

Pricing Research in Marketing: The State of the Art*

I. Introduction

Price is the only marketing mix variable that generates revenues; all others involve expenditures (or possibly investments) of funds. The effects of price changes are more immediate and direct, and appeals based on price are the easiest to communicate to prospective buyers. However, competitors can react more easily to appeals based on price than to those based on product benefits and imagery. It can be argued that the price decision is perhaps the most significant among the decisions of the marketing mix (strategy) for a branded product. Conventional wisdom suggests that the price decision should be made in consonance with those of other elements of marketing strategy.

Despite the high importance of price, academic research on pricing issues in marketing has been modest at best. This has been true for various reasons: researchers have emphasized financial and cost analyses used to reach price decisions within a corporation, there has been greater support for and growth of advertising and product research, research in marketing has relied on behavioral science methodologies, data

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This paper is an attempt to synthesize the recently published research on pricing issues from the viewpoint of marketing science. The review will consider the relevance of selected trends such as the experience curve, individual choice models, and dynamics of evolution of demand over time on the issues of pricing decisions for products. The focus will be on such issues as the static and dynamic models of pricing (particularly for new products over the life cycle), price discounts, behavioral considerations for pricing strategies, interactions of price and other marketing mix variables, product line pricing, and pricing across a marketing channel. The paper will identify some directions for future research in this important area.

on pricing decisions within a corporation have not been available to academics, and methods needed for analyzing complex matters on pricing have not existed. At an aggregate level (e.g., industry or economy), pricing research has been the forte of economists.

Even though theoretical research on price setting is sparse, there does not seem to be a dearth of advice given to practitioners. The literature on such prescriptions seems to originate from the seminal articles by Dean published in 1950 (and reprinted in 1976) and 1969, and subsequently by Oxenfeldt (1960, 1966, 1973). They present a systematic approach to price setting that takes into account the factors of cost, market segmentation, consumer response, target market, and integration with other elements of the marketing mix. There appear to be two major strategic alternatives for a new product: skimming price and penetration price. Dean's articles emphasize that pricing remains an art, and that the price decision for new products requires sound judgment. These ideas have had a profound impact on practice, and it is only recently that they have been the subject of systematic theoretical research. Some recently published ways in which managers are advised to set prices for their products include setting prices according to customers' perceptions of product benefits and costs (Shapiro and Jackson 1978); setting prices to achieve a predefined target rate of return (Brooks 1975); and setting prices taking into account bargaining, buyer's and seller's strengths and weaknesses (Jain and Laric 1979). These ideas are too general, lack theoretical foundation, and are hard to implement.

Fortunately, the historical perspective depicted above has changed somewhat in recent years. Marketing academicians—notably those with some background in economics and related disciplines—are incorporating some useful concepts into research on pricing. Three categories of recent developments in marketing appear to have had an impact on current pricing research: cost-related developments, individual choice, and the dynamics of choice.

Cost-related Developments

The most significant idea on costs comes from the empirical evidence published by the Boston Consulting Group (1968) that the marginal cost per unit declines with accumulated volume according to a power function. This has come to be known as the experience curve.

Individual Choice

A great majority of recent research in marketing has focused on how individual consumers choose among a set of alternatives. Some ideas significant to pricing research are listed below:

- a) Brands can be described as multiattributed alternatives; the perceived positions of brands on these attributes are related to marketing activities of brands.

- b) Consumers differ in the way they utilize various attributes (perceptions) in evaluating the brands.
- c) Perceptions of brands on attributes enter into the formation of utility scores for the brands.
- d) For any choice situation, only a subset of all possible alternatives may be considered by the consumer. This set is sometimes called the evoked set.
- e) Price of an item enters either as an attribute in the evaluation stage of the choice process or as a constraint in the ultimate choice.
- f) Ultimate choice is a function of the utility scores obtained in c subject to e; these functions are empirically derivable.

Dynamics of Choice

Considerable evidence suggests any population's adoption of an innovation is distributed over time. This idea has contributed much to research on pricing strategies over time for new products. A related idea for frequently purchased products is that there is a large stochastic component in the probabilities of choice for various brands in a given category. This aspect becomes relevant when one evaluates the effects of price promotions for frequently purchased products.

Against the background of these ideas, this paper will attempt to review recently published research in marketing on pricing issues. Some caveats on this review are in order here. First, it will focus on the literature appearing essentially in journals relating to marketing and management science (and not economics) during the last 5 years or so.¹ Second, the review is intended to be selective rather than exhaustive in terms of the topics covered.² The focus will be on six topics: pricing models for single periods, dynamic pricing models, price discount decisions, behavioral aspects of pricing, interactions of price and other elements of the marketing mix, and a miscellany of other topics such as pricing in a channel and organizational aspects. Third, the focus will be on decision making on price rather than a consideration of welfare and regulatory aspects resulting from corporate decisions on prices. Readers may wish to refer to a previous review on pricing decisions by Monroe and Della Bitta (1978), since this paper essentially will cover material published since that date.

The rest of the paper is organized as follows. Section II presents a formal statement of the pricing decision faced by a manager (manage-

1. The reader is referred to the paper by Nagle (1984) in this issue which reviews relevant economics literature on pricing. A sample of such articles includes Newberry (1978), Schmalensee (1981, 1982), Stokey (1981), and Sherman and Visscher (1982).

2. The literature on market share models that utilize price information and competitive structures has not been included in this review. Undoubtedly, the way a market structure for a given product is defined will (or should) have an impact on the pricing decision.

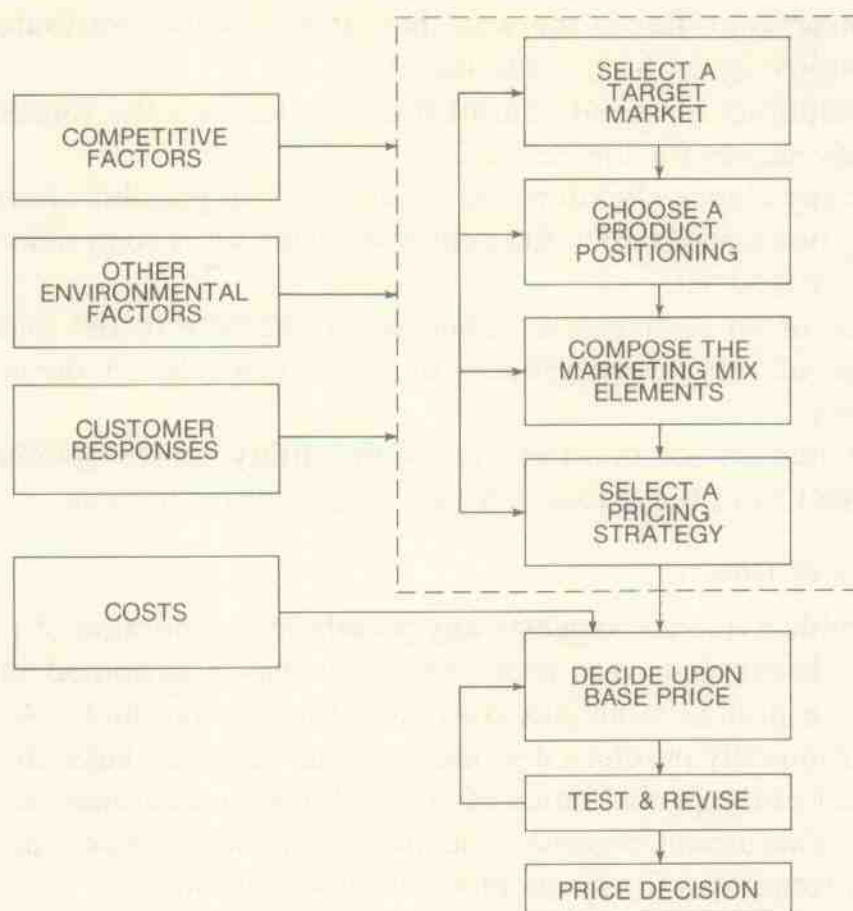


FIG. 1.—Price decision process for a new product

ment) of a firm. This section will indicate the kind of data that need to be considered in setting prices. Sections III–VIII will review selected articles along with a critique in each of the six topics indicated above.³ Finally, Section IX will present some directions for future research.

II. A Framework for Price Decisions

Assume that a firm is about to launch a new product for which pricing decisions need to be made for a period of time. It is common practice to consider this decision as part of the overall marketing strategy for the product. Figure 1 lays out a framework adapted from Cravens (1982, p. 294) that managers are advised to follow in reaching these interdependent decisions. The factors of cost, competition, and the particular decisions for other elements of the marketing mix tend to interact with the decisions on price. The figure requires little elaboration.

The decision process is undoubtedly quite complex. To reach a final decision on the marketing mix for the new product (including price), the firm needs information on cost functions, anticipated marketing

3. The reference list to this paper contains various other items in the literature, even though they are not reviewed in the paper.

mixes of competing products, and consumer decision processes with respect to the firm's own product in light of competition. Two sets of price decisions may be differentiated from the firm's point of view: (1) the long-term pricing strategy which will determine the base price of the new product over time (or planning horizon), and (2) the structure of discounts (quantity based or temporary deals) which are of a tactical nature (within any particular time period of the planning horizon). Further, the intraperiod decisions may be subsumed in the elements of the other (than price) elements of the marketing mix for the product. An initial formalization of this problem is shown in the Appendix.

While various formal models for setting optimal prices in various market structures exist, their application to practical problems is considerably impeded by various measurement problems (e.g., estimation of the demand and cost functions).⁴ Thus, the methods by which practical decisions on prices are made in firms do not necessarily conform to normative rules. A stream of research has attempted to develop descriptive models for the decision process for price decisions in various situations; the paper by Hulbert (1981) provides an overview of this research. Typically, the attempt here is to develop a flowchart that shows how various relevant factors are included in the decision process; the flowchart also lays out the criteria for evaluating a change in the price decision (base price or price off) and the operational procedures employed in an organization for the decision. The papers by Howard and Morgenroth (1968); Farley, Howard, and Hulbert (1971); Howard, Hulbert, and Farley (1975); Capon and Hulbert (1975); and Farley, Hulbert, and Weinstein (1980) report specific applications of this descriptive modeling approach.

The scheme for price-cost planning presented by Fogg and Kohnken (1978) systematically links elements of marketing strategy with manufacturing cost-reduction plans. It may be deemed a simplified version of the model shown in the Appendix. The cost reductions are largely the result of gains due to experience effects as volume of production increases over time. The procedure requires various statistical data on historical prices, historical costs, sales forecasts, and assumptions about competitive behavior. The usefulness of price forecasting for strategic planning is well illustrated for the case of petrochemicals by Stobaugh and Townsend (1975). See also Capon, Farley, and Hulbert (1975) for a descriptive model for pricing and forecasting in an oligopoly situation.

4. Recent developments in marketing research—notably using conjoint analysis—contributed much to the ability of researchers to measure utility functions at the individual level. See Hauser and Urban (1977) and Green and Srinivasan (1978). Mahajan, Green, and Goldberg (1982) report an application of conjoint analysis for measuring self- and cross-price/demand relationships. This review will not cover the measurement issues.

III. Static Models of Price Setting

The optimal price in a given period for a product can be derived for any case by solving the general condition that marginal revenue should equal marginal cost. Several problems occur in defining and measuring the revenue (demand) and cost (supply) functions in a particular situation. When applied to the case of monopoly (e.g., a new product), this condition yields the rule for optimal price, P^* , as

$$P^* = \frac{\epsilon_p}{1 + \epsilon_p} \cdot MC, \quad (1)$$

where ϵ_p is the price elasticity of demand (and is less than -1) and MC is the marginal cost per unit. This rule is for one period. Presumably, price changes should follow this rule as conditions change over time. Various factors relevant in the marketing environment for a brand are ignored by this rule. These factors include consideration of the competing set of products for the brand in question, variation of these competing sets across individual consumers, and interaction of price effects with those of other elements of the marketing mix (e.g., advertising, channels used), cost and demand dependencies, and dynamics over time.

This section will focus on two efforts in the literature that incorporate the factors of consumer choice process, competition, and channel-related issues in setting prices at one point in time; the problem of price setting can be more generally thought of as changing prices for the next time period. (We will postpone consideration of dynamics to a later section.) These are due to Mesak and Clelland (1979) and Little and Shapiro (1980). Both of these papers deal with frequently purchased, low-priced consumer products.

Mesak and Clelland address the problem of predicting the impact of simultaneous changes in prices for a set of competing brands on the sales of a given brand. Their competitive pricing model is specific to a given geographic market, and it uses data collected from a sample of consumers in that market. Using three postulates on the consumer decision process, they develop an equation for estimating expected percentage sales gain or loss for a given brand due to price changes in the total set of brands. This model was empirically tested against a competing model based on a regression of market share on price. Mesak and Clelland conclude that the model they proposed fared better. While their model suffers from the lack of strict validity tests, the approach is impressive on two grounds: first, it is a microlevel model, and second, it incorporates acceptable behavioral premises at the individual level. This approach should be useful in determining specific geographical areas and how much to raise (or reduce) prices for brands.

The Little-Shapiro paper develops a two-stage theory of price setting that postulates maximizing behavior on the part of customers and stores. In their model, once in the store, customers purchase goods to maximize utility; this process determines the short-run response to prices. The store's problem then is to maximize short-run profit subject to a constraint that a given level of customer utility be delivered. The utility level becomes a policy parameter for the store which, in part, determines the long-run attractiveness of the store to the customers. Their model is quite comprehensive in dealing with the customer-store interaction and is a stepping stone to a theory of pricing a bundle of goods at the level of a supermarket, which includes interactions among various products. Little and Shapiro comment on the measurement issues involved in estimating the cross-elasticities and anticipate progress on this front with the advent of scanner data. While the approach offers promise, the empirical issues can be quite formidable. Nevertheless, this paper presents a theory of pricing goods using accepted principles of economic behavior. The theory does not include such important phenomena as customers' desire to seek variety in shopping and stores' stocking behavior with regard to new products.

IV. Dynamic Models of Pricing

Recent years have witnessed an intense amount of activity on models for pricing products over time. Almost invariably this research relates to new products since dynamic issues are more important in that area. The existing knowledge on life cycle, experience curves, and consumer processes of adoption and diffusion has been integrated into this stream of research.

The issue of how price elasticities vary over the life cycle of the product has been studied empirically by Simon (1979). Based on an extensive analysis of West German data on sales and prices for three consumer products and 43 brands, Simon (1979) concludes that typical changes occur in price elasticities (ϵ) for brands as they go through their life cycles (i.e., $\epsilon_{\text{introduction}} \geq \epsilon_{\text{growth}} \geq \epsilon_{\text{maturity}} \leq \epsilon_{\text{decline}}$). Based on this analysis, Simon arrives at an optimal price behavior for a new brand which involves the myopic price and some adjustments due to changes in price elasticities. In particular, he concludes that the markup factor in the corresponding optimal price strategy—that is, $\epsilon_p / (1 + \epsilon_p)$ when $\epsilon_p \leq -1$ —is relatively smaller at the introduction and growth stages, relatively greater at the maturity stage, and decreases during the decline stage. Further, he concludes that his analysis lends support to a penetration strategy over time. This work has not incorporated all of the dynamics of the marketplace, as the studies reviewed below demonstrate.

We will start our review of dynamic pricing research by building a

chronology of this research stream. Robinson and Lakhani (1975) may be credited with opening this area for further research. Their paper set up a mathematical model that incorporates the two concepts of declining costs over time and the evolution of demand for a new durable good according to the epidemic model applied by Bass in 1969. They tackled the problem of pricing a new product using dynamic programming. Subsequent contributions to this research have been made by Bass (1980), Dolan and Jeuland (1981), Jeuland and Dolan (1982), and Kalish (1983). These papers present either generalizations or solutions using different methodologies or empirical applications.

To get a flavor of this model-building effort, we will summarize the main results obtained by Jeuland and Dolan (1982), who also considered the case of nondurable goods. The authors portray purchasing behavior (applicable to any type of good) by three parameters: (1) innovative trial, α ; (2) imitative trial, β ; and (3) repeat buying, b . Note that for durable goods during the planning period of interest (when the new product has a monopoly), b is essentially equal to zero. Let m be the market potential for the product. They derive the time path for optimal price over the planning horizon to consist of two parts, one that represents the optimal price, $p_m(t)$, that would maximize short-term profits (i.e., for a myopic strategy) and the other that represents an adjustment, $\Delta p(t)$, due to the endogenous dynamics of the demand system. Thus, the optimal price, $p^*(t)$, is given by

$$p^*(t) = p_m(t) + \Delta p(t). \quad (2)$$

Their substantive results are:

1. For the case of undiscounted profits, the optimal price path for a durable good (i.e., $b = 0$), is *low* introductory price and prices to peak and then decline (i.e., penetration strategy followed by skimming strategy) if the imitation effects are important (i.e., $\beta m > \alpha$) and *high* introductory and declines over time (i.e., skimming strategy) when imitation effects are *unimportant* (i.e., $\beta m < \alpha$).

2. In the case of undiscounted profits for a nondurable good with frequent repeat purchase (i.e., $b > 0$), the optimal path is a low introductory price followed by continuous price increases (i.e., penetration strategy).

3. For a positive discount rate, results 1 and 2 are generally encountered.

4. As the discount rate becomes large, the adjustment becomes less important and the optimal strategy looks like the myopic strategy.

Also, Jeuland (1981) presents a set of parsimonious models of diffusion of innovation for a new product that incorporates price. The models utilize principles of rational consumer choice under uncertainty and the diffusion of innovations; these principles postulate that a consumer chooses a product only if its value exceeds its price (i.e., the reserva-

tion price concept) and that the consumer perceives that there is some uncertainty with regard to the value of the new product. He analyzes various situations and concludes that the earlier results of lower introductory price are still valid for some reasonable circumstances.

Kalish (1983) has demonstrated that the results obtained by Jeuland and Dolan using specific functional forms for cost and demand for durable goods generally hold for general functional forms. In addition, he has developed the conditions of demand and discount rates under which a penetration pricing policy would still be optimal for a myopic monopolist. See also Bass and Bultez (1982) for a comparison of profit implications of optimal pricing strategy over time versus myopic pricing strategy for technological innovations when the demand is expressed as a power function in price shifted by a time-dependent diffusion effect. Based on simulation studies, their conclusion is that discounted profits under myopic pricing are only slightly less than those under optimal multiperiod strategy.

While the above models deal with the issue of pricing a new product during the period of its monopoly power, the effects of competitive entry and subsequent dynamics in the market are ignored. The issue of competitive entry is studied by Eliashberg and Jeuland (1982) using game theory and by Clarke and Dolan (1984) using simulation methods. The theoretical results of Eliashberg and Jeuland indicate that the pricing strategy during the duopoly period (after entry by a competitor) may be quite different from that during the monopoly period. The simulation results of Clarke and Dolan identify conditions under which an innovative firm may follow skimming and penetration pricing strategies in response to a competitive entry; no generalizations can be derived except that competitive entry is a variable to be reckoned with in addition to the other variables identified above. The work of Thompson and Teng (1981) perhaps represents the state of the art on the use of non-zero-sum differential games for deriving optimal policies of pricing and advertising under oligopoly situations; they present numerical algorithms for finding solutions for the tripoly situation. The paper by Lieber and Barnea (1977) constructs the optimal price trajectory for a monopoly with a finite level of resources (a supply constraint) and competition induced by monopolistic selling price (a demand constraint). Using the game-theoretic approach, they find that optimal price path will initially decrease and eventually increase. Despite these several efforts, the topic of the effects of competition offers enormous opportunities for further research.

One item in the literature that applies dynamic models to pricing and production is by Lodish (1980). He tackles the problem of pricing and production decisions for products or services whose value to the consumer may be changing over time. Examples include pricing for broadcast spots on television. He develops a dynamic programming formula-

tion for this problem and solves it using a simple computer program. His results are empirically validated for television spot prices.

We conclude this section with two specific comments. First, the theoretical research on pricing new products is at a fairly sophisticated stage and includes several relevant factors. It seems quite appropriate for practitioners to begin to depend on these results after ensuring that their decision situations fit the particular assumptions made in these models. Second, the theoretical results need to be empirically validated; such validation efforts would show opportunities for advancing the existing theories and perhaps would test the seriousness of assumptions made.

V. Price Promotion Decisions

Price promotion—or, more generally, offering a temporary price reduction in cash or kind—is a common marketing tool for increasing sales on a temporary basis. The literature contains several models that attempt to optimally determine the amount of price off (or deal), duration of price off, number of times such price off should be offered, and determination of long-term effects of price promotions. The context for this work typically is that of frequently purchased consumer goods. Some references in this stream of research are the articles by Kuehn and Rohloff (1967), Goodman and Moody (1970), Rao and Shakun (1972), Rao and Thomas (1973), Aaker (1973), Lilien (1974), Kinberg, Rao, and Shakun (1974), Kinberg and Rao (1975), and Blattberg et al. (1978). Reviews of this literature can be found in Monroe and Della Bitta (1978) and Rao and Sabavala (1980).

In their paper, Rao and Sabavala treat the decision problem of price promotion as an allocation of a marketing budget to advertising and promotion. Their model takes into account the peculiar feature of price promotions—that is, the effects on sales via temporary price change and the fact that the cost of the promotion is, in practice, allocated from a marketing budget. They derive optimal conditions for the regular price and temporary price reductions and argue for differentiating between short-term price elasticity and long-term price elasticity in the decisions on price promotions.

A typical approach for determining the effect of a price promotion is to evaluate the gain due to increased sales during the period of promotion against losses due to reductions in sales subsequent to withdrawal of the price deal (commonly known as the “stocking up” effect); see Rao and Thomas (1973). The sales increases or reductions have been modeled in various ways using such concepts as trade-off between opportunity costs of forgone sales and holding costs of excess inventories, consumer choice process of brands with increased quality-price relationships due to price promotion, game theory, and stochastic

models of consumer choice. The modeling has typically been at the aggregate level. In general, this research has sought predictions of the phenomena rather than cogent explanations.

Recently, however, Blattberg, Eppen, and Lieberman (1981) have presented an explanation for dealing of storable products based on the idea of transferring carrying costs from the retailer to the consumer. They propose two models: one for the retailer and one for the consumer. The retailer seeks to balance fixed cost, inventory cost, and loss from deal to maximize profits, while the consumer seeks to balance holding cost and gain from the deal to maximize profits. A juxtaposition of these two models results in a necessary condition for dealing to be profitable: holding costs to certain consumers for the product category must be less than one-half those of the retailer. However, this paper ignores competition at the retail level. This paper is perhaps the first in the spirit of offering a cogent theoretical explanation for deals and then presenting empirical evidence. Jeuland and Narasimhan (1982) presented a similar model in which retailers are *not* assumed to be less efficient, but face a downward sloped demand curve, and consumers are heterogeneous in their preferences, and derived a sufficient condition for deals to occur. Work is necessary to compare these explanations using inventory theory with other explanations such as the one using quality-price evaluations.

The bargain value model (BVM) proposed and tested by Keon (1980) presents a procedure for modeling consumer brand choice which considers brand prices and offers a different explanation for consumer behavior under price promotions. Specifically, the BVM is based on the construct of bargain value defined as the ratio of monetary worth of a brand and its price and the premise that a consumer chooses that brand with the highest bargain value among the evoked set of brands. The implication of this model is that the effect of price promotions is not to create new brand loyalty but to keep loyal customers. Not enough empirical evidence is presented in this paper, but the underlying premises of the model are worth further investigation.

Narasimhan (1982) worked from the premises of a price-theoretic model (Rosen 1974) to explain the use of coupons by consumers. He has shown that users of coupons are more price elastic than nonusers of coupons and that the opportunity cost of time and other household resources are variables that determine the decision to use coupons. Various implications of his model are tested using diary panel data.

Another direction for price promotion research is the one being pursued by Thaler (1982) in which prospect theory (Kahneman and Tversky 1979) is employed to conceptualize the purchasing behavior under price changes. Thaler hypothesizes that individuals maintain a system of mental accounts that are adjusted on a transaction-by-transaction basis and postulates a process by which outcomes of trans-

actions are coded (separately or as a package). His work has some implications in the way price promotions are presented (e.g., percent off or dollars off) and for the use of rebates. However, this research is still in a preliminary stage.

VI. Behavioral Aspects of Pricing

This section will consider research on the role played by price in the consumer choice process. Two distinct roles for price may be identified: an allocative role and a nonallocative (informative) role. The economic theory of consumer behavior and the stream of research on hedonic prices (which treats price as an indicator of opportunity costs) consider the allocative role of price (see Griliches 1971).⁵

The fact that price may convey some information on quality has been acknowledged by Scitovsky (1944). Empirical research on the topic of a link between price and quality has been undertaken in marketing since 1964. A review of studies prior to 1976 appears in Gardner (1977). Some of the recently published research on behavioral issues of price includes Monroe (1976), Wheatley and Chiu (1977), Hagerty (1978), Park and Winter (1979), Riesz (1980), and Etgar and Malhotra (1981).

In general, these studies have enumerated conditions specific to product and choice context where the informative role of price appears either to operate or not to operate. Generally speaking, the presence of additional information about the product or the purchase context diminishes the strength of the price-perceived quality link (see Rao 1971). In a recently published paper, Etgar and Malhotra (1981) conclude, on the basis of a series of experiments, that no uniform price-quality relationship exists and that the derived importance of price is not uniform across the various quality aspects of products evaluated by the subjects.

In conclusion, this research is not based on sound theory, and it tends to be largely descriptive. The results obtained are usually based on experiments conducted by the authors with no attempt to build a logically consistent story. Bowbrick (1980) makes this point rather strongly.

The basic issue of how price enters the choice process still remains to be resolved. Using certain assumptions on utility function, Srinivasan (1982) shows that there is a high degree of congruity between the two roles—informative and allocative—played by price. However, the fact that price has some informational role need not be contested. Research toward developing appropriate demand models that incorpo-

5. See Agarwal and Ratchford (1980) for a comprehensive empirical application of Rosen's (1974) model of consumer choice to the case of automobiles. See also the comment by Nelson (1982) and reply by Ratchford and Agarwal (1982). See Brown and Rosen (1982) for econometric issues of hedonic price models.

rate the informative role of price is needed to help us better understand the formation process at the individual level. An attempt in this direction is made by Rao and Gautschi (1982), who propose a construct that they term "evoked price" and show how the choice process may be modeled as a set of simultaneous equations. They are at a stage of empirically testing and validating the proposed models.

VII. Price and Other Elements of the Marketing Mix

While the issue of how price and other elements of the marketing mix interact is critical in making practical marketing decisions, the topic has been severely underresearched. Two aspects of this interrelationship will be reviewed here: the relationship between price and product characteristics, investigated by Hauser and Simmie (1981), and that between price and advertising, examined by Benham (1972), Eskin and Baron (1977), Wittink (1977), and Albion and Farris (1981). The first is a theoretical paper, and the last four are empirical studies. I shall review them all briefly.

Hauser and Simmie investigate the problem of positioning a product (or selecting features and price for the product) so as to maximize the firm's profit. Their theory attempts to integrate the available knowledge on how consumers process information (as developed in psychometrics) with the economic model of Lancaster (1971). They incorporate concepts of mapping product features and psychosocial cues into a perceptual space; consumers vary in their preference toward competing objects and the way they perceive products. Various measurement issues for implementing this theory have been addressed with respect to some new items in the communications market. Some assumptions with regard to scaling of the characteristics may not be easily satisfied. Nevertheless, it is a good attempt at integrating various elements of previous research.

The question of how advertising and prices interact is very interesting because of its managerial and social implications. On the basis of an econometric analysis of the eyeglasses market as of 1963, Benham (1972) concluded that prices were substantially lower in the states of the United States which allowed advertising of eyeglasses. A similar conclusion was arrived at by Albion and Farris (1981) based on an analysis of advertising and retail margin data for 51 product categories and 488 individual brands sold in supermarkets; they concluded that advertised brands are sold at lower retail margins than unadvertised brands. They further showed that this relationship is independent of the effect of advertising on unit sales. These empirical findings have implications such as potential necessity to alter retail or wholesale prices when advertising budgets are changed and potential underestimation of the long-term contribution of advertising to sales and profits.

Based on a series of four test market experiments for three food products and one household cleaning product, Eskin and Baron (1977) conclude that increases in advertising expenditures increase sales and that such increases are greater under low price conditions than under high price conditions; thus, there appears to be a negative price-advertising interaction. A similar finding that advertising may serve to increase price sensitivity is reported by Wittink (1977). Farris and Albion (1980) review arguments on the question of how advertising affects prices and review empirical research till that date. Ferguson's (1982) comments on the 1980 article and the reply by its authors (Farris and Albion 1982) are worth noting to indicate the lack of definiteness of the advertising-price relationship. Thus it appears that this area offers significant opportunities for both theoretical and empirical research.

VIII. A Miscellany of Topics

This section will briefly comment on a set of selected and somewhat unrelated topics.

The effects of delegating pricing authority to the sales force have been examined by Stephenson, Cron, and Frazier (1979). Based on data collected from a sample of 108 member firms of the American Surgical Trade Association, they found that those firms giving the highest degree of pricing authority to the sales force generated the lowest sales and profit performance. This study raises questions on the ideal location (sales force or management) for control for setting (and changing) prices in an organization and argues for placing relatively little pricing latitude in the hands of the salespeople.

The paper by Burt and Boyett (1979) reports on the effect of introducing competition into the supply sources for various items procured under the bidding process. Their study of 356 items which had been priced under sole source and then under competitive conditions showed that the introduction of competition is associated with a reduction in unit price of between 10.8% and 17.5%, depending on the size of the order.

The issues of pricing along the distribution channel and optimal quantity discounts have not received much attention in the literature. Beginnings of some work in the area of channels can be found in Jeuland and Shugan (1981) and McGuire and Staelin (1983). In their unpublished paper, Jeuland and Shugan (1981) explore how several mechanisms to achieve cooperation affect the total profits of all members of the channel and find that profit sharing can be implemented with quantity discounts. McGuire and Staelin (1983) develop a simple game-theoretic model of two manufacturers selling their competing products through retail outlets and draw various conclusions on the industry equilibrium; one conclusion of interest is that, if the manufacturers

behave cooperatively, profits are greater and retail prices are lower with a pure company-store system than with privately owned dealers. The paper by Zusman and Etgar (1981), who analyze the marketing channel using the theory of dyadic contracts, is also relevant for the issue of determining optimal pricing policies along a distribution channel. In another unpublished paper, Dolan (1980) considers the role of quantity discounts as a means of coordinating the inventory policies of independent members of the distribution channel to achieve the goal of cost minimization of the whole system. These research efforts should form the basis for an intensive examination of the implications for pricing across a distribution channel.

Although the problem of pricing a line of interrelated products is managerially important, the marketing literature pays to it only a cursory attention. Loss leader pricing is one illustration of how firms utilize the concept of demand interdependencies in practice. The literature in economics presents theoretical solutions to the problem of pricing interrelated goods; for example, see Oren, Smith, and Wilson (1982, 1984). Little and Shapiro (1980) also propose pricing solutions to a product line. Monroe and Della Bitta (1978) derive a model which explicitly considers the demand and cost dependencies.

Equation (1) for optimal price ignores any effects of interdependence (of demand and costs) of the product with others. Assuming only one other product, B , in the line and no cost dependencies, the optimal price, P_A^* , for a product A (assuming that the sales are in the elastic portion of the demand curve) can be shown to be

$$P_A^* = \frac{\epsilon_A}{1 + \epsilon_A} \cdot MC_A - \left(\frac{\eta_{AB}}{1 + \epsilon_A} \right) \cdot \frac{Q_B(P_B - MC_B)}{Q_A} \quad (3)$$

where ϵ_A and η_{AB} are self- and cross-price elasticities for product A , Q_A and Q_B are sales quantities of A and B , and MC_A and MC_B are marginal cost functions of A and B , respectively. A and B are substitutes if η_{AB} is positive and complements if η_{AB} is negative. The extension of (3) to a set of B -type products is quite immediate. Implementation of this result presents several empirical problems for estimating the required elasticities and the problem of allocation of joint costs. (See Demski [1981] for a recent discussion on cost allocation.) Mahajan et al. (1982) show how the conjoint analysis can be used for this purpose. Reibstein and Gatignon (1982) report another empirical effort in which econometric methods are used to measure self- and cross-elasticities for eggs of different sizes using sales data at the store level; they also discuss how optimal prices for the line of eggs may be set using these estimates. The paper by Monroe and Zoltners (1979) presents a simpler approach to the product line pricing problem particularly when the firm faces resource constraints; they argue for the use of the criterion of contribution per resource unit as opposed to gross margin.

IX. Some Directions for Future Research

The preceding review, although selective, indicates the state of the art of pricing research in marketing. It points out that recent research on pricing is somewhat disjointed and has not reached the same degree of comprehensiveness as other topics in marketing such as advertising. Various areas covered in the review require further work from both a theoretical and an empirical point of view. Some of these ideas are indicated below. These include an extensive study on how pricing decisions are made in practice, product line pricing, studies on the role of price in consumer choice, validation of dynamic models for pricing new products, and competitive pricing.

Practice of determining prices. Benefits of knowing more about the decision processes of how industry managers go about determining (and changing) prices for their products (see Hulbert 1981) are quite apparent. However, issues such as discount structures, variation of prices across different levels of channels, and reactions to competitive price moves do call for further empirical investigation; such studies could also determine the degree to which current economic theories or models available in the literature are being employed by practitioners and the role of market forces in setting prices of products. Such a study should also attempt to look at issues of price setting for one product as well as a line of related products and at various levels of the distribution channel; attention also has to be paid to the problems and procedures relating to the implementation of price policies. A good description of practice should lead to improved theoretical work. Thus, one essential research step would be to undertake a comprehensive study of price setting in selected industries. In a sense, research along the lines suggested would update an earlier case-oriented study by Kaplan, Dirlam, and Lanzillotti (1958).

Role of price in consumer choice. As pointed out, behavioral research on prices has suffered from a lack of theoretical perspective. In order to obtain a better understanding of how price information is used by consumers in making brand choices, richer constructs are needed in this research. Constructs such as reservation price, evoked price, fair price, price willing to pay, and price paid will have to be differentiated and their predictive role in brand choice ascertained. Further, consumers' perceptions of price changes, rebates, and price discounts could also be examined. This stream of research should be of great value not only in setting prices but also in determining discounts or rebates.

Pricing for new products. The models derived in the literature for setting optimal prices for new products need empirical validation. Further, these models should incorporate richer processes of consumer choice originating from disaggregated levels (e.g., inclusion of an appropriate set of items with which a new product might compete for the

consumer's budget). Additionally, the applications of hedonic pricing in determining price structures for new products should be explored.

Product line pricing. It is obvious that extensive research is called for in the area of pricing a product line. In addition to resolving empirical issues in estimating the parameters of these models, the effects of portfolio analyses at various levels of the organization on product line pricing will need to be investigated.

Competitive pricing behavior. Various research issues remain to be investigated in the area of competitive pricing. These questions include: When would a competitor react to a price change by a rival firm? How large a price change will be implemented by a competitor in reaction to a price change by a rival? How would the reactions be when there is more than one rival in the industry? What roles do various factors (e.g., management culture, inflation, profit expectations) play in the competitive pricing behavior? What are the dynamics of competitive behavior? It appears that existing techniques of analysis (e.g., game theory, semi-Markov chains, reaction curves) may naturally be utilized in this research effort. Further, model validation may not present much difficulty since data on competitive price movements are generally in the public domain or are easily collected.

Appendix

A Mathematical Formulation of Pricing Problem for a New Product

In this Appendix, the decision of pricing a new product over time is presented as a mathematical programming problem. Various concepts are described using the following notation. Let

T	= number of periods in the planning horizon (numbered 0, 1, 2, . . . , T);
$A_1(t)$	= set of products in the marketplace that compete with the new product B during period t ;
$A_2(t)$	= set of products which have joint costs (manufacturing or marketing) with B within the firm;
$M(t)$	= marketing mix decisions (other than price) for product B during the period t ;
$MX[A_1(t), t]$	= set of marketing mix decisions (including price) for all the products that compete with B during period t ;
$P(t)$	= price of one unit of B during time t ;
$c(t)$	= production cost per unit of B during time t ;
$r(t)$	= rate of discount applicable to the firm for period t ;
$CM(t)$	= cost of the marketing mix decisions for B in time period t ;
$QA(t)$	= production in some comparable units of the items in set A_2 at time t ;

- $Q(t)$ = expected number of units sold of B at time t
 given $M(t)$ and $P(t)$;
 $Z(t)$ = contribution to profit from B during time t ;
 and
 $V(0)$ = present value of the $Z(t)$ stream during the
 planning horizon.

We can now write the decision problem for the firm in setting the prices for B over the planning horizon. The problem is to choose $\{P(t); t = 0, 1, 2, \dots, T\}$ so as to maximize $V = \sum_{t=0}^T Z(t) / \prod_{k=0}^t (1 + r_k)$ where $Z(t) = [P(t) - C(t)]Q(t) - CM(t)$. The functions that describe $Q(t)$ and $C(t)$ can be written as $C(t) = f_1[Q(t), C(t-1), QA(t)]$ and $Q(t) = f_2[P(t), Q(t-1), M(t), MX(A_1(t), t)]$. This formalization expresses the notions of interdependence and the interactive nature of the decision process. The function for $Q(t)$ may also be developed in terms of the choice processes of potential consumers in the marketplace. We may also note that this problem calls for a significant amount of data on market dynamics, market structure, competitive behavior, and cost behavior. In practice, the problem needs to be simplified so that a reasonable solution (strategy) can be derived. However, the formalization should help in thinking about the nature of questions that should be considered while tackling the pricing decision by a firm and the kinds of measurements necessary for the decision.

References

- Aaker, D. A. 1973. Toward a normative model of promotional decision making. *Management Science* 19 (February): 593-603.
 Agarwal, M. K., and Ratchford, B. T. 1980. Estimating demand functions for product characteristics: The case of automobiles. *Journal of Consumer Research* 7 (December): 249-62.
 Albion, M. S., and Farris, P. W. 1981. The effect of manufacturer advertising on retail pricing. Report no. 81-105. Cambridge, Mass.: Marketing Science Institute, December.
 Bass, F. M. 1969. A new product growth model for consumer durables. *Management Science* 15 (January): 215-27.
 Bass, F. M. 1980. The relationship between diffusion rates, experience curves, and demand elasticities for consumer durable technological innovations. *Journal of Business* 53 (July): S51-S67.
 Bass, F. M., and Bultez, A. V. 1982. A note on optimal strategic pricing of technological innovations. *Marketing Science* 1 (Fall): 371-78.
 Benham, L. 1972. The effect of advertising on the price of eyeglasses. *Journal of Law and Economics* 15 (October): 337-52.
 Blattberg, R.; Buesing, T.; Peacock, P.; and Sen, S. 1978. Identifying the deal-prone segment. *Journal of Marketing Research* 15 (August): 369-77.
 Blattberg, R. C.; Eppen, G. D.; and Lieberman, J. 1981. A theoretical and empirical evaluation of price deals for consumer nondurables. *Journal of Marketing* 45 (Winter): 116-29.
 Boston Consulting Group. 1968. *Perspectives on Experience*. Boston: Boston Consulting Group.
 Bowbrick, P. 1980. Pseudo research in marketing: The case of the price/perceived quality relationship. *European Journal of Marketing* 14 (8): 466-70.
 Brooks, D. G. 1975. Cost-oriented pricing: A realistic solution to a complicated problem. *Journal of Marketing* 39 (April): 72-74.
 Brown, J. N., and Rosen, H. S. 1982. On the estimation of structural hedonic price models. *Econometrica* 50 (May): 765-74.

- Burt, D. N., and Boyett, J. E. 1979. Reduction in selling price after the introduction of competition. *Journal of Marketing Research* 16 (May): 275-79.
- Capon, N., and Hulbert, J. 1975. Decision systems analysis in industrial marketing. *Industrial Marketing Management* 4 (June): 143-60.
- Capon, N.; Farley, J. U.; and Hulbert, J. 1975. Pricing and forecasting in an oligopoly firm. *Journal of Management Studies* 12 (May): 133-56.
- Clarke, D. G., and Dolan, R. J. 1984. A simulation model for the evaluation of pricing strategies in a dynamic environment. *Journal of Business*. In this issue.
- Cravens, D. W. 1982. *Strategic Marketing*. Homewood, Ill.: Irwin.
- Dean, J. 1969. Pricing pioneering products. *Journal of Industrial Economics* 17 (July): 165-79.
- Dean, J. 1976. Pricing policies for new products. *Harvard Business Review* 54 (November/December): 141-153. (Originally published, *HBR*, November 1950).
- Demski, J. 1981. Cost allocation games. In Moriarity, S. (ed.), *Joint Cost Allocations: Proceedings of the University of Oklahoma Conference on Joint Cost Allocations*. Norman, Okla.: Center for Economic and Management Research.
- Dolan, R. J. 1980. Determination of optimal quantity discount schedules. Working Paper. Chicago: University of Chicago, Graduate School of Business, January.
- Dolan, R. J., and Jeuland, A. P. 1981. Experience curves and dynamic demand models: Implications for optimal pricing strategies. *Journal of Marketing* 45 (Winter): 52-73.
- Eliashberg, J., and Jeuland, A. P. 1982. New product pricing strategies over time in a developing market: How does entry affect prices? Working Paper no. 82-021. Chicago: University of Chicago, Center for Research in Marketing, August.
- Eskin, G. J., and Baron, P. H. 1977. Effects of price and advertising in test-market experiments. *Journal of Marketing Research* 14 (November): 499-508.
- Etgar, M., and Malhotra, N. K. 1981. Determinants of price dependency: Personal and perceptual factors. *Journal of Consumer Research* 8 (September): 217-22.
- Farley, J. U.; Howard, J. A.; and Hulbert, J. 1971. An organizational approach to industrial marketing information systems. *Sloan Management Review* 13 (Fall): 35-54.
- Farley, J. U.; Hulbert, J. M.; and Weinstein, D. 1980. Price setting and volume planning by two European industrial companies: A study and comparison of decision processes. *Journal of Marketing* 44 (Winter): 46-54.
- Farris, P. W., and Albion, M. S. 1980. The impact of advertising on the price of consumer products. *Journal of Marketing* 44 (Summer): 17-35.
- Farris, P. W., and Albion, M. S. 1982. Reply to comments on "The impact of advertising on the price of consumer products." *Journal of Marketing* 46 (Winter): 106-7.
- Ferguson, J. M. 1982. Comments on "The impact of advertising on the price of consumer products." *Journal of Marketing* 46 (Winter): 102-5.
- Fogg, C. D., and Kohnken, K. H. 1978. Price-cost planning. *Journal of Marketing* 42 (April): 97-106.
- Gardner, D. M. 1977. The role of price in consumer choice. *Selected Aspects of Consumer Behavior*. NSF/RA 77-0013. Washington, D.C.: Government Printing Office.
- Goodman, D. A., and Moody, K. W. 1970. Determining optimum price promotion quantities. *Journal of Marketing* 34 (October): 31-39.
- Green, P. E., and Srinivasan, V. 1978. Conjoint analysis on consumer research: Issues and outlook. *Journal of Consumer Research* 5 (September): 103-23.
- Griliches, Z. 1971. *Price Indices and Quality Change*. Cambridge, Mass.: Harvard University Press.
- Hagerty, M. 1978. Model testing techniques and price-quality tradeoffs. *Journal of Consumer Research* 5 (December): 194-205.
- Hauser, J. R., and Simmie, P. 1981. Profit maximizing perceptual positions: An integrated theory for the selection of product features and price. *Management Science* 27 (January): 33-56.
- Hauser, J. R., and Urban, G. L. 1977. A normative methodology for modeling consumer response to innovation. *Operations Research* 25 (July/August): 579-619.
- Howard, J. A., and Morgenroth, W. M. 1968. Information processing model for executive decisions. *Management Science* 14 (March): 416-28.
- Howard, J. A.; Hulbert, J.; and Farley, J. U. 1975. Organizational analysis and information systems design: A decision process perspective. *Journal of Business Research* 3 (April): 133-48.

- Hulbert, J. 1981. Descriptive models of marketing decisions. In Randall L. Schultz and Andris A. Zoltners (eds.), *Marketing Decision Models*. New York: North-Holland.
- Jain, S., and Laric, M. 1979. A framework for strategic industrial pricing. *Industrial Marketing Management* 8 (January): 75-80.
- Jeuland, A. P. 1981. Parsimonious models of diffusion and innovation. Part B. Incorporating the variable of price. Working Paper. Chicago: University of Chicago, Center for Research in Marketing, July.
- Jeuland, A. P., and Dolan, R. J. 1982. An aspect of new product planning: Dynamic pricing. In A. A. Zoltners (ed.), *Marketing Planning Models*. TIMS Studies in the Management Sciences, vol. 18. New York: North-Holland.
- Jeuland, A. P., and Narasimhan, C. 1982. Why do some consumers buy on deal and retailers offer deals? Working Paper. Chicago: University of Chicago, Graduate School of Business, September.
- Jeuland, A. P., and Shugan, S. M. 1981. Managing channel profits. Working Paper. Chicago: University of Chicago, Graduate School of Business, October.
- Kahneman, D., and Tversky, A. 1979. Prospect theory: An analysis of decision under risk. *Econometrica* 47 (March): 263-91.
- Kalish, S. 1983. Monopolist pricing with dynamic demand and production costs. *Marketing Science* 2 (Spring): 135-60.
- Kaplan, A. D. H.; Dirlam, J. B.; and Lanzillotti, R. F. 1958. *Pricing in Big Business: A Case Approach*. Washington, D.C.: Brookings Institution.
- Keon, J. N. 1980. The bargain value model and a comparison of managerial implications with the linear learning model. *Management Science* 26 (November): 1117-30.
- Kinberg, Y., and Rao, A. G. 1975. Stochastic models of a price promotion. *Management Science* 21 (April): 897-907.
- Kinberg, Y.; Rao, A. G.; and Shakun, M. 1974. A mathematical model for price promotions. *Management Science* 20 (February): 948-59.
- Kuehn, A. A., and Rohloff, A. C. 1967. *Consumer Response to Promotions. II. Promotional Decisions Using Mathematical Models*. Boston: Allyn & Bacon.
- Lancaster, K. 1971. *Consumer Demand: A New Approach*. New York: Columbia University Press.
- Lieber, Z., and Barnea, A. 1977. Dynamic optimal pricing to deter entry under constrained supply. *Operations Research* 25 (July/August): 696-705.
- Lilien, G. L. 1974. Application of a modified linear learning model of buyer behavior. *Journal of Marketing Research* 11 (August): 279-85.
- Little, J. D. C., and Shapiro, J. F. 1980. A theory for pricing non-featured products in supermarkets. *Journal of Business* 53 (July): S199-S209.
- Lodish, L. M. 1980. Applied dynamic pricing and production models with specific application to broadcast spot pricing. *Journal of Marketing Research* 17 (May): 203-11.
- McGuire, T. W., and Staelin, R. 1983. The industry equilibrium analysis of downstream vertical integration. *Marketing Science* 3 (Spring): 161-92.
- Mahajan, V.; Green, P. E.; and Goldberg, S. M. 1982. A conjoint model for measuring self- and cross-price/demand relationships. *Journal of Marketing Research* 19 (August): 334-42.
- Mesak, H., and Clelland, R. C. 1979. A competitive pricing model. *Management Science* 25 (November): 1057-68.
- Monroe, K. B. 1976. The influence of price difference and brand familiarity on brand preferences. *Journal of Consumer Research* 3 (June): 42-49.
- Monroe, K. B., and Della Bitta, A. J. 1978. Models for pricing decisions. *Journal of Marketing Research* 15 (August): 413-28.
- Monroe, K. B., and Zoltners, A. 1979. Pricing the product line during periods of scarcity. *Journal of Marketing* 43 (Summer): 49-59.
- Nagle, T. 1984. Economic foundations of pricing. *Journal of Business*. In this issue.
- Narasimhan, C. 1982. Coupons as price discrimination devices: A theoretical perspective and empirical evidence. Working Paper. Chicago: University of Chicago, Graduate School of Business, July.
- Nelson, J. P. 1982. Estimating demand functions for product characteristics: Comment. *Journal of Consumer Research* 9 (September): 219-20.
- Newbery, D. M. G. 1978. Stochastic limit pricing. *Bell Journal of Economics* 10 (Spring): 260-69.

- Oren, S. S.; Smith, S. A.; and Wilson, R. B. 1982. Nonlinear pricing in markets with interdependent demand. *Marketing Science* 1 (Summer): 287-313.
- Oren, S. S.; Smith, S. A.; and Wilson, R. B. 1984. Pricing a product line. *Journal of Business*. In this issue.
- Oxenfeldt, A. R. 1960. A multi-stage approach to pricing. *Harvard Business Review* 38 (July/August): 125-33.
- Oxenfeldt, A. R. 1966. Product line pricing. *Harvard Business Review* 44 (July): 137-44.
- Oxenfeldt, A. R. 1973. A decision-making structure for price decisions. *Journal of Marketing* 37 (January): 48-53.
- Park, W., and Winter, F. 1979. Product quality judgments: Information processing approach. *Journal of the Market Research Society* 21 (July): 211-17.
- Rao, V. R. 1971. Salience of price in the perception of product quality: A multidimensional measurement approach. *Marketing in Motion/Relevance in Marketing*. Chicago: American Marketing Association.
- Rao, V. R., and Gautschi, D. A. 1982. The role of price in individual utility judgments: Development and empirical validation of alternative models. *Choice Models for Buyer Behavior*. Greenwich, Conn.: JAI.
- Rao, V. R., and Sabavala, D. J. 1980. Allocation of marketing resources: The role of price promotions. In R. L. Leone (ed.), *Proceedings of the Second Market Measurement Conference*. Providence, R.I.: TIMS College of Marketing and the Institute of Management Sciences.
- Rao, A. G., and Shakun, M. F. 1972. Quasi game theory approach to pricing. *Management Science* 18 (January): 110-23.
- Rao, V. R., and Thomas, L. J. 1973. Dynamic models for sales promotion policies. *Operational Research Quarterly* 24 (March): 403-17.
- Ratchford, B. T., and Agarwal, M. K. 1982. Estimating demand functions for product characteristics: Reply. *Journal of Consumer Research* 9 (September): 221-24.
- Reibstein, D. J., and Gatignon, H. 1982. Optimal product line pricing: The influence of elasticities and cross-elasticities. Working Paper. Philadelphia: University of Pennsylvania, Wharton School, November.
- Riesz, P. C. 1980. A major price-perceived quality study re-examined. *Journal of Marketing Research* 17 (May): 259-62.
- Robinson, B., and Lakhani, C. 1975. Dynamic pricing models for new product pricing. *Management Science* 21 (June): 1113-22.
- Rosen, S. 1974. Hedonic prices and implicit markets: Product differentiation in pure competition. *Journal of Political Economy* 82 (January/February): 34-55.
- Schmalensee, R. 1981. Monopolistic two-part pricing arrangements. *Bell Journal of Economics* 12 (Autumn): 445-66.
- Schmalensee, R. 1982. Commodity bundling by single-product monopolies. *Journal of Law and Economics* 25 (April): 67-72.
- Scitovsky, T. 1944-45. Some consequences of the habit of judging quality by price. *Review of Economic Studies* 12:100-105.
- Shapiro, B. P., and Jackson, B. B. 1978. Industrial pricing. *Harvard Business Review* 56 (November/December): 119-27.
- Sherman, R., and Visscher, M. 1982. Nonprice rationing and monopoly price structures when demand is stochastic. *Bell Journal of Economics* 13 (Spring): 254-62.
- Simon, H. 1979. Dynamics of price elasticity and brand life cycles: An empirical study. *Journal of Marketing Research* 16 (November): 439-52.
- Srinivasan, V. 1982. Comments on the role of price in individual utility judgments. *Choice Models for Buyer Behavior*. Greenwich, Conn.: JAI.
- Stephenson, R. P.; Cron, W. L.; and Frazier, G. L. 1979. Delegating pricing authority to the sales force: The effects on sales and profit performance. *Journal of Marketing* 43 (Spring): 21-28.
- Stobaugh, R. B., and Townsend, P. L. 1975. Price forecasting and strategic planning: The case of petrochemicals. *Journal of Marketing Research* 12 (February): 19-29.
- Stokey, N. L. 1981. Rational expectations and durable goods pricing. *Bell Journal of Economics* 12 (Spring): 112-28.
- Thaler, R. 1982. Using mental accounting in a theory of purchasing behavior. Working Paper no. 82-16. Ithaca, N.Y.: Cornell University, Graduate School of Business and Public Administration, April.

- Thompson, G. L., and Teng, J. T. 1981. Optimal pricing and advertising policies for new product oligopoly models. Working Paper. Pittsburgh: Carnegie-Mellon University, Graduate School of Industrial Administration, August.
- Wheatley, J., and Chiu, J. S. 1977. The effects of price, store image and product and respondent characteristics on perceptions of quality. *Journal of Marketing Research* 14 (May): 181-87.
- Wittink, D. R. 1977. Exploring territorial differences in the relationship between marketing variables. *Journal of Marketing Research* 14 (May): 145-55.
- Zusman, P., and Etgar, M. 1981. The marketing channel as an equilibrium set of contracts. *Management Science* 27 (March): 284-302.

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