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Sellers sometimes practice a form of false advertising known as bait and switch. A low-priced good is advertised but replaced by a different good at the showroom. The practice is surprising since advertising the wrong good discourages the appropriate buyers from shopping, attracting customers who will be disappointed when they see the good. Firms bait and switch to draw a greater number of shoppers. The cost is that some who would have bought the good that is for sale may not bother to look. Under a variety of conditions, bait and switch is a profitable strategy resulting in a fully rational equilibrium with false advertising.

An auto enthusiast is reading his Sunday paper and sees an ad for a new four-wheel-drive vehicle priced at $21,998. When he arrives at the showroom, he is told that the advertised vehicle has been sold but that a similar model is available. This one costs $22,998, but it contains a number of important options such as pinstripes and tinted glass. After some bargaining and the loss of a day's time, the customer buys the car at $22,500.

The dealership has engaged in bait and switch. It is alleged that dealers often advertise cars that they do not have available simply to attract shoppers to the showroom. A number of states have passed laws that attempt to restrict the use of this type of behavior.[1]

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[1] The Federal Trade Commission prohibits bait and switch, defined as an alluring but insincere offer to sell a product or service that the advertiser does not intend or want to sell (see Gerstner and Hess 1990, p. 114). In California, automobile ads list the serial number of the advertised car and the number available at that price.

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Bait-and-switch strategies, which, it is claimed, are used frequently, seem to be profitable at first glance but are puzzling on closer examination. When a seller advertises the wrong good, say a Jeep without pinstripes and tinted glass, he induces those most interested in the cheaper model to come in. But those who prefer the fully loaded version at the higher price are less likely to shop than if the car actually for sale were advertised accurately. It is true that, once at the showroom, some who would not otherwise have looked at the expensive model will end up buying. But it is also true that some customers who want the expensive model may not even bother to look.[2]

Search costs are at the heart of the problem, but the mere invocation of search costs does not provide an answer. Even if consumers were "locked in" by search costs, there is no reason why the seller would want to lock in buyers who value the good less. Truthful advertising would seem to attract those who receive the most consumer surplus from the good, and sellers would be able to extract the most rent from these high-value buyers. Also, search costs are sunk costs, and it is not clear that sunk costs can lock customers in.

The use of bait and switch depends on the distribution of preferences in the population of consumers. When the market is dense at the low end so that most customers want to buy the low-quality variety at a low price, firms are more likely to advertise low-quality, low-price goods and attempt to switch customers to higher-price items. When the market is dense at the upper end, firms are more likely to advertise high-quality goods and attempt to switch buyers to lower-quality items. The main results follow: (1) Truthful advertising prevails unless more consumers will shop for a good other than the one that the seller has available. Bait and switch can result only when more will shop for good B than for good A and when the seller has good A for sale. (2) A bait-and-switch strategy has value only when there are search costs. (3) Seller showing costs reduce the likelihood of engaging in bait and switch. (4) Bait and switch tends to involve goods with similar attributes and price. Truthful advertising is more likely when the alternative is to advertise a good with different characteristics and price.

[2] Stigler and Kindahl (1970) pointed out the difference between list price and sale price. They argued that price was much more flexible than it appeared because the relation of sale to list price varied with market conditions. More recently, Carlton (1986) has examined those data and found that when price changes are rare, price movements are relatively large. Charging a price different from the one that is advertised can be interpreted as bait and switch. Bait and switch bears some similarity to cheap talk. The advertisement is an announcement, but not a commitment. For a discussion of cheap talk, see, e.g., Sobel (1985) and Farrell (1987).

Model

Consider a good, say a car, that is for sale. If all the car's attributes were known, it would appeal to different individuals in different ways. For example, a two-seat convertible is likely to be less highly valued by a family of four that lives in Buffalo than it is by a single man who lives in Los Angeles. Similarly, an eight-seat minivan may have higher value to the family of four than to the single man. Let us index individuals by some vector of characteristics, $\mathbf{x}$. In the case of automobiles, $\mathbf{x}$ might relate to family size and income.

Suppose that there are two types of commodities in the world: The first is an automobile that comes in two varieties, A and B. The second is a generic good that has price equal to one. Consumers are endowed with wealth W. Cars A and B cost P_A and P_B, respectively. If the consumer buys a type A car, then he has $W - P_A$ left to spend on the generic good. If the consumer buys a type B car, then he has $W - P_B$ left to spend on the generic good. If the consumer buys neither A nor B, then he has W left to spend on the generic good. Thus, in the absence of search costs, utility is given by

$$\begin{array}{ll} M(\mathbf{x}, W - P_A) & \text{if } A \text{ is consumed} \\ N(\mathbf{x}, W - P_B) & \text{if } B \text{ is consumed} \\ R(\mathbf{x}, W) & \text{if neither } A \text{ nor } B \text{ is consumed.} \end{array} \tag{1}$$

Now suppose that the consumer must bear cost k to search for the car. Under these circumstances, utility is given by

$$\begin{array}{ll} M(\mathbf{x}, W - P_A - k) & \text{if } A \text{ is consumed} \\ N(\mathbf{x}, W - P_B - k) & \text{if } B \text{ is consumed} \\ R(\mathbf{x}, W) & \text{if neither } A \text{ nor } B \text{ is consumed; no search occurs} \\ R(\mathbf{x}, W - k) & \text{if neither } A \text{ nor } B \text{ is consumed; search occurs.} \end{array} \tag{1'}$$

If a consumer searches and buys A, his utility is $M(\mathbf{x}, W - P_A - k)$ and, analogously, $N(\mathbf{x}, W - P_B - k)$ if he buys B. If he chooses not to search, he avoids cost k and receives utility $R(\mathbf{x}, W)$. If he searches and then chooses not to buy, he receives utility $R(\mathbf{x}, W - k)$, because the search cost reduces his resources available for the generic good.

Let γ be the proportion of firms that produce A and $1 - \gamma$ the proportion that produce B. For simplicity, it is assumed that a potential customer gets a message from one and only one seller. The message identifies the location of the store and affirms that it has automobiles to sell. It also declares the type of car that is for sale.[3] After having received the message, the consumer can decide to "shop," that is, to inspect the good or to stay home. If he does not shop, then all his wealth is spent on the generic good. The consumer's type is unknown to the producer, primarily because the seller does not know the identity of the consumer that his advertisement reaches.

A firm that sells A can either advertise truthfully that it has A for sale at price P_A or advertise falsely that it has B for sale at price P_B. The second strategy is bait and switch. A *bait-and-switch strategy* is defined as advertising one good but offering another to the buyer after he has already borne the search costs and has come to inspect the product. The truth-telling situation requires a separating equilibrium in which A wants to advertise A and B wants to advertise B. A *bait-and-switch equilibrium* is defined as a pooling equilibrium in which both sellers advertise that they have B.[4]

Defining a bait-and-switch equilibrium as a pooling equilibrium conforms with common usage of the term "bait and switch." In the bait-and-switch equilibrium, all sellers announce that they have the low-priced good for sale. The announcement merely identifies the location of the automobile showroom and lets the shopper know that there is some positive probability that the advertised good is actually for sale. Buyers understand that some sellers engage in bait and switch. The shopper arrives at the showroom and learns the identity of the actual car for sale. If the car is in fact a B, he judges the ad to have been truthful. If the car is actually an A, he views the seller as having engaged in bait and switch; this seller has lied about the identity of the good. Even though buyers know that some sellers engage in deceptive advertising, the dishonest behavior by those sellers is exactly what is commonly called bait and switch.

To begin, let us provide conditions under which a separating equilibrium exists. In such an equilibrium, sellers of A advertise A, sellers of B advertise B, and buyers shop for a car on the basis of its announced characteristics.

If firms tell the truth, then a consumer who sees an ad announcing that A is for sale at P_A will shop for and buy A iff

$$M(\mathbf{x}, W - P_A - k) > R(\mathbf{x}, W). \tag{2}$$

Similarly, a consumer who sees an ad announcing that B is for sale at P_B will shop for and buy B iff

$$N(\mathbf{x}, W - P_B - k) > R(\mathbf{x}, W). \tag{3}$$

[3] The type part of the message may or may not be informative and depends on the equilibrium, to be derived below.

[4] Since nothing is assumed about A's quality relative to B, goods can be redefined to consider the opposite case.

When condition (2) holds, the consumer's utility is higher by buying the car at price P_A and bearing search costs k than by not shopping at all and saving search costs. When (3) holds, the consumer is better off by shopping and buying B than by not shopping at all and saving search costs.

For a separating equilibrium to exist, a seller of A must not want to move to a bait-and-switch strategy. That is, given that consumers expect truthful advertising, the seller of A must not want to advertise falsely that he has B for sale.[5] Since we are interested in bait and switch, we now derive the condition under which a truthful advertising, separating equilibrium will not exist.

Suppose that a seller of A advertises B. Consumers, who initially assume truthful advertising, come to inspect the good if (3) holds. When the customer arrives at A's showroom, he learns that the car is type A and not B. At that point, the consumer buys the car iff

$$M(\mathbf{x}, W - P_A - k) > R(\mathbf{x}, W - k). \tag{4}$$

After the consumer has borne search costs k, he can either decide to buy A at price P_A and receive utility $M(\mathbf{x}, W - P_A - k)$ or refuse to buy A and receive utility $R(\mathbf{x}, W - k)$. Since search costs have already been borne, the utility from not buying A is only $R(\mathbf{x}, W - k)$, not $R(\mathbf{x}, W)$.

A sale of A by a seller who adopts a bait-and-switch strategy occurs only when both conditions (3) and (4) hold. Since the seller of A falsely advertises B, condition (3) must be met for a potential customer to shop. But since A is actually for sale, condition (4) must be met for a customer to buy. Define λ_B as the proportion of individuals with $\mathbf{x}$ such that conditions (3) and (4) hold. Then λ_B is the probability that a randomly drawn customer will buy A if a seller deviates to a bait-and-switch strategy, given that buyers expect truthful advertising. Similarly, define λ_T as the proportion of individuals with $\mathbf{x}$ such that condition (2) holds. Thus λ_T is the probability that a randomly drawn customer will buy A if seller A advertises truthfully, given truthful advertising by others. Finally, define λ_3 as the proportion of the population who satisfy condition (3), that is, the proportion who would shop for (and buy) B. Since some who will shop for B will not buy A once in the store, $\lambda_3 \geq \lambda_B$.

There are customers who will search for a car thinking that it is a B who would not have shopped at all had they known that only an A was available. Advertising B brings in these customers. Once there,

[5] Conversely, a seller of B would not want to advertise falsely that he had an A. But A can always be redefined as B, and as will be shown below, if sellers of A want to bait and switch, sellers of B want to advertise truthfully. Therefore, the conditions for only one seller are relevant.

some will buy because (4), the condition for buying after search has already been done, is weaker than (2), the condition for shopping and buying an A before search costs are sunk. But there is a cost to advertising B when only A is available. Some who would have bought A are not interested in B. There are likely to be individuals of type $\mathbf{x}$ such that (2) holds but (3) does not. Advertising B keeps those potential buyers away. This is the cost of bait and switch.

Normalize the rent per unit of A sold to be one. Then the expected rent to A from advertising truthfully is simply λ_T per potential customer. Analogously, the expected rent from bait and switch is λ_B per potential customer. A truthful advertising equilibrium exists when $\lambda_T > \lambda_B$ and when the analogous condition holds for sellers of B. Then sellers want to advertise truthfully, and buyers base their shopping decisions on the announced good. Conversely, if $\lambda_T < \lambda_B$, a seller of A will want to deviate from the truthful advertising equilibrium and will engage in a bait-and-switch strategy.

Bait and Switch

Why would a seller bait and switch when false advertising drives legitimate buyers away and attracts some customers who may not buy when they learn the true identity of the good for sale? The answer is that enough actual buyers may be induced into the showroom by advertising B to make up for those lost from failing to advertise truthfully.[6] This leads to the following proposition.

PROPOSITION 1. A necessary condition for a seller of A to deviate from truthful advertising to a bait-and-switch strategy, given that others are advertising truthfully, is that fewer customers are willing to shop for the good that the seller has than are willing to shop for the other good. A necessary and sufficient condition for a seller to adopt a bait-and-switch strategy, given that others are advertising truthfully, is that $\lambda_B > \lambda_T$.

Proof. First consider the necessary and sufficient condition. In order for a bait-and-switch strategy to be adopted, λ_B must exceed λ_T. Given that others are advertising truthfully and buyers believe the ads, the profit under truthful advertising is λ_T, and the profit under bait and switch is λ_B. Thus $\lambda_B > \lambda_T$ is a necessary and sufficient condition for the bait-and-switch strategy.

Further, recall that λ_B is defined as the proportion of the population for which conditions (3) and (4) hold. Since (3) must be satisfied

[6] The bait-and-switch equilibrium is similar to the one described by Akerlof (1970) and Greenwald (1986), where some sellers offer the low-quality good and some offer the high-quality good, but consumers do not know the identity of the sellers ex ante.

in order for (3) and (4) to be satisfied, $\lambda_3 \geq \lambda_B > \lambda_T$. Therefore, a necessary condition to deviate to a bait-and-switch strategy is $\lambda_3 > \lambda_T$. The proportion who are willing to shop for B must exceed the proportion who are willing to shop for A. Q.E.D.

Additionally, it is possible to show that the seller of at most one type of the good will deviate to the bait-and-switch strategy. If sellers of A want to deviate from truthful advertising, then sellers of B do not, and vice versa. Thus we have the following proposition.

PROPOSITION 2. At most one type of seller wants to deviate from truthful advertising to a bait-and-switch strategy. If sellers of A advertise that they are selling B, then sellers of B do not advertise that they are selling A.

Proof. A necessary condition for A to want to bait and switch is that more customers will shop for B than will shop for A. Since the labels A and B are arbitrary, it must also be true that for B to want to bait and switch, more customers must be willing to shop for good A than for B. Both statements cannot hold simultaneously. Q.E.D.

Nonexistence of a separating equilibrium does not imply existence of a pooling equilibrium. Neither separating nor pooling may exist, or both separating and pooling may exist. Since the bait-and-switch equilibrium is defined as a situation in which sellers of both A and B advertise B and in which consumers are aware of this situation, the conditions for a pooling equilibrium are now examined.

The conditions for a bait-and-switch equilibrium are related to but slightly different from those for breaking a truthful advertising equilibrium. If bait and switch occurs, then there is pooling in which every seller advertises B. Given that everyone is advertising B, will it ever pay for A to advertise A truthfully, thus destroying the pooling equilibrium?

Let us explore the possibility that a seller of A will deviate from the pooling equilibrium and advertise truthfully that A is for sale, where consumers believe that advertising A is truthful.

As before, a buyer will shop for A when (2) holds. In the pooling equilibrium, a buyer does not know whether he will encounter A or B but knows that γ of the firms are selling A and $1 - \gamma$ of the firms are selling B. Thus a customer shops when

$$\begin{aligned} &\gamma \max\{M(\mathbf{x}, W - P_A - k), R(\mathbf{x}, W - k)\} \\ &+ (1 - \gamma)\max\{N(\mathbf{x}, W - P_B - k), R(\mathbf{x}, W - k)\} > R(\mathbf{x}, W). \end{aligned} \tag{3'}$$

Seller A still sells only to those shoppers whose ex post value of A exceeds the ex post value of buying only generic goods. So goods are sold only to those for whom condition (4) is satisfied. The customers who will shop in the pooling equilibrium and buy from A are those for whom (3′) and (4) hold. Condition (3) does not imply (3′), so the failure to have a separating equilibrium does not imply that bait and switch by all sellers of A is an equilibrium.

Recall that λ_T is the proportion of potential consumers for whom (2) is satisfied, that is, those customers who will shop for and buy an A under truthful advertising. Define λ_B' as the proportion of potential customers for whom (3′) and (4) are satisfied. The following proposition describes conditions for the pooling equilibrium.

PROPOSITION 3. A necessary condition for sellers of A to advertise B falsely, given that all other sellers advertise B, is that more customers will shop when all advertise B than will shop for A when the seller of A advertises truthfully. A necessary and sufficient condition for A to advertise B, given that all others advertise B, is that $\lambda_B' > \lambda_T$.

Proof. Profit for a seller of A in the pooling equilibrium is λ_B'. Profit for a seller of A who deviates to truthful advertising (and is believed) is λ_T. Thus $\lambda_B' > \lambda_T$ is necessary and sufficient for A to bait and switch in the pooling equilibrium.

Also, the proportion who shop when all advertise B are those for whom (3′) holds. Since λ_B' is the proportion for whom (3′) and (4) hold, the proportion who shop is not less than λ_B'. But necessary for bait and switch is that $\lambda_B' > \lambda_T$. Thus, for A to engage in bait and switch, given that all others advertise B, it is necessary that the proportion who shop when all advertise B exceed the proportion who shop when a seller of A advertises A. Q.E.D.

Proposition 3 is similar to proposition 1. The difference is that in proposition 1, shoppers base their shopping decision on what they believe to be a truthful claim that B is for sale. In proposition 3, shoppers recognize that there is only a $1 - \gamma$ probability that the advertised good is of type B and that γ of the sellers offer A and engage in bait and switch.

To prove the existence of a pooling equilibrium, it is necessary to consider the behavior of those who sell B. In particular, it is necessary to describe the conditions under which sellers of B will not want to deviate from the pooling equilibrium by advertising A.

If B advertises A and the ad is believed, then all those for whom (2) holds will shop. But after learning that the good is a B instead of an A, the shopper will buy only when

$$N(\mathbf{x}, W - P_B - k) > R(\mathbf{x}, w - k). \tag{5}$$

In the pooling equilibrium, sellers of B sell to those for whom (3′) and (5) are satisfied. Sellers of B advertise B in the pooling equilibrium if and only if there are more individuals for whom (3′) and (5) are satisfied than there are individuals for whom (2) and (5) are satisfied.

It is now possible to state the following proposition.

PROPOSITION 4. If good B is preferred to good A by all consumers at the relevant prices, then a bait-and-switch equilibrium exists and is the only equilibrium.

Proof. A separating equilibrium does not exist: For a separating equilibrium to exist, there must be more individuals for whom (2) and (4) are satisfied than for whom (3) and (4) are satisfied. Since $N(\mathbf{x}, W - P_B - k) > M(\mathbf{x}, W - P_A - k)$ for all $\mathbf{x}$, there is no one for whom (2) and (4) are satisfied who does not have (3) and (4) satisfied. But, in general, there are individuals for whom (3) and (4) are satisfied who do not have (2) and (4) satisfied. Thus the separating equilibrium breaks down.

A pooling equilibrium exists: First, in the pooling equilibrium, A will use a bait-and-switch strategy. There is no one for whom (2) and (4) hold who does not also have (3′) and (4) satisfied. To see this, substitute (4) into (3′) to obtain

$$\gamma M(\mathbf{x}, W - P_A - k) + (1 - \gamma)\max\{N(\mathbf{x}, W - P_B - k), R(\mathbf{x}, W - k)\} > R(\mathbf{x}, W). \tag{3''}$$

Since (3″) is a convex combination of M and $\max\{N, R\}$ and since $N > M$ for all $\mathbf{x}$, $M(\mathbf{x}, W - P_A - k) > R(\mathbf{x}, W)$ guarantees that the convex combination is also greater than $R(\mathbf{x}, W)$. The reverse is not true, so A advertises B.

Second, B does not want to advertise A. Since $N(\mathbf{x}, W - P_B - k) > M(\mathbf{x}, W - P_A - k)$, anyone for whom (2) and (5) are satisfied also satisfies (3′) and (5). The reverse is not true, so B advertises truthfully. Thus the pooling equilibrium exists. Q.E.D.

While the condition stated in proposition 4 is a strong one, it helps provide the intuition for all that follows. Bait and switch makes sense when most people prefer one type of good. Then the seller of the other type will engage in a bait-and-switch strategy and the seller of the most desired good will advertise truthfully.[7]

To provide a graphical representation, normalize utility such that $R(\mathbf{x}, W) = c_1$ and $R(\mathbf{x}, W - k) = c_2$ for every consumer, c_1 and c_2

[7] It is possible that neither pooling nor separating equilibria exist. Pooling may generate almost no shoppers. In the pooling equilibrium, some firms engage in bait and switch. A consumer shops only when the weighted utilities of A and B exceed the no-shopping utility, $R(\mathbf{x}, W)$. Those who prefer A but are just barely willing to shop for an A may not shop because there is a substantial chance that they will find a B in the pooling equilibrium. Those who prefer B but are just barely willing to shop for a B may not shop because there is a substantial chance that they will find an A in the pooling equilibrium. When sellers revert to advertising an A, at least those customers who actually want an A will shop and buy. But if most prefer B, it is possible that when others are advertising truthfully, sellers of A will want to deviate to advertising B, thus destroying the separating equilibrium.

being arbitrary constants with $c_1 > c_2$.[8] The bait-and-switch equilibrium requires that (3′) and (4) are satisfied for more individuals than (2) and (4). (Otherwise A will advertise truthfully.)

In figure 1, values of N and M are plotted. A point in N, M space corresponds to an individual or individuals who have that pair $[N(\mathbf{x}, W - P_B - k), M(\mathbf{x}, W - P_A - k)]$. Suppressed in this two-dimensional diagram is the vertical axis, which shows the frequency of individuals at each point. Individuals for whom (2) and (4) are satisfied are those with $M(\mathbf{x}, W - P_A - k) > R(\mathbf{x}, W)$. This is shown as the vertical lined area in figure 1*a*. For sellers of A, (3′) and (4) imply (3″) and (4). Those for whom (3″) and (4) are satisfied are those for whom N, M lie in the horizontal lined area.[9] Much of the areas overlap, but J is associated only with truthful advertising and L only with bait and switch. Sellers of A will not deviate from bait and switch when the number of individuals in area L exceeds the number of those in area J.

In figure 1*b*, the decision by sellers of B is illustrated. A seller of B who advertises B sells to those for whom (3′) and (5) hold. Substituting (5) into (3′) yields conditions

$$\begin{aligned}&\gamma \max\{M(\mathbf{x}, W - P_A - k), R(\mathbf{x}, W - k)\}\\ &\quad + (1 - \gamma)N(\mathbf{x}, W - P_B - k) > R(\mathbf{x}, W)\end{aligned} \tag{3*}$$

and (5). This is shown as the horizontal lined area. A seller of B who advertises A sells to those for whom (2) and (5) hold. This is shown as the vertical lined area. Nonoverlapping areas are S, which is associated with advertising A (falsely), and Q, which is associated with advertising B truthfully. Sellers of B advertise truthfully when the number of individuals in area Q exceeds the number of those in area S.

The reason that proposition 4 holds is clear from figure 1: When $N(\mathbf{x}, W - P_B - k) > M(\mathbf{x}, W - P_A - k)$ for all $\mathbf{x}$, all the mass lies below the $M = N$ line. This guarantees that more points are found

[8] Since only orderings are important and since $R(\mathbf{x}, W) > R(\mathbf{x}, W - k)$ for all consumers, there is always a monotonic transformation of utility that can produce $R(\mathbf{x}, W) = c_1$ and $R(\mathbf{x}, W - k) = c_2$.

[9] Condition (3″) can be rewritten as

$$M > \frac{R(\mathbf{x}, W)}{\gamma} - \frac{(1 - \gamma)R(\mathbf{x}, W - k)}{\gamma} \quad \text{for } N < R(\mathbf{x}, W - k)$$

and

$$M > \frac{R(\mathbf{x}, W)}{\gamma} - \frac{(1 - \gamma)N}{\gamma} \quad \text{for } N \geq R(\mathbf{x}, W - k).$$

For $0 < \gamma < 1$, $k > 0$, the vertical intercept is always greater than R since the intercept goes to infinity as γ goes to zero, and it equals R when $\gamma = 1$ since $\partial/\partial\gamma$ is always negative.

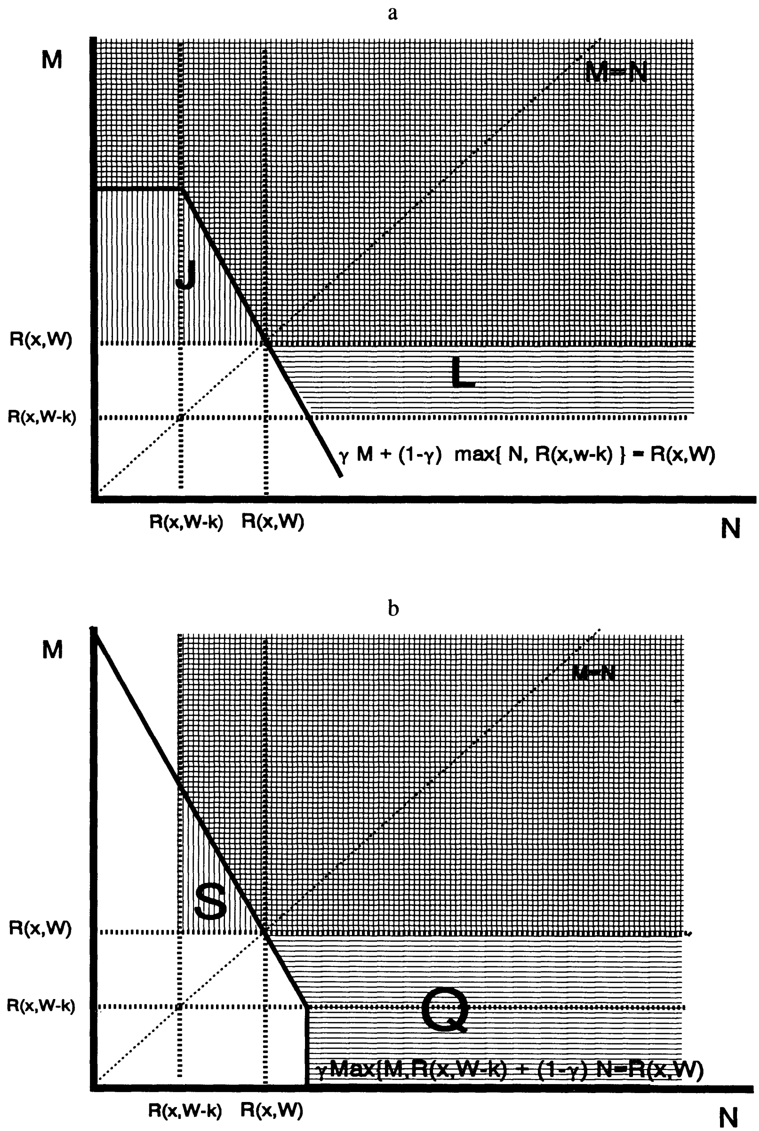

FIG. 1

in L than in J and that more points are found in Q than in S, which is an empty set. It is also clear that the condition in proposition 4 is excessive. While sufficient, it is not necessary that $N(\mathbf{x}, W - P_B - k) > M(\mathbf{x}, W - P_A - k)$ for every possible consumer, but only that the predominant number of points lie in the southeast region of the diagram.

These propositions provide the logic for bait and switch. If sellers of B advertise truthfully, a seller of A wants to lie about what he has for sale only when he believes that more of the potential shoppers can be attracted by advertising a good other than the one that he has available. He brings in more shoppers by advertising B, hoping that a large enough proportion of them will buy A now that search costs are sunk. Rather than doing without a car, or hoping to find a B at some point in the future, the shopper buys A. Thus a bait-and-switch equilibrium is most likely when the market is relatively dense at one end. An example of this strategy is the sale of cars, where dealers advertise the cheaper model at a low price. Most prefer the cheaper model, but when shoppers arrive at the dealership, they are informed that the car advertised has already been sold. However, a similar car with many more options is available, of course at a higher price.

Since nothing has been assumed about M or P_A relative to P_B, bait and switch as described above can also refer to situations in which a seller advertises the high-price, high-quality good when he has the low-price, low-quality good for sale. Sellers like to convince potential buyers that the good is the high-quality, high-price type only when more consumers will shop for the high-price good than for the low-price one. One example involves theater tickets. A frequently advertised slogan is "good seats still available." Often, when the ticket buyer calls, he finds that only lower-quality, lower-price seats are available, except for the Thursday afternoon performance. The seller would use this strategy only if most consumers prefer to shop for the high-price, high-quality seats. Indeed, high-price seats usually sell out first. If theaters adopt a pricing policy that underprices the best seats relative to others,[10] then the theater might use bait and switch. In this case, the seller attempts to shift consumers to lower-price goods rather than higher-price ones.

Close Substitutes and Bait and Switch

Suppose that A were a \$300,000 Lamborghini Diablo (a very fancy sports car) and B were a minivan. Intuition suggests that bait and switch is not very likely between these two cars. But if A were instead a minivan with tinted glass that sold for \$250 more than B, one senses that bait and switch would be more likely to occur. Insight can be gained by providing a necessary condition for a bait-and-switch equilibrium.

[10] Why they do this is another interesting issue that is not addressed here. One possibility, however, is that it is impossible to keep buyers of cheap seats from moving down into the more expensive seats.

PROPOSITION 5. No bait-and-switch equilibrium exists when anyone who will shop for B will not buy A.

Proof. The condition implies that anyone for whom $N(\mathbf{x}, W - P_B - k) > R(\mathbf{x}, W)$ also has $M(\mathbf{x}, W - P_A - k) < R(\mathbf{x}, W - k)$. Necessary for bait and switch is that there are some individuals who satisfy (3″) and who satisfy $R(\mathbf{x}, W - k) < M(\mathbf{x}, W - P_A - k) < R(\mathbf{x}, W - k)$ (i.e., there are some individuals with N, M pairs in area L of fig. 1*a*). These are individuals who will buy A ex post, who will not search for the certainty of A, and who will search when B turns up with probability $1 - \gamma$.

If an individual will not shop for A so that $M(\mathbf{x}, W - P_A - k) < R(\mathbf{x}, W)$, then (3″) can hold only if $N(\mathbf{x}, W - P_B - k) > R(\mathbf{x}, W)$. But this implies that $M(\mathbf{x}, W - P_A - k) < R(\mathbf{x}, W - k)$. Thus it is impossible to satisfy (3″) and $R(\mathbf{x}, W - k) < M(\mathbf{x}, W - P_A - k) < R(\mathbf{x}, W)$ simultaneously. Q.E.D.

The logic behind this proposition is clear: If no one who will shop for a B will buy an A, there is no reason for sellers of A to advertise that they have B. They lose some potential buyers of A and gain no shoppers of value. Truthful advertising is a more profitable strategy.

The proposition also provides a formal statement on close substitutes and bait and switch. If shoppers for the minivan will not buy the Lamborghini, nothing is gained by advertising that a minivan is for sale. Bait and switch requires that those who value B highly also value A highly, which is unlikely when the goods are minivans and Lamborghinis.

An extreme case provides graphical intuition. Suppose that $M(\mathbf{x}, W - P_A - k)$ and $N(\mathbf{x}, W - P_B - k)$ are very negatively correlated across consumers such that every individual for whom $N(\mathbf{x}, W - P_B - k) > 0$ also has $M(\mathbf{x}, W - P_A - k) = 0$, and vice versa. All points lie on the vertical and horizontal axes of figure 1. This guarantees that there are no points in L, but there are likely to be some in J, so the bait-and-switch equilibrium breaks down.

The Importance of Search Costs

Search costs are essential for bait and switch. The reason that A engages in a bait-and-switch strategy is that there are individuals who will buy A after having borne the search costs who will not search for A. Thus we have the following proposition.

PROPOSITION 6. In the absence of search costs, truthful advertising is an equilibrium.

Proof. In order for a seller to deviate from truthful advertising to bait and switch, there must be some individuals such that condition

(4) holds but condition (2) does not. Bait and switch has value only when

$$R(\mathbf{x}, W - k) < M(\mathbf{x}, W - P_A - k) < R(\mathbf{x}, W)$$

for some individuals. This condition can hold only when $k > 0$. Q.E.D.

If $k = 0$, there is no one who would buy after having already borne search costs who would not also buy before having borne search costs. Thus anyone who would shop for B and also buy A would also shop for A.

Note that it is not the fact that consumers are "locked in" that makes bait and switch attractive. Instead, bait and switch is a way to lower the *marginal* cost of purchasing A. Once the consumer is in the showroom, his marginal cost is P_A. Before he arrives, his marginal cost is $P_A + k$. Bait and switch works because search costs are sunk, not because they lock consumers in. There is no obvious reason why lock-in would favor lying over truthful advertising.

Further, this result has nothing to do with reputation. Sellers are not advertising truthfully because they fear the effects that lying will have on their reputations. They advertise truthfully because lying attracts the wrong customers. This was the starting point for the puzzle: In the absence of search costs, lying is unproductive because it attracts the wrong customers to the store.

The Effect of Showing Costs

Bait and switch is a profitable strategy for some sellers because it brings in some buyers who would not otherwise shop. It also brings in shoppers who will decline to buy once they find out that the good for sale is an A rather than a B. Shopping not only imposes costs on the buyer; it also is likely to impose costs on the seller. Some of these are fixed costs associated, for example, with placing an ad in the local newspaper. These costs will have no effect on the decision to advertise truthfully since they are borne whether an accurate or false message is transmitted. But other showing costs are variable, requiring additional labor time for a larger flow of customers. When bait and switch is profitable, the flow of shoppers is larger than it is with truthful advertising. Thus a seller's decision to advertise truthfully may be altered. Indeed, if showing the good to no-sale shoppers is costly, then bait and switch is less attractive. A seller who might have engaged in bait and switch in the absence of showing costs may opt for truthful advertising when showing costs are high. This leads to the next proposition.

PROPOSITION 7. Sufficiently high showing costs induce a bait-and-switch seller to prefer truthful advertising.

Proof. An equilibrium bait-and-switch strategy is used by A when $\lambda_T < \lambda_B'$. Let s be the showing cost. Then A will bait and switch when

$$\lambda_T - \lambda_T s < \lambda_B' - \lambda_{3'} s,$$

where $\lambda_{3'}$ is the proportion of individuals for whom (3′) is satisfied. Showing costs are borne on each shopper, not only on those who buy. The bait-and-switch condition with showing costs is violated when

$$(\lambda_{3'} - \lambda_T)s > \lambda_B' - \lambda_T.$$

Since $\lambda_{3'} \geq \lambda_B' > \lambda_T$, a sufficiently large positive value of s guarantees that truthful advertising is preferred.[11] Q.E.D.

Advertising Price or Quality

While most real-world examples of bait and switch involve advertising both price and quality (e.g., a particular model of an automobile for sale at $21,998), it is not necessary that both attributes be advertised. An ad could simply say "car available at $20,000" and allow the consumer to infer the quality. Or, more likely, it could advertise the quality of the good without specifying the price. For example, theaters advertise "good seats still available" without specifying the price.

In perfect competition, quality is sufficient since price is determined by the market. But the converse does not hold: Since many goods have the same price, advertising price does not reveal the quality of the good, even in perfect competition. Since it is not very interesting to advertise price without specifying the good or its quality, we focus on whether quality can be advertised without price.

Once search costs are introduced, price can deviate from the competitive price. Specifically, once a seller has a buyer in his store, the buyer's reservation utility is $R(\mathbf{x}, W - k)$. The seller and buyer then bargain over price, which is limited only by the requirement that price exceed the seller's reservation price and that price is less than $\overline{P}$, where $\overline{P}$ is defined such that

$$M(\mathbf{x}, W - \overline{P} - k) = R(\mathbf{x}, W - k).$$

As long as the customer knows the bargaining framework and the seller's reservation price, the customer will estimate the price to be paid. Then P_A and P_B can be interpreted as the estimated price, which will turn out to be the actual price, and all the previous analysis holds. The seller could advertise quality alone, and the buyer would infer the correct price.

[11] It is possible, of course, that the s can be sufficiently high to prevent selling altogether.

If the consumer knows only the distribution of reservation values rather than the realization or reservation value, things become more difficult. Then interpreting P_A and P_B as the estimated price paid does not make conditions (2)–(4) correct. Since maximizing the utility of the expectation is not the same as maximizing expected utility, the consumer conditions (2)–(4) would have to be replaced by ones that integrate over the entire distribution of possible reservation prices. Under these circumstances, additional information would be provided by advertising a price to which the seller can commit. The next section explores the issue of credible prices.

Another Interpretation of Bait and Switch

Bait and switch has been defined as false advertising, where a seller announces that he has, say, a low-quality, low-price good for sale when in fact he has a high-quality, high-price good for sale. Others might define bait and switch as a less subtle lie: A seller advertises that he has the high-quality good at a low price but replaces it with the identical good, renamed and carrying a higher price. A reinterpretation of the model permits this definition of bait and switch. Since nothing requires that $N(\mathbf{x}, Z)$ differ from $M(\mathbf{x}, Z)$, this interpretation fits the formal presentation. Good A sells at P_A and yields utility $M(\mathbf{x}, W - P_A - k)$. Good B sells for P_B and yields utility $M(\mathbf{x}, W - P_B - k)$, since B is identical to A. Under these circumstances, conditions (2) and (4) are unchanged, but $M(\ )$ replaces $N(\ )$ in (3), which becomes

$$M(\mathbf{x}, W - P_B - k) > R(\mathbf{x}, W). \tag{3a}$$

When (3) is (3a), a truthful advertising equilibrium can never exist. Bait and switch is always a dominant strategy. Since $P_B < P_A$ and k is nonnegative, (2) implies (3a) and (4). Furthermore, since $P_A > P_B$, there will be some consumers for whom (3a) holds and (2) does not. Thus $\lambda_B > \lambda_T$, so sellers should always advertise the good at a lower price than the one they expect to charge.[12]

This result is too strong and one on which the discussion of the last section has some bearing. Announcements of quality and price

[12] This is the interpretation of bait and switch used by Gerstner and Hess (1990). Their consumers will pay the same amount for any brand and will select the good with the lowest price. Thus the authors consider the special case in which A and B are perfect substitutes for one another at a ratio of one-to-one. When these conditions hold, Gerstner and Hess find that bait and switch may be socially beneficial because the practice pushes the price of featured brands sufficiently low. Since the featured brand is a perfect substitute and since the authors allow the possibility of taking a rain check on the featured brand, the price of in-store promoted goods comes down as well.

may be contradictory. If a consumer believes that the advertised good is of quality A, then advertising price P_B is not generally credible. Unless the seller can commit to P_B, the consumer will infer that the price is P_A. There are only two consistent messages in the absence of commitment: B is available at P_B or A is available at P_A. Ridiculous price/quality combinations are not taken seriously and might result in customers' ignoring the ad altogether.

Conclusion

Bait and switch occurs only when there are more potential customers for a good other than the one that the seller has available. After shoppers have come to inspect the good, some will buy it even though it is different from the one advertised and even though they would not have bothered to shop had they known what was available. Purchasing the available good, given that search costs are sunk, dominates the alternative.

The primary results are the following.

1. Bait and switch occurs because a seller gains shoppers by lying about the good that is for sale. Once search costs have been borne, some individuals who would not have shopped for the good had they known its identity will buy it because the marginal cost of a purchase no longer includes search costs. The cost of using a bait-and-switch strategy is that some who genuinely desire the good for sale will not shop as a result of the misleading message.

2. Bait and switch occurs only when there are many shoppers who prefer a good other than the one for sale. Only then does false advertising increase the number of potential buyers.

3. Bait and switch is more likely to involve goods that are close substitutes for one another. Only then will shoppers for one good be willing to buy the other good in its place.

4. A bait-and-switch strategy has value only when search is costly. Without search costs, anyone who will buy a good once at the store would also have shopped for it had it been advertised truthfully.

5. Sellers are less likely to bait and switch when there are costs to showing the good to potential customers. Showing costs penalize sellers who attract nonbuying shoppers to their stores.

References

Akerlof, George A. "The Market for 'Lemons': Quality Uncertainty and the Market Mechanism." *Q.J.E.* 84 (August 1970): 488–500.

Carlton, Dennis W. "The Rigidity of Prices." *A.E.R.* 76 (September 1986): 637–58.

Farrell, Joseph. "Cheap Talk, Coordination, and Entry." *Rand J. Econ.* 18 (Spring 1987): 34–39.

Gerstner, Eitan, and Hess, James D. "Can Bait and Switch Benefit Consumers?" *Marketing Sci.* 9 (Spring 1990): 114–24.

Greenwald, Bruce C. "Adverse Selection in the Labour Market." *Rev. Econ. Studies* 53 (July 1986): 325–47.

Sobel, Joel. "A Theory of Credibility." *Rev. Econ. Studies* 52 (October 1985): 557–73.

Stigler, George J., and Kindahl, James K. *The Behavior of Industrial Prices.* New York: Columbia Univ. Press (for NBER), 1970.