(0.0639)	(0.255)	(0.203)	(0.0948)	(0.0899)	(0.0608)	(0.0595)
Observations	43798	43798	17342	17342	41896	41896	43459	43459
Adjusted R^2	0.612	0.643	-0.056	0.237	0.523	0.568	0.662	0.682
Household Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Spatial Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Local Price Controls	No	Yes	No	Yes	No	Yes	No	Yes

Notes. The table reports estimations of equation (2) on our sub-categories of visible and food expenditures. The regression is performed on the subsample of Middle Caste (MC) and Low Caste (LC). Visible and food consumption are regressed on the log of mean regional monthly per capita expenditure (MPCE) of the corresponding High Caste (interacted with a caste dummy for MC) and on the log of mean regional monthly per capita expenditure (MPCE) of household's own caste. In addition to state fixed effects, we control for the economic level of the NSS region by introducing the log of mean MPCE in each regression. All regressions include household controls (log of hh size, fraction of people by age and gender, household type, education and occupation head. We also add a fixed effect for each of the four sub-rounds) and spatial controls (population and urbanization at district levels, sector). Local price indexes are added in specification (2) and (4). Sampling weights are included. Robust standard errors (clustered at the village level) are reported in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 6: Accounting for relative income of HC in specification (1)

	OLS (1) visible	OLS (2) visible	OLS (3) food	OLS (4) food
[1em] log total expenditure	0.982*** (0.0318)	0.985*** (0.0320)	0.514*** (0.0177)	0.512*** (0.0177)
Low Castes	0.272** (0.133)	-0.0319 (0.196)	-0.731*** (0.0757)	-0.602*** (0.107)
Middle Castes	0.208* (0.123)	0.119 (0.174)	-0.407*** (0.0714)	-0.275*** (0.0970)
Muslims	0.0194 (0.162)	-0.167 (0.223)	-0.486*** (0.0801)	-0.497*** (0.113)
Low Castes x log total expenditure	-0.0337** (0.0159)	-0.0401** (0.0163)	0.0854*** (0.00903)	0.0885*** (0.00921)
Middle Castes x log total expenditure	-0.0254* (0.0145)	-0.0284* (0.0149)	0.0471*** (0.00842)	0.0502*** (0.00857)
Muslims x log total expenditure	-0.00211 (0.0190)	-0.00762 (0.0196)	0.0597*** (0.00949)	0.0595*** (0.00987)
Low Castes x log mean expenditure HC		0.0476** (0.0236)		-0.0206* (0.0121)
Middle Castes x log mean expenditure HC		0.0152 (0.0202)		-0.0209* (0.0108)
Muslims x log mean expenditure HC		0.0309 (0.0257)		0.00166 (0.0137)
Observations	90482	90482	90482	90482
Adjusted R^2	0.771	0.771	0.885	0.885
Household Controls	Yes	Yes	Yes	Yes
State FE	Yes	Yes	Yes	Yes
Supply Side Controls	Yes	Yes	Yes	Yes
Caste Inequality	No	Yes	No	Yes

Notes. The table reports the OLS estimations of equation (1) on our measure of visible consumption and food expenditures. The regression is performed on the entire sample. It reports the gap in expenditures of LC, MC and Muslim households compared to HC households. Visible and food consumption are regressed on the log of total expenditure of each household, interacted with a caste dummy. Specifications (1) and (3) controls for household total expenditure, state fixed effects, household controls (log of hh size, fraction of people by age and gender, household type, education and occupation head), fixed effect for each of the four sub-rounds along with supply side controls (mean regional consumption, population and urbanization at district levels, sector, local price indexes). Specification (2) and (4) adds the interaction between the regional relative consumption of High Caste households and the caste dummies. Sampling weights are included. Robust standard errors (clustered at the village level) are reported in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

4.3 Robustness Checks

4.3.1 Outside the Caste Hierarchy: Muslims and Scheduled Tribes

The relative economic status of the high caste may systematically affect poorer households regardless of caste membership. We therefore run the same regressions on groups that do not belong to the caste system. The Scheduled Tribes (ST) and Muslims were historically disadvantaged groups in India, just like the low caste (Scheduled Castes). They are, however, not considered part of the Hindu caste system, and should not be affected by the process of Sanskritization described by Srinivas.

Table 7: Effect of HC and own caste on Muslims and ST, visible and food expenditures

	(1) lvisible	(2) lvisible	(3) lfood	(4) lfood
log total expenditure	1.568***	1.371***	0.835***	0.835***
	(0.246)	(0.155)	(0.0994)	(0.0718)
log mean expenditure HC	0.147**	0.0719	-0.0110	-0.00507
	(0.0685)	(0.0581)	(0.0285)	(0.0277)
log mean expenditure HC x ST	-0.0946*	-0.0798	-0.0463**	-0.0386*
	(0.0540)	(0.0487)	(0.0228)	(0.0224)
Muslim	-0.743*	-0.598*	-0.298*	-0.240
	(0.401)	(0.360)	(0.169)	(0.165)
log mean expenditure own caste	-0.227**	-0.101	-0.0828	-0.0701*
	(0.111)	(0.0718)	(0.0508)	(0.0384)
log regional expenditure	-0.189***	-0.0684	0.0872***	0.0763**
	(0.0728)	(0.0623)	(0.0306)	(0.0299)
Observations	17336	17336	17336	17336
Adjusted R^2	0.690	0.760	0.905	0.909
Household Controls	Yes	Yes	Yes	Yes
State FE	Yes	Yes	Yes	Yes
Local Price Controls	No	Yes	No	Yes

Notes. The table reports estimations of equation (2) on our measure of visible consumption and food expenditures. The regression is performed on the subsample of Muslims and Scheduled Tribes (ST). Visible and food consumption are regressed on the log of mean regional monthly per capita expenditure (MPCE) of the corresponding High Caste (interacted with a caste dummy for MC) and on the log of mean regional monthly per capita expenditure (MPCE) of household's own caste. In addition to state fixed effects, we control for the economic level of the NSS region by introducing the log of mean MPCE in each regression. All regressions include household controls (log of hh size, fraction of people by age and gender, household type, education and occupation head. We also add a fixed effect for each of the four sub-rounds) and spatial controls (population and urbanization at district levels, sector). Local price indexes are added in specification (2) and (4). Sampling weights are included. Robust standard errors (clustered at the village level) are reported in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

We therefore regress the mean regional per capita expenditures of the upper castes on the visible and food expenditures of Muslims and Scheduled Tribes (Equation (2)). The results in columns (1) to (4) of table 7 confirm that ST and Muslim consumption choices are not affected by the effect of upper castes' wealth level when it comes to food and conspicuous consumption. There is also evidence of a general equilibrium effect on prices, which distorts consumption choices of Muslims and Scheduled Tribes households. However, once we control for prices, we

find no evidence of status preferences driven by the relative consumption of the high caste.

4.3.2 The Reference Group: Caste versus Class

Our measure of relative economic status of high caste households could actually capture income inequality in a given region. In other words, we would capture an effect that has to do with the highest economic classes rather than the high castes as the reference group. This hypothesis is already undermined by our empirical strategy, as we compare similar households of different castes controlling for economic and demographic characteristics. Indeed, there exist both rich and poor households within each caste, as can be seen in figures 1.

Table 8: Caste versus Class: effect of richest 25% households on LC and MC households

	(1) lvisible	(2) lvisible	(3) lfood	(4) lfood
log total expenditures	1.116***	1.009***	0.781***	0.804***
	(0.0929)	(0.0816)	(0.0444)	(0.0392)
log mean expenditures richest 25%	0.176*	0.0607	-0.0448	-0.0687*
	(0.0964)	(0.0770)	(0.0440)	(0.0353)
log mean expenditures richest 25% x MC	-0.0996**	-0.0691*	-0.0363*	-0.0338*
	(0.0414)	(0.0395)	(0.0199)	(0.0193)
LC dummy	-0.725**	-0.503*	-0.291**	-0.270*
	(0.308)	(0.293)	(0.148)	(0.143)
log mean expenditures own group	0.0773	0.103**	-0.0316	-0.0314
	(0.0518)	(0.0468)	(0.0243)	(0.0224)
log regional expenditures	-0.231***	-0.151**	0.0891**	0.104***
	(0.0805)	(0.0667)	(0.0395)	(0.0338)
Observations	43879	43879	43878	43878
Adjusted R^2	0.715	0.740	0.869	0.874
Household Controls	Yes	Yes	Yes	Yes
State FE	Yes	Yes	Yes	Yes
Spatial Controls	Yes	Yes	Yes	Yes
Local Price Controls	Yes	No	Yes	No

Notes. The table reports estimations of equation (2) on our measure of visible consumption and food expenditures. The regression is performed on the subsample of Middle Caste (MC) and Low Caste (LC). Visible and food consumption are regressed on the log of mean regional monthly per capita expenditure (MPCE) of the corresponding richest 25% households (interacted with a caste dummy for MC) and on the log of mean regional monthly per capita expenditure (MPCE) of household's own caste. In addition to state fixed effects, we control for the economic level of the NSS region by introducing the log of mean MPCE in each regression. All regressions include household controls (log of hh size, fraction of people by age and gender, household type, education and occupation head. We also add a fixed effect for each of the four sub-rounds) and spatial controls (population and urbanization at district levels, sector). Local price indexes are added in specification (2) and (4). Sampling weights are included. Robust standard errors (clustered at the village level) are reported in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

To address this concern more specifically, we compute the mean expenditure of the richest 25% households in each region and run the same regressions as in specification (2). We choose the fourth quartile because it represents a similar share of the population as the high caste households. Indeed, the later accounts for 24% of the population in our sample. Results are shown in table 8. We find no evidence that our results are explained by a relative income effect

disconnected from caste membership.

4.3.3 Caste and Discrimination

Lastly, there remains the concern that our results could be driven by discrimination effects. It could be that in regions where high caste households are richer, low caste households suffer more from price discrimination or are not allowed to have access to certain categories of expenditure. These households would mechanically compensate lower spendings on such categories of expenditure by consuming more on other items. We therefore run the same regression as in Section 4.2 on other categories of expenditures, namely health and education, services and the least visible goods listed in table 10 (Appendix). Results are shown in Table 9.

Table 9: Effect of HC and own caste on LC and MC, other expenditures

	(1) lhealth_educ	(2) lhealth_educ	(3) lservice	(4) lservice	(5) lother	(6) lother
log total expenditure	1.360***	1.499***	1.568***	1.681***	0.511***	0.547***
	(0.281)	(0.243)	(0.215)	(0.186)	(0.0882)	(0.0783)
log mean expenditure HC	-0.0610	-0.0147	0.0463	0.119	0.0470	0.0465
	(0.114)	(0.103)	(0.0876)	(0.0790)	(0.0371)	(0.0356)
log mean expenditure HC x MC dummy	-0.0289	-0.0604	0.0685	0.0383	-0.0192	-0.0140
	(0.0692)	(0.0660)	(0.0514)	(0.0482)	(0.0222)	(0.0217)
LC dummy	-0.164	-0.423	0.552	0.306	-0.145	-0.113
	(0.516)	(0.491)	(0.386)	(0.361)	(0.166)	(0.162)
log mean expenditure own caste	0.251	0.0521	0.298**	0.126	0.0104	-0.0353
	(0.162)	(0.129)	(0.121)	(0.0923)	(0.0500)	(0.0412)
log regional expenditure	-0.400***	-0.377***	-0.471***	-0.487***	0.120**	0.114**
	(0.151)	(0.139)	(0.115)	(0.105)	(0.0483)	(0.0476)
Observations	39503	39503	43122	43122	43878	43878
Adjusted R^2	0.431	0.472	0.637	0.673	0.624	0.632
Household Controls	Yes	Yes	Yes	Yes	Yes	Yes
State FE	Yes	Yes	Yes	Yes	Yes	Yes
Spatial Controls	Yes	Yes	Yes	Yes	Yes	Yes
Local Price Controls	No	Yes	No	Yes	No	Yes

Notes. The table reports estimations of equation (2) on measures of healh and education, services and other goods. The regression is performed on the subsample of Middle Caste (MC) and Low Caste (LC). Visible and food consumption are regressed on the log of mean regional monthly per capita expenditure (MPCE) of the corresponding High Caste (interacted with a caste dummy for MC) and on the log of mean regional monthly per capita expenditure (MPCE) of household's own caste. In addition to state fixed effects, we control for the economic level of the NSS region by introducing the log of mean MPCE in each regression. All regressions include household controls (log of hh size, fraction of people by age and gender, household type, education and occupation head. We also add a fixed effect for each of the four sub-rounds) and spatial controls (population and urbanization at district levels, sector). Local price indexes are added in specification (2), (4) and (6). Sampling weights are included. Robust standard errors (clustered at the village level) are reported in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

It is striking to see that the relative consumption of high castes households on the low castes households' consumption is not significant for these other categories of expenditures. Health or education expenditures, which would be good candidates for discrimination effects increasing with the relative income of the high caste, are not significant. This does not mean that discrimination does not play a role in India, but that we do not find evidence that such effects are correlated with local between-caste inequality and could drive our findings.

5   Conclusion

This article documents a gap in conspicuous consumption between caste groups, with low caste households consuming more conspicuously than high caste households at similar levels of income. This gap in caste-specific consumption choices is especially large for the poorer households, and increases with local between-caste inequality. We also underline a pattern of substitution between conspicuous consumption and food expenditure. This could lead to a status trap in which the feeling of relative deprivation crowds out high return investments for the future self or dynasty such as appropriate nutrition. A back-of-the-envelope calculation leads to a non-trivial substitution effect: in regions where high castes are twice richer, households living under 2 dollars a day would spend 15 cents more on conspicuous items and less on food.

These results raise a number of questions needed to be adressed in subsequent research works. First, there are some limitations to the NSS data: the absence of income data particular to developing countries makes it harder to find a good instrument for consumption, and the surveys only provide a broad categorization of status groups (three caste categories). These issues probably lower the significance of the effect, and the potential identification of the reference group. Replicating these results in other countries with different status groups or at different stages of development may shed light on the specificity and magnitude of the Veblen effect as well as the substitution pattern across consumption categories. Furthermore, these first empirical results need to be integrated in a systematic framework linking economic inequality to status-based inequality in order to infer from these effects a prediction on social welfare and long-term income distribution. Finally, the potential non-monotonicity of the effect should be studied depending on local factors that affect social interactions. Indeed, the mechanism behind the feeling of relative deprivation remains unknown: is there a visibility component which dominates the results, for example if low caste households interact more with the high castes than other social groups? Does the effect disappear if social groups identify themselves as sufficiently far or foreign to the high caste? Which forms does the feeling of relative deprivation take depending on local, historical and cultural factors for each social group? These are interesting avenues for future research, both in theoretical and empirical works, and would clarify how we should think of status and inequality in the context of development and integration policies.

These preliminary results suggest that it is crucial to take into account a group-level analysis of inequality when deriving development or redistributive policies. Indeed, the self-reinforcement effect of status concern within a hierarchical society may not be solved by pure redistribution if we do not consider inherited group membership. Instead, there may be a need of considering group-targeted policies so as to directly affect the Veblen externality imposed on disadvantaged groups. It already takes shape in the awareness of the persistence of caste or race inequality, and the support for affirmative action policies.

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6 Appendix

6.1 IV specification on total expenditures

There is no perfect instrument for total consumption in the absence of income data. Especially if one wants to look at sub-categories of expenditures. Results presented above do not instrument total consumption. The use of such a strategy is commented below. All our results presented in the paper hold when we instrument for income.

Lower-caste households may be more credit-constrained than higher-caste households, which makes them relatively more sensitive to transitory income shocks. For more conspicuous goods which are also more durable, there may be a stronger downward bias (Deaton, 1997). On the contrary, in the case of food and calorie consumption, Bouis and Haddad (1992) have shown the upward bias dominates. A more specific issue has to do with the under-representation of the rich in the NSS consumption data, partly because the rich tend to save more than the poor (Bardhan, 2008). Upper Castes households being on average richer than lower castes, controlling for total consumption may still bias downward the gap in visible consumption between the upper caste and the lower castes households.

The instruments should be highly correlated with the measure of total expenditures and uncorrelated with the error term, which includes measurement errors and transitory income. Being constant over time, education has long been used in the literature (Modigliani and Ando, 1960), as it will have little correlation with transitory income. In the case of India, Behrman and Deolalikar (1987b) proposes a larger list of instrumental variables[5]. They also use the instrumental method as a way to purge the estimated income/food expenditure elasticity of potential simultaneous equations bias.

Our own preferred instrumental specification of household's total expenditures per capita follows Charles et al. (2009) and includes the level of education of the head of household and his detailed occupation code, along with the size of land owned, as land has been argued to be a good proxy for income in India (Bardhan et al., 2014)[6]. The use of a logarithmic versus quadratic form for the estimation of the income elasticity of consumption may depend on which category of expenditures is considered. Subramanian and Deaton (1996) show that using a logarithmic transformation of total expenditures leads to coherent estimates for food and calorie consumption, but other categories of consumption may require quadratic terms in the logarithm of expenditure (Banks et al., 1997). Since the inclusion of a quadratic term does not affect significantly the estimates of the expenditure gap between castes we keep the instrumented log-

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[5]The variables used are farm size, percentage of farm area under deep soil, family size, proportions of the household that are adult males and females, age and schooling years of the household head, total annual rainfall in the village of residence, and various village and year dummies.

[6]The instrumental specification is robust to the inclusion of additional variables such as the proportions of the household that are adult males and females, age of the household head or the number of children.

arithmic transformation as our main specification of permanent income[7]. Finally, an estimation based on the Lesser-Working form of Engel curve, i.e. where we replace the log of total expenditures for a given category of consumption by its budget share does not alter the results. The instrumental regression confirms the standard predictions of a downward bias for visible expenditures as the permanent income elasticity goes from an average 1.1 with the OLS specification of permanent income to 1.4 when we instrument for total expenditures. On the contrary, food (and calorie) consumption are biased upward, with permanent income elasticities for food going from 0.7 to 0.6, which in Bouis and Haddad (1992) and Subramanian and Deaton (1996).

6.2   Additional figures

Table 10: Items visibility in India (source: Khamis et al. 2012)

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.

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[7]As in Subramanian and Deaton (1996), non-linearity complicates the issue of estimation bias, which is another reason why we favour the log linear structure.
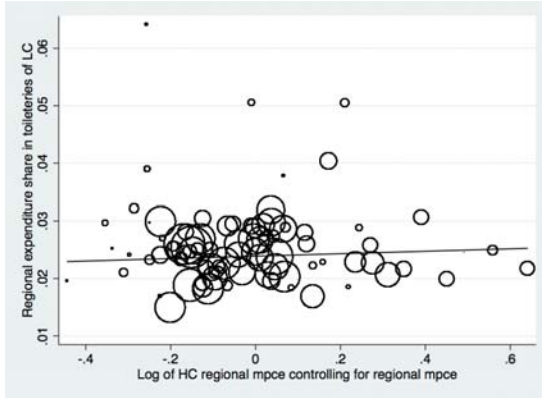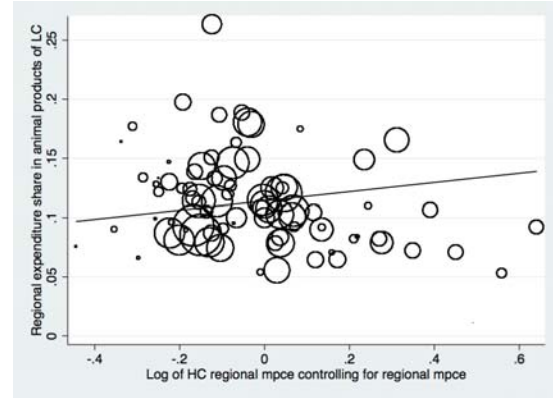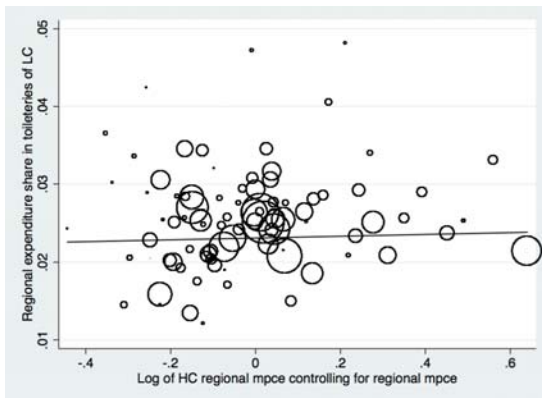
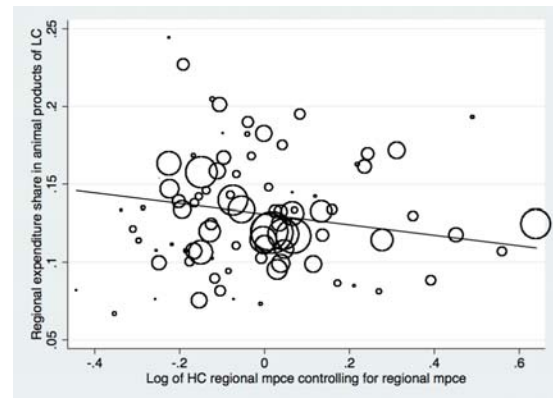(a) Toileteries (perfume, soap or body cream)   (b) Animal Products (meat, fish, eggs or dairy)

Figure 5: HC regional expenditures shares vs. HC regional income (mean regional income control)

(a) Toileteries (perfume, body cream, soap)   (b) Animal Products (meat, fish, eggs, dairy)

Figure 6: Muslims regional expenditures shares vs. HC regional income (mean regional income control)

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