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Chapter III

THE DIMENSIONS OF PRICE

A STUDY of cost-price relations requires a preliminary examination of some of the complexities in the meaning and measurement of "price," along the lines of the preceding discussion of costs. This is essential not only because "price" is so frequently treated as a simple and unequivocal fact, but also in view of the central role that the price mechanism is alleged to play in the contemporary economic system. Actually, when one attempts to specify those terms of a transaction that are part of the price of a commodity, serious questions, both accounting and theoretical, arise. Furthermore, any concern with the meaning of price soon reveals how closely attached are the difficulties of providing, for a product or a commodity, a definition that is at the same time theoretically valid and empirically useful. The problems involved in the endeavor to give precise meaning to the concept "price" will be the subject matter of the first section of this chapter. A second will explore the mechanism within an enterprise through which pricing decisions are formulated.[1]

1. The Concept of Price

Economic logic presumes that each individual in the community endeavors "to satisfy his tastes as far as is possible in view of the obstacles to satisfaction which confront him."[2] For a community as a whole these obstacles are

[1] For these purposes pricing decisions will include the acceptance or rejection of a "market price."

[2] J. R. Hicks, "The Foundations of Welfare Economics," *Economic Journal*, XLIX (December 1939), p. 698.

largely technical; that is, the total product is limited by the available human and natural resources and by the productive processes utilized. For any individual or group within the community, the limitations to a fuller "satisfaction of wants" are not only technical but consist also in the wants and tastes of others.

The "prices" of all goods and services and all agents of production can be regarded as an "elaborate indicator" of the alternatives open to individual consumers and producers. "To the consumer the structure of prices indicates the terms on which he can acquire the goods for which he spends his money income. To the producer the structure of prices indicates the terms on which he may dispose of his goods and services or acquire the goods and services of others." [3] A variation in "price," affecting as it does the alternatives open to producers and consumers, is bound to influence both the wants selected by consumers for satisfaction and the size of incomes going to those who participate in the productive process.

An exchange of "goods and services" between a buyer and a seller takes place on the basis of agreed terms of sale. In a formal sense, therefore, price must be the amount of money, or the present value of the credit instrument or other agreement, exchanged between the buyer and the seller per unit of the "goods and services." Price is here made equivalent to average revenue per unit of product at the point at which transfer of ownership takes place.[4] Any such definition obviously involves a particular view of a "product"; it includes all services such as transportation, credit facilities and guarantees furnished by the seller, but excludes any undertaken by the buyer. Alternatively, price may be defined as revenue net of any services or discounts rendered or granted to the buyer. The first definition of

[3] E. S. Mason, "Price Policies and Full Employment," in *Public Policy*, edited by E. S. Mason and C. J. Friedrich (Harvard University Press, 1940).

[4] Revenue is averaged only over the units of a single transaction. A differentiated price is said to exist when the average revenue to a seller varies as between transactions consummated at or about the same time.

price implies that services rendered and discounts granted are properly regarded as costs involved in the sale of a product. The second treats such services and discounts as deductions from revenue.

This last definition has the advantage of being equivalent to that used by economists in the usual concept of a firm's demand function; in addition, it approximates the accounting term of net realization (sales minus discounts). The construction of index numbers of "price" requires some standard and readily applicable notion of both price and product if variations in the index are readily to be understood. The definition of price in terms of net realization would be appropriate to an index that attempts to measure changes in revenue per unit obtained by sellers. With such an index, the effect of variations in transport charges would be largely excluded. The construction of index numbers is made difficult, except perhaps for raw materials, by this definition of price, for net realization data are not as generally available as list prices at the point of ownership transfer.

Although the term price will ordinarily be used in this report to denote net realization per unit of product in a single transaction, there are instances in which it will be of advantage to adopt terminology which defines the product more broadly and focuses attention on the list price and other terms of transactions. Important features of price determination may be neglected if one concentrates too narrowly, in particular situations, on net realization. The focus of price-making forces is generally at the point at which ownership transfer takes place. The seller may absorb freight, and offer in connection with a sale a variety of discounts and services that combine to form a price structure which will be difficult to understand if one is preoccupied with price defined narrowly as net realization. There can be little doubt, therefore, that especially in the study of related transactions it may be instructive to regard price not simply as revenue per unit but rather as comprising a whole series of terms of sale. Under such circumstances the concept of product must be correspondingly enlarged.

Price in the sense of net revenue may be close to quoted or list price in certain markets, and in others the variations may be wide. Such list or quoted "prices" are frequently but one of the many provisions in a contract of sale. Other features of the transaction, such as discounts, allowances and credit provisions, materially alter the per unit cost to buyers and the per unit revenue to sellers. In the pages to follow the term *price structure* will be considered to include the list price and the other provisions of the transaction that result in a divergence between net revenue per unit of product to sellers and the list price. It will be employed with reference to the sales of a product of a given firm rather than to a single transaction;[5] and it therefore comprises, in addition to the many dimensions of price to a single buyer, the terms whereby one buyer or group of buyers is differentiated from others. The average net revenue from sales to a buyer or a group of buyers may be changed without affecting the list price simply by a variation in other items in the price structure, such as discounts and allowances.[6]

In addition to the list price, the most recurrent components of the price structure of a product are:

1. Cash discounts
2. Quantity discounts and volume discounts
3. Freight allowances
4. Seasonal discounts
5. Advertising allowances

[5] Since the main orientation of this study is the enterprise, the term "price structure" is used with respect to a single firm. The term is used in a narrow sense to mean the dimensions of a single product; in a wider context it may also include the differentials among products. "Price structure" can also denote the complex of prices, among a group of firms or even all firms. The term "price system" may be more appropriate in the latter case.

[6] Measures of price flexibility, in terms of either amplitude or frequency of price change, will be distorted just as price indexes are if they are based only on list prices.

6. Promotional allowances
7. Trade-in allowances
8. Price guarantees
9. Quality guarantees
10. Trade discounts
11. Credit terms
12. Delivery acceptance discounts

A number of these terms of sale can be illustrated from the price structure of products sold to dealers in a recent period by the International Harvester Company.[7] Contracts drawn up once a year designate a list price, f.o.b. Chicago or factory, at the option of the buyer. A cash discount of 5 percent is allowed for payment within a stipulated period, which varies with the machine or implement; for some of the more expensive machines this period may be as long as the whole yearly season. A quantity discount, discontinued in 1935, depended on the size of the orders for particular machines. For instance, spring tooth harrows were reduced $.25, $.50 or $1.00 on orders of 20, 40, or 100 or more sections. A volume discount is granted on the total dollar volume of business a dealer transacts with the company. Between 1926 and 1932 there was in effect a vendor's option discount which provided that dealers accepting delivery of orders before specified dates, depending on the region and implements involved, would receive a 2 percent discount. The discount was intended to reduce the cost to the company of storage of completed machines and implements. In addition, special allowances were made on certain items. Thus in 1926 if a dealer met certain service requirements for tractors, his account was credited to the amount of $50 per tractor sold. In 1933 each dealer was credited with $80 for each combination sale of a Farmall tractor with one of several machines, provided this reduction was passed on to the purchaser. During 1932 and 1933 a crop guarantee plan tied 40 percent of the price of certain implements to the

[7] "Industrial Wage Rates, Labor Costs and Price Policies," Part II, Temporary National Economic Committee, *Monograph No. 5* (Washington, 1940).

price of cotton, corn and wheat. If the price of these commodities fell below a designated amount, prices of the implements were reduced. During 1930–33 the credit position of dealers received especially careful scrutiny and since 1933 prompter settlement of claims has been required, the volume of obligations allowed each dealer by the company has been cut, and stricter terms on carry-over accounts have been instituted. Dealer's contracts carry a price guarantee clause which provides that the company, if it reduces prices before the cash discount dates, "agrees to adjust to such lower basis the price of any complete machines . . . which were purchased . . . and remain unshipped or on hand unsold." Finally, it may be noted that contracts carry warranties or guarantees as to the satisfactory performance of the implement or machine. Broken or defective parts will be replaced at the expense of the company.[8]

The preceding summary of price structure changes in a single company indicates clearly how risky it is to presume that list price variations are an adequate index of the change in average net revenue. Although the presumption may prove valid in some instances, it cannot safely be invoked

[8] A similar array of illustrations could be presented for a number of industries. "Collateral terms of sale" are exemplified by the case of the fertilizer industry, in Saul Nelson, "A Consideration of the Validity of the Bureau of Labor Statistics Price Indexes," Appendix 1, *The Structure of the American Economy* (National Resources Committee, 1939), pp. 173-85. See also Willard L. Thorp and Ernest A. Tupper, *The Potash Industry, A Report submitted to the Department of Justice by the Department of Commerce* (multigraphed), pp. 62-67.

The importance of dimensions to price structures other than list price can be illustrated by instances from the steel industry. If changes in price structure made in 1938 had been in effect in 1937, the revenue of the Youngstown Sheet and Tube Company would have been reduced by 8⅜ percent. Approximately 15 percent of this reduction would have been due to changes in differentials and basing points. "All Steel Companies Adversely Affected by Basing Point Changes Says Youngstown Sheet and Tube," *Iron Age* (August 25, 1938), p. 51.

The importance of discounts in quotations of the "official price" is illustrated in the testimony of representatives of the American Can Company, *Hearings before the Temporary National Economic Committee, Part 20, Iron and Steel Industry* (Washington, 1939), pp. 10775-78.

unless specific investigations have previously been made. The above illustration suggests also that *reference to a "price" must always rigorously designate the corresponding "product"* if clarity is to be maintained. An implement delivered with a guarantee of performance is a different "product" from one delivered without such a guarantee. Even though the goods may appear to be physically identical, the fact that they are not interchangeable (because of the guarantee) makes it advisable to regard them as separate "products." Specification of "products" solely in terms of their physical characteristics is likely to neglect some important terms of their sale.

A very careful study of product specifications has recently been made of "book paper." At least seven main characteristics of book paper must be specified before an order can be filled. Since there are 40 product classes (drawing, envelope, rotogravure, etc.), 12 grades (A, B, C, etc.), 33 finishes (antique laid, dull, lacquer, etc.), 9 sizes and trims (regular deckle, irregular untrimmed, etc.), 8 colors (natural, white, ivory, etc.), 8 quantity classes (less than ream, carton, carload, etc.), and 19 packings (banded rolls, sealed bundles, etc.), over 170 million different specific "products" can be designated by these physical characteristics of the paper alone.[9] If account is taken of the differentiation that can be introduced by the "nonprice"[10] terms of the agreement of sale (dates of delivery, guarantees, etc.), it would be possible to specify over a billion different book paper "products." Fortunately, the bulk of book paper sales are concentrated in relatively few of these categories.

A consideration of the "dimensions" of price, exemplified by discounts, has raised the question whether such discounts

[9] The complete classification is presented as Appendix D to this report.

[10] There are undoubtedly instances when it will be debatable whether a term of the sales contract can most usefully be regarded as distinguishing one "product" from another or changing the revenue (price) from a "product" already specified. The problem becomes even more acute in the case of the labor contract (below, p. 42).

should be regarded as increases in cost rather than deductions from revenue to the seller and as increases in revenue rather than deductions from cost to the buyer. Either view of these "dimensions" is logically permissible if consistently followed, and each has certain practical merits and demerits. The problem is an aspect of how selling costs should be treated, for discounts can be regarded, like advertising, as part of the cost of selling products.[11]

To treat discounts and similar allowances as costs would facilitate the calculation of "price" indexes, since list prices would more closely approximate average revenue. List prices are readily available, and the problem of collecting data on so many "dimensions" and estimating their effects on revenue could thus be avoided. To consider these terms of sale, on the other hand, as deductions from revenue, is apparently in conformity with the practice of most business enterprises in calculating "net realization" as the list price minus discounts and similar allowances to purchasers.[12] Furthermore, this procedure appears to be a closer fit to the theoretical concept of revenue, interpreted to mean money income. On balance, therefore, it will be more convenient to regard such terms of sale as were enumerated above (pp. 36-37) as deductions from revenue, and to continue to speak of them as "dimensions" of price. This practice can be justified further if a narrow definition of "market" is adopted, for then the theory of discrimination can usefully be applied. The various "dimensions" of price can be used to set different prices (in the sense of average revenue) in different markets, and yet maintain an equal list price in all markets. A volume discount, for instance, is a way of discriminating between different types of buyers according to the amount of business they do with a firm. The average revenue in each such market will be determined, theoreti-

[11] See Chapter IX, "Selling Costs."

[12] A study of accounting practice in this connection would be useful. Even more important is the way in which the responsible executives formulate their decisions on the amount and character of discounts and allowances.

cally, at the point where marginal cost and marginal revenue are equal.[13]

The foregoing discussion of price structure by no means exhausts all the terms of sale in current use between buyers and sellers. Other terms may be equally important to the successful culmination of the sale and to the significance of those terms which have been classified as part of the price structure. Typical of such provisions are the following which are as frequently implicit as they are expressed in a formal contract:

1. Provision for dates of delivery
2. Guarantees of performance
3. Legal and other services
4. Agreement to repurchase
5. Agreement of exclusive dealings by one party

At times it becomes extremely difficult to separate the terms of sale which are to be regarded as a part of the price structure from those which are not. For instance, guarantees have been used to reduce the money outlay of the buyer and thus cut the revenue of the seller. "Extravagant quality guarantees were at one time a favorite method of cutting prices on automobile tires without any change in the nominal list. Similarly, in the coal industry, certain producers endeavored to evade code price restrictions by issuing guarantees of heat content which they knew were impossible of fulfillment."[14]

While this discussion of price structure and other terms

[13] To regard price structure in terms of discrimination between different types of buyers suggests a field of study about which very little is known. Upon what considerations are discount structures and similar terms of sale determined? To what extent are such terms largely conventional trade practices influenced in recent years by such legislation as the Robinson-Patman Act and Fair Trade Practice laws? Is there any information relevant to the costs in different "markets" and to the costs of separating markets from each other? Is there a tendency for more or less differentiation? See Walton H. Hamilton, "Cost as a Standard for Price" in "Price Discrimination and Price Cutting," *Law and Contemporary Problems*, IV (June 1937), pp. 321-33.

[14] Saul Nelson, *The Structure of the American Economy*, p. 175.

of sale has centered, at least by implication, about processed goods and services, it is equally applicable to the wage contract. A collective bargaining agreement not only stipulates "wages, hours, and working conditions" but also may provide for the form of union recognition, the handling of grievances, regulation of apprenticeship and dues collection, to mention only a few items. Since the whole agreement provides for the terms under which labor services are sold, what is the "price" of labor? As in the case of price, it is useful to speak of a "wage structure," distinguishing the particular clauses in a contract which affect most directly the money income of the group of wage earners and the payrolls of the employer. The wage structure would include not only time and piece rates, overtime rates, bonuses, but also vacations with pay, pensions, special provisions for the purchase of products at discount, etc. Illustrative of other terms would be clauses on union recognition, shop stewards, arbitration and seniority. It is exceedingly difficult in practice to invest such a distinction with precision, probably even more difficult than in the case of the contract for "goods," because there are many more clauses in a trade agreement which do not relate *directly* to money income of wage earners but which may influence it indirectly in numerous ways.[15]

2. *The Formulation of Pricing Decisions*

The price structure of an enterprise is a result of its pricing decisions and "price policy." In certain types of market situations [16] this combination may amount to little more than acceptance of the prevailing market price or rejection of certain orders. Even under these circumstances, analogous to the pure competition of economic theory, an enterprise may have a "price policy" and make decisions which vitally influence its average revenue per unit of

[15] The meaning and measurement of factor prices, particularly wage rates, are treated in some detail in Chapter VI.

[16] See Chapter XI.

"product." In line with its appraisal of prospective as compared to present price levels, it may buy or sell more or less than it produces. Under the most realistic conditions of competition, a firm typically has some discretion as to the prices it charges and the precise character of the products it sells. This choice among prices and products may reflect very narrow or rather broad alternatives to a single enterprise. The choice between these alternatives represents a second sense, in more common usage, in which a firm may be said to have a price policy.

It is customary to think of decisions as formulated by an "entrepreneur." Customarily, however, at least in the large firm, they are made by a group of officials who seek to balance the diverse, and often conflicting, interests of various departments in the company. The internal politics of business organizations requires much more attention in a study of the process of price determination than is usually devoted to it. In conferences on pricing policy, the sales representatives may stress the importance of lower prices and attractive products, the sales credit department the desirability of favorable discounts and terms of credit to customers, the legal department the dangers of larger discounts to different types of customers and the general importance of relationships to the public and to governmental agencies and departments in particular, the manufacturing department the technical difficulties of producing the quantity and quality specified for the desired dates of delivery, the accounting department the need for larger profit margins, and the research department the danger, attributable to technical imperfections, of introducing such innovations as the sales representatives may request. Similarly, decisions as to the volume of production and employment may involve compromises between the desire of the production and the industrial relations departments to maintain the working force, the treasurer's concern over cash position, the accounting department's view of the probable fluctuation in inventory values, and the sales department's concern over style or technical obsolescence.

The compromise adopted between such divergent interests is apt to be materially influenced by the personalities involved, the accidents of the moment, and the "bargaining" strength and abilities of the various departments. To be sure, the individual entrepreneur must make decisions which amount to compromises between different interests, but in a large corporation these interests have "organized representatives." To be able to predict price changes from variations in costs or demand, one must be familiar with those rules of thumb, accounting practices, and special interests that impinge on decision-making within individual companies. Only meager specific information is generally available about the pricing process within firms in market situations with quoted or bargained price structures. One of the most fruitful research undertakings would appear to be in this field of the process of decision formation within companies. From a limited number of investigations,[17] at least one type of price structure decision seems to conform to the following general pattern. A different pattern apparently prevails where prices are made for contract or custom work.

(1) In companies that manufacture more than a few standardized products, the executive officials can be concerned only with pricing certain typical products in each general class. Prices for different styles, sizes, models, and other variations from the typical product are set by subordinates on the basis of generally accepted geographical, dollar, or percentage differentials. It would be a valuable addition to the knowledge of pricing practices if one could learn the number or the proportion of products on which price decisions are made by the main executives of the company in firms producing thousands of separately listed "products."

(2) Price decisions really represent a choice among a few alternatives, and not from an indefinitely large number of possibilities, as might be supposed. In the pricing of established products, the executives are confronted with an ex-

[17] Temporary National Economic Committee, *Monograph No. 5*.

isting or prevailing price, charged by the company. Three sets of possibilities ordinarily confront the price setter. First, the price levels may be increased, left alone, or decreased. In most specific situations only two of these possibilities can be regarded as real alternatives. Second, variations in price structures seem ordinarily to be made in fairly specific and conventionalized intervals, for instance, 5 or 10 percent, or similarly discrete monetary units such as 5 or 10 cents. As previously observed, only a few such possibilities are actually present. Third, the executives must choose the terms of the price structure to be varied: the list price, the discount structure, or the terms of credit.

(3) Markets may be classified according to the time characteristically consumed between reconsiderations of price quotations. In many markets price structures remain unchanged during such periods, so that a revaluation of price structures is made by executives at specified and regular intervals. In other market situations where "products" are usually very specialized and produced only on order, a list or quoted price may be used simply to save time and expense on small orders. Larger transactions will receive the attention of important executives.

(4) The choice between the alternatives listed above is made after the information available for decisions has been examined. It is probably most usual to start with the variation in costs during the preceding period, that is, since the last decision as to price structure was formulated. Costs provide the point of departure for pricing decisions because more detailed information is available concerning them than for such factors as demand conditions, costs of competitors, and competitive sales and price tactics. The accounting departments of companies prepare, in many instances, different "cost" statements which are relevant to different decisions.[18]

Knowledge of the pricing process would be considerably enhanced if the investigator could learn what kinds of "cost" information are used by firms in formulating pricing

[18] See above, Chapter II.

decisions. As matters stand, it is unlikely that one can know more than that practices differ widely among firms. Some take average costs from the income statement of the last period with customary straight line methods of allocating overhead. Others consider "budgeted" costs which envisage some normal rate of operations for allocating overhead. Still others estimate costs with "normal" or "reasonably expected" rates of labor efficiency and machine performance. The different ways of handling inventory valuations must also influence materially the "costs" used in pricing. The extent to which such "arbitrary" accounting conventions *alone* serve to shape pricing decisions is a problem requiring extensive additional study.

(5) Starting with the price that may be suggested from the change in costs, the next step in this formalized pattern of decision is to revise the estimate in the light of the expected volume of sales, price, quality and sales programs of competitors, and similar demand considerations. For items of this sort information must be much less definite than for costs. There may, therefore, be wide differences in the judgment of pricing executives concerning the magnitude and importance of such demand factors. In examining and evaluating demand considerations like the expected price and sales policy of rivals, the income of prospective purchasers and their disposition to buy, the pricing executives of the company frequently come to adopt certain rules of thumb which may be peculiar to their department or company, or to the industry and even the business community. These rules are usually the product of business experience, which may or may not be applicable to the particular circumstances under consideration. Thus, it may be accepted that the demand for the products of the company is, in effect, inelastic. Or, the price may be varied simply to follow that of another company on the assumption that the latter, with its higher-priced executives and elaborate research department, should be in a better position to judge the market.

Chapter XI examines further the ways in which the data available to management regarding costs and demand conditions are used in pricing decisions. It is important to emphasize here that, at least in the large corporation, whatever data are at hand are not ordinarily transmuted into an entrepreneurial decision through a single mind guided by a total view of the situation; rather they are interpreted by various interests and emerge as a group decision influenced in important ways by the internal organization of the firm in question.

PART TWO

COST BEHAVIOR