

**Discussion Papers No. 239, November 1998
Statistics Norway, Research Department**

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Are there Social Limits to Growth?

Abstract:

Hirsch (1976) suggested that as consumption grows, an increasing proportion of the benefits people derive from consumption is due to a status effect. Status is a relative concept that cannot be increased on average; thus it may seem reasonable to expect that as consumption grows, the marginal benefits of consumption decrease more than the marginal benefits of status. In equilibrium, however, there will be price effects that may more than outweigh this effect. Thus, there is no a priori reason to expect more status-seeking behavior in richer societies.

Keywords: Status-seeking, relative consumption.

JEL classification: D11, D50

Acknowledgement: Financial support was provided by the Norwegian Research Council.

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1. Introduction

In his seminal work *The Social Limits to Growth*, Fred Hirsch (1976) argued that “as the level of average consumption rises, an increasing portion of consumption takes on a social as well as an individual aspect. That is to say, the satisfaction that individuals derive from goods and services depends in increasing measure not only on their own consumption but on consumption by others as well” (Hirsch 1976, p. 2). One of the social aspects of consumption that Hirsch was concerned about was that of status-seeking, in which individuals use consumption as a means of achieving social status: “[G]oods and services sharing some or all of the characteristics of positional goods attract an increasing proportion of family expenditure as family income rises” (Hirsch 1976, p. 28).¹

The idea that people’s concern for social status becomes increasingly important as the general level of income in society grows is intuitively compelling: In poor societies, the urgent demand is to satisfy basic needs. As material goods become more abundant, basic needs are satisfied, and people may start to care relatively more about their social position and relative economic status. If the marginal utility of consumption *per se* is decreasing, an extra unit of consumption gives less utility the richer one is. Positional goods and status, on the other hand, are relative concepts, and thus cannot be increased on average: One individual can improve her social status, but everybody cannot simultaneously do so. Thus, it may seem reasonable to believe that as average income increases, an increasing part of the marginal utility of income is associated with status.

Following this line of thought, one would expect that phenomena such as excessive spending of resources in a rat-race for status would primarily be found in rich societies. Numerous historical and anthropological studies, however, show that status-seeking behavior is common in societies with comparatively low levels of consumption. Recall, for example, Adam Smith’s famous passage in the *Wealth of Nations* (1776), where he points out that the English of his day “would be ashamed to appear in public” without wearing leather shoes and linen shirts; indicating that the important aspect of one’s clothing was not just whether it was warm and comfortable, but also the effect it might have on one’s social status. Other examples can be found in anthropological studies of so-called “gift economies,” where the receipt of a gift imposes a duty to repay the donor with a gift of equal or greater value (Mauss, 1954). The failure or inability to meet this obligation diminishes the perceived status of the recipient and enhances the prestige of the gift-giver. In such societies, individuals face strong incentives to accumulate wealth in the pursuit of relative rank.

¹ Here, “positional goods” are goods which are acquired or consumed in order to obtain some kind of social position.

An extreme version of this behavior is the *potlatch* ritual of the Kwakiutl people of the Pacific Northwest, at which tribal leaders gave away or even destroyed wealth to establish relative position. As described in Boas' (1897, p. 353) ground-breaking ethnographic study,

“The rivalry between chiefs and clans finds its strongest expression in the destruction of property. A chief will burn blankets, a canoe, or break a copper, thus indicating his regard of the amount of property destroyed and showing that his mind is stronger, his power greater, than that of his rival. If the latter is not able to destroy an equal amount of property without much delay, his name is 'broken'. He is vanquished by his rival and his influence with his tribe is lost, while the name of the other chief gains correspondingly in renown.”

While these observations indicate that social status is indeed important in societies with comparatively low general income levels, the hypothesis that concern for status increases with the general income level might still hold: Social status may, of course, be even *more* important to people in richer societies. In this note, however, we will demonstrate that in general, this will hold only under certain specifications of the utility function. Assuming that the marginal utility of consumption *per se* goes to zero as the consumption level goes to infinity is not sufficient to secure the argument: Even if it may be true that another unit of consumption gives a very small utility increment for a rich person, more consumption is needed to win the contest for status in a rich society, implying that status becomes more expensive. It is the relative size of these effects which determines whether status becomes increasingly important or not, and whether an increasing portion of family expenditure is spent on status-seeking.

2. Is status more important in rich societies?

Consider first a simple static model with n identical consumers whose utilities depend on consumption (c) and status (s). For simplicity, we assume logarithmic utility:

$$(1) \quad U = u(c, s) = \ln(c) + \ln(s)$$

In the *Oxford Advanced Learner's Dictionary*, the word “status” is explained as “person's social, legal or professional position or rank in relation to others” (Hornby, 1989). Thus *relative standing* is the crucial aspect of the notion of status. If status can be achieved through consumption, then, it seems reasonable to model status as some function of relative consumption.² In economic models, status has

² Alternatively, one might assume that status is achieved not through consumption but through wealth, education, or other variables; for economic implications of such assumptions, see Brekke and Howarth (1998).

frequently been formalized simply as the ratio of one's own consumption to the average consumption level (for example, Rauscher, 1997). Thus, we will assume that

$$(2) \quad s = \frac{c}{\bar{c}}$$

where \bar{c} is the average consumption level of the n consumers. Each individual regards \bar{c} as exogenous, disregarding the impact on average consumption of changes in her individual consumption level. However, since all individuals are identical and get the same income, we have

$$(3) \quad c = \bar{c}$$

Hence, in this simple model, it will always be the case that $s = 1$. Although each individual may attempt to improve her own social status by consuming more, all individuals cannot simultaneously improve their social status; i.e., the total supply of status is fixed.³

Note that there is so far no real trade-off between status and consumption, since consuming the single consumption good is the only way to get status. The total marginal utility of consumption comes partly from consumption *per se*, and partly from the status concern:

$$(4) \quad \frac{\partial U}{\partial c} = \frac{\partial u}{\partial c} + \frac{\partial u}{\partial s} \frac{\partial s}{\partial c}$$

³ Alternatively, if one does not like the idea of simply assuming that status is determined by relative consumption, one may make the somewhat weaker assumption that status is proportional to consumption; i.e. $s = qc$. Here, q is the the "price" of status, i.e. how much consumption it takes to increase status by one unit. If one takes as a starting point that the supply of status (or positional goods) is fixed, one may normalize so that $\bar{s} = 1$. The equilibrium price of positional goods will thus be $q = 1/\bar{c}$, implying that we may arrive at the status function

$s = \frac{c}{\bar{c}}$ endogenously.

We will denote the marginal utility derived from consumption *per se*, $\frac{\partial u}{\partial c}$, the *direct marginal utility of consumption*, and the marginal utility derived via status, $\frac{\partial u}{\partial s} \frac{\partial s}{\partial c}$, the *indirect marginal utility of consumption*.

With logarithmic utility, the direct marginal utility of consumption equals $1/c$, which is decreasing in consumption and eventually goes to zero. The marginal utility of status $\frac{\partial u}{\partial s} = \frac{1}{s}$, on the other hand, will be constant and equal to 1 regardless of the consumption level, since $s = 1$. However, since $\frac{\partial s}{\partial c} = \frac{1}{\bar{c}}$, the indirect marginal utility of consumption $\frac{\partial u}{\partial s} \frac{\partial s}{\partial c}$ will also go to zero as consumption increases; and in fact, with our particular choice of utility function, the direct and indirect marginal utilities will decrease at *exactly the same rate!* Hence, with logarithmic utility, the marginal benefits derived from use of material goods will be equally distributed between benefits due to direct consumption on the one hand and status-related benefits on the other, independent of the consumption level; and the benefits of achieving status will not dominate as material goods use goes to infinity.

This conclusion depends on the particular form of the utility function. Note first that if the utility function is separable, i.e. $U = u(c) + v(s)$, the *indirect* (status-related) marginal utility of consumption can be written as $\frac{\partial v}{\partial s} \frac{1}{\bar{c}}$. Since we always have $s = 1$ in equilibrium, the particular form of the utility function matters for the indirect marginal utility of consumption only insofar as the value of $\frac{\partial v(1)}{\partial s}$ varies; the functional form itself does not enter the expression. Consider, for example, the case of CRRA (constant relative risk aversion, or Box-Cox) utility function:

$$(5) \quad U = u(c, s) = \frac{1}{\gamma} (c^\gamma - 1) + \frac{1}{\gamma} (s^\gamma - 1) \quad \text{for } \gamma < 1$$

Here, as was the case with logarithmic utility, the marginal utility of status is still 1, and hence an extra unit of consumption adds $1/\bar{c}$ to utility. On the other hand, the marginal utility of consumption is now $c^{\gamma-1}$. Hence the relative importance of the direct versus indirect contribution to utility is

$$(6) \quad \frac{u'_c}{u'_s \cdot (1/c)} = c^\gamma$$

Hence, if $\gamma > 0$, then the direct effect becomes increasingly important as consumption increases. Hirsch's conjecture that "the satisfaction that individuals derive from goods and services depends in increasing measure not only on their own consumption but on consumption by others as well" is true only if $\gamma < 0$.

Note that the CRRA utility function is a monotone transform of the CES-utility function

$$(7) \quad U = (c^\gamma + s^\gamma)^{1/\gamma} \quad \text{for } \gamma < 1$$

with elasticity of substitution $\sigma = 1/(1-\gamma)$. Hence, *if consumption and status are good substitutes, the Hirsch conjecture is wrong*. As we get richer, status becomes increasingly costly, and we would like to substitute away from it. On the other hand, if the two goods are bad substitutes, the Hirsch intuition goes through.

Actually, as there is only one good in the model discussed this far, no actual substitution can take place. In the next section, we will introduce a model in which consumers have a real choice between status and consumption, and demonstrate that our argument still goes through. We will also introduce a linear production function, thus extending the model into a simple general equilibrium model.

3. The trade-off between consumption and status

Assume now that there are two consumption goods, c_1 and c_2 . Let us regard c_1 as a pure consumption good that does not confer social status, whereas c_2 is a source of status does not yield direct consumption benefits. This is a somewhat extreme assumption: Generally, most status-related consumption goods will presumably also yield some direct consumption benefits. For example, while driving a Porsche might give one a higher social status than driving a cheaper and more ordinary car, the Porsche would probably also give a more comfortable driving experience. However, a complete separation of status and consumption benefits simplifies the analysis, although such separation is not crucial for the main results.

Boas' (1897) description of the *potlatch* ritual of the Kwakiutl cited in the Introduction provides an example of spending which may achieve status, but no consumption benefits: Assume that the same resource c can be used for both status and consumption purposes, but that one can easily distinguish

the two uses. c_1 in our model then corresponds to the amount of resources used for consumption purposes, while c_2 denotes resources that are destroyed in the *potlatch* ceremony.

We assume a linear technology, implying that each tribe member can produce an amount of material goods c proportional to the amount of labor he supplies. Thus,

$$(8) \quad c_1 + c_2 = c = wL$$

where L is labor supply (or time spent working) and w is the marginal productivity of labor.⁴ Also,

$$(9) \quad T = l + L$$

where T is total time available to the individual, and l is leisure time, which is assumed to enter the utility function.

A person's status in the tribe depends on how much he can afford to destroy, compared to the average tribe member. Thus status is defined as

$$(10) \quad s = \frac{c_2}{\bar{c}_2}$$

Destroyed consumption goods provide no direct utility; hence individuals' utility function, still assuming logarithmic preferences, is now given by

$$(11) \quad U = \alpha_c \ln c_1 + \alpha_s \ln s + \alpha_l \ln l$$

In this case, there is a real trade-off between status and consumption. Maximization of (11) subject to (8) and (9) yields the first order conditions

$$(12) \quad \frac{c_1}{\alpha_c} = \frac{c_2}{\alpha_s} = \frac{wl}{\alpha_l} = \frac{wT}{\alpha_c + \alpha_s + \alpha_l}$$

We note that $\frac{c_1}{\bar{c}_2} = \frac{\alpha_c}{\alpha_s}$, which is independent of marginal productivity of labor. In this model, the richer society is the one with the higher marginal productivity of labor. Hence, the share of material goods used for status purposes (i.e. being destroyed) is independent of the affluence of society. Note also that according to (12), $l = \frac{\alpha_l}{\alpha_c + \alpha_s + \alpha_l} T$. Thus, the amount of leisure consumed is also independent of the marginal productivity of labor.

It is straightforward to generalize this to CRRA utility as above. We then find that

$$(13) \quad \alpha_c c_1^{\gamma-1} = \frac{\alpha_s}{\bar{c}_2} \quad \text{or} \quad \frac{c_1}{\bar{c}_2} = \frac{\alpha_c}{\alpha_s} c_1^\gamma$$

As above, if status and consumption are poor substitutes, the share of material goods being destroyed increase with c . If they are good substitutes, a decreasing proportion is destroyed.

The example of a *potlatch* ritual in which items are actually destroyed to signal status is, of course, particularly flagrant. However, the main intuition is not dependent on this extreme interpretation of the model: As consumption becomes more abundant, status becomes, relatively speaking, more scarce. This implies a higher price of status. Even with decreasing marginal utility of consumption, consumption *per se* may become attractive compared to status-seeking, because status has become exceedingly expensive.

4. Conclusion

To conclude, the conjecture that status-seeking becomes increasingly important as average consumption levels increase is true only for some specifications of the utility function. This ambiguity holds even when the marginal utility of consumption is decreasing and the supply of status is fixed. The share of total resources spent on status-seeking will be increasing in average income if status and consumption are poor substitutes. However, if they are good substitutes, the relative importance of status-seeking decreases with the average consumption level. Without specific assumptions about the form of the utility function, thus, there is no *a priori* reason to expect less status-seeking behavior in poor societies than in richer ones.

In particular, with logarithmic utility, there is no relationship at all between average consumption levels and the relative share of total income spent on positional goods. Nor is it the case that an increasing part of the utility derived from consumption comes from positional goods. However, the *absolute* amount of income spent on positional goods will of course increase with increasing total income.

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