

Causes and Consequences of Price Premiums

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Causes and Consequences of Price Premiums*

I. Introduction

Over the past several decades, numerous studies have examined the relationship between price and consumer perceptions of product quality (e.g., Leavitt 1954; Gabor and Granger 1966; Rao 1971; Monroe 1976; Rao and Monroe 1988, 1989). Informed principally by psychological theories, the price-perceived quality research stream has examined a variety of contexts in which consumers do and do not attribute higher quality to higher-priced products. The implicit rationale has been that poorly informed consumers may rely on a “You get what you pay for” decision rule in making judgments about product quality; however, Rao and Monroe (1988) have empirically demonstrated that well-informed consumers may also make price-quality inferences when price is a valid indicator of quality.

Economic models have noted that “price not only influences buyers’ expectations but also in-

Existing literature that argues for the prevalence of price premiums is examined. An evaluation of an extant model identifies several possible boundary conditions that limit the applicability of the model. A set of propositions is developed based on these boundary conditions, linking buyer, seller, and market factors to the magnitude of price premiums that should be available. Alternative means for empirical testing of the propositions are offered, and some implications and applications of this line of thinking for pricing and brand management are described.

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fluences producers' incentives" (Klein and Leffler 1981, p. 634). Further, "Because of . . . *rational consumer anticipations*" (p. 621; emphasis added), under some circumstances, sellers of high-quality products are able to charge a price that is higher than "the minimum average cost (or marginal cost) of high quality" (Klein and Leffler 1981, p. 622). The difference between such a superhigh price and the perfectly competitive price for high-quality output is defined to be the *price premium* available to these sellers and provides them a monetary incentive to deliver high quality.

Pashigian (1995), in a recent textbook, provides a lucid and accessible account of the Klein and Leffler model, its assumptions and its mechanics, that leads to the conclusion that providing high quality can be a profitable strategy. We intend to examine the marketing implications of this conclusion. We first provide a brief précis of the Klein and Leffler model and then critically examine the assumptions of the model. This discussion allows us to derive a set of testable predictions that specify when price premiums are likely to be observed. We then offer several avenues for the empirical testing of the predictions we derive and discuss some strategic implications. Finally, we conclude with a brief summary and directions for future research.

II. Conceptual Background

A. *The Model*

Unlike the assumption underlying psychological approaches to the price-perceived quality relationship, economic models of price-quality relationships (of which the price-premium phenomenon is a special case) do not invoke a naive consumer making (potentially) economically irrational choices. Rather, there is an explicit recognition of a utility-maximizing consumer dealing with a profit-maximizing firm. When such consumers are faced with information asymmetry (i.e., the seller knows more about the quality of the product than the buyer) and moral hazard (i.e., the seller may claim that a low-quality product is actually of high quality and charge a commensurately high price), the rational quality-sensitive consumer may be apprehensive that, because quality is unobservable prior to purchase, profit-maximizing sellers will provide low-quality products. Consequently, these consumers are willing to pay only a low price consistent with their expectations of low quality.¹

According to Klein and Leffler (1981), one solution to the problem

1. Detailed (though technical) treatments of the moral hazard problem are available in various sources including an excellent exposition in Kreps (1990) and Hart and Holmstrom (1987). A less technical description is available in Bergen, Dutta, and Walker (1992).

of quality debasement for products whose quality is revealed only after purchase is the provision of price premiums (coupled with the promise of repeat purchase). This mechanism operates on the principle that a profit-seeking seller will promise and deliver a high-quality product when the offered price yields long-run profit over the life of the relationship that is greater than profits available from alternative strategies such as (1) producing and selling low quality or (2) claiming high quality while producing and selling low quality. The model assumes that this second strategy can not be executed more than once because such "cheating" will be detected immediately after purchase and a dishonest firm will lose all future credibility. Formally:

$$\left[\sum_{i=1}^n \{1/(1+r)^i\} \cdot \{P_{iH}^* - P_{iH}\} \right] > (P_{iH} - P_{iL}), \quad (1)$$

where

- n = the number of interactions between buyer and seller,²
- r = the interest rate,
- P_{iH}^* = a superhigh price paid for high quality during the i th interaction, and
- P_{iH} and P_{iL} = competitive prices (or marginal costs) for high and low quality, respectively, during the i th interaction. Additionally, it is assumed that the quality of products below the low-quality level can be detected prior to purchase (i.e., there is a certain minimum level of low quality below which quality debasement can be detected).

In general, $(P_H^* - P_H)$ is defined to be the price premium. The left-hand side of the expression in equation (1) represents the price-premium stream to the seller and compensates the seller for the *opportunity cost* of not skimping on quality. High-quality products will be traded when the buyer pays this amount over n periods. Note that sellers must not only receive a superhigh price; these price premiums must

2. Note that, from a game theoretic standpoint, n should be unknown. If the number of transactions that will occur is known, sellers will maximize long-run profit by debasing quality during the last transaction. Anticipating this, buyers will drop their offered price during the last transaction. Consequently, the next-to-last transaction presents an opportunity for sellers to debase quality, and buyers will recognize this and drop their offered price during the next-to-last transaction as well. Hence, the game unravels (Klein and Leffler 1981; Tirole 1988). However, if the precise value of n cannot be specified by the players, a cooperative solution can be determined (the logic is analogous to the "supergame" solutions to the Prisoner's Dilemma problem, where the game is either infinitely long or is one in which players have sufficient uncertainty regarding the period when the game will end [Luce and Raiffa 1957, pp. 97–102; Telser 1980]).

be spread over several purchase occasions. If the entire premium was paid during the first transaction, the seller would have no incentive not to cheat, since the threat of loss of future profits disappears.

Pashigian's (1995) description of the Klein and Leffler model provides the incentive condition under which a seller with the ability to produce high quality will indeed provide high quality rather than cheat (see fig. 1). If the average and marginal costs of production of high quality are higher than the average and marginal costs of production of low quality, then

$$\begin{aligned}
 & [1/r] \cdot \left[(P^* - P_H)X^* - \left\{ \left(\int_{X_h}^{X^*} MC(X, q_H) \right) - (X^* - X_H)P_H \right\} \right] \\
 & > \left[\{(X'' - X^*)(P^* - P_H)\} - \left\{ \left(\int_{X'}^{X''} MC(X, q_L) \right) - (X'' - X')P_H \right\} \right] \\
 & \quad + \left\{ \int_{X_h}^{X^*} MC(X, q_H) \right\} - (X^* - X_H)P_H \\
 & \quad + \left\{ P_H X' - P_L X_L - \int_{X_1}^{X'} MC(X, q_L) \right\}, \tag{2}
 \end{aligned}$$

where r is the annual rate of interest.³ This expression simply reiterates the argument captured in equation (1), according to which the discounted value of future profits from a price premium strategy must be greater than the current (one-time) profit from cheating.

B. An Evaluation of the Model

While the model is intuitively appealing, some issues regarding its validity have been raised. For instance, Shapiro (1983), wondering whether such price premiums are consistent with economic equilibrium, demonstrated that firms charging price premia are in fact recouping "a competitive return on their investments in reputation" (p. 660), and therefore, no long-term rents accrue to the seller. Klein and Leffler implicitly suggest that the profits earned through premiums are dissipated through idiosyncratic quality-signaling expenditures such as plush carpeting, company-specific logos and signs, and advertising that does not convey product information but does convey quality information because of the perceived costs associated with advertising (see also Pashigian 1995, p. 532; Kirmani and Wright 1989; Kirmani 1990).⁴

3. Also, as noted above, q_L (Shapiro [1983] refers to this quality level as q_{\min}) is the minimum level of quality that the seller can offer without discovery of quality debasement; any quality level below q_L will be readily detected as poor quality by buyers.

4. While the issue of economic equilibrium is not germane to our purpose here, some of these arguments have profound implications for marketing strategy. For greater detail on the issue of reconciling price premia with equilibrium, see Rao and Monroe (1994).

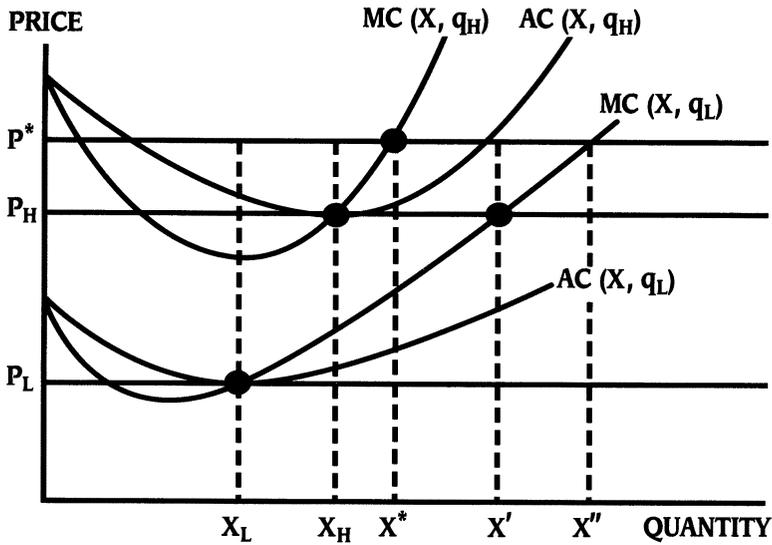


Fig. 1.—Incentive condition for high quality provision (adapted from Pashigian [1995]).

In addition, the numerous assumptions that underlie the model limit its generalizability (see Pashigian [1995, p. 532], for a list of six critical assumptions). For instance, it is assumed that (1) sellers can deceive buyers only once, and once deceit has been detected, the seller loses all credibility and is not able to sell high-quality products ever again and that (2) consumers know the seller's cost functions for each level of quality. However, in most markets, neither of these assumptions would hold true. Most sellers can successfully renege on quality-related commitments by finding new (uninformed) consumers, and it is extremely rare (if not impossible) for buyers to know the seller's cost function with any degree of accuracy (indeed, it is not clear whether sellers know their own cost functions exactly).

Further, the model adopts the perspective that the seller may renege on a commitment to deliver a product of high quality, but ignores the possibility that the buyer may also renege on the promise of repeat purchase. While premiums and repeat purchase commitments provide sellers an incentive to deliver high quality, they have no ability to enforce the repeat purchase component of the mechanism.

Finally, a key issue of measurement is left unaddressed in the model. The presence of price premiums is inferred, but not empirically established, since no systematic empirical examination of the existence of price premiums is available. Indeed, it is unclear how such an examination would occur, given the difficulty with determining the "true" quality and marginal costs of products.

In this article, we examine these and other limitations of the model to determine the boundary conditions of the theory, as well as to develop new theoretical insights. Specifically, in the next section, we identify several assumptions of the model to predict variations in the magnitude of price premiums as the particular assumption is relaxed. Later, we discuss approaches for empirically validating the predictions that emerge from the model, and in a subsequent section we address the marketing implications of our analysis. Finally, we conclude with a brief comment on the utility of economic approaches to the study of marketing.

III. Factors That Influence Price Premiums

Our emphasis in this article is on the specification of circumstances under which price premiums can be used to correct for a potential moral hazard problem. To accomplish this goal we adopt the following approach. We consider (1) predictions offered by the model per se, and (2) the implicit and explicit assumptions that underlie the model. In the latter case, we relax the identified assumptions one at a time to understand when the model will simply not work; this understanding helps us derive several propositions that predict the magnitude of price premiums under different conditions. For expository convenience, we discuss the circumstances under which price premiums should be observed under the following categories: buyers' judgments of product quality, sellers' influences on product quality, and market influences on product quality.

A. *Buyers' Judgments of Product Quality*

Recall that the model is predicated on the notion of product quality. If the quality of the product were not an important factor in the buyers' decision, then the problem of information asymmetry and resulting moral hazard would be irrelevant. In other words, a basic requirement for the model to work is that buyers care about quality, and we discuss this issue first.

Relative product quality. Because of differences in risk preference, and variations in taste for quality, there is likely to be heterogeneity in consumers' quality preferences (Klein and Leffler 1981; Rao and Bergen 1992). For instance, the restaurant manager of a gourmet restaurant purchasing food ingredients is likely to be more concerned about the quality of ingredients than a graduate student purchasing the same ingredients for a solitary meal. Further, consumers who demand high quality should value it more than consumers who do not care about quality. Consequently, consumers who are more concerned about quality should be willing to pay higher price premiums to assure

quality. Conversely, buyers who do not care about quality are not likely to use price premiums as a mechanism to assure product quality, and will simply settle for low-quality (and low-priced) alternatives. This reasoning is consistent with Shapiro's (1983) assertion that the relative quality of the product will have an impact on the price premium. In other words, the higher the quality of the product, the more quality-sensitive should be the consumers of those products (i.e., as the quality of the product increases, demand is likely to be characterized by increasingly quality-sensitive consumers). This intuition can be directly derived from equation (1), where, as P_{iH} rises (i.e., as the marginal cost of high-quality products rises), the premium stream rises. Therefore, because high-quality products are demanded by quality-sensitive buyers:

PROPOSITION 1. The magnitude of price premiums will be positively related to the *relative quality* of the product, *ceteris paribus*.

If the product market is relatively homogeneous on quality, either because of the current state of technology, government regulation, or industry norms, then, regardless of the incentives provided, the buyer is likely to receive the same level of quality. Conversely, if there is considerable variability in product quality in the marketplace, buyers who are concerned about quality will need to use some mechanism (such as a price premium) to assure quality. Therefore:

PROPOSITION 2. The magnitude of price premiums will be positively related to the degree of *variability* in product quality in the marketplace, *ceteris paribus*.

Further, as the minimum quality level below which quality debasement can be detected changes, because the sellers' opportunity cost of not cheating changes, price premiums should change (eq. [1]). Specifically, as P_{iL} falls (i.e., the marginal cost of the lowest level of quality below which quality decrements are observable on inspection falls), the premium stream should increase. Therefore:

PROPOSITION 3. The magnitude of price premiums will be positively related to decreases in the quality level below which quality debasement can be detected, *ceteris paribus*.

Observability ex ante. The degree to which the true quality of a product is observable prior to purchase is determined by at least two factors: (1) the buyers' expertise (a buyer trait), and (2) the degree to which quality can be assessed through inspection (a property of the product). To the extent that the buyer knows (or can detect) quality prior to purchase, there will be no information asymmetry. Similarly, to the extent that the product's quality can be fully and unambiguously determined prior to purchase, there will be no information asymmetry. Consequently, *ceteris paribus*, when there is a preponderance of informed buyers (as in the market for the purchase of supercomputers),

or when product or service attributes are readily evaluated prior to purchase (e.g., search products), there will be no need to pay a premium to assure quality. Thus:

PROPOSITION 4. The magnitude of price premiums will be positively related to the difficulty associated with determining actual quality prior to purchase, *ceteris paribus*.

Observability ex post. Additionally, even after purchase, there is likely to be some level of heterogeneity in buyers' abilities to detect the presence and level of quality attributes in a product because of individual differences in skills, knowledge, and technology. For instance, wine connoisseurs are more likely to be able to tell if wine from a particular bottle is too vinegary, relative to individuals who have no nose for wines. Further, the quality connoting attributes of some products are revealed more readily than others—the sweetness of a new sugar substitute is revealed upon initial use, while the durability of a new automobile tire is revealed after several years. In general, the longer the time lag between purchase and quality revelation, the greater is the seller's opportunity cost of not debasing quality, since dishonest sellers can earn profits for a longer period of time before they are discovered to have cheated. Consequently, the buyer will need to pay higher premiums for products with long lags between purchase and quality revelation.⁵ Thus:

PROPOSITION 5. The magnitude of price premiums will be positively related to the time lag between purchase and quality revelation, *ceteris paribus*.

B. Sellers' Influence on Product Quality

In this section, we first discuss what is perhaps the most interesting, though potentially controversial, implication that emerges from our analysis of the model. This implication is particularly noteworthy from a marketing standpoint, since it focuses on brand names (or brand equity; Keller 1993), perhaps the most important weapon available to the marketer (Kotler 1994). This element in the marketer's arsenal achieves its importance because it is a visible means of providing information to the marketplace about the seller's identity, and it cannot (unlike advertising, channels of distribution, pricing strategy, and even product attributes) be easily mimicked by competitors.

Investments in brand name. As noted by Wernerfelt (1990), "The economic theory of branding is very limited" (p. 91). Nevertheless, the obvious prediction linking branding to price premiums would be that the "average relative price for branded products is higher than

5. If the buyer can never detect true quality (as in the case of credence goods), price premiums per se will not be an efficacious means of assuring product quality, since buyers will realize that the seller can claim high quality and deliver low quality without ever being discovered.

for unbranded products” (Montgomery and Wernerfelt 1992, p. 38; this is similar to Shapiro’s [1983] prediction regarding the price premium earned by sellers who have invested in reputation). However, and contrary to the prediction, the empirical finding reported by Montgomery and Wernerfelt is that umbrella-branded products are significantly and consistently lower priced than products that are not umbrella branded.⁶ They explain this finding by arguing that “informed customers place a higher premium on quality than the uninformed. This is quite a natural assumption because customers who care the most about quality should use more information sources” (p. 46). The implicit argument is that quality-sensitive buyers purchasing experience products that are not umbrella branded may pay a price premium to assure quality. Rao and Bergen (1992) independently observed that reputationless sellers tend to receive relatively higher price premiums from quality-sensitive buyers for experience products. This finding and associated formal modeling (e.g., Wernerfelt 1988) yield some counter-intuitive predictions to which we now turn.

One way to approach the issue is to assess a seller’s inherent propensity to cheat. Based on the preceding rationale, the prediction can be offered that the seller with a brand name is less likely to cheat than a seller without a brand name; branded sellers offer their brand names as “hostages” in the marketplace, where they effectively serve as reassurance to buyers that the seller is not a “fly-by-night” operator.

Sellers with large investments in brand names are less likely to skimp on quality because of the perceived and real costs of loss of future sales (and associated premiums), loss of sales in related markets, loss of goodwill, erosion of brand image, and the like.⁷ In other words, a branded seller who cheats can be identified as dishonest by the buyer and therefore stands to lose future sales and profits as well as any prior investment in the brand name (e.g., advertising). Consequently, such a seller is likely to need a lower price premium than an unbranded seller to deliver high quality consistently. A quality-sensitive buyer likely recognizes this diminished need for a price premium on the part

6. One referee noted that the evidence on umbrella brands vs. nonumbrella brands may not be analogous to the comparison of branded vs. unbranded products. Note, however, that umbrella-branded products (e.g., 3M) can be considered to be more vulnerable than nonumbrella-branded products (e.g., KAO), because quality debasement in one product category can harm products in a multitude of other categories. In other words, as noted by Montgomery and Wernerfelt (1992), “There is a relationship between the size of the bond posted and its association with multiple products” (p. 42). This logic would be equally applicable when comparing an unbranded product with a branded product, since the underlying construct is the vulnerability of the brand name.

7. Notice that our definition of a brand investment is characterized by future profits at risk (i.e., vulnerability), which raise the costs of cheating. This formulation is subtly different from Shapiro’s definition of a brand’s reputation as quality delivered in the past.

of a branded seller and, therefore, will likely be willing to pay a relatively lower price premium.⁸ Therefore:

PROPOSITION 6. The magnitude of price premiums will be negative related to the seller's investments in establishing a brand name, *ceteris paribus*.

At first blush, it may appear that this reasoning suggests a counterintuitive conclusion: a branded seller is at a price disadvantage. However, this is not our claim. It is in fact the willingness to accept lower price premiums that allows a branded seller to prevent other sellers, with lower investments in brand names, from entering its served quality market. Therefore, our claim is that a branded seller should (rationally) receive a lower price premium than an unbranded seller, since the branded seller is likely to be more trustworthy. Consequently, it would not be possible for an unbranded seller (earning a high premium) to coexist with a branded seller (earning a low premium) in the same quality market.

One way to test this assertion would be to compare the unit margins of products across two separate markets. So, if in one product market (e.g., the market for personal computers) branded sellers exist, and in the other market (e.g., the market for home cleaning services) no branded seller exists, the general level of profit margins in the branded market should be lower than in the unbranded market. When a branded seller enters the unbranded market, the need for consumers to protect themselves from being cheated declines. Consequently, the price premiums offered should drop.

This rationale is illustrated in table 1, where two fictitious markets are tracked across three time periods. The entry of a branded seller in t_2 into market A reduces the need to pay price premiums since the buyer (rationally) expects that a branded seller will not debase quality. Consequently, demand for unbranded products should decline, unless these unbranded products now offer some other hostage. Note, however, that in market B, where no branded product has yet entered, the original level of premiums continues to be offered and earned, since all existing unbranded sellers are perceived to be equally untrustworthy.

Buyer's unobservable commitment. Recall that the model is designed to protect buyers from a potentially dishonest seller. However, as we noted earlier, the model does not address how the seller is to be protected from a buyer who may cheat by renegeing on the commitment to purchase in the future. In the Klein and Leffler model, the seller has no means of enforcing a buyer's commitment. If the buyer does not return for repeat purchases, the seller loses the premium that

8. Note that, here, brand names function as a signal, which is typically thought of as a solution to adverse selection problems; however, the moral hazard and adverse selection models operate on the same basic principle of providing rewards for honesty, and punishment for dishonesty, and can therefore be analyzed simultaneously (Picard 1987).

TABLE 1 Illustration of Premium Streams for Branded and Unbranded Products in Two Separate Markets

Time Period	Market A	Market B
T_0	Several unbranded products earning a certain premium (δ)	Several unbranded products earning a certain premium (δ)
T_1	Entry of branded product	No branded product
T_2	Premiums drop (to $\delta - \theta$) and unbranded products exit or offer some other hostage to assure quality	Premiums stay high (at δ) as long as no branded product enters

would have been earned on future transactions. Consequently, if there exists the possibility that the buyer will not return for future purchases (perhaps because of changes in circumstances, or because of the emergence of new technology or alternative suppliers of high quality at a lower price), the seller will anticipate the loss of future premiums and will request the entire premium stream in the current period. Not only does this request raise the price to a potentially unacceptable level, it also eliminates the repeat purchase element that is essential to prevent the seller from cheating. In essence, to end this impasse, in addition to the price-premium/repeat-purchase mechanism that limits the seller's tendency to cheat, there must exist a mechanism to prevent the buyer from cheating as well.

The likelihood that the buyer can renege on the commitment to repeat purchase increases with the number of alternative suppliers that are available. If there are an infinite number of sellers available, the buyer's promise of repeat purchase is not likely to be credible, and the price-premium mechanism will simply not work. Conversely, in (small) markets where the possibility of developing a "bilateral monopoly" exists, price premiums are more likely to occur as a quality assuring device. Here, buyers can offer sellers credible hostages (such as transaction-specific assets) that will assure sellers that the buyer cannot easily switch vendors; if buyers were to renege on their repeat-purchase commitment, they would not only lose their hostage, they would also have to return to the seller in the not too distant future, given the small size of the market. Therefore:

PROPOSITION 7. The magnitude of price premiums will be negatively related to the number of competitors in the supplier marketplace, *ceteris paribus*.

Seller's monopoly power. Once discovered to have compromised on quality, the model implies that the seller is banished from the marketplace. In other words, the threat of termination is implicit in the model. However, suppliers are not always terminated, because of cultural norms or because of the possibility that the current infraction (quality reduction) may have been an aberration, or because buyers

forget (Klein and Leffler 1981). Further, the impact of one buyer terminating a supplier may be minimal, if the seller serves a large and diverse set of buyers. If the seller is not vulnerable to the threat of termination (i.e., some monopoly power exists), and therefore does not face the prospect of losing the entire stream of future payments, the costs of quality reduction are lower, and the opportunity cost of not lowering quality are correspondingly higher. Under such circumstances, a higher premium will be necessary to keep the seller honest. Thus:

PROPOSITION 8. The magnitude of price premiums will vary inversely with sellers' vulnerability to the threat of termination, *ceteris paribus*.

C. *The Market's Influences on Product Quality*

Information revelation. The Klein and Leffler (1981) model explicitly assumes immediate information revelation once a seller cheats. This assumption presumes the existence of institutions that monitor and publicize such infractions. Such purveyors of information regarding a seller's quality include competing sellers, the press, consumer support groups (e.g., *Consumer's Union*), regulatory agencies, and buyers themselves. However, such organizations or groups may not always be able to successfully gather and disseminate quality related information rapidly, because markets vary in the degree to which information regarding one player's behavior can travel to other players (Frenzen and Nakamoto 1993). For instance, in dispersed international markets involving multiple time zones, varying standards (e.g., different voltage requirements for electrical appliances), and diverse languages and cultures, the rate of information transfer on quality debasement is likely to be relatively slow given the difficulty of (1) establishing that deceit was intended and (2) communicating such information to multiple publics whose definitions of deceit may vary (Rao 1993). Conversely, in a market where there are three large automobile corporations that are geographically clustered, technologically similar, and culturally alike, the likelihood of a supplier's quality debasement being detected and communicated is much greater. Further, the nature and impact of the quality debasement (e.g., failure of a key component resulting in death) may influence the speed of information transfer. In essence, when information about quality debasement travels slowly, the opportunity cost of not cheating is relatively high and vice versa. Consequently:

PROPOSITION 9. The magnitude of price premiums will vary inversely with the degree to which information regarding quality debasement can be made public, *ceteris paribus*.

Frequency of purchase. The repeat purchase provision of the model suggests that the number of transactions entered into has an impact on the magnitude of price premiums. If there is likely to be

only one transaction (or very infrequent purchases, e.g., household appliances), the seller has little incentive to maintain quality since the repeat purchase “policing” mechanism does not apply; no price premium will be high enough to assure quality. For infrequently purchased products, “the premiums are enjoyed (by the seller) only after a long delay and hence must be larger to compensate for the investment (in high quality manufacturing)” (Shapiro 1983, p. 671). Conversely, for frequently purchased products, because the seller has many opportunities to reduce quality in the future, the number of potential opportunities to exploit consumer ignorance through quality reduction increases. Therefore, the price premium per transaction required to match the opportunity cost of not skimping on quality likely is less. In other words, the magnitude of a price premium should be smaller when a buyer and seller interact virtually every day, as compared to the price premium required for the purchase of infrequent home repair services. Therefore:

PROPOSITION 10. The magnitude of price premiums will vary positively with the average interpurchase time interval, *ceteris paribus*.

Interest rates. The last factor, the interest rate r , can be examined directly in equation (1). Consistent with Klein and Leffler (1981), the price premium required to assure unobservable quality should rise with the interest rate. In other words, the higher the interest rate, the greater must be the profit margin to the seller in the current time period because alternative investment opportunities yield a relatively high return, and therefore, the greater must be the premium necessary to assure quality. Therefore:

PROPOSITION 11. The magnitude of price premiums will be positively related to interest rates, *ceteris paribus*.

To summarize, when information asymmetry exists and resulting moral hazard infractions can go undetected and unpunished, the seller benefits by engaging in dishonest behavior. The Klein and Leffler model prescribes the use of price premiums to prevent such dishonesty. When information about quality is easily and credibly available, the information asymmetry problem disappears and the need for price premiums also disappears. The magnitude of the price premium that is necessary to correct any information problem is a function of particular elements of the transaction and their effect on the magnitude of the moral hazard problem. We have offered an illustrative set of predictions that flow from the model and now turn to a description of approaches that may be used to validate these predictions empirically.

IV. Empirical Testing Options

The empirical evidence on the prevalence of price premiums is limited, suggesting the need for more research to isolate the various circumstances under which price premiums will be available and, perhaps,

necessary.⁹ In this section, we discuss four avenues for empirical tests: surveys, examination of secondary data, behavioral experiments, and experimental economics approaches. A summary of this discussion is available in table 2.

A. *Survey Methods*

Perhaps best illustrated in the marketing management as well as the strategy literatures, typical surveys involve soliciting the opinion of a probability sample (or, sometimes, key informants) through a survey on the phenomenon of interest. For instance, Rao and Bergen (1992) solicited responses from senior purchasing executives about their most recent purchase (see table 2 for illustrative indicators). Subsequent regression modeling of this cross-sectional data revealed interesting empirical regularities regarding the systematic differences in perceptions of price premium payments. For instance, it was observed that, while for experience-type products the degree to which price premiums were paid was perceived to increase with the buyer's quality consciousness, the opposite trend was observed for search-type products. This finding is explained by the argument that, for search-type products, increased quality consciousness should lead to greater search and a reduced tendency to pay prices higher than necessary for a given level of quality, consistent with Tellis and Wernerfelt (1987).

While this type of approach to empirical validation is useful as a first approximation of human behavior, it is often rife with methodological and other shortcomings. One important methodological shortcoming associated with this approach is often termed "common method variance" by psychometricians. Simply put, common method variance refers to the fact that data for both dependent and independent variables come from the same source—the respondent. Consequently, should the respondent guess the true intent of the study, he or she may try to provide responses consistent with that guess and not reveal the true value of the variable being measured.

A second methodological problem is that the data are correlational and do not provide any information on causality. This snapshot simply provides information about a cross section of respondents' opinions, without revealing the underlying mechanism that would provide rigorous empirical support for the theory. Finally, in the current context, the data do not speak to actual margins across different market condi-

9. It should be noted that premiums are not restricted to product markets. The literature in labor economics has long discussed "efficiency wages" or wage premiums (e.g., Krueger and Summers 1988) which are supracompetitive wages offered to workers to provide them an incentive to avoid shirking. The notion of a wage premium is similar to that of a price premium, and serves the same (incentive to perform) purpose. This literature would be useful for the marketing discipline in the study of sales force compensation issues.

TABLE 2 Description of Approaches to Empirical Testing

Approach	Method	Illustrative Measures	Sample/Data Sources
1. Survey	Psychometrically valid scale items are used as input in General Linear Model-based statistical analyses.	Likert scale items such as: [*] <ul style="list-style-type: none"> • "Sellers earn gross margins that are <i>higher</i> than normal." • "I/we pay a price higher than the cost of manufacture would warrant." • "I/we pay a price that is higher than the competitive market price." Anchored at "strongly agree" and "strongly disagree." [†]	Buyers
2. Analysis of secondary data	Data on product quality and prices, costs, and margins are used as input in General Linear Model-based statistical analyses.	Relative quality ratings and relative price information in a category. [‡]	<i>Consumer's Union</i> , PIMS, individual corporations (though these data are often sensitive and error-filled)
3. Behavioral experiments	Psychometrically valid scale items are used as input in General Linear Model-based statistical analyses. Independent variables are manipulated.	Likert scale items as in 1. Independent variables are checked to assure that they are successfully manipulated, in pretesting.	Buyers, mall intercepts, students
4. Experimental economics	Price bids/responses are used as input in General Linear Model-based-statistical analyses. Independent variables are manipulated.	Specific prices that are offered in a simulated market. [‡] Independent variables are manipulated similar to 3.	Students

^{*} See Rao and Bergen (1992) for an illustration.

[†] See Montgomery and Wernerfelt (1992) for an illustration.

[‡] See DeJong, Forsythe, and Lundholm (1985) for an illustration.

tions, but only provide data on buyer perceptions that may or may not reflect the true cost and profit structure in the marketplace.

B. Analysis of Secondary Data

Much like the study reported by Montgomery and Wernerfelt (1992), longitudinal econometric studies that examine price and profit variability across industries, customer segments, and for multiple time periods could prove useful (see table 2 for possible data sources). Such a study may examine large secondary databases that report on price and profit movements for specific Standard Industrial Classification (SIC) codes. Models that incorporate variables suggested by theory could test whether, for instance, infrequently purchased branded durable products (for which quality would likely be an important attribute) fetch lower price premiums relative to unbranded services (where moral hazard would likely be a concern).

While such an approach would clearly have many advantages from the standpoint of data availability and the existence of well-established analytical techniques, the lack of information about causality continues to be a shortcoming. Further, given the difficulty associated with obtaining reliable cost information for particular products, margin and profit estimates would be of dubious authenticity.

C. Behavioral Experiments

The field of consumer research in marketing is typified by a variety of experimental studies informed by a psychology tradition. This approach offers one fruitful avenue for further empirical work to test the propositions offered here.

In a typical experiment, two or three of the variables considered to have a causal effect would be “manipulated” at various levels and an appropriate dependent variable would be measured. In our context, it would be feasible to manipulate the extent of brand investment (low, moderate, and high), observability of key product attributes (low for experience products and high for search products), and frequency of purchase (low and high), yielding a three-factor design with three, two, and two levels for each factor, respectively. Scenarios could be developed for each of the 12 possible combinations either in written form or in a simulated shopping environment. Subsequently, the respondent’s willingness to pay a price above average for each of the various conditions would serve as a dependent variable, to reveal any systematic differences across the various experimental conditions (see table 2 above for analysis alternatives).

While the behavioral experimental approach has the advantage of providing evidence on the underlying causal mechanism, the lack of realism raises concerns about the generalizability of such laboratory findings. Additionally, the absence of information on the seller’s cost structure, and profit margin, as well as the relatively imprecise depen-

dent variable would render the results of such a study questionable, with respect to its ability to speak to the theory putatively under test.

D. Experimental Economics

Perhaps the most promising route for empirical testing would be the experimental economics approach pioneered by Smith, Plott, and their colleagues (Smith 1962, 1964, 1982; Plott and Smith 1978; Plott 1982; Lynch, Miller, Plott, and Porter 1991). Research that employs the techniques of experimental economics has recently begun to appear with some regularity in applied business fields (e.g., DeJong, Forsythe, and Lundholm 1985; DeJong, Forsythe, Lundholm, and Uecker 1985; Isaac and Reynolds 1992). In studies of this ilk, respondents provide a price bid in response to an offer from another player.

For instance, DeJong, Forsythe, and Lundholm (1985) simulated a market in which a principal could reduce a potential loss by purchasing services from an agent of unknown quality. The quality of service provided by the agent would directly affect the loss faced by the principal—the lower the quality, the higher the loss incurred. Similarly, the quality of the service provided by the agent directly affected the costs faced by the agent—the higher the quality, the higher the costs. Since both principal and agent started the game with an initial experimenter-provided endowment, and any money left over at the end of play was theirs to keep, there was a strong pecuniary motive for respondents to perform.

The specific theoretical issues examined by DeJong, Forsythe, and Lundholm (1985) are not relevant to this discussion. The particular approach, however, is very instructive in designing experiments to test economic theories. For instance, it would be feasible to conduct an experiment to test whether branded items would receive a lower premium relative to unbranded items. Respondents would be asked to participate in a game with a faceless seller who could sell them either a low- or high-quality product. The quality of the item would be revealed immediately after purchase, and the experimenter would guarantee its resale. If the buyer purchases a low-quality item, profit is adversely affected (see table 2 above for measures). The theoretical prediction would be that, in markets where there are no branded sellers, under repeated play, price premiums would be observed more so than in markets where a branded seller existed.

An additional advantage with this approach is that cost data and margin information can be made available to subjects, and they can compute the “rational” price premium that should be paid. Therefore, very precise predictions can be made about rational economic behavior.¹⁰

10. See Davis and Holt (1993) for an excellent discussion of experimental economics under conditions of information asymmetry.

V. Implications and Applications

We devote the bulk of our attention to product and price strategy issues when discussing marketing implications. However, several additional issues that would benefit from this type of analysis include sales force compensation, channel relationships, and other similar relationships between actors engaged in a relationship characterized by information asymmetry and moral hazard.

A. *Competing on Price*

Not seeking a price premium yet claiming high quality for an experience product targeted to a quality-sensitive segment may be an erroneous marketing strategy. This implication is in direct conflict with traditional “low price” perspectives offered in the popular press (Trout 1990; Shapiro 1991; Clancy and Shulman 1991). As Ratchford (1994) suggests, buyers attempting to “lowball” sellers of experience products such as medical services, marketing research services, or home repair, do so at their peril.

Size of premiums. If price premiums are one means of assuring quality, then the size of the price premium should reflect the cost savings the buyer achieves through not implementing an alternative monitoring mechanism. For instance, rather than pay a price premium, an industrial buyer may invest in (less) costly inspection facilities that will verify the quality of incoming material.¹¹ Therefore, the magnitude of the price premium should be less than the least-cost alternative quality assurance mechanism and yet be sufficiently large to generate compliance on the part of the seller. However, transactions cost economics would suggest that other mechanisms that are not self-enforcing are likely to be less efficient (Williamson 1981).

Premiums for new products. The use of price premiums to assure quality may decline over time because buyers have an opportunity to learn about surrogates for quality. In other words, experience-dominant attributes such as durability reveal themselves, and buyers learn how to search for information indicative of attributes such as durability that was previously known only through experience. Conversely, for new product categories, where the marketplace is relatively less informed, monitoring product quality is more difficult. Therefore, in general, price premiums will be a more prevalent mechanism to assure product quality in new product categories, whenever high quality is desired by buyers. For mature products, the “size of the price premium achievable by the superior quality competitor begins

11. This does assume that the product is not a true experience product and that, at a cost, true quality can indeed be determined before use. The perspective that if one invests sufficient time and money, true quality can be determined through 100% “sampling,” is consistent with agency theory and probably has some merit in the real world.

to decline'' (Day 1986, p. 83). This observation is consistent with a result in the signaling literature that suggests that the length of time that a seller operates in a marketplace would covary negatively with the size of price premiums earned (Bagwell and Riordan 1991).

B. Brand Management

Two important implications for brand managers include (1) the building of a brand's equity and the consequences of such efforts and (2) the opportunities for and consequences of extending reputable brand names to new products and markets.

Building brand names that yield premiums. Recall our claim that a branded product will receive a lower premium (in its market) than an unbranded product (in the unbranded product's market). This proposition presents a problem for an unbranded seller attempting to enter a market where a branded seller exists. The following analysis sheds some light on the issue.

Consider a market currently populated by buyers with heterogeneous preferences for quality. Thus, there are buyers who are highly quality sensitive and buyers who are not quality sensitive. Further, consider the presence of two types of sellers in this market: (1) a seller with an established reputation for quality (i.e., a prestigious brand name) currently receiving price premiums from the quality-sensitive segment, and (2) a seller without a reputation for quality (i.e., a generic, or low-prestige brand name) catering to the segment that is not quality sensitive and is not receiving price premiums. Now, when a new, unbranded product or unknown brand enters the market, it can choose from several strategic options.

One option is to sell to the quality-insensitive segment and not earn a price premium. Alternatively, this seller may pursue the quality-sensitive segment in an attempt to earn price premiums. If it pursues the quality-sensitive segment, it must offer high quality. However, since this seller has no prior investment in a brand name, it has a higher opportunity cost of not cheating. Therefore, its rational, profit-maximizing price is higher than that of the current high-quality brand. So, to credibly claim the same level of quality currently being delivered by the branded high quality seller, this new seller must charge a price higher than that being charged by this current seller.¹² Rational buyers will not pay a higher price for the same level of quality, especially from an unknown seller.¹³

12. Other options not considered here include free trials or trial periods, credible warranties, and the like (Davis and Rao 1996).

13. The seller also has the option of charging a low price for high quality, although this is obviously not credible to quality-sensitive buyers even if the strategy is driven by rational motives such as a desire to invest in reputation. The quality-sensitive buyer who is currently purchasing from a high-quality seller is not likely to take the risk of

Faced with this dilemma, a new seller who does not have a reputable brand name may appeal to the market segment that is not quality sensitive by offering a low-price but high-quality product; such a strategy would yield short-term losses that can be considered to be an investment in reputation (Shapiro 1983). Over time, if successful, the seller would be able to establish a reputation for quality that is vicariously learned by the high-quality segment. Once it has established a reputation for quality, it may then be able to receive a price premium for its now established reputation in the high-quality market.¹⁴

The price strategy used by Japanese automobile manufacturers to enter and capture markets in North America and Europe appears to be consistent with this strategy. As our argument would suggest, these sellers initially would have had to receive a higher price premium than incumbents to credibly claim high quality. Their initial high-quality/low-price claims were accepted by buyers who were price sensitive but were relatively quality insensitive (e.g., students). Now that the Japanese brands have established an enviable and visible reputation for quality, luxury car buyers are willing to patronize the upscale products available from these manufacturers at a price comparable to or higher than other reputable car manufacturers (Grossberg 1990).

Clearly, the attitude toward Japanese automobiles has changed dramatically in the last 30 years, at least in part because of Japanese manufacturers' monetary investment in building their brands' reputation for quality. They are now perceived as less likely to compromise on quality than they were when they first entered the market. Therefore, they now receive a price premium (higher per unit margins) for luxury automobiles; this strategy could not have been executed in the 1960s.¹⁵ If Honda had introduced the Acura in the 1960s rather than in the 1980s, it is likely that the company would not have met with success, and certainly it would not have received a price premium, because of the initial absence of any reputation for quality. The relative lack of success of a British automobile (the Sterling) in the luxury car market provides further anecdotal support for the conclusion that the

purchasing from this reputationless new entrant given the potential high costs if this new entrant turns out to be a cheat. Further, recall that the buyer may be in a "bilateral monopoly" pact with the current seller to keep new entrants out.

14. It is interesting that the strategy is the same whether the firm has *no* reputation (a new entrant) or a poor reputation (a firm that has compromised on quality in the past). In both cases, the firm will need to establish/reestablish its reputation by supplying high quality at low prices to price-sensitive buyers for a while. It would seem that U.S. automobile firms were slow to recognize this important prescription for a market-oriented pricing strategy. Now, Ford's 1996 Taurus pricing suggests a renewed effort at investing in building a reputation through the offer of high quality at a relatively low price.

15. The key point is not whether Japanese car manufacturers consciously followed the strategy implicit in our argument, but rather that this aspect of their strategy is consistent with the argument.

absence of a reputation makes it difficult to enter markets where price premiums are currently available.¹⁶

Brand extensions. Recall that, since they are perceived to be more likely to debase quality, unbranded sellers should receive price premiums more so than branded sellers, in their respective (separate) markets. Because this higher price premium results in higher prices, such sellers are likely to be successful only if they are the initial entrants into a new market. If they enter after a branded seller, they are not likely to be able to compete successfully on price when addressing the same (quality-sensitive) segment. Conversely, branded sellers can credibly charge a price lower than the initial entrant whose brand is less reputable. Hence, they can more easily extend their brand name into a new market being served by an unbranded seller.¹⁷ Thus, products with large investments in their brand names have a second mover advantage and can adopt a relatively risk-averse, “wait-and-see” strategy toward new markets.

An interesting corollary to this logic is that branded sellers entering new markets may prefer not to reveal their true identity (this phenomenon is referred to as the “stealth market” in the popular business press). By using unfamiliar brand names, such sellers may earn price premiums (intended to keep them honest) to a greater degree than if their true (trustworthy) identity were known. Clearly, this assertion is speculative and ignores the many good reasons for leveraging an existing reputable brand name in a new market. However, it should be noted that, in circumstances where a reputable brand is unsure about the quality of a new product, it may choose at least not to reveal its association with the new product until such time as its true quality is established. As Schmalensee (1982) suggests, first movers may sustain higher prices than imitators, if buyers are quality sensitive and product quality is uncertain.

VI. Conclusions

A principal limitation of economic theory is its reliance on a view of human nature as being driven largely by monetary self-interest. Clearly, such a view of people is not entirely consistent with common

16. Curiously enough, the Sterling is manufactured by a strategic ally of Honda. This observation suggests that the “investment in brand reputation” strategy was not a conscious choice of the Japanese automobile manufacturers. Rather, it appears to have been a serendipitous occurrence with happy consequences for them.

17. This logic ignores the behavioral issues involved in brand extensions; one such issue is the perceived fit between the new product category and the original brand’s perceived competence (Aaker and Keller 1990). For instance, Kodak discovered that its brand name was extensible into batteries, given its technological image, while Disney had to launch a new corporation (Touchstone Pictures) to address successfully the mature cinema market (Yovovich 1988; Rao and Ruckert 1994).

observations:¹⁸ people go to war everyday, knowing that their odds of getting killed are significantly nonzero; people exhibit altruistic behavior (e.g., they make unidentified donations to charities); people invest in college funds for children (and grandchildren) yet to be conceived. While an imaginative economist may offer very persuasive self-interest-based explanations for these phenomena, such explanations may involve a redefinition of the notion of self-interest to such an extent that the original meaning of the term would be unrecognizable and any predictions of economic theory would be rendered unfalsifiable. Nevertheless, economic bases for examining human behavior are often as good as any other.

Economic approaches to the study of marketing phenomena have often been treated with skepticism because economic theories (unlike psychological theories) do not explain individual processes. Nagle (1984, p. 53) defends the economic approach as follows: "Economic theorists do not claim to describe the processes by which people actually make decisions; they claim rather to explain why certain decisions persist. Economic theory assumes that persistent and widespread behavior, whatever the underlying psychological process leading to it, must somehow be reinforced by success at furthering economic well-being. Such reinforcement encourages people, on average, to act 'as if' they understood and responded 'rationally' to the economic process that rewards their behavior" (Alchian 1950; Friedman 1953). In essence, even if rational economic behavior is not observed among individuals, aggregate behavior suggests that, on average, individuals behave in an economically rational manner.

Much like Nagle (1984), our overarching goal has been to summarize the implications of a particular economic model for a marketing audience. This literature is somewhat inaccessible to noneconomists because of its technical nature, yet this body of knowledge has important implications for marketing theory and practice. As noted by other commentators (e.g., AMA Task Force on the Development of Marketing Thought 1988), such interdisciplinary efforts will likely provoke considerable research through cross-fertilization of ideas.

The field of marketing, sensitive as it is to multiple disciplinary perspectives and lacking the paradigmatic baggage of a particular discipline, would be an ideal setting in which to examine the issues raised here. Given the penchant of scholars in marketing to borrow and adapt creatively "constructs from a variety of social sciences to obtain multiple perspectives and richer frameworks" (Bergen et al. 1992, p. 21),

18. For instance, a specific premise of the price-premium rationale is that buyer's expectations are that quality may be debased if the seller is indifferent between high and low quality. However, as Wolinsky (1983) notes, sellers may take pride in their craft and therefore provide high quality unless there exists an economic reason to provide low quality.

it would appear likely that careful empirical tests with actual consumers and organizations would yield results that are externally valid, since stringent assumptions necessary for mathematical tractability would probably make way for assumptions regarding human behavior.

References

- Aaker, D. A., and Keller, K. L. 1990. Consumer evaluations of brand extensions. *Journal of Marketing* 54 (January): 27–41.
- Alchian, A. A. 1950. Uncertainty, evolution and economic theory. *Journal of Political Economy* 58 (June): 211–21.
- AMA (American Marketing Association) Task Force on the Development of Marketing Thought. 1988. Developing, disseminating, and utilizing marketing knowledge. *Journal of Marketing* 52 (October): 1–25.
- Bagwell, K., and Riordan, M. H. 1991. High and declining prices signal product quality. *American Economic Review* 81 (March): 224–39.
- Bergen, M. E.; Dutta, S.; and Walker, O. C. 1992. Agency relationships in marketing: A review of the implications and applications of agency related theories. *Journal of Marketing* 56 (July): 1–24.
- Clancy, K. J., and Shulman, R. S. 1991. *The Marketing Revolution: A Radical Manifesto for Dominating the Marketplace*. New York: Harper.
- Davis, D. D., and Holt, C. A. 1993. *Experimental Economics*. Princeton, N.J.: Princeton University Press.
- Davis, S., and Rao, A. R. 1996. Accounting for Consumer Expectations in the Choice of Price and Quality. Center for Research in Marketing Working Paper no. 9601. Minneapolis: University of Minnesota, Carlson School of Management.
- Day, G. S. 1986. *Analysis for Strategic Market Decisions*. St. Paul, Minn.: West.
- DeJong, D. V.; Forsythe, R.; and Lundholm, R. J. 1985. Ripoffs, lemons, and reputation formation in agency relationships: A laboratory market study. *Journal of Finance* 50 (July): 809–20.
- DeJong, D. V.; Forsythe, R.; Lundholm, R. J.; and Uecker, W. C. 1985. A laboratory investigation of the moral hazard problem in an agency relationship. *Journal of Accounting Research* 23, suppl.:81–119.
- Frenzen, J., and Nakamoto, K. 1993. Structure, cooperation, and the flow of information. *Journal of Consumer Research* 20 (December): 360–75.
- Friedman, M. 1953. The methodology of positive economics. In *Essays in Positive Economics*. Chicago: University of Chicago Press.
- Gabor, A., and Granger, C. W. J. 1966. Price as an indicator of quality: Report on an enquiry. *Economica* 46 (February): 43–70.
- Grossberg, K. A. 1990. The ins and outs of Japanese pricing strategy. *Journal of Pricing Management* 1 (Summer): 6–12.
- Hart, O., and Holstrom, B. 1987. The theory of contracts. In Truman Bewley (ed.), *Advances in Economic Theory: Fifth World Congress*. London: Cambridge University Press.
- Isaac, R. M., and Reynolds, S. S. 1992. Schumpeterian competition in experimental markets. *Journal of Economic Behavior and Organization* 17 (January): 59–100.
- Keller, K. L. 1993. Conceptualizing, measuring and managing customer-based brand equity. *Journal of Marketing* 57 (January): 1–22.
- Kirmani, A. 1990. The effect of perceived advertising costs on brand perceptions. *Journal of Consumer Research* 17 (September): 160–71.
- Kirmani, A., and Wright, P. 1989. Money talks: Perceived advertising expense and expected product quality. *Journal of Consumer Research* 16 (December): 344–53.
- Klein, B., and Leffler, K. B. 1981. The role of market forces in assuring contractual performance. *Journal of Political Economy* 89 (August): 615–41.
- Kotler, P. 1994. *Marketing Management: Analysis, Planning and Control*. 8th ed. Englewood Cliffs, N.J.: Prentice-Hall.

- Kreps, D. M. 1990. *A Course in Microeconomic Theory*. Princeton, N.J.: Princeton University Press.
- Krueger, A. B., and Summers, L. H. 1988. Efficiency wages and the inter-industry wage structure. *Econometrica* 56 (March): 259–93.
- Leavitt, H. J. 1954. A note on some experimental findings about the meaning of price. *Journal of Business* 27 (July): 205–10.
- Luce, R. D., and Raiffa, H. 1957. *Games and Decision: Introduction and Critical Survey*. New York: Wiley.
- Lynch, M.; Miller, R. M.; Pott, C. R.; and Porter, R. 1991. Product quality, informational efficiency, and regulation in experimental markets. *Research in Experimental Economics* 4:269–318.
- Monroe, K. B. 1976. The influence of price differences and brand familiarity on brand preferences. *Journal of Consumer Research* 3 (June): 42–49.
- Montgomery, C. A., and Wernerfelt, B. 1992. Risk reduction and umbrella branding. *Journal of Business* 65 (January): 31–50.
- Nagle, T. 1984. Economic foundations for pricing. *Journal of Business* 57 (January): pt. 2:S3–S26.
- Pashigian, B. P. 1995. *Price Theory and Applications*. New York: McGraw-Hill.
- Picard, P. 1987. On the design of incentive schemes under moral hazard and adverse selection. *Journal of Public Economics* 33 (August): 305–32.
- Plott, C. R. 1982. Industrial organization theory and experimental economics. *Journal of Economic Literature* 20 (December): 1485–1527.
- Plott, C. R., and Smith, V. L. 1978. An experimental examination of two exchange institutions. *Review of Economic Studies* 45 (February): 133–53.
- Rao, A. R. 1993. The price of quality. *Pricing Strategy and Practice: An International Journal*, 1, no. 2:22–34.
- Rao, A. R., and Bergen, M. E. 1992. Price premium variations as a consequence of buyers' lack of information. *Journal of Consumer Research* 18 (December): 412–23.
- Rao, A. R., and Monroe, K. B. 1988. The moderating effect of prior knowledge on cue utilization in product evaluations. *Journal of Consumer Research* 15 (September): 253–64.
- Rao, A. R., and Monroe, K. B. 1989. The effect of price, brand name, and store name on buyers' perceptions of product quality: An integrative review. *Journal of Marketing Research* 26 (August): 351–57.
- Rao, A. R., and Monroe, K. B. 1994. Information asymmetry, moral hazard and price premiums: Implications for pricing strategy. Center for Research in Marketing Working Paper no. 9403. Minneapolis: University of Minnesota, Carlson School of Management.
- Rao, A. R., and Ruekert, R. W. 1994. Brand alliances as signals of product quality. *Sloan Management Review* 36 (Fall): 87–97.
- Rao, V. R. 1971. Saliency of price in the perception of product quality: A multidimensional measurement approach. In Fred C. Allvine (ed.), *Proceedings*. Chicago: AMA, 571–577.
- Ratchford, B. T. 1994. Discussion of "information asymmetry, moral hazard and price premiums: Implications for pricing strategy." Paper presented at the Marketing Science Institute Conference on Pricing Decision Models, Boston.
- Schmalensee, R. 1982. Product differentiation advantages of pioneering brands. *American Economic Review* 72 (June): 349–65.
- Shapiro, C. 1983. Premiums for high quality products as returns to reputations. *Quarterly Journal of Economics* 98 (November): 659–79.
- Shapiro, E. 1991. *Corporate Truths Become Competitive Traps*. New York: John Wiley & Sons.
- Smith, V. L. 1962. An experimental study of competitive market behavior. *Journal of Political Economy* 70 (April): 111–37.
- Smith, V. L. 1964. The effect of market organization on competitive equilibrium. *Quarterly Journal of Economics* 78 (May): 181–201.
- Smith, V. L. 1982. Microeconomic systems as an experimental science. *American Economic Review* 72 (December): 923–55.
- Tellis, G. J., and Wernerfelt, B. 1987. Competitive price and quality under asymmetric information. *Marketing Science* 6 (Summer): 240–53.

- Telser, L. G. 1980. A theory of self-enforcing agreements. *Journal of Business* 53 (January): 27–44.
- Tirole, J. 1988. *The Theory of Industrial Organization*. Cambridge, Mass.: MIT Press.
- Trout, J. 1990. The perils of focusing on price alone. *Journal of Pricing Management* 1 (Fall): 47–48.
- Wernerfelt, B. 1988. Umbrella branding as a signal of new product quality: An example of signalling by posting a bond. *RAND Journal of Economics* 19 (Autumn): 458–66.
- Wernerfelt, B. 1990. Advertising content when brand choice is a signal. *Journal of Business* 63 (January): 91–98.
- Williamson, O. E. 1981. The economics of organizations: The transactions cost approach. *American Journal of Sociology* 87 (November): 548–77.
- Wolinsky, A. 1983. Prices as signals of product quality. *Review of Economic Studies* 50 (October): 647–58.
- Yovovich, B. G. 1988. What is your brand really worth? *Adweek's Marketing Week* (August 8): 18–24.