Volume Title: Cost Behavior and Price Policy

Volume Author/Editor: Committee on Price Determination

Volume Publisher: NBER

Volume ISBN: 0-87014-190-2

Volume URL: http://www.nber.org/books/comm43-1

Publication Date: 1943

Chapter Title: The Nature of Costs and Prices: Introduction

Chapter Author: Committee on Price Determination

Chapter URL: http://www.nber.org/chapters/c2089

Chapter pages in book: (p. 3 - 11)

Chapter I

INTRODUCTION

PERHAPS in no area of economic inquiry is there so wide a gap between theoretical and empirical work as in the field which has long been considered the core of economic analysis—the formation of prices. The study of variations in output, employment, national income, investment, savings and interest rates, and the multiplier effects of income-creating expenditures has proceeded in recent years on the basis of hypotheses which have permitted rather extensive empirical examination. Changes in these and in other variables embraced within the hypotheses can be and have been measured. In many cases, no doubt, the statistical procedures have been extremely venturesome, and the resulting averages and aggregates probably hide many holes into which rash investigators have fallen and will continue to fall. Nevertheless, in studies of this sort theoretical concepts are not usually formulated without regard to the possibility of actual application, whereas in the field of price analysis until recently there has been very little attempt to coordinate practice with hypothesis.

Price theory has placed increasing emphasis on the operations of the individual firm under various assumed demand and cost conditions. While some theorists are of the opinion that this trend has gone too far and that approximately accurate and useful results can be obtained only so long as firms can be grouped into markets or industries which are treated as substantially competitive,[1] it seems safe to say

[1] J. R. Hicks, *Value and Capital* (Clarendon Press, Oxford, 1939), p. 84. "It is, I believe, only possible to save anything from this wreck—and it must be remembered that the threatened wreckage is that of the greater part of economic theory—if we can assume that the markets confronting most of the firms with which we shall be dealing do not differ very greatly from perfectly competitive markets."

that with respect to most industrial market situations the competitive assumption involves serious distortion. Here the individual firm must be recognized as the principal unit of study.[2] Although contemporary theory emphasizes this point of view, little attention has been given by economists to the application of their "tools" of price analysis. Furthermore, theoretical speculation on the reaction of individual firms to assumed changes in cost and demand conditions has far outrun any possibility of testing by investigation.

Empirical work in the price field has, in the main, fallen into two groups of studies. On the one hand, investigations have been made of the changing relationship over time of the prices of broad groups of commodities and services in a "price system." The data used are the prices of "representative" commodities, collected and published by the government; and despite all the difficulties connected with the divergence between actual and published prices, changing commodity specifications, index compilations and the like, such studies have adequately revealed some broad and significant aspects of economic behavior.[3] On the other hand, there have been numerous surveys of output-price-sales relationships of particular commodities. The monumental demand studies of Henry Schultz[4] belong in this category, as do the investigations by the Department of Agriculture into the relationship between price changes and fluctuations in the volume of sales and output of agricultural commodities. The statistical approximation of the price-sales relationship (demand function) of a commodity is, of course, easiest for a standard product sold to ultimate con-

[2] The most recent and effective survey of the theoretical literature on the market relations of the individual firm is presented in Robert Triffin, *Monopolistic Competition and General Equilibrium Theory*, Harvard Economic Studies No. 67 (Cambridge, 1940).

[3] See, e.g., the works of Frederick C. Mills; in particular, *The Behavior of Prices* (National Bureau of Economic Research, 1927), and *Prices in Recession and Recovery* (National Bureau of Economic Research, 1936).

[4] *The Theory and Measurement of Demand* (University of Chicago Press, 1938).

sumers. As for the price-output relationship (supply function), statistical approximation is frequently possible for agricultural products and such commodities as lumber, standard cotton textile fabrics and bituminous coal, for which production conditions are close to those of pure competition.[5]

Remarkable for their scarcity, however, are empirical studies of the cost and demand conditions confronting a firm. It is true that business "case studies" of price, output and investment decisions are fairly numerous and frequently illuminating,[6] and that a wealth of pertinent, though usually unanalyzed, material is to be found in business, accounting and management publications. When available, engineering estimates of the relation between size of machine or plant and costs, or between rate of operations and costs, are also often enlightening. Business research itself is being directed increasingly toward the type of question in which the economist is interested.[7] Finally, there have been in recent years a number of attempts at statistical approximation of the total cost-output relation for particular firms.[8] Yet despite these developments, it remains true that examination of cost and demand conditions as they exist in practice has limped sadly behind the venturesome constructions of price theorists.

Such investigation is presumably of particular interest to business management, to the economic observer and to the government administrator. An understanding of how costs

[5] For an interesting attempt to derive a statistical supply function in a noncompetitive market, see J. Tinbergen, "Bestimmung und Dentung von Angebotskurven, Ein Beispiel," in *Zeitschrift für Nationalökonomie*, I (1929–30), pp. 669-79.

[6] Perhaps the best collection of such case material is that of Malcolm P. McNair and Richard S. Meriam, *Problems in Business Economics* (McGraw-Hill, 1941).

[7] See National Resources Planning Board, *Research—A National Resource*, Vol. III, "Business Research" (Washington, 1941).

[8] Certain of these investigations are surveyed in ensuing chapters. A careful study is Joel Dean's "The Relation of Cost to Output for a Leather Belt Shop," *Technical Paper 2* (National Bureau of Economic Research, 1941).

vary with changes in output, factor prices, technology, methods of management, size of plant, distribution channels, size of order and so on, and of how revenue is affected by changes in volume of sales, advertising expenditure, product variation, and different merchandising methods, is certainly helpful in the formulation of output, price and investment decisions. Rational business action, interpreted as a maximization of the present value of the investment or of the proprietorship interest, is dependent on a correct forecast of the costs and revenues associated with possible lines of endeavor, and such a forecast presupposes a knowledge of the manner in which costs and revenues have been determined in the past. The focus of management interest is on the business decision and the factors basic to decision. As for the conceptual schemes of price theory, insofar as empirical research can invest them with content, they are relevant to executive decision.

For the economic observer who seeks to explain price behavior, the utility of an attempt to apply the "tools" of price analysis must obviously depend largely on the extent to which the cost and revenue variables pertaining to profit maximization are determinable or actually approximated in current business practice. Do businessmen really act from the considerations embraced within the conceptual framework of individual enterprise analysis, or is this analysis beside the point? Although examples of price and output decisions reached on the basis of economically rational cost and revenue calculations are not lacking, it is clear also that business policies are frequently dependent in part on conventional, rule-of-thumb methods, or may be directed toward objectives not envisaged in the simplified models of economics. To the argument that marginal cost and revenue calculations play a relatively small role in the price, output and investment decisions of business practice, there are various stock replies: first, that even though the available accounting and operating data are not adapted to such calculations, these data are filtered through the business judgment of management and emerge as decisions conforming

closely to the line of action which would be followed if marginal cost and revenue calculations were undertaken; second, that although management operates with unit costs and prices rather than with marginal calculations, the net result may be no different; third, that in general those firms which approximate maximum profit calculations most closely will survive while others fail. Points one and two may be valid, but there is little factual evidence either for or against them. And the third point, although it may be sound, does little to show how maximum profit positions are approached in the absence of marginal cost and revenue calculation. In an interesting article on business price policy the authors, after a study of some three dozen firms, are forced to conclude that the majority think "in altogether different terms: that in pricing they try to apply a rule of thumb which we shall call 'full cost,' and that maximum profits, if they result at all from the application of this rule, do so as an accidental (or possibly evolutionary) by-product."[9]

The interest of the public administrator is very similar to that of the economic observer. His aim is to determine what considerations are actually taken into account by business firms in formulating decisions on price, output, investment and related matters. Both the initial impact and the ultimate consequences of an administrative ruling will depend on current business practice, which may or may not conform to the principles of contemporary analysis of the individual firm. It may be said, then, that business management has a direct concern in the empirical determination of the variables upon which the maximum profit position of the firm depends. Economists and public officials are interested also, insofar as business practice can be explained by such a determination. It is true, of course, that some public administrators charged with fixing prices have an immediate interest in the determination of the variables.

The primary purpose of this volume is to examine the

[9] R. L. Hall and C. J. Hitch, "Price Theory and Business Behavior," *Oxford Economic Papers*, No. 2 (May 1939), pp. 18-19.

possibilities of isolating the effects on costs of certain important cost-determining influences. Part One is devoted to a preliminary consideration of the character of costs and the dimensions of price. Since the conceptual framework of this study is provided by the current theory of costs in the firm, a brief summary of this theory is presented in Chapter II. The actual cost data available to management and to the economist are limited to accounting and statistical records. Such records, however, do not yield magnitudes that are directly applicable to the purposes with which we are concerned. Indeed the adaptation of accounting data to these purposes is the principal problem confronting empirical cost analysis, and for this reason an examination of the character of costs as viewed by economics and accountancy is necessary to the analysis that follows. Chapter II concludes with a brief survey of some of the uses to which accounting data have been put in cost studies that are outside the main current of the discussion.

Recent consideration of the "dimensions" of price has indicated how complex may be the meaning of the price of a product sold by a particular firm. As represented in a demand or marginal revenue curve, price is presumably a net realization to the firm after deduction of all discounts and allowances. An understanding of the price-making process, however, requires an examination of the "structure" of a price, including a multitude of selling terms. Chapter III is concerned with various meanings of price and its dimensions and with the relation between the internal organization of a firm and the process of pricing.

The substance of the volume is represented by the analysis of Part Two. The thread of this analysis, to which the discussion of the various chapters is tied, is a consideration of the problems of isolating the influence of a single variable among the many which simultaneously affect costs. It must be admitted that the thread is a tenuous one, that its frequent breaks are patched up only with difficulty, and that the authors wander on occasion into other fields. Their excuse must be that the material is in many places scanty

and that very little systematic work has been done in this area. A common structure is apparent in all the chapters in Part Two and serves to focus attention upon the principal objectives with which all are concerned: a consideration of the statistical problems involved in the study of the influence of certain factors on costs, a critical evaluation of existing materials and studies, and suggestions of further research possibilities.

The analysis of costs here attempted is something less than comprehensive, for many of the important influences on the cost of a product to a firm have had to be neglected. A perusal of the chapter headings will indicate that attention has been concentrated mainly on those elements which have been emphasized in traditional individual firm analysis. Given fixed plant and equipment, the production costs of a product to a single-product firm may be considered as determined, within the framework of a given technology, by the rate of plant utilization and the prices of the input factors. Chapters IV and V are concerned with costs and rate of output. With respect to changes in the rate of output, certain costs must be treated as fixed and others as variable. The conventions of accounting and record-keeping with respect to the distribution of fixed costs over time and the implications of the conventions for the short run cost function are examined in Chapter IV. Chapter V is devoted principally to a critical examination of recent statistical studies of the cost function. Chapter VI deals with the effect on costs of changes in factor prices.

The empirical study of the effects of technical change on costs, which is the subject of Chapter VII, is beset by serious difficulties which the authors cannot pretend to have met, much less to have solved. Theoretical analysis is accustomed to distinguish between induced changes, which are mere adaptations of known techniques applied in response to variations in output or factor prices, and substantive changes, which involve a shift in the cost function. This distinction, unfortunately, eludes statistical application. The attempt to isolate the effects of a technical change on costs

from the effects of changes in factor prices and in rate of output on costs is a hazardous undertaking.

Chapters VIII, IX and X abandon the restrictions of a single product and fixed plant and deal, in turn, with the allocation of common costs among products, with the behavior of selling as distinguished from production costs, and with the relation of size of plants and of firms to costs. As in the case of previous chapters, the consideration of these problems is confronted on the one hand with clear-cut and meaningful economic distinctions which are largely inapplicable to the material at hand and, on the other, with accounting data which usually, and often necessarily, represent rule-of-thumb judgments and arbitrary conventions. Empirical research has the dual responsibility of adapting theoretical constructions to the character of the data and of adjusting and modifying the arrangement of the statistical and accounting material in such a way as to make it applicable to economically significant questions.

A fruitful consideration of the relation of cost behavior to price determination by the firm awaits further work on costs. Equally essential is further investigation of demand conditions, to which it is hoped the Committee may presently turn. Chapter XI, as the title indicates, is limited to a few remarks on the implications of cost behavior for price analysis. It has been thought useful to present in the appendices to the main discussion a considerable amount of supplementary material which lies somewhat outside the central theme of this volume.

In conclusion, the authors wish to emphasize that this report in no sense represents a complete study of the principal cost problems confronted by the individual firm. They are acutely aware that in many places in the discussion the difficulties associated with the isolation of the influence of one variable on costs from others operating simultaneously have not been countered effectively. In addition, many other cost problems just as significant as the ones treated here have perforce been neglected for lack of time. The Committee will be content, therefore, if this

report is accepted as an introduction to a body of imperfectly known material, as a critical appraisal of existing studies of cost behavior, and as a presentation of suggestions for further research.