Brand Names: Markets for Envy and Prestige

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Abstract

Brand products and their non-brand substitutes are ofttimes *vertically differentiated more than their material quality differential* due to social contexts. Consumers of a brand product may extract utility either by being envied for affording it, in which case their utility is a function of how many others *cannot* afford it, or by signalling their wealth, in which case their utility is a function of the *average wealth of all who consume it.* In each of these two cases we analyse qualitatively the brand monopolist's under- or over-pricing incentives as opposed to socially optimal pricing.

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JEL classification : L12, D42, A13.

1. Introduction

Brand-name clothes, jewelry and accessories tend to be many times more pricey than their non-brand-name substitutes. Apparently, these huge premia are far beyond fair prices for intrinsic product quality.[1] More often than not, wearers of brand items extract utility from the brand name itself. One can safely argue that such utility materialises only in a social context. Those who can afford brand items may feel good about themselves by being envied (or at least to believe so) by those who cannot afford them. Or in some societies, it may be beneficial to signal one's wealth by proving that one can afford such items. In either case, the wearer is using the brand item to signal her own wealth to the rest of the society, instead of a signal about the product quality when purchasing it.

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1) In those products of which intrinsic quality is the single most important concern, such as car parts and electric equipments, the guaranteed quality offered only by "genuine" products may account for most, if not all, of the price premia. For, cars and electronic appliances are officially warrantied to function properly only when used in conjunction with genuine (in the sense of being supplied by the same manufacturer as the main equipment) auxiliaries, such as batteries, films, toner cartridges and extension cables.

In existing studies, brand names have extensively been modelled in one of the following two large frameworks. One is to regard brands as product quality signals. Literature on software piracy is a prime example in this category, where genuine brand product is actually not only a product itself but in fact a package consisting of the product and its warranty and technical support, whereas a pirate substitute is only the product alone without any of the follow-up functions. The brand product and pirate products are thereby vertically differentiated.[2] In our present paper, the brand product and non-brand products are vertically differentiated but through different reasoning: the value-added for the former is generated by peer approval rather than its intrinsic functionality. This implies that its utility value is directly linked with its price; for instance, if it is as inexpensive as its non-brand substitutes, then its social utility falls to nil. Brand names sell precisely because they are (moderately) pricey. Technically, such price-dependence of brand quality perceived from the demand side, characterises our model in two ways. Firstly, unlike in the traditional game theory on vertical product differentiation *á la* Gabszewicz and Thisse (1979), Shaked and Sutton (1982), Choi and Shin (1992), *inter alia*, the supplier of the brand product in our model cannot "choose" its product quality independently of its pricing. Secondly, viewed from the demand side, the standard notion of each consumer's willingness to pay as a function of quality no longer applies.

The other is network externality. If different brands are associated with distinct compatibility standards which are mutually exclusive, then that brand which has the largest pool of existing users enjoys the highest benefit made possible by its broadest compatibility. Hence, from each individual user's point of view it is advantageous to share the same brand with as many other users as possible. Such an advantage is reflected on the price. This model has a similarity to ours in that the said network externality is "social," i.e., dependent upon how many other users use the same brand product and thus cannot be controlled singlehandedly by the supplier. In our model, however, it is not always the more users the better. If the brand price is high, for those few who are affluent enough to afford it its utility value is enormous. Game-theoretically, this implies that consumers in our model are not playing a *coordination game* and that our model does not admit multiple equilibria divided along *basins of attraction* (as in Kandori, Mailath and Rob (1993), Kandori and Rob (1995), and Young (1993)).

In section 2 we lay out a simple "market for envy" model where wearers of a brand product extracts utility from being envied by their less affluent peers. In section 3 we present an alternative "market for prestige" model where those signals about the wealth of the wearers deployed via the brand product afford the wearers some socioeconomic advantage. Section 4 provides a few comparative-statics interpretations to our theoretical findings from sections 2 and 3.

2) Poddar (2004).

2. Market for envy and exclusivity

Consider a society consisting of a unit mass of consumers whose wealth levels are exogenously distributed according to a commonly known (nondegenerate) cumulative distribution $F[\cdot]$, where $F[0] = 0$. Each consumer, who is infinitesimally small relative to the society, buys one unit of either product: the brand product at price $p > 0$, or the non-brand product whose price is normalised to zero hereinafter. The brand product is supplied monopolistically whilst the non-brand product is supplied competitively, both costlessly (or, marginal costs being normalised to nil).

Consumers are categorised into two exogenous types independently of their wealth levels: the "snobbish" type whose population is $s \in (0, 1]$, and the "pragmatic" type $1-s$. A snob's utility from the non-brand product is nil whilst that from the brand product is a fixed positive constant b times the mass of those snobs who are too poor to afford the brand product. On the other hand, pragmatists extract the same utility from brand and non-brand products and hence will always buy the non-brand product insofar as $p > 0$.

2.1 When does the brand sell?

If every snob whose wealth is at least p buys the brand product,[3] then the mass of those snobs who cannot afford it is $sF[p]$, hence each snob who affords the brand product attains the gross utility $bsF[p]$. Therefore, the brand product sells if and only if there exists a $p > 0$ such that $p \leq bsF[p]$. This implies the following.

Lemma 1 : For any given $F[\cdot]$, there exists a threshold $ß_* > 0$ such that the brand product can sell if and only if $bs \geq ß_*$.

This lemma implies :

Corollary 1-i : For any given $F[\cdot]$ and $s > 0$, there exists a $b_*[s] > 0$ such that the brand product can sell if and only if $b \geq b_*[s]$.

Corollary 1-ii : For any given $F[\cdot]$ and $b \geq b_*[1]$, there exists an $s_*[b] > 0$ such that the brand product can sell if and only if $s \geq s_*[b]$.

Corollary 1-iii : If $b < b_*[1]$, the brand product cannot sell for any $s \in (0, 1]$.

3) It need not be assumed verbatim that each consumer affords to spend all her wealth on the brand product. Insofar as the consumer's personal budget that can be spent on the brand product increases in her wealth, the essence of our qualitative analysis stands valid.

In words, the brand product sells only when b is sufficiently high, that is, the snobs extract sufficiently high utility from being envied, and also s is sufficiently high, that is there are many enough snobs.

2.2 What if the brand sells well?

Now, assuming that both b and s are high enough not to make the above constraints bind, the monopolist supplier of the brand product is to set p so as to maximise its profit $(1-F[p])sp$, that is equal to its revenue in our model.

On the other hand, the total surplus generated by the brand product is the mass of snobs who can afford it, that is $(1-F[p])s$, times that of those snobs who cannot, $F[p]s$, times b, that makes $F[p](1-F[p])bs^2$ altogether. Assuming that $F[p]$ is well-behaved so that second-order conditions are globally satisfied, the following lemmata can be established.

Lemma 2 : The total surplus is maximised when the price p is equal to the median wealth of the snob population, so that exactly half the snobs can afford it.

Proof : The first-order condition for total surplus maximisation is given by

$$\frac{d}{dp}\left(F[p](1-F[p])bs^2\right) = (1-2F[p])f(p)bs^2 = 0.$$

Lemma 3 : The profit-maximal monopoly price is lower (resp., higher) than m, the median wealth of the snobs, if and only if $f[m]m > \frac{1}{2}$ $\left(\text{resp., } f[m]m < \frac{1}{2}\right)$, where $f[\cdot] = F'[\cdot]$ is the density function.

Proof : The first-order derivative of the profit (= revenue) is given by

$$\frac{d}{dp}\left((1-F[p])ps\right) = (1-F[p]-f[p]p)s = 0.$$

Therefore in the neighbourhood of $p \approx m$, price reduction proves profitable if and only if

$$1-F[m]-f[m]m < 0, \text{ that is equivalent to } f[m]m > \frac{1}{2}.$$

These two lemmata jointly imply the following.

Proposition I : Assuming that $bs > \frac{1}{2m}$, the monopolist supplier of the brand product underprices (resp., overprices) relative to total surplus maximality if and only if $f[m]m > \frac{1}{2}$ $\left(\text{resp., } f[m]m < \frac{1}{2}\right)$.

Important here is how to interpret the condition $f[m]m > \frac{1}{2}$. If, for example, the wealth distribution is uniform over $[0, w]$ where w is any positive amount, then $f[m]m = \frac{1}{2}$, hence the monopoly pricing coincides with total surplus maximisation and hence happens to be socially desirable, too.

Two possible features of the wealth distribution can make $f[m]m > \frac{1}{2}$ likely, entailing *underpricing* incentives.

- If the distribution is *modal near its median*, then the density $f[m]$ tends to be high. In this case, the monopolist has an incentive to price the brand product *below* the mode of the wealth distribution so as to sell it to a mass market, whereby underpricing as opposed to total surplus maximality.
- If the distribution *shifts up* so as to make the snob population sufficiently wealthy, then the median m also shifts up. For example, if the wealth distribution is uniform over $[v, v+w]$ where v and w are both positive, then $f[m]m > \frac{1}{2}$. This is the case where the median wealth m is so high that the monopolist can afford to lower the price below m in exchange for a sales quantity increment.

Both of the above two subcases are where the demand for the brand-name product is *price-elastic* at the price m.

Otherwise, if the wealth distribution is extremely skewed and thus relatively thin in the middle, then it is possible to have $f[m]m < \frac{1}{2}$. The monopolist can then profitably raise the price above the median without losing a large bulk of customers. The monopoly price is thereby higher than total surplus maximal. An exponential distribution $F[x] = 1 - e^{-\gamma x}$ has its median at $x = m = \frac{\ln 2}{\gamma}$ where the density is $f[m] = \gamma e^{-\gamma m} = \frac{\gamma}{2}$, thereby $f[m]m = \frac{\ln 2}{2} < \frac{1}{2}$.

Economic characterisation : Observations above can lead to a curiously impersonating story as follows. In a highly developed economy where consumers are wealthy and their wealth distribution is relatively egalitarian, it tends to be $f[m]m > \frac{1}{2}$ so that the monopolist supplier of the brand product is likely to have an underpricing incentive, causing the said product to become more popular than it should socially be. In contrast, in a developing economy where a vast majority of consumers are teetering on or below the poverty line whilst no more than a few rich consumers monopolise a large mass of wealth, their wealth distribution has a long upper tail inducing $f[m]m < \frac{1}{2}$, whereby the monopolist tends to overprice its brand product to make it less affordable than socially desirable.

Another pair of equally curious characterisations follow directly from foregoing Lemmata 2 and 3, respectively.

Corollary 2 : The total surplus maximal price p for the brand product is *monotone* in the wealth distribution $F[\cdot]$ in the sense of first-order stochastic dominance, that is, if a wealth distribution $F_1[\cdot]$ first-order stochastic dominates another distribution $F_2[\cdot]$ then the total surplus maximal price p under $F_1[\cdot]$ is higher than that under $F_2[\cdot]$.

Corollary 3 : The profit maximal price p for the brand product is *not necessarily monotone* in the wealth distribution $F[\cdot]$ in the first-order stochastic dominance sense.

Example i : Under the standard uniform wealth distribution $F[x] = x \in [0,1]$, the median wealth pricing $p = \frac{1}{2}$ maximises both the total surplus and the monopolist's profit. If, however, the middle class is impoverished so as to entail

$$F[x] = \begin{cases} 2x & 0 \leq x \leq 0.2 \\ x + 0.2 & 0.2 \leq x \leq 0.4 \\ 0.6 & 0.4 \leq x \leq 0.6 \\ x & 0.6 \leq x \leq 1 \end{cases}$$

then the total surplus maximal price drops to the new median 0.3 whilst the profit maximal price rises to 0.6.

2.3 What if the brand barely sells?

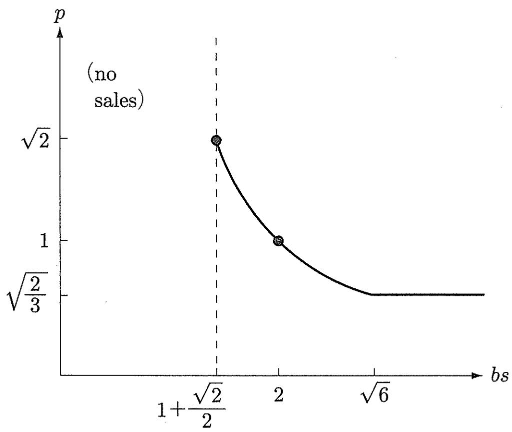
As aforementioned (see 2.1), the brand product can sell if and only if there exists a $p > 0$ such that $\frac{p}{F[p]} \leq bs$. This implies that, either when b is low, meaning that the snobs are not snobbish enough, or when s is low, meaning that the snobs are few, the monopolist is forced to price its brand product at a price near $\arg\min_p \frac{p}{F[p]}$ in order to survive. Such a price tends to be *slightly above the mode* of the wealth distribution. This implies that, when the general demand for the brand product is low and thus its marketing struggles,

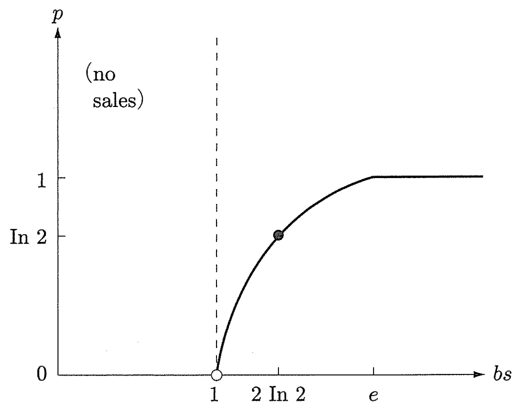
- the price may not necessarily become lower than when there is ampler demand,
- the price conducive for the monopolist's survival does not generally optimise the total surplus.

Example ii : When the wealth distribution is triangular (Bartlett)

$$F[x] = \begin{cases} \frac{x^2}{2} & 0 \leq x \leq 1 \\ -\frac{x^2}{2} + 2x - 1 & 1 \leq x \leq 2 \end{cases}$$

the monopolist would price $p = \sqrt{\frac{2}{3}}$ if $bs \geq \frac{\sqrt{2/3}}{F[\sqrt{2/3}]} = \sqrt{6}$. On the other hand, the total surplus would be maximised by median wealth pricing which, in this example, is $p = 1$. As bs decreases so as no longer to admit the profit maximal price $p = \sqrt{\frac{2}{3}}$, the monopolist is forced to *raise* the price in order to survive. The dependence of the monopoly pricing on bs





is illustrated in the left diagram.

As is clear from the illustration, when $bs = 2$ the monopoly price coincides with total surplus maximisation. The monopolist underprices its brand product insofar as $bs > 2$, overprices it when $1 + \frac{\sqrt{2}}{2} \leq bs < 2$. The brand product is no longer viable if $bs < 1 + \frac{\sqrt{2}}{2}$.

Example iii: Under the standard exponential wealth distribution $F[x] = 1 - e^{-x}$, the monopoly price is 1 if $bs \geq \frac{1}{F[1]} = e$. Unlike in our previous example, this is an overprice in the light of total surplus optimisation which should warrant $p = \ln 2$. Contrary to foregoing Example ii, as bs plunges below e, the monopolist is forced to *reduce* the price as illustrated in the right diagram. Lowering the demand parameter bs serves to discipline against the monopolist's overpricing until bs falls to $2 \ln 2$ where the monopoly pricing coincides with total surplus maximisation. As bs falls further, the brand product comes to be underpriced.

Moral of the story from these two examples is :

- the dependence of monopolist's brand product pricing on the demand parameter bs varies not only quantitatively but also qualitatively across different wealth distributions ;
- the product viability constraint $\frac{p}{F[p]} \leq bs$ can, albeit coincidentally, serve to rectify either overpricing or underpricing incentives of the monopolist, possibly entailing a constrained monopoly price which happens to be near its social optimum.

3. Market for wealth signalling

It is not inconceivable that, in a certain class of social contexts, it may be beneficial for an individual to signal her wealth by wearing something visibly expensive.[4] To illustrate such a situation, we revisit our previous model laid out in section 2 except that a "snob" attains from the brand product a gross utility which no longer depends upon the number of other snobs who cannot afford it, but now is proportional to the *average wealth of all who consume the same product*. Interpretatively, the "snobbish" type now refers to those who, unlike previously, can benefit from signalling their wealth levels, whilst the rest of the consumers' population do not harbour such a prospect.

3.1 When does the brand sell?

If every snob whose wealth is at least p buys the brand product, their average wealth is

$$\frac{1}{1-F[p]}\int_{x=p}^{\infty} x\,dF[x]$$

whereby each of them attains the gross utility

$$\frac{b}{1-F[p]}\int_{x=p}^{\infty} x\,dF[x] \tag{3.1.1}$$

in which $b>0$, as before, parametrises the strength of their desire to signal their wealth.

Meanwhile, the average wealth among those who do not consume the brand product is

$$\frac{s}{1-s+sF[p]}\int_{x=0}^{p} x\,dF[x]+\frac{1-s}{1-s+sF[p]}\int_{x=0}^{\infty} x\,dF[x]$$

or equivalently

$$\frac{1}{1-s+sF[p]}\int_{x=0}^{p} x\,dF[x]+\frac{1-s}{1-s+sF[p]}\int_{x=p}^{\infty} x\,dF[x]\,.$$

Thereby those snobs who cannot afford the brand product will attain the utility equal to

$$\frac{b}{1-s+sF[p]}\int_{x=0}^{p} x\,dF[x]+\frac{(1-s)b}{1-s+sF[p]}\int_{x=p}^{\infty} x\,dF[x]\,. \tag{3.1.2}$$

The difference between these two gross utility levels is thereby

$$\left(\frac{b}{1-F[p]}-\frac{(1-s)b}{1-s+sF[p]}\right)\int_{x=p}^{\infty} x\,dF[x]-\frac{b}{1-s+sF[p]}\int_{x=0}^{p} x\,dF[x]=$$

$$=\frac{F[p]b}{1-s+sF[p]}\left(\frac{1}{1-F[p]}\int_{x=p}^{\infty} x\,dF[x]-\frac{1}{F[p]}\int_{x=0}^{p} x\,dF[x]\right)$$

which is how much the snobs are willing to pay for the brand product. Hence, the viability of the brand product hinges upon the existence of a price p satisfying

$$p\le\frac{F[p]b}{1-s+sF[p]}\left(\frac{1}{1-F[p]}\int_{x=p}^{\infty} x\,dF[x]-\frac{1}{F[p]}\int_{x=0}^{p} x\,dF[x]\right) \tag{3.1.3}$$

where the right-hand side increases both in b and in s. Immediately from these relations,

4) It is now strongly recommendable that the one-to-one relation between a consumer's wealth and her budgetary allowance for the brand product be interpreted proverbially as aforementioned in footnote 2 (section 2) rather than verbatim.

Corollaries 1-i through 1-iii (see section 2) continue to hold in this alternative model, even though Lemma 1 fails to apply unmodified as b and s no longer multiplicatively form a sufficient statistic bs.

3.2 What if the brand sells well?

As in 2.2, if both b and s are high enough not to make the above inequality constraint (3.1.3) bind, the monopolist will price the brand product so as to maximise its profit $(1-F[p])sp$.

The aggregate social welfare, on the other hand, can be measured by the aggregate (i.e., population-weighted) gross utility of the snobs.

Lemma 4 : The welfare maximal monopoly price p decreases monotonically in s. In particular, it tends to the mean of the wealth distribution $F[\cdot]$ as $s \downarrow 0$, and to zero as $s \uparrow 1$.

Proof: The aggregate gross utility of the snobs is $(1-F[p])s$ times (3.1.1) plus $F[p]s$ times (3.1.2), that is

$$W = bs \int_{x=p}^{\infty} x\, dF[x] + \frac{bF[p]s}{1-s+sF[p]} \left(\int_{x=0}^{p} x\, dF[x] + (1-s) \int_{x=p}^{\infty} x\, dF[x] \right) =$$

$$= \frac{bs}{1-s+sF[p]} \left(F[p] \int_{x=0}^{\infty} x\, dF[x] + (1-s) \int_{x=p}^{\infty} x\, dF[x] \right).$$

The first-order condition

$$\frac{\partial W}{\partial p} = \frac{-bs^2 f[p]}{(1-s+sF[p])^2} \left(F[p] \int_{x=0}^{\infty} x\, dF[x] + (1-s) \int_{x=p}^{\infty} x\, dF[x] \right) +$$

$$+ \frac{bs}{1-s+sF[p]} \left(f[p] \int_{x=0}^{\infty} x\, dF[x] - (1-s)pf[p] \right) =$$

$$= \frac{bs(1-s)f[p]}{(1-s+sF[p])^2} \left(\int_{x=0}^{\infty} x\, dF[x] - s \int_{x=p}^{\infty} x\, dF[x] - (1-s+sF[p])p \right) =$$

$$= \frac{bs(1-s)f[p]}{(1-s+sF[p])^2} \left(\int_{x=0}^{p} (x-p)\, dF[x] + (1-s) \int_{x=p}^{\infty} (x-p)\, dF[x] \right) =$$

$$= \frac{bs(1-s)f[p]}{(1-s+sF[p])^2} \left(-\int_{x=0}^{p} F[x]\, dx + (1-s) \int_{x=p}^{\infty} (1-F[x])\, dx \right) = 0$$

implies that the welfare maximal monopoly price p be chosen so as

$$(1-s) \int_{x=p}^{\infty} (1-F[x])\, dx = \int_{x=0}^{p} F[x]\, dx .$$

This immediately proves the lemma.

The qualitative difference from foregoing Lemma 2 is that the welfare maximal price now depends upon s. On the other hand, the profit maximal monopoly price remains independent of s, hence the following proposition.

Proposition II : For any wealth distribution $F[\cdot]$ there exists a pair $\widehat{b}$, $\widehat{s}$ such that the profit maximal monopoly price for the brand product is above its welfare maximal price for any $b \geq \widehat{b}$ and $s \geq \widehat{s}$.

A socioeconomic configuration with a high s indicates that the market for the brand product is thick, the society being filled with plenty of snobs, and one with a high b indicates that these snobs value the brand highly. Namely, a society with a high s and a high b is where the brand product becomes most prominent. Proposition II implies that, in such a society, the monopolist supplier of the brand product has an incentive for *overpricing* as opposed to welfare optimisation.

3.3 What if the brand barely sells?

As aforementioned, the brand product is viable if and only if there exists a $p > 0$ satisfying the foregoing inequality condition (3.1.3). Similarly to our previous model (see 2.3), this viability constraint binds in two alternative directions: either when s decreases, or when b decreases. Unlike previously, however, these two directions now have different influences on the resulting constrained monopoly price p.

One of the two directions is where b becomes sufficiently small to make (3.1.3) bind whilst s stays high. As the most extreme case, let $s = 1$.

Lemma 5: When $s = 1$, there is a $\widehat{p} > 0$ such that the brand product sells at any price $p \in (0, \widehat{p}]$ for any $b > 0$.

Proof: $s = 1$ reduces the inequality condition (3.1.3) into

$$p \leq b\left(\frac{1}{1-F[p]}\int_{x=p}^{\infty} x\,dF[x] - \frac{1}{F[p]}\int_{x=0}^{p} x\,dF[x]\right).$$

As $p \downarrow 0$,

$$\frac{1}{1-F[p]}\int_{x=p}^{\infty} x\,dF[x] \ \downarrow \mu \qquad \text{and} \qquad \frac{1}{F[p]}\int_{x=0}^{p} x\,dF[x] \ \downarrow 0$$

where μ denotes the mean of the wealth distribution $F[\cdot]$. Thereby the above inequality tends to $0 \leq b\mu$, which unambiguously holds.

Lemma 5 implies that, when s is sufficiently high, the constraint on the viability of the brand product due to a low b need not entail inevitable overpricing.

The other direction is where b stays high whilst s becomes low.

Lemma 6: There exists a $\widetilde{b} > 1$ such that, for any $b > \widetilde{b}$, there is a $\widetilde{p}$ such that the brand product sells at any price $p \geq \widetilde{p}$ for any s.

Proof: As $p \uparrow F^{-1}[1]$,

$$\frac{1}{F[p]}\int_{x=0}^{p} x\,dF[x] \ \uparrow \mu,$$

whereby the inequality condition (3.1.3) tends to

$$p \leq b\left(\frac{1}{1-F[p]}\int_{x=p}^{\infty} x\,dF[x] - \mu\right).$$

Note also that

$$\frac{1}{1-F[p]}\int_{x=p}^{\infty} x\,dF[x] \geq p\,,$$

so that the foregoing inequality condition holds whenever $p \leq b(p-\mu)$. Hereby letting $\widetilde{b} = \lim_{p \uparrow F^{-1}[1]} \frac{p}{p-\mu}$, the lemma holds.

Lemma 6 implies that, for a sufficiently high b, overpricing of the brand product is viable irrespective of s.

Findings from Proposition II, Lemmata 5 and 6 can be summarised as follows.

- When the viability of the brand product binds due to a low b, there is a possibility (albeit no guarantee) that the monopolist's overpricing incentive may be curtailed.
- When the viability constraint binds due to a low s, it does not serve to intercept the monopolist's incentive for overpricing.

4. Policy and social implications

We have thus far characterised over- and under-pricing incentives for the monopolist supplying a brand product. Our next step is a comparative statics analysis to predict possible effects of various policies on the markets for brand products.

4.1 Taxes and subsidies

Taxation can be divided into two categories. One is to tax (or to subsidise) the brand product directly. Generally speaking, it is desirable to levy a tax on an underpriced product, and to subsidise an overpriced product. For instance, our observations from section 2.2 suggest that in a mature developed economy where consumers are relatively homogeneous in their wealth levels, an "envy" product ought to be taxed whilst it should be subsidised in a less developed, less egalitarian economy. Similarly, our findings from section 3.2 indicate that a "wealth signal" product should generally be subsidised.

The other is income taxation as a socioeconomic redistribution device. This serves to alter exogenously the wealth distribution of consumers in the context of our model. Our observations from section 2.2 seem to advocate for moderation: that is, in a developed economy where consumers' wealth distribution is already relatively egalitarian, further equalisation tends to aggravate the underpricing problem of the brand product, whilst in a less egalitarian economy a progressive taxation can moderate the overpricing problem. From 3.2, on the other hand, the effects of wealth redistribution on the pricing of a wealth signal product are obscure. Noting that brand products comprise a relatively small fraction of macroeconomy, it is not always appropriate to draw recommendations on redistributive taxation based solely upon pricing incentives of these brand products. Instead, it is more appropriate to register, and promote awareness to, these "inadvertent side effects" entailed by redistributive taxation.

4.2 Social education

It is arguable that snobs may outgrow their snobbism via proper education to some extent. In our context, this can be parametrised as a decrement either in s or in b. Contrarily, it is also conceivable that the "snobbism" in our model can be reinterpreted as an acquired, cultivated taste, hence can be enhanced via social education. This should be parametrised as an increment in either s or b.

The social impact of a marginal change in s should be quantified as its influence to the aggregate utility of the remainder of the population. When a marginal increment in s takes place, that is when a small fraction of the previously pragmatist population cease to be pragmatists and join the snob population, the utility of the *existing* snobs will increase if the brand product is an "envy" product as seen in 2.2, but will decrease if a "wealth signal" product as seen in 3.2. These are the typical externalities entailed by social education altering the population fraction of brand enthusiasts.

It is slightly tricky to quantify the social impact of a marginal variation in b as it alters snobs' utility, which is the basis of our welfare evaluation altogether. Perhaps the most logically natural procedure is to inspect the snobs' aggregate utility *divided by* b as a function of b. As seen in 2.2 and 3.2, insofar as the viability of the brand product remains unthreatened, b only proportionately scales up/down the total surplus. If, however, b is driven far enough down to render the brand product unsustainable, the surplus reduces to nil and hence is hurt more than proportionately to b. This implies that excessive anti-brand education is hurtful.

5. Conclusion

In this paper we have contemplated two alternative sources for brand quality generated "socially" from the demand side. One is that the high price of the brand product serves to satisfy affluent consumers' desire to be envied. In this scenario, the social utility from the brand product depends upon the *numbers* of those who can afford it and of those who cannot. If such a brand product is monopolistically supplied by a profit-seeking firm, it tends to be under- (resp., over-)

priced as opposed to the social optimum if consumers' wealth distribution is relatively even (resp., uneven).

The other scenario is that the brand product is to be used to signal the wealth of those who consume it. The difference from our first scenario is that the utility now depends upon the *average wealth* of those who can afford it and that of those who cannot. A monopolist supplying this type of brand product tends to overprice it when consumers are keen to signal their wealth.

In reality, it is not always easy to distinguish between these two and possibly other alternative scenarios. They may not be mutually exclusive. It is also arguable that brand names may often play dual roles: they serve partly as signals for intrinsic product quality and also partly as social distinctions at the same time. Our simplified model is by no means to be taken verbatim as assuming away such complicated reality. Instead, our analysis is to be validated component-by-component, i.e., that part of brand quality which is generated by the aforesaid "envy" should carry those characteristics which we have discussed above, and that part which owes to the "wealth signal" should have distinct characteristics as aforementioned.

One consideration which might indeed affect our qualitative conclusions is the prospect of free entry. In this paper we have implicitly regarded a brand supplier as historically given and unchangeable in a short run. An alternative view might be to reconsider the supply of the brand product as contestable, or monopolistically competitive. Arguably, under this alternative view, the viability constraint for the brand product might be more likely to bind than in the monopoly case, and thus our discussions in sections 2.3 and 3.3 might become more relevant. Unfortunately, our said discussions remain generally inconclusive, pending further specifications of the contestability or of the monopolistic competition in question.

Another extension might be *intra-firm* brand differentiation, that is, the same firm supplying more than one brand with price discrimination.[5] In this paper we have focused exclusively on *inter-firm* brand differentiation, as in reality brand differentiation seems most typically associated with differentially reputed manufacturers. In theory, however, intra-firm price discrimination should be profitable if the firm could choose to opt for it, which presumably leaves a fruitful prospect for future research.

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