

Relative Social Status and Conflicting Measures of Poverty - A Behavioral Analytical Model

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Abstract

We consider a situation where the relatively 'poor' are concerned about their relative income status with respect to a relevant reference group. Such a concern is explicitly introduced in a utility function to study the consumption behavior of the poor. We point towards a possible conflict between income based and nutrition-based measure of poverty. Changes in income distribution generate non-homothetic outcome for an "otherwise homothetic" preference structure and may convert an "otherwise normal" good into an inferior good.

Keywords: Status; Consumption pattern; Inequality; Poverty

JEL Classification: C13, D01, D12, O40

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I. Introduction

It is now well recognized by many scholars that a reasonable framework of choice has to deal with the influence of the society on the consumption behavior of the individual. The idea of conspicuous consumption and the so-called Veblen effect have been well known in economics for many years [Veblen (1902)]. Sivanathan and Petit (2010) have confirmed that individuals are quite sensitive to their relative status in the society and would like to ‘mend’ their ‘self’, under constant attack due to various social pressures. They take recourse to status-signaling consumption behavior and such a pattern of human behavior has been confirmed through repeated experiments in the field of experimental psychology. This is one of the building blocks of the utility function that we use in the subsequent analysis. Frank (1985) talks about context dependent preferences and the concern for status, related to a particular social context. In contrast we provide a concrete analytical structure to relate status to inequality and poverty. Mujcic and Frijters (2013) have explicitly and convincingly demonstrated a method for measuring the willingness to pay to move up the status ladder. Surprisingly very little theoretical work has been done on status seeking behavior and poverty in general and the relationship between inequality, status and income versus nutritional measures of poverty.

Patnaik (2007) and Deaton and Dreze (2009) have dealt with the conflict between income-based measure and nutrition-based measures of poverty which seem to go in opposite directions as purchasing power improves for the poor. Patnaik (2007) asserts that actual poverty estimate is far greater than the optimistic figure provided by the Government of India. While Deaton and Dreze (2009) analyze various reasons for such a behavior, not much emphasis is given to the role of a status-driven consumption pattern, although they do not altogether ignore such a possibility. That social inequality can influence individuals’ consumption and induce greater consumption of the so-called status good, becomes quite relevant for such analysis. We will eventually demonstrate how emerging social inequality possibly through growth can lead to conflicting measures of poverty².

² A paper by Radhakrishna and Ravi (2004) explores an empirical relationship between malnutrition and poverty for the rural India, along with a logit regression using maximum likelihood method to identify the determinants of rural malnutrition. Their findings suggest that even though there is some achievement in poverty reduction, India has not been very successful in reducing malnutrition. In a working paper by Mukherjee, Rajaraman, and Swaminathan (2010) have modeled both under nutrition and over nutrition in India along with which they have discussed the role of different forms of economic inequality, and various behavioral variable (such as diet and activity) that affect nutrition.

Primary purpose of this work is theoretical. We would argue that a reasonable utility function that accommodates status seeking behavior in a simple but intuitive manner can lead to an outcome where income and nutrition based measures of poverty will be in conflict. In a way increasing inequality will cause nutritional poverty. Thus conventional wisdom that poverty causes inequality needs to be reexamined if the status effect is important. Rising inequality accentuates status effect and compels people toward status-based consumption pattern and may adversely affect poverty in terms of nutritional measure. Social perception about status might be related to the information about global consumption standard as projected through electronic media. These effects must be seriously looked into.

Economic survey by the Government of India (2011-12) suggests that the poor people have their income levels falling behind relative to the average income earners, a sign that inequality is on the rise. However, such a process does not undermine the fact that in absolute terms even the lower income classes are better off but a sense of falling behind in the race cannot be ignored. This plays a critical role in any analysis that relates status driven consumption with the socio-psychological perception regarding inequality³.

Papers by Easterlin [(1974), (1995) and (2001)], Van de Stadt, Kapteyn, and Van de Geer (1985), Clark and Oswald (1996), Senik (2004), and Ferrer-i-Carbonell (2005) find that well-being is driven by relative position. Luttmer (2005) using NSFH data finds that, controlling for an individual's own income, higher earnings of neighbors are associated with lower levels of self-reported happiness and that increased neighbors' earnings have the strongest negative effect on happiness for those who socialize more in their neighborhood.

Ireland (1994), Bagwell, Bernheim and Douglas (1996) and Glazer and Conrad (1996) have shown how conspicuous consumption is used as a signal to demonstrate one's income or wealth. Glazer and Conrad (1996), Chao and Schor (1998), Bloch, Rao and Desai (2004) have shown how things like charitable donations, buying pattern of women's cosmetics, wedding celebrations is used to signal status. Considering visible good as status good, Charles, Hurst and Roussanov (2009) finds that with the rise in the average income of the reference group, consumption of conspicuous goods decreases. Very recently, Moav and Neeman (2012) showed

³ One must note that there is a literature on status and growth pioneered by Cole, Mailath, and Postlewaite (1992) and later extended by Corneo and Jeanne (2001). The message of this literature is that the aspiration effect i.e., the effort to attain higher status induces agents to over-accumulate relative to the standard case i.e., without such concern for status. In a general context, therefore, two offsetting effects must be considered, one that pushes the individual to consume more and the other when saving intensity is higher.

how the status seeking behaviour leads to a higher consumption of conspicuous goods resulting in lower intergenerational bequests among the poor, leading to poverty trap. Using a very general approach Santra and Chaudhury (2015) models how individuals' status seeking behavior influences their consumption pattern. Using PSID data for US households they found that the conventional signaling model doesn't hold here. They also get results contrary to Duesenberry's claim that rich are not concerned about their position relative to lower income group class. Many studies on status seeking behavior have also been done focusing on race. Recent examples of those are by Charles *et al.* (2009), Kaus (2013) where the existence of status effect is examined among Blacks. Khamis, Nishith and Zarah (2012) have made a study for India where reference groups are based on caste and religion using the approach of Charles *et al.* (2009). They confirm the main prediction of signaling model. However, these papers do not deal with the topic we are discussing in this paper.

To motivate our study, we first present a preliminary empirical exercise. We take the dataset provided by the National Sample Survey Organization of India viz. the NSS 66th and 68th round all India unit level survey on consumption expenditure (Schedule 1.0, Type 1 and 2). The dataset includes household level observations on item specific expenditure and various household specific characteristics.

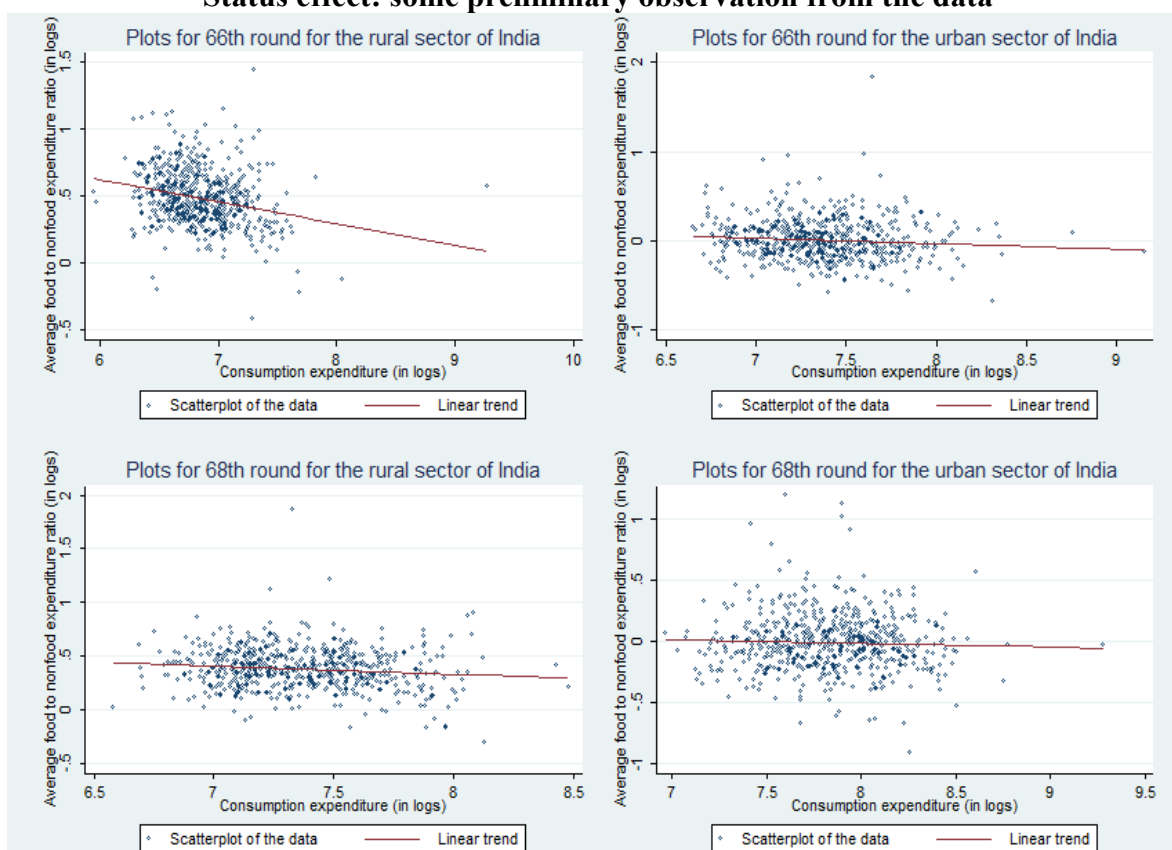
Apart from this, data is also provided on the households' localization, such as the sector (Rural or Urban), district and state. The total number of household level observations in our analysis is 201649 for the 66th round and 203313 observations for the 68th round. The data spans thirty five states and union territories. The total number of districts in our analysis is 612 for the 66th round and 625 for the 68th round.

For a particular round of data, we consider only those households of rural India who's monthly per – capita consumption expenditures lie within a range⁴ of 250 rupees above or below the rural India's lowest quintile (i.e., 25th percentile) level of monthly per – capita consumption expenditure. For these households, we consider their per capita monthly expenditure on food and non – food commodities and compute the district wise average food to non-food expenditure ratios. We plot these figures against the respective districts' rural median monthly per – capita total consumption expenditure to capture the idea that the consumption pattern of the poor is

⁴ Taking into consideration the number of data points available for the analysis and the difference between the upper limit of the range (which is 250 rupees above the quintile) with the median.

sensitive to inequality. We redo this exercise separately for urban India considering the per capita monthly expenditure on food and non – food commodities of those households who’s monthly per – capita consumption expenditures lie within the specified range above or below the urban India’s lowest quintile level of monthly per – capita consumption expenditure. From this data, we likewise calculate the district wise average food to non-food expenditure ratios and plot it in a diagram against the respective districts’ urban median monthly per – capita total consumption expenditure for both rounds of the data. The plots from this exercise for both rounds of data are depicted in Figure–1. We find that each of the scatterplots depicts a negative relationship between the district and sector wise average expenditure ratios and the corresponding district and sector wise median total consumption figures. To illustrate this clearly, we fitted a linear trend line to each of the scatterplots. These plots are in line with our conjecture and bears out the fact that relatively poor individuals belonging to a particular class of income (here proxied by total consumption expenditure), do tend to respond to the median level of expenditure (income) in their locality. Greater median expenditure seems to drive them towards non-food consumption.

Figure-1
Status effect: some preliminary observation from the data



Source: Authors’ own calculation using NSS unit level data.

The paper is structured as follows. The second section develops the model explaining the conflict between income and nutrition-based measures of poverty. The last section concludes.

II. Explaining the Conflict between Poverty Measures

We start from two axioms on how perceived social inequality affects the individual welfare.

Axiom 1: Inequality hurts

This implies that having below average income in a society reduces individual utility. Our assumption will be that being above average does not matter, but being below definitely hurts. This asymmetry is deliberate to highlight the implications of belonging to the downside of inequality.

Axiom 2: Inequality increases MU for status good

Having lower than average income increases the marginal utility of conspicuous consumption or consumption of the status good. This is directly drawn from experimental psychology literature where intensity of desire to consume the status good seems to be greater among those who are affected by social inequality.

We now invoke a simple utility function with N , the consumption of nutrition good and L , the consumption of luxury or status good or non-nutritious good.

$$U = f\left(\frac{\bar{y}}{y}\right) \left[N^\alpha + \phi\left(\frac{\bar{y}}{y}\right) L^\alpha \right] \quad 0 < \alpha < 1 \quad \dots (1)$$

where $\bar{y}$ is average income of the reference social group and ' y ' is the individual's level of income.

$$f\left(\frac{\bar{y}}{y}\right) \begin{cases} = 1 & \text{for } y \geq \bar{y} \\ < 1 & \text{for } y < \bar{y} \end{cases} \quad \dots (2)$$

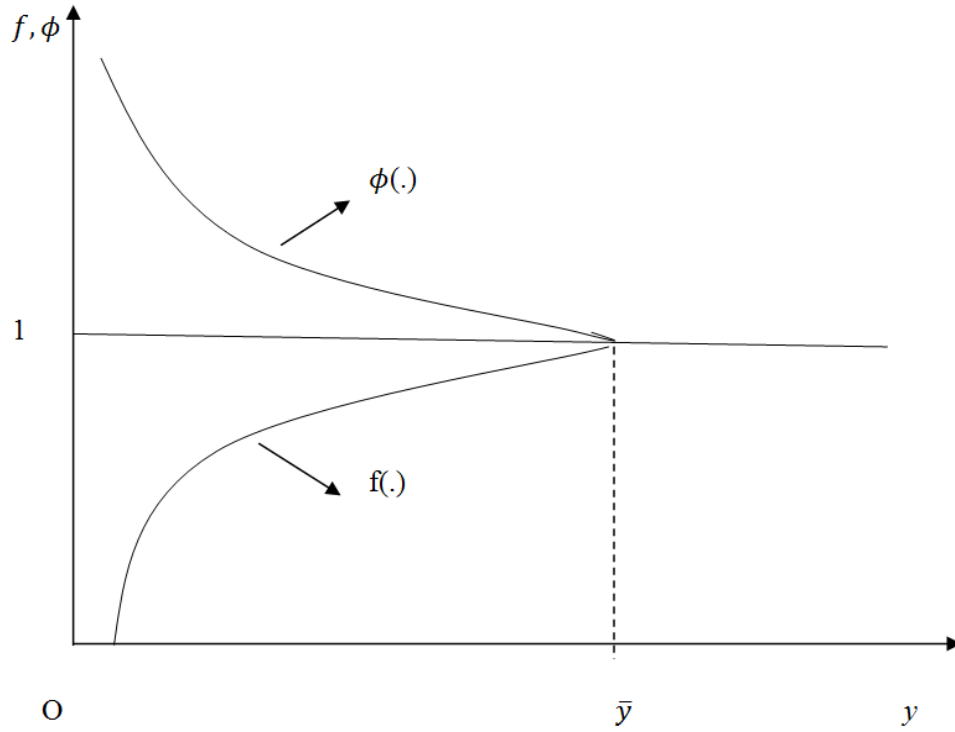
And $f' < 0$. [Follows from Axiom 1]

$$\phi\left(\frac{\bar{y}}{y}\right) \begin{cases} = 1 & \text{for } y \geq \bar{y} \\ > 1 & \text{for } y < \bar{y} \end{cases} \quad \dots (3)$$

And $\phi' > 0$. [Follows from Axiom 2]

We will not discuss price effect and assume prices to be equal to one.

Figure-2



If inequality truly hurts,

$$f\left(\frac{\bar{y}}{y}\right) \left[\tilde{N}^\alpha + \phi\left(\frac{\bar{y}}{y}\right) \tilde{L}^\alpha \right] < \left[N_0^\alpha + \phi\left(\frac{\bar{y}}{y}\right) L_0^\alpha \right] \quad \dots (4)$$

Where $(\tilde{N}, \tilde{L})$ are optimal consumption levels for $y < \bar{y}$ and the same are denoted by (N_0, L_0) for the benchmark case with $y = \bar{y}$.

Invoking the Envelope property it is straightforward to interpret (U) as

$$\frac{dU}{dy} = f' \cdot \left(-\frac{\bar{y}}{y^2} \right) \left(\tilde{N}^\alpha + \phi\left(\frac{\bar{y}}{y}\right) \tilde{L}^\alpha \right) + f \cdot \phi' \cdot \left(-\frac{\bar{y}}{y^2} \right) \tilde{L}^\alpha > 0$$

$$\text{Or, } -\left(\frac{\bar{y}}{y^2}\right) f' \tilde{N}^\alpha - \left(\frac{\bar{y}}{y^2}\right) L^\alpha [f' \phi + f \phi'] > 0$$

Since $f' < 0$ and $\phi' > 0$, a sufficient condition is given by:

$$[f' \phi + f \phi'] < 0 \quad \dots (5)$$

Note that if 'y' moves up the ladder ' $f(\cdot)$ ' increases but ' ϕ ' drops. Or put differently if 'y' drops from ' $\bar{y}$ ', ' $f(\cdot)$ ' goes down to a value less than unity, but ' ϕ ' increases, the net effect has to be negative if inequality has to hurt in equilibrium.

It is obvious that in equilibrium

$$\tilde{N} = \frac{y}{1+\phi^{\frac{1}{1-\alpha}}} \text{ and } \tilde{L} = \frac{\phi^{\frac{1}{1-\alpha}}}{1+\phi^{\frac{1}{1-\alpha}}} \cdot y \quad \dots (6)$$

One observation regarding (6) should be interesting. Note that if the distribution remains invariant (6) exhibits a demand function with unit income elasticity since the rest of the terms are constants. Hence trivially it is a homothetic demand function we are dealing with. Once the distribution starts changing the function becomes non-homothetic. Increase in y will increase both N and L , given distribution. While worsening of status will reinforce the consumption level of L , it will hurt the demand for nutritious good, F . What we show next is that it can actually go down and the nutritional measure of poverty will show an increase when in terms of income the poor is richer. Thus F becomes a de facto inferior good.

Note that as long as ' ϕ ' does not change i.e. the distribution remains invariant ' $\tilde{N}$ ' must increase with ' y '. Also if ' y ' increases and ' $\bar{y}$ ' remains the same, ' $\tilde{N}$ ' increases on both counts i.e. because ' y ' increases and the distribution become more egalitarian. When $\phi = 1$, by virtue of having this specific utility function, $\tilde{N} = \frac{1}{2}y$. However, when $\phi > 1$ and if both ' y ' and ' $\bar{y}$ ' increase when we increase ' y ', relative social status can worsen leading to an increase in ' ϕ ' and a net reduction in ' $\tilde{N}$ '. We are contemplating a situation where ' $\bar{y}$ ' is increasing at a faster rate than ' y ' i.e. the distribution is worsening when ' y ' is increasing.

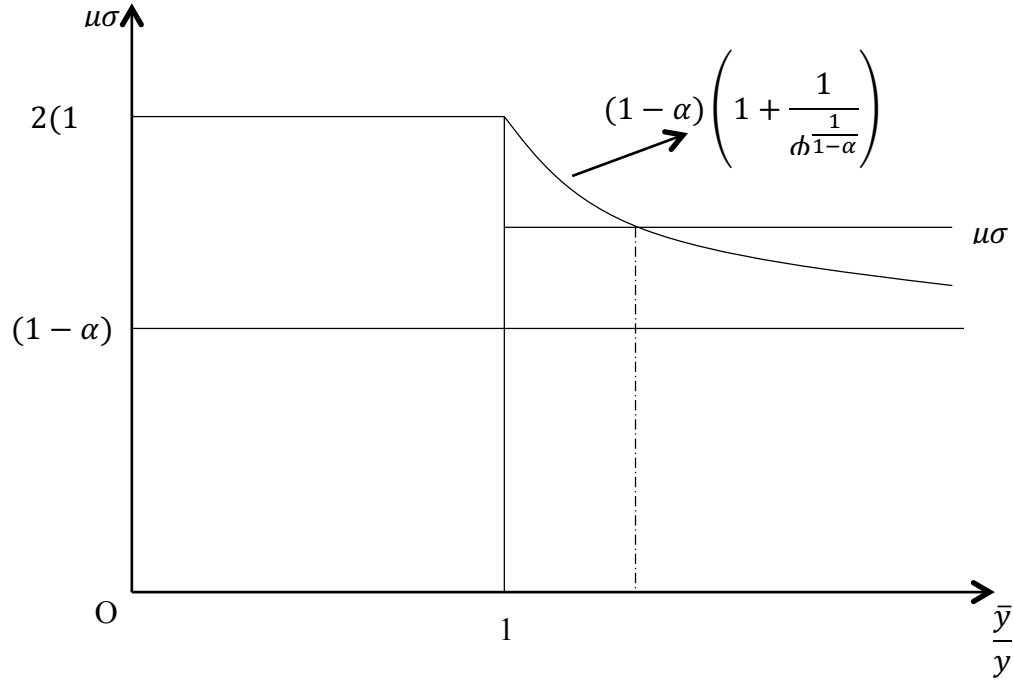
$$\text{It is easy to check that } \frac{d\tilde{N}}{dy} < 0 \text{ iff } \mu\sigma > (1 - \alpha)(1 + \frac{1}{\phi^{\frac{1}{1-\alpha}}}) \quad \dots (7)$$

$$\text{Where, } \mu = \frac{d\phi}{d(\frac{\bar{y}}{y})} \frac{\bar{y}/y}{\phi} \text{ and } \sigma = \frac{d(\frac{\bar{y}}{y})}{dy} \frac{y}{\bar{y}/y}$$

$$\text{As } y \rightarrow \bar{y}, \phi\left(\frac{\bar{y}}{y}\right) \rightarrow 1, \text{ RHS in (7)} \rightarrow 2(1 - \alpha)$$

$$\text{As } y \rightarrow 0, \phi\left(\frac{\bar{y}}{y}\right) \rightarrow \infty, \text{ RHS in (7)} \rightarrow (1 - \alpha)$$

Figure-3



If $\left(\frac{\bar{y}}{y}\right)$ increases with 'y', the consumption of 'N' reacts according to the magnitude of ' μ ' and ' σ '. While ' μ ' reflects the cultural perception of relative status i.e., how sensitive the society is to the status factor, ' σ ' reflects the elasticity of distribution. If either of them is very weak, we should not have any conflict between two alternate measures of poverty. If either of them is zero, we are back with the standard case. If either of them is very high we shall have our interesting results. Also greater is $(\bar{y}/y)$ and lower is $1/\phi$ chances are greater that the conflict will arise. Inequality has a direct bearing on the nutritional estimate of poverty.

Proposition 1

A growth in income may reduce consumption of food and hence nutritional intake if it is accompanied by a worsening of income distribution. Thus food will look to be an “inferior” good and income based and nutritional-based measures of poverty will not match. If income distribution remains unchanged, there will be no such conflict.

Proof: See the discussion above. Q.E.D.

One implication of our framework is that with invariant income distribution i.e. income of the poor and the average income growing at the same rate, we do not have an outcome consistent with Engels Law as the ratio between N and L is independent of income. But as soon as the average grows faster than the individual income, L/N will rise. Thus our system obeys distribution sensitive Engel's Law when distribution free utility function does not exhibit such property. Consider any reduced form expression where N/L is shown to be falling with the level of income. What we demonstrate such movement may imply something beyond standard Engel's Law as worsening income distribution would also imply such a movement. This is critical for any empirical exercise related to such questions. This is sought to be captured in detail in a companion empirical piece [Marjit, Santra and Hati (2015)].

III. Concluding Remarks

The purpose of this paper has been to propose a simple model of choice based on experimental evidence on human behavior as available in experimental social psychology and relate it to the debate on poverty, nutrition and inequality. The idea has also been to propose a model which could be easily related to classroom discussion demonstrating the fact that models that we often use to analyze consumers choice are possibly special cases of a more general structure which includes, for example, status seeking behavior. It goes without saying that we are social animals and our individual behavior is conditioned by the social neighborhood we live in. But conjectural and descriptive statements such as above need to be substantiated by analytical models of human behavior that reflects rational decision on the part of the poor, possibly in terms of an extended framework of rationality. We have deliberately refrained from analyzing the behavior of the rich since we wish to talk about the poverty measure. Note that in our paper the poor choose to neglect nutritional intake. That puts public policy in real dilemma. Raising purchasing power might not help improve nutritional standard when inequality is on the rise unless income is raised substantially so that the income effect compensates the distributional consequence that works through status seeking behavior.

This is a static model and we do not consider the saving pattern of the poor. It is possible that the status effect is also reflected in investment in education or human capital. Hence, nutritional neglect is for a fair cause, to see kids go to school and get educated for a better future. Hence, the status effect as such will have both growth and nutritional consequence. We can use this basic model to highlight dynamic issues.

One such concern is whether the poor undertake adequate savings or tend to overspend in the current period being guided by considerations related to social status. In a recent paper Marjit, Beladi and Chakraborti (2015) develop a simple inter-temporal model, based on the above utility function to show that if the poor expect that the distribution of income will be extremely uneven in the future and they will be marginalized in the society to a much greater extent in spite of the best of their efforts, they will spend more heavily in the current period, thus loading consumption in the current period and saving less compared to a situation where there is no such status concern. Of future research interest are topics such as Status and International Trade and Status, Corruption and Inequality.

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