Snob Effects, Exclusivity, and Competition Intensity
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Often, demand depends on historical and expected sales. A particular instance of this phenomenon are snob effects where consumers’ willingness to pay and demand are a negative function of past and future sales. We introduce the concepts “degree of exclusivity” and snob-effect strength and show how firms can benefit from fostering exclusivity.

Solving a duopoly model for subgame perfect equilibria, we obtain the following results: a) For snob-effect goods, an anti-“self-fulfilling prophecy” effect can be identified. b) We show that a high snob-effect strength and high degrees of exclusivity dampen competition intensity. c) A high snob-effect strength may be harmful to a firm disadvantaged with respect to the installed base (high installed base) or with respect to the degree of exclusivity (low degree). d) High degrees of exclusivity are optimal for both firms if the costs of exclusivity are sufficiently low.

1. Introduction

In some industries, such as fashion or arts, a negative influence of expected sales on actual demand can be observed. Consumers reduce their demand if they expect numerous other consumers to buy the same or a similar product. For example, two women meet in an arcade and unhappily realize that they wear the same dress (arcade effect). The dresses were not, after all, as exclusive as the women had hoped. Original works of art, in contrast to prints, provide another example. A person’s prestige may be enhanced by possessing the originals rather than copies. These effects are often called snob effects.

Typically, snob effects are combined with the idea of a brand. There are hardly any functional differences between a Gucci handbag and a “normal one”. Even in style, Gucci handbags are not very exceptional. Still, this brand has succeeded in being esteemed as precious, and high prices are paid. Juveniles also exhibit brand awareness. The shoe brand Buffalo is a relevant example. Buffalo shoes are made for juveniles up to the age of mid-twenty and are quite expensive, ranging from 59 to 200 Euros. Five years ago, they were an absolute must-have in Germany, but hardly known to persons older than the target group.

Firms use all aspects of the marketing mix to generate snob effects. Pricing generates snob effects by two different mechanisms. On the one hand, a high price can serve as a symbol of status in itself. A Woolworth watch worth around 10 Euros has no show-off value, in stark contrast to a “Rolex” priced around 3,000 Euros or to watches of the brand Lange & Söhne which are priced at 7,000 Euros or more. This is, of course, Veblen’s theory of conspicuous consumption. On the other hand, high prices lead to low sales, thus achieving exclusivity. Our pricing model makes use of the second argument and is a model of snob, not Veblen effects.

Turning to communication policy, the luxury car Maybach is sold on the slogan: “the best way to live on forever is to be exceptional” (see the Maybach website). Even less expensive brands try to exploit snob effects via advertising. The watch-brand Alfex of Switzerland advertises with the slogan: “dare to be different” (see the Alfex website). Often, consumers of snob-effect goods just want to show uniqueness and to satisfy the “desire to do their own thing” (see Chaudhuri/Majumdar 2006).
Distribution policy can also be used to signal exclusivity. The very restrictive option within this strategy is to allow sales only in so-called flagship stores. These are brand-owned stores that sell nothing but their own products. Examples for these most exclusive stores can be found in large cities, e.g. in the Hamburg street “Neuer Wall” with its boutiques of Bulgari, Hermès, Jil Sander, or Boss. We cannot help but cite Julie, a major character in the novel “Bergdorf Blondes” by Sykes (2004, p.95): “I’ve just been to the Van Cleef über-aber-private-favorite-clients-only studio sale that, like, virtually no one gets invited to.”

Finally, we consider product policy. The New York art market in the sixties and the Wildenstein and Co. gallery provide a suitable example. This gallery offered only old masters (see Bongard 1967, pp. 45), thus choosing those works of art with the highest scarcity (old masters have died and cannot produce any more). Another example is the fashion and accessories brand Hermès which sells hand-folded ties and scarves with hand-rolled seams (see website of Hermès). As handcraft in itself does not necessarily lead to higher durability, Hermès is out for exclusivity and snob appeal rather than quality. Rich illustrative material can be found in the “Manufaktum” mail-order catalogue. Thus, we have identified exclusivity policies in all four areas of the marketing mix.

For analytical purposes, we need to separate the heterogeneity aspect from the exclusivity aspect. Heterogeneity refers to one good being different from, or better than another. We model horizontal differentiation (goods being different) but not vertical differentiation (goods being of different quality). We use the familiar Hotelling space to do so.

Exclusivity refers to one good being less common than another. As a first approximation, good 1 is less common than good 2 if good 1’s sales are lower than good 2’s sales. In our model, we will deviate from this first approximation in two respects. First, we will allow consumers to be forward-looking and to consider both past and expected sales. We call the cumulated past sales the “installed base”.

Second, we will look at network sizes rather than past and expected sales. Network sizes are a function of both sales and the so-called degrees of exclusivity, denoted by $d_1$ and $d_2$ for goods 1 and 2, respectively. The degree of exclusivity $d_1$ impacts on network sizes in the following fashion. If the degree of exclusivity $d_1$ is high, the sales of good 2 do not (or hardly) enter the network size of good 1. If $d_1$ is low, the sales of good 2 count as much (or nearly as much) as the sales of good 1 for good 1’s network size.

Above, we give examples of communication, distribution, and product policy that set good 1 well aside of good 2, so that the sales of good 2 do not compromise the exclusivity of good 1. These policy measures increase the degree of exclusivity. In our model, we assume that firms decide on their degrees of exclusivity. This is just a short way to say that firms use their marketing instruments in order to produce the desired degrees.

Formally, we will define exclusivity by the difference of network sizes. Focusing on two firms, we say that good 1 is more exclusive than good 2 if the network size of good 1 is lower than the network size of good 2. In that case, we also say that good 1 enjoys a network size advantage. It should be obvious that network size advantages are very important for some goods (for example, evening gowns) and less important for others (for example, stockings). We employ the so-called snob-effect strength $s$ to translate network sizes into (un-)willingness to pay. The product of snob-effect strength and network size is called snob network size while the product of snob-effect strength and network size advantage is addressed by snob advantage.

While we assume that $s$ is the same for both firms, the degrees of exclusivity $d_1$ and $d_2$ may differ. That is, good 1’s degree may be high due to appropriate exclusivity policies while good 2’s degree may be low because of other policies.

The upshot of the above discussion is that heterogeneity and exclusivity are independent concepts. In particular, the combination homogeneity/exclusivity is possible. For example, customers can be basically indifferent between (relatively inexpensive) Alfex and (expensive) Rolex watches and still prefer to buy the latter due to the snob advantage benefitting Rolex. For an opposite example (heterogeneity, non-exclusivity) consider the art market for oil paintings: each oil painting is an original, such that even oil paintings of one and the same artist differ from each other. Moreover, there is heterogeneity between painting styles and different painters. Nevertheless, exclusivity between different oil paintings can be low; a consumer may not succeed in setting himself apart from other consumers who possess oil paintings as well, even if from different painters. This shows that heterogeneity (modelled by the linear Hotelling space) and exclusivity (modelled by the network size advantage) are strictly separable concepts.

We assume that product, communication, and distribution policy are long-term parameters while prices can be altered in the short run. Therefore, our model is two-stage. At the first stage, the two firms simultaneously decide on their degrees of exclusivity which can be altered by appropriate product, communication, and distribution policies (Fig. 1). At the second stage, they engage in price competition. This set-up is the reason for modeling snob, but not Veblen, effects. With Veblen effects, pricing influences the degrees of exclusivity. However, since pricing occurs after setting the degrees of exclusivity, we cannot take account of this (interesting and important) phenomenon.

The formal analysis of snob effects is quite analogous to the analysis of network effects, as Leibenstein (1950, p.
1. stage: product policy  
   degrees of communication policy  
   exclusivity  
   distribution policy

2. stage: pricing policy

Figure 1: The two stages and the marketing mix

199) points out. In case of network effects (called bandwagon effects by Leibenstein), customers are more interested in buying a product the more others consume the same or a compatible product. Communication systems are a prime example. While the positive in case of snob-effect goods, it is negative for network-effect goods. We modify a paper on network effects by Wiese (1998) in order to exploit the "symmetrical relationship to the bandwagon effect" (Leibenstein 1950, p. 199).

Leibenstein (1950, pp. 200) provides the basic tools for analyzing (network-effect and) snob-effect demand. The author separates the effects of a price decrease in a graphical manner. Following a price decrease and holding demand expectations constant, demand increases by some amount. However, as expectations adjust, demand somewhat decreases due to the snob effect. In our paper, we use a simple analytical formulation to show how (given and adjusted) expectations influence demand in the presence of snob effects. In particular, we see how the snob effects (degree of exclusivity, snob-effect strength) affect competition intensity. Generally, competition intensity is defined to be high if a change in the parameters of competition (e.g. a price decrease) leads to large changes in demand (a demand increase). In line with Leibenstein, we find that snob effects decrease competition intensity. Going beyond Leibenstein, and other authors, we note that the incompatibility in case of network-effect goods corresponds to the exclusivity in case of snob-effect goods. Both of these concepts were not addressed by Leibenstein who deals with a monopolistic setting.

There exist a plethora of publications on network effects. Helpful surveys include Economides (1996) and Wiese (1997), the most up-to-date being Farrell/Klemperer (2007). The recent empirical paper by Stremersch et al. (2007) finds that indirect network effects (the hardware-software paradigm) may be less important than previously thought.

Despite the similarity between network and snob effects, part of the literature on snob effects has evolved quite differently from that on network effects. It is concerned with congestion in communication, or traffic networks. A very recent paper in this graph-theoretic tradition is Acemoglu/Ozdaglar (2006). The results are not (easily) transferable to marketing.

Another important strand of the literature deals with fashion and fashion cycles. An early sociological paper is “Fashion” by Simmel (1957). In a verbal manner, this author characterizes fashion as the outcome between two human tendencies, the lower classes’ wish to imitate the upper classes (bandwagon effect) and the desire by the upper classes to differentiate themselves from the lower ones (snob effect). In order to expound Simmel’s idea of a fashion cycle and by building on Karni/Schmeidler (1990), Pesendorfer (1995) constructs a dynamic dating-game model where agents of both upper and lower classes try to match those of the upper classes.

In contrast to fashion-cycle models, ours is not dynamic and differentiation between consumers is realized by way of a Hotelling model rather than by upper and lower classes. The objective of our model is to analyze business strategy at the cross-over point of heterogeneity, exclusivity, and installed bases.

Somewhat close to our model are those by Navon/Shy/Thisse (1995), Grilo/Shy/Thisse (2001), and Amaldoss/Jain (2005). These authors simultaneously develop network-effect and snob-effect models. In contrast to our paper, they do not consider installed bases or degrees of exclusivity. We also mention the recent survey by Gierl/Plantsch (2007) and a series of papers by Lynn (1989, 1991, 1992) that are concerned with the psychology of snob effects.

Our paper can also be seen as a contribution to the large literature on branding, see for example Aaker (2004) or Esch (2007). A main question in this literature concerns the brand value associated with the image, familiarity, or perceived quality of the product. In our model, we have two central concepts which may be associated with a brand value, exclusivity (measured by the difference of network sizes) and the degrees of exclusivity. We argue that exclusivity (difference of network sizes) is a function of prices and hence an accidental characteristic of a product which cannot be linked to the brand value. We show below that we can (in principle) measure how much the degrees of exclusivity are worth. We do so by following Goldfarb/Lu/Moorthy (2007) who define brand value as the “difference in equilibrium profit between the brand in question and its counterfactual unbranded equivalent”.

Our model yields important managerial implications. We will be able to show how the degrees of exclusivity, the snob-effect strength, installed bases, and heterogeneity influence market outcomes and competition intensity. In particular,

- we find an anti-“self-fulfilling prophecy” effect for snob-effect goods and that unilateral exclusivity increases demand (Result 1),
- we show that a high snob-effect strength and high degrees of exclusivity dampen competition intensity (Result 2),
- our model finds that a high snob-effect strength may be harmful to a firm disadvantaged with respect to the installed base (high installed base) or with respect to the degree of exclusivity (low degree) (Result 3), and...
we arrive at high degrees of exclusivity for both firms if the costs of exclusivity are sufficiently low (Result 4).

The paper is structured as follows: In Section 2, we recapitulate the differentiation model due to Hotelling (1929) which we augment by pricing (see Neven 1985) and by snob effects. Section 3 is dedicated to demand functions with given and with rational expectations. In Section 4, we solve the pricing game (2nd stage) for given exclusivities, while Section 5 refers to the first stage where exclusivities are decided on. Section 6 offers some conclusions.

2. Product Differentiation and Snob Effects

2.1. A Two-Stage Model

We develop a two-stage model in order to analyze exclusivity and price competition. The players, i.e., the firms 1 and 2, choose exclusivity degrees \(d_1\) and \(d_2\), respectively, at the first stage. At the second stage, they set prices \(p_1\) and \(p_2\) with complete information of the exclusivities chosen in the first stage. We use the solution concept of subgame perfection, i.e., we apply backward induction.

2.2. Product Differentiation and Hotelling’s Linear City

We infer demand as a function of both product differentiation and snob effects. Product differentiation refers to properties of the goods which are not reflected in degrees of exclusivity or in the strength of the snob effect (see below).

We model differentiation via Hotelling (1929)’s linear city, normalized to one (Fig. 2). The two firms are positioned at the ends of the linear city.

Consumers are characterized by \(h\), such that \(0 \leq h \leq 1\). \(h\) also represents consumer \(h\)’s distance to the position of firm 1. The most obvious interpretation of the distance between a consumer and a producer is geographical when the point of consumption (\(h\)) differs from the point of sale (0, or 1). Alternatively, distance can be interpreted in terms of product properties in a product space; a consumer at \(h\) prefers product characteristic \(h\) but has to choose between 0 and 1. In either case, the distance of a consumer to the firms is costly for the consumer. We assume that these costs amount to \(th\) for a customer choosing firm 1 and \(t(1-h)\) for a customer choosing firm 2. The factor \(t \geq 0\) is a parameter of heterogeneity. For example, in the geographical interpretation, \(t\) is the rate of transportation costs per distance unit. Homogeneity of products is implied by \(t = 0\).

2.3. Snob Effects: Degree of Exclusivity and Snob-Effect Strength

In the introduction, we defined snob network size as the product of snob-effect strength and network size. We calculate the network size of product 1 as \(x_1^{exp} + x_1^{ib} + (1 - d_1)(x_2^{exp} + x_2^{ib})\), where \(x_1^{exp}\) stands for the expected sales and \(x_1^{ib}\) for the installed base of firm 1. \(x_2^{exp}\) and \(x_2^{ib}\) are the expected sales and the installed base, respectively, of firm 2. Thus, the network size for product 1 depends on the expected total network size of firm 1, \(x_1^{exp} + x_1^{ib}\), and on the expected total network size of firm 2 weighted by \(1 - d_1\).

The parameter \(d_1\) is called firm 1’s degree of exclusivity and lies in the range between 0 and 1. It is close to 1 if product 1 is very exclusive. In this case the relevant network for a consumer of product 1 includes only the consumers of product 1. Due to communication policy, distribution policy, and other policies, product 1 is so much set apart from product 2 that consumers of product 1 do not take product 2 into account. At the same time, \(d_2\) can have a low value. For consumers of product 2, the sales of product 1 do count in such a case. Similar values of the degrees of exclusivity are also possible. For example, if firm 1 sells cars, and the cars sold by firm 2 are in a similar class, equally difficult to obtain etc., \(d_1\) and \(d_2\) may both hold intermediate values.

The snob network size for product 1 is thus defined as \(s(x_1^{exp} + x_1^{ib} + (1 - d_1)(x_2^{exp} + x_2^{ib}))\). Remember that the snob-effect strength \(s\) is considered a market parameter independent of the marketing instruments and thus the same for both firms. \(s\) is high for snob-effect products such as cars or evening gowns and low for non-snobbish products such as paper-tissue handkerchiefs or stockings.

By making its own products non-exclusive towards those of firm 2 (through a small \(d_1\)), firm 1 increases the size of its network and thus decreases the snob effects. Analogously, the snob effects for product 2 are given by \(s((1 - d_2)(x_1^{exp} + x_1^{ib}) + x_2^{exp} + x_2^{ib})\).

3. Demand Function with Given and with Rational Expectations

3.1. Demand with Given Expectations

We assume that the consumers’ decisions depend on a simple index, the effective price given by effective price = price + transportation cost (according to Hotelling model) + snob network size (as in the last section).

We assume that all consumers buy one and only one of the two products. Thus, consumers of type \(h\) buy product 1 if

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**Figure 2: Hotelling’s linear city and product differentiation**

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Solving the inequality for $h$, we obtain Result 1:

**Result 1:** Assuming a uniform distribution of consumers along the linear city and normalizing the “number” of consumers to 1, we find firm 1’s demand in case of given expectations

$$x_{1}^{\text{given}}(d_{1}, d_{2}, p_{1}, p_{2}, x_{1}^{\exp}, x_{2}^{\exp}, x_{1}^{ib}, x_{2}^{ib}) = \frac{1}{2} + \frac{1}{2\partial} \left( \frac{p_{2} - p_{1}}{\text{price advantage of firm 1}} + \frac{\S v}{\text{suffix advantage of firm 1}} \right).$$

Because of our assumption that every consumer buys exactly one unit of either product 1 or product 2, we have $x_{1}^{\text{given}} + x_{2}^{\text{given}} = 1$. Thus, total demand is given and independent of prices, exclusivity degrees and heterogeneity.

We can take note of some price and product-policy aspects:

- **Product differentiation diminishes price competition.**
  Product differentiation is relevant for price policy. The higher $t$, the less important are the prices for the buying decision of the consumer. With high values of $t$, price cuts hardly pay; therefore product differentiation gives room for price increases. We interpret $\frac{1}{2t}$ as a measure of the intensity of competition. Generally, competition intensity is defined as low if a price decrease leads to a small increase in sales. Here, a low intensity of competition is associated with a high value of $t$.

- **Past and expected sales are important for the demand of snob-effect products.**
  With $d_{1} = d_{2} = d$ (identical degrees of exclusivity), expected network size advantage $v$ can be written as $v = d \left( (x_{1}^{\exp} - x_{1}^{\text{ib}}) + (x_{2}^{\exp} - x_{2}^{\text{ib}}) \right)$.
  Thus, we obtain a kind of anti-“self-fulfilling prophecy”.
  Products which are believed to be successful become unsuccessful due to this very belief. To exploit this mechanism, firms may try to signal low values by flagship stores or “über-über-private-favorite-clients-only studio sales” (see introduction for further examples). In case of $d_{1} = d_{2} = 0$ (equal network sizes) or in case of $s = 0$ (no snob effects), differences in expected sales or in the installed base do not matter.

- **Unilateral exclusivity increases network size advantages.**
  In order to increase demand, it is advantageous to foster unilateral exclusivity, i.e., firm 1’s demand is high if $d_{1}$ is high and $d_{2}$ is low. Formally, this can be seen by
  $$\frac{\partial v}{\partial d_{1}} = x_{1}^{\exp} + x_{1}^{ib} > 0 \quad \text{and} \quad \frac{\partial v}{\partial d_{2}} = -(x_{1}^{\exp} + x_{2}^{ib}) < 0.$$

### 3.2. Demand with Rational Expectations

So far, we did not specify how consumers form expectations about future sales. Since these expectations feed into the expected network size advantage (see Fig. 3), firms will try to influence expectations. However, they will not succeed in the long run. Therefore, we assume that consumers have rational expectations, i.e., they expect the sales that will actually occur. Rational expectations or perfect foresight means that agents foresee the economy’s development as perfectly as the modeler can.

In case of rational expectations, the interlinkages depicted in Fig. 3 are understood by the consumers so that

$$x_{1}^{\exp} = x_{1}^{\text{given}}(d_{1}, d_{2}, p_{1}, p_{2}, x_{1}^{\exp}, x_{2}^{\exp}, x_{1}^{ib}, x_{2}^{ib})$$

and

$$x_{2}^{\exp} = x_{2}^{\text{given}}(d_{1}, d_{2}, p_{1}, p_{2}, x_{1}^{\exp}, x_{2}^{\exp}, x_{1}^{ib}, x_{2}^{ib})$$

result.
We solve the first of these equations for \( x_1 \) by letting \( x_1^{\text{rep}} = x_1^{\text{given}} \) and \( x_1^{\text{rep}} + x_2^{\text{rep}} = 1 \), obtaining Result 2:

**Result 2:** Rational expectations lead to firm 1’s demand

\[
x_{1}^{\text{rational}}(d_1, d_2, p_1, p_2, x_1^b, x_2^b) = \frac{1}{2} \left[ \frac{1}{\lambda} \text{competition intensity of firm 1} \right] \left( \frac{p_2 - p_1}{\text{price advantage of firm 1}} + \frac{1}{2} \text{fulfilled expectations snob advantage of firm 1} \right),
\]

where \( \beta \) denotes the base advantage of firm 1, \( \beta = x_1^b + (1 - d_1)x_1^b - (x_2^b + (1 - d_2)x_2^b) \), \( \Delta d \) the exclusivity advantage of firm 1, and \( \lambda \) the competition intensity in case of fulfilled expectations,

\[
\lambda = \frac{1}{2r + s(d_1 + d_2)}.
\]

This demand function carries several important implications for the marketing of snob-effect products:

- **Snob effects diminish price competition under rational expectations.**
- For \( s = 0 \) or \( d_1 = d_2 = 0 \), we have \( \lambda = \frac{1}{2r} \) as for given expectations. Competition intensity \( \lambda \) is a negative function of \( s(d_1 + d_2) \), i.e., competition is lower in the presence of snob effects. Under given expectations, we witness a quantity increase of \( \frac{1}{2r} \) per unit of price decrease.

This is not the end of the story when snob effects are taken into account. Snobbish consumers realize that quantity becomes higher than expected and they reduce demand accordingly. Finally, one unit of price decrease leads to an increase in demand of \( \lambda = \frac{1}{2r + s(d_1 + d_2)} \leq \frac{1}{2r} \).

Qualitatively, this effect has already been shown for the case of monopolistic supply by Leibenstein (1950).

The contrast between Result 1 (demand curve for given expectations) and Result 2 (demand curve for rational expectations) provides a challenge for both marketing research and marketing policy. Concerning research, snob effects drive a wedge between short-run consequences of price changes (which can be substantial) and long-run effects (which turn out to be relatively small). With respect to policy, pricing should be oriented towards the long term and prices should be higher than those optimal from the short-run perspective.

- **Unilateral exclusivity can be a successful antidote against a small installed base of the competitor.**

A firm with a low installed base has a competitive advantage over her rival. Nevertheless, it becomes possible for the competitor to overcome this disadvantage through unilateral exclusivity. For example, assume \( x_1^b = 0 \) and \( x_2^b = 0 \). To take an extreme example, let \( d_1 = 1 \) and \( d_2 = 0 \) so that we have \( \Delta d = 1 \). Then,

\[
2\beta + \Delta d = 2(x_1^b + x_2^b) - d_2(x_2^b - (x_1^b + x_2^b - d_1(x_1^b))) + \Delta d = 1
\]

so that the fulfilled-expectations network advantage lies on the side of firm 1.

Since the degrees of exclusivity are very subjective factors, firms need subtle communication and other policies to gain the exclusivity advantage.

- **Snob effect goods are ordinary goods.**

The above demand curve reflects snob effects which depend on sales. While high prices reduce sales and increase snob effects, there is no direct link from prices to snob effects. Therefore, in contrast to Veblen effects, the demand curve is downward sloping.

### 4. Price Competition (Second Stage)

In order to calculate the subgame perfect equilibria, we begin with the last stage of the game, the price competition. We assume that production costs are independent of exclusivity and that exclusivity is obtained at zero costs. In order to discard boundary solutions, we assume

\[
-\frac{3}{s\lambda} \leq 2\beta + \Delta d \leq \frac{3}{s\lambda}, \text{ or, equivalently, } \\
\frac{s}{\lambda} \geq 6(2\beta + \Delta d)
\]

Intuitively, products have to be sufficiently heterogeneous.

Defining profits of firm 1 by \( \Pi_1(p_1, p_2) = (p_1 - c)x_1^{\text{rational}} \), we obtain the price reaction function of firm 1 given by

\[
p_1^0(p_2) = \arg \max_{p_1} \Pi_1(p_1, p_2) = \frac{1}{2} \left( p_2 + c + \frac{1}{2\lambda} + \frac{s}{6}(2\beta + \Delta d) \right).
\]

Setting up an analogous reaction function for firm 2, and solving the resulting linear equation system, Result 3 follows:

**Result 3:** At the second stage of our game, the Nash prices are given by

\[
p_1^0(d_1, d_2) = c + \frac{1}{2} + \frac{s}{6}(2\beta + \Delta d) \quad \text{and} \quad p_2^0(d_1, d_2) = c + \frac{1}{2\lambda} + \frac{s}{6}(2\beta + \Delta d).
\]

Quantities and profits in equilibrium are equal to

\[
x_1^0(d_1, d_2) = \frac{1}{2} + \frac{1}{6} s(2\beta + \Delta d) \geq 0
\]

\[
x_2^0(d_1, d_2) = \frac{1}{2} + \frac{1}{6} s(2\beta + \Delta d) \geq 0
\]

\[
\Pi_1^0(d_1, d_2) = \frac{1}{36} \frac{(3 + \lambda s(2\beta + \Delta d))^2}{\lambda} = \frac{[x_1^0(d_1, d_2)]^2}{\lambda}
\]

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The equilibrium values obey the following comparative-statics results:

$$\frac{\partial \Pi^1}{\partial t} = 1,$$

$$\text{sign} \left( \frac{\partial x_1^d}{\partial t} \right) = -\text{sign}(2\beta + \Delta d),$$

$$\frac{\partial \Pi^1}{\partial d_1} \geq 0',$$

$$\frac{\partial \Pi^1}{\partial d_2} = s\left( \frac{2}{3} + \frac{1}{3} x_1^d \right) > 0,$$

$$\frac{\partial x_1^d}{\partial d_1} > 0, \quad \frac{\partial x_1^d}{\partial d_2} < 0,$$

$$\frac{\partial \Pi^1}{\partial s} = \frac{1}{3}(x_1^d) \left( 2 + x_1^d \right) + \frac{1}{3} d_1(1 - x_1^d),$$

$$\frac{\partial x_1^d}{\partial s} = \frac{1}{3}(2\beta + \Delta d) \left( \frac{t}{2s + (d_1 + d_2)} \right)^2$$

where the results marked by a star (*) are shown in the Appendix.

We have the following policy conclusions, obtained by differentiating the variables with respect to the appropriate parameters:

- **Product differentiation leads to price and profit increases for both firms.** This is a standard result.

- **Exclusivity pays.**

With respect to exclusivity, the interest of each firm is clear-cut: The higher the degree of exclusivity, the higher both price and sales of the more exclusive firm. We can also express this by calculating the brand value of the degree of exclusivity. Taking firm 1, the brand value of \(d_1\) can be defined by \(\Pi^1(d_1, d_2) - \Pi^1(0, d_2)\), the profit at degree \(d_1\) minus the profit at degree 0. In order to obtain a manageable brand value, we assume \(x_1^d = x_2^d = \frac{1}{2}\)

\[
\Pi^1(d_1, d_2) = \frac{1}{36} \left( 3 - 2\lambda s\beta - \lambda s\Delta d \right)^2 \frac{x_1^d (d_1, d_2)^2}{\lambda}
\]

\(d_2 = \frac{1}{2}\), and \(t = 1\). We then find the brand value of \(d_1\)

\[
\Pi^1(d_1, d_2) = \Pi^1(d_1, d_2) - \Pi^1(0, d_2)
\]

\[
= \frac{1}{36} \left[ 336 + 136\alpha \lambda s + 200\alpha^2 \lambda s + 50\alpha^3 \lambda s + 9s^2 \right] > 0
\]

which is a positive function of \(s\), the snob-effect strength. Plotting this brand value for alternative snob-effect strengths yields an increasing graph such as Fig. 4 for \(s = 1\).

- **Snob-effect strength is good for firms with fulfilled-expectations snob advantage.**

The firm having the fulfilled-expectations snob advantage on its side (firm 1 in case of \(2\beta + \Delta d > 0\)) benefits from a high snob-effect strength. This can be seen from \(\frac{\partial \Pi^1}{\partial s} > 0\) and \(\frac{\partial x_1^d}{\partial s} > 0\). On the other hand, firm 2 may not benefit as can be seen from the following example. Consider \(d_1 = 1, d_2 = 0, x_1^d = 0,\) and \(x_2^d = 1\) (which imply \(\lambda = \frac{1}{2 \lambda s (d_1 + d_2)} = \frac{1}{2 \lambda s} , \beta = 1\) and \(2\beta + \Delta d = 3\)). Then, we obtain \(\Pi^1 = \frac{1}{2 \lambda s} \) and \(\frac{\partial \Pi^1}{\partial s} < 0\).

Producers with fulfilled-expectations snob advantage need to seek out markets with individually minded consumers who like to stand out from “hoi polloi”.

5. **Competition for Exclusivity (First Stage)**

We will now turn to the first step, i.e., the determination of the degrees of exclusivity. Note that specificity is not a parameter like price or research expenditure that firms can decide on directly. Instead we assume that firms use their product, distribution, and communication policy in order to obtain the desired degree of specificity.

The results derived in the previous section \(\frac{\partial \Pi^1}{\partial d_1} > 0, \frac{\partial \Pi^1}{\partial d_1} > 0\) and the corresponding inequalities for firm 2) lead straightforward to Result 4:

**Figure 4: The brand value of firm 1’s degree of exclusivity**

\[\text{Brand value of } d_1\]
Result 4: If the degrees of exclusivity are fixed at zero costs, we obtain the first-stage actions
\((d_1^*, d_2^*) = (1, 1)\)

in a subgame-perfect equilibrium. Then, equilibrium prices, quantities and profits are
\[
\begin{align*}
p_1^*(1, 1) &= c + t + s + \frac{t}{3}(x_2^b - x_1^b), \\
p_2^*(1, 1) &= c + t + s - \frac{t}{3}(x_2^b - x_1^b), \\
x_1^b(1, 1) &= \frac{1}{2} + \frac{s}{6(t + s)}(x_2^b - x_1^b), \\
x_2^b(1, 1) &= \frac{1}{2} - \frac{s}{6(t + s)}(x_2^b - x_1^b), \\
\Pi_1^*(1, 1) &= \frac{1}{18}(t + s) \left( 3 + \frac{s}{t + s} (x_2^b - x_1^b) \right)^2, \\
\Pi_2^*(1, 1) &= \frac{1}{18}(t + s) \left( 3 - \frac{s}{t + s} (x_2^b - x_1^b) \right)^2.
\end{align*}
\]

We find the following recommendations for business strategy:
- **For sufficiently low costs of achieving exclusivity, firms should aim for high degrees of exclusivity.**
  - In the introduction, a wide variety of exclusivity-generating instruments were introduced by way of examples. Obviously, some of them will be quite costly. From the snob-effect point of view, firms will try to achieve some degree of exclusivity.
- **Small installed bases pay.**
  - Prices, outputs, and profits are a negative function of the installed base. Therefore, firms producing snob-effect goods have good reason to reduce demand in one period in order to benefit in later periods.
- **Strength of snob effect.**
  - The uniform distribution of consumers along the Hotelling space gives obvious room for additional research.
- **Another serious restriction is** \(x_1 + x_2 = 1\). By construction, both firms cannot be successful in offering small amounts. Of course, while this feature of our model is convenient from the tractability standpoint, it gives rise to obvious modifications.
- **The paper shows that signaling exclusivity pays.**
  - Since there is no uncertainty involved in this paper, the literature on signaling does not apply. However, future development may also take signaling into account.
- **Empirically, snob effects and network effects are not necessarily uniform as the fashion-cycle literature cited in the introduction makes clear.**
- **In reality, different consumers attach different value to exclusivity.**
  - However, in our model, the snob-effect strength \(s\) is the same for all consumers, a serious shortcoming.
- **We assume that product, distribution, and communication policy influence the degrees of exclusivity while prices do not.**
  - This is an artifact of our two-stage model. Future models should acknowledge the Veblen effect that high prices lead to high degrees of exclusivity.
- **We assume that consumers harbour rational expectations.**
  - Of course, this requires them to have a good overview of the market. Therefore, asymmetric-information models are needed to deal with the issue of creating “false” expectations.
- **Finally, the introduction of costs of creating exclusivity might well change our clear-cut results.**
  - Indeed, non-exclusive strategies are common for discount markets like WalMart or Aldi. To cite an example from the art market (see Bongard 1967, pp. 45): The Arts International Galleries in the New York of the 60s offered a large number of oil paintings of unknown artists in different styles and with different motives. The sales of these galleries amounted to 125 000 pictures yearly with prices between 5 and 75 US dollars.

We now turn to the marketing implications. While snob effects harbour the promise of increased profitability, the marketing policy of snob effects is not an easy one. Our model emphasizes the existence of complex strategic interconnections between different variables of sales policy – heterogeneous, network size, degree of exclusivity, and strength of snob effect – and their influence on pricing policy. These strategic issues are central for successful brand management.
- **The central result of our paper is this:** While, at first sight, snob effects seem to reduce demand, snob effects have positive impacts for producers as well. A high exclusivity degree influences a firm’s profit twofold: On the one hand, it increases the consumers’ willingness to buy (direct profit effect) while, on the other hand, it influences the competition intensity. In the model presented here the following causality holds: the more exclusive the products the lower the incentive of the firms to undercut competitors’ prices (indirect profit effect). Exclusivity then leads to higher profit due to diminished competition intensity.

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Turning to the difficulties of snob-effect marketing, it is very important to find out whether the product in question is indeed a snob-effect good or, quite to the contrary, a network-effect good. Increasing exclusivity will prove catastrophic for network goods. Telling snob-effect goods apart from network-effect goods is not an easy undertaking because a good may well be a snob-effect good for one group of consumers and a network-effect good for others. This relates to the parameter \( s \) in our model.

Snob-effect (and network-effect) products pose a major challenge for marketing research as their sales volume does not only depend on prices but also on expected sales or even on expected sales in equilibrium. This dependence makes it difficult to interpret results from pre-tests in referential markets.

Appendix
We show \( x^3_1(d_1, d_2) \geq 0, x^3_2(d_1, d_2) \geq 0, \) and \( \frac{\partial \Omega^1(d_1, d_2)}{\partial t} \geq 0. \) These follow from our assumption
\[
\frac{3}{\lambda s} \leq 2 \beta + \Delta d \leq \frac{3}{\lambda s}, \text{ or equivalently, }
\]
\[
t \geq s \left( \frac{1}{2} d_1 + d_2 + \frac{1}{6} [2 \beta + \Delta d] \right).
\]
Indeed, we have
\[
x^3_1(d_1, d_2) = \frac{1}{2} \frac{3}{\lambda s} (2 \beta + \Delta d)
\]
\[
\leq \frac{1}{2} \frac{3}{\lambda s} \left( \frac{3}{\lambda s} \right) = 0,
\]
\[
x^3_2(d_1, d_2) = \frac{1}{2} \frac{3}{\lambda s} (2 \beta + \Delta d)
\]
\[
\leq \frac{1}{2} \frac{3}{\lambda s} \left( \frac{3}{\lambda s} \right) = 0
\]
and
\[
\frac{\partial \Omega^1}{\partial t} \geq 72 \left( 1 + s \left( \frac{d_1 + d_2}{2} - \frac{1}{6} [2 \beta + \Delta d] \right) \right) + \frac{\frac{d_1 + d_2}{2} - \frac{1}{6} [2 \beta + \Delta d]}{(2t + s(d_1 + d_2))^2}
\]
\[
\geq 0.
\]

References