Cloak or Flaunt? – The Firm’s Fashion Dilemma

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Abstract

Often firms in the fashion industry purposefully withhold information on the identity of their most fashionable or acclaimed products. The benefit of this strategy is not obvious since we would expect higher awareness about fashion hits to increase demand. Moreover, even within the fashion industry, some firms actively promote their fashion hits. This divide in communication strategies cannot be explained by the existing wealth signaling models of fashion (Veblen 1899, Pesendorfer 1995). Thus, the main research question of this paper is: Why do some firms cloak fashion hits, while others flaunt them?

I suggest that fashion is a social device that may facilitate social interactions by: 1) allowing consumers to signal to each other that they are “in the know,” and, 2) enabling them to fit in with their peers. I present a model of social interactions, where players use fashion goods to signal own type and interpret that of others. In this context, I examine how the firm’s communication strategy affects the value of fashion as a social device, and how this in turn affects firm’s incentive to cloak or flaunt fashion.

The firm faces an interesting dilemma - if it reveals the identity of the fashion hit, then the signaling value of the product is diluted since most consumers can recognize and purchase it. However, if there is very little information in the market, its value is again undermined since there are fewer social interactions in which a consumer can use it as a signaling device. Given these trade-offs, I find the conditions under which the firm prefers to withhold information on the identity of its fashion hits. Interestingly, the firm is more likely to cloak fashion if a large fraction of its consumers are interested in using fashion as a social device. I also examine consumers’ and firm’s incentives to preserve exclusivity and find that they are not perfectly aligned. Finally, I find that social welfare can be enhanced when there is less information in the system.

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1 Introduction

Carpe Diem, is an avant-garde fashion label by Maurizio Altieri, who is known among the fashion cognoscenti for his secretive nature. Altieri doesn’t advertise or promote his products in any way, to the extent that he doesn’t even let himself be photographed. In fact, he sells his products through selective stores that serve his agenda of remaining under the radar. For example, consider Atelier New York, a Carpe Diem stockist that is regarded as a Mecca of menswear by fashion-insiders. However, Atelier isn’t much to look at; has an unmarked storefront except for a minuscule ‘A’ logo on the door and is located in an unfashionable neighborhood in NYC. This crafted invisibility, while seemingly strange, is not unique to Carpe Diem. Many chic fashion designers like Endovanera, Number (N)ine, etc., seem equally intent on hiding themselves. For instance, “Location was everything to Takahiro Miyashita when opening his first Number (N)ine store in the States. The extremely popular Japanese menswear designer was looking for a location, […] where only people looking for it would find it (he had to move his Tokyo store three times when the locations got too mainstream).”

This phenomenon of strategically withholding information in the arena of fashion is not confined to avant-garde labels like Carpe Diem. As a matter of fact, well established fashion houses routinely withhold information on their ‘fashion hits’ or the ‘it’ items of the season. Labels like Yves Saint Laurent (YSL), Versace, and Marc Jacobs usually have multiple product lines, of which only one (if any) goes on to become a fashion hit. However, these firms hardly ever openly reveal their best-sellers or fashionable items in their stores, websites or ad campaigns. Instead, they diligently promote all their lines for a given season without picking any favorites. In fact, their websites don’t even divulge whether a particular product is part of a new line or was continued from the last season.

Consider, for example, the marketing strategy of YSL in Spring 2006, when it had one of the most fashionable ‘it’ bags in recent times – Muse. (An ‘it’ bag is essentially a sought after bag, is carried by the fashion elite, is in great demand and sells-out long before the end of the season.) Even though Muse was deemed to be the ‘it’ bag of the season, YSL never explicitly promoted the bag as fashionable. The white Muse sold out barely days after its launch, without any public push from YSL. In fact, this wasn’t the only

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1A rare article (Shoham 2006) on Altieri says – “he doesn’t give interviews, doesn’t let himself be photographed, doesn’t advertise, doesn’t have shows, doesn’t loan clothes for shoots, doesn’t market his wares other than to a handful of stores in the world, […]. Why in the world would a clothes designer behave like a radical underground artist? What does commerce have to do with anti-commercialism like this?”

2http://www.refinery29.com/refinery/NYCmen_08.php
time YSL refrained from promoting its fashion hits. Recently, in Spring 2008, YSL introduced among other bags, a “Muse Two” bag, which was regarded as the ‘it’ bag of the season, with long waitlists\(^3\). In spite of Muse Two’s critical acclaim, YSL didn’t explicitly promote this bag in its ad campaign, website or stores. In fact, YSL ran three advertisements featuring bags, and only one of them featured Muse Two. Further, all three ads were given equal prominence, i.e., looking at the ad campaign one could not infer that Muse Two was in fact the ‘it’ bag (see Figure 8 in the appendix). Even their website does not offer any clue as to which of their bags is the ‘it’ bag. (Figure 9 in the appendix shows a snapshot of the handbag section of YSL’s website from Spring 2008.) The website simply portrays dozens of bags with the Muse Two not even appearing on the first page of their handbag section.

YSL is by no means the only fashion label that eschews promoting its fashion hits. Recently, the Marc Jacobs store in NYC, Greenwich Village redid its storefront to resemble a low rent army-navy store and sold vintage military coats for $59. The coats went on to become fashion hits and were later featured in New York Times (Colman 2008). It is notable that Marc Jacobs chose to market them such that only those ‘in the know’ could recognize the storefront and buy them, instead of promoting them as “hot picks”.

This apparent indifference to informing consumers about fashion hits is surprising, especially since many other firms consistently advertise fashion – labels like Ralph Lauren (RL) and Gap explicitly promote their most fashionable items. For example, in Spring 2008, RL promoted its popular “Scarf handbag” as the most fashionable bag of the season. In fact, it was the only bag featured in their ads and was heavily promoted on their website (see Figures 10, 11 in the appendix). On a similar note, Gap ran the successful ‘Khakis’ ad campaign in the 90s, touting Khakis as fashionable.

At first glance, we would expect higher awareness about fashion hits to increase demand, since consumers yearn for information on fashion hits\(^4\). Hence, it is puzzling that firms like YSL conceal this information. Further, firms that don’t advertise their fashion hits seem to be the ones that cater to the ‘fashion-conscious’ crowd. For example, YSL and Marc Jacobs cater to the fashion-conscious (unlike Gap and RL) and, if anything, we would expect these firms to be the ones advertising fashion hits.

This paper examines this divide in the communication strategies of fashion firms – Why do some firms cloak fashion, while others flaunt it? More interestingly, why is it that the firms catering to fashion-conscious

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\(^3\) At the end of the season, Style.com, the leading fashion website had took stock of the fashion hits of Spring 2008 and identified YSL’s Muse Two as one of most waitlisted accessories of the season.

\(^4\) In fact sleuthing trends and ‘it’ items has given rise to an industry of fashion magazines, websites, experts and blogs whose primary value proposition is that they can navigate the precarious world of fashion and unearth fashionable trends and accessories, a task which the average consumer may not find herself up to.
crowds seem less inclined to promote their fashion hits? Further, the word fashion itself seems imprecise – popular products sported by everyone and advertised intensely (like Gap’s Khakis) are often considered ‘fashionable’; so are elusive products sported by relatively few people (like Muse). What exactly is ‘fashion’ then and how does the nature of fashion shape a firm’s communication strategy?

I suggest that fashion is a social device that facilitates social interactions by – 1) allowing people to signal taste, access to information, and 2) enabling them to fit in with peers. I model social interactions as a ‘dating game’, where players signal own type and interpret that of others. In this context, I examine how the firm’s communication affects the value of a social device and how this in turn affects the firm’s incentives to cloak or flaunt fashion. Consider the firm’s dilemma: if it reveals too much information, then the signaling value of the fashionable hit is diluted since even the uninformed can buy it. However, if there is very little information in the market, its value is again undermined since the number of social interactions in which consumers can use it as a social device decreases. Given these trade-offs, I find the conditions under which it is optimal for the firm to withhold information.

Next, I examine the role of various market characteristics on the firm’s incentive to withhold information – interestingly, the incentive to advertise fashion hits increases if a large fraction of consumers are uninterested in fashion-based social interactions. Further, we can show that consumers’ and firm’s incentives to maintain exclusivity are not aligned. Finally, I also find that less information can be socially optimal.

The rest of the paper is organized as follows: Section 2 develops a theory of fashion and discusses related literature. Sections 3 and 4 present the model and analysis. Section 5 then investigates the equilibrium properties and comparative statics. Section 6 contrasts consumers’ and firm’s incentives to maintain exclusivity, and Section 7 examines the welfare implications. Finally, Section 8 discusses future work and limitations, and concludes.

2 Background

2.1 What is Fashion?

The word ‘fashion’ is semantically ambiguous, so I start by examining the broad underpinnings of what constitutes fashion. One of the defining attributes of fashion is that it is consumed conspicuously – most, if not all, fashion categories, such as clothes and bags, are external accessories meant for public display. The conspicuous nature of these products suggests that they are consumed not only for inherent utility, but also
as a social device. In fact, in a seminal essay on fashion, the prominent sociologist Simmel (1904) suggested
that fashion satisfies two paradoxical social needs of people – the need for group cohesion and the need for
individual elevation from the society:

“it (fashion) satisfies the demand for social adaptation; it leads the individual upon the road
which all travel, [...] At the same time, it satisfies in no less degree the need for differentia-
tion…”

The dual concepts of emulation and distinction serve as the basis of consumer utility in this paper. These
ideas are also related to the concept of ‘optimal distinctiveness’ in psychology (Brewer 1991). Brewer
suggests that people want to be similar to their social counterparts (group cohesion), but at the same time
they want to portray distinctive positive qualities (distinction).

Consider first the concept of ‘group cohesion’. The idea that social devices allow people to ‘fit in’ with
the society is understandable and the need to conform has been extensively documented in the literature. In a
seminal experiment, Asch (1955) showed that people often conform to erroneous opinions in unambiguous
situations to avoid the discomfort of being isolated in their choices or being the ‘odd one out’; that is, people
conform for social approval. Individuals may also conform to highlight group membership (Wernerfelt
1990, Berger & Health 2007, Kuksov 2007) or to avoid sanctions imposed on deviants (Bernheim 1994).
Also see Jones 1984 for an overview of the experimental evidence on conformity.

In its other role, fashion allows people to differentiate themselves by signaling distinctive positive qual-
ities. For instance, people might want to show that they have good taste, are socially well-connected, in-
formed, wealthy, etc. Each of these qualities can be signaled using external accessories, and in each context,
the word ‘fashion’ would highlight the specific quality to which it is associated.

For example, in certain scenarios, expensive luxury goods may be considered fashionable, in which case,
the word ‘fashionable’ would imply that the owner is wealthy. In fact, Veblen (1899) suggested that fashion
could be a signal of wealth and coined the term ‘conspicuous consumption’. While wealth signaling would
certainly explain the demand for expensive goods, it doesn’t provide a rationale for concealing information.
Indeed, if fashion were synonymous with wealth alone, then concealment is far from ideal since it reduces
the number of people to whom a consumer can signal her wealth, thereby reducing its value. Moreover, the
dichotomy in communication doesn’t follow along the lines of price (expensive vs. cheap). For example, the
inexpensive Marc Jacobs vintage coats were not advertised as fashionable, but neither were the expensive
In fact, the idea that fashion is always initiated by the upper classes is often contested (Bourdieu 1984, Bunevento 2000) as many fashions have humble origins; jeans originated from cowboys and miners, and the western-style male dress owes its origins to Quakers, not aristocracy. More recently, fashions have originated in youth subcultures – the antithesis of rich elite. For instance, the hip-hop style was pioneered by inner-city kids.

I argue that fashion is often a signal on access to information or taste. Indeed, the word ‘fashionable’ is often used synonymously with tastefulness. Bourdieu (1984), an influential sociologist who has written extensively on fashion and social distinction, proposes that ‘cultural capital’ or knowledge manifests itself in individual taste. He argues that taste is reflected in fashion choices, and hence serves as a signal on an individual’s cultural capital:

"what is at stake is indeed "personality” […] The objects endowed with the greatest distinctive power are those which most clearly attest the quality of the appropriation, and therefore the quality of the owner."

Also worthy of note is the distinction that Bourdieu draws between cultural capital and economic capital. He observes that the two can often conflict; those rich in cultural capital might sometimes be economically poor (like artists) and those rich in economic capital might be less affluent in cultural capital and exhibit bad taste (like sports players, businessmen).

Moreover, cultural capital or taste is often a manifestation of access to information. Blumer (1969) studied the cultivation of taste in the context of fashion and suggested that those with extensive access to similar information go on to develop ‘common sensitivities and similar appreciations’. Simply put, those ‘in the know’ develop a similar appreciation, termed as ‘taste’. Indeed, there is evidence to suggest that access to information and fashion are interlinked concepts. For example, Suzuki & Best (2003) attribute the rise of high-school girls or ‘Kogaru’ as fashion leaders in 90’s Japan to their communication networks. Similarly, Thornton (1995) documents the role of information in club cultures. Thus, fashion is a ‘signal on one’s position in a mobile, information-based hierarchy’ (Donath 2007). That is, fashion can be interpreted as a signal on access to information.

In summary, based on the previous literature, I identify two roles of fashion – as a vehicle for conforming, and as a signal on access to information. Note that these correspond to the two paradoxical functions of
fashion suggested by Simmel (1904). Consider the firm’s communication dilemma in this context – If it reveals information, people assume that the owner of a fashionable good was informed by the firm, rather than credit its purchase to the owner’s superior taste or connectivity. This undermines the value of fashion as a discriminating signal. On the flip side, if very few people buy the product, then there are fewer interactions in which a buyer can use it as a social device, thereby decreasing its value.

2.2 Related Literature

The last section presented the background for the theory developed here. In this section, I discuss the related literature in economics and marketing. First consider the economic models of fashion. Karni & Schmeidler (1990) presented one of the earliest theoretical models of fashion. They consider two social groups – high and low, where both types value products used by high types, but not those used by low types and show that fashion cycles can arise in equilibrium. Similarly, Corneo & Jeanne (1994) show that fashion cycles may arise out of information asymmetry. Pesendorfer (1995) added a firm to the mix and adopted the wealth signaling idea of Veblen to show that a monopolist produces fashion in cycles to allow high types to signal their wealth. In contrast, I focus on the firm’s communication strategy to explore why fashion firms often withhold information on the identity of their fashion hits. Thus, this paper presents a model of fashion as a signal on taste, access to information and as a vehicle for conforming, unlike the previous literature.

In a more general context, this paper adds to the body of literature that explores the role of social influence on consumption. In particular, within the marketing literature, this paper relates to Wernerfelt (1990), which showed that ‘cheap talk’ advertising by a firm could serve as a coordinating cue for consumers wishing to signal group affiliations. Similarly, Kuksiov (2007) explores the value of brand image in social communication over and above cheap talk conversation among consumers. While Kuksiov (2007) models a scenario where consumers have ‘horizontal’ preferences in their matches, this paper focuses on a scenario where there is a vertical difference in consumer’s abilities and everyone prefers to match with high types. Moreover, the “dating game” in the model is based on prior models of social interactions. As discussed before, Pesendorfer models interactions as a matching game where signals have to be costly to be credible. In contrast, others have studied games where cheap talk can be informative (Crawford & Sobel 1982, Kuksiov 2005). I model fashion as a costly signal that players use to communicate their type and to conform. On a related front, Berger & Heath (2007) demonstrate that consumers might shun certain products to avoid signaling undesirable characteristics, providing experimental evidence for the identity
signaling model developed here.

This paper also relates to the literature on bestsellers in marketing and economics. Sorenson (2007) studies the value of appearing in the New York Times bestseller list by identifying its effect on sales and product variety. Tucker & Zhang (2008) study the impact of displaying popularity information on sales for niche and mainstream products and find that it benefits the former more. Kalra & Mathur (2008) model a retailers decision to display popularity information and find that it depends on the heterogeneity in consumers’ taste and value for quality. The key point of divergence between this paper and the best-sellers literature is that the focus here is on developing a model to capture the social externalities associated with conspicuous consumption and explore how they affect a firm’s decision to conceal or reveal ’hot’ products.

3 Model

I consider a model that captures the communication and pricing decisions of a firm with multiple product lines, such as YSL, RL.

3.1 Model Set-up

Consider a monopoly, which produces two products A and B. There is a unit mass of risk neutral consumers who consume A, B, or nothing. Nature chooses A or B as the ‘it’ product, where nature can be understood as the fashion elite, such as fashion editors or celebrities who often pick a product as the ‘it’ item of the season. This choice could be driven by the ‘common sensibilities’ of the fashion elite (as suggested by Blumer 1969), which they may have developed by exposure to shared informational sources. Further A and B are equally likely to be chosen, that is, \( \Pr (A \text{ is the ‘it’ product}) = \Pr (B \text{ is the ‘it’ product}) = \frac{1}{2} \). These two states are denoted as \( \theta = A, B \).

After launching A and B, the firm receives perfect information on the state of the world. It is reasonable to expect a firm to know whether its collections are well-received or not. Typically, each season’s fashion cycle begins four to six months in advance; for example, the Fall/Winter collections are exhibited in fashion shows in February, during which the season’s trends emerge as part of feedback from fashion reviewers and editors.

The firm can choose to inform consumers about the ‘it’ product through a costless message \( m \). Specifically, in each state of the world \( \theta = A, B \), it can send three possible messages – \( m = \phi, A, B \). \( m = \phi \) is an uninformative message that doesn’t reveal which of A or B is the ‘it’ product. On the other hand, \( m = A \)

\(^5\)Within the model, the uninformative message \(( m = \phi )\) is equivalent to no message or not advertising at all. In reality, firms
(m = B) implies that the firm is promoting A (B) as the ‘it’ product. The firm also chooses prices \{P_A, P_B\} for A and B. Consumers perfectly observe both message \(m\) and prices \(P_A, P_B\).

If the firm’s message and prices are not perfectly informative, consumers can choose to search to find out which of A, B is the ‘it’ product. Search can be understood as the process by which consumers hunt down informational sources that inform them about the identity of the ‘it’ product. For example, they may attend fashion-weeks, read fashion blogs, magazines or talk to well-connected friends who may have this information. I assume that consumers are heterogeneous in their ability to procure information and that this ability is correlated with other desirable qualities such as taste, sophistication and social connectivity. Heterogeneity in ability is operationalized by assuming that consumers are uniformly distributed on a unit line signifying type \(t\), where the search cost of type \(t\) is given by \(c\beta\), where \(c\) is a constant and \(\beta = 1 - t\). Search fetches a signal \(\sigma = \{A, B\}\) that is accurate with probability \(1 > s > 1/2\); if \(\theta = A\), upon search consumers get \(\sigma = A\) with probability \(s\), and \(\sigma = B\) with probability \((1 - s)\).

Utility from a product is modeled as the sum of consumption utility and social utility:

\[
U = CU + SU
\]  

Let \(CU = V\) for both A and B, i.e., there are no qualitative differences between the ‘it’ product and the other product. Thus, the difference in utility of consuming the ‘it’ product and the non-‘it’ product stems from the social interactions it initiates rather than the consumption utility associated with it. Social utility is modeled as the utility obtained from social interactions. While many factors enable and affect social interactions, here I focus on modeling two specific roles of the products as discussed before – 1) as a device to signal access to information, and 2) as a device to exhibit conformity. Specifically, the utility of consumer \(i\) from interacting with consumer \(j\) is:

\[
SU^j_i = A^j_i + C^j_i
\]

where \(A^j_i\) is the utility obtained by consumer \(i\) from \(j\)’s type and \(C^j_i\) is the utility from conformity.

The first component \(A^j_i\) is modeled as a mean-zero increasing function on \(j\)’s type \(t_j\):

\[
A^j_i = a \cdot (2t_j - 1)
\]

where ‘a’ is a constant (see Figure 1). The key attribute required in \(A^j_i\) is that it should be increasing in \(t_j\); that is, interactions with high types are more enjoyable than those with low types. I choose this particular mean-zero linear functional form for two reasons. First, this functional form normalizes the expected utility may choose to advertise for reasons other than provision of information on fashion hits, like increasing the visibility of the firm (Zhao 2000), or signaling quality (Mayzlin and Shin 2008) in which case they may send an uninformative message.  

\[6\]

The existence conditions for the equilibria conditions are somewhat different than the ones derived here if \(s = 1\).
from interactions without information on partner’s type to zero ($E[A_i^j] = \int_0^1 (2t_j - 1)dt_j = 0$). Second, the simple linear form makes the analysis tractable.

The second component $C_{ij}^j$ is modeled as the utility from conformity. If both partners in a given interaction have the same product, they get a utility $\eta$ from conforming, that is:

$$C_{ij}^j = I(i, j)\eta$$  \hspace{1cm} (4)

where, $I(i, j) = 1$, iff both $i$ and $j$ use the same product.

Finally, some consumers may not value the ability signaled by fashion or yearn to fit in. They may simply buy clothes, bags and shoes for their utilitarian value and not as social devices. Therefore, I segment consumers into two groups – Segment 1 (of size $\gamma$) and Segment 2 (of size $1 - \gamma$), where Segment 2 doesn’t care about the social utility associated with fashion\textsuperscript{7,8} If consumer $i$ belongs to segment 2, then she obtains $SU_{ij}^j = A_{ij}^j = C_{ij}^j = 0$ for all $j$. While these consumers don’t directly affect the firm’s demand (or profits), we will see that they affect it indirectly as they influence others’ value from buying fashion goods. Thus, $\gamma$ is a metric on the social network of the consumers served by the firm.

### 3.2 Timing

Figure 2 depicts the extensive form of the game in detail. At stage 1, the firm launches two products A and B. At stage 2, it receives perfect information on the state $\theta$. At stage 3, the firm chooses message $m \in \{A, B, \phi\}$ and prices $\{P_A, P_B\}$. Consumers observe the message and prices, and they form beliefs on the state $\theta$. At stage 4, consumers decide whether to search or not\textsuperscript{9} At stage 5, all consumers make their

\textsuperscript{7}The existence of segment 2 is not necessary to show the existence of any of the equilibria.
\textsuperscript{8}The disinterest in social interactions displayed by segment 2 doesn’t imply that they are social recluses; rather they don’t use the products in question as a social device.
\textsuperscript{9}An interesting aspect of search is recognition. In this model, all consumers recognize A and B because the message and prices are perfectly visible to everyone. One could also consider a model where some fraction of consumers who have chosen not to search, also haven’t observed the message and prices, and therefore cannot recognize the two products. Such a model provides the same main results as the current one.
<table>
<thead>
<tr>
<th>Stage 1</th>
<th>Stage 2</th>
<th>Stage 3</th>
<th>Stage 4</th>
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<tr>
<td>Firm launches two products A &amp; B.</td>
<td>Firm receives perfect information on which, if any, of A or B is the ‘it’ product.</td>
<td>Firm chooses message ( m \in {A, B, \emptyset} ) and prices ( {P_A, P_B} ). Consumers observe message, prices.</td>
<td>Search Decision Consumers decide if they want to search or not. If they do, they get signal ( \sigma \in {A, B} ) which is correct with probability ( s ).</td>
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<th>Stage 5</th>
<th>Stage 6</th>
<th>Stage 7</th>
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<tr>
<td>Purchase Decision All consumers decide whether to buy one of A, B or nothing. If they buy A or B, they expend ( P_A ) or ( P_B ).</td>
<td>All consumers are randomly matched with another consumer.</td>
<td>Decision to Date Each person in a pair ( (i, j) ) decides if she wants to date her partner or not. If both choose to date, then person ( i ) receives social utility ( SU_{ij}^1 ).</td>
</tr>
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Figure 2: Timeline for the Game

Social interactions are modeled using a stylized dating game that spans stages 6 and 7. At stage 6 all consumers are randomly matched with another consumer from the unit mass of consumers. Random matching is designed to capture the uncertainty in social interactions, where players may not be able to a priori predict their partners’ ability and choices.\(^{11}\) At stage 7, each person in a pair \( (i, j) \) evaluates the potential social utility from her partner based on which they simultaneously decide whether to date or not. Thus, \( i \) is willing to date \( j \) if \( E_i[SU_{ij}^2] > 0 \). If both \( i \) and \( j \) are willing to date each other, then a date takes place, and they obtain social utilities \( SU_{ij}^2 \) and \( SU_{ij}^1 \) respectively. Both parties should be willing for a date to occur since social interactions are voluntary in nature.\(^{12}\) The inference and dating decisions in the dating

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\(^{10}\) I assume that there is no hold-up problem and prices once set remain the same.

\(^{11}\) Both Simmel (1904) and Pesendorfer (1995) discuss the role of randomness in social interactions and its impact in spawning fashion. For example, Simmel suggests that big cities, where people know each other only fleetingly are more likely to spawn fashions than small tribal communities where everyone knows each other. In terms of the analysis, it can be shown that a model where there is a probability \( \chi \) of being matched with a partner whose ability and choices are known and a probability \( (1 - \chi) \) of being randomly matched yields similar results as long as \( (1 - \chi) > 0 \).

\(^{12}\) Investing in an interaction can be costly in time and effort; therefore consumers may not want to expend these costs to indulge in an unprofitable interaction.
game thus mirror real interactions, where subsequent to meeting someone, people often decide whether to interact with them or not, based on external signals derived from clothing and accessories. For example, in a party, one may decide whether to hang out with someone (or not) based on how ‘cool’ she/he looks. Similarly, one may decide to date a relative stranger in a club, based on inferences from his/her external accessories.

4 Equilibria

Without loss of generality, let $\theta = A$. The firm has three possible choices in message $\ - m = A, m = B$ and $m = \phi$. Pricing is a continuous decision, and the firm can choose any set of prices $P_A, P_B$. The firm’s expected profit $\pi(S)$ is a function of its message and prices as follows:

$$\pi(S) = D_A(S) P_A + D_B(S) P_B \quad (5)$$

where $S = \{m, P_A, P_B\}$ and $D_A(S), D_B(S)$ denote the expected demand for A, B when $\theta = A$ for strategy S. Further, I make two tie-breaking assumptions about the message:

Assumption 1: If the firm is indifferent between sending $m = A$ ($m = B$) and sending $m = \phi$, it chooses $m = A$ ($m = B$).

Assumption 2: If the firm is indifferent between sending a truthful message ($m = A$, when $\theta = A$) and sending a false message ($m = B$, when $\theta = A$), it sends the truthful message.

While many possible equilibria can arise, I focus on two equilibria which correspond to the cloaking and flaunting behavior displayed by firms. Section 4.1 discusses a cloaking equilibrium where both the firm’s message and prices are uninformative. Section 4.2 discusses a flaunting equilibrium, where the firm’s message and prices are perfectly informative. Section 4.3 discusses conditions under which cloaking is more profitable for the firm and the existence conditions for both equilibria.

4.1 Cloaking Equilibrium

Consider a perfect Bayesian equilibrium where the firm’s and consumers’ strategies are as follows: for $\theta = A, B$, the firm sends the uninformative message $m = \phi$ and sets prices $P_A = P_B = P(\beta^*)$. Consumers in segment 1 with search costs less than or equal to $c\beta^*$ (where $0 \leq \beta^* \leq 1$) search, and buy A if $\sigma = A$ and buy B if $\sigma = B$. Others in segment 1 and those in segment 2 do not search or buy (as shown in Figure 3). Essentially, $P(\beta^*)$ is the price which induces the cut-off $\beta^*$ among consumers in segment 1.
In equilibrium, equal prices imply that consumers cannot make inferences on the state of the world from the prices. This is consistent with the fact that firms like YSL that don’t explicitly advertise fashion hits, also don’t price the fashion hits and flops differently. In addition to the equilibrium play, I specify the following off-equilibrium beliefs and actions. Let \( \mu(m, P_A, P_B) = (\mu_A, \mu_B) \) be the probabilities attached to states \( \theta = A \) and \( \theta = B \) upon observing \((m, P_A, P_B)\).

(a) \( \mu(\phi, P_A, P_B) = (0.5, 0.5) \), if \( P_A = P_B = P(\tilde{\beta}) \neq P(\beta^*) \) > \( V \).

Consumer i’s action (\( i \in \text{segment 1} \)): if \( 0 \leq \beta_i \leq \tilde{\beta} \), then search and buy according to signal; if \( \tilde{\beta} \leq \beta_i \leq 1 \), then don’t search or buy.

(b) \( \mu(\phi, P_A, P_B) = (0.5, 0.5) \), if \( P_A = P_B = P(\bar{\beta}) \) ≤ \( V \).

Consumer i’s action (\( i \in \text{segment 1} \)): Buy A or B randomly

(c) \( \mu(\phi, P_A, P_B) = (1, 0) \), if \( P_A > P_B \).

Consumer i’s action (\( i \in \text{segment 1} \)): Buy A iff \( P_A < V + \gamma \eta \).

(d) \( \mu(A, P_A, P_B) = (1, 0) \) for all \( P_A, P_B \).

Consumer i’s action (\( i \in \text{segment 1} \)): Buy A iff \( P_A < V + \gamma \eta \).

Notice that off-path, we have specified not only beliefs, but also the best-responses of consumers. Usually, it is sufficient to just specify off-equilibrium beliefs. However, in this game, consumers in segment 1 could have multiple best-response actions following the same belief (because consumers’ decisions are interdependent). Therefore, we need to make assumptions on best-response actions at each node as well. Note that in all these cases, consumers don’t refrain from search and purchase when they see off-equilibrium message or prices - rather they adjust their search, purchase behavior. Thus, these beliefs and actions are more generous to the firm than ones in which consumers refrain from any purchase (which would force the firm to stick to the equilibrium strategy more stringently). Therefore, while many possible types of “cloaking equilbria” could arise depending on the off-equilibrium beliefs and actions, the cloaking equilibrium considered here offers the firm maximum flexibility in its strategies. (See Section C in the appendix for a full discussion of off-equilibrium beliefs.)

Now, I solve for the optimal price specified above \( P(\beta^*) \) by backward induction.
4.1.1 Dating Game

Let \( S_C(\tilde{\beta}) = \{\phi, P(\tilde{\beta}), P(\tilde{\beta})\} \) be a cloaking strategy that induces a cut-off \( \tilde{\beta} \) such that consumers in segment 1 with search cost less than \( c\tilde{\beta} \) search (and buy) and those above don’t (see Figure 3). Now, consider the dating decision of consumers at stage 7 after they have been matched in stage 6. In a random match between \( i \) and \( j \), player \( i \) chooses to date \( j \) iff \( E_i[SU_j^i] > 0 \). Let \( f_i \) and \( f_j \) denote \( i \)'s and \( j \)'s product choices, where \( f_i, f_j \in \{A, B, O\} \), with \( O \) denoting the no purchase option. Since \( i \) infers \( j \)'s type from \( j \)'s product choice (and vice-versa), we can specify \( i \)'s expected utility from dating \( j \) as \( E_i[SU_j^i(f_i, f_j)] \), which is a function of \( i \)'s and \( j \)'s product choices. Thus, \( i \) chooses to date \( j \) iff \( E_i[SU_j^i(f_i, f_j)] > 0 \). Notice that consumers have dual tasks in the dating game – 1) infer partner’s type from the external signal and 2) signal own type to be as high as possible to attract one’s partner to interact.

Lemma 1 In any match \((i, j)\) within the cloaking equilibrium, there is an interaction iff both \( i \) and \( j \) have purchased one of \( A \) or \( B \).

Proof: See Appendix.

In equilibrium, since only consumers with low search costs \((0 \leq \beta \leq \tilde{\beta})\) search and purchase, heterogeneity in ability is reflected in search and purchase behavior. Therefore, purchase of \( A \) or \( B \) is a credible signal on ability and all matches where both partners have purchased one of \( A \) or \( B \) are successful. For example, consider the inferences when both \( i \) and \( j \) have purchased \( A \). \( i \) infers that \( j \) lies between 0 and \( \tilde{\beta} \) and \( i \)'s expected utility from \( j \)'s ability (and vice-versa) is:
Moreover, because both $i$ and $j$ have the same product, they get a utility $\eta$ from conformity, and the total expected utility from the date is:

$$
E_i[SU_i^j(A, A)] = E_j[SU_j^i(A, A)] = a(1 - \bar{\beta}) + \eta > 0
$$

(7)

Both $i$ and $j$ choose to date as the expected utility from the date $a(1 - \bar{\beta}) + \eta$ is positive. Next, consider the case when $i$ has A and $j$ has B (or vice-versa). Here, both still recognize that their partner has low search costs ($0 \leq \beta_i, \beta_j \leq \bar{\beta}$), since only those who search, buy. That is,

$$
E_i[SU_i^j(A, B)] = E_j[SU_j^i(B, A)] = \frac{1}{\beta} \int_{0}^{\bar{\beta}} a(1 - 2\beta) d\beta = a(1 - \bar{\beta}) > 0
$$

(8)

Thus both $i$ and $j$ choose to date even though the conformity component is zero here. (The fact that a date ensues even if $i$ and $j$ have different products may tempt consumers to buy A or B randomly. This possibility is ruled out later.) However, if one of the players has not bought anything, say $j$, $i$’s inference on her is as follows: either $j$ belongs to segment 1 and has high search costs ($0 \leq \beta_i, \beta_j \leq \bar{\beta}$), or she belongs to segment 2 and has search costs ($0 \leq \beta_j \leq 1$). Thus, $i$ infers that on average $j$ has high search costs, which in turn induces $i$ to avoid a date with $j$.

Notice that even though a consumer’s own type doesn’t affect her utility, signaling that she has high ability enables interactions with others who also have high ability, which is useful. Thus, even though a consumer’s own expertise doesn’t affect her utility directly, exhibiting it enables her to attract partners with positive qualities, and thereby affects her utility indirectly. The dating game is thus an endogenous mechanism to capture the rationale for signaling high ability. In the cloaking equilibrium, ‘fashion goods’ thus play an important role in facilitating interactions by alleviating concerns about one’s partner since they enable the low search cost types to differentiate themselves from the crowd and interact with each other.

4.1.2 Search and Purchase Decisions

Now I solve for the optimal search and purchase decisions at stages 3 and 4 by incorporating the dating decisions from above. Let $su_A$ be the expected social utility from using A for a consumer $i$ in segment 1 (when $\theta = A$), after she has bought A:

$$
su_A = \rho_A(\tilde{\beta}) E_i[SU_i^j(A, A)] + \rho_B(\tilde{\beta}) E_i[SU_i^j(A, B)]
$$

(9)

where $\rho_A(\tilde{\beta})$ is the probability of being matched with a partner who has purchased A and $\rho_B(\tilde{\beta})$ is the
probability of being matched with a partner who has purchased B. Recall that consumers choose not to date a partner who has not purchased either A or B; therefore, we don’t have a $\rho_O(\tilde{\beta})$ term in the expression for $su_A$. Since the probabilities of match $\rho_A(\tilde{\beta})$ and $\rho_B(\tilde{\beta})$ depend on the number of consumers who search and purchase, they are also functions of the firm’s strategy $S_C(\tilde{\beta})$. Specifically, in equilibrium, the probability of being matched with a partner carrying A is exactly equal to the expected demand of A (which is $D_A(S_C(\tilde{\beta}))$). Similarly, the probability of being matched with a partner carrying B is $D_B(S_C(\tilde{\beta}))$. Thus we have:

\[ su_A = D_A(S_C(\tilde{\beta})) E_i[SU_i^j(A, A)] + D_B(S_C(\tilde{\beta})) E_i[SU_i^j(A, B)] \] (10)

Similarly, we can also derive the expected social utility from using B and O (nothing) as:

\[ su_B = D_A(S_C(\tilde{\beta})) E_i[SU_i^j(B, A)] + D_B(S_C(\tilde{\beta})) E_i[SU_i^j(B, B)] \] (11)

\[ su_O = 0 \] (12)

The expected demand functions (see Table 1) thus play a crucial role in determining the social utilities. Moreover, it can be easily shown that:

\[ su_A > su_B > su_O \] (13)

Using (13), it can be shown that the optimal action for consumers (who have searched) is to follow their signal because a consumer who uses B when $\theta = A$ obtains lower expected utility than one who uses A.

<table>
<thead>
<tr>
<th>State of the World</th>
<th>Expected Demand for A</th>
<th>Expected Demand for B</th>
</tr>
</thead>
<tbody>
<tr>
<td>$\theta = A$</td>
<td>$\gamma \beta s$</td>
<td>$\gamma \beta (1 - s)$</td>
</tr>
<tr>
<td>$\theta = B$</td>
<td>$\gamma \beta (1 - s)$</td>
<td>$\gamma \beta s$</td>
</tr>
</tbody>
</table>

Table 1: Expected Demand (given cut-off $\tilde{\beta}$)

Next, consider consumers’ search decision. Let $E_i[Search, \tilde{\beta}]$ be the expected utility from search for a consumer $i$ from segment 1, with search cost $c\beta_i$, when the firm’s strategy is $S_C(\tilde{\beta})$. $i$ searches if:

\[ E_i[Search, \tilde{\beta}] = s \left( V + su_A - P(\tilde{\beta}) \right) + (1 - s) \left( V + su_B - P(\tilde{\beta}) \right) - c\beta_i > 0 \] (14)

$E_i[Search, \tilde{\beta}]$ is derived as follows - Upon investing search cost $c\beta_i$, the consumer could get the correct signal (A) with probability $s$, in which case she would expend $P(\tilde{\beta})$ to buy A and get utility $V + su_A$. There is also a probability $1 - s$ of getting the wrong signal (B), in which case she would buy B and get utility $V + su_A - P(\tilde{\beta})$. The decision to search therefore depends not only on own search costs, but also on $su_A$ and $su_B$, which are functions of others’ decisions. This mutual dependence of social utilities creates
interlinked choice decisions, where a consumer’s search and purchase decisions hinge not just on her own judgment of what is the ‘it’ product, but also her expectation of how many other people in the market search and believe it to be the ‘it’ product. Moreover, because the value of search is the same for everyone (in segment 1), and search costs are increasing in $\beta$, there exists a cut-off $\beta \geq 0$, above which consumers don’t search.

4.1.3 Optimal Prices

Given consumers decisions, now we can solve for the optimal price $P(\beta^*)$ in the cloaking equilibrium. Since the consumer at $\beta$ finds it just optimal to search, price can be obtained from her indifference equation as $P(\beta)$. The firm can thus control the type and the number of people buying by picking an optimal price $P(\beta^*)$ in tandem with the message $m = \phi$. Thus, the firm’s profit maximization problem in the cloaking equilibrium is:

$$\max_{\beta} \pi \left( SC(\beta) \right) = P(\beta) \left[ DA \left( SC(\beta) \right) + DB \left( SC(\beta) \right) \right]$$

such that $0 \leq \beta \leq 1$ (15)

where $SC(\beta) = \{ \phi, P(\beta), P(\beta) \}$ is the cloaking strategy that yields the cut-off $\beta$. If $\theta = A$, the total demand for A and B is $\gamma\beta$, which is same even for $\theta = B$. This gives us a single optimal cut-off $\beta^*$.

Let $\hat{\beta} = Max\{\hat{\beta}_1, 0\}$, where $\hat{\beta}_1 = \frac{[\gamma(a + \eta A_1) - c] + \sqrt{[\gamma(a + \eta A_1) - c]^2 + 3\gamma a V}}{3\gamma a}$ and $A_1 = [s^2 + (1 - s)^2]$.

**Proposition 1** In the cloaking equilibrium, the firm prices both A and B at $P(\beta^*) = V + \gamma\beta^* \left[ a(1 - \beta^*) + \eta A_1 \right] - c\beta^*$, where $\beta^* = Min\{\beta, 1\}$.

**Proof:** See Appendix.

Now consider the trade-offs involved in the choice of the optimal price defined in Proposition 1. Again, consider the expected utility from search as defined in (14), when $P_A = P_B = P$.

$$E_i[\text{Search, } \beta] = s (V + su_A) + (1 - s) (V + su_B) - c\beta - P$$

Price has two effects: first is the direct effect ($-P$), which is negative, i.e., increasing price decreases the value of search. More interestingly, price also has an indirect effect since it affects other consumers’ incentives to search and purchase, which in turn affects consumer $i$’s decisions through $su_A$ and $su_B$. From (10) and (11), we have:

$$su_A = \gamma\beta s \left[ a(1 - \beta) + \eta \right] + \gamma\beta (1 - s) \left[ a(1 - \beta) \right]$$
Figure 4: Social Utility of Fashion \( \left( s \approx 1, \gamma = 1, a = 0.7, \eta = 0.1, c = 1 \right) \)

\[
su_B = \gamma \tilde{\beta}(1-s) \left[ a(1-\tilde{\beta}) + \eta \right] + \gamma / \tilde{\beta} s \left[ a(1-\tilde{\beta}) \right]
\]

Notice that each term in \( su_A \) and \( su_B \) has two components - the expected utility from a date (which is \( a(1 - \tilde{\beta}) \) or \( a(1 - \tilde{\beta}) + \eta \)) and the probability of a date (which is \( \gamma / \tilde{\beta} s \) or \( \gamma / \beta (1 - s) \)). The former is decreasing in \( \tilde{\beta} \) (as shown in Figure 4), that is, each extra person that the firm allows into the system adds a negative externality, since her type is always worse than that of those who are already in the system. In other words, including more people is always detrimental to the signaling value of the product. On the other hand, the probability of a successful date is increasing in \( \tilde{\beta} \). That is, each extra person allowed into the system increases the probability of a successful interaction and adds a positive externality. The model thus endogenously produces the two common effects seen in the demand for fashion goods - snob effect and bandwagon effect (Leibenstein 1950).

The struggle between these two effects highlights the core trade-off in the model – How exclusive should the ‘fashion’ be? If very few people use it, even though they might be able to signal their stellar ability and interact with the most accomplished, there aren’t going to be many people to signal to. On the other hand, if almost everyone uses the products, there would be no dearth of people to interact with; rather the value of doing so would be minimal. This tension is manifested in the firm’s endeavor to choose just the right level of exclusivity (\( \beta^* \)) by manipulating the number of people who have access to information. For small values of \( \tilde{\beta} \), the marginal benefit from the increase in the probability of date is likely to dominate the marginal loss from the decrease in signaling value. For larger values of \( \tilde{\beta} \), the reverse might hold. The firm’s strategy
reflects the tension between these two effects.\footnote{Firms in the fashion industry often have to navigate the fine line between being popular and too popular. For example, by 2007, Muse was so popular that it signaled ‘fashion victim’ rather than fashion leader. A New York Times article (Wilson 2007) commented on fall of the ‘it’ bag Muse and specifically quoted the fashion director of the Domino magazine as saying: “Some people still carry the Muse. They think the Muse is hot, because they’re kind of behind.”}

**Random Purchase**

Finally, we need to ensure that both consumers who search and buy and those who don’t, refrain from buying one of A or B randomly without searching. Random purchase is especially tempting because both A and B are construed as positive signals and lead to dates. However, purchasing without information is risky since there is a higher probability of picking the wrong product (compared to those who search) which may reduce the expected utility below the price charged.

Let the expected utility from random purchase for a consumer $i$ be $E_i[\text{Buy Randomly}, \tilde{\beta}]$, which is a function of cut-off $\tilde{\beta}$.

$$E_i[\text{Buy Randomly}, \tilde{\beta}] = 0.5 \left( V + su_A - P(\tilde{\beta}) \right) + 0.5 \left( V + su_B - P(\tilde{\beta}) \right).$$  \hspace{1cm} (16)

In random purchase there is a probability 0.5 of buying the ‘it’ product (A), in which case $i$ would get utility $V + su_A - P(\tilde{\beta})$. There is also a probability 0.5 of buying the wrong product (B), in which case she would get $V + su_B - P(\tilde{\beta})$. Note that $E_i[\text{Buy Randomly}, \tilde{\beta}]$ is independent of $i$’s search costs ($c\beta_i$) since there is no search involved in random purchase.

Now consider the incentive to deviate for consumers from $\tilde{\beta}$ to 1. In equilibrium, they obtain zero utility since they don’t search, buy or date. Hence, their utility from buying randomly should be less than zero to prevent deviation, i.e., we require that $E_i[\text{Buy Randomly}, \tilde{\beta}] < 0$. Next, consider the consumers from 0 to $\tilde{\beta}$, who search. Of all these consumers, the marginal consumer at $\tilde{\beta}$ has the highest incentive to deviate since she obtains the lowest utility from search. Hence, the non-deviation constraint for the consumer at $\tilde{\beta}$ is the binding one. Since the consumer at $\tilde{\beta}$ finds it just optimal to search ($E_{\tilde{\beta}}[\text{Search}, \tilde{\beta}] = 0$), we again have the condition for non-deviation as:

$$E_{\tilde{\beta}}[\text{Search}, \tilde{\beta}] = 0 > E_i[\text{Buy Randomly}, \tilde{\beta}]$$  \hspace{1cm} (17)

which simplifies to:

$$s \left( V + su_A - P(\tilde{\beta}) \right) + (1 - s) \left( V + su_B - P(\tilde{\beta}) \right) - c\tilde{\beta}$$

$$> 0.5 \left( V + su_A - P(\tilde{\beta}) \right) + 0.5 \left( V + su_B - P(\tilde{\beta}) \right).$$
In sum, we can derive one condition for ruling out random purchase from (17) as specified in Lemma 2\textsuperscript{14}.

**Lemma 2** If $c < \bar{c}$, then consumers don’t buy one of A or B randomly, where $\bar{c} = \frac{\eta \gamma (2s-1)^2}{2}$.

Proof: See Appendix.

Lemma 2 essentially states that if search is not prohibitively expensive, then consumers would invest in search rather than make a risky choice. The condition $c < \bar{c}$ ensures that the risk of making a wrong choice in a random pick outweighs the cost associated with search.

### 4.2 Flaunting Equilibrium

Consider a perfect Bayesian equilibrium where the firm’s and consumers’ strategies are as follows: for $\theta = A$, the firm sends the message $m = A$ and sets prices $P_A^* > P_B^*$. Consumers in segment 1 buy A without searching and those in segment 2 buy B. In addition to the equilibrium play, I specify the following off-equilibrium beliefs and actions:

(a) $\mu(\phi, P_A, P_B) = (0.5, 0.5)$, if $P_A = P_B = P(\beta) > V$.

Consumer $i$’s action ($i \in$ segment 1) when $c < \bar{c}$: if $0 \leq \beta_i \leq \bar{\beta}$, then search and buy according to signal; if $\bar{\beta} \leq \beta_i \leq 1$, then don’t search or buy. If $c \geq \bar{c}$, then search cannot be sustained. So no one searches or buys.

(b) $\mu(\phi, P_A, P_B) = (0.5, 0.5)$, if $P_A = P_B = P(\bar{\beta}) \leq V$.

Consumer $i$’s action ($i \in$ segment 1): Buy A or B randomly

(c) $\mu(\phi, P_A, P_B) = (1, 0)$, if $P_A > P_B$.

Consumer $i$’s action, ($i \in$ segment 1): Buy A iff $P_A < V + \gamma \eta$

(d) $\mu(B, P_A, P_B) = (0, 1)$ for all $P_A, P_B$.

Consumer $i$’s action, ($i \in$ segment 1): Buy B iff $P_B < V + \gamma \eta$.

Note that if the firm deviates to send an uninformative message and sets uninformative prices, consumers’ beliefs on the state of the world remain at priors, and they behave as they would in a cloaking equilibrium - they search and buy if it is optimal to do so. (For a full discussion of off-path beliefs and actions, see Section C.2 in the appendix.) Next, I solve for the optimal prices by backward induction.

\textsuperscript{14} As the non-deviation condition is the same for the consumer at $\bar{\beta}$ and those after $\bar{\beta}$, an equilibrium where consumers with low search costs ($\beta \leq \bar{\beta}$) buy after search and those with higher search costs $\beta > \bar{\beta}$ buy randomly is not feasible. If it is optimal for consumers with search costs greater than $c\bar{\beta}$ to deviate, it is also optimal for a consumer with search costs lower than $c\bar{\beta}$ to deviate.
4.2.1 Dating Game, Search and Purchase Decisions

**Lemma 3** In any match \((i, j)\) within the flaunting equilibrium, there is an interaction iff both \(i\) and \(j\) have purchased the advertised product \(A\).

*Proof: See Appendix.*

Since there is no search involved, there is no inference on the ability of the partner in any match \((i, j)\). For example, when both \(i\) and \(j\) have the advertised product \(A\), we have:

\[
E_i[A_i^j(A, A)] = E_j[A_j^i(A, A)] = \int_0^1 a(1 - 2\beta)d\beta = 0 \tag{18}
\]

and the total expected utility from the date is:

\[
E_i[SU_i^j(A, A)] = E_j[SU_j^i(A, A)] = \eta > 0 \tag{19}
\]

While both \(i\) and \(j\) choose to date, their decision stems from the conformity component \(\eta\), and not the ability of their partner. However, matches \((A, B)\) and \((B, A)\) don’t lead to successful dates since only those uninterested in social interactions buy \(B\). From \(i\)’s perspective:

\[
E_i[SU_i^j(A, B)] = \int_0^1 a(1 - 2\beta)d\beta = 0 \tag{20}
\]

From \(j\)’s perspective, \(E_j[SU_j^i(A, B)] = 0\) since she is not interested in social interactions. So all matches in which even one player has \(B\) ((\(B, B\)), \((B, A)\) and \((A, B)\)) are not successful.

Moreover, even consumers in segment 1 choose not to search, and it can be shown that the optimal action for all consumers in segment 1 is to follow the firm’s message and buy \(A\) if price is less than the expected utility. Further, the optimal action for consumers in segment 2 is to buy \(B\) if \(P_B \leq V\). A key point of note here is that high types are unable to use private information as a signal, i.e., the lack of information asymmetry makes signaling impossible - advertising a product as ‘fashionable’ destroys its signaling value since it precludes search.

4.2.2 Optimal Prices

The firm’s profit maximization problem in the flaunting equilibrium is:

\[
\max \pi(S_F) = P_A D_A(S_F) + P_B D_B(S_F), \tag{21}
\]

where \(S_F = \{A, P_A, P_B\}\) is a flaunting strategy.
Proposition 2. In the flaunting equilibrium, when the firm sends message \( m = A \), it sets prices \( P_A = V + \gamma \eta \) and \( P_B = V \).

Proof: See Appendix.

Everyone in segment 1 buys the advertised product (A). Therefore the expected social utility from A for a random consumer is \( V + \gamma \eta \), where \( \gamma \) is the chance of a date or the probability of being matched with a partner with A and \( \eta \) is the utility from the date. Hence, the optimal price of the advertised product A is \( P_A = V + \gamma \eta \). The expected demand for B comes from those consumers uninterested in social interactions (segment 2). Since these consumers don’t value social interactions, the firm sets the price of B at \( P_B = V \) or the consumption utility. Note that when the firm reveals information, it can price both the products differently and extract the consumption utility from all consumers, whereas in the cloaking equilibrium, the firm sacrifices some demand (and consumption utility) to extract the signaling value from few consumers.

4.3 Cloak or Flaunt?

Let \( \Pi = \pi(S_C^*) - \pi(S_F^*) \) and \( C = \bar{c} - c \), where \( S_C^* \) and \( S_F^* \) are the optimal cloaking and flaunting strategies. First, we can show that there exists a region where the cloaking equilibrium exists and is more profitable for the firm than the flaunting equilibrium, i.e., \( \Pi > 0 \) and \( C > 0 \). Further, notice that in the cloaking equilibrium, the off-equilibrium beliefs and actions are such that if the firm deviates and sends an informative message or sets informative prices, then its profit is equivalent to that from flaunting. Similarly, in the flaunting equilibrium, the off-equilibrium beliefs and actions are such that if the firm deviates to send an uninformative message and set uninformative prices, consumers behave as in the cloaking equilibrium (i.e., they search and purchase if optimal) and the firm obtains the profit of a cloaking strategy. Therefore, the firm can choose whether the flaunting equilibrium gets played or the cloaking equilibrium gets played by choosing the flaunting strategy or the cloaking strategy. Thus, we have two mutually exclusive regions of cloaking equilibrium and flaunting equilibrium, since the firm always prefers one or the other.

Proposition 3

Region 1 - If \( \Pi > 0 \) and \( C > 0 \), then the cloaking equilibrium uniquely exists. The monopolist chooses strategy \( S_C(\beta^*) = [\phi, P(\beta^*), P(\beta^*)] \) for \( \theta = A \). Consumers in segment 1 with search costs \( c\beta \leq c\beta^* \) search and buy according to their signal. Consumers in segment 1, with search costs \( c\beta > c\beta^* \) and those in segment 2 neither search nor buy.
Region 2 - If $\Pi \leq 0 \text{ or } C \leq 0$, then the flaunting equilibrium uniquely exists. The monopolist chooses strategy $S^*_F = [A, V + \gamma \eta, V]$ for $\theta = A$. Consumers in segment 1 buy A and those in segment 2 buy B.

Proof: See Appendix

Recall that the off-path actions and beliefs specified here are not very punishing for the firm - For example, we could specify more stringent off-path beliefs and actions such that if the firm were to deviate in the flaunting equilibrium and cloak (set uninformative message and prices), then consumers refrain from search (and purchase). In that case, the flaunting equilibrium could exist over all parameter values. Similarly, we could specify more stringent off-path actions for the cloaking equilibrium too, in which case the cloaking equilibrium could exist over a large set of parameter values. In such a scenario, we could rank the regions by ‘firm profitability’ and in region 1, cloaking would be the more profitable equilibrium and in region 2, flaunting would be the more profitable equilibrium. The approach taken here is isomorphic to a ranking approach, in that, both approaches identify regions where cloaking exists and is more profitable for the firm than flaunting. Therefore, while uniqueness is a function of the specific assumptions here, the basic result of higher profitability under cloaking (existence of parameters where $\Pi > 0 \text{ and } C > 0$) is robust to specifications.

Further note that in equilibrium the firm no incentive to lie. For instance, in the flaunting equilibrium, if the firm deviates to send a false message ($m = B$), its profit doesn’t increase. In this model, the uncertainty is on the identity of the ‘it’ product and not firm type. Moreover, consumers care about the ‘it’ product because it is a coordination mechanism, not because they inherently value it more. Thus, even a false message would achieve the same profit for the firm and same result for consumers because the firm is basically using a public message as a mechanism to engender convergence. The value of the message lies in the fact that in its absence, consumers would have to rely on local sources of information, which cannot produce the kind of convergence that a well-publicized message can. However, there is no reason for sending a false message either. Thus, in accordance with tie-breaking assumption 2, since the firm is indifferent between lying and telling the truth, it tells the truth.

An important implication of Proposition 3 is that under certain conditions the firm may strategically withhold information on the identity of the ‘it’ product. That is, even if the firm could convince everyone to buy a product by promoting it as fashionable it would choose not to do so. In fact, concerns about the adverse impact of ‘too much information’ abound in the fashion industry and are particularly well-illustrated
by the example of British fashion label Burberry, which suffered a serious decline in popularity when its trademark check pattern was extensively adopted by the ‘chavs’ in U.K (Finch 2003). (Chavs are classified as a social subclass conspicuous by their lack of good taste\textsuperscript{15} While Burberry has stopped manufacturing some of its popular products adopted by the chavs (Dibb 2005) in order to salvage its fashion-conscious market, it continues to be cited as an example of the consequences of over-exposure.

The second key takeaway of Proposition 3 is that ‘fashion’ (in the lay sense of the word) can arise under both flaunting and cloaking strategies, though its nature might differ. In the cloaking equilibrium, ‘fashion’ denotes something tasteful or obscure, which people diligently search in order to signal their access to information (at the expense of conformity). In contrast, in the flaunting equilibrium, the advertised product pushed by the firm emerges as ‘fashionable’ product. Here, fashion is primarily a social device for fitting in with the rest of the society. However, the role of fashion as a social device transcends the equilibria.

Finally note that $C > 0$ condition implies that cloaking is feasible iff the firm’s consumers are reasonably savvy, in that, search is not prohibitively expensive for them. If that were not the case, the firm may not be able to preclude random purchase to sustain the cloaking equilibrium.

5 Equilibria Properties and Comparative Statics

This section examines how the relative placement of the equilibria and how the firm’s incentive to reveal information changes with market and consumer characteristics. This analysis provides some insight into

\textsuperscript{15} Slate Magazine article defines ‘chavs’ as “tough guys, skanks, [...], and cheesy celebrities. The king and queen of the chavs are soccer star David Beckham and his wife, not-so-Posh Spice, Victoria Beckham (Gross 2006).
why the decision to advertise fashion varies widely. First, I vary the parameter $\gamma$, which is a measure of the fraction of the market interested in fashion as a social device. When is a firm more likely to advertise fashion – when many of its consumers are interested in fashion or when they aren’t? Specifically, I examine how the firm’s incentive to reveal information changes with $\gamma$.

**Proposition 4** For a given set of $\{a, \eta, s, c\}$, if there exists a $\gamma_L$ at which cloaking is in equilibrium, then for all $\gamma > \gamma_L$, cloaking continues to be in equilibrium.

*Proof: See Appendix.*

The incentive to publicize the ‘it’ product or flaunt information is decreasing in $\gamma$ – if cloaking is profitable at low values of $\gamma$, then it continues to be so at higher values of $\gamma$. That is, the firm is less likely to publicize ‘fashion’ if a large fraction of its consumer base is “fashion-conscious”. Unlike typical signaling models, here the value of the fashion-signal is endogenous since the number of people to whom a consumer can signal is proportional to the fraction of the market interested in fashion-based interactions. If a consumer’s social circle predominantly doesn’t value the fashion based social interactions, then it is unprofitable for her to engage in costly search/purchase to signal to a scant few. Thus, the same product can generate different incentives to search in different social circles, which in turn may lead to different communication strategies on the firm’s part. This offers some insight into why brands like YSL, Marc Jacobs that serve very fashion-conscious markets are less likely to advertise fashion unlike Gap and RL that serve less fashion conscious markets and therefore seem more inclined to advertise fashion. Note that this result goes counter to the naive intuition that if more consumers care about fashion, then the firm should be more inclined to provide information on fashion. Figure 5 depicts the equilibrium partitions. The x-axis for the figure is $\gamma$ and as seen in the figure, increasing $\gamma$ makes the cloaking equilibrium more likely.

Next, I present some comparative statics on the effect of varying the following parameters:

1. $V$, the consumption utility associated with the product,
2. $\eta$, the utility from conformity, and
3. $a$, the utility from signaling low search costs.

As defined in section 4.3, let $\Pi$ be the difference between the expected profits from cloaking and flaunting. While $C$ is also a determinant of the actual equilibrium, it is unrelated to the firm’s incentives to withhold or reveal information and therefore not considered in this analysis. The findings are summarized below:
Proposition 5

1. \( \Pi \) is decreasing in \( V \).
2. \( \Pi \) is decreasing in \( \eta \).
3. \( \Pi \) is non-decreasing in \( a \).

Proof: See Appendix

The first result indicates that as the value of consumption utility increases, the firm is more likely to reveal information. Thus we are more likely to see cloaking if the social utility or ‘fashion’ component associated with a product is high compared to the utilitarian component. That is, withholding information as a phenomenon is more likely in ‘fashion categories’ as opposed to utilitarian categories (such as computers or laundry detergents).

Secondly, as the value of conforming increases, the incentive to reveal information increases. This is intuitive since the firm is able to mobilize a larger consumer base when it chooses revelation, which leads to increased conformity. Hence, in markets where conforming with peers is relatively important, it is more likely to see advertisements promoting fashion hits, compared to markets where conformity is not as sought after. On a similar note, as \( a \) (value of signaling) increases, the incentive to withhold information increases. This result is demonstrated in Figure 5: the y-axis shows the relative values of signaling and conformity. At low values of y, the relative value of conformity is high compared to the value of signaling and therefore the flaunting equilibrium is more likely to exist, whereas the opposite is true for high values of \( a \).

6 Consumers’ and Firm’s Incentive

Next, I examine whether the firm’s and consumers’ incentives to maintain exclusivity are aligned. While we have explored the role of a firm in a market for fashion, often consumers themselves create fashions by adopting certain products. For example, in the 90s in Japan, ‘Kogaru’ or high-school girls adopted a series of fashions like ‘loose socks’ (long white socks loosened on the top to hang around the ankles) and ‘camisole fashion’ (wearing camisoles as an outer garment) to emerge as high-profile trendsetters. Similarly, ‘Hush-puppies’ was a dying brand of shoes in the mid-90s, before East village kids in Manhattan adopted them as a fashion statement (Gladwell 2002). In all these cases, a core group of trendsetters designated a product as fashionable and informed their friends, social counterparts about it. How would we expect these trendsetters to ‘promote’ their new trends?
In the previous sections, we saw that the firms might be inclined to maintain exclusivity to maximize profit. Since consumers cannot monetize the fashion, would we expect them to reveal it to everyone? Are street fashions likely to be less exclusive than firm-created fashions? To answer these questions, I modify the model to draw contrasts between the firm’s and consumers’ incentives to maintain exclusivity.

First, I normalize $V = 0$ to draw a clear contrast between consumers’ and firm’s incentives based on just the social utility of the product. Next, I assume that a central agent (for example, a trendsetter) can pick a fashion and reveal it to as many consumers as she wants according to her discretion. The trendsetter may communicate the new trends through various channels. For example, in the case of ‘Kogaru’, it has been shown that they used personal communication devices to inform each other about fashion. We can assume that the trendsetter uses such a communication device or relies on WOM. Specifically, suppose that she can choose a cut-off $\beta_C$ (where $0 \leq \beta_C \leq 1$), and set-up a mechanism such that all consumers from 0 to $\beta_C$ get information on the fashionable product (which they can use) while those above $\beta_C$ don’t. (While I acknowledge that this may not be always feasible for a given trendsetter, the objective here is to provide a benchmark to compare the consumers’ incentives with that of the firms.) In that case, how many consumers would she choose to include? The expected social utility from the fashion at a cut-off $\beta_C$ for a consumer (if she is included in the fashion) is:

$$EU_C(\beta_C) = \gamma \beta_C [a(1-\beta_C) + \eta]$$  \hspace{1cm} (22)

The trade-offs of including more people remain the same as before and $EU_C(\beta_C)$ is maximized at $\beta_C^* = \frac{a+\eta}{2a}$. Hence, from a random consumer’s perspective, the optimal cut-off is $\beta_C^*$ if she is included in the fashion. Thus, a consumer whose search cost lies between from 0 to $\beta_C^*$ would want the ideal cut-off to be $\beta_C^*$. However, from the perspective of consumers from $\beta_C^*$ to 1, $\beta_C^*$ is not the ideal cut-off since they want to be included in the fashion. At the same time, they don’t want more people included since the social utility associated with the product is decreasing as more consumers after $\beta_C^*$ are included. Thus, a consumer whose search cost is $\beta_C$, where $\beta_C^* < \beta_C \leq 1$ would prefer the cut-off to be $\beta_C$, that is, she would prefer to be the last person included in the fashion.

Contrast this with the cut-off that a firm would choose in the same scenario, that is, the firm is given a fashionable product and it chooses a cut-off $\beta_F$ (where $0 \leq \beta_F \leq 1$) such that it sells the fashion to all consumers with search cost less than $\beta_F$. The firm’s expected profit from selling the fashion to consumers till $\beta_F$ is:
Figure 6: Optimal Exclusivity from Consumers’ and Firm’s Perspectives

\[ EU_F(\beta_F) = \gamma^2 \beta_F^2 [a(1 - \beta_F) + \eta] \]  

where \( P = \gamma \beta_F [a(1 - \beta_F) + \eta] \) is the price it can charge and \( \gamma \beta_F \) is the number of consumers it sells to. This value is maximized at \( \beta_F^* = \frac{2(a+\eta)}{3a} \).

**Proposition 6** Consider \( EU_C(\beta_C) = \gamma \beta_C [a(1 - \beta_C) + \eta] \) and \( EU_F(\beta_F) = \gamma^2 \beta_F^2 [a(1 - \beta_F) + \eta] \).

1) \( EU_C(\beta_C) \) is maximized at \( \beta_C^* = \frac{a+\eta}{2a} \) and \( EU_F(\beta_F) \) is maximized at \( \beta_F^* = \frac{2(a+\eta)}{3a} \).

2) \( \beta_C^* < \beta_F^* \), for all \( \forall a, \eta, \gamma \).

3) For consumers lying between 0 and \( \beta_C^* \), the optimal exclusivity is \( \beta_C^* \), while for all consumers between \( \beta_C^* \) and 1, the optimal exclusivity is \( \beta_C \). The optimal exclusivity from the firm’s perspective is \( \beta_F^* \).

Interestingly, I find that the firm’s incentive to monetize the fashion actually makes it more inclusive than the ‘cool consumers’ (with search cost less than \( \beta_C^* \)). From a trendsetter’s perspective, at \( \beta_C^* \) the negative externality to the social utility starts dominating the positive externality. However, the aspect of monetizing the fashion changes the firm’s perspective; the firm’s ideal cut-off is always higher at \( \beta_F^* \), where the marginal cost to the profit starts dominating the marginal benefit. Figure 6 pictorially contrasts the firm’s and consumers’ incentives. Therefore, consumers’ and firm’s problems are fundamentally different – consumers who set trends strive to maximize the social utility, whereas a firm is focused on the profit, which alters its incentive to be exclusive. While this analysis has abstracted away from many details, it provides some insight into why underground fashions and street fashions that originate organically are often
considered more “cool” than firm driven fashions.

7 Social Welfare

In the last section, we saw that the firm’s and consumers’ incentives are misaligned. This section further examines the extent to which the firm’s incentives are at odds with social welfare. In particular, the existence of cloaking equilibrium raises the following question: Does the firm’s incentive to withhold information negatively impact the social welfare in the system?

In the cloaking equilibrium the social surplus $\Delta_C$ is as follows:

$$\Delta_C = \pi (S_{C}^*) + \Omega (S_{C}^*)$$

where $\Omega (S_{C}^*)$ is the consumer surplus in the cloaking equilibrium. In this equilibrium, all consumers from 0 to $\beta^*$, obtain a positive surplus and while all other consumers obtain zero surplus ($\beta^*$ here refers to the optimal cut-off in the cloaking equilibrium). It can be easily shown that:

$$\Omega (S_{C}^*) = \frac{1}{2} \gamma c (\beta^*)^2$$

However in the flaunting equilibrium, the social surplus is equivalent to the firm’s profit since the firm extracts all the surplus from consumers. There is no information rent for any consumer. That is:

$$\Delta_F = \pi (S_{F}^*)$$

since $\Omega (S_{F}^*) = 0$. Proposition 7 outlines the mismatch between the firm’s incentives and social welfare.
Proposition 7 1) There exists no parameter space where the firm cloaks information, though flaunting is socially optimal: if $\pi(S_C^*) > \pi(S_F^*)$, then $\Delta_C > \Delta_F$.

2) There always exists a region where the firm prefers flaunting, though the socially optimal action is cloaking: $\Delta_C > \pi(S_F^*)$.

Of course, this result is contingent on a monopolistic scenario since the consumer surplus in a competitive setting might be higher under both the flaunting and cloaking equilibria. All the same, Proposition 7 highlights the fact that in the cloaking equilibrium, the ‘cool’ or low search cost consumers are better off than others and that in the flaunting equilibrium, this asymmetry doesn’t exist. The firm, by ignoring the ‘cool’ consumers surplus, may choose flaunting when in fact the socially optimal action is cloaking. More fundamentally, the key take-away of this analysis is that, withholding information doesn’t necessarily hurt the social welfare or consumer surplus. In Figure 7, the region between the cloaking and flaunting equilibria is the space where the firm’s incentives and social welfare are misaligned.

8 Conclusions, Limitations and Future Research

In this paper I study the communication strategy of firms in the fashion industry and seek to explain why some firms actively conceal their ‘fashion hits’ while others blatantly promote them. I model fashion as a social device that plays the dual role of allowing people to both fit-in with their peers as well as differentiate themselves by signaling ‘good taste’ or ‘access to information’. This paper examines how the firm’s communication interacts with consumers’ valuation of fashion and how this in turn affects firm’s communication strategy. I find that sometimes the firm’s communication may undermine the value of the fashion goods and that it might be better for the firm to conceal information on fashion hits. Moreover, such a strategy can also be socially optimal. I also find that firms are less likely to advertise fashion hits if their consumers are interested in using fashion as a social device.

Though the discussion here mostly pertained to apparel and accessories, the phenomenon of withholding information is also seen in other conspicuously consumed categories. Often restaurants and clubs try to remain underground, so that only those ‘in the know’ are aware of their existence and location. According to a New York Times article (Williams 2007): “If you haven’t cracked the code of the newest night spots in Manhattan, there might be a reason, […] they are discreet to the point of invisible, quiet to the point of skittish, intimate to the point of anonymous.” Similarly, art galleries hardly ‘advertise’ their acclaimed pieces since one of the primary reasons for visiting them is to show off one’s taste or ability to recognize
‘good art’.

More generally, fashion is a wide-ranging phenomenon and commands a multi-billion dollar industry and our exploration of the field remains incomplete. While this paper studies the role of information in shaping fashion, many other factors could influence or drive fashion. For example, fashion is often made difficult to use (as in high heels, uncomfortable clothes) so that it remains a ‘costly signal’. The chic brand Bless, often makes its products inaccessible by having consumers assemble them.

Finally, while this paper presents a framework to examine the role of firm’s communication and pricing on consumers’ social interactions, the analysis is not without shortcomings. First, the model presented here is static. A dynamic model that captures the micro-diffusion of information would yield additional insights on fashion cycles and consumers’ role in driving fashion. Further, I do not model the exact process by which a particular product gets chosen as the ‘it’ product. While the focus here is on exploring a firm’s decision given information on fashion hits, how they get picked by the fashion media remains an interesting and pertinent question. Finally, I do not model competition - While cloaking would still be a feasible equilibrium under competition, it would be interesting to examine whether the competition increases or decreases the incentive to divulge information.
A Proof of Proposition 1

Let $S_C(\tilde{\beta}) = \{\phi, P(\tilde{\beta}), P(\tilde{\beta})\}$ be a cloaking strategy that induces a cut-off $\tilde{\beta}$ such that consumers in segment 1 with search cost less than $c\tilde{\beta}$ search (and buy) and those above don’t (see Figure 3). We will now show that this is in fact the optimal action for consumers and solve for the optimal price. (The proofs of Lemma 1 and 2 are nested within the proof of proposition 1.)

Proof of Lemma 1

Consider each possible type of match one by one to solve for the dating outcome in each.

**Match Types – (A, A) and (B, B):** Since only those who search are expected to buy (consumers of type $\beta$, where $\beta \leq \tilde{\beta}$), purchase of either A or B implies that $\beta \leq \tilde{\beta}$. Therefore, when both $i$ and $j$ have one of A or B, the expected utility from partner’s ability is as follows:

$$E_i[A_j^i(A, A)] = E_j[A_j^j(A, A)] = \frac{1}{\tilde{\beta}} \int_0^{\tilde{\beta}} a(1 - 2\beta) d\beta = a(1 - \tilde{\beta}) > 0 \quad (A.1)$$

Further, because both $i$ and $j$ have the same product, they also get a utility $\eta$ from conformity and the total expected utility from the date is:

$$E_i[\text{SU}_j^i(A, A)] = E_j[\text{SU}_i^j(A, A)] = a(1 - \tilde{\beta}) + \eta > 0 \quad (A.2)$$

Both $i$ and $j$ choose to date since the expected utility from the date is positive.

**Match Types – (A, B) and (B, A):** Again, if consumer $i$ has purchased one of A or B, then the inference is that $\beta_i \leq \tilde{\beta}$ and $E_i[A_j^i(A, B)] = E_j[A_j^j(B, A)] = a(1 - \tilde{\beta}) > 0$. However, there is no utility from conformity as the choices are dissimilar (A, B). Still, both $i$ and $j$ choose to date since:

$$E_i[\text{SU}_j^i(A, B)] = E_j[\text{SU}_i^j(B, A)] = a(1 - \tilde{\beta}) > 0 \quad (A.3)$$

**Match Types – (A, O) and (B, O):** – Assume that $i$ has A and $j$ has O. (The analysis for (B, O) follows along the same lines.) $j$’s expected utility from $i$ is given by (A.3)\footnote{$E_j[\text{SU}_i^j(O, A)]$ is calculated assuming that $j$ is from segment 1. If instead she is from segment 2, her expected utility from a date is always 0 since she doesn’t care for social interactions. I have only mentioned the expected utilities for the case when $(i, j)$ belong to segment 1, since the other case is trivial.}, while $i$’s expected utility from $j$ is:

$$E_i[A_j^i(A, O)] = -a\gamma\tilde{\beta}(1 - \tilde{\beta}) \left\{ \frac{1}{(1 - \gamma) + \gamma(1 - \tilde{\beta})} \right\} < 0 \quad (A.4)$$

If $j$ has not purchased, she either belongs to the $\tilde{\beta}$ to 1 set of consumers in segment 1 or she belongs to segment 2. Therefore, $i$’s expected utility from $j$’s ability is given by A.4. In other words, $i$ interprets $j$’s
lack of purchase as a negative signal on her type. Moreover, there is no utility from conformity. Thus, \(i\)'s expected utility from dating \(j\) is \(E_i [SU_i^j (A, O)] < 0\). Hence, \(i\) chooses not to date \(j\)\(^{17}\).

**Match Type – (O, O):** Here \(i\)'s expected social utility from a date with \(j\) (and vice-versa) is the same as that in previous case and therefore both \(i\) and \(j\) optimally choose not to date\(^{18}\). Hence, only if both \(i\) and \(j\) have purchased either \(A\) or \(B\), a date takes place.

**Search and Purchase Decisions**

Next, I show that those who search optimally follow their signal and that those who don’t search optimally choose to not buy. First consider the purchase decision of consumers who have searched. Let \(E_i[U_A | \sigma = A]\), \(E_i[U_B | \sigma = A]\) and \(E_i[U_O | \sigma = A]\) be the expected utilities from buying \(A\), \(B\) and nothing respectively for a consumer \(i\) from segment 1, when her signal is \(A\).

\[
E_i[U_A | \sigma = A] = V + \gamma \beta a(1 - \bar{\beta}) + \eta \gamma \bar{\beta} \left[p_{A|A}s + p_{B|A}(1 - s)\right] - P(\bar{\beta}) \tag{A.5}
\]

\[
E_i[U_B | \sigma = A] = V + \gamma \beta a(1 - \bar{\beta}) + \eta \gamma \bar{\beta} \left[p_{B|A}s + p_{A|A}(1 - s)\right] - P(\bar{\beta}) \tag{A.6}
\]

\[
E_i[U_O | \sigma = A] = 0 \tag{A.7}
\]

where \(p_{A|A}\) and \(p_{B|A}\) are the posterior probabilities of states \(A\) and \(B\) given the signal \(\sigma = A\). The difference \(E_i[U_A | \sigma = A] - E_i[U_B | \sigma = A] = \eta \gamma \bar{\beta} (p_{A|A} - p_{B|A})(2s - 1) > 0\) is always positive. Similarly, it is easy to show that \(E_i[U_A | \sigma = A] - E_i[U_O | \sigma = A]\) is also positive by substituting for price \(P(\bar{\beta})\). Therefore, if a consumer gets \(\sigma = A\), she buys \(A\) and if she gets \(\sigma = B\), she buys \(B\)\(^{19}\).

Since all those who search follow their signals, we can derive the expected demand for \(A\), \(B\) and \(O\) for all \(\theta\), as shown in Table 1. Using these demand functions, we can derive the expected social utilities from using \(A\), \(B\) and \(O\) for \(\theta = A\) as:

\[
su_A = \gamma \bar{\beta} s[a(1 - \bar{\beta}) + \eta] + \gamma \beta s(1 - s)\tag{A.8}
\]

\[
su_B = \gamma \bar{\beta} s[a(1 - \bar{\beta})] + \gamma \beta s(1 - s)\tag{A.9}
\]

---

\(^{17}\) The result is not contingent on \(j\)'s willingness to interact.

\(^{18}\) Note that if \(f_i = f_j = O\), then \(i\) and \(j\) don’t obtain any utility from conformity. Implicitly, those who don’t buy are assumed to use some other outside products. For example, those who don’t carry potentially fashionable bags don’t go bagless; rather, they are assumed to use a bag from their closet or a utilitarian bag bought from a department store. A model where there are infinite outside products available to all consumers is virtually the same as the current model, as the probability of being matched with someone who has the same outside product is zero. In short, fashion instigates conformity, which is not possible to achieve otherwise.

\(^{19}\) It is possible that consumers interpret their signals differently. Consider the following scenario – those who get \(A\), believe that \(B\) is more likely to be the ‘it’ product and those who get \(B\) believe that \(A\) is more likely to be the ‘it’ product (those who get \(B\) continue to believe the firm doesn’t have an ‘it’ product). In this case, those who get a signal \(A\) would buy \(B\) while those who get \(B\) would buy \(A\). However this is an issue of nomenclature, that is, the signal \(A\) actually delivers the message that \(B\) is the ‘it’ product and vice-versa. Hence, this is equivalent to the case analyzed above.
Let $E_i[\text{Search}, \tilde{\beta}]$ be the expected utility from search for a consumer $i$ from segment 1, with search cost $c\beta_i$, when the firm chooses the cloaking strategy $S_C(\tilde{\beta})$. $i$ searches if:

$$E_i[\text{Search}, \tilde{\beta}] = s \left( V + su_A - P(\tilde{\beta}) \right) + (1 - s) \left( V + su_B - P(\tilde{\beta}) \right) - c\beta_i > 0 \tag{A.11}$$

Similarly, let the expected utility from not searching for a consumer $i$ be $E_i[\text{NoSearch}, \tilde{\beta}]$. This is always zero as $i$ optimally buys nothing when she doesn’t search, that is:

$$E_i[\text{NoSearch}, \tilde{\beta}] = 0 \tag{A.12}$$

The consumer at $\tilde{\beta}$ is indifferent between searching and not searching. Hence, we have $E_{\tilde{\beta}}[\text{Search}, \tilde{\beta}] = E_{\tilde{\beta}}[\text{NoSearch}, \tilde{\beta}] = 0$, that is,

$$E_{\tilde{\beta}}[\text{Search}, \tilde{\beta}] = s \left( V + su_A - P(\tilde{\beta}) \right) + (1 - s) \left( V + su_B - P(\tilde{\beta}) \right) - c\tilde{\beta} = 0 \tag{A.13}$$

which gives the price as

$$P(S_C(\tilde{\beta})) = V + \gamma\tilde{\beta} \left[ a(1 - \tilde{\beta}) + \eta A_1 \right] - c\tilde{\beta} \tag{A.14}$$

where $A_1 = [s^2 + (1 - s)^2]$. Given the price, the optimal action for all consumers from 0 to $\tilde{\beta}$ is to search and buy accordingly. Also, the consumers from $\tilde{\beta}$ to 1 in segment 1 optimally choose not to search and buy (given the price). However, all consumers in segment 1 have the option of buying randomly, which is considered in Lemma 2. Finally, consider the consumers in segment 2. They will not deviate and buy since the products are priced higher than the consumption utility $V$. Also, they don’t search as they have no value for search.

**Proof of Lemma 2**

The expected utility from random purchase is same for everyone, since it just depends the cut-off $\tilde{\beta}$ (and not on own search costs) and is as follows:

$$E_i[\text{Buy\_Randomly}, \tilde{\beta}] = 0.5 \left( V + su_A - P(\tilde{\beta}) \right) + 0.5 \left( V + su_B - P(\tilde{\beta}) \right) \tag{A.15}$$

First, consider consumers who search in equilibrium, that is, $0 \leq \beta \leq \tilde{\beta}$. Since the expected utility from search is the same for all of them and the search cost is the highest for the consumer at $\tilde{\beta}$, she has the highest incentive to deviate. Hence we only need to specify the non-deviation condition for this consumer to ensure that others ($\beta < \tilde{\beta}$) don’t deviate. Thus $E_{\tilde{\beta}}[\text{Search}, \tilde{\beta}] > E[\text{Buy\_Randomly}, \tilde{\beta}]$ is the binding constraint which gives us the condition:

$$su_O = 0 \tag{A.10}$$
\[ E_{\tilde{\beta}}[\text{Search, } \tilde{\beta}] = 0 > E_{i}[\text{Buy Randomly, } \tilde{\beta}] \]  
which simplifies to:

\[ s \left( V + su_A - P(\tilde{\beta}) \right) + (1-s) \left( V + su_B - P(\tilde{\beta}) \right) - c\tilde{\beta} > 0.5 \left( V + su_A - P(\tilde{\beta}) \right) + 0.5 \left( V + su_B - P(\tilde{\beta}) \right) \]

which in turn simplifies to:

\[ (s - 0.5) (su_A - su_B) - c\tilde{\beta} > 0 \]

This gives us the condition for non-deviation as:

\[ c < \bar{c} \]  
\[ (A.17) \]

where \( \bar{c} = \frac{\eta(2s-1)^2}{2} \).

Next consider the consumers in segment 1, who don’t search \( (\tilde{\beta} < \beta \leq 1) \). In equilibrium, these consumers obtain zero utility as they don’t search, buy or date. Hence, they will not deviate and buy randomly if \( E[\text{Buy Randomly, } \tilde{\beta}] < 0 \) which again gives us the condition \( c < \bar{c} \). Thus, we have just one non-deviation constraint to rule out random purchase.

**Optimal Prices**

As we now have the price as a function of the cut-off, we can define the firm’s maximization problem as follows:

\[ \max_{\tilde{\beta}} \pi(S_C(\tilde{\beta})) = P(\tilde{\beta}) [D_A(S_C(\tilde{\beta})) + D_B(S_C(\tilde{\beta}))], \text{ such that } 0 \leq \tilde{\beta} \leq 1 \]  
\[ (A.18) \]

where \( S_C(\tilde{\beta}) = \{ \phi, P(\tilde{\beta}), P(\tilde{\beta}) \} \) is the cloaking strategy which induces the cut-off \( \tilde{\beta} \).

The total demand for A and B is \( \gamma \tilde{\beta} \), for \( \theta = A, B \): the maximization problem remains the same across both states. Hence, we can solve for a single optimal cut-off \( \beta^* \).

The FOC of (A.18) has two roots \( \hat{\beta}_1 = \\frac{[\gamma(a+\eta A_1) - c] + \sqrt{[\gamma(a+\eta A_1) - c]^2 + 3\gamma aV}}{3\gamma a} \) and \( \hat{\beta}_2 = \\frac{[\gamma(a+\eta A_1) - c] - \sqrt{[\gamma(a+\eta A_1) - c]^2 + 3\gamma aV}}{3\gamma a} \).

Note that \( \hat{\beta}_1 \) is always positive and \( \hat{\beta}_2 \) is always negative if \( V > 0 \). However, if \( V = 0 \), \( \hat{\beta}_1 = \frac{2[\gamma(a+\eta A_1) - c]}{3\gamma a} \) and \( \hat{\beta}_2 = 0 \). The SOC is \( [\gamma(a + \eta A_1) - c] - 3\gamma a \beta \), which negative at \( \hat{\beta}_1 > 0 \). At \( \hat{\beta}_2 = 0 \), the SOC is \( [\gamma(a + \eta A_1) - c] \), which is positive if \( \hat{\beta}_1 > 0 \) and negative if \( \hat{\beta}_1 < 0 \). Hence if \( \hat{\beta}_1 < 0 \), the optimal solution is \( \hat{\beta}_2 = 0 \). So, \( \hat{\beta} = Max\{\hat{\beta}_1, 0\} \). However, since the cut-off can’t exceed \( \tilde{\beta} \) or 1, the optimal cut-off is given by \( \beta^* = Min\{\hat{\beta}, 1\} \) and the optimal price by \( P(\beta^*) = V + \gamma \beta^* [a(1 - \beta^*) + \eta A_1] - c\beta^* \).
B Proof of Proposition 2

Assume that all consumers in segment 1 buy the advertised product (say A) and those in segment 2 buy the other product (say B). We will now show that this is in fact the optimal action for consumers and solve for the optimal prices. (The proof of Lemma 3 is nested within the proof of proposition 2.)

Proof of Lemma 3

Match Types – (A, A): Since there is no search and everyone in segment 1 buys the advertised product A, the expected utility from partner’s ability is:

\[ E_i[A_i^1(A, A)] = E_j[A_j^1(A, A)] = \int_0^1 a(1 - 2\beta)d\beta = 0 \] (A.19)

However because both \(i\) and \(j\) have the same product, they get a utility \(\eta\) from conformity and the total expected utility from the date is:

\[ E_i[SU_i^1(A, A)] = E_j[SU_j^1(A, A)] = \eta > 0 \] (A.20)

Both \(i\) and \(j\) choose to date as the expected utility from the date is positive.

Match Types – (A, B) and (B, A): Here, the only consumers who purchase B are the ones uninterested in social interactions (segment 2). Therefore:

\[ E_i[SU_i^1(A, B)] = \int_0^1 a(1 - 2\beta)d\beta = 0 \] (A.21)

Further, since \(j\) is uninterested in social interactions, she always chooses to not date. Thus, there is no date.

Match Types – (B, B): Here both \(i\) and \(j\) are uninterested in social interactions. Hence, there is no date.

Search and Purchase Decisions

Consumers in segment 1 - The optimal action for a consumer \(i\) is to not search and buy A since everyone else in segment 1 is buying A (assuming that the price is less than or equal to the expected utility from the product). If they deviate and buy B, then they don’t get any social utility since no one dates players who buy B.

Consumers in segment 2 - The optimal action is to buy B if optimal the price is less than \(V\).

Optimal Prices

The firm’s expected profit if it adopts the flaunting strategy \(S_F = \{A, P_A, P_B\}\) is:

\[ \max \; \pi(S_F) = P_A[D_A(S_F) + D_B(S_F)] \] (A.22)
Note that the maximization problem remains unchanged across the states of the world. First, since all consumers in segment 1 buy A and use it in social interactions, the optimal price for A is \( P^*_A = V + \gamma \eta \). Second, since only consumers in segment 2 buy B, the optimal price for B is \( P^*_B = V \), i.e., the consumption utility V as they do not care for social interactions.

**C Discussion of Off-Equilibrium Beliefs and Best-responses**

The beliefs and best-responses in the cloaking and flaunting equilibrium are symmetric, i.e., a given strategy by the firm’s produces the same beliefs and actions in both equilibria.

**C.1 Cloaking Equilibrium**

(a) \( \mu(\phi, P_A, P_B) = (0.5, 0.5) \), if \( P_A = P_B = P(\bar{\beta}) \neq P(\beta^*) > V \).

Consumer \( i \)'s action (\( i \in \text{segment 1} \)): if \( 0 \leq \beta_i \leq \bar{\beta} \), then search and buy according to signal; if \( \bar{\beta} \leq \beta_i \leq 1 \), then don’t search or buy.

(b) \( \mu(\phi, P_A, P_B) = (0.5, 0.5) \), if \( P_A = P_B = P(\bar{\beta}) \leq V \).

Consumer \( i \)'s action (\( i \in \text{segment 1} \)): Buy A or B randomly

(c) \( \mu(\phi, P_A, P_B) = (1, 0) \), if \( P_A > P_B \).

Consumer \( i \)'s action (\( i \in \text{segment 1} \)): Buy A iff \( P_A < V + \gamma \eta \).

(d) \( \mu(A, P_A, P_B) = (1, 0) \) for all \( P_A, P_B \).

Consumer \( i \)'s action (\( i \in \text{segment 1} \)): Buy A iff \( P_A < V + \gamma \eta \).

As mentioned in the main text, the interdependent nature of the game entails that we specify off-path best-responses and beliefs at each node for consumers in segment 1. Consumers in segment 2 only care about the consumption utility V and their utility does not depend on others’ actions. Therefore, at all nodes, they buy A if \( V - P_A \geq V - P_B \geq 0 \), buy B if \( V - P_B > V - P_A \geq 0 \) and neither if \( V - P_A, V - P_B < 0 \). Hence, the rest of the discussion on the off-path beliefs and actions is confined to consumers in segment 1.

Case 1 - I assume that all consumers in segment 1 search and buy if it is optimal for them to do so. Since, all consumers follow this strategy, a given consumer \( i \) chooses to follow the same strategy (it is the best she can do at this node). However, the other possible best-response could be: Don’t search or buy. In this case, because no one else searches or buys, the best that a consumer \( i \) can do is to refrain from search.
and purchase too. I choose the former since it offers the firm more flexibility in pricing, i.e., even if the firm deviated and priced the products differently, consumers don’t completely refrain from buying.

Case 2 - Since the firm has lowered the price below $V$, search cannot be sustained, i.e., even those with high search costs and those in segment 2 will find it optimal to buy (without searching). Therefore, it is easy to show that the only feasible best-response here is for everyone to buy A or B randomly.

Case 3 - When one product is priced higher than the other (say A), consumer’s attach probability one to the state $\theta = A$. In equilibrium, we know that the demand for ’it’ product is greater than the demand for the non-’it’ product. Therefore consumers believe that if the firm were to deviate and price a product higher, it would pick the ’it’ product. Again, many possible best-responses are feasible (including buying nothing if $V < P_A$). I assume that consumers buy A if $P_A \leq V + \gamma \eta$. Recall that $\gamma \eta$ is the social utility associated with buying A, when everyone else in segment 1 is buying A too. Thus, consumers behave as in the flaunting equilibrium and buy A (which is revealed as the ’it’ product). Again, I pick this particular best-response since it is the most profitable action from the firm’s perspective (which in fact increases the firm’s incentive to deviate).

Case 4 - When firm sends $m = A$ (the $m = B$ case follows along the same lines), I assume that consumers believe A to be the ’it’ product with probability 1, i.e., the message is given precedence over the prices. (We can also do the opposite - give precedence to the price over the message). I choose the former since it seems likely that in reality the prices may reflect many possible pieces of information (such as quality, costs etc.), whereas an advertisement informing consumers on the identity of the ’it’ is very specific. Therefore, it is given precedence. The behavior of consumers is similar to that case 3 (wherein they attached probability 1 to the state A too).

C.2 Flaunting Equilibrium

(a) $\mu(\phi, P_A, P_B) = (0.5, 0.5)$, if $P_A = P_B = P(\bar{\beta}) > V$.

If $C > 0$, Consumer $i$’s action ($i \in$ segment 1): if $0 \leq \beta_i \leq \bar{\beta}$, then search and buy according to signal; if $\bar{\beta} \leq \beta_i \leq 1$, then don’t search or buy. If $C \leq 0$, then search cannot be sustained. So no one searches or buys.

(b) $\mu(\phi, P_A, P_B) = (0.5, 0.5)$, if $P_A = P_B = P(\bar{\beta}) \leq V$.

Consumer $i$’s action ($i \in$ segment 1): Buy A or B randomly
(c) \( \mu(\phi, P_A, P_B) = (1, 0) \), if \( P_A > P_B \).

Consumer \( i \)'s action, (\( i \in \text{segment 1} \)): Buy A iff \( P_A < V + \gamma \eta \)

(d) \( \mu(B, P_A, P_B) = (0, 1) \) for all \( P_A, P_B \).

Consumer \( i \)'s action, (\( i \in \text{segment 1} \)): Buy B iff \( P_B < V + \gamma \eta \).

Case 1 - As in the case of cloaking equilibrium, I assume that all consumers in segment 1 search and buy if it is optimal for them to do so. However, it may not be always feasible, as \( C \) could be negative (\( C \leq 0 \)). In that case, the only best-response is to refrain from search and purchase.

The discussion for cases 2, 3 and 4 follow along the same lines as that for cases 2, 3, and 4 in subsection C.1 (off-path beliefs and actions of cloaking equilibrium).

D Proof of Proposition 3

D.1 Cloaking Equilibrium

I now consider possible deviations to show that, they are all less profitable for the firm than the equilibrium strategy.

a) The firm deviates on prices: \( P_A = P_B = P(\bar{\beta}) \neq P(\beta^*) > V \)

Here, consumer beliefs on the state of the world remain the same as priors: \( \mu(\phi, P_A, P_B) = (0.5, 0.5) \) and consumers actions are as follows:

The best-response of a consumer \( i \in \text{segment 1} \) is to search and buy if \( 0 \leq \beta_i \leq \bar{\beta} \). If \( \bar{\beta} \leq \beta_i \leq 1 \), then she neither searches nor buys. Consumers in segment 2 neither search nor buy. Hence, the firm’s profit is \( \pi(\text{S}_C(\bar{\beta})) \), which is less than \( \pi(\text{S}_C(\beta^*)) \) since \( \pi(\text{S}_C(\beta^*)) \) is the maximum profit from cloaking.

b) The firm deviates on prices: \( P_A = P_B \neq P(\beta^*) \leq V \)

All consumers buy A or B randomly. The firm’s maximum profit under such a strategy is \( V \) which is less than \( \pi(\text{S}_C(\beta^*)) \) since \( \pi(\text{S}_C(\beta^*)) > \pi(\text{S}_F^*) = V + \gamma^2 \eta \).

c) The firm deviates on prices: \( P_A > P_B \)

Here the consumer beliefs are \( \mu(\phi, P_A, P_B) = (1, 0) \) and consumer actions are as follows:

Consumers in segment 1 buy A iff \( P_A \leq V + \gamma \eta \) and those in segment 2 buy B if \( P_B \leq V \). The maximum profit from this strategy is \( V + \gamma^2 \eta \) which is less than \( \pi(\text{S}_C(\beta^*)) \).

d) The firm deviates on the message: \( m = A \)
Here the consumer beliefs are \( \mu(A, P_A, P_B) = (1, 0) \) for all \( P_A, P_B \) and consumer actions are as follows:

Consumers in segment 1 buy A iff \( P_A \leq V + \gamma \eta \) and those in segment 2 buy B if \( P_B \leq V \). The maximum profit from this strategy is \( V + \gamma^2 \eta \) which is less than \( \pi(S_C(\beta^*)) \).

e) The firm deviates on the message: \( m = B \)

Here the consumer beliefs are \( \mu(B, P_A, P_B) = (0, 1) \) for all \( P_A, P_B \) and consumer actions are as follows:

Consumers in segment 1 buy B iff \( P_B \leq V + \gamma \eta \) and those in segment 2 buy A if \( P_A \leq V \). The maximum profit from this strategy is \( V + \gamma^2 \eta \) which is less than \( \pi(S_C(\beta^*)) \).

Thus, there are no profitable deviations for the firm.

D.2 Flaunting Equilibrium

I now consider all possible deviations to show that, they are all less profitable for the firm than the equilibrium strategy.

a) The firm deviates on the message and prices: \( m = \phi, P_A = P_B = P(\bar{\beta}) > V \)

Case 1: If \( C > 0 \)

Here, consumer beliefs on the state of the world remain the same as priors: \( \mu(\phi, P_A, P_B) = (0.5, 0.5) \) and consumers actions are as follows:

The best-response of a consumer \( i \in \) segment 1 is to search and buy if \( 0 \leq \beta_i \leq \bar{\beta} \). If \( \bar{\beta} \leq \beta_i \leq 1 \), then she neither searches nor buys. Consumers in segment 2 neither search nor buy. Hence, the firm’s profit is \( \pi(S_C(\bar{\beta})) \), which is atmost \( \pi(S_C(\beta^*)) \) if \( \bar{\beta} = \beta^* \) since \( \pi(S_C(\beta^*)) \) is the maximum profit from cloaking. However, \( \pi(S_C(\beta^*)) < \pi(S_F^\ast) \).

Case 2: If \( C \leq 0 \)

Here, consumer beliefs on the state of the world remain the same as priors: \( \mu(\phi, P_A, P_B) = (0.5, 0.5) \).

However, search cannot be sustained. Therefore, no one searches or buys and the firm’s profit is zero, which is always less than \( \pi(S_C(\beta^*)) \).

b) The firm deviates on the message and prices: \( m = \phi, P_A = P_B = P(\bar{\beta}) \leq V \)

All consumers buy A or B randomly. The firm’s maximum profit under such a strategy is \( V \) which is less than \( \pi(S_F^\ast) = V + \gamma^2 \eta \).

c) The firm deviates on message: \( m = \phi, P_A^* > P_B^\ast \).

Consumers in segment 1 buy A iff \( P_A \leq V + \gamma \eta \) and those in segment 2 buy B if \( P_B \leq V \). The profit from this strategy is \( V + \gamma^2 \eta \). Since, this is exactly the same as the profit from \( \pi(S_F^\ast) \), by the tie-breaking
assumption 1, the firm doesn’t deviate.

d) The firm deviates on message: \( m = B, P_B^* > P_A^* \).

Consumers in segment 1 buy B iff \( P_B \leq V + \gamma \eta \) and those in segment 2 buy A if \( P_A \leq V \). The profit from this strategy is \( V + \gamma^2 \eta \). Since, this is exactly the same as the profit from \( \pi (S_F^*) \), by the tie-breaking assumption 2, the firm doesn’t deviate.

Thus, there are no profitable deviations for the firm.

E Proof of Proposition 4

Consider a \( \gamma_L \), where flaunting is not in equilibrium, that is \( \Pi > 0 \) (cloaking is more profitable) and \( C > 0 \). Now, I show that for all \( \gamma_H > \gamma_L \), flaunting continues to be not in equilibrium, i.e., flaunting remains less profitable than cloaking. For a given set of \( \{s, a, \eta, c\} \), let \( \beta(\gamma) \) be the optimal cut-off at \( \gamma \) from cloaking. Also, let \( F[\gamma, \beta] \) be the difference between the expected profits from cloaking (at the cut-off \( \beta \)) and flaunting.

\[
\pi (S_C(\beta)) - \pi (S_F^*) = F[\gamma, \beta] = \gamma^2 f[\beta] + \gamma g[\beta] + h[\beta]
\]

where \( f[\beta] = (\beta^2[a(1 - \beta) + \eta A_1] - \eta), g[\beta] = V^2 - \beta^2 c^2 \) and \( h[\beta] = -V \)

1. Since \( \gamma g[\beta] + h[\beta] = -c\beta^2 - V(1 - \beta) < 0 \), \( \forall \gamma, \beta \) if there exists a \( \gamma_L \), such that \( F[\gamma_L, \beta(\gamma_L)] > 0 \), then \( f[\beta(\gamma_L)] > 0 \).

2. We know that at \( \gamma = 0 \), \( F[0, \beta(\gamma_L)] = -V \).

3. Also, \( \frac{dF[\gamma, \beta(\gamma_L)]}{d\gamma} = 2\gamma f[\beta(\gamma_L)] + g[\beta(\gamma_L)] \), which is increasing in \( \gamma \). Hence, once it becomes positive, it remains positive (as \( \gamma \) increases). Note that \( \beta(\gamma_L) \) is kept constant and \( \gamma \) is being varied in the derivative.

4. \( \frac{dF[\gamma, \beta(\gamma_L)]}{d\gamma} \bigg|_{\gamma=0} = g[\beta(\gamma_L)] < 0 .\)

5. Since \( F[0, \beta(\gamma_L)] = -V \) and \( F[\gamma_L, \beta(\gamma_L)] > 0 \), at some point between 0 and \( \gamma_L \), \( \frac{dF[\gamma, \beta(\gamma_L)]}{d\gamma} \) becomes positive.

6. Thus, \( \forall \gamma_H > \gamma_L \), \( F[\gamma_H, \beta(\gamma_L)] > 0 \)

7. Let \( \hat{c}(\gamma) = \frac{\eta(2s-1)^2}{2} \) and \( \hat{c}(\gamma) = \frac{\eta(2s-1)^2}{2} > 0 .\) Therefore, \( \hat{c}(\gamma_L) < \hat{c}(\gamma_H) .\) We know that \( c < \hat{c}(\gamma_L) \), therefore \( c < \hat{c}(\gamma_H) \) \( \forall \gamma_H > \gamma_L \). Hence, a cloaking strategy with a cut-off \( \beta(\gamma_L) \) is viable at \( \gamma_H .\)
8. Since \( F[\gamma_H, \beta(\gamma_L)] > 0 \) and \( c < \bar{c}(\gamma_H) \), cloaking continues to be a viable and more profitable strategy at \( \gamma_H \) than flaunting. (Of course, the firm may choose a better cut-off \( \beta(\gamma_H) \), but \( F[\gamma_H, \beta(\gamma_L)] \) is a lower bound on difference in profits.)

**F Proof of Proposition 5**

(6a) For a given set of \( \{a, \gamma, s, c, \eta\} \), let \( \Pi \) be as defined in Section 4.3.

Case 6a.1 – Let \( \hat{\beta}_1 < 0 \) (which is a possibility if \( V = 0 \)) which gives us \( \beta^* = 0 \) and \( \Pi = -(V + \gamma^2 \eta) \). Hence \( \frac{d\Pi}{dV} = -1 < 0 \).

Case 6a.2 – Let \( 0 < \hat{\beta}_1 < 1 \), which gives us \( \beta^* = \hat{\beta}_1 \) and \( \Pi = \{ \gamma \left[ V + \gamma \hat{\beta}_1 \left[ a \left( 1 - \hat{\beta}_1 \right) + \eta A_1 \right] \right] \hat{\beta}_1 - \{ V + \gamma^2 \eta \} \} \).

1. Differentiating, we have \( \frac{d\Pi}{dV} = \frac{\partial \Pi}{\partial \hat{\beta}_1} \frac{d\hat{\beta}_1}{dV} + \frac{\partial \Pi}{\partial V} \).

2. We know that \( \frac{\partial \Pi}{\partial \hat{\beta}_1} = 0 \).

3. Therefore, \( \frac{d\Pi}{dV} = \frac{\partial \Pi}{\partial V} = -\left( 1 - \gamma \hat{\beta}_1 \right) < 0 \)

Case 6a.3 – Let \( \hat{\beta}_1 \geq 1 \), which gives us \( \beta^* = 1 \) and \( \Pi = \{ \gamma (V + \eta \gamma A_1 - c) \} - \{ V + \gamma^2 \eta \} \).

1. Differentiating, we have \( \frac{d\Pi}{dV} = -(1 - \gamma) < 0 \)

(6b) For a given set of \( \{a, \gamma, s, c, V\} \), let \( \Pi \) be as defined in Section 4.3.

Case 6b.1 – Let \( \hat{\beta}_1 < 0 \) (which is a possibility if \( V = 0 \)) which gives us \( \beta^* = 0 \) and \( \Pi = -(V + \gamma^2 \eta) \). Hence \( \frac{d\Pi}{d\eta} = -\gamma^2 < 0 \).

Case 6b.2 – Let \( 0 < \hat{\beta}_1 < 1 \), which gives us \( \beta^* = \hat{\beta}_1 \) and \( \Pi = \{ \gamma \left[ V + \gamma \hat{\beta}_1 \left[ a \left( 1 - \hat{\beta}_1 \right) + \eta A_1 \right] \right] \hat{\beta}_1 - \{ V + \gamma^2 \eta \} \} \).

1. Differentiating, we have \( \frac{d\Pi}{d\eta} = \frac{\partial \Pi}{\partial \hat{\beta}_1} \frac{d\hat{\beta}_1}{d\eta} + \frac{\partial \Pi}{\partial \eta} \).

2. We know that \( \frac{\partial \Pi}{\partial \hat{\beta}_1} = 0 \).

3. Therefore, \( \frac{d\Pi}{d\eta} = \frac{\partial \Pi}{\partial \eta} = -\gamma^2 \left( 1 - \hat{\beta}_1 \right) < 0 \)

Case 6b.3 – Let \( \hat{\beta}_1 \geq 1 \), which gives us \( \beta^* = 1 \) and \( \Pi = \{ \gamma (V + \eta \gamma A_1 - c) \} - \{ V + \gamma^2 \eta \} \).

1. Differentiating, we have \( \frac{d\Pi}{d\eta} = -\gamma^2 (1 - A_1) < 0 \)
For a given set of \( \{\eta, \gamma, s, c, V\} \), let \( \Pi \) be as defined in Section 4.3.

**Case 6c.1** – Let \( \hat{\beta}_1 < 0 \) (which is a possibility if \( V = 0 \)) which gives us \( \beta^* = 0 \) and \( \Pi = -(V + \gamma^2 \eta) \). Hence \( \frac{d\Pi}{da} = 0 \).

**Case 6c.2** – Let \( 0 < \hat{\beta}_1 < 1 \), which gives us \( \beta^* = \hat{\beta}_1 \) and \( \Pi = \left\{ V + \gamma \hat{\beta}_1 \left[ a \left( 1 - \hat{\beta}_1 \right) + \eta A_1 \right] \right\} \gamma \hat{\beta}_1 - \left\{ V + \gamma^2 \eta \right\} \).

1. Differentiating, we have \( \frac{d\Pi}{da} = \frac{\partial \Pi}{\partial \hat{\beta}_1} \frac{d\hat{\beta}_1}{da} + \frac{\partial \Pi}{\partial a} \).

2. We know that \( \frac{\partial \Pi}{\partial \hat{\beta}_1} = 0 \).

3. Therefore, \( \frac{d\Pi}{da} = \frac{\partial \Pi}{\partial a} = -\left( \gamma \hat{\beta}_1 \right)^2 \left( 1 - \hat{\beta}_1 \right) > 0 \) since \( 0 < \hat{\beta}_1 < 1 \).

**Case 6c.3** – Let \( \hat{\beta}_1 \geq 1 \), which gives us \( \beta^* = 1 \) and \( \Pi = \left\{ \gamma (V + \eta A_1 - c) \right\} - \left\{ V + \gamma^2 \eta \right\} \).

1. Differentiating, we have \( \frac{d\Pi}{da} = 0 \)

### G  Additional Figures

![Image](https://example.com/figure8.png)

Figure 8: Yves Saint Laurent Spring 2008 Ad Campaign for Bags; *From left to right: Muse, Majorelle, Muse Two* (highlighted)
Figure 9: Handbag Section of Yves Saint Laurent’s Website (Spring 2008)

Figure 10: Ralph Lauren Collection’s Ad Campaign for Bags (Spring 2008)
Figure 11: Handbag Section of Ralph Lauren Collection’s Website, Spring 2008; (Highlighted - “Our Favorites” and “Scarf Handbag”)

Scarf Handbag
References


Review, 80, 262-267.


