Visible Inequality, Status Competition and Conspicuous Consumption: Evidence from India*

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Abstract

In a world where individuals care about social status as determined by the rank in the distribution of conspicuous consumption among peers, a fall in the level of visible inequality, by intensifying the degree of status competition, is likely to cause individuals to spend more on conspicuous goods which are assumed to carry status. I examine this hypothesis using nationally representative micro data from India. I find that a decrease in the level of visible inequality, ceteris paribus, causes conspicuous consumption of households to increase significantly. This increase in conspicuous spending not only represents consumption distortion, but is also wasteful as it results in no improvement in one's social status due to parallel action of others. From a policy perspective, my findings therefore suggest that traditional policies targeted to reduce economic inequality may have serious unintended consequences. Rather a more effective approach might be to combine such policies with social policies that represses one's desire to compete in status.

Keywords: Behavioral Economics, Conspicuous Consumption, India, Status competition, Social status, Visible Inequality.

JEL Classification: D12, D31, D63, D80, I32, O12

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> It is true that certain living creatures, as bees and ants, live sociably one with another (which are therefore by Aristotle numbered amongst political creatures), and yet have no other direction than their particular judgements and appetites; nor speech, whereby one of them can signify to another what he thinks expedient for the common benefit: and therefore some man may perhaps desire to know why mankind cannot do the same. To which I answer,..., that men are continually in competition for honour and dignity, which these creatures are not; and consequently amongst men there ariseth on that ground, envy, and hatred, and finally war; but amongst these not so.
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> *Thomas Hobbes*, Leviathan (1651)[1]

1 Introduction

Social status has always been considered among the most compelling inducements of human behavior. People care about social status not only for the sake of itself but also because high social status implies many material and non-material benefits. As Weiss and Freshtmen (1998) puts it:

> A person of high status expects to be treated favorably by other individuals with whom he might engage in social and economic interactions. This favorable treatment can take many forms: transfer of market goods, transfer of non-market goods (through marriage, for instance), transfer of authority (letting the high status person be the leader), modified behavior (such as deference or cooperation) and symbolic acts (such as showing respect).[2]

Although the importance of social status had been highlighted discretely by early economists such as Veblen (1899) and Duesenberry (1949) and sociologists such as Bourdieu (1979), it was only towards the end of the last century did social status formally came to be recognized as an issue of crucial significance in the domain of economic sciences. Since then, the notion of social status has been incorporated in economic analysis in a plethora of ways.[3]

Apparently, the idea of social status is somewhat abstract. However, one can loosely define social status of an individual as her relative position in the society that is observable by her peers. It has been traditionally argued that the primary way to achieve social status is through acquisition of a special class of goods called *positional goods* which are socially visible and are assumed to carry status (Frank, 1985). The expenditure on such goods in literature is referred to as *conspicuous consumption*.[4]The key assumption here is that individual's position in the society is typically evaluated by others based on his or her level of spending on conspicuous goods relative to others in her peer group (and not based on income or wealth which are typically not visible unlike conspicuous goods). Invoking this assumption, thus, social status may simply defined as one's relative rank in the distribution of conspicuous consumption expenditure.[5]

Interestingly, in such a framework where individuals care about social status, individuals' incentive to consume the conspicuous goods is linked closely to the level of dispersion (or spread) of the conspicuous consumption distribution

[1] The Second Part of Commonwealth, Chapter XVII, p. 104-105, *Leviathan or the Matter, Forme, & Power of a Common-wealth Ecclesiasticall and Civill.* London, printed for Andrew Crooke, at the Green Dragon in St. Pauls Church-yard. Prepared for the McMaster University Archive of the History of Economic Thought, by Rod Hay.

[2] Similar argument has also been made by Neumark and Postlewaite (1998) and Cole et al. (1992).

[3] See Tryuts (2011) for an excellent survey of literature on social status.

[4] The term "Conspicuous Consumption" was originally coined by Thorstein Veblen (1899) to describe the acquisition and display of possessions with the intention of gaining social status.

[5] This definition of social status is based on two important assumptions. One, social status is fundamentally a relative concept. That is, it is not how well off I am that is important, but rather what is important whether I am better off than those who are 'similar' to me (as Frank and Heffetz (2011) note, according to American journalist and satirist H. L. Mencken, a true wealthy man one who earns one dollar more than his wife's sister's husband!). And secondly, one's status is determined specifically by the expenditure, particularly, on goods that are both socially visible and the consumption of which is associated with higher income. Both these assumptions are perfectly justifiable given the fact that "status is inherently positional" and "the only way to obtain status is through actions that are socially visible (or that have socially-visible consequences)" (Frank and Heffetz, 2011).

within the reference group which I define as visible inequality (or socially visible inequality).[6] More precisely, in a world where individuals are assumed to care about their social status, the demand for conspicuous goods is likely to increase when socially visible inequality falls. This is because the incentive to indulge in conspicuous consumption is likely to inversely vary with the degree of visible inequality (Corneo and Jeanne, 2001, Samuelson, 2004, Hopkins and Kornienko, 2009).[7] The argument is that, a fall in the level of socially visible inequality or equivalently a compression of the distribution of conspicuous consumption, increases individuals returns from investing in status or potential position gains that can be obtained through conspicuous consumption, since a given increase in conspicuous consumption now allows one to "jump over" more of one's contemporaries. As a result, households have an increased incentive to indulge in conspicuous consumption following a reduction in the level of inequality so as to overtake others in status.[8]

A somewhat different way to make the same argument is that, by increasing the dispersion of conspicuous consumption, more inequality discourages those who belong to the lower end of the social ladder from catching up with the ones who belong the higher end in the contest for social status. This in turn weakens the incentives for those higher up in the social ladder to acquire more conspicuous goods in order to defend their social status. Consequently, the status motive inducing people to acquire conspicuous goods is weaker for everyone under a more unequal distribution of conspicuous consumption.

If the above assertion is true, and a fall in socially visible inequality does indeed augment status competition thereby causing individuals to spend more on conspicuous goods, then there are at least two reasons to be concerned about. One, as pointed out by Frank (2007) the increase in conspicuous spending in response to falling level of socially visible inequality is achieved either by decreasing expenditure on other consumption on goods- some of which might have positive social externalities like education and health - or by lowering savings. This therefore clearly represents consumption distortion which has potential negative social implications. And two, from a social stand point, the expenditure on conspicuous goods to achieve higher status in face of falling inequality represents a total "waste" of resources as argued by Hopkins and Kornienko (2004) and Frank and Heffetz (2011). The argument is that although the desire for social status leads each consumer to consume a higher level of conspicuous goods (than what she would have consumed if she had no status concern) in anticipation of raising his/her own social status, but such anticipation does not materialize due to the parallel actions of others.[9] As Hopkins and Kornienko (2004) remark that this situation is very similar to the Red Queen effect in Lewis Carrol's "Through the Looking Glass" in which "it takes all the running you can do to keep in the same place."

[6] Hereafter, I use the terms *dispersion* of conspicuous consumption within a reference group and *visible inequality* interchangeably. However, one thing to note is the following. Strictly speaking visible inequality should be calculated based on not only conspicuous goods but also visible but non-conspicuous goods. However, the assumption here is that the latter forms a trivial fraction of total consumption expenditure and hence can be ignored. This argument, infact, is supported by the data that I make use of in this paper.

[7] Note that none of these papers precisely link conspicuous spending behavior to visible inequality as defined in this paper. Corneo and Jeanne (2001) define social status in terms of rank in the wealth distribution and consequently argue that status concerns will lead to a rise in conspicuous spending in response to a fall in wealth inequality. Samuelson (2004) argues that conspicuous consumption will respond to changes in overall consumption inequality through status effects. Hopkins and Kornienko (2009) on the other hand relate income inequality to conspicuous consumption via status effects assuming that visible inequality has a one to one relation with income inequality. However the crux of their arguments is identical to the that I make here in describing the nexus between visible inequality, status competition and conspicuous consumption.

[8] To understand this argument better consider a society comprising of 3 members Damian, Emma and Rupert having conspicuous expenditure \$5, \$12 and \$18 respectively. So if Damian spends an additional \$7 he would achieve a second highest rank and if he spends an additional \$13 he would attain rank one. Now suppose the distribution of conspicuous consumption changes such that Damian's spending remains the same but Emma's and Rupert's spending changes to \$9 and \$12 respectively implying that the dispersion of conspicuous consumption gets lower. Notice that now Damian, by spending the same additional \$7 can achieve the highest rank instead of the second highest rank. In other words his marginal return from investing in status is strictly higher in a less dispersed society. This therefore induces Damian to spend more on conspicuous goods when visible inequality falls.

[9] As Layard (1980) puts it "For, though individuals are willing to make sacrifices to improve their individual position, the net result of status-motivated action will be no increase in status satisfaction but an increase in sacrifice" (p. 738).

Based on these theoretical insights, the main question that I seek to answer in this paper is the following. Does a fall in the level of socially visible inequality – by augmenting status competition – indeed cause conspicuous consumption of households to increase, particularly in a less developed country setting? The reasons why this question demands careful examination are twofold. Firstly, from an academic point of view, empirical analysis of the link between inequality, status competition and conspicuous consumption is instrumental in extending our general understanding of how social forces triggered by changes in distribution of resources affect consumption decisions of households. And secondly, and more importantly, this analysis also has potential implications for economic policy. In particular, if socially visible inequality at the local level is assumed to be related to the global level of income inequality or consumption inequality, having a clear understanding of how changes in visible inequality and consequent status competition drives conspicuous consumption expenditure will allow policy makers to design appropriate redistribution policies that could potentially be used to reduce inequalities in income and wealth so as to promote economic efficiency and social justice, particularly in less developed nations where inequality is a serious problem, without generating unintended side-effects like status competition and consumption distortions.

I begin by presenting a behavioral model of consumption that precisely defines the link between conspicuous consumption, social status and visible inequality. Based on this theoretical framework, I go on to formulate an econometric model which I use to estimate the impact of visible inequality within a community or a reference group - *which I define in this paper as the village or neighborhood* - on conspicuous spending of households. To do so I use household level data from India.

What makes India particularly suitable for my analysis? I can cite at least two reasons.

Firstly, India has recorded a massive increase in inequality over the last two decades and currently Gini index of India based on household consumption expenditure is 0.39. This, quite naturally, is perceived by policy makers and economists as a major threat to sustainable growth and inclusive development. Consequently, it is often recommended that inequality reduction is one key way to ensure higher rates of economic growth. However, if the status competition hypothesis holds, then traditional redistribution policies and programmes targeted may potentially prove to be self defeating for aforementioned reasons. As such getting a deeper understanding of the nexus between economic inequality, social comparisons and conspicuous spending becomes utmost necessary.

Secondly, with one-third of the world's poorest population living in India,[10] an analysis of how visible inequality might affect conspicuous spending through augmenting status competition based on household data from India is also important for a deeper understanding of the role of social comparisons in conspicuous spending in less developed countries. In particular, examining the status competition hypothesis in context of a poor nation like India provides me with an unique opportunity to claim that the results that I obtain is likely to be generalizable to a host of countries which are less poor than India. This is due to the fact that in general reference groups in less developed countries are less affluent with high risk sharing (Townsend, 1994) and, therefore, demonstrating one's socioeconomic position might lead to higher demand from peers and therefore lower incentives to consume conspicuously. The argument is that even in the presence of such offsetting forces, if a fall in socially visible inequality causes people to spend higher on conspicuous goods, then in more developed countries where this force is typically not relevant, one is more likely to observe a negative relationship between visible inequality and conspicuous consumption. In other words, the results that I obtain in this paper is likely to have a substantial amount of external validity.

Estimation of the impact of visible inequality within a village on conspicuous spending is carried out via standard instrumental variable (IV) methods because visible inequality as defined in this paper is endogenous due to strategic reasons. In addition, permanent income which is proxied by annual total household consumption expenditure is

[10] As Bandyopadhyay (2013) puts it, "India's income per capita ranks at 149 in the world...using the most parsimonious definition of the poverty line, there are at least 300 million extreme poor in India (living on less than a dollar a day), and more than 500 million if a broader definition of the poverty line is used."

endogenous because conspicuous consumption is a part of total consumption.

The results are striking. I find that visible inequality has a significant negative impact on household conspicuous consumption expenditure given permanent income and other demographic controls. Specifically, the two-step GMM results show that a one standard deviation decline in visible inequality causes household conspicuous spending to increase by roughly 15% for the rural sample and by 7% for the full sample. This clearly lends support to the hypothesis of status competition. In other words, a decline in visible inequality does indeed cause households to spend inefficiently more on conspicuous goods so as to achieve social distinction which becomes easier to achieve in a more homogenous (or equivalently, less unequal) society.

Further, in order to examine whether the impact of visible inequality varies across different subpopulations, the estimation sample is next cut in various ways, namely, by age of household head, gender of household head, marital status of household head, educational attainment of household head, household size, number of married members in the household, and official economic status of the household. Analysis reveals that there is quite a bit of heterogeneity embedded in the relationship between visible inequality and conspicuous consumption: visible inequality and consequent status competition has severe negative impact on household conspicuous spending for some subsamples but not for others.

How robust are my baseline results? In order to examine this question, I carry out a series of robustness tests. I find that my main results remain qualitatively unchanged when I use alternate definitions of conspicuous consumption basket and alternate measurements of visible inequality with the results being more robust for the rural sample. Additionally my findings also remain unchanged when reference groups are defined based on district of residence and caste group instead of defining reference groups in terms of village of residence. Lastly, to check the sensitivity of the instruments used, I re-estimate my baseline model assuming instruments to be 'plausibly exogenous' (Conley et al., 2012). Results suggest that the instruments used to identify the econometric model is unlikely to be a reason of serious concern.

To my knowledge this paper presents the first rigorous empirical study that links conspicuous consumption specifically with socially visible inequality to capture the phenomenon of status competition. This in fact is the main contribution of this paper. In the past there have been a few empirical studies examining how status competition might influence conspicuous spending behavior of households but all of these have implicitly assumed that it is the level of income inequality that drives status competition.[11] However what this approach fails to recognize is that income of an individual is an opaque measure and unobserved by peers or neighbors (Hicks and Hicks, 2014). Therefore attributing behavioral responses of individuals to income inequality within a reference seems inappropriate since a prerequisite of the measure of inequality to trigger any sort of behavioral response must be that it is observable by individuals so as to allow them to condition their behavior on. Also, from an econometric perspective using measure of income inequality as the main explanatory variable is likely to generate problems of measurement error in the regression as the true income inequality, although is perfectly observable to the econometrician, is not something that households know.[12]

The other contribution of this paper is that it is among the first few papers which specifically look at conspicuous consumption and social comparisons in a less developed country using non-experimental data. While there has been quite a few empirical papers looking at various aspects of conspicuous consumption in developed countries,[13] literature that specifically focuses on conspicuous consumption in less developed countries is small.[14] However, given

[11] See for instance, Jin et al. (2011), Brown et al. (2012), Marjit (2012) and Chai and Kaus (2013).

[12] Actually, the problem of measurement error here is in the reverse direction: the econometrician knows the true value of the variable but needs to use a mismeasured version to capture the phenomenon of status competition.

[13] For instance Charles et al., 2009. Heffetz, 2011, Friehe and Mechtel, 2014 among many others.

[14] Recent additions to the literature of conspicuous consumption in less developed countries include are Kaus (2013), Khamis et al. (2012) Brown et al. (2011) and Jin et al. (2011). However, none of these address the issue that I am addressing here.

the very different cultural and institutional settings, it is important to have a clear perspective of the drivers of such expenditure in poor countries - where clearly conspicuous consumption is absolutely synonymous to conspicuous waste[15] - so as to design suitable policies for inequality reduction and poverty alleviation.

The paper unfolds as follows. Section two outlines the basic conceptual framework. Section three discuss the econometric specification, data, various issues related to model identification and estimation technique. Main results and results of robustness checks are presented in section four. The last section concludes.

2 Conceptual Framework

In this section, I start off by presenting a brief discussion of how I define appropriate reference groups. Then to motivate the empirical specification, I present a behavioral model, based on Frank (1985), that precisely shows how visible inequality - by augmenting status competition within a reference group - can affect conspicuous spending of households.

2.1 Defining appropriate reference groups

The main question that this paper intends to explore is how the level of inequality prevailing within a reference groups affects conspicuous spending of the households. As such I begin by defining reference groups of households.

Reference groups of households can broadly be defined as the self-evaluative space that households use to make social comparisons and assess their relative economic position. According to Festinger (1954), a household's reference group is composed of other households who the households perceive are 'similar' to them in relative dimensions. Prior literature on social comparison has defined comparators groups based on many different attributes. For instance, reference groups have been defined based on single attributes such as area of residence (Blanchflower and Oswald, 2004; Kingdon and Knight, 2007; Friehe and Mechtel, 2014), age cohort (Deaton, 2001), occupation (Clark and Oswald, 1996), as well as, a combination of multiple attributes, for instance, area and language (Bertrand et al., 2000), place of residence and race/ethnic group affiliation (Aizer and Currie, 2004; Charles et al., 2009; Khemis et al., 2012; Kaus, 2013), age and province (Jin et al., 2011), age, education and area of residence (Ferrar-i-Carbonell, 2005) and state, age, race and education (Eibner and Evans, 2005). Thus, although there are a plethora of approaches adopted to define one's reference group although, the fact remains that true reference groups are ultimately unobservable. Given this, the best that a researcher can do is to construct suitable reference groups in such a way that ensures that "members of such groups have a high degree of similarity and are likely to contain a high proportion of relevant reference people" (Eibnar and Evans, 2005).

In this paper, I define reference groups specifically as households in the same village (for rural areas) or neighborhood (for urban areas). I do this particularly based on the assumption that villages and neighborhoods are basically small geographic units populated by households who are similar in many dimensions and are exposed to similar geographic and institutional conditions (Singer, 1981). Another motivation of defining reference groups based on geographical proximity is that social interactions - that are more likely to take place between individuals living closeby - is likely to influence individual decision making (Akerlof, 1997) which is a fundamental issue that I intend to explore in this paper. My construction of reference groups based on area of residence, also derive some support from previous literature on social comparisons. For instance, Senik (2004) finds that households are completely ignorant about income distribution at the national level. Further, Frank and Levine (2007) posit that reference group inequality varies directly with the level of inequality within an individual's area of residence. Cojacuru (2013) summarizes

[15] In fact, Veblen (1899) had originally described conspicuous consumption as a sub-category of *conspicuous waste*.

various empirical studies confirming that reference groups that are used by individuals for social comparisons are indeed local.

2.2 Stylized Model

I start off by assuming that relevant units of observation are households living in villages located in various districts across the country. Let n_{jk} denote the number of households (indexed by i, $i = 1, 2, ..., n_{jk}$) in village j ($j = 1, 2, ..., J_k$) of district k ($k = 1, 2, ...K$). Every household consumes two types of goods - positional good c_1 which are typically visible and for which social comparisons affect choices more (examples include clothing, cars, housing) and a non-positional good c_2 which may or may not be visible and which generally have a small social utility component (for instance insurance). In line with previous literature, I will refer to consumption of c_1 as *conspicuous consumption*. Utility of households - as in traditionally neoclassical setting - depend on absolute levels of consumption of the positional and non-positional goods. Additionally, utility also depends on *social status* (also referred to as *social distinction*) of households.

In order to incorporate the notion of social status, following Robson (1992), Hopkins and Kornienko (2004) and Ray and Robson (2012), I assume social status of household i is determined by her position in the distribution of conspicuous consumption in the village where she resides. In other words, social status s of household i with a particular level of consumption is defined as the fraction of population in the village whose conspicuous spending is less than or equal to the conspicuous spending of that household. That is,

$$s(F_j(c_{1ijk})) = F_{jk}(c_{1ijk})$$

where $F_{jk}(c_{1ijk})$ is the mass of individuals with consumption less than equal to c_{1ijk} and $F_{jk}(.)$ is assumed to be continuous.[16]

Thus preferences over absolute consumptions of the two goods and status can be represented as follows:

$$U = U(c_{1ijk}, c_{2ijk}, F_{jk}(c_{1ijk}); \mathbf{X}_{ijk}, \xi_{ijk}) \tag{1}$$

such that U is non-negative and twice differentiable. Further, it is strictly increasing in c_{1ijk}, c_{2ijk} and s and strictly concave in c_{1ijk} and c_{2ijk}. $\mathbf{X}_{ijk}$ denotes vector of household specific attributes and ξ_{ijk} captures unobserved preference shifters.

Assuming that household i has fixed income y_i and setting prices of both goods to be equal to unity, the consumers' problem thus becomes

$$\max_{c_{1ijk}, c_{2ijk}} U(c_{1ijk}, c_{2ijk}, F_{jk}(c_{1ijk}); \mathbf{X}_{ijk}, \xi_{ijk})$$

$$\text{subject to } c_{1ijk} + c_{2ijk} \leq y_{ijk}; c_{1ijk}, c_{2ijk} \geq 0.$$

Notice that if individuals are not status-concerned, (1) reduces to a simple text book utility function and maximization of the resulting utility function with respect to the budget constraint produces equilibrium demand functions

[16] Robson (1992) and Hopkins and Kornienko (2004) actually define status as $s(c_1, F(c_1)) = \eta F(c_1) + (1 - \eta)F^-(c_1) + \omega$ where $F^-(c_1) = \lim_{c_1' \to c_1^-} F(c_1')$ is the mass of individuals with conspicuous consumption strictly less than c_1, $\omega \geq 0$ is the level of status that corresponds to $c_{1ijk} = 0$ and $\eta \in [0, 1)$.This formulation is developed specifically to deal with ties. As Hopkins and Kornienko (2009) argues, if all agents chose the same level of consumption in a sense they would all be "equal first," but perhaps not as happy as someone who was uniquely first. To reflect this, the current assumption would award them status equal to η which is strictly less than one. However, since I have assumed the distribution of conspicuous consumption $F(c_1)$ to be continuous, there are no ties and the above measure of status reduces to $S(c_1, F(c_1)) = F(c_1) + \omega$.

$c^*_{1ijk} = c_1(y_{ijk})$ and $c^*_{2ijk} = c_2(y_{ijk})$. However, if we assume the every individual in the population has at least some degree of concern about social status, then the optimization behavior of the agents becomes *strategic* in nature, where every individual incorporates her expectation about consumption choices of all other individuals into her decision process while choosing optimal levels of consumption. Assuming that households act non-cooperatively, they will make the Cournot-Nash assumption that their spending behavior does not alter the spending behavior of others and as such consumption demands are defined as those that emerge when individuals maximize utility taking the density of conspicuous consumption being given.

Thus the first order condition for interior maximum are

$$\frac{U_1(c_{1ijk}, c_{2ijk}, F_{jk}(c_{1ijk}); \mathbf{X}_{ijk}, \xi_{ijk})}{U_2(c_{1ijk}, c_{2ijk}, F_{jk}(c_{1ijk}); \mathbf{X}_{ijk}, \xi_{ijk})} + \frac{U_3(c_{1ijk}, c_{2ijk}, F_{jk}(c_{1ijk}); \mathbf{X}_{ijk}, \xi_{ijk})}{U_2(c_{1ijk}, c_{2ijk}, F_{jk}(c_{1ijk}); \mathbf{X}_{ijk}, \xi_{ijk})} f_{jk}(c_{1ijk}) = 1 \quad (2)$$

$$c_{1ijk} + c_{2ijk} = y_{ijk} \quad (3)$$

where U_n is the partial derivative of U with respect to the nth argument and $f_{jk}(.)$ is the density function of c_{1ijk}. Notice that given the first order conditions, one can obtain

$$c_{1ijk} = \Psi(y_{ijk}, F_{jk}(c_{1ijk}), f_{jk}(c_{1ijk}); \mathbf{X}_{ijk}, \xi_{ijk}) \quad (4)$$

An important point to recognize is that, given (4), c_{1ijk} depend on the distribution of conspicuous consumption F_{jk}. As such, any change in dispersion of the conspicuous consumption distribution - which I call visible inequality - is likely to impact c_{1ijk}. Denoting visible inequality as σ_{-ijk},the status competition theory hypothesizes that

$$\frac{\partial c_{1ijk}}{\partial \sigma_{-ijk}} < 0.$$

The argument underlying the hypothesis is the following. The spending on conspicuous goods increases households' utility in all settings, but the incentive to consume conspicuous goods is greater when the conspicuous consumption distribution is more compressed, since in that situation a given increase in spending on conspicuous goods allows households to "jump over" more of her contemporaries as argued by Samuelson (2004). In other words, if individuals are far apart in terms of their conspicuous expenditure, the rank improvement that can be achieved by acquiring an additional unit of conspicuous good is small. Hence, the marginal status utility provided by conspicuous goods decreases when the distribution characterizing the conspicuous consumption expenditure is more dispersed or unequal.[17]

The empirical exercise that follows tries to obtain the magnitude and direction of the effect of visible inequality on conspicuous consumption. If empirical findings indicate a significant negative impact of visible inequality on conspicuous consumption, the results are consistent with status competition hypothesis.

3 Empirical Approach

3.1 Baseline Econometric Model

In order to examine the relation between visible inequality and conspicuous spending of households, the main econometric model that I intend to estimate based on the theoretical framework outlined above is the following:

[17] Similar assumption is made by Bell and Freeman (2001) to link earnings inequality to work hours.

$$\begin{aligned} \ln(Conspicuous\ Consumption)_{ijk} &= \alpha + \beta(Visible\ Inequality)_{-ijk} \\ &\quad +\gamma \ln(Permanent\ Income)_{ijk} \\ &\quad +\mathbf{X}'_{ijk}\lambda + \mathbf{I}'_k\delta + \xi_{ijk} \\ i &= 1, 2, ...n_{jk};\ j = 1, 2, ..., J_k;\ k = 1, 2, .., K \end{aligned} \tag{5}$$

where i indexes households, j indexes villages, k denotes districts, n_{jk} denotes the total number of households in village j, J_k denotes the total number of villages in district k and K denotes the total number of districts in the sample. The dependent variable *Conspicuous Consumption* is the aggregate expenditure of households on visible positional goods.

The parameter of interest in the above model is β that measures the effect of visible inequality on conspicuous spending of households. Given that in my framework visible inequality refers to the dispersion or spread of the conspicuous consumption distribution, I use the log of standard deviation of conspicuous consumption ($\ln \sigma(Conspicuous\ Consumption)$) calculated based upon conspicuous spending of all households residing in a particular village except the focal household as my baseline measure of *Visible Inequality*. In addition, I also use the Gini index ($Gini(Conspicuous\ Consumption)$) and coefficient of variation ($CV(Conspicuous\ Consumption)$) as measures of visible inequality to check the robustness of my baseline results. A nonzero β coefficient implies that a household's conspicuous expenditure depends on the level visible inequality in the village. Note that if $\beta < 0$, conspicuous spending of households declines with reference group inequality, which is consistent with the literature on status competition.

Notice that in my baseline econometric model, I include several variables as controls, the most important of which is household *Permanent Income*. Strictly speaking, according to the theoretical model outlined above, I should have included current income as the control variable. However, I control for permanent income and not current household income because according to Modigliani and Brumberg (1954) and Friedman (1957) current income comprises of a transitory component as well as a permanent component and it is only the permanent income component of the current income that impacts consumption expenditure. This fact has also been highlighted in similar studies by Charles et al. (2009) and Khamis et al. (2012). Further, I include a vector of demographic characteristics of households $\mathbf{X}$ which include variables that might be correlated with household consumption expenditure. Additionally, a full set of district fixed effects $\mathbf{I}$ is also included to capture unobserved district level heterogeneity which might be correlated with visible inequality. Finally ξ_{ijk} is a random error term such that

$$\xi_{ijk} = \mu_{jk} + \varepsilon_{ijk}$$

where μ_{jk} and ε_{ijk} are reference group-specific and household-specific components of errors respectively.

3.2 Data

The data come from 2005 Indian Human Development Survey (IHDS) which is a nationally representative household survey conducted by the National Council for Applied Economic Research (NCAER) in New Delhi and University of Maryland (Desai, Reeve and NCAER, 2009).

The IHDS survey - conducted in November 2004 and October 2005 - covers 41,554 households in 1503 villages and 971 urban neighborhoods located throughout India.[18] As pointed out by Khamis et al. (2012), the main advantage of

[18] The survey covered all the states and union territories of India except Andaman and Nicobar, and Lakshadweep. These two account

using this survey is that it includes many questions that are not asked in the larger and more commonly used Indian household survey, the National Sample Survey (NSS). In particular, detailed questions on income and consumption are asked in the IHDS which are essential for my analysis.

There are forty-seven consumption categories in the IHDS, which are based on the short form questions in the NSS. Thirty of the consumption categories, which are frequently purchased items, use a thirty day time frame while the other seventeen use a three hundred and sixty five day time frame. I convert all expenditures to the annual time frame before estimation. In deciding which goods to categorize as conspicuous visible goods, I rely on the online survey by Khemis et al. (2012) that was carried out among 163 students of Delhi School of Economics, India to determine the visibility of a host of consumer goods. This survey was identical to that carried out by Charles et al. (2009) and similar in spirit to the survey of Heffetz (2011) both of which were motivated to determine the extent of visibility of a consumption good.[19] However, since the latter surveys were carried out in the US, unlike, the survey by Khemis et al. (2011), I refrain from constructing the basket of conspicuous goods for my baseline analysis based on these, as contextual factors (like culture and social norms) may be extremely important in shaping perception of individuals about visibility or conspicuousness of a good.[20] The conspicuous consumption basket does not include goods and services with little or no visibility and/or limited status effects, such as food consumed at home, insurance premiums, books, tobacco, education and health expenditures.

Following Khamis et al. (2012), I categorize an item as visible if more than 20 percent of the respondents say they can observe consumption of the item even if they have no interaction or only occasional interaction with the person consuming the item. I categorize an item as positional or being associated with higher income if more than 20 percent of the respondents say the consumption of the item would increase the same or more than an increase in income if income were to rise. Visible positional goods or conspicuous consumption items are then those items which are both visible and additionally associated with higher income. All such items are: personal transport equipment, footwear, vacations, furniture and fixtures, social functions, repair and maintenance, house rent and rent, entertainment, clothing and bedding, jewelry and ornaments, recreation goods and personal goods. As such the main dependent variable is the sum total of household expenditure on these goods. Table 1 contains a full list of potential conspicuous goods included in the IHDS survey.

Note that in IHDS survey, there are several households reporting zero expenditure on visible positional goods. Since our dependent variable is in logarithms, including these households in our analysis would mean their corresponding value of the dependent variable will be undefined. One way to avoid this problem is simply to drop these holds and run regressions based on the trimmed sample. However, this may result in sample selection bias. Rather, a more sophisticated way to circumvent this problem and include these households in the analysis is to apply the *inverse hyperbolic sine transformation* (Burbridge et al., 1988) to the variable in question (which in this case is conspicuous consumption) which can be briefly described as follows. Let $z \, \epsilon \, [0, \infty)$ be the variable which I want to include in logarithmic form in the regression model. Then the inverse hyperbolic sine transformation requires simply to transform z as $\log(z^2 + \sqrt{z^2 + 1})$ which unlike $\log z$, is defined even for $z = 0$.[21] As such, in this paper I use the inverse hyperbolic sine transformation to deal with households reporting zero conspicuous consumption expenditure (for a detailed description see Friedline et al., 2015).

for less than .05 percent of India's population. The data is publicly available from the Data Sharing for Demographic Research program of the Inter-university Consortium for Political and Social Research (ICPSR).

[19] Interested readers may see Khamis et al. (2012) for a detailed description of the method adopted for the survey.

[20] For instance, while Khemis et al. (2012) expenditure on social functions to have a high degree of associated conspicuousness (and this has also been confirmed by previous studies like Bloch et al., 2004), Haffetz (2011) and Charles et al. (2009) measure of conspicuous expenditure excludes expenditure on social functions. However, we use the Charles et al. (2009) and Haffetz (2012) definition of conspicuous consumption for robustness purposes.

[21] According to ( ), except for very small values of z, the inverse sine is approximately equal to $log(2z_i)$ or $log(2) + log(z_i)$, and so it can be interpreted in exactly the same way as a standard logarithmic dependent variable.

Getting a proper estimate of permanent income from survey data is extremely difficult. Previous literature has generally relied on proxying permanent income by using one or more of the following variables: average current income, education level (Dynan et al., 2004), total consumption expenditure (Charles et al., 2009, Khemis et al. 2012), etc. Following previous studies, I also use total consumption expenditure to proxy permanent income in logarithmic form allowing me in to interpret the associated regression coefficient as elasticities. However, as evident, total consumption expenditure as a proxy to permanent income is endogenous (as it includes conspicuous consumption) and hence must be instrumented. I use log of household income and a dummy indicating whether the household has zero income or not as instruments for total consumption expenditure. The income measure that I use in my estimations is constructed as the sum total (for each household) of wages and salaries, non-farm business income, net agricultural income, remittances, property and other income and public benefits. Each of these incomes are in turn constructed from more than fifty different sources of income queried in the IHDS. Note that, as in case of conspicuous expenditure, my sample consists of several households reporting zero total consumption expenditure and zero income. While I drop the households who report zero annual total consumption expenditure, for being able to include those households reporting zero current income in my analysis, as before, I perform the inverse sine transformation.

The set of control variables include household size, age of household head, a quadratic in the age of household head, a series of dummy variables indicating the gender of household head, marital status of household head, the region where the household resides (rural or urban and metro or non-metro area), how long the household has been living in the same village or neighborhood, and official socioeconomic status of the household (i.e., whether household can officially be categorized as poor as per the official poverty line definition).[22] Also, to account for the influence of education on conspicuous consumption behavior of households, a dummy taking a value of 1 if the household head is literate, and a non-binary variable denoting the total number of years of education of household head are included.

Next, to control for the possible impact of household composition on conspicuous consumption expenditure, I include variables indicating the proportion of children, adolescents and adults in the household. Further to account for composition of household on the basis of number of married members, I include three binary variables indicating whether the total number of married members in the household is zero, between one and five or more than five.

Acknowledging the fact that the extent of households' exposure to media acts as a significant force behind conspicuous spending, I also include three non-binary variables to capture the extent of media exposure of men, women and children in the household.[23] Finally, given that previous research indicates that households' race or caste and religious affiliation is one of the key determinants of conspicuous consumption expenditure (see for instance, Charles et al. (2009), Khamis et al. (2012)), I include a set of dummy variables indicating the caste and religious affiliation of the household.[24]

My estimation sample consists of 37,081 households from 2456 villages and urban neighborhoods located across 375 districts: these are households in the IHDS where we have individual level information for household heads and for which household head is between 18 and 65 years of age, household current income is more than equal to zero but less than Rs. 10,00,000 (equivalent to $16,667), total consumption expenditure is more than zero but less than Rs. 10,00,000, conspicuous consumption expenditure is more than equal to zero, information on household's literacy level and educational attainment is non-missing and finally the household lives in a village with not less than three members.

[22] The poverty line varies by state and urban/rural residence. It is based on 1970s calculations of income needed to support minimal calorie consumption and has been adjusted by price indexes since then. It is currently under revision.

[23] The variables that capture households' exposure to social media is important to include in the analysis as previous analysis have documented significant impact of social media exposure on consumption-savings decisions of households. In particular, Schor (1998) based on a US sample found that those who watched TV saved less.

[24] To be more precise I include eight dummies for eight caste and religious categories, namely, Upper caste Brahmin, Upper caste Non-Brahmin, Dalit, Other backward classes (OBC), Dalit, Adivasi, Muslim, Sikh/Jain and Christian.

Figure 1 presents a district-level map of India indicating the districts that are covered in the 2005 IHDS sample. As evident, the covered districts are spread almost uniformly across the country thus making the data set really a country-representative one. Figure 2 shows the histogram of the size of the reference group when it is defined based on village of residence. The mean size of village is 15, the standard deviation is 5 and as evident from figure 2, and size of most of the village-based reference groups lies between 10 and 20.

The first panel of table 2 presents the descriptive statistics for the variables of interest for the full sample. Mean annual conspicuous spending - which is the key variable in the analysis - of households included in the sample is Rs. 10,000 (equivalent to $167) and standard deviation is Rs. 27,000 (equivalent to $450). The mean of the village standard deviation of conspicuous spending - which captures the level of village level visible inequality is approximately Rs.15,000 (equivalent to $250) and the associated standard deviation is Rs. 22,000 (equivalent to $367). The village gini indices computed based on visible positional expenditure of households ranges between 0.02 and 0.88 with a mean of 0.47 and a standard deviation of 0.16 which apparently is indicative of the fact that inter-village heterogeneity in terms of visible inequality is fairly high. Average total annual expenditure of included households is Rs. 53,000 (equivalent to $883) with standard deviation of Rs. 50,000 (equivalent to $833). Mean household current income is also Rs. 53,000 and standard deviation of current income is Rs. 66,000 (equivalent to $1,100). Of the included households, approximately 20% are 'poor' as per the official definition of poverty line in India.

Each household has five members on average. The mean age of household head is 44. The average years of formal schooling of household head is approximately 5 years and approximately 68% of the household heads are literate. Of all the included households, 91% are male headed and 88% household heads are married. Moreover, roughly 94% of the households have at least one married member. The proportion of households living in urban areas is roughly 37% and only around 10% of the households live in metro cities. The rest live in rural parts of India. The mean proportion of household members below the age of 14 is 29%, between 15 years and 21 years is 15%, and above 21 years is 56%. As for the variables included to capture exposure to social media, it is observed that 82% of the men in the household, 78% of the female members and 71% of the children regularly are exposed to at least one form of social media that includes newspaper, radio and television. Finally, the caste/social group composition of the sample of analysis is as follows: 21% of the included households are Brahmins and non-Brahmins but members of other high castes, 33% are members of other backward classes (OBC), 20% are Dalits, 8% are Adivasis, Muslims account for 12% of the included households, and the rest are Sikhs, Jains or Christians.[25]

The summary statistics of all the variables included for the rural sample are presented in the second panel of table 2.

3.3 Identification Issues

Before proceeding to estimate the empirical model, several identification issues merit discussion.

The first issue that demands careful explanation is the problem of correlated unobservables that potentially may bias the parameter estimates. The problem of correlated unobservables may arise if there are reference group-specific components that vary across groups ($\mu_j \neq \mu_s \ \forall \ j \neq s$) and are correlated with exogenous characteristics of households (Lee, 2007). According to Moffit (2001), the problem of correlated unobservables has two potential sources in generic models of social interactions. The first source of correlated unobservables may arise from endogenous group

[25] In the IHDS data, social groups consist of eight categories: Brahmins, non-Brahmins but members of other high castes, OBC, Dalits, Adivasis, Muslims, Sikhs/Jains and Christians. I combine the first two and the last two categories for the purpose of defining caste/religion based reference groups. As such, I have at most six categories of social groups in each district instead of eight. However, when including caste fixed effects in the regression equation, I consider all castes separately (as in the original data) and consequently include seven dummies for the eight caste categories.

membership. That individuals could self-select into reference groups with certain objectives was first highlighted by Falk and Knell (2004). Building on this issue, Nesse (2004) argues that motivated to satisfy particular psychological desires, individuals can create their own social groups.[26] One way of doing this is typically via migration or residential relocation (Stark and Taylor, 1991). For instance, a poor person living in a prosperous neighborhood, to reduce her feeling of relative deprivation, might want to relocate to a less prosperous neighborhood where he finds many others who are 'similar' to him. As such, endogeneity of reference groups can only be examined with information on individuals' goals or attitude towards migration to localities with higher or lower average income or variance of income (Knight and Kingdon, 2007). Without precise information on these aspects, it is difficult to rule out the possibility of endogeneity of reference groups. Such information, however, is extremely hard to get from most household surveys. The data that I use in this paper, unfortunately, is no different.

However, following Ravallion and Lokshin (2005), I argue that, the problem of self selection into reference gets reduced considerably in case of less developed economies. The fact that Ravallion and Lokshin (2005) stresses on is that people in less developed countries clearly do not have the same degree of freedom to choose their location (and hence their reference groups) as in a developed country. Particularly, in rural regions, people have typically lived in the same village or nearby for most of their lives. The data that I use indeed supports this argument: I find that 99 percent of those households in the rural sample have been living in the same village for more than ten years. The comparable figure for the full sample, however, is 90 percent. Thus, although it is possible that endogeneity of reference groups may be a cause of concern when I base my analysis on the full sample, it is unlikely to be so when I restrict my analysis to only those who live in the rural areas. Acknowledging this issue, I carry out my entire analysis based on the rural sample as well as based on the full sample parallely.[27]

The second source of correlated unobservables may be certain unobservable environmental attributes that are specific to reference groups. For example, a particular characteristic may vary systematically with reference group inequality and also with conspicuous spending in certain unobserved ways. If there are unobserved heterogeneity across reference groups, then estimates may be biased. The general strategy to circumvent this problem is to include reference group fixed effects in the regression (Eibner and Evans, 2005). However, this strategy does not work in the present case as identification essentially relies on variation in the level of socially visible inequality between villages which, in fact, are the reference groups. The other major concern in this context is the problem of endogeneity that can be attributed directly to the measure of socially visible inequality. But why will the inequality measure be endogenous despite the fact that the focal household i is left out of the calculation of the inequality measure?

The reason is as follows. According to the underlying theoretical framework, households belonging to a particular reference group decide simultaneously how much to spend on conspicuous goods. As Hopkins and Kornienko (2009) argues, if we assume that every individual in the population has at least some degree of concern about social status, then the optimization behavior of the agents,essentially, becomes *strategic* in nature, where every individual incorporates her expectation about consumption choices of all other individuals into her decision process while choosing optimal levels of consumption. This, in turn, clearly renders the inequality measure endogenous since it is nothing but a function of conspicuous spending of all other households belonging to the same reference group. This problem - in spirit - is very similar to those regularly encountered in spatial econometric models (see for example, Fredriksson and Millimet, 2004, Millimet and Rangaprasad, 2007). The most widely employed method to tackle the

[26] Kingdon and Knight (2007) illustrates this point by using the following example. If a person is strongly motivated for self-improvement, she might want to make comparisons only with individuals who are superior to them. On the other hand, where self-enhancement is important, she may select for comparison people who are inferior if that makes her feel better.

[27] An additional benefit of analysing the rural sample separate from the full sample is that given that people living in rural areas are more closely tied to each other and depend more on social networks in general, it is likely that the phenomenon of status competition may be more salient among the rural people compared to those living in urban areas. As such, examining the rural sample in isolation probably will give me a better estimate of the true impact of socially visible inequality and consequent social competition on conspicuous consumption.

endogeneity issue in such spatial econometric models is the instrumental variable (IV) approach which can be briefly illustrated as follows.

Consider a generic spatial econometric model of the form

$$\begin{aligned} y_i &= \alpha + \beta \sum_{j=1}^{n} \omega_{ij}^{y} y_j + \delta \sum_{j=1}^{n} \omega_{ij}^{x} x_j + \lambda x_i + \varepsilon_i, \\ i, j &= 1, 2, ..., n \; and \; i \neq j \end{aligned}$$

where y denotes the dependent variable for household i and x denotes the independent variable for household i, y_j and x_j denotes the same for household j, ω_{ij}^{x} and ω_{ij}^{y} are the variable specific weights assigned to household j by household i . This model suffers from endogeneity problem if y's are correlated due to strategic reasons.[28]

In such a case, if δ is not statistically distinguishable from zero, one solution to circumvent the problem of endogeneity and obtain consistent estimators of the parameters of the model is to use x_j as instruments for y_j, employing the same weighting scheme for the instruments as for the y_j's. That is, if ω_{ij}^{y} is $1/n$, implying that the main variable of interest is $\overline{y}_j$,then the instrument to be used is $\overline{x}_j$ (see Bruckner, 2003 for a more detailed analysis of models of this kind).

Since Bruckner (2003) and many others discuss the econometric issues involved in such kinds of spatial models in details, re-iterating the same here does not make any sense. Rather it may not be very inappropriate to provide some intuition behind the mechanics of the above estimation strategy. The main justification of using $\overline{x}_j$ as instrument for $\overline{y}_j$ is that $\overline{x}_j$ is a function of every other households' x's except for household i. If truly, household's y_i is affected only by x_i and not by x_j for all $j \neq i$, then a linear or non-linear combination of x_j, $j \neq i$ by no means should belong to the regression model, i.e., $E[y_i|\overline{y}_j, \overline{x}_j, x_i] = E[y_i|\overline{y}_j, x_i]$ which in other words means that the exclusion restriction is satisfied. Moreover, given that y_i is a function of x_i for all i, this means that $E(\overline{y}_j, \overline{x}_j) \neq 0$. These in turn means that $\overline{x}_j$ does indeed satisfy the requirement of a valid instrument.

Notice that the model that I have specified in (5) in essence is very similar to the above discussed generic model used in spatial econometrics which allows me to adopt the estimation strategy that closely mimics the one discussed above. More specifically, the instruments that I use for visible inequality for household i are inequality measures (standard deviation) calculated based on attributes of all households belonging to i's reference group except i herself that do not affect household i's decision of conspicuous spending. Household characteristics like current income, years of education and an indicator variable for literate households serve as valid instruments if they affect household's own decision of conspicuous consumption, but not conspicuous consumption decision of other households belonging to the same reference group. I argue that these variables does indeed satisfy the requirements to be used as valid instruments because current income and educational attainment of others belonging to the comparator group is not easily observable by a particular household,[29] but nevertheless these variables clearly effect households' own conspicuous spending.[30] Table 3 presents the summary statistics of the instruments used in the analysis.

[28] For instance, as in Fredriksson and Millimet (2003), y_i could be thought to be a measure of environmential policy stringency in state i, and y_j the measure of environmential policy stringency in state j. Notice that this model clearly suffers from endogeneity problem even though y_i does not explicitly belong to the left hand side, given that a state while deciding the level of environmental policy stringency has some anticipation about what the other states would be doing.

[29] Hicks and Hicks (2014) argues "income is actually an opaque measure" and "individuals are typically unaware of their neighbors' income". I believe similar argument can also be made for educational attainment.

[30] Although I use income inequality as an instrument, strictly speaking, the spatial econometric method outlined above requires me to use permanent income inequality as permanent income and not current income affects household spending. Inspite of this, the usage of income inequality as an instrument can be justified by invoking the assumption that income inequality is roughly equal to permanent income inequality as measured by the respective standard deviations at the village level although household current income is not necessarily equal to permanent income. Alternatively, one can think about income inequality as an instrument which is measured with error. That is assume that the true regression model is $y = \alpha + \beta x + \epsilon$, where x is endogenous and is required to be instrumented by

3.4 Model Estimation and Diagnostic Tests

In line with literature on spatial econometric models discussed previously, I estimate the above model by the technique of Generalized Method of Moments (GMM) clustering standard errors at the state level.[31]Since, the number of excluded instruments that I have is strictly greater than the number of endogenous variables in my framework - implying that my model is overidentified - I report the two-step GMM estimates or optimal GMM estimates, which is the most efficient GMM estimator for overidentified models with heteroskedastic errors of unknown form (for a detailed overview of the two-step GMM see Cameron and Trivedi (2005) and Baum et al. (2007)).

Several diagnostic tests are conducted to assess the reliability and efficiency of the two-step GMM and 2SLS estimates. Firstly, I report Hansen's J statistic (1982), which is an overidentification test for the validity of the instruments. The joint null hypothesis of this test is that the instruments are valid instruments, i.e., uncorrelated with the error term, and that the excluded instruments are correctly excluded from the estimated equation. A rejection of the null hypothesis casts doubt on the validity of the instruments. Next, I report the Kleibergen-Paap rk LM statistic (2006) which is an underidentification test, i.e., it is a test of whether the equation is identified. More formally, this test is used to determine whether the minimal canonical correlation between the endogenous variables and the instruments is statistically different from zero. In other words, the LM test seeks to test whether that the excluded instruments are "relevant", meaning correlated with the endogenous regressors. The null hypothesis of this test is that the model is not identified. A rejection of the null hypothesis indicates that the model is identified. Further, since IV estimates based on weak instruments are biased towards OLS estimates (Bound et al., 1995, Staiger and Stock, 1997, Stock et al., 2002) I report the Angrist-Pischke multivariate F-statistic (2009) from the first stage regressions which is the test to examine strength of instruments in a model with multiple endogenous variables.[32] According to Halla et al. (2012) there does not exist any study that provides threshold values that this statistic should exceed for weak identification not to be considered a problem, but researchers usually use a value of 10 as an indication of a strong instrument, following the general proposal of Staiger and Stock (1997) for a threshold for the first-stage F-statistic.

4 Results

4.1 Main Results

Table 4 reports the two-step GMM estimates of the effect visible inequality on household conspicuous consumption expenditure.

First, notice that, each specification fares fairly well in terms of the Hansen (1982) overidentification test, Kleibergen-Paap (2006) rk LM test for underidentification as well as Angrist-Pischke (2009) multivariate F test to assess the strength of the instruments. More precisely, based on the rural sample, observe that in three out of four

z. However, z is not available to the econometrician; instead what she has is $\widetilde{z} = z + \zeta$. In such a case, over and above the standard requirements for z to serve as a valid instrument, it must also be the case that $cov(\epsilon, \zeta) = 0$ for one to obtain consistent estimator of β. I assume that this condition holds in my case.

[31]I cluster standard errors at the state level (instead of village or district level) following the general proposal of Cameron and Miller (2015). According to them, "there is no formal test of the level at which to cluster. The consensus is to be conservative and avoid bias and use bigger and more aggregate clusters when possible, up to and including the point at which there is concern about having too few clusters. For example, suppose your dataset included individuals within counties within states, and you were considering whether to cluster at the county level or the state level. We have been inclined to recommend clustering at the state level. If there was within-state crosscounty correlation of the regressors and errors, then ignoring this correlation (for example, by clustering at the county level) would lead to incorrect inference.

[32]There are also some other statistics and tests to assess the strength of instruments - such as the conventional F-statistics, Shea's R^2, Cragg-Donald statistic and Kleinbergen-Paap rk F-statistics. However, the first two are clearly not suitable for assessing whether instruments are weak in multiple endogenous variable framework and whether the last two can be used in a multiple endogenous variable framework is debatable.

specifications (including the one reported in column 4 which is my preferred one), based on the Hansen J statistic, I am strongly unable to reject the joint null hypothesis that the instruments are uncorrelated with the error term, and that the excluded instruments are correctly excluded from the estimated equation. I can, however, only weakly reject this joint null hypothesis in the second specification. The same is true for the estimates based on the full sample, i.e., except for the second specification, diagnostic tests for all other specifications indicate that the instruments are uncorrelated with the error term, and that they are correctly excluded from the estimated equation. Next, across all specifications reported for both samples, the estimated Kleibergen-Paap rk LM statistic allows me to clearly reject the null hypothesis that the instruments are uncorrelated with the endogenous regressors and that the model is not identified. Finally, the Angrist-Pischke multivariate F-statistic computed for each endogenous variable lies well above 10 across all specifications, which clearly indicates that none of the specifications suffer from the weak instrument problem.[33]

In terms of actual two-step GMM estimates, I find a negative and statistically significant impact of visible inequality - measured as natural log of standard deviation of visible position expenditure in reference village (leaving out individual i) - on conspicuous spending across all specifications with magnitudes of the coefficients ranging -0.07 and -0.13 for the rural sample. The corresponding estimates based on the full sample lie between -0.02 and -0.08 and are statistically significant in two out of four specifications (including my preferred specification). Notice that the magnitudes of these coefficients are economically significant as well as these coefficients of the visible inequality can be interpreted as *elasticities* given that both conspicuous expenditure as well as visible inequality are in logarithms.

To get a further sense of economic significance of the estimated elasticities for the rural sample, judging from the specification in column 4- which is my preferred specification - evaluated at the sample mean, a one standard deviation decline in (log) visible inequality (roughly 1.30) implies 0.11 log points increase in conspicuous consumption expenditure, which translates into an increase in the level of conspicuous consumption expenditure by roughly a factor of 1.15 (=exp(1.30 x 0.11)), or 15%. The comparable figure based on the full sample (as judged from column 8) is 7%. The magnitudes of these effects are indeed substantial. For instance, a household living in the rural area and spending close to the mean level of Rs. 8,200 ($136) on conspicuous goods will increase his spending by Rs 1,230 ($21) to a level close to Rs. 9,500 ($157) in response to a one standard deviation fall in (log) visible inequality.

As for the other point estimates of other control variables, the following results are worth noting.

Firstly, in line with Charles et al. (2009), Kaus (2013) and Khamis et al. (2013), I find that conspicuous or visible positional goods are luxury goods. Specifically, the income elasticity of conspicuous goods given by the estimated coefficient on the permanent income - which has been proxied by log of total expenditures - from the regression shown in columns (4) and (8) of table 4 are approximately 1.79 (s.e. = 0.04) and 1.72 (s.e. = 0.05) respectively. This implies that a 1% increase in permanent income (or, total expenditures) results in a 1.8% increase in conspicuous expenditure based on the rural sample and a 1% increase in permanent income (or, total expenditures) results in a 1.7% increase in conspicuous expenditures based on the full sample. As Charles et al. (2009) puts it, "the luxury property of visible goods suggests why it is essential to control for permanent income" when evaluating the impact of visible inequality on conspicuous expenditure.

Next, for the rural sample, I find that household size and age of household head both have negative statistically significant effect on conspicuous consumption expenditure. These results are consistent with previous findings of Friehe and Mechtel (2014). This possibly implies that as family size increases, households become more 'economical' and cuts down on 'unnecessary' conspicuous expenditure and that households with younger heads tend to spend more on conspicuous goods. Apart from these, the regression results also suggest that household with heads who are not married, who are poor, who have been living in the same place for less than ten years and households having

[33] The First-stage results are not presented but are available upon request.

women members more exposed to social media and having more than five married members have significantly higher conspicuous expenditure than their respective counterparts.

How do the above findings compare with those obtained using the full sample? Based on the full sample, I find that household size, age of household head, years of education of household head, women's exposure of media all have negative significant effect of household conspicuous consumption. Moreover, those households who are poor, have more than five married members, have been living in the same place for less than ten years, living in rural areas, and whose household heads are literate and unmarried have significantly more expenditure on conspicuous goods compared to those who do not belong to these categories. Additionally, those who are member of any one of the social group including upper caste non-Brahmin, OBC, Dalit, Adivasi and Muslim spend significantly more on conspicuous goods compared to Sikhs or Jains.

4.2 Heterogeneity Analysis

Table 5 reports the results of the estimation carried out to examine the effect of visible inequality on conspicuous consumption expenditure of households when the estimation sample is cut in different ways for the rural sample as well as the full sample. This allows me to examine if the observed relation between visible inequality and household conspicuous spending are different for some sub-populations than others. My findings are as follows.

First, the impact of visible inequality on conspicuous consumption is negative and highly significant for those households headed by persons who are above 45 years of age for the rural as well as the urban sample. When I restrict the sample to include only those households with heads whose age is between 18 and 45, the coefficient of visible inequality is negative and statistically significant only for the rural sample. On comparing the absolute size of the coefficients, I find that for the rural sample, the impact of visible inequality is more severe for the subsample consisting of younger household heads. In other words, status competition seems to be driving the consumption decisions more for those households headed by younger individuals. This infact is consistent with Hopkins and Kornienko's (2004) and Charles et al.'s (2009) argument: young people, given their greater involvement in marriage and other social markets as they search for spouses and friends, are likely more concerned than the old about outsider's assessment of their economic position and thus should be more likely to indulge in conspicuous expenditure as a result.

Second, for the rural as well as for the full sample, the effect of visible inequality on conspicuous consumption is much larger in absolute magnitude for female headed households than male headed households. Moreover the signs of the coefficient being negative imply that conspicuous spending of female headed households are driven to a larger extent by a fall in visible inequality and the resultant status competition compared to the household headed by males (however, for the full sample, the sign of coefficient of visible inequality for fails to show statistical significance for female headed households). This is interesting, and on a broader level this may have implications for how gender differences influence the relation between social comparisons and economic decisions made by individuals.

Third, I find that compared to the married household heads, the non-married heads are impacted significantly more by visible inequality and consequent status competition judging by the magnitude of the coefficients of visible inequality when only rural households are included in the sample. However, this is not true for results based on the full sample.

Fourth, splitting the sample into two groups based on educational attainment, I find that those with more than ten years of education are affected more by visible inequality and status competition and consequently their increase in conspicuous spending in response to a fall in the level of visible inequality is greater than the increase in conspicuous spending of those having education of less than ten years in response to an equal decline in visible inequality. This is true for the rural sample as well as for the urban sample.

Next, in order to examine whether the estimated impact of visible inequality on conspicuous spending differ by

household size or not, I split the sample based on number of members in the household. For the rural sample, I find that for those households consisting of ten or lesser members, visible inequality has a significant negative impact on conspicuous consumption expenditure. However, for those households with more than ten members, the coefficient of visible inequality seems to be positive as well as statistically insignificant. Similar results are obtained based on the full sample as well. However, I cannot rule out the fact the insignificance of the coefficients of visible inequality based on the sample consisting of households with more than 10 people is purely driven by statistical reasons, given that the size of the sample is small.

Sixth, for the rural sample, I split the sample according to number of married members in the household. I find negative and statistically significant relations between visible inequality and conspicuous consumption for all subsamples, namely, subsamples consisting of households with no married members, consisting of five or less married members, as well for that consisting of more than five married members. However, the magnitude of the impact differs considerably across different subsamples with the maximum magnitude of the coefficient of visible inequality (which is roughly -0.72) being recorded for the subsample consisting of households with no married members. I carry out similar analysis based on the full sample as well, i.e., I split the full sample based on the number of married members in the household as described above. Results obtained based on the full sample are very similar to those obtained based on the rural sample.

Finally, I compare the impact of visible inequality on conspicuous consumption between those households who are officially classified as 'poor' and those who are not. Based on the full sample, I find that both the groups - in terms of conspicuous expenditure - respond significantly to changes in visible inequality: the coefficients of visible inequality for both groups are negative and statistically significant. Moreover, the size of coefficients indicate that impact of visible inequality is, infact, slightly higher for the poor subsample compared to the non-poor subsample. However, this does not hold when I restrict the sample to include only rural households. For the rural households, although the coefficient of visible inequality are negative for both the poor and non-poor subsamples, but it is only statistically significant only for the non-poor subsample. Moreover, the magnitude of the coefficient is larger for the non-poor subsample than the poor subsample.[34]

4.3 Robustness Checks

How robust are my results to the choice of a different measure of visible inequality, to a different definition of conspicuous consumption, or to a different definition of reference group? To answer this questions, I carry out a series of robustness checks reported below. Moreover I also test whether the baseline results change significantly if income inequality, which is the main instrumental variable, is only 'plausibly exogenous'.

4.3.1 Alternate definitions of Conspicuous Consumption

In my first check, I examine whether the identified effect of visible inequality on conspicuous spending of households is robust to alternate definitions of conspicuous consumption expenditure. Specifically I use three different definitions of conspicuous consumption: Charles et al. (2009), Heffetz et al. (2011) as adopted by Friehe and Mechtel (2014)[35] and Friehe and Mechtel's (2014) own definition. Table 1 provides a complete list of goods and services included in the conspicuous consumption expenditure basket as per each definition. Notice that, none of these definitions include

[34] See Banerjee and Duflo (2007) for a detailed discussion about the conspicuous consumption expenditure of the poor.

[35] Heffetz (2011) constructs a list of visible goods ranked according to degree of visibility. Following Friehe and Mechtel (2014), I use the goods that are ranked between 2 and 11 by Heffetz (2011) to construct the *Heffetz basket of conspicuous goods.* Although as per Heffetz' survey cigarettes seem to be most visible (and hence is ranked first), this item is exclude from the basket of conspicuous goods as cigarettes do not fulfill the second requirement of our definition of conspicuous consumption – namely, the impression that those who consume more of it are, on average, better off than individuals who consume less (Friehe and Mechtel, 2014).

expenditure on social functions as a part of conspicuous consumption. However, given that a host of previous studies clearly establish the extreme importance on expenditure on weddings, funerals and other types of social ceremonies to signal social status particularly in LDCs (see for example, Bloch et al., 2004, Brown et al., 2011 among many others) in addition to using the above mentioned definitions of conspicuous consumption, I use three modified definitions that add expenditure on social functions to the original list of goods and services included as per the three specified measures of conspicuous consumption. That is, in total I have six measures of conspicuous consumption expenditure to test the robustness of the identified impact of visible inequality on conspicuous consumption. Results based on the rural sample are reported in table 6(a) and that based on the full sample are reported in table 6(b).

For the rural as well as the full samples, I find that the coefficient of visible inequality for all the six regressions carried out defining the basket of conspicuous consumption in six different ways are negative and are highly significant (in fact, all coefficients for the full sample and five out of six coefficients for the rural sample are significant at 1% level of significance). However, the size of the estimated coefficients vary based on the definition of conspicuous consumption expenditure. For the rural sample, the estimated coefficients lie between -0.04 (s.e.=0.02) to -0.12 (s.e.=0.037) with the maximum and minimum values of the coefficients obtained from the regressions that use Heffetz (2009)'s original definition and Friehe and Mechtel (2014)'s original definition of conspicuous consumption expenditure respectively (columns 3 and 5). For the full sample, the estimated coefficients of visible inequality lie between -0.05 (s.e.=0.018) and -0.131 (s.e.=0.023) with the regressions using Heffetz (2009) definition (including social function expenditure) and Friehe and Mechtel's (2014) original definition of conspicuous consumption yielding the extreme values of coefficients respectively (columns 4 and 5).

Recall that the magnitude of the estimated coefficient obtained from my preferred baseline model reported in columns (4) and (8) of table 4 in which I defined the conspicuous consumption basket based on Khamis et al. (2012)'s survey was -0.08 (s.e.=0.027) and -0.06 (s.e.=0.021) for the rural and full sample respectively which are close to what I obtain using alternate definitions of conspicuous consumption expenditure. This indicates that the identified relation between visible inequality and conspicuous consumption expenditure is robust to variations in definitions of conspicuous spending and that the baseline findings are not driven in anyway by how conspicuous consumption is defined.

4.3.2 Alternative measures of visible inequality

Next, instead of measuring visible inequality as natural log of standard deviation of positional visible expenditure at the village level, I use Gini coefficient, coefficient of variation and natural log of coefficient of variation - all calculated at village level leaving out the focal individual as before - to measure the degree of visible inequality within the reference group. The main criticism that is often levelled against the usage of the second moment as a measure of inequality is that it is not scale invariant and it depends on the measurement unit: for example, by multiplying all income of the baseline distribution by a number λ, the variance increases by λ^2. This problem can be typically avoided by alternative 'scale invariant' measures of inequality like the Gini coefficient and coefficient of variation. Thus, although these measures - particularly Gini index - may not be as appropriate as the second moment to capture the local dispersion or spread of conspicuous consumption,[36] however it would give an idea about the extent to which the relation between visible inequality and household conspicuous spending is sensitive to how exactly visible inequality is measured.

Table 7 reports the results obtained from two step GMM regressions when using the alternate unit free measures of visible inequality. Columns (1) and (2) show results of regressions based on the rural sample. Regression results

[36] Given that the underlying framework used in this paper defines visible inequality absolutely in terms of dispersion or spread of the distribution.

based on the full sample are shown in columns (3) and (4).

For the rural sample, when Gini index is used as measure of visible inequality instead of natural log of standard deviation, visible inequality has a significant negative effect on household conspicuous expenditure. More specifically, when the Gini index increases by 0.1, household conspicuous spending drops by roughly 5%. The impact of visible inequality on conspicuous consumption is also negative and statistically significant when visible inequality is measured by coefficient of variation.

How do the above results compare with the results obtained from regressions based on the full sample? It turns out that the impact of visible inequality, as measured either by Gini index or coefficient of variation, on conspicuous spending of households is negative as in the rural sample. However, now the coefficient sizes are much smaller. Moreover, the coefficients fail to show statistical significance at conventional levels of significance. Does this mean that is some (endogenous reference group selection) kind of sorting going on in the urban sample which is contaminating the results when the full sample is used? This is possible. Other possibilities could be that people's decision in urban area are not driven substantially by status concerns or that they are status concern but their comparator group members may not be their neighbors but rather there colleagues in their workplace. However, one interesting thing to note is that in my baseline analysis, using the full sample, the impact of visible inequality on conspicuous spending when visible inequality is measured as log of standard deviation is found to negative and highly significant. As such, what exactly might be causing coefficients of visible inequality calculated as gini index and coefficient variation to be insignificant but that calculated as standard deviation to be significant is not clear.

Over all, these results imply that at least for the rural sample, the relation between visible inequality and conspicuous consumption is not driven by how visible inequality is measured.

4.3.3 Caste and religion based reference group

The importance of caste and religious group affiliation in determining households' social identity particularly in India has been highlighted in various studies (see for instance Khamis et al., 2012). This in turn could potentially imply that self-identification is stronger among members of the same social group living in the same region compared to households living in the same locality but belonging to very different social groups. To acknowledge this fact. I construct reference groups based on caste and religious affiliation of households.

The ideal way to construct reference groups for households would be based on caste/religion and village of residence instead of districts. However, I am unable to do so purely because of inadequate availability of data (i.e., this yields too many reference groups with tiny number of households). As an alternative, I assume a households' reference group includes members of the same caste/religion living in the same district.[37]

This alternative definition of reference group, however, I believe has a serious limitation. This is particularly due to the fact that the geographical area that districts typically represent are possibly too large for households to form comparator groups based upon. In other words, I may identify more with people of my own caste/religion group, but it is impossible for me to be influenced by some one who lives in a different village or neighborhood as it is unlikely that we ever socially interact. Nevertheless, it would be interesting to check the sensitivity of my results obtained under this alternate definition of reference group.

From table 8, I find that results of regressions, when reference groups are defined based on caste/religion and district, are very similar to that obtained in my baseline analysis. For the rural sample, the coefficients of visible inequality is statistically significant when visible inequality is measured either by log of standard deviation or by

[37]For the purpose of constructing the reference groups based on district and caste/religious affiliation, I combine the Upper Caste Brahmins and Upper Caste Non-Brahmins as well as Sikhs/Jains and Christians given that Upper Caste Brahmins and Christians had only few observations.

coefficient of variation or by gini index. To get a sense of economic significance, I calculate the impact of a one standard deviation change in visible inequality on conspicuous consumption based on the results reported in column (1) . I find that, one standard deviation fall in the level of visible inequality as measured by the log of standard deviation of conspicuous consumption causes household spending on conspicuous goods to increase by approximately 16%. However, for the full sample, the impact of a fall in visible inequality on conspicuous consumption drops substantially to 5%. The coefficients of coefficient of variation and gini index are also much smaller for the full sample compared to that obtained based on the rural sample. Moreover, the these coefficients also fail to show statistical significance. Overall, the results are similar to that obtained in my baseline analysis. In other words, the main results does not seem to be sensitive to the definition of reference groups.

4.3.4 Sensitivity Analysis of Instrumental Variables

One criticism hat is often levelled against the instruments used for model identification is that they might not satisfy the exclusion restriction. In the present case this concern is not valid for the instruments used for total consumption expenditure (which proxies permanent income) because income can only affect conspicuous consumption through total consumption. However, it might be worthwhile to check the sensitivity of my baseline results when a small direct impact of the instruments, which are used to instrument visible inequality, are allowed for. In other words, it might be useful to check whether my baseline regression results are sensitive when I treat these instruments as only *plausibly exogenous*.

To do so, I follow the method proposed in Conley et al. (2012). To fix ideas, suppose that the true model is given by

$$Y = X\Psi_1 + Z\Psi_2 + \varepsilon \tag{6}$$

$$X = \Psi_3 Z + \eta \tag{7}$$

where Y denotes the $N \times 1$ vector of outcomes which is $\ln(Conspicuous\ Consumption)$, X denotes $N \times 2$ of matrix of endogenous variables which are $Visible\ Inequality$ and $\ln(Permanent\ Income)$ with parameter of interest Ψ_1, Z is an $N \times r$ matrix of instruments with $r \geq 2$, Ψ_3 is the matrix of first stage coefficients and Ψ_2 is the parameter measuring the plausibility of the exclusion restriction. Notice that I omit other covariates and district fixed effects purely for notational convenience. Further, note that, as per the baseline specification, I have five instruments for two endogenous variables. However, now I use only two of the five instruments, one for each endogenous variable implying that $r = 2$. Specifically, I instrument $\ln(Permanent\ Income)$ by $\ln(Income)$ and $Visible\ Inequality$ by $Income\ Inequality$. I reduce the set of the instruments purely due to computational purposes. As such, in this modified set up, the set of *plausibly exogenous* variables that I have to deal with consists only of $Income\ Inequality$ (since, $Income$ is exogenous as argued above).

A valid instrument requires $\Psi_2 \equiv 0$. Conley et al. (2012) seek to construct a valid confidence interval for Ψ_1 even when this requirement does not hold. Their approach is referred to as the Union of Confidence Intervals (UCI) with Ψ_2 support assumption approach. The approach assumes that $\Psi_2 \in \Gamma$, where Γ is the bounded support of Ψ_2. If the true value of Ψ_2 was the value $\widetilde{\Psi}_2 \in \Gamma$, then one could subtract $\widetilde{\Psi}_2 Z$ from both sides of the equation (11) and estimate

$$\widetilde{Y} = Y - Z\widetilde{\Psi}_2 = X\Psi_1 + \varepsilon$$

and obtain an estimate of Ψ_1 via two stage least squares (TSLS) using Z as instruments. Moreover, one could construct a symmetric $(1-\alpha)\%$ confidence interval, $CI_N(1-\alpha, \widetilde{\Psi}_2)$, based on the asymptotic variance of the TSLS estimator. However, in reality, the true value of Ψ_2 is unknown. Consequently, one can estimate Ψ_1 for all values within the support Γ via TSLS regressions of $\widetilde{Y}$ on X and construct the union of resulting confidence intervals $\cup_{\widetilde{\Psi}_2 \in \Gamma} CI_N(1-\alpha, \widetilde{\Psi}_2)$.

Since we know that $\widetilde{\Psi}_2 \in \Gamma$ and that the intervals $CI_N(1-\alpha, \widetilde{\Psi}_2)$ were all constructed such that $Pr\{\Psi_1 \in CI_N(1-\alpha, \widetilde{\Psi}_2)\} \rightarrow (1-\alpha)$ when $\Psi_2 = \widetilde{\Psi}_2$, it follows that asymptotically $Pr\{\Psi_1 \in \cup_{\widetilde{\Psi}_2 \in \Gamma} CI_N(1-\alpha, \widetilde{\Psi}_2)\} \geq 1-\alpha$. That is, $\cup_{\widetilde{\Psi}_2 \in \Gamma} CI_N(1-\alpha, \widetilde{\Psi}_2)$ will cover the true parameter value of Ψ_1 with at least probability $(1-\alpha)$ asymptotically.

To implement the UCI approach, one has to start with making some assumption about the interval for Γ. Since it is not easy to think of channels through which income inequality may have impact on conspicuous spending other than through visible inequality, I assume that Ψ_2 close to zero. Moreover, since the direction of the effect (if any) is not clear a priori, I use a symmetric support centred at zero: $\Gamma = \{-\delta, \delta\}$ for different values of δ.

The results are shown in Figure 4. The top (bottom) row displays the results for income inequality without district fixed effects (with district fixed effects) for both the rural as well as the full sample. The figures reveal that, without district fixed effects, if the exclusion restriction violation is small (i.e., $\delta \leq 0.05$), then the true value of the coefficient of visible inequality is indeed negative for both the rural and full sample. This is in consonant with my baseline results. The confidence intervals include the zero value only if the direct impact of income inequality is sufficiently high. When district fixed effects are added, the size of the the exclusion violation required to invalidate my baseline results falls only slightly. Therefore, even if $\Psi_2 \neq 0$, as long as the exclusion restriction violation is small enough, the baseline results remains - at least qualitatively - unchanged.[38]

While the above discussion does not provide a definite answer to the question of whether my instrument is valid, it does increase my confidence in the identification strategy using the same instrument.

5 Conclusion

Status competition hypothesis predicts that in a world where households care about their social status as determined by their rank in the distribution of conspicuous consumption expenditure, a fall in the dispersion of conspicuous consumption expenditure within reference groups - by generating higher marginal status utility - is likely to cause households to spend increased amount of resources on conspicuous goods. Such spending not only represents inefficient transfer of resources from other consumption categories (some of which might have positive social externalities), but also such expenditure in anticipation to achieve higher societal rank is completely wasteful as rank improvement does not materialize due to parallel action of others in the comparator group.

In this paper I empirically examine the main prediction of the status competition theory. Using microlevel data from India, I find that a reduction in socially visible inequality by increasing the intensity of status competition does indeed cause households to increase spending on conspicuous goods. Subsample analysis reveals that there is significant heterogeneity involved in the relation between visible inequality and household conspicuous consumption expenditure: while this relation is negative and significant for some subsamples, it is not so for others. Moreover the magnitude of the impact of visible inequality on conspicuous spending also varies by subsamples.

My main results are robust to a violation of a whole lot of assumption invoked in baseline analysis. In particular, my results do not change qualitatively when I use alternate definitions of conspicuous consumption basket, alternate measures of inequality and alternative definitions of reference group. Moreover, results do not change significantly

[38] This, by no means, imply that if violation of exclusion restriction is larger then the baseline results does not hold. It just means that in that case, there is only a possibility that the true impact of visible inequality on conspicuous consumption is zero.

even if I assume the main instrument used for model identification is 'plausibly exogenous'.

My results have some important implications for policy: I have shown the reduction in inequality particularly at the local level causes households via augmenting the degree of status competition. This suggests that redistribution policies that reduce the level of local socially visible inequality may have crucial negative side-effects. Consequently, this castes doubt about such policies being really effective in fostering the rate of economic development. Rather, a more effective approach might be to combine such redistribution policies with *social* policies that promote resistance to social pressure, focusing on relationships with friends, neighbors and coworkers (Ordabayeva and Chandon, 2011) with the aim of reducing individuals' or households' desire to participate in status competition. One way to do this, as suggested by Putnam (2007), is probably to promote a broad sense of "we" among members of the same community or reference groups through popular culture, education and common experiences. Such policies, although might not eliminate status competition completely, but might be helpful in transforming and moderating the adverse effects of falling inequality and consequent status competition on consumption behavior of households.

Future work in this area should focus more on exploring the role of status seeking behavior and status competition as the key drivers of the relation between local inequality and conspicuous spending behavior of the households. Also examining how traditional redistributional policies may be combined with social policies that tend to reduce the intensity of status competition so as to minimize 'conspicuous arms races' is another important area for future research.

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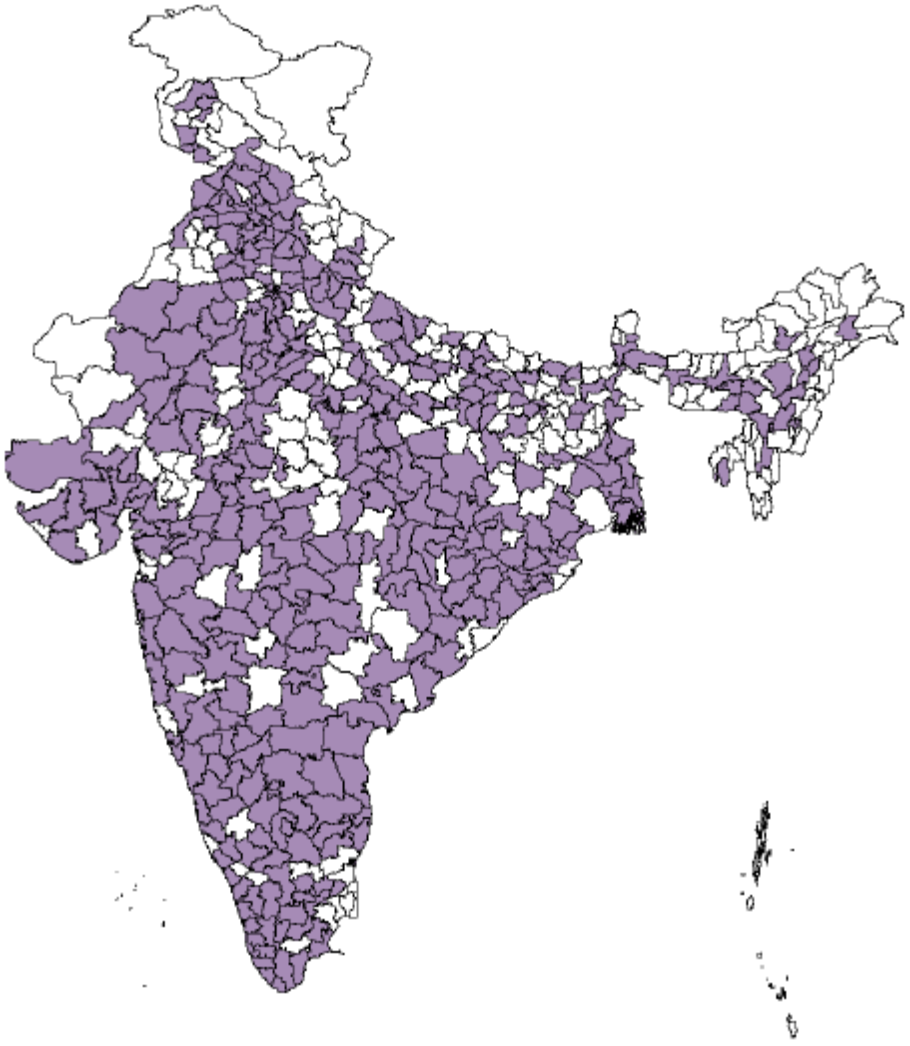
Figure 1: 2005 IHDS Sample District Coverage



Note: The map shows 384 districts covered in the 2005 IHDS Survey. However, the sample that I make use of in the analysis consists of 375 districts. The rest of the districts correspond to households that are dropped due to reasons discussed in the data section of the text.

Source: Desai et al. (2005)

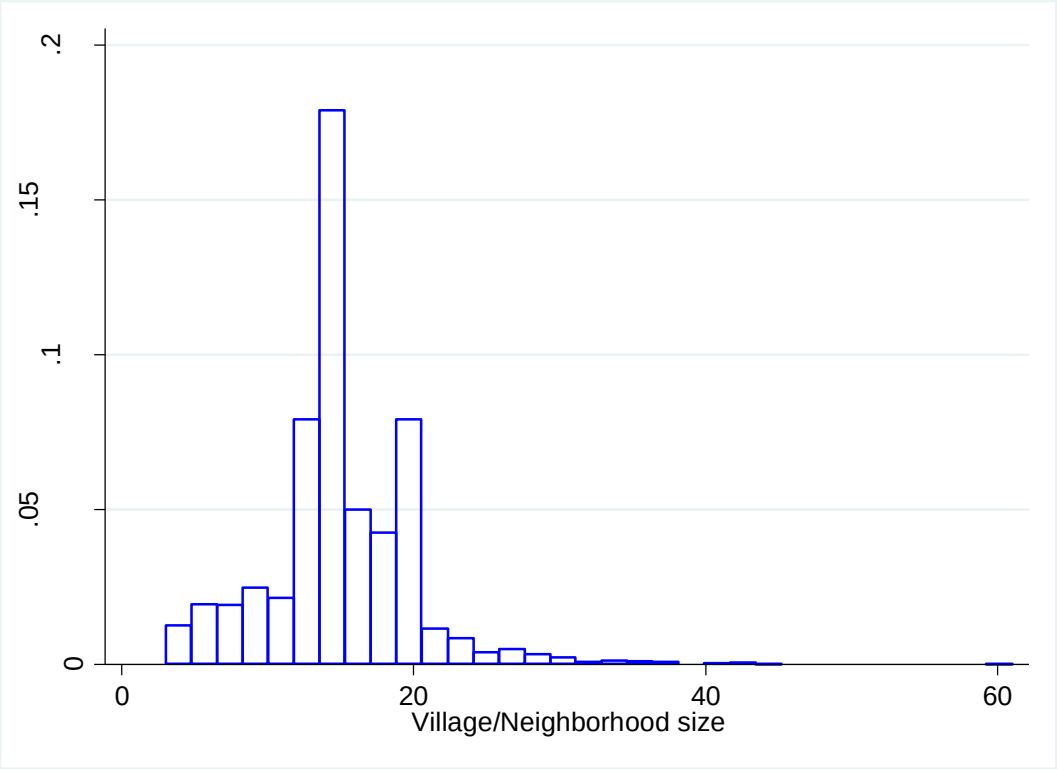


Figure 2. Histogram of Village/Neighborhood size

Note: Village size is defined as the number of households living in a particular village/neighborhood.

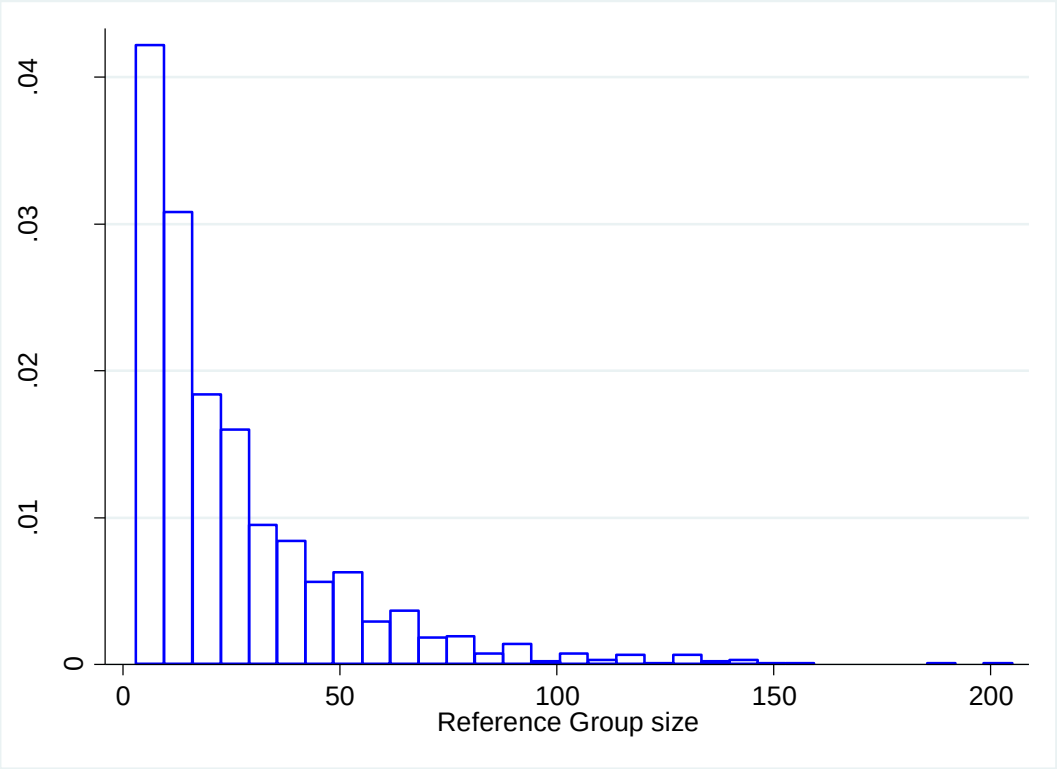
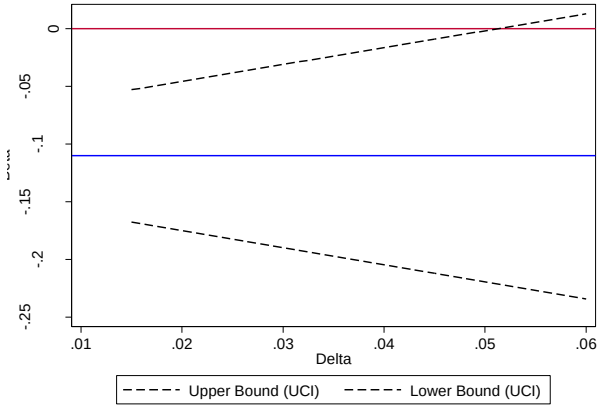


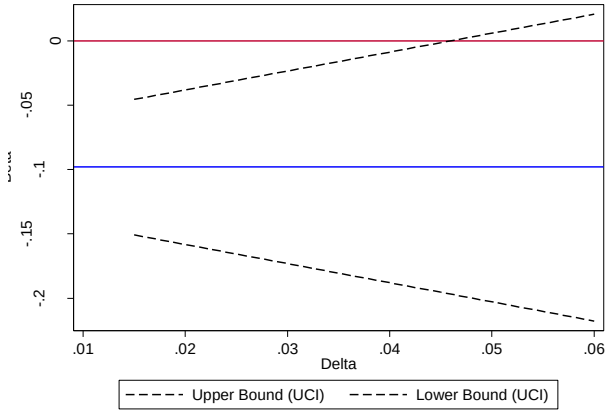
Figure 3. Histogram of alternate reference group size when reference groups are defined by district and caste/religion.

Note: Alternate Reference group size is defined as the number of households living in a particular district having the same caste/religious affiliation..

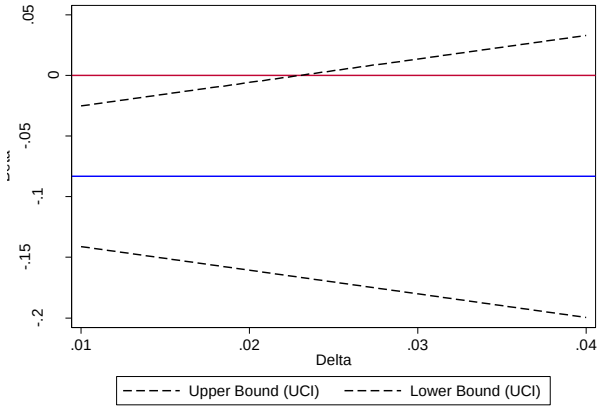
Figure 4. Sensitivity Analysis of Instruments – UCI Approach (Conley et al., 2012)



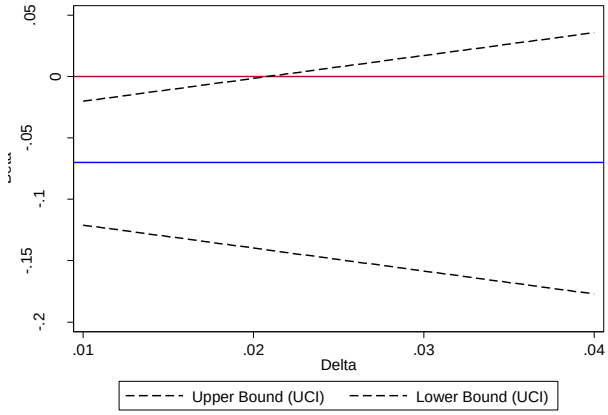
(A)



(B)



(C)



(D)

Notes:

1. Figures show how large the exclusion restriction violation would need to be in order to invalidate the baseline form results.
2. (A) – Based on rural sample excluding district fixed effects, (B) – Based on full sample excluding district fixed effects, (C) – Based on rural sample including district fixed effects, (D) – Based on full sample including district fixed effects
3. The dashed lines plot the union of confidence. Blue line denotes the actual Two stage least square estimates.
4. Beta denotes coefficient of visible inequality, Delta represents possible values of coefficient of income inequality had it been a part of the second stage.
4. Figures produced using the 'plausexog' code produced by Damian Clarke (2014)

Table 1. Definition of Conspicuous Consumption Expenditure

Expenditure Category	Khamis et al. (2012)	Charles et al. (2009)	Heffetz (2011)	Friehe and Mechtel (2014)
Personal Transport Equipment (includes bicycle, scooter, car etc.)	✓	✓	✓	✓
Footwear	✓	✓		✓
Vacations	✓			✓
Furnitures and Fixtures (includes bedstead, almirah, suitcase, carpet, paintings, etc.)	✓		✓	✓
Social Functions (marriage, funerals, gifts, etc.)	✓			
Repairs and Maintenance (of residential buildings, bathroom equipments etc.)	✓			
House rent and other rents (including expense on rented household appliances, furnitures etc.)	✓	✓		
Entertainment (includes cinema, picnic, sports,club fees and video cassettes)	✓	✓		
Clothing and Bedding	✓		✓	✓
Jewelry	✓		✓	✓
Recreation goods (includes TV, radio, taperecorder, musical instruments)	✓		✓	✓
Personal goods (includes clock, watch, PC, telephone, mobile etc.)	✓			✓
Paan, tobacco and other intoxicants			✓	
Services (domestic servants etc.)			✓	
Food at restaurants			✓	✓
Telephone, cable and internet				✓
Personal care (includes spectacles, umbrella, torch, lighter etc.)		✓		✓

Note: The dependent variable *ln(Conspicuous Consumption)* in the baseline analysis is defined following Khamis et al. (2012)'s definition. Other definitions are used to check robustness of baseline results.

Table 2. Summary Statistics

	Rural Sample		Full Sample	
	Mean	Standard Deviation	Mean	Standard Deviation
Dependent Variable				
Conspicuous Consumption	8149.36	26070.36	10000.53	27409.24
ln(Conspicuous Consumption)	8.68	1.41	8.92	1.44
Measures of Visible Inequality				
σ (Conspicuous Consumption)	13542.52	21411.77	14694.79	21780.39
ln σ(Conspicuous Consumption)	8.71	1.3	8.88	1.23
CV (Conspicuous Consumption)	1.3	0.7	1.22	0.66
Gini (Conspicuous Consumption)	0.5	0.17	0.49	0.17
Demographics				
Income	40070.96	52479.02	53020.58	65696.78
ln(Income)	10.8	1.11	11.05	1.22
Total Consumption Expenditure	44770.29	44082.5	52784.98	50008.86
ln(Total Consumption Expenditure)	11.13	0.7	11.3	0.72
HH Size	5.33	2.47	5.16	2.35
Age	44.7	11.09	44.44	10.99
Male (=1 if HH head is male)	0.91	0.29	0.91	0.29
Married (=1 if HH head is married)	0.88	0.33	0.88	0.32
HH member proportion: 0-14 years	0.3	0.23	0.29	0.22
HH member proportion: 15-21 years	0.14	0.18	0.15	0.18
HH member proprtion: >21 years	0.55	0.21	0.57	0.21
HH married members: Zero	0.07	0.25	0.07	0.25
HH married members: 1-5	0.89	0.32	0.89	0.31
HH married members: >5	0.05	0.21	0.04	0.19
Poor (=1 if officially classified as poor)	0.21	0.41	0.2	0.4
Urban (=1 if HH lives in urban area)	0	0	0.37	0.48
Metro (=1 if HH lives in metro city)	0.03	0.17	0.1	0.3
Literate (=1 if HH head is literate)	0.6	0.49	0.68	0.47
Years of Education	4.46	4.47	5.73	4.94
Years in Place (=1 if years in same village > 10)	0.97	0.16	0.91	0.29
Media Exposure: Men	0.77	0.42	0.83	0.38
Media Exposure: Women	0.7	0.46	0.78	0.41
Media Exposure: Children	0.66	0.47	0.71	0.45
Upper Caste Brahmin	0.04	0.19	0.06	0.23
Upper Caste Non-Brahmin	0.14	0.35	0.17	0.37
OBC	0.36	0.48	0.34	0.47
Dalit	0.23	0.42	0.21	0.4
Adivasi	0.11	0.32	0.09	0.28
Muslim	0.09	0.29	0.12	0.32
Sikh/Jain	0.01	0.11	0.02	0.12
Christian	0.01	0.12	0.02	0.13
N	23,471		37,081	

Table 3. Summary Statistics, *Instruments*

	Rural Sample		Full Sample	
	Mean	Standard Deviation	Mean	Standard Deviation
Main Analysis				
ln(Income)	10.8	1.11	11.05	1.22
Zero Income (=1 if Income=0)	0	0.05	0	0.06
ln σ(Income)	10.22	0.75	10.39	0.75
σ(Literate)	0.44	0.12	0.39	0.17
σ(Years of Education)	3.99	0.99	4.01	1.02
Robustness Checks				
Gini (Income)	0.39	0.11	0.37	0.11
Gini (Years of Education)	0.2	0.07	0.18	0.07
CV (Income)	0.86	0.36	0.81	0.34
CV (Years of Education)	1.1	0.52	0.92	0.52
N	23,471		37,081	

Table 4. Estimated impact of Visible Inequality on HH Conspicuous Expenditure

	Rural Sample				Full Sample			
VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
ln σ(Conspicuous Consumption)	-0.0945**	-0.131***	-0.0670**	-0.0815***	-0.0282	-0.0773**	-0.0217	-0.0576***
	(0.0450)	(0.0457)	(0.0268)	(0.0268)	(0.0305)	(0.0363)	(0.0214)	(0.0209)
ln(Permanent Income)	1.396***	1.373***	1.545***	1.791***	1.426***	1.448***	1.525***	1.721***
	(0.0485)	(0.116)	(0.0305)	(0.0692)	(0.0432)	(0.0718)	(0.0289)	(0.0516)
Demographic Controls	NO	YES	NO	YES	NO	YES	NO	YES
District Fixed Effects	NO	NO	YES	YES	NO	NO	YES	YES
Observations	23,471	23,471	23,471	23,471	37,081	37,081	37,081	37,081
R-squared	0.457	0.455	0.463	0.463	0.490	0.491	0.473	0.479
Adjusted R-squared	0.457	0.256	0.456	0.300	0.490	0.288	0.468	0.305
Hansen J statistic	5.373	7.001	3.699	1.536	4.739	6.541	4.145	2.435
	[p-value=0.146]	[p-value=0.0719]	[p-value=0.296]	[p-value=0.674]	[p-value=0.192]	[p-value=0.0881]	[p-value=0.246]	[p-value=0.487]
Kleibergen-Paap rk LM statistic	16.79	18.18	15.40	17.19	18.38	19.06	18.33	18.76
	[p-value=0.002]	[p-value=0.001]	[p-value=0.003]	[p-value=0.001]	[p-value=0.001]	[p-value=0.001]	[p-value=0.001]	[p-value=0.001]
Angrist Pischke F-statistics								
ln σ(Conspicuous Consumption)	38.9	57.51	57.18	60.58	51.75	70.63	48	53.27
	[p-value=0.000]	[p-value=0.000]	[p-value=0.000]	[p-value=0.000]	[p-value=0.000]	[p-value=0.000]	[p-value=0.000]	[p-value=0.000]
ln(Permanent Income)	106.29	79.67	149.36	87.78	187.5	86.48	202.8	123.93
	[p-value=0.000]	[p-value=0.000]	[p-value=0.000]	[p-value=0.000]	[p-value=0.000]	[p-value=0.000]	[p-value=0.000]	[p-value=0.000]
Number of districts			277	277			375	375

Note: Estimation via two-step GMM. The dependent variable is *ln(conspicuous consumption*), where conspicuous consumption follows Khamis et al. (2012)'s definition (see Table 1). The main explanatory variable of interest is Visible Inequality *lnσ(Conspicuous Consumption)* which is defined as the natural log of standard deviation of conspicuous expenditure of households at the village (reference group) level leaving out the focal household. The set of demographic control variables include *ln(Permanent income), HH size, Age, Age^2,Male, Married, Poor, Literate, Years of Education, HH member prop.: 0-14 years, HH member prop.: 15-21 years, HH member prop.: > 21 years, HH married members: Zero, HH married members: 1-5, Media Exposure (Men), Media Exposure (Women), Media Exposure (Children), Urban, Metro, Years in same village>10, Upper Caste Brahmin, Upper Caste Non-Brahmin, Dalit, Adivasi, Muslim, Sikh/Jain*. Subsumed binary variables are *HH married members: >5* and *Christian*. Heteroskedasticity robust standard errors are reported in parantheses clustered at state level. All regressions include a constant. *lnσ(Conspicuous Consumption)* and *ln(Permanent Income)*are endogenous. First stage instruments include *ln(Income), Zero Income which is* a dummy takes a value 1 if households have zero income, *lnσ(Income)* which denotes natural log of standard deviation of income of households at the village (reference group) level leaving out the focal household, *σ(Literate)* which denotes of standard deviation of *Literate* (dummy variable that takes value 1 if HH is literate) of household head at the village (reference group) level leaving out the focal household, *σ(Education)* which denotes of standard deviation of years of education of household head at the village (reference group) level leaving out the focal household. ***indicates significant at 99% confidence level, **indicates significant at 95% confidence level, *indicates significant at 90% confidence level.

Table 5. Estimated impact of Visible Inequality on HH Conspicuous Spending, specific subsamples

	Rural Sample			Full Sample		
Specific Subsamples	ln σ(Conspicuous Consumption)		Sample Size	ln σ(Conspicuous Consumption)		Sample Size
(1) Age of HH head						
(a) Age between 18 and 45 years	-0.0818**	(0.0328)	11,251	-0.0418	(0.0268)	18,188
(b) Age > 45 years	-0.0769**	(0.0310)	12,218	-0.0724***	(0.0215)	18,891
(2) Gender of HH head						
(a) Female	-0.327***	(0.122)	2,160	-0.0949	(0.166)	3,388
(b) Male	-0.0817***	(0.0259)	21,296	-0.0632***	(0.0219)	33,672
(3) Marital Status of HH head						
(a) Married	-0.0781***	(0.0259)	20,610	-0.0554**	(0.0223)	32,639
(b) Unmarried	-0.398***	(0.123)	2,852	-0.165	(0.164)	4,428
(4) Education of HH head						
(a) Years of Education≤10	-0.0705***	(0.0250)	21,458	-0.0473**	(0.0202)	31,304
(b) Years of Education>10	-0.225***	(0.0730)	1,989	-0.115***	(0.0439)	5,759
(5) HH size						
(a) *≤10 people*	-0.0805***	(0.0270)	22,599	-0.0585***	(0.0204)	35,939
(b) >10 people	-0.164	(0.109)	832	0.0386	(0.112)	1,089
(6) Number of Married people in HH						
(a) No Married People	-0.722***	(0.274)	1,577	-0.666	(0.519)	2,500
(b) >0 and ≤5 married people	-0.0661**	(0.0264)	20,787	-0.0573***	(0.0207)	33,095
(c) >5 married people	-0.338**	(0.159)	1,047	-0.252***	(0.0709)	1,384
(7) Official Economic Status of HH						
(a) Poor	-0.0542	(0.0415)	4,966	-0.0685**	(0.0314)	7,369
(b) Non-Poor	-0.0857***	(0.0305)	18,487	-0.0503*	(0.0261)	29,695

Note: Estimation via two-step GMM. The dependent variable is *ln(conspicuous consumption*), where conspicuous consumption follows Khamis et al. (2012)'s definition (see Table 1). The main explanatory variable of interest is Visible Inequality *lnσ(Conspicuous Consumption)* which is defined as the natural log of standard deviation of conspicuous expenditure of households at the village (reference group) level leaving out the focal household. The control variables are *ln(Permanent income), HH size, Age, Age^2,Male, Married, Poor, Literate, Years of Education, HH member prop.: 0-14 years, HH member prop.: 15-21 years, HH member prop.: > 21 years, HH married members: Zero, HH married members: 1-5, Media Exposure (Men), Media Exposure (Women), Media Exposure (Children), Urban, Metro, Years in same village>10, Upper Caste Brahmin, Upper Caste Non-Brahmin, Dalit, Adivasi, Muslim, Sikh/Jain*. Subsumed binary variables are *HH married members: >5* and *Christian*. Additionally a full set of district fixed effects are also included as explanatory variables. Heteroskedasticity robust standard errors are reported in parentheses clustered at state level. All regressions include a constant. *lnσ(Conspicuous Consumption)* and *ln(Permanent Income)*are endogenous. First stage instruments include *ln(Income)*, *Zero Income which is* a dummy takes a value 1 if households have zero income, *lnσ(Income)* which denotes natural log of standard deviation of income of households at the village (reference group) level leaving out the focal household, *σ(Literate)* which denotes of standard deviation of *Literate* (dummy variable that takes value 1 if HH is literate) of household head at the village (reference group) level leaving out the focal household, *σ(Education)* which denotes of standard deviation of years of education of household head at the village (reference group) level leaving out the focal household. ***indicates significant at 99% confidence level, **indicates significant at 95% confidence level, *indicates significant at 90% confidence level.

Table 6(a): Robustness of estimated impact of Visible Inequality on HH Conspicuous Consumption expenditure, Alternate defintions of Conspicuous Consumption, Rural Sample

VARIABLES	(1) C1	(2) C2	(3) H1	(4) H2	(5) FM1	(6) FM2
ln σ(Conspicuous Consumption)_C1	-0.0713***					
	(0.0243)					
ln σ(Conspicuous Consumption)_C2		-0.0811***				
		(0.0266)				
ln σ(Conspicuous Consumption)_H1			-0.123***			
			(0.0373)			
ln σ(Conspicuous Consumption)_H2				-0.103***		
				(0.0250)		
ln σ(Conspicuous Consumption)_FM1					-0.0432**	
					(0.0204)	
ln σ(Conspicuous Consumption)_FM2						-0.0631***
						(0.0200)
ln (Permanent Income)	1.583***	1.565***	1.747***	1.676***	1.926***	1.844***
	(0.0902)	(0.0738)	(0.0756)	(0.0738)	(0.0896)	(0.0789)
Demographic Controls	YES	YES	YES	YES	YES	YES
District Fixed Effects	YES	YES	YES	YES	YES	YES
Observations	23,469	23,469	23,470	23,471	23,471	23,471
R-squared	0.261	0.401	0.236	0.406	0.319	0.451
Adjusted R-squared	0.251	0.393	0.226	0.398	0.310	0.444
Hansen J statistic	3.263	1.735	3.319	2.439	4.834	2.970
	[p-value=0.353]	[p-value=0.629]	[p-value=0.345]	[p-value=0.486]	[p-value=0.184]	[p-value=0.396]
Kleibergen-Paap rk LM statistic	16.52	17.16	16.85	17.32	16.82	17.08
	[p-value=0.002]	[p-value=0.002]	[p-value=0.002]	[p-value=0.002]	[p-value=0.002]	[p-value=0.002]
Angrist Pischke F statistic						
ln σ(Conspicuous Consumption)_C1	82.78					
	[p-value=0.000]					
ln σ(Conspicuous Consumption)_C2		44.35				
		[p-value=0.000]				
ln σ(Conspicuous Consumption)_H1			49.06			
			[p-value=0.000]			
ln σ(Conspicuous Consumption)_H2				30.5		
				[p-value=0.000]		
ln σ(Conspicuous Consumption)_FM1					106.07	
					[p-value=0.000]	
ln σ(Conspicuous Consumption)_FM2						57.09
						[p-value=0.000]
ln (Permanent Income)	87.33	87.14	88.24	87.54	87.21	87.25
	[p-value=0.000]	[p-value=0.000]	[p-value=0.000]	[p-value=0.000]	[p-value=0.000]	[p-value=0.000]
Number of districts	277	277	277	277	277	277

Note: Estimation via two-step GMM. The dependent variable is *ln(conspicuous consumption*). In specification [1], conspicuous consumption basket is constructed as per Charles et al. (2009)'s definition (C1). In specification [2], conspicuous consumption basket is constructed as per Charles et al. (2009)'s definition but expenditure on social ceremonies is also included as a part of conspicuous consumption expenditure (C2). In specification [3], conspicuous consumption basket is constructed as per Heffetz (2011)'s definition (H1). In specification [4], conspicuous consumption basket is constructed as per Heffetz (2011)'s definition but expenditure on social ceremonies is also included as a part of conspicuous consumption expenditure (H2). In specification [5], conspicuous consumption basket is constructed as per Friehe and Mechtel (2014)'s definition (FM1). In specification [6], conspicuous consumption basket is constructed as per Friehe and Mechtel (2014)'s definition but expenditure on social ceremonies is also included as a part of conspicuous consumption expenditure (FM2). See Table 1 for a complete list of goods included in the conspicuous consumption basket as per each definition. The main explanatory variable of interest is Visible Inequality *lnσ(Conspicuous Consumption)* which is defined as the natural log of standard deviation of conspicuous expenditure of households at the village (reference group) level leaving out the focal household. The control variables *ln(Permanent income), HH size, Age, Age^2, HH member prop.: 0-14 years, HH member prop.: 15-21 years, HH member prop.: > 21 years, Media Exposure (Men), Media Exposure (Women), Media Exposure (Children), Years of Education* are continuous. All other variables are binary. Heteroskedasticity robust standard errors are reported in parantheses clustered at state level. All regressions include a constant. *lnσ(Conspicuous Consumption)* and *ln(Permanent Income)*. First stage instruments include *ln(Income), Zero Income which is* a dummy takes a value 1 if households have zero income, *lnσ(Income)* which denotes natural log of standard deviation of income of households at the village (reference group) level leaving out the focal household, *σ(Literate)* which denotes of standard deviation of *Literate* (dummy variable that takes value 1 if HH is literate) of household head at the village (reference group) level leaving out the focal household, *σ(Education)* which denotes of standard deviation of years of education of household head at the village (reference group) level leaving out the focal household. ***indicates significant at 99% confidence level, **indicates significant at 95% confidence level, *indicates significant at 90% confidence level.

Table 6(b). Robustness of estimated impact of Visible Inequality on HH Conspicuous Consumption expenditure, Alternate definitions of Conspicuous Consumption, Full Sample

VARIABLES	(1) C1	(2) C2	(3) H1	(4) H2	(5) FM1	(6) FM2
ln σ(Conspicuous Consumption)_C1	-0.0764***					
	(0.0176)					
ln σ(Conspicuous Consumption)_C2		-0.0904***				
		(0.0220)				
ln σ(Conspicuous Consumption)_H1			-0.129***			
			(0.0267)			
ln σ(Conspicuous Consumption)_H2				-0.131***		
				(0.0232)		
ln σ(Conspicuous Consumption)_FM1					-0.0498***	
					(0.0180)	
ln σ(Conspicuous Consumption)_FM2						-0.0680***
						(0.0171)
ln (Permanent Income)	1.665***	1.610***	1.823***	1.713***	2.045***	1.922***
	(0.0774)	(0.0628)	(0.0635)	(0.0478)	(0.0763)	(0.0624)
Demographic Controls	YES	YES	YES	YES	YES	YES
District Fixed Effects	YES	YES	YES	YES	YES	YES
Observations	37,079	37,079	37,080	37,081	37,081	37,081
R-squared	0.265	0.401	0.246	0.409	0.358	0.480
Adjusted R-squared	0.257	0.394	0.238	0.403	0.351	0.475
Hansen J statistic	3.970	1.087	6.826	6.499	4.645	4.223
	[p-value=0.265]	[p-value=0.780]	[p-value=0.077]	[p-value=0.089]	[p-value=0.200]	[p-value=0.238]
Kleibergen-Paap rk LM statistic	17.94	18.39	18.13	18.36	18.30	18.38
	[p-value=0.001]	[p-value=0.001]	[p-value=0.001]	[p-value=0.001]	[p-value=0.001]	[p-value=0.001]
Angrist-Pischke F statistic						
ln σ(Conspicuous Consumption)_C1	153.93					
	[p-value=0.000]					
ln σ(Conspicuous Consumption)_C2		49.61				
		[p-value=0.000]				
ln σ(Conspicuous Consumption)_H1			114.71			
			[p-value=0.000]			
ln σ(Conspicuous Consumption)_H2				35.36		
				[p-value=0.000]		
ln σ(Conspicuous Consumption)_FM1					252.24	
					[p-value=0.000]	
ln σ(Conspicuous Consumption)_FM2						69.92
						[p-value=0.000]
ln (Permanent Income)	123.61	123.66	123.6	123.61	123.49	123.66
	[p-value=0.000]	[p-value=0.000]	[p-value=0.000]	[p-value=0.000]	[p-value=0.000]	[p-value=0.000]
Number of districts	375	375	375	375	375	375

Note: Estimation via two-step GMM. The dependent variable is *ln(conspicuous consumption*). In specification [1], conspicuous consumption basket is constructed as per Charles et al. (2009)'s definition (C1). In specification [2], conspicuous consumption basket is constructed as per Charles et al. (2009)'s definition but expenditure on social ceremonies is also included as a part of conspicuous consumption expenditure (C2). In specification [3], conspicuous consumption basket is constructed as per Heffetz (2011)'s definition (H1). In specification [4], conspicuous consumption basket is constructed as per Heffetz (2011)'s definition but expenditure on social ceremonies is also included as a part of conspicuous consumption expenditure (H2). In specification [5], conspicuous consumption basket is constructed as per Friehe and Mechtel (2014)'s definition (FM1). In specification [6], conspicuous consumption basket is constructed as per Friehe and Mechtel (2014)'s definition but expenditure on social ceremonies is also included as a part of conspicuous consumption expenditure (FM2). See Table 1 for a complete list of goods included in the conspicuous consumption basket as per each definition. The main explanatory variable of interest is Visible Inequality *lnσ(Conspicuous Consumption)* which is defined as the natural log of standard deviation of conspicuous expenditure of households at the village (reference group) level leaving out the focal household. The control variables *ln(Permanent income), HH size, Age, Age^2, HH member prop.: 0-14 years, HH member prop.: 15-21 years, HH member prop.: > 21 years, Media Exposure (Men), Media Exposure (Women), Media Exposure (Children), Years of Education* are continuous. All other variables are binary. Heteroskedasticity robust standard errors are reported in parantheses clustered at state level. All regressions include a constant. *lnσ(Conspicuous Consumption)* and *ln(Permanent Income)*. First stage instruments include *ln(Income), Zero Income which is* a dummy takes a value 1 if households have zero income, *lnσ(Income)* which denotes natural log of standard deviation of income of households at the village (reference group) level leaving out the focal household, *σ(Literate)* which denotes of standard deviation of *Literate* (dummy variable that takes value 1 if HH is literate) of household head at the village (reference group) level leaving out the focal household, *σ(Education)* which denotes of standard deviation of years of education of household head at the village (reference group) level leaving out the focal household. ***indicates significant at 99% confidence level, **indicates significant at 95% confidence level, *indicates significant at 90% confidence level.

Table 7. Robustness of estimated impact of Visible Inequality on HH Conspicuous Consumption expenditure, Alternate measures of inequality

	Rural Sample		Full Sample	
VARIABLES	(1)	(2)	(3)	(4)
Gini (Conspicuous Consumption)	-0.471**		-0.170	
	(0.221)		(0.188)	
CV(Conspicuous Consumption)		-0.141*		-0.0484
		(0.0763)		(0.0616)
ln(Permanent Income)	1.802***	1.820***	1.721***	1.745***
	(0.0708)	(0.0673)	(0.0524)	(0.0494)
Demographic controls	YES	YES	YES	YES
District Fixed Effects	YES	YES	YES	YES
Observations	23,471	23,401	37,081	37,009
R-squared	0.467	0.464	0.481	0.479
Adjusted R-squared	0.460	0.456	0.475	0.473
Hansen J statistic	0.331	3.803	1.433	4.491
	[p-value=0.565]	[p-value=0.149]	[p-value=0.231]	[p-value=0.106]
Kleibergen-Paap rk LM statistic	16.02	14.59	16.97	15.94
	[p-value=0.000]	[p-value=0.002]	[p-value=0.000]	[p-value=0.001]
Angrist Pischke F statistic				
Gini (Conspicuous Consumption)	21.66		31.78	
	[p-value=0.000]		[p-value=0.000]	
CV(Conspicuous Consumption)		9.86		11.85
		[p-value=0.000]		[p-value=0.000]
ln(Permanent Income)	158.09	105.61	217.15	143.21
	[p-value=0.000]	[p-value=0.000]	[p-value=0.000]	[p-value=0.000]
Number of districts	277	277	375	375

Note: Estimation via GMM 2-step. The dependent variable is *ln(Conspicuous Consumption*), where conspicuous consumption follows Khamis et al. (2012)'s definition (see Table 1). Specifications [1] and [3] use *Gini(Conspicuous Consumption)*, specifications [2] and [4] use *CV(Conspicuous Consumption)* as the measures of *Visible inequality* – which is the main explanatory variable of interest – respectively, where *Gini(Conspicuous Consumption)* is defined as the Gini coefficient of conspicuous expenditure of households at the village (reference group) level leaving out the focal household, and *CV(Conspicuous Consumption)* is defined as the coefficient of variation of conspicuous expenditure of households at the village (reference group) level leaving out the focal household. The control variables *ln(Permanent income), HH size, Age, Age^2, HH member prop.: 0-14 years, HH member prop.: 15-21 years, HH member prop.: > 21 years, Media Exposure (Men), Media Exposure (Women), Media Exposure (Children)* are continuous. All other variables are binary. Heteroskedasticity robust standard errors are reported in parantheses clustered at state level. All regressions include a constant. *lnσ(Conspicuous Consumption)* and *ln(Permanent Income)*. First stage instruments include *ln(Income), Zero Income which is* a dummy takes a value 1 if households have zero income, *lnσ(Income)* which denotes natural log of standard deviation of income of households at the village (reference group) level leaving out the focal household, *σ(Literate)* which denotes of standard deviation of *Literate* (dummy variable that takes value 1 if HH is literate) of household head at the village (reference group) level leaving out the focal household, *σ(Education)* which denotes of standard deviation of years of education of household head at the village (reference group) level leaving out the focal household. ***indicates significant at 99% confidence level, **indicates significant at 95% confidence level, *indicates significant at 90% confidence level.

Table 8. Robustness of estimated impact of Visible inequality on HH Conspicuous Consumption Expenditure, Alternate definition of reference group

	Rural Sample			Full Sample		
VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)
ln σ(Conspicuous Consumption)	-0.130***			-0.0534*		
	(0.0482)			(0.0314)		
CV (Conspicuous Consumption)		-0.165*			-0.0493	
		(0.0895)			(0.0602)	
Gini (Conspicuous Consumption)			-0.717**			-0.00441
			(0.318)			(0.247)
ln(Permanent Income)	1.802***	1.790***	1.799***	1.725***	1.724***	1.682***
	(0.0729)	(0.0707)	(0.0725)	(0.0553)	(0.0540)	(0.0539)
Demographic Controls	YES	YES	YES	YES	YES	YES
District Fixed Effects	YES	YES	YES	YES	YES	YES
Observations	23,308	23,309	23,309	36,699	36,702	36,702
R-squared	0.459	0.459	0.461	0.478	0.478	0.479
Adjusted R-squared	0.452	0.451	0.454	0.472	0.472	0.474
Hansen J statistic	0.379	0.373	0.384	1.602	1.593	2.094
	[p-value=0.538]	[p-value=0.541]	[p-value=0.536]	[p-value=0.206]	[p-value=0.207]	[p-value=0.148]
Kleibergen-Paap rk LM statistic	16.20	6.170	16.12	18.13	8.362	15.44
	[p-value=0.000]	[p-value=0.045]	[p-value=0.000]	[p-value=0.000]	[p-value=0.015]	[p-value=0.000]
Angrist Pischke F statistic						
ln σ(Conspicuous Consumption)	19.08			38.22		
	[p-value=0.000]			[p-value=0.000]		
CV (Conspicuous Consumption)		7.81			12,85	
		[p-value=0.02]			[p-value=0.000]	
Gini(Conspicuous Consumption)			13.95			36.69
			[p-value=0.000]			[p-value=0.000]
ln(Permanent Income)	164.35	166.31	165.95	217.73	225.18	231.74
	[p-value=0.000]	[p-value=0.000]	[p-value=0.000]	[p-value=0.000]	[p-value=0.000]	[p-value=0.000]
Number of districts	277	277	277	374	374	374

Note: Estimation via GMM 2-step. The dependent variable is *ln(Conspicuous Consumption*), where conspicuous consumption follows Khamis et al. (2012)'s definition (see Table 1). The main explanatory variable of interest is Visible Inequality *lnσ(Conspicuous Consumption)* which is defined as the natural log of standard deviation of conspicuous expenditure of households at the (reference group level leaving out the focal household. Reference group of a household includes other households of the household's district of residence having same caste/religious affiliation. The control variables *ln(Permanent income), HH size, Age, Age^2, HH member prop.: 0-14 years, HH member prop.: 15-21 years, HH member prop.: > 21 years, Media Exposure (Men), Media Exposure (Women), Media Exposure (Children)* are continuous. All other variables are binary. Heteroskedasticity robust standard errors are reported in parantheses clustered at state level. All regressions include a constant. *lnσ(Conspicuous Consumption)* and *ln(Permanent Income)*. First stage instruments include *ln(Income), Zero Income which is* a dummy takes a value 1 if households have zero income, *lnσ(Income)* which denotes natural log of standard deviation of income of households at the village (reference group) level leaving out the focal household, *σ(Literate)* which denotes of standard deviation of *Literate* (dummy variable that takes value 1 if HH is literate) of household head at the village (reference group) level leaving out the focal household, *σ(Education)* which denotes of standard deviation of years of education of household head at the village (reference group) level leaving out the focal household. ***indicates significant at 99% confidence level, **indicates significant at 95% confidence level, *indicates significant at 90% confidence level.