Conspicuous Consumption and the Existence of Upward Sloping Demand Curves*

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Abstract

This paper develops a theoretical framework for studying conspicuous consumption. This is modeled as a device that signals the consumer's social status. Status is some function of the individual's rank in the wealth hierarchy. This approach makes it possible to distinguish between snob and conformist consumer behavior. It is shown that when behavior is conformist, the market demand curve for the good can exhibit a positive slope. A number of unconventional implications for public policy are then derived concerning taxation, monopoly power, and the voluntary provision of public goods.

1 Introduction

When asked about the possibility of demand curves that increase with price, most of us display skepticism and refer to that remote possibility as to the Giffen paradox. In fact, as one of the most widely used microeconomics textbooks states it, "Giffen goods are pretty peculiar, and are primarily a theoretical curiosity" [Varian (1987, p.133)].[1] On the other hand, positively sloped demand curves vastly populate marketing textbooks, where they are mostly to be found under the heading of "prestige pricing" [e.g. Gaedeke and Tootelian (1983)]. The opinion of marketing scholars is that several products are primarily bought because of the prestige that they confer, and the prestige value is eroded when the product's price diminishes. Thus price reductions can lead to a decrease in the quantity demanded.

In this paper we show that the economists' dismission of upward sloping demand curves as an aberrant phenomenon may be unjustified for a well-alive class of consumption goods, hereafter referred to as "conspicuous goods". These are goods which are mainly purchased because of the demonstration effects that their consumption exerts on others. Thus our claim about upward sloping demand curves concerns such goods as fashionable clothes rather than inferior goods, such as the Irish potato. However, we do not share marketers' view that prestige seeking explains upward sloping demand curves. According to our analysis, the property of interdependence in consumer behavior that leads to the departure from the law of demand is something that might rather be termed *ostracism avoiding.*[2]

The empirical relevance of our model rests on the importance of demonstration effects in consumption activities. That such effects are actually crucial has long been asserted by many economists and other social scientists [e.g. Pigou (1913), Rae (1905), Veblen (1922)]. For a number of commodities, like jewels, dress fashion, and cosmetics, the importance of demonstration effects is apparent: social visibility of consumption is not an inherent

[1]The apotheosis of the criticism of the Giffen property is reached in Barzel and Suen (1992) where it is explained that the demand curves for Giffen goods are actually downward sloping if one uses a proper framework of expected utility maximization. See however Dougan (1982) for a more mitigated assessment.

[2]Another justification of upward sloping demand curves that is proposed in marketing textbooks is that high price suggests high product quality. There exists a game-theoretic literature that studies the role of the price as a signal of quality [e.g. Milgrom and Roberts (1986)]. The major difference with our approach is that the price will be used to signal the quality of the consumer rather than the quality of the product.

attribute of the commodity but is explicitly seeked by consumers. It is extremely plausible that conspicuous consumption plays a major role in the demand for cars, homes, furnitures, arts, holidays, food and drinks, which taken together makes a large share of consumers' expenditures in developed economies. Demonstration effects are also a natural candidate for explaining consumption activities that, absent these effects, seem to imply a *negative* impact on the consumer's utility, like driving big cars in extremely crowded city centers, or wearing uncomfortable but fashionable clothes.

Two main explanations of why consumers engage in demonstration effects are offered in the literature. Firstly, from an evolutionary perspective it is argued that the psychological reward mechanism of human behavior is activated by showing a high relative standing in social hierarchies. Conspicuous consumption can then be viewed as a contest for signaling a high position [Frank (1985a, 1985b)]. Secondly, from a sociological perspective it is claimed that the amount of deference shown by others depends on an individual's social status. Conspicuous consumption can then be viewed as an attempt to raise the consumer's status and thereby his approval by society [Coleman (1990)].

The attempts made by economists to develop a formal theory of conspicuous consumption are relatively recent. The early contribution of Leibenstein (1950) laid down the useful distinction between bandwagon and snob effects but left unclear the microeconomic foundations of these effects as well as their normative implications. Kolm (1972) modeled conspicuous consumption in a coherent microeconomic framework in which utility depends on relative consumption in an exogenously given way, and studied its normative consequences. The works of Frank (e.g. 1984, 1985a, 1985b) provided valuable insights into a number of economic consequences of conspicuous consumption and gave a new stimulus to this line of research. Contributions along this line include Orosel (1986), Seidman (1989), and, more recently, Ireland (1994), Konrad (1992) and our own work (1994a and 1994b).

In the present paper we develop a theoretical framework that explicitly captures the idea that conspicuous consumption is mainly motivated by the desire of individuals to show social superiority. We model conspicuous consumption as a signaling game in which consumers try to signal social status, and status is some function of relative wealth. Then we establish that market demand for conspicuous goods may be upward sloping under some circumstances. Our analysis may thus be seen as providing a signaling foundation to

Leibenstein's (1950) model, in which it was shown that some portions of the market demand curve may be positively inclined if the utility derived from the product depends on the price paid for it. Our analysis is also closely related to Becker's (1991) model of restaurant pricing. Becker shows that if the individual demand for a good positively depends on the aggregate quantity demanded, it is possible that the market demand curve is upward sloping over part of its domain. Karni and Levin (1994) provide some microfoundations of Becker's demand functions by explicitly assuming that the individual utilities for the good are functions of the total number of buyers. This is however different from our approach, that consists of working with the status-signaling game induced by observable consumption. This approach allows us to endogenize the relationship between the number of buyers and the individual utilites for the good. [3]

The theoretical framework in this paper easily lends itself to normative analysis. It turns out that the policy implications may be strikingly at odds with the conventional wisdom. We show this with respect to the analysis of taxation, monopoly power, and the voluntary provision of public goods.

The paper will proceed as follows. In section 2 we set up the model of conspicuous consumption and establish a necessary condition for the existence of upward sloping demand curves. In section 3 we present an example of such a curve. In section 4 some policy implications of the model are discussed. Section 5 provides some concluding remarks.

2 The model

2.1 The preferences

We consider an economy populated by a continuum of consumers indexed by $r \in [0,1]$. Consumers are ordered according to their level of income, y_r, in the following way: for all r and r' in $[0,1]$, $r < r' \iff y_r > y_{r'}$. Hence r represents the individual's rank in the income hierarchy.

[3]In a recent article, Coelho and McClure (1993) have studied a model for a fashion good in which market demand is postulated to vary inversely with the estimated contemporaneous stock of the good. If time is held constant one can obtain a positive relationship between price and the stock purchased over the relevant time periods. Of course, this construction is not a demand curve.

Each individual faces the following consumption set: an observable good, referred to as the conspicuous good, and an unobservable good, used as the numéraire. Neither the individual's income nor his consumption of the numéraire good is visible to spectators. The only thing that the public observes is the individual's consumption of the conspicuous good. For the sake of simplicity, we assume that this good is indivisible and that consumers do not buy more than one unit.

Individuals have identical preferences, represented by the following separable utility function:

$$U_r = u(c_r) + v(\delta_r) \tag{1}$$

where c_r is the consumption of the numéraire good and δ_r is a dummy variable that is 0 if the individual does not purchase the conspicuous good and 1 if he does. The function $u(.)$ is increasing, strictly concave, and satisfies $lim_{c \to +\infty} u'(c) = 0$.

The function $v(.)$ measures the consumer's valuation of the conspicuous good. In order to make our argument as clear as possible, we posit that the consumption of this good yields no intrinsic utility. Its sole purpose is to send a message about the individual's rank in the income hierarchy. In turn, individuals derive utility from the inference made by the public about the individual's rank. We assume that all individuals have access to the same information: the purchasing behavior with respect to the conspicuous good of each other individual, and the way in which income is distributed within the population. Thus the message contained in conspicuous consumption is identically interpreted by all individuals. Formally,

$$v(\delta_r) = E(a(r)/\delta_r) \tag{2}$$

where $E(./\delta)$ is the expectation conditional on the observation of δ, and $a(r)$ is a continuous function defined on the unit interval, with finite lower and upper bound, referred to as the rank utility.

This formalization captures the two interpretations of conspicuous consumption presented before. Following the evolutionary line of reasoning, $v(\delta_r)$ can be viewed as the psychic reward that is derived from signaling a certain rank in the wealth contest. Following the sociological approach, $v(\delta_r)$ is a mesure of the utility that is derived from social recognition gained by signaling a certain rank in the wealth hierarchy.[4] Although, given these interpretations, it might might seem natural to assume that $a(r)$ is decreasing, a moment reflection is sufficient to see that this may be an unwarrented assumption. Thus, at this stage no restriction on the form of $a(r)$ is imposed.

Equation (2) may look somewhat unorthodox, since the signaling effect of conspicuous consumption directly enters the utility function. A more orthodox approach would require the signaling effect to be monetized in a market transaction occurring under incomplete information. Actually, an interpretation of (2) in terms of labor market signaling can also be formulated [Spence (1974)]. Individuals may want to signal a high relative income because this variable is correlated with the productive ability of individuals. According to this interpretation, $v(\delta_r)$ measures the utility derived from the individual's job, whose characteristics depend on his estimated ability [Frank (1985a)].

Each individual chooses δ_r in order to maximize his utility, subject to the budget constraint

$$c_r + p\delta_r \leq y_r \tag{3}$$

where $p \in P$ is the price of the conspicuous good.

It should be clear how this decision problem differs from the standard one in consumer theory. As the consumption set contains a conspicuous good, the way in which individual preferences are optimized depends on how its consumption affects others' beliefs about oneself. Since the inferences made by spectators also depend on the market outcome, the consumers' decision problems are no longer independent.

2.2 Conformist versus snob behavior

Individuals purchase the conspicuous good if its *signaling value* $\sigma \equiv v(1) - v(0)$ is large enough. As the maximization of (1) readily shows, the condition for individual r to purchase the good is:

[4] Sociologists often define status as the deference shown by others according to the standing of the individual in a social hierarchy [Coleman (1990)]. In the sociological interpretation of our model, $a(r)$ may therefore be referred to as the status utility.

$$\sigma > u(y_r) - u(y_r - p) \tag{4}$$

Suppose that the signaling value is strictly positive and finite. From this condition it is not difficult to see that individual r buys the good if and only if his income is larger than a threshold level, which depends both on the price of the good and its signaling value. This threshold level, denoted $\overline{y}(\sigma, p)$, is defined as follows (two cases should be distinguished):

$$\sigma = u(\overline{y}(\sigma, p)) - u(\overline{y}(\sigma, p) - p) \quad if \quad \sigma \leq u(p) - u(0) \tag{5}$$

$$\overline{y}(\sigma, p) = p \quad if \quad \sigma \geq u(p) - u(0) \tag{6}$$

Thus, $\overline{y}(\sigma, p)$ is either the income which makes the individual indifferent between purchasing the good or not, or it is the minimal income which is necessary to afford the good. It follows that the conspicuous good may separate the population into two groups, a group of rich who choose to afford it, and a group of poor who prefer to abstain from it. The number of individuals who buy the good may be written as:

$$n = N(\overline{y}(\sigma, p)) \tag{7}$$

where $N(y)$ denotes the number of individuals in the economy with income higher than y. We assume that the function $N(\cdot)$ is continuous and differentiable, with $N'(\cdot) < 0$. It follows that the number of consumers is decreasing with the price of the good and increasing with its signaling value.

We now turn to the formation of the public's inferences about consumers' status. We firstly consider semi-separating equilibria, i.e. situations in which $n \in]0, 1[$ and spectators form their beliefs rationally.[5] The individuals who purchase the conspicuous good send a simple message, which is that they belong to the n richest part of the population, or equivalently that their rank is better than n. Using Bayes' rule, the signaling value of the good, which is the difference between the average rank utility of those who purchase it and those who do not, may be written as:

[5]The model also admits pooling equilibria, with n equal 0 or 1. The analysis of these equilibria is contained in the Appendix.

$$\sigma = \frac{\int_0^n a(r)dr}{n} - \frac{\int_n^1 a(r)dr}{1-n} = \frac{1}{n(1-n)} \int_0^n [a(r) - \overline{a}]dr \tag{8}$$

where $\overline{a}$ is the average rank utility over the whole population. Notice that if $a(.)$ is strictly decreasing, σ is strictly positive as previously supposed. However, the signaling value of the good may remain positive even if the rank utility is increasing on some interval. Hereafter we just assume that the form of $a(r)$ ensures that the signaling value is positive.

An important implication of equation (8) is that the utility of the conspicuous good is a function $\sigma(n)$ of the number of consumers. This property departs from the orthodox model of consumer demand, in which the utility of goods is exogenously defined with tastes.[6] How the signaling value of the good varies with the number of consumers is an important aspect of conspicuous consumption. Using L'Hopital's rule, $lim_{n\to 0}\sigma(n) = a(0) - \overline{a}$, meaning that when the number of consumers is arbitrarily small, the signaling value of the good is given by the difference between the top rank utility and the average rank utility. Furthermore, $lim_{n\to 1}\sigma(n) = \overline{a} - a(1)$, implying that when almost everybody purchases the good, its signaling value is given by the difference between the average rank utility and the bottom rank utility. Following Leibenstein (1950), we shall say that consumer behavior is *conformist*[7] if the utility of the good is higher when it is more widely consumed, and conversely that consumer behavior is *snobbish* if the utility from purchasing the good is enhanced by its rarity. More formally, conspicuous consumption is said to be conformist (snobbish) when function $\sigma(\cdot)$ is strictly increasing (decreasing).

It should be noticed that conformism and snobbism in our model are not exogenously given characteristics of the good. Rather, they are determined by the form of the rank utility. Following the sociological interpretation, the presence of conformism or snobbism depends on how social status is formed. Different social structures lead to different status assignments. Thus, social structures and not the nature of the good are resposible for

[6]This property makes conspicuous goods formally similar to network goods, e.g. telecommunications systems. See Katz and Shapiro (1994) for a recent survey of the literature on networks. The crucial difference between conspicuous and network goods is that, whereas for the latter the influence of the number of consumers on the good's utility is determined by technological properties of the good, for the former this influence is endogenously determined via its impact on the formation of beliefs on the consumers' status.

[7]Leibenstein (1950) also uses the term *bandwagon* effect to describe conformism. The distinction between snobbish and conformist behavior has played no role in the subsequent literature.

conformism or snobbism in conspicuous consumption.

In order to understand the relationship between the rank utility and consumer behavior, notice that, according to (8), any continuous and differentiable function $\sigma(\cdot)$ defined on the unit interval can be rationalized by a rank utility of the form:

$$a(r) = \overline{a} + (1 - 2r)\sigma(r) + r(1 - r)\sigma'(r) \tag{9}$$

In what follows, it will sometimes be convenient to consider the class of rank utility functions that generates a signaling value of the form:

$$\sigma(n) = \alpha + \beta n^{\gamma} \tag{10}$$

where α, β, and γ are coefficients. This class is given by:

$$a(r) = \overline{a} + \alpha(1 - 2r) + \beta r^{\gamma}[1 + \gamma - (2 + \gamma)r] \tag{11}$$

Suppose for the sake of illustration that $\gamma = 1$, so that the rank utility is quadratic. In this case $\sigma(n)$ is linear and preferences are snobbish if and only if β is negative. Hence, conspicuous consumption is conformist (snobbish) if and only if the preferences on ranks are concave (convex).[8] The intuition is as follows. If the preferences on ranks are concave, it is more costly to lose one position in the hierarchy when one is ranked low than when one is ranked high. Accordingly, there is much to lose to be seen at the bottom of the income ladder. When the number of consumers increases, being a non-consumer becomes more costly, i.e. the signaling value of the good increases. In essence, the demand for conspicuous consumption is motivated mainly by the fear of being identified with the poor. The logic of snobbish behavior is the converse one. Individuals are more sensitive to being ranked among the rich, than not being ranked among the poor. In this case, the demand for the conspicuous good is mainly motivated by the hope of being identified with the rich. Notice that it is only in the special case in which the marginal utility of rank is constant that the signaling value of conspicuous consumption is independent of the number of consumers.

[8]The coincidence between conformism and the concavity of preferences on ranks is not true in general.

2.3 Equilibrium market demand

Provided that some separation occurs i.e. $n \in]0,1[$, the equilibrium demand is entirely determined by equations (7) and (8). The former describes in particular the classical impact of the price on demand: given that the utility of the good amounts to σ, the demand is decreasing with the price. The latter equation introduces the original feature of conspicuous consumption, which is that the utility itself depends on aggregate consumption. This may change the properties of the demand function, or equivalently the *price function*, $p(n)$.

We state the following proposition:

Proposition 1 . *The price function $p(n)$ is uniquely defined on $]0,1[$ and continuous. If preferences are snobbish, the price function is decreasing.*

Proof. Firstly, let us assume that $u(y_n)-u(0) > \sigma(n)$. In this case $p = y_n$ is impossible; so, if p(.) exists, it is defined by (5). Let us represent in Fig.1 equations (7) and (8) in the space (p, σ) for a given $n \in]0,1[$. If n is the number of consumers, y_n is the income level which makes the individual indifferent between buying the conspicuous good or not. Using equation (5), equation (7) may be written as:

$$\sigma = u(y_n) - u(y_n - p) \tag{12}$$

which defines a strictly increasing locus in the space (p, σ) for $p \in P \equiv [0, y_1]$. The locus shifts upwards when n is larger. Equation (8) defines a horizontal line in (p, σ). As the figure shows, if the condition of the Proposition is met, loci (7) and (8) intersect in one unique point, which defines $p(n)$ uniquely.

Secondly, let us assume that $u(y_n) - u(0) \leq \sigma(n)$. Then, $p = y_n$.

If preferences are snobbish, $\sigma'(n) > 0$, a larger n raises locus (7) upwards and shifts line (8) downwards, so that $p(n)$ decreases. QED

People acquainted with marketing textbooks will be likely to find this result surprising, since the justification of upward sloping demand curves in those books is precisely the individual's desire of social distinction, which is typically identified with snobbism. However, this explanation is simply untenable on grounds of equilibrium logic. If the signaling value of the good is fixed, a demand increase must be associated with a price reduction. If demand is increasing with the price the classical effect must be offset by the impact on the signaling power of the good: the increase in the number of consumers has to increase the signaling value by an amount that more than compensates the classical effect. This implies that the signaling behavior has to be conformist. Conversely, snobbish behavior is *not* consistent with an upward sloping demand curve. In this case, enlarging the market lowers the signaling value of the good, so that a *lower* price is needed in order to induce the market to absorb the additional quantity.

3 An example of upward sloping demand curve

From the analysis in the previous section it has emerged that conformism is a necessary condition for an upward sloping demand curve. Now we exhibit an example in which a sufficiently strong conformism implies the departure from the law of demand.

We revert to the specification (10) and consider the special case in which $\alpha = 0$ and $\beta = 1$. The signaling value is therefore

$$\sigma = n^{\gamma} \tag{13}$$

which implies that for $0 < \gamma < \infty$ consumer behavior is conformist. Furthermore, the signaling value of the good varies between 0 and 1. An example of rank utility that generates this signaling value of the good is depicted in Fig. 2. Under this specification, social status is maximal at rank $\frac{\gamma}{2+\gamma}$. Increasing γ shifts the ideal rank from the top toward the bottom. This characterizes a situation in which societal values invoke to blame great richness.

We specify the utility derived from the consumption of the unobservable numéraire as:

$$u(c) = \overline{u} - e^{-\mu c} \tag{14}$$

where $\mu > 0$. Let the income distribution be described by the following function:

$$N(y) = e^{-\lambda y} \tag{15}$$

where $\lambda > 0$.

The price function for this example can be constructed using the method presented in the proof of the former proposition. Plugging the adopted specification in (5) and (6), it follows that:

$$p = \frac{1}{\mu} log(1 + n^{\gamma - \frac{\mu}{\lambda}}) \quad if \quad n^{\gamma} + n^{\frac{\mu}{\lambda}} \leq 1 \tag{16}$$

$$p = -\frac{1}{\lambda} log(n) \quad if \quad n^{\gamma} + n^{\frac{\mu}{\lambda}} \geq 1 \tag{17}$$

It readily follows that if $\gamma > \mu/\lambda$, and n is sufficiently low, $p'(n) > 0$. The demand curve for the conspicuous good is upward sloping over part of its domain.

The upward sloping demand appears only if γ and λ are sufficiently large and μ is sufficiently small. This can be interpreted as follows. For given σ, the coefficient μ measures the utility loss for buyers from reduced consumption of the numéraire good. Thus, it reflects the strength of the classical effect of the price on demand. The coefficient γ measures the rate at which the signaling value of the good increases with the number of consumers. Furthermore, a given increase of the signaling value induces a larger increase of the number of consumers, the larger is λ. This coefficient measures the rate at which the number of consumers increases according to the income distribution. Thus, the effects of a larger γ and λ strengthen each other and give the strength of the signaling effect. This effect must counterbalance the classical effect in order to generate an upward sloping demand curve.

4 Some unconventional policy implications

4.1 Taxation

Insofar as demonstration effects are a form of externalities, the existence of a market failure in the presence of conspicuous consumption is hardly surprising. Individuals engage in consumption signals in the attempt to increase their own social status but what the ones gain, the others lose. This explains the conjecture of an inefficiently high level of consumption of conspicuous goods, and the idea put forward in the literature that a specific tax on conspicuous expenditures, e.g. a luxury tax, alleviates the externality problem [Frank (1985a), Ireland (1994), Kolm (1972), Seidman (1989)].

In the context of our model, the market failure is made more striking by the fact that the conspicuous good is consumed even if it has no intrinsic utility. If we assume that p is the cost for society to produce one unit of the conspicuous good (which is the case with a perfectly competitive supply and constant marginal cost), positing a Benthamite social welfare function we obtain:

$$\begin{aligned} W &= \int_0^1 [u(c_r) + v(\delta_r)]dr \\ &= \int_0^n [u(y_r - p) + a(r)]dr + \int_n^1 [u(y_r) + a(r)]dr \\ &= \int_0^n u(y_r - p)dr + \int_n^1 u(y_r)dr + \overline{a} \end{aligned} \tag{18}$$

It readily follows that the optimal quantity of conspicuous consumption is nil. The last term of this expression reflects the fact that from the point of view of the social planner the demonstration effects generated by conspicuous consumption are irrelevant. Thus, transforming numéraire goods into conspicuous goods without intrinsic utility is a pure social waste.

However, in our theoretical framework if preferences are conformist it need not be true that over-consumption is reduced by taxing the good. Consider the example of the previous section. A consumption tax, by raising the price of the good, may increase its signaling value and *raise* aggregate consumption. This means that one has to be careful when judging the welfare effects of taxation of expenditures for status goods. If these goods are mainly valued for their values, making them more expensive may turn to widen their diffusion and diminish social welfare.[9]

4.2 Regulation of monopoly power

The implications of monopoly power in the case of conspicuous consumption may substantially differ from the traditional ones. In the canonical setup, monopoly power reduces the supply under the efficient level and causes a social loss equal to the "welfare triangle". On the other hand, the expectation of monopoly power may induce investments in product and process innovation, because it allows to reap higher gains from the investment. This trade-off has major policy implications concerning e.g. the optimal length for which patents should be issued.

[9] A related effect is found in Ng (1987) for diamond goods. These are goods characterized by the fact that consumer's expenditure for the good directly enters his utility function with positive sign.

This analysis needs not apply to industries producing goods for conspicuous consumption, if only because it is not clear that the monopolistic supply is too low. In the presence of demonstration effects, the competitive supply is too high even if the good has some intrinsic utility, so that a monopoly might be preferable from the welfarist point of view.

The effects of monopoly power on production and welfare depend on the form of consumer behavior. If consumers are snobbish, a monopoly produces less than the competitive supply also because it internalizes the fact that restricting the supply boosts the signaling value of the good. Insofar as the competitive supply is too high, the monopoly may be preferable.

In the conformist case the comparison is less straightforward. In the example of the previous section the demand curve is upward sloping and a monopoly may produce *more* than a competitive industry. However, if the demand is downward sloping, monopoly power may bring the supply closer to the efficient level.

The form of competition may further determine which products will be available for conspicuous consumption. As we demonstrate in the Appendix, if consumer behavior is snobbish and conjectures out of equilibrium are passive,[10] an observable good without intrinsic utility is purchased by some consumers only if it is expensive enough.

Proposition 2 . *If preferences are snobbish and beliefs out of equilibrium are passive conjectures, there exists a price $\hat{p}$, such that if $p < \hat{p}$, the unique equilibrium is $n = 0$.*

The reason is that a good that is unexpensive has no signaling value in the snobbish case. This implies that such a good may be marketed only if supply is monopolistic, so that a high price is sustainable even if production costs are low.

Thus, the classical normative implications of monopoly power may in some circumstances be inverted in the case of conspicuous goods. Monopoly power may be welfare improving because it reduces the production level, and detrimental to welfare because it allows for the marketing of socially undesirable status-signals that would not be supplied otherwise.

[10]This means that beliefs are unchanged when out-of-equilibrium behavior is observed.

4.3 Voluntary provision of public goods

It is a well-known theoretical fact in public economics that under laissez-faire there is underprovision of public goods by individuals. However, examples of voluntary donations to charity and other forms of private provision of public goods abound in the real world. The explanation of these phenomena requires some departure from the canonical model of public goods provision. The present analysis suggests one such departure. It consists of explaining voluntary contributions as conspicuous expenditures, by means of which individuals signal their social status. This would imply that conspicuous consumption may be socially useful when it takes the form of a gift. The search for social recognition by individuals may be an instrument for society to overcome the problem of free riding on the provision of public goods.

An example of this type of behavior is ervegetism in classical Greece and the Roman Empire, where wealthy citizens used to voluntarily offer religious monuments, popular entertainments, and sacrifices to the deity in the name of the whole city [Veyne (1976)]. Nowadays, institutions like Rotary and Lions offer concerts and dinners at a price considerably above the market price and devote the profit in support of charitable activities. These meetings are organized in order to make socially visible who is contributing and who is not. This provides an opportunity to signal high relative income and gain social recognition, which may explain why people are ready to pay a price above the market clearing level.[11]

It is easy to extend our model of conspicuous consumption in order to incorporate voluntary contributions to a public good. Rewrite the utility function (1) as:

$$U_r = u(c_r) + v(\delta_r) + z(G) \tag{19}$$

where δ_r is the decision to contribute a given amount for the provision of the public good, and $z(\cdot)$ is the utility derived from consuming the amount G of the public good. Assume that p is the contribution which is demanded from individuals and G is a function of the aggregate level of contributions. Insofar as individual contributions have a negligible impact on the amount of public good, consumer behavior is exactly the same as described in the previous sections. Hence proposition 1 can be applied to the case of voluntary contributions

[11]See Holländer (1990) for a related approach to voluntary cooperation.

to the public good. Furthermore, the possibility of an upward sloping demand curve points out an unconventional implication, since in that case the number of contributors grows when the fee that they have to pay is increased. An example may be that of political parties and trade unions losing membership when they impose less self-sacrifice onto their members. According to our model, the explanation would be the diminished signaling value of being a member that is induced when the demanded commitment is made more easily affordable.

5 Concluding remarks

As for Keynes' grandchildren, for a large portion of the population in the rich part of the world consumption has to a large extent lost its function as means to satisfy some absolute needs and has become a device to generate social approval and assign a place to individuals in social hierarchies. At least since Adam Smith's *Theory of Moral Sentiments* economists have been aware of the importance of this transformation in consumer behavior; nonetheless, attempts to formalize the relative or social aspects of consumption are fairly recent and have not yet lead to the formulation of a canonical model.

In this paper we have proposed a simple theoretical framework to study consumption behavior as a status-signaling device. Social status is some function of the individual's relative wealth, which itself is not observable by others. Thus individuals choose their pattern of visible consumption by trading off the gain in status obtained by impressing the public with the loss of consumption of commodities that are intrinsically more useful. This theoretical framework captures the basic ideas of conspicuous consumption, as put forward e.g. by Rae and Veblen.

Although it is provided with an explicit signaling foundation, the model presented in this paper is clearly rudimentary. The consumption set, consisting of two goods, one of which is indivisible, is very primitive. The extension to incorporate many goods is in itself straightforward, provided a clear distinction is maintained between observable and non-observable consumption. Relaxing the indivisibility assumption is more delicate, since a problem of non-existence of equilibrium in pure strategies may then emerge. However, our current work on the topic indicates that this problem can be successfully dealt with for an interesting class of models. Another shortcoming of the present model derives from the assumption of separability of the utility function. A generalization in this respect is possible but at the expense of rapidly growing analytical complexity. Furthermore, the model is static, and therefore it does not allow to deal with evolution and learning in consumer behavior. An exploration in this direction is provided in Corneo and Jeanne (1994b). It would also be interesting to study the interplay of conspicuous consumption and imperfect competition, by allowing for monopolistic competition among differentiated conspicuous goods or for an oligopolistic supply of a homogeneous conspicuous good.[12]

We think that the main new insights provided in this paper will prove to be quite robust to more sophisticated modeling. These insights can be summarized as follows. Firstly, there is the scope for a well-grounded distinction between snobbish and conformist conspicuous consumption, that helps to discriminate between situations leading to very different positive and normative implications. Secondly, the market demand curve for conspicuous goods may exhibit bizarre characteristics; in particular, it may be upward sloping if consumer behavior is conformist. Thirdly, conventional policy implications might be misleading under conspicuous consumption: taxing conspicuous expenditures may turn to enlarge the market for these goods, and limiting monopoly power may be detrimental to social welfare. Finally, conspicuous consumption may be socially desirable when it takes the form of a gift to the community: the search for social status by individuals may overcome the problem of free riding on the provision of public goods.

[12]Karni and Levin (1994) study duopolistic competition in a restaurant pricing game with consumption externalities.

APPENDIX

In order to complete the description of the equilibria of the model, we briefly present its pooling equilibria, in which either $n = 0$ or $n = 1$.

Pooling at $\delta_r = 0$.

If $n = 0$ is an equilibrium, consumer's utility is given by

$$U_r = u(y_r) + \overline{a} \tag{20}$$

and no consumer can gain by choosing $\delta_r = 1$. Using (1) and (2), this equilibrium condition can be written as

$$E(a(r)/1) < \overline{a} + u(y_r) - u(y_r - p), \qquad \forall r \in [0, 1] \tag{21}$$

The temptation to deviate is the larger, the richer is the individual. Hence, we have shown the following result:

Proposition 3 . *For any* $p \in P$, $n = 0$ *is an equilibrium if beliefs out of equilibrium are such that* $E(a(r)/1) < \overline{a} + u(y_0) - u(y_0 - p)$.

Thus, if the public has passive conjectures, i.e. it does not assign any particular meaning to the consumption of the observable good, then $E(a(r)/1) = \overline{a}$. In this case the signaling value of the good is nil, and $n = 0$ is an equilibrium. This implies that one can always find beliefs out of equilibrium that give a pooling at $\delta_r = 0$.

Pooling at $\delta_r = 1$.

Suppose $n = 1$ is an equilibrium. Then,

$$U_r = u(y_r - p) + \overline{a} \tag{22}$$

In order for this to be an equilibrium, no consumer should gain by switching to $\delta_r = 0$, i.e.

$$E(a(r)/0) < \overline{a} - u(y_r) + u(y_r - p), \qquad \forall r \in [0, 1] \tag{23}$$

Since the temptation to deviate is the larger, the poorer is the individual, the following result can be established:

Proposition 4 . *For any $p \in P$, $n = 1$ is an equilibrium if beliefs out of equilibrium are such that $E(a(r)/0) < \overline{a} - u(y_1) + u(y_1 - p)$.*

Notice that if $a(.)$ is strictly decreasing, such an equilibrium can be constructed if and only if

$$\overline{a} - a(1) > u(y_1) - u(y_1 - p) \tag{24}$$

which means that the maximal lost of social status possibly involved must be sufficient to induce even the poorest member of the community to buy the good. Clearly, if beliefs are restricted to passive conjectures, $E(a(r)/0) = \overline{a}$, and no pooling equilibrium at $\delta_r = 1$ exists.

Proof of Proposition (2). Denote $\hat{p} = lim_{n \to 1} p(n)$. According to the proof of Proposition (1), $\hat{p}$ is either implicitly defined by:

$$\overline{a} - a(1) = u(y_1) - u(y_1 - \hat{p}) \tag{25}$$

or $\hat{p} = y_1$. Snobbish preferences imply $p'(n) < 0$; hence, if $p \in (0, \hat{p})$ no semi-separating equilibrium exists. Since a pooling at $\delta_r = 1$ is excluded by passive conjectures, the only equilibrium is $n = 0$. QED

Figure 1

Figure 2

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