THE PROFIT MAXIMISING PRICING MODEL

THESIS

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Cecil W Jackson

GRAHAMSTOWN

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CHAPTER I: BACKGROUND

1.1 INTRODUCTION

> "Administrative theory is peculiarly the theory of intended and bounded rationality - of the behavior of human beings who satisfice because they have not the wits to maximize"
>
> Herbert A Simon, Administrative Behaviour.

> "We should view decision making itself as an effortful activity"
>
> Harvey Leibenstein, General X-Efficiency Theory and Economic Underdevelopment

Writing thirty-five years ago, R S Edwards (1952) noted that as an economist who was once an accountant he had "been following with some perplexity the recent controversy in this country (United Kingdom) and the United States on the influences determining prices in manufacturing industry" (p 298). He explained that he was surprised that economists should find the practice of cost-plus pricing "a significant discovery" (p 298) and that he was also surprised that "the existence of these procedures should have led to serious questioning of the validity of the marginal approach in economic analysis" (p 298). He observed that rules of thumb are sometimes used in practice and commented "that these rules of thumb are

not always as satisfactory as they might be and sometimes they are downright stupid. But it surely does not follow that, because mistakes are sometimes made in business practice, the marginal analysis, which is merely a method of stating formal qualities of sensible behaviour, is inapplicable as a general approach" (p 298).

Thirty-five years later, as an accountant who was once a student of economics, and noting the extent to which some economists have gone in absorbing the managerial and behaviourial schools into their theory of the firm, I am now especially surprised at the ease with which accountants, both professional and academic, dismiss the applicability of the marginalist approach[1].

Using analytical techniques, this study will examine the accountant's pricing theories and the factors influencing the accountant when he makes a pricing decision and will compare the accountant's marginalist approach to the economic theory from which it is derived and examine the validity of the reasons given in accounting theory for the widespread exclusion of the application of the profit maximizing pricing decision model.

1.2 THE MAJOR APPROACHES TO THE THEORY OF THE FIRM

Pricing behaviour is studied by economists in the theory of the firm in microeconomics. In microeconomic theory three main approaches to the study of the firm can be identified; neoclassical theory, managerial theory and

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1. See American Institute of Certified Public Accountants (AICPA) (1985) and Garrison (1985: p 503) and Killough and Leininger (1984: p 356).

behavioural theory.

(i) Neoclassical Theory

In neoclassical theory the firm is an "heuristic fiction"[2] which attempts to maximise profit. Based on the assumption that the firm attempts to maximise profits, neoclassical theory explains the price at which the seller offers his product for sale in terms of the profit maximising pricing model. Accounting for the nature of the behaviour of costs and revenues in relation to volume produced and sold, the economist then sees price being set at the level at which marginal revenue is equal to marginal cost, which is the level at which total revenue exceeds total cost by the greatest amount and is thus the point at which profit is maximised. This will be examined in more detail later in this chapter. Led by such names as Friedman (1962), Machlup (1967) and Papendreou (1958), most neoclassical studies of the firm today are positivist studies.

(ii) Managerial Theory

Focussing on the ever increasing separation of ownership from control in corporations, following pioneering work by Berle and Means (1932), the managerial theory of the firm holds that managers have the discretion to deviate from the profit maximisation goal, which may maximise the shareholders' utility, and instead to maximise functions which maximise their own utility as they perceive it. Led to prominence by Baumol (1959),

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2. See Machlup (1967: 27).

revenue maximisation is frequently presented as an alternative to profit maximisation. The issue as to what are the alternative objectives of the firm and how they affect the validity of the profit maximising pricing model will be examined in chapter 5.

(iii) Behaviourial Theory

Introducing organisational theory into the study of the theory of the firm the behavioural theorists focussed rather on the formation of corporate goals as opposed to their attainment.

Herbert Simon (1955) in his path breaking article explained that their approach was to "explore possible ways of formulating the process of rational choice" (101). He explained that their focus on the actual process of the decision takes into account the limits to rational maximisation behaviour.

Leading behavioural theorists, Cyert and March, also explained that one of their research commitments was that they wished to study the decisions "by studying the process" (1963: 2).

Herbert Simon (1959) in another, also much celebrated article, summarised the attacks on the hypothesis that the entrepreneur strives to maximise profits. In that article he stated, "The entrepreneur may not care to maximise, but may simply want to earn a return that he regards as satisfactory" (262). He said that satisficing "is a concept more meaningfully related to the psychological notion of aspiration levels than to

maximisation" (262).

Thompson (1981) sums up the philosophy of the behavioural theorists saying, "The thesis is that management decision makers are content to go with workable or satisfactory solutions and courses of action rather than undertaking the more burdensome chore of figuring out the very best alternative at each and every fork" (302).

Succinctly put by Simon (1957): "Administrative theory is peculiarly the theory of intended and bounded rationality - of the behaviour of human beings who satisfice because they have not the wits to maximise" (24).

Having considered the three major approaches to the theory of the firm under which pricing is studied by the economist, the accountant's perception of the firm and pricing must now be considered.

1.3 THE ACCOUNTANT'S FIRM VERSUS THE ECONOMIST'S FIRM

The area of accounting which studies the pricing behaviour of the firm is cost and management accounting. Barret and Bruns (1985) have stated that "management accounting is designed to help make things happen and then measure what has happened" (1). The National Association of Accountants (NAA) has defined management accounting as "the process of identification, measurement, accumulation, analysis, preparation, interpretation, and communication of financial information used by management to plan, evaluate, and control within an organisation and to assure appropriate use

of and accountability for its resources".[3]

It is noteworthy that managerial accountants usually refer to an "organisation"[4] whereas the microeconomist refers to the "firm".

It is submitted that the crux of the matter in reconciling the accountant's perception of the pricing decision to that of the economist is to recognise the difference between the entity (firm or organisation) considered by the accountant and the one considered by the economist.

In Machlup's (1967) famous presidential address to the American Economic Association, he explained that the economist's firm is an "imaginary reactor" (27). He stressed that it "is a pure construct for which there need not exist an empirical counterpart" (27). He explained that to confuse the imaginary firm with a "real" firm would be to "confuse a heuristic fiction with a real organisation like General Motors or Atlantic and Pacific" (9), which is "to commit the falacy of misplaced correctness" (9).

This "heuristic fiction" of a firm is something altogether different from the organisation which the managerial accountant studies. Garrison (1985) makes it clear that "managerial accounting is concerned with providing information to managers, that is, those who are inside an organisation" (3). Further, he unambiguously defines this organisation saying:

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3. See Killough and Leinenger (1984: 5).
4. See Garrison (1985: 3) and Horngren (1982: 9).

> "An organisation can be defined as a group of people united for some common purpose. A bank providing financial services is an organisation, as is a university providing educational services, the General Electric Company providing appliances and other products" (3).

Garrison's (1985) specific inclusion of the General Electric Company and Machlup's (1967) specific exclusion of a real organisation with a name like General Motors starkly emphasise the very core of the difference between the accountant's entity and the economist's entity.

Thus the accountant has the task of assisting in the achievement of the goals of a specific, real organisation. Read together with the National Association of Accountants' definition of management accounting[5], it becomes clear that the purpose of the management accountant is to assist in the task of achieving the objectives of a real organisation.

As a result of the fact that the accountant has this specific task of assisting in the achievement of the objectives of a specific, real organisation, he normally has a specific contractual obligation (be it employee/employer or consultant/client) with some or other party requiring him in general and sometimes specific terms to employ his skills towards the interests of that party. The crux of the matter is that as a result of

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5. See page 5 of this chapter.

knowingly and willingly entering into such a legal contract (and being legal requires that it is not in contra bona mores) he acquires a legal, and many would perhaps say also a moral, obligation to then apply his skills in the interests of the other party in terms of the contract.

When this specific obligation of the accountant to another party is considered together with the modern organisation's feature of separation of ownership from control and the resultant scope for goal incongruence between managers and shareholders, then it becomes clear that the question of exactly whose interests the accountant serves when he works on a pricing decision, deserves much closer attention than it has so far received.

The work of Harvey Leibenstein (1978) the pioneer of X-efficiency theory, is pertinent in this regard. Examining the profit maximisation assumption of neoclassical microeconomic theory, Leibenstein (1978) pointed out that the inputs of a firm "can be used with various degrees of effectiveness" (17). If the input is not used effectively then the corresponding dimunition in output is a measure of x-inefficiency. The present study considers that this notion of x-inefficiency could be very helpful in analysing the pricing decision. It is suggested that it is highly pertinent that Leibenstein (1978) explained that effective use of the firm's inputs depends not only an actual performance but also on "the decisions that are made on how to use the inputs" (18).

Concerning the decision on how to use the inputs we must note that Leibenstein (1978) perceived that agents may have different interests from their principals. He said that "they may also make decisions which

emphasise their own interests irrespective of whether they are in the principal's interest" (27). He also drew attention to the fact that in the performance of activities there exists for individuals "an infinity of effort points to choose from"[6] and that, of course, individuals will not always choose to be 100% effortful. Further, he postulated that "we should expect different effort levels on the part of the agent compared to those of the principal" (10). Perhaps, most pertinent of all, he declared that "we should view decision making itself as an effortful activity" (28).

Viewed against this background it is thus submitted that it is urgently necessary to examine carefully the accountant's pricing theory and practices.

1.4 PRICING MODELS

Both accountants and economists recognise two generic pricing philosophies; that is, "profit maximising" and "cost plus markup" pricing strategies. In order to examine the accountant's version of the "profit maximising" pricing model it is necessary first to illustrate in more detail the "profit maximising" pricing model of economic theory from which the accountant's model is derived.

Assuming that under most forms of competition, price reductions will be necessary to sell more units and that the cost of additional units of products is not constant, the economists construct a model as shown in Figure 1 and Figure 2.

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6. See Leibenstein (1978: 28).

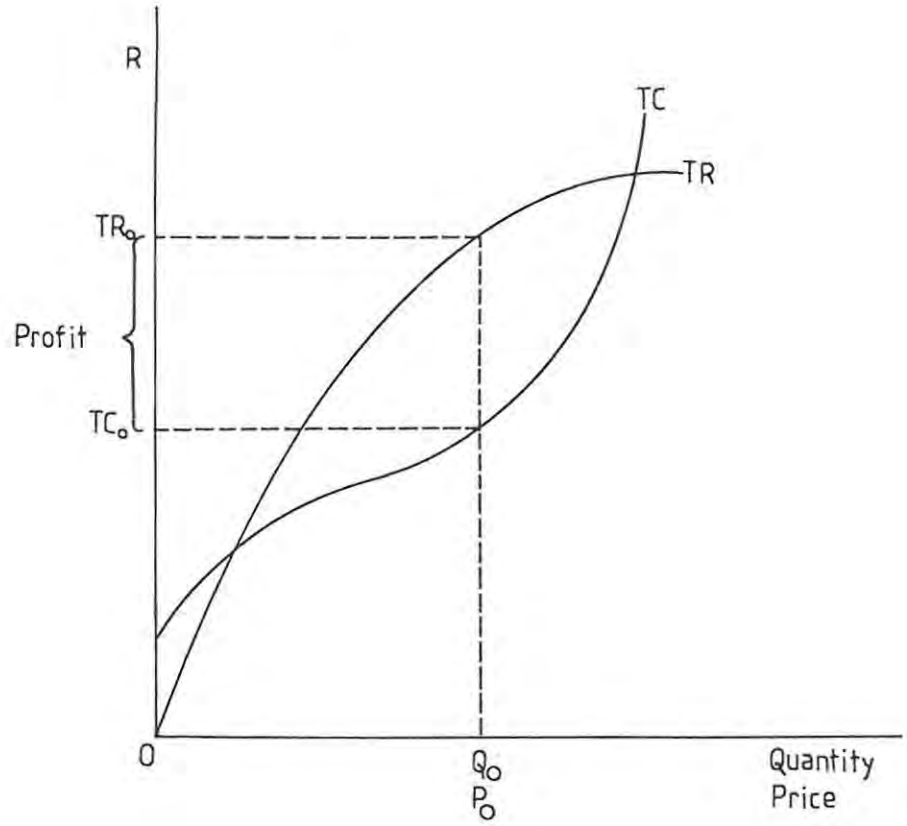

Figure 1: Total Revenue and Total Cost Curves (TR, TC)

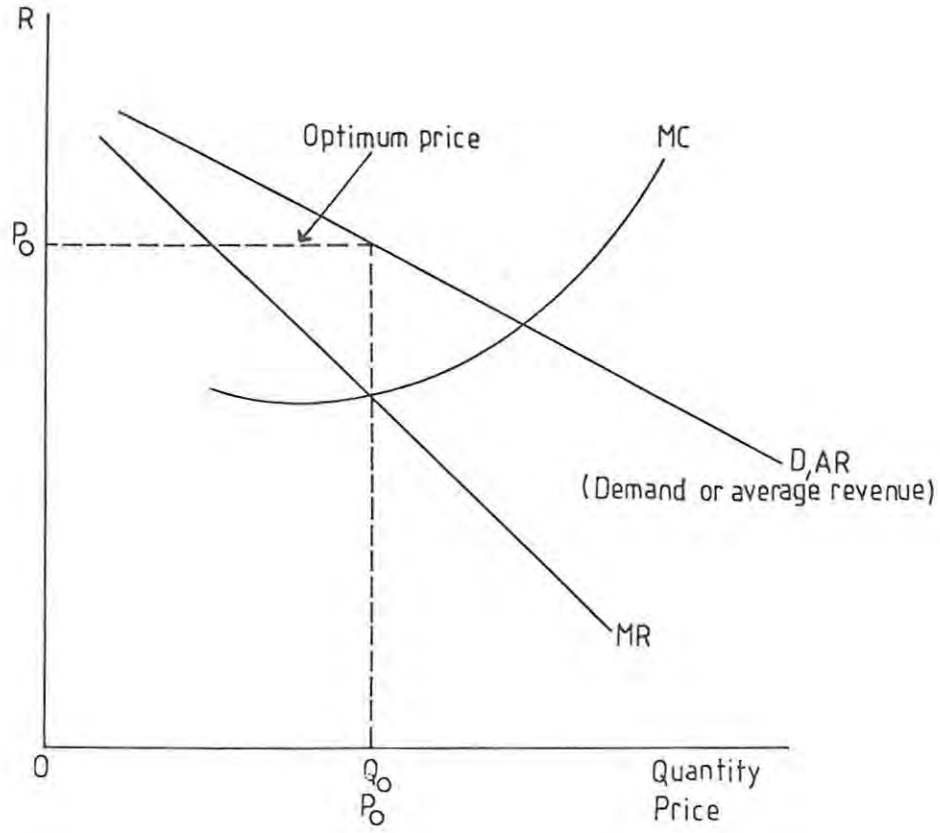

Figure 2: Marginal Revenue and Marginal Cost Curves (MR, MC)

This can be illustrated with data from an example in Killough and Leinenger (1986: 353-357) of a firm with revenue and cost functions as follows:

Let; x = number of units of output

R = total revenue function

C = total cost function

MR = marginal revenue function

MC = marginal cost function

If; $R = 84x - 4x^2$

and $C = \frac{x^3}{3} - 4x^2 + 20x + 183$

MR can then be found by differentiating the total revenue function with respect to output:

$$R = 84x^1 - 4x^2 \qquad \ldots \quad (1)$$

$$\frac{dR}{dx} = 1\,(84x^{1-1}) - 2\,(4x^{2-1})$$

$$\frac{dR}{dx} = 84 - 8x$$

Thus $MR = \frac{dR}{dx} = 84 - 8x \qquad \ldots \quad (3)$

MC can be found by differentiating the total cost function with respect to output:

$$C = \frac{x^3}{3} - 4x^2 + 20x^1 + 183 \qquad \ldots \quad (2)$$

$$\frac{dc}{dx} = 3\,\frac{x^{3-1}}{3} - 2\,(4x^{2-1}) + 1\,(20x^{1-1})$$

$$MC = \frac{dC}{dx} = x^2 - 8x + 20 \qquad \ldots \quad (4)$$

Setting the marginal revenue equal to the marginal cost and solving for x, one finds the output that results in maximum profit:

$$MR = MC \qquad \ldots \quad (5)$$

$$84 - 8x = x^2 - 8x + 20$$

$$x = 8$$

Thus the firm should produce 8 units of output to maximise profit. From equation (3) and equation (4) it can be seen that marginal revenue and marginal cost are both equal to R20 at an output of 8 units.

This optimum profit figure can be verified by determining the profit function. Let the profit be P.

$$P = R - C$$

$$P = \frac{-x^3}{3} + 64x - 183 \qquad \ldots \quad (6)$$

The output which maximises profit can be found by differentiating the profit functions with respect to output, setting the derivatives equal to zero and checking for a maximum:

$$\frac{dP}{dx} = -x^2 + 64$$

$$0 = -x^2 + 64$$

$$x = 8$$

This verifies the profit maximising output set earlier.

Thus the economist's model states that the price for a product which maximises profit is the one associated with the volume of output at which marginal revenue is equal to marginal cost.

Now what is the accountant's theory and practice of pricing? Partly due to the fact that the accountant's data is the main data base in cost plus markup pricing, it is frequently perceived, especially by economists, that the accountant only studies and practices cost plus markup pricing. Oxenfeldt and Baxter (1961) commented: "It is generally true that the cost accountant fails to state his assumptions about the firm's aims and pays scant attention to demand; he collects cost data and arrives at a price by manipulating these" (77).

The truth is, as stated earlier, that accountants also recognise two generic pricing philosophies; that is, "profit maximising" and "cost plus markup" pricing strategies. This is evidenced by the fact that publications of professional accountants[7] and the standard texts on managerial accounting[8] explain both a profit maximising model and a cost-plus approach.

In reconciling the accountant's profit maximising model to the economist's model from which it is derived it must be noted that the accountant's total

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7. See American Institute of Certified Public Accountants (1965) publication "Cost analysis for Pricing and Distribution Policies".

8. See Garrison (1985: 499-523) and Koplan (1982: 221-236) and Arnold and Hope (1983: 151) and Polimeni, Fabozzi and Adelberg (1986: 756-758).

cost curve is typically linear. He acknowledges that it is true that each additional unit produced will possibly never increase total cost by an amount exactly equal to the increase of the previous unit of output. Nevertheless he considers that ranges of volumes of production exist within which each extra unit of output will increase total cost by an amount which is not materially different from the previous unit's increase of cost. Thus, within such ranges of production, the accountant envisages a linear relationship between volume and cost, with variable cost per unit equal to marginal cost per unit. Over the full range of volumes, the slope of this total cost curve would, of course, change several times, as, for example, discount quantity barriers and normal time to overtime barriers are broken; and it would also be stepped as fixed costs change.

When the accountant feels that he can assume that fixed costs in total and variable costs per unit will not change materially for the relevant range of volume being considered, he makes a simplifying assumption that the total cost curve can be represented as in Figure 3.

When total fixed costs and variable costs per unit are expected to change materially and the economist's total revenue function is recognised, the accountant obtains a profit maximising pricing decision model which could produce total revenue and total cost curves as represented in Figure 4.

It can then be seen that when we recognise a linear relationship between cost and volume, with a total cost curve of changing slope, there could easily be a number of prices (with associated volumes) at which marginal

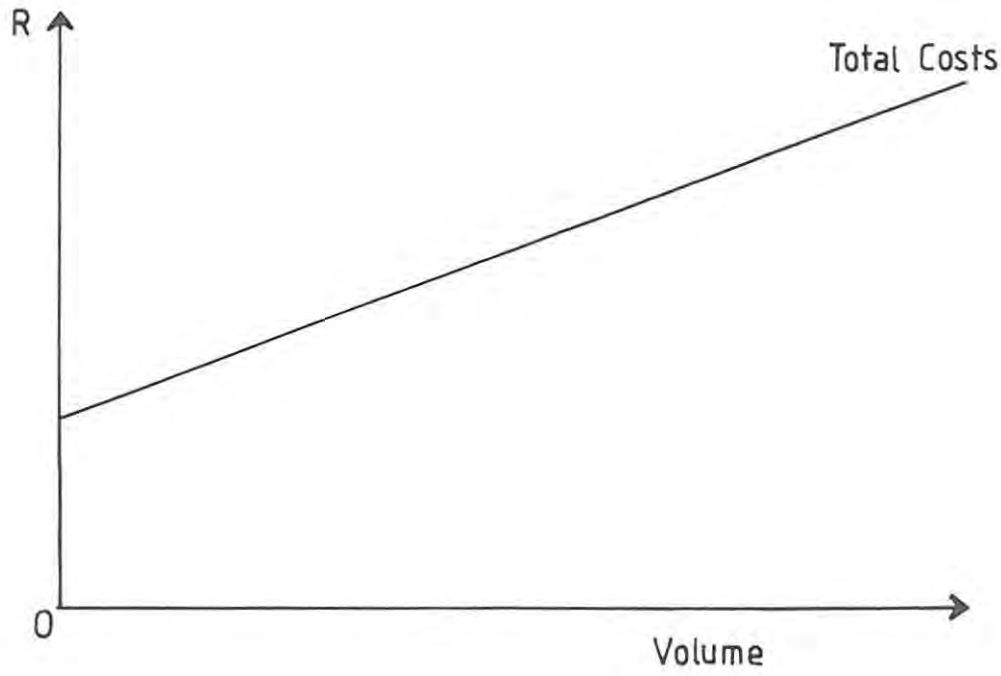

Figure 3

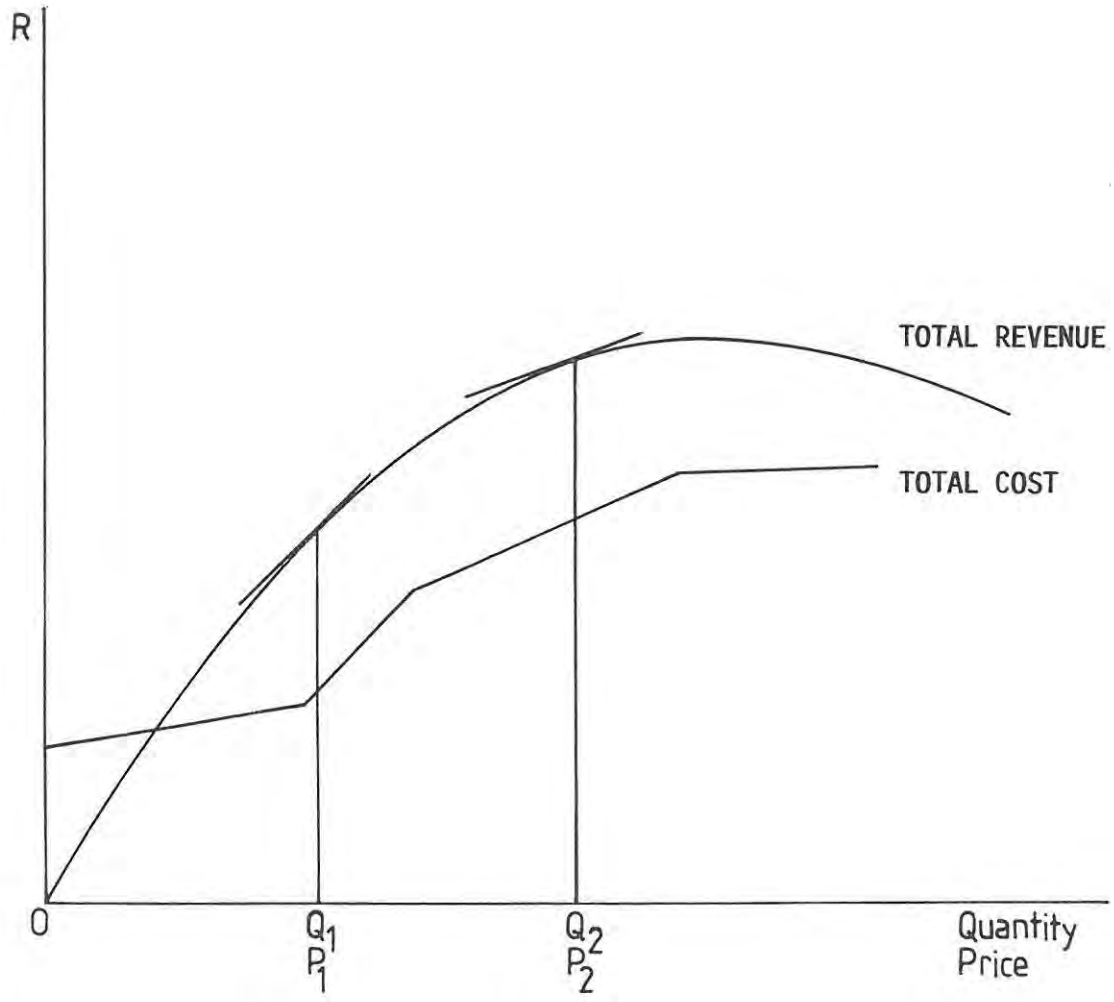

Figure 4

revenue would be equal to marginal cost, and thus the equality of marginal revenue and marginal cost will not necessarily be decisive in determining the profit maximising price and output level. Here (Figure 4) marginal revenue is equal to marginal cost at price P_1 and at price P_2. For this reason, when approaching pricing with the profit maximising pricing model, the accountant focuses on total revenue and total cost, not marginal revenue and marginal cost.

Of course, this is reconcilable to the economist's model in that, with the economist's total revenue and cost curves in Figure 1, the profit increases all the time as volume increases, whilst marginal revenue is greater than marginal cost, since the total revenue curve is moving further away from the total cost curve. Once marginal revenue becomes smaller than marginal cost, the total revenue curve moves closer to the marginal cost curve and profit is then decreasing. Thus just before the level of volume at which the total revenue curve begins moving towards the total cost curve, it is parallel to the total cost curve; and until then, as volume increases so does profit. Where the curves are parallel, marginal revenue is equal to marginal cost and thus the point at which total revenue exceeds total cost by the greatest amount is also the point at which marginal revenue is equal to marginal cost.

The second pricing philosophy which accountants study is, of course, "cost plus markup" pricing. Garrison (1985) comments "the most common approach to the pricing of standard products is to employ some type of cost-plus pricing formula" (504).

Whilst much detailed work and difficult arbitrary allocations of overhead to product are required in calculating a "cost" of a product, the technique is a simple and easily understood one - as explained in Garrison (1985):

> "The approach is to compute a 'cost' base and then to add to this base some predetermined markup to arrive at a target selling price" (504).

Sometimes the markup is simply a traditional rule of thumb and sometimes, in its most sophisticated form, the markup is structured to try to achieve a desired return on investment, based on estimated costs and expected volume. In any form, the target price is then assessed as to its viability and is then adjusted down to "what the market can bear" if necessary. This step of adjusting down to "what the market can bear", of course, covers a multitude of sins and will be examined in more detail in chapter 3.

Horngren (1981) explained that circular logic is employed in target return pricing because the markup is determined by cost and cost is partially determined by volume which is itself partially determined by the mark-up.[9]

He also points out that the plus in cost-plus is rarely an unalterable markup. "Its magnitude depends on the behaviour of competitors and customers" (94-95).

Nevertheless, managerial accounting textbooks quickly dismiss profit

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9. See Horngren (1981) pp 94-95.

maximising pricing as not generally applicable[10]. The empirical evidence is that cost-plus pricing is the most widespread approach in practice[11]. Even the AICPA has departed from its position where it gave prominence to a marginalist approach (1965) and now (1985) it has issued a publication for aiding member accountants in assisting clients in determining prices which is completely based on a cost-plus approach[12].

Why is it that this cost plus approach receives such acceptance by managers and practising accountants and accounting authors?

1.5 FACTORS INFLUENCING THE ACCOUNTANT'S DECISION

At this stage it is useful to review some vital aspects of the discussion so far. From our analysis of the accountant's "firm" and from the major schools of thought in microeconomic theory, there is strong evidence that we should expect that the following will have an effect on the perceptions and behaviour of the accountant when involved in the pricing decision:

(1) The practising accountant has a contractual obligation to assist in solving a specific problem for a real firm. He has to furnish information which will be acted upon.

(2) "Satisficing as opposed to maximising appears to be a verifiable trait of human behaviour".[13]

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10. See page 2 of this chapter.
11. See Dollery (1982).
12. See AICPA (1985).
13. As quoted by Thompson (1981: 302) when citing to March and Simon (1958: 140-141).

(3) The modern corporation's ownership is increasingly separated from control, leading to scope for goal incongruence and the managerial school's claim that managers attempt to maximise functions other than shareholders' profit.

(4) As explained by Leibenstein (1978) "inputs can be used with various degrees of efficiency within the firm" (17) and agents especially, are likely to have different interests and effort levels from principals.

Conscious of (1) above, that is, that the accountant has to solve a specific problem for a real firm, I once described the accountant in a joint article (Jackson and Dollery, 1984) as "less concerned with perfection and more urgently seeking a workable and effective solution" (683). I now feel that accounting theorists need be heedful of factors (2), (3) and (4) above in analysing how the accountant comes to be less concerned with perfection in his more urgent search for a "workable" pricing solution.

Noting the separation of ownership from management and the growth in size of the modern corporation, and referring to a study by Tricker (1979) who formed the Corporate Policy Group in the United Kingdom to promote a greater understanding of corporate direction, control and governance, Savage (1984) commented that "the problem today, however, is that corporate practice is so diverse that it has outgrown the legal model. Successive Company Acts perpetuate the fiction that the shareholders control a company

at the annual general meeting, when in reality they are in a weak position in relation to management" (322). Emphasising this as a problem, Savage further observed that Tricker (1979) argued that the large public companies with external public investment require "a governing body capable of exercising professional supervision over executive actions and demonstrating the legitimacy of corporate activities to outside interests" (Savage: 322).

The pricing decision, with its pivotal affect on volume, cost and profit, is possibly the most important decision of the company.

Now this study submits that it deserves consideration that the chartered accountant/certified public accountant has a unique tradition of being appointed by shareholders to work with, but independently of, management with a view to reporting on the custodianship and efficiency of management in the interests of shareholders and other parties associated with the corporation. It is submitted that he is thus in a unique position to perform the task of ensuring that the corporation uses a decision making process for pricing which is in accordance with the agreed objectives of the organisation.

Mindful of Leibenstein's caveat that we should view decision making itself as an effortful activity and that we could expect different effort levels and interests on the part of agents and principals, it becomes even more evident that the profit maximising pricing model's rejection must be questioned in order to determine whether it is being rejected when it may be more efficient for principals (shareholders) and even for managers

themselves and other constituencies of the firm.[14]

Thus this study proposes that the reasons given by managerial accounting authors for regarding the profit maximising pricing model as not generally applicable should be examined carefully.

1.6 THE REASONS CITED FOR THE EXCLUSION OF THE PROFIT MAXIMISING PRICING DECISION MODEL

The reasons generally given by managerial accounting authors for regarding the profit maximising pricing model as not being generally applicable in practice can be classified as follows:

(i) the fact that estimations are required for its use;

(ii) the assertion that, in any case, its use would be severely limited to only certain types of market structures;

(iii) the assertion that the maximisation of profit may not be a major objective of the firm; and

(iv) the fact that price is just one element of the marketing mix.

Since the examination of the validity of these criticisms of the model is of core importance to this study, Garrison's (1985) outline of these criticisms is reproduced in full as follows:

"Although the models in Exhibits 12-1 and 12-2 (Figures 1 and

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14. Chapter 5 will examine the conflicting interests of the different constituencies of the firm.

2[15]) do a good job of showing the general outlines of the incremental profit approach to pricing, they must be viewed as being only broad, conceptual guides in pricing decisions. There are several reasons why. First, the cost and revenue data available to managers are generally sufficient to provide only rough approximations of the shape of the various cost and revenue curves depicted in the models. As our methods of measurement are improved and refined in years to come, this situation may change, but at present managers usually have only a general idea of the shape of the demand curve that they are facing.

Second, the models are directly applicable only in conditions of **monopoly** (no directly competing product in the market) and **monopolistic competition** (many sellers of similar products, with no one seller having a large enough share of the market for other sellers to be able to discern the effect of its pricing decision on their sales). The models are not applicable between these two extremes, where the market is characterised by situations of **oligopoly** (a few large sellers competing directly with one another). The reason is that the models make no allowance for retaliatory pricing decisions by competing firms, and retaliatory pricing is a prime characteristic of oligopolistic industries.

A third limitation of the general models arises from the fact

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15. See page 10.

that price is just one element in the marketing of a product. Many other factors must also be considered that can have a significant impact on the number of units of a product that can be sold at a given price. Among these factors are promotional strategy, product design, intensity of selling effort, and the selection of distribution channels.

A final limitation of the general models is that even if business firms had a precise knowledge of the shape of their demand curves, we cannot automatically assume that they would price in such a way as to maximise profits. The reason is that this might bring accusations from the public of 'profiteering' and 'charging all that the traffic will bear'. Rather than attempting to maximise profits, many firms seek only to earn a "satisfactory" profit for the company. They think in terms of a reasonable return on the investment that has been made in the company, and they strive to set prices in such a way as to earn that return. The concept of a satisfactory profit underlies the actions of a great many business firms today" (503).

1.7 METHODOLOGY

It is important for the purposes of this study that we recognise that the different understandings of firm adopted by the different approaches to the study of it, are not mutually exclusive. Machlup (1967) illustrated that depending on the purpose in mind, different concepts of the firm are

useful.[16] He included in his illustration, inter alia, a managerial science concept of the firm for the purpose of that discipline and a theory of competitive prices and allocation concept of the firm for the purpose of the neoclassical economist. He then urged:

> "I hope there will be no argument about which concept of the firm is the most important or the most useful. Since they serve different purposes, such an argument would be pointless" (28).

It is useful to read this together with the NAA'S (Gordon, et al: 1981) comment:

> "Pricing decisions utilise the talents and know-how of many individuals across several functional areas, of which accounting is only one. Management accountants must be willing and able to work with individuals from various disciplines if their real potential for aiding executives in making pricing decisions is to be achieved" (11).

As was mentioned earlier in this chapter, most economic science studies today defending the neoclassical theory of the firm are positivist studies[17]. This study will be a normative defence of the profit maximising pricing model. It is submitted that if the profit maximising

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16. Machlup (1967: 29) went as far as to say that "instead of a heated contest between marginalism and managerialism ... a marriage between the two had come about".

17. See page 3 of this chapter.

pricing model is excluded for the wrong reasons, this could be a manifestation of X-inefficiency.

Encouraged by the quotation from Machlup (1967: 28) above, and the NAA's recognition of the interdisciplinary nature of the pricing decision, this study will accept the findings of the behavioural and managerial schools and x-inefficiency theory in the sense that they explain influences acting upon the pricing decision maker. Looking at pricing from the unique perspective of the accountant, who has a heritage of independent examination of the financial affairs of a company in the interests of shareholders, third parties, managers and the firm as a whole, the present study will critically question the reasons given by managerial accounting authors for the widespread exclusion of the application of the profit maximising pricing model.

The study will use the empirical data of two major pricing behaviour studies; namely, Dollery (1983), a South African study, and Gordon et al (1981), an American study commissioned by the National Association of Accountants.

The remainder of this study will be organised as follows:

(i) Chapter 2 will examine the argument that the model's use is severely limited in that it could only be applied in certain types of market structures.

(ii) Chapter 3 will examine the argument levelled against the profit

maximising pricing model on the grounds that the model is only as good as the estimates it embodies.

(iii) Chapter 4 will examine the argument that the model excludes the non-price elements of the marketing mix.

(iv) Chapter 5 will examine the argument levelled against the model on the grounds that profit maximisation may not be the sole or major objective of the firm.

(v) Chapter 6 will conclude as to the findings of the study and the policy proposals which can be deduced therefrom.

It must be stressed that it is not the philosophy of profit maximisation, but the profit maximising decision model which is being defended.

CHAPTER II: THE MARKET STRUCTURE ARGUMENT

2.1 INTRODUCTION

A standard argument levelled against the profit maximising pricing model in favour of cost-plus pricing is the allegation that it is "only"[1] applicable under conditions of monopoly and monpolistic competition.

Garrison's (1985) statement of the argument reads as follows:

> "Second, the models are directly applicable only in conditions of **monopoly** (no directly competing product in the market) and **monopolistic competition** (many sellers of similar products, with no one seller having a large enough share of the market for other sellers to be able to discern the effect of its pricing decision on their sales). The models are not applicable between these two extremes, where the market is characterised by situations of **oligopoly** (a few large sellers competing directly with one another). The reason is that the models make no allowance for retaliatory pricing decisions by competing firms, and retaliatory

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1. In a wide ranging study of concentration of manufacturing industry in South Africa, Du Plessis (1977) did extensive work on the categorization of concentration of industry with the national Standard Industrial Classification (SIC) figures. Dollery (1983) used this work to define the populations for his samples. It is interesting to note that Dollery's monopolistic competition population included as many as 7 409 South African manufacturing firms which could be thought of as approximating workable competition or at least monopolistic competition and 1 175 South African manufacturing firms which may be taken to approximate monopolistic markets. See Dollery (1983) p 136 and p 188.

pricing is a prime characteristic of oligopolistic industries" (503).

This chapter will examine the validity of this argument which is used to support the widespread exclusion of the model.

The modus operandi begins with a theoretical analysis which will illustrate scope for the application of the profit maximising pricing model in each of the four market structures, showing how the model can be used to maximise profit in each of these market structures. Thereafter, the empirical evidence of two major studies (Gordon et al, 1981; and Dollery, 1983) of the pricing behaviour of manufacturers will be examined for supporting evidence of the contention that there is a place for the profit maximising pricing model in all four market structures.

2.2 PERFECT COMPETITION

It is widely accepted that the existence of four main features distinguishes the perfectly competitive market; namely

(i) The products of the firms in the industry are homogenous;

(ii) None of the buyers or sellers in the market are of significant enough size to affect the going market price of the product;

(iii) Resource inputs are completely mobile so that there are no restrictions on the freedom of firms entering or leaving the industry; and

(iv) There is perfect information so that buyers and sellers make decisions under conditions of certainty.

The possible arguments against the profit maximising pricing model on the grounds of this market structure per se must be identified and examined. There are two arguments:

(1) A perfectly competitive market does not exist.

(2) Assuming that such a market does exist, the price of products offered for sale is given so that there is no use for the model.

The first argument, namely, that a perfectly competitive market does not exist, is not a valid argument against profit maximising pricing in favour of cost-plus pricing at all. At most it just means that this market structure need not be considered in the argument. In no sense can it be argued that cost-plus pricing is more applicable in non-existent markets than profit maximising pricing. Further, of the total population of firms, the fact that none of them are perfectly competitive does not mean that the population size of firms under consideration for either pricing model is reduced. All firms must now fall into one of, or a mix of, the other market structures which will be examined. In fact, since proponents of cost-plus pricing argue that there is no scope for the profit maximising model under perfect competition on another ground, the non existence of this market structure would actually be in favour of the profit maximising pricing model because this exclusion would increase the number of firms under monopolistic competition where the model is said to be more applicable.

Clearly, in practice, infinite gradations in the dilution of these features of perfect competition, until their total absence, will characterise the markets in which products are produced and sold. Further, no market in the

real world will ever meet all four of these stringent characteristics of perfect competition. As seen in chapter one of the present study, neoclassical microeconomic theory, led by such eminent writers as Machlup (1967), Friedman (1962; 1952) and Stigler (1957), for example, has copious literature debating the usefulness of the theoretical construct of the perfectly competitive firm, explaining how a model may yield valid conclusions in spite of embodying unrealistic assumptions. Thus a study of the perfectly competitive model may be argued to be useful for our purposes for the many firms operating under conditions very close to the conditions of perfect competition. This view is summed up well by Thompson (1981) when he states "as we shall see, the perfectly competitive model captures the essence of real-world markets where large numbers of relatively small firms sell identical products" (321). In essence, the argument in the context of this study can be said to be that the perfectly competitive model is of practical value for the market structure under which many sellers possess no monopoly power over price. Scherer (1980) put it succinctly as follows:

> "Homogeneity of the product and insignificant size of individual sellers (i.e. ATOMISTIC market structure) are sufficient conditions for the existence of pure competition - the only basic structural type under which sellers possess no monpoly power" (11).

Clark (1940) initiated the notion of "workable competition", the essence of which lies in the "rivalry in selling goods"[2] (243).

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2. This notion has been developed by, inter alia, Bain (1959) and Markham (1950).

The second argument, namely, that there is no use for the model when price is given, ignores the fact that the model also indicates the level of output which will maximise profit.

From both Figures 2.1 and 2.2, it can be seen that the firm must produce a quantity of Q1 units of output in order to maximise profits.

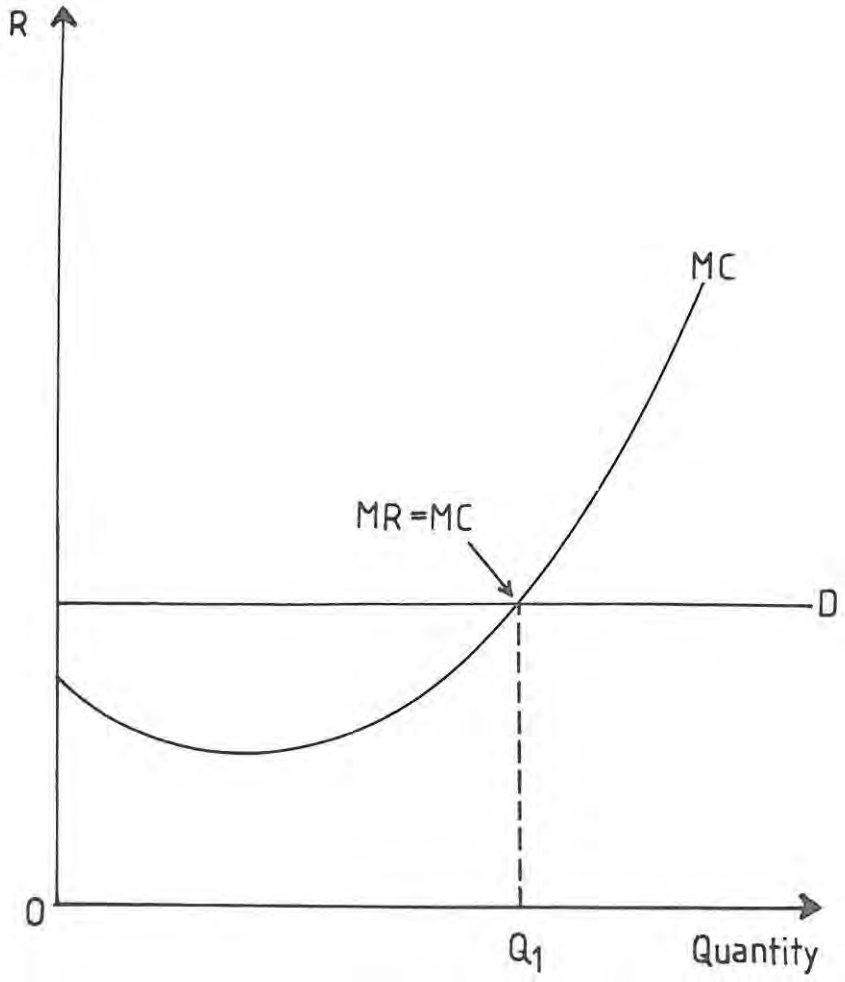

Figure 2.1

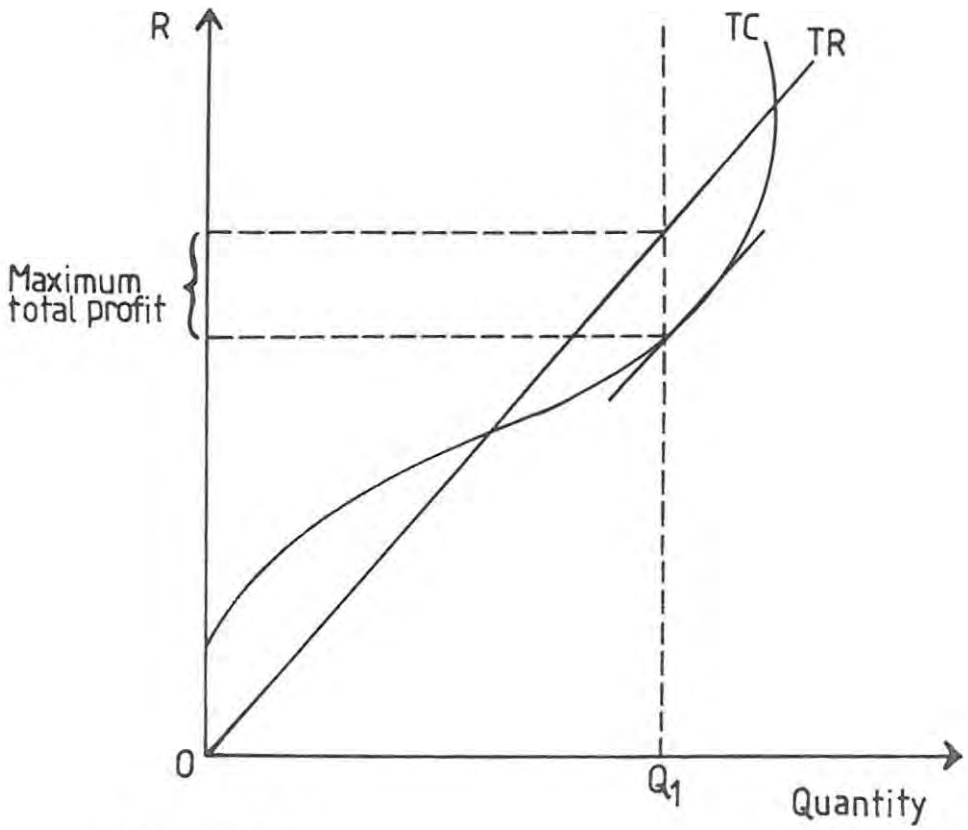

Figure 2.2

Thus the profit maximising pricing model is applicable in perfect competition for the maximisation of the firm's profit in that it can indicate the optimum volume of output for the firm.

2.3 MONOPOLY AND MONOPOLISTIC COMPETITION

2.3.1 MONOPOLY

As with perfect competition, the existence of a real world counterpart of the opposite extreme of perfect competition is similarly doubted by economists.[3] The attribute of there being a sole supplier of a product is frequently met but the absence of close substitutes is more difficult to find. Thompson (1981) extracts the essence of the usefulness of this theoretical construct when he says that the examination of the price and output decisions of the pure monopolist is of value because it "illuminates the patterns of monopolistic behaviour, irrespective of whether a firm is a pure monopolist" (439). Here the firm's demand/average revenue curve is the same as the industry's demand curve. Since opponents of the profit maximising model do not deny its applicability in a monopoly on the grounds of market structure[4], it is not necessary to examine this market structure in any further detail, other than to mention that the model will be applied to set price and volume in the manner illustrated in chapter 1 of this study.[5]

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3. See, for example, Stigler (1966) and Kirzner (1973) and Trifin (1940).
4. See Garrison (1985: 503).
5. See chapter 1, page 10.

2.3.2 Monopolistic Competition

Turning our attention to monopolistic competition, we note that the sellers in this type of market, which is characterised by the existence of large numbers of sellers and some degree of product differentiation, still face competition from many rivals who differentiate between basically homogenous products to create their own particular version in order to create a kind of limited monopoly. The crux of the matter for the purposes of this study is that this differentiation gives the seller some degree of price discretion. "The distinguishing trait of a differentiated product is the ability of the seller to raise the product's price without sacrificing the entire sales volume" (Scherer, 1980: 11).

Once again, since the opponents of the profit maximising pricing model do not exclude the model on the grounds of this market structure, it is not necessary to illustrate the application of the model in monopolistic competition where it will also be applied in the manner illustrated in chapter 1 of this study.

2.4 OLIGOPOLY

2.4.1 BACKGROUND

When a small number of firms supply the dominant share of an industry's total output the market is said to be oligopolistic. The behaviour of these few producers is characterised by a strong perception of their inter-dependence in that their actions have significant repercussions on rival firms. The effect of these dynamics is that the behaviour of real world

oligopolistic firms is not characterised by one norm.

This makes oligopoly a particularly complex and difficult subject. Scherer (1980) has commented that oligopoly is interesting not only because of its prevalence but "because it poses such difficult problems for the economic theorist" (151). Dollery (1983) commented that "some of the most distinguished theorists in economic science have met their metaphorical fates in this complex area of conjecture" (27).

It is not surprising then that the accounting literature, with its "more urgent" search for "workable solutions"[6] has taken its simplification of microeconomic theory to its most extreme in this area of its adoption of pricing theory.

Mirroring the wide variety of different competitive circumstances which exist in oligopoly, "economists have developed literally dozens of oligopoly theories" (Scherer, 1980: 151).

Accounting theorists, noticing the increased price inter-dependency under this market form, have focussed on a model for one structure of oligopolistic competition and ignored the other dozens of models for the other structures of oligopolistic competition. Based on this false generalisation they have fallaciously held that there is no place for the application of the profit maximising pricing model in the whole of oligopoly. As quoted on page 28 of this study, Garrison (1985) states

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6. See page 20 of this study.

that "the (profit maximising pricing) models are not applicable between these two extremes (monopoly and monopolistic competition) where the market is characterised by oligopoly" (503).

This is quite simply false. This conclusion which has its origin in oversimplification and fallacious generalisation is incorrect on at least two counts.

Firstly, it assumes that the profit maximising pricing model only assists in maximising profits by setting price. This is incorrect. It has already been shown, when analysing perfect competition in this chapter, that, even when there is no price discretion, the model assists in profit maximisation by indicating the volume of production which will maximise profit. In the same manner, those oligopolists who are price takers, can use their estimated demand and cost curves to set the volume which will maximise their profits.

Secondly, not all oligopolists are price takers. It will be shown in this chapter that under some structures of oligopolistic competition, some of the oligopolists do have some degree of price discretion which indeed gives the firm potential to maximise profits by the use of cost-volume-profit analysis.

2.4.2 THE KINKED DEMAND CURVE

Since accounting theorists allege that all oligopolists are perforce hamstrung into being pricetakers, let us first examine a model of

oligopolistic competition under which all the firms are locked into a pricetaker's position.[7]

Pioneered by Sweezy (1939), the kinked demand curve model illustrates how a few firms supplying a market could have to refrain from independently changing their price.

Assume that firms A, B and C sell a product at price P_1 as in Figure 2.3 and A's quantity sold is Q_1. If A lowers its price to P_2 and this price reduction is ignored by B and C, clearly A's share of the market should increase and its quantity sold would increase greatly, to say Q_2. However, if B and C match A's new price, A would maintain its share of the market and its volume would not increase all the way to Q_2, because the whole industry would be selling at a lower price and therefore it would only experience an increase in volume to, say, Q_3, in proportion to what the whole industry's volume increased as a result of the lower price.

Similarly, if A raises its price to P_3 and this price increase is ignored by B and C, A's market share will fall and its volume sold will fall

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7. It must be stressed that, given the plethora of oligopolistic models, a comprehensive survey of all the models is quite impossible. The object of this section is simply to show that there are oligopolist market structures under which there is scope for the maximising model. Consequently we will only look at one model, the so-called Kinked Demand Curve model, under which all the competitiors are price takers, and a few models under which some of the competitors are price makers. (The kinked demand curve represents the structure under which the least price discretion would be expected.) The set out of the graphic illustrations in this chapter is based on Scherer (1980) and Thompson (1981) and Sher and Pinola (1981).

greatly, to say Q_4. However, if B and C follow A's price increase, then A will maintain its old share of the market and its volume sold would only decrease in proportion to what the whole industry's volume would fall, to say Q_5, as a result of the industry selling at a higher price.

Thus if rivals match A's price reductions but do not match price increases then A's demand curve would be kinked at point P_1 Q_1 as illustrated in figure 2.3.

Thus in this situation, A, B and C can expect that price cuts may be matched by rivals in order that they do not lose market share and that price increases may not be followed by rivals in order that they may increase their market share. Therefore, the price can be expected to stick at P_1 and this has led accounting theorists, in their oversimplication, to allege that all oligopolists will always be price takers and that the profit maximising pricing model will not be applicable for maximising profits.

Figures 2.4 and 2.5 illustrate the error made by managerial accounting authors when they allege that the profit maximising model is not applicable to oligopolists because they are price takers.

Assume the usual marginal cost function and assume that an oligopolist has a kinked demand curve as was postulated in figure 2.3 and assume a marginal cost function MC_1 and a current price of P_1.

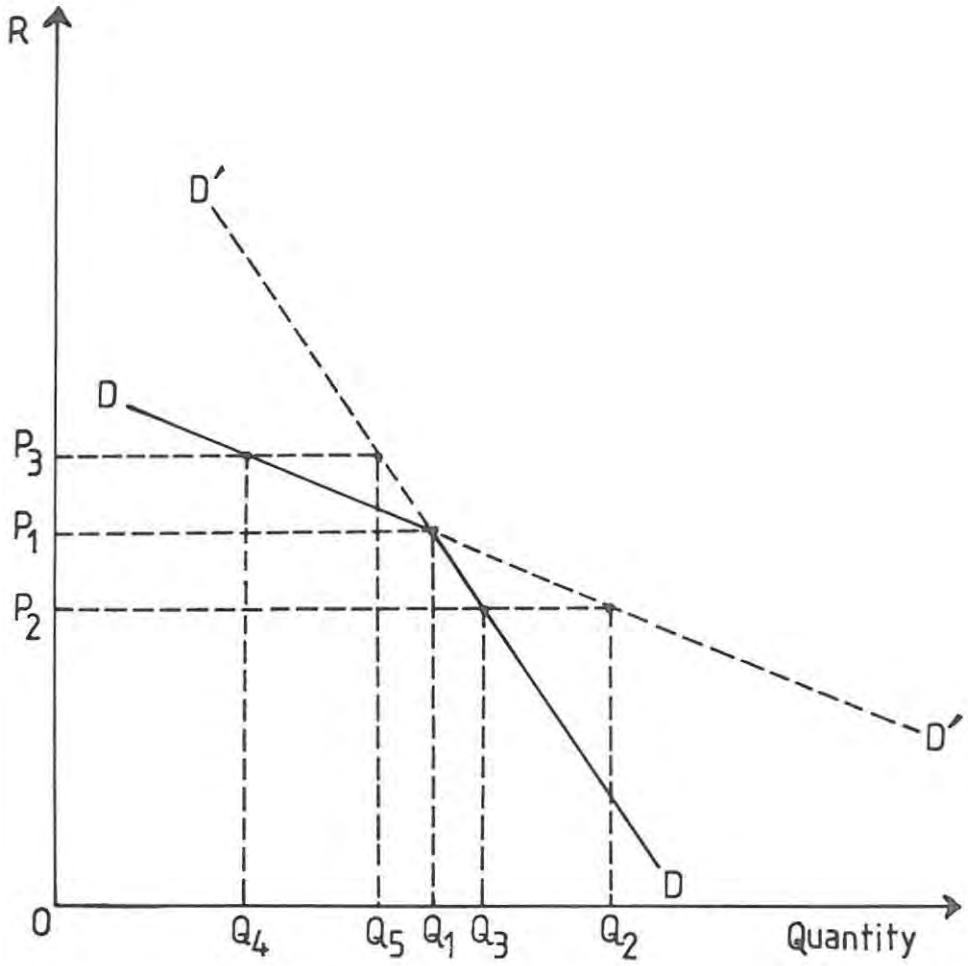

Figure 2.3: The Kinked Demand Curve

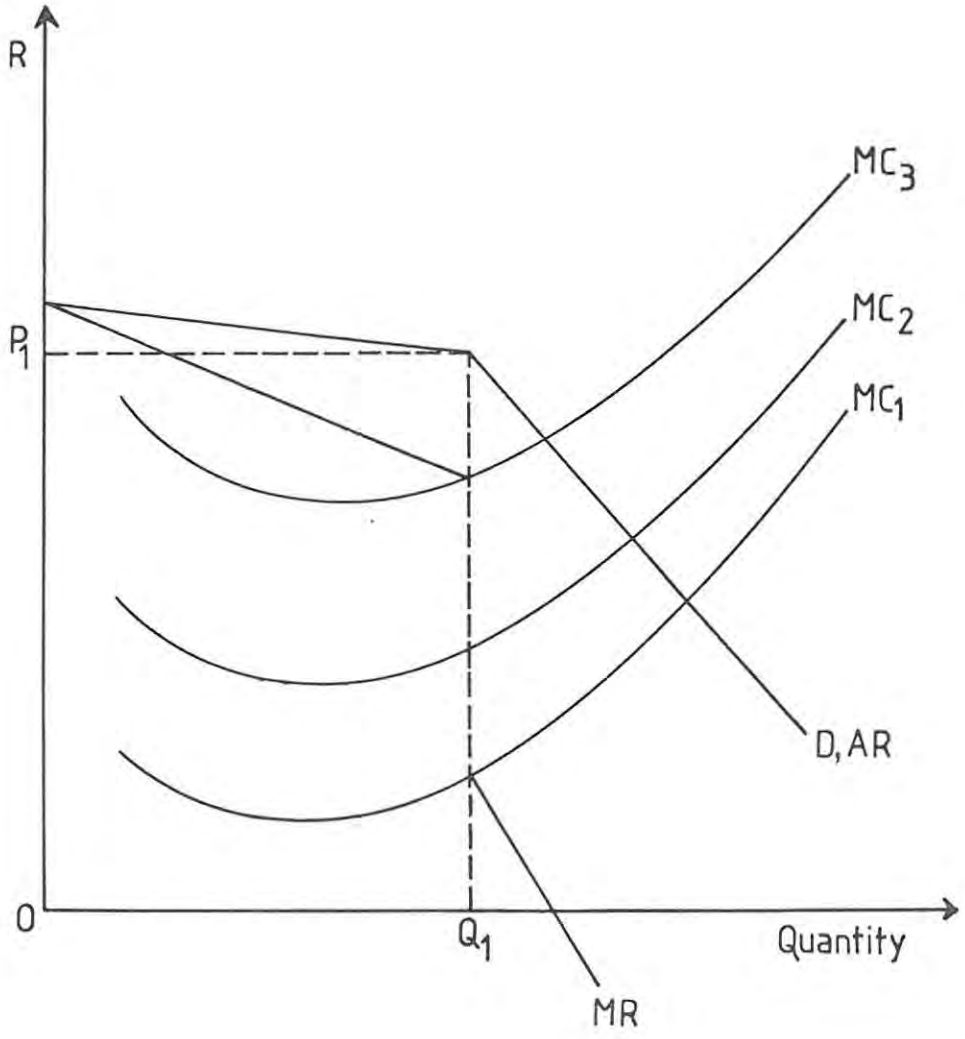

Figure 2.4

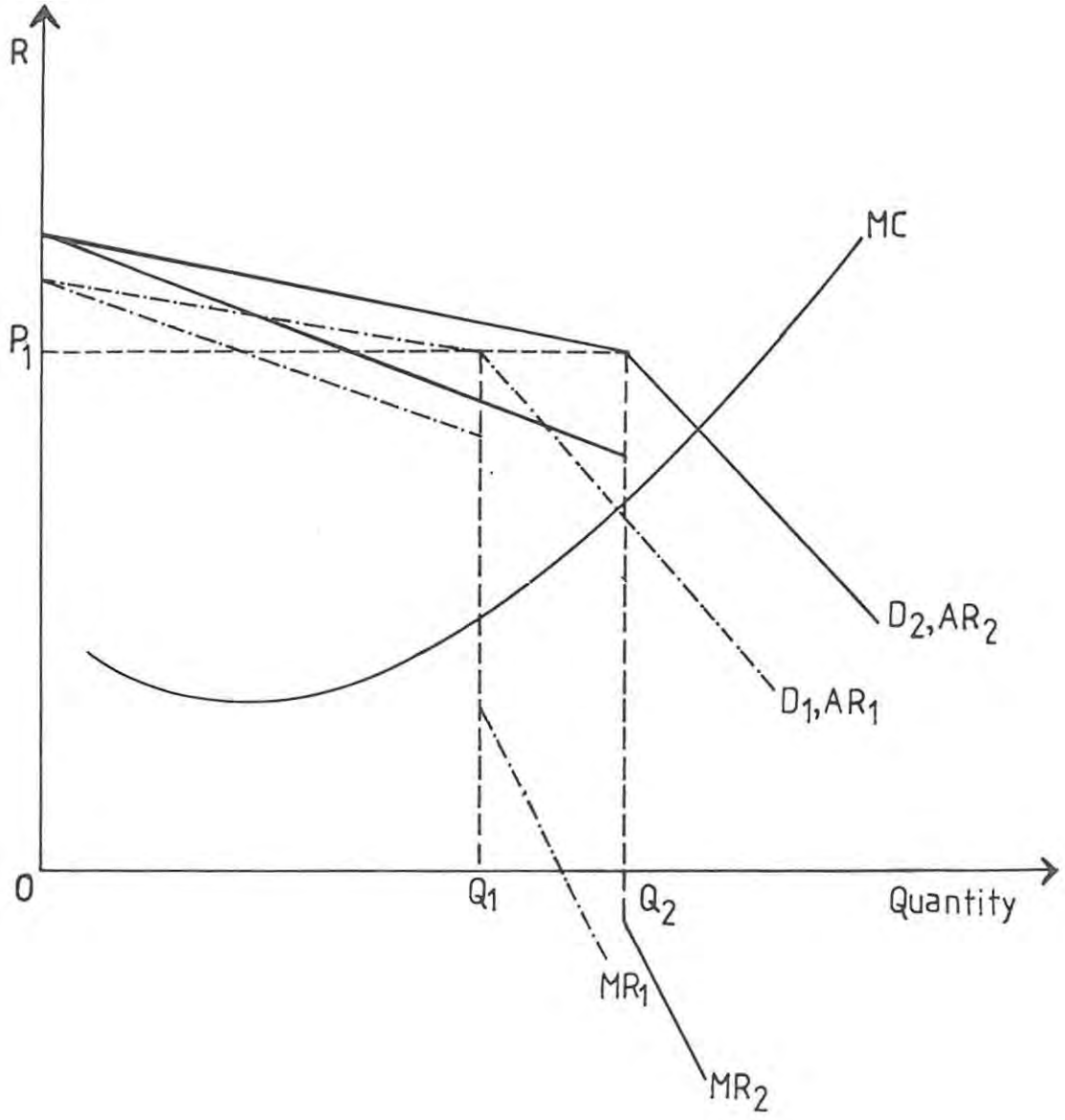

Figure 2.5

It has been seen in chapter one of this study that profits are maximised when marginal revenue equals marginal cost.

The profit maximising pricing model indicates that profit will be maximised by this firm if it produces Q_1 units for sale. Further, figure 2.4 shows that even if input costs rise, profits will be maximised at quantity Q_1 right up to a cost function increase pushing the marginal cost function all the way to MC_3.

Figure 2.5 shows even more scope for the profit maximising pricing model to assist in maximising the firm's profit by showing that the model indicates the profit maximising output level where demand for an oligopolist's product increases whilst he is faced with a price taker's kinked demand curve.

As the demand function shifts from D_1 to D_2, the marginal revenue function shifts from MR_1 to MR_2.

The profit maximising pricing model indicates that although price should not change as a result of this increase in demand, the quantity produced for sale by the firm should increase from Q_1 to Q_2 in order to maximise profits.

Thus, even when an oligopolist is locked into a price taking position the profit maximising model will aid in maximising profits.

2.4.3 PRICE MAKERS

We now turn our attention to illustrating that there are conditions under which some oligopolists do have price discretion and can use the profit maximising pricing model in order to set the price at which they will maximise profits.

2.4.3.1 EQUAL MARKET SHARES AND EQUAL COSTS

The first structure with this potential, is, grantedly, a special case, namely, the special case in which two firms have equal market shares and equal costs and supply the whole market. Each oligopolist then serves half of the demand and the two firms will have identical demand, marginal revenue, marginal cost, total revenue and total cost functions. Setting the price where marginal revenue equals marginal cost will maximise profit for each of the firms. No price conflict exists.

It must be stressed that not only will there not be incentive for rivalry at this profit maximising price, but this study submits that the estimation of the cost and revenue curves, required by the profit maximising model, will help avoid rivalrous price behaviour by guiding each duopolist to the price which is the mutually optimum price for them.

2.4.3.2 EQUAL MARKET SHARES DIFFERENT COSTS

Assume that Firm 1 and Firm 2 have equal market shares and that they supply the whole market, but they have different cost functions.

Figure 2.6 shows that Firm 1 will maximise profits at price P_1 whereas Firm 2 will maximise profits at price P_2. Homogeneity of product ensures that competitive forces will drive the two firms to sell at the same price.

One possibility is that the firms strike a compromise price via collusion. However, apart from the fact that most countries have legislated against such collusion, it is a "fragile means of reaching a long-lasting solution" (Thompson 1981: 389). The very fact that it is a compromise creates the incentive to breach the collusion.

Thus an alternative is for Firm 1 to exercise its advantage of having a preference for the lower price, P_1, to sell at P_1 and thus impose its will on Firm 2 in the likelihood that Firm 2 will have to follow suit and sell at price P_1 in order to maintain its market share.

It could happen that Firm 2 would rather enter into a price war and even sell below price P_1 in order to discourage Firm 1 from selling at price P_1. However, it is frequently ignored by theorists that such a price war would be fought at a price which is even further away from Firm 2's optimum price than Firm 1's.

It could also happen that Firm 2 maintains its price at P_2 and loses a portion of its market share. This could have the effect of allocating an increased volume of sales to Firm 1, beyond its profit maximising volume of Q_1. However, considering the other variables in the marketing

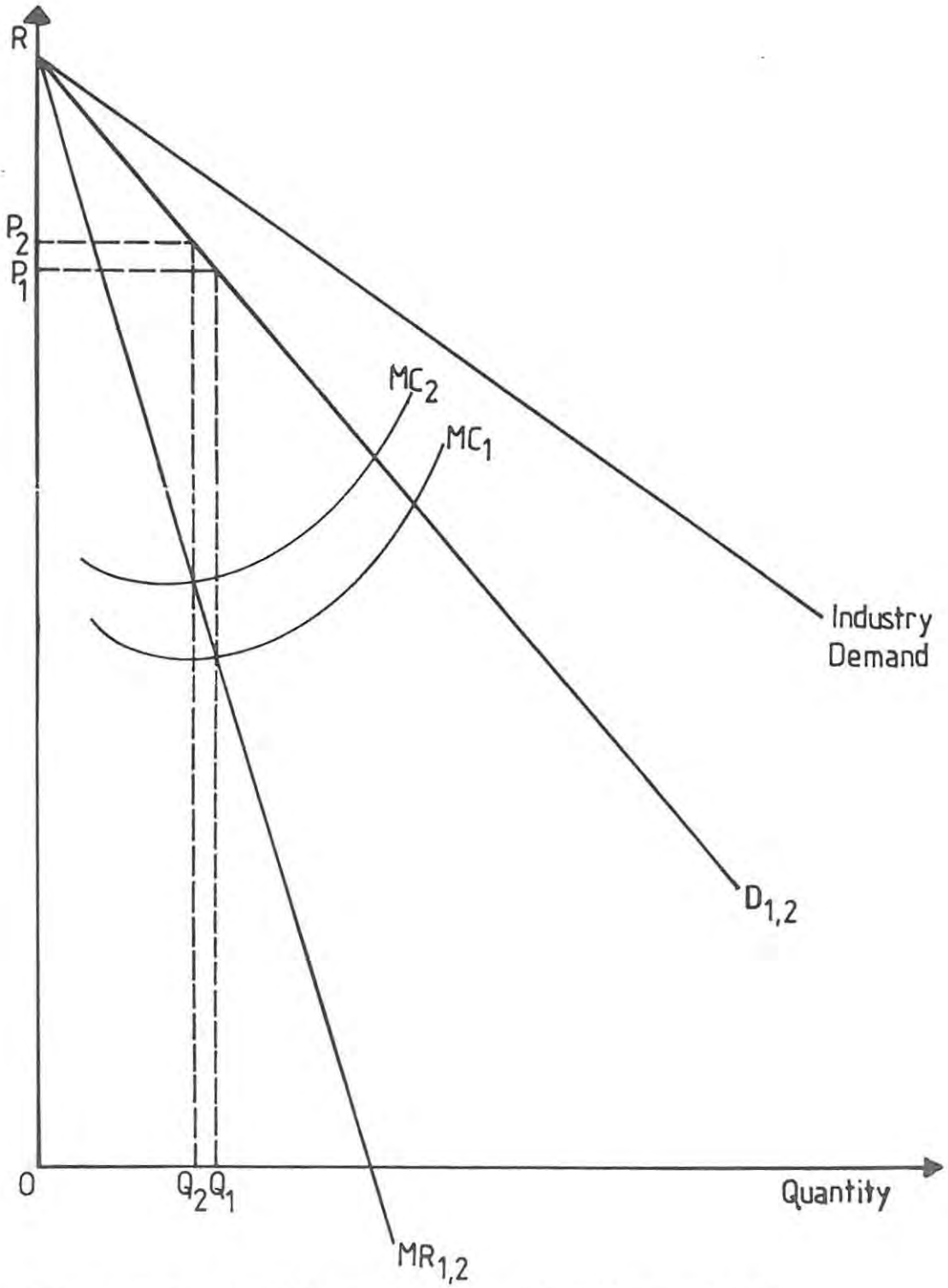

Figure 2.6: Equal Shares Pricing with differing Costs

mix[8] effecting volume of sales such as advertising effort, for example, there is a strong possibility that this would not be a vital factor.

Thus, of the various possible responses by the firm with the higher cost function, Thompson (1981) concludes that short of shifting to another business, it is likely that two options will prove to be the most viable for it, namely:

(1) "revamping its production techniques to bring costs in line with (or even lower than) those of rival firms"; and

(2) "doing the best it can at the price chosen by the low cost firms" (390).

Thus it is clear that in such an oligopolistic structure, there can be a price maker and the profit maximising pricing model would help to indicate the price and quantity which would maximise profits for the price maker.

2.4.3.3 DIFFERENT MARKET SHARES AND EQUAL COSTS

When firms have equal marginal cost functions (note it is not required here that fixed and total cost functions are equal) but different shares of the market at the same prices, three different patterns of marginal cost behaviour can be distinguished. Over the relevant range of production, marginal costs could be rising or constant or decreasing, as in Figures 2.7a, 2.7b and 2.7c respectively. Assume that at the same prices, Firm 1

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8. The significance of other variables of the marketing mix will be examined more closely in Chapter 4.

supplies 40 per cent of the market and Firm 2 supplies 60% of the market.

Figure 2.7a shows that when marginal costs are rising as volume increases, the firm with the smallest market share maximises profit at the lower price, P_1, whereas, Firm 2 maximises profit at the higher price, P_2. The smaller firm may exercise its advantage of having a preference for the lower price. Again, the other firm, preferring the higher price, will have the same options as in the previous example. Here, the firm preferring the higher price is bigger than the one preferring the lower price and it may be in a better position to conduct a punitive price war to coerce the smaller firm into charging a higher price. Thus, in this case, the likelihood of the smaller firm being able to be a price maker imposing its price on the market is smaller, but not unheard of. Smaller-share firms are sometimes financially strong enough, due to, for example, good liquidity, or strong parent companies, to withstand pressure from larger-share firms.

Figure 2.7b shows that when marginal costs are constant over the relevant range both the larger-share and smaller-share firms maximise profits at the same price. This is inconsistent with the standard managerial accounting literature, which holds that there is no place for the price setting profit maximising model in an oligopolistic market structure. Furthermore, this is especially significant when the prevalence of this non-conflict case is taken into account. Explaining the prevalence of this case, when pricing is oriented towards long run goals, Scherer (1980) cited the degrees of multi-plant operation over the long run to explain the constant marginal

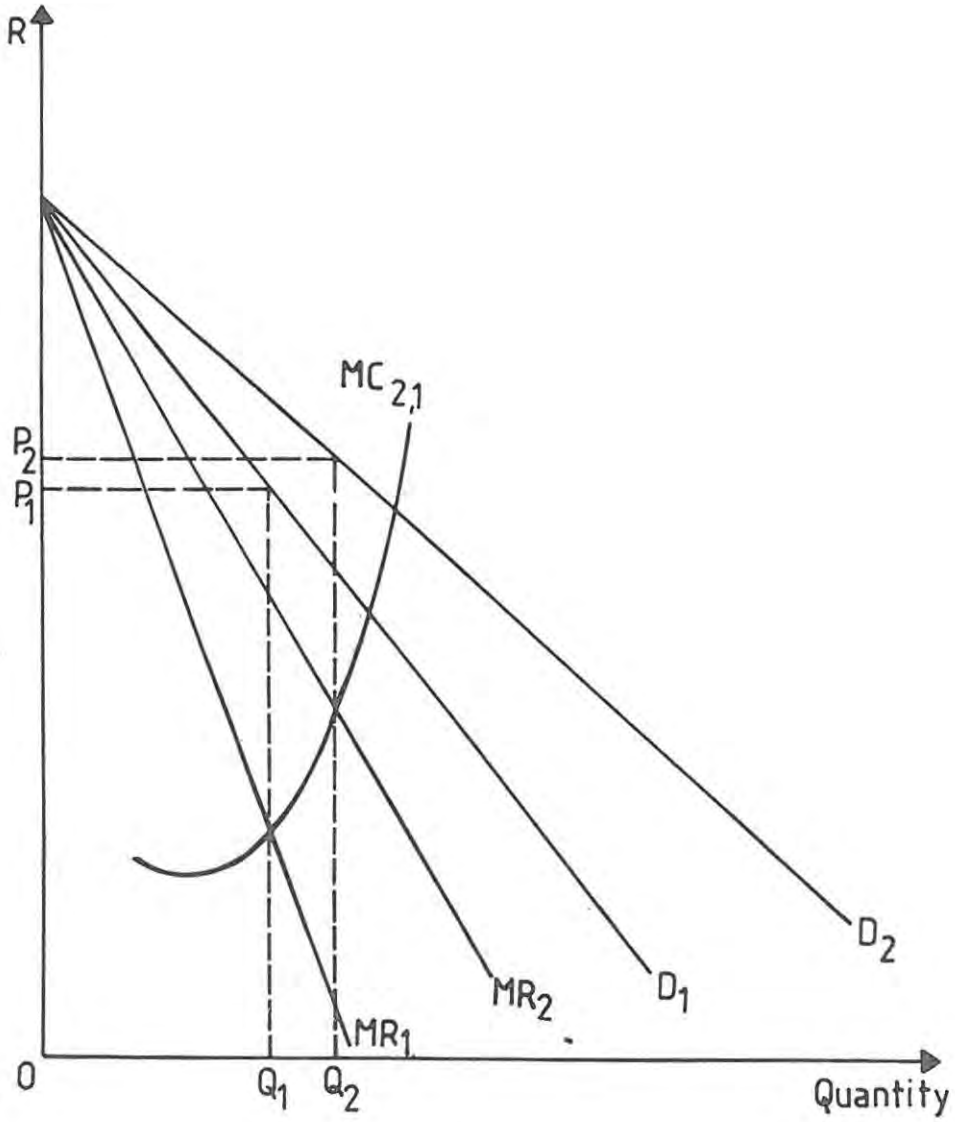

Figure 2.7a: Different Market Shares and equal, rising costs

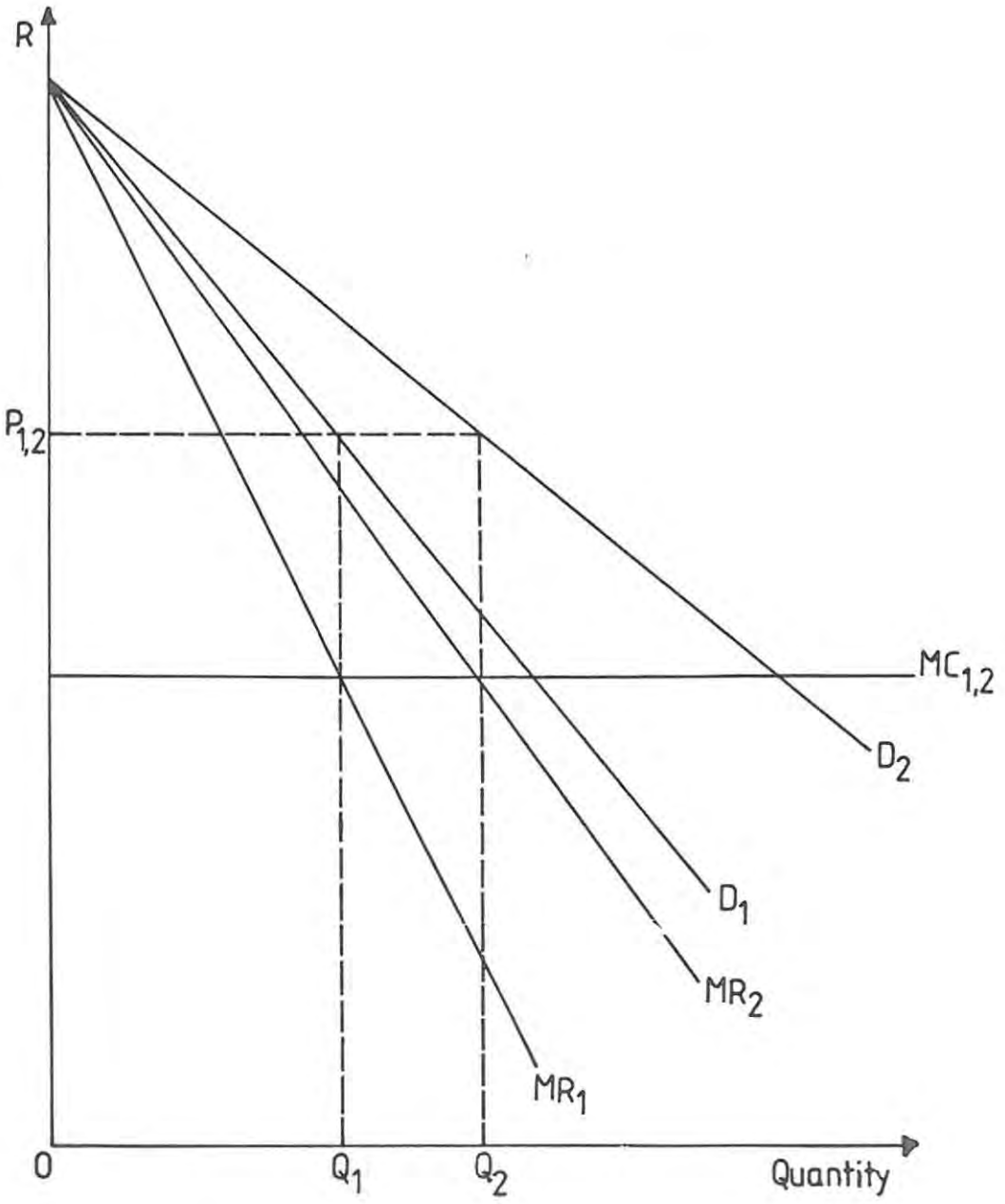

Figure 2.7b: Different Market Shares and equal, constant costs

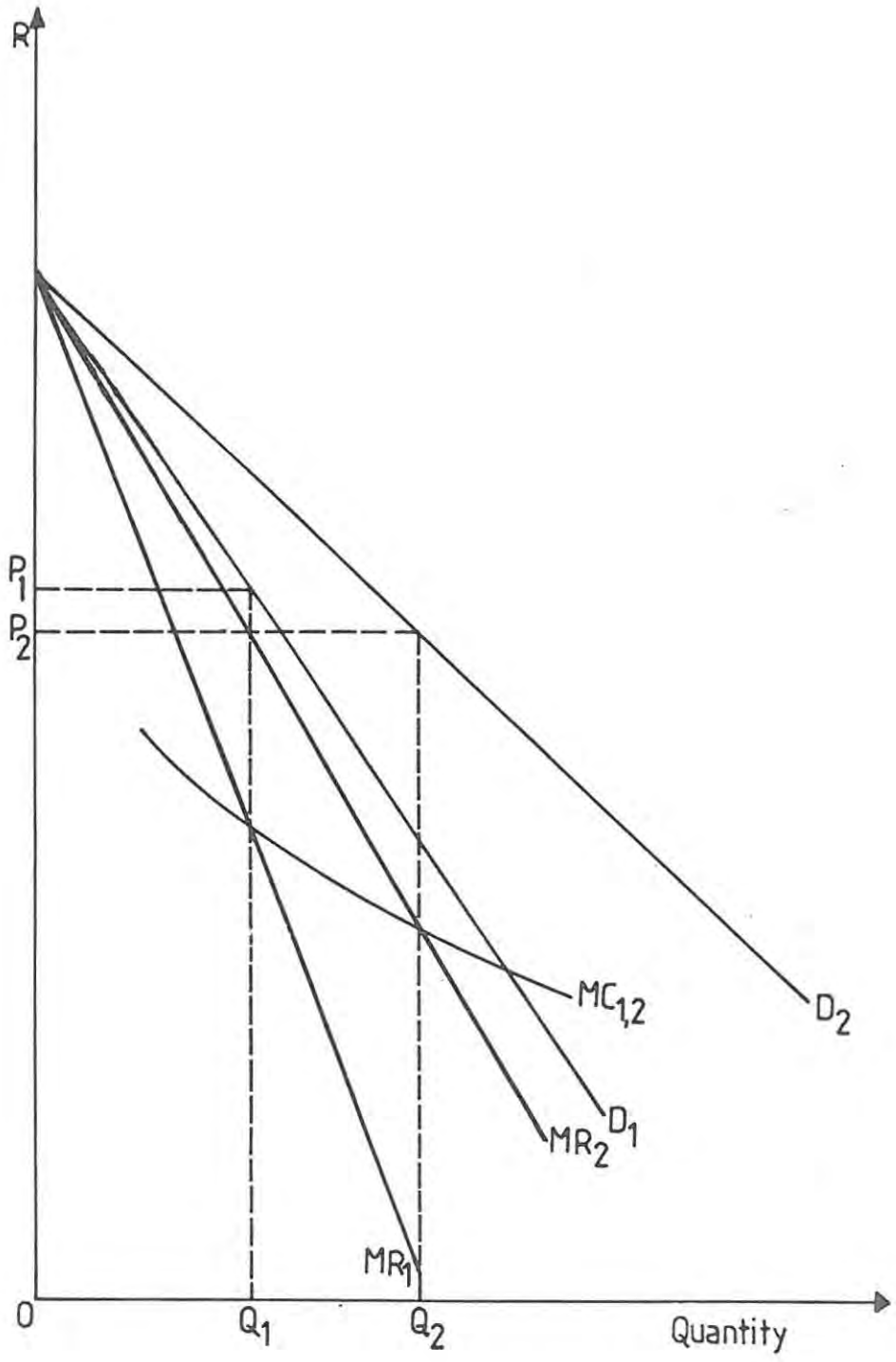

Figure 2.7c: Different Market Shares and equal, decreasing costs

costs phenomenon. He went as far as to say "this suggests the prevalence of the no conflict case (figure 2.7b) (constant marginal costs) when pricing is oriented toward long-run goals" (158). He feels that short run marginal cost curves would more likely be in the nature of the increasing marginal cost case as illustrated in figure 2.7a.

In similar vein, Thompson (1981: 392) cites three causes to explain the prevalence of the constant marginal cost curve. Firstly, he points out that cost studies of manufacturing enterprises have shown a fairly widespread tendency for constant returns to variable input up to 85% to 90% of capacity.[9] Secondly, he also refers to the argument that constant returns to scale may prevail as output expands over the long run. Thirdly, he asserts that competition forces rival firms to remain cost competitive. Considering these three factors Thompson concludes "the lack of a sizable differential amongst respective profit maximising prices of rival firms (as shown in figure 2.7b) may not be uncommon" (392).

Thus the opportunity afforded for the application of the profit maximising pricing model under oligopolistic competition is a significant contradiction of the managerial accounting theory which holds that there is no place for the model in oligopoly.

Figure 2.7c shows that when marginal cost declines over the relevant range

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9. See Thompson (1981: 280) and see p 279 where he refers to an empirical study of the metal industry by Alpert (1959) which found constant returns to scale and horizontal long run average cost curve (LRAC) after a threshold output level.

of production the firm with the largest market share prefers the lower price.[10] The smaller firm is less likely to be able to wage a punitive price war against the bigger one, and it is therefore likely that the larger firm will exercise its advantage in maximising profits at the lower price. When it is considered that this price, being the lower one, would also be better for discouraging entry of other firms into the market, then the likelihood of the larger firm exercising its preference for its lower profit maximising price must be seen to be even greater. Thus, here again, is significant scope for the application of the profit maximising pricing model for the purpose of price setting under oligopolistic competition.

2.4.3.4 DOMINANT FIRM PRICE LEADERSHIP

When one firm, often a highly vertically integrated one, accounts for a much larger share of the market than any of its rivals, which are often a number of fringe competitors, then it sometimes happens that one way in which the firms arrive at a common price is for the large firm to take the initiative to act as a price leader for the industry.[11] When this occurs the other firms wait for the leader to announce a price change which is accepted and followed by the other firms.[12]

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10. Thompson (1981: 279) quotes a number of studies e.g. Moore (1959) and Lomax (1951) and Johnston (1960) showing empirical evidence of LRAC declining as output rises.

11. Thompson (1981: 739) cites the American firms of K Mart, A & D and Sears as good examples of dominant firm price leadership.

12. Also, the market sometimes does not have a clear, long term leader, and in what is known as barometric pricing, bigger firms alternate in the price leading role.

The dominant firm sets its price and output per the usual profit maximising pricing model. The other firms supply the rest of the market at the set price. The fringe firms therefore behave just as firms in a perfectly competitive market, there being scope for the use of the profit maximising pricing model for the determination of the quantity only, at which they will maximise profits. Although this proves that there is scope for the dominant firm to set its profit maximising price in this market structure, it must be noted that the prevalence of this price will not be as widespread as may appear. The reason is that if the larger firm prefers a higher price it means that smaller firms have an advantage and the current smaller ones may grow large and powerful at this higher price and other smaller firms would be attracted into the market at such a higher price. However, the point is that this phenomenon of dominant firm price leadership is further evidence of scope for the profit maximising pricing model in setting prices in oligopolistic situations.

Having shown that oligopolistic market structures do not per se exclude the use of the profit maximising pricing model, let us turn our attention to two research studies of practical pricing behaviour in manufacturing firms.

2.5 RESEARCH STUDIES OF PRICING BEHAVIOUR IN MANUFACTURING FIRMS

2.5.1 The American and Canadian Study

In 1981 the National Association of Accountants of the United States of America released its research study (Gordon et al, 1981) on pricing behaviour in the United States and Canada. The primary objective of this study was "to determine how manufacturing firms in the United States and

Canada are presently making pricing decisions". (1)

Of particular interest were the questions posed to determine inter alia, "the relationship between pricing and economic market structure". (1)

The sample consisted of 44 firms, the products of which were being sold in primarily two different economic market structures, namely monopolistic competition and oligopoly.

According to the literature, non-price competition is more important than competition on the basis of price to oligopolistic competitors. Thompson (1981) states that in an oligopoly "the most attractive strategies for gaining sales, profit and market share are thus grounded in market variables other than price".

The respondents were asked to rate the intensity (based on a scale of 1 to 5, ranging from low to extreme) of various types of competition they faced. Appendix 1(b), shows the high intensity of price competition throughout. Note, for instance, that the food processing industry firms studied in the United States were mainly operating under monopolistic competition whereas the heavy equipment firms studied in the United States were all operating under oligopolistic competition.[13] Yet both categories rated the intensity of price competition as high. In fact, the firms in the heavy equipment sector in the United States, which were mainly oligopolistic, ranked the

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13. See appendix 1(a) on page 65.

intensity of price competition as even higher than the United States food processing firms (operating mainly under monopolistic competition) ranked it. The study concluded: "These results indicated that the firms included in our study did indeed view pricing decisions as a key item in their product line's survival" (Gordon et al, 1981: 40).

The respondents were also asked to indicate whether their prices were determined on the basis of product costs and/or market factors. An overwhelming 40 of the 44 firms considered both market conditions and costs in determining prices. This is especially significant when it is considered that the profit maximising pricing model, with its required estimations of both revenues and costs at different prices, is a model which requires specific consideration of both costs and market conditions.

This major National Association of Accountants study found that its efforts at explaining pricing decisions based on differences between economic market structures were unproductive. It reported that because the products under study were being sold in different market structures they investigated "whether differences in pricing objectives, policies and decisions could be explained on the basis of economic markets" (41). However, it concluded: "This investigation (which was based on various forms of statistical analyses) was unproductive" (41).

On the other hand significant correlations between other factors (i.e. other than market structure) and pricing practices were found.

Appendices 1(c) and 1(d) show factors which were more easily correlated than market structure to the incidence of cost-plus pricing versus market related pricing.

With statistically significant relationships at the 10% or lower level, it was found that companies which produced standard products tended to be more prone towards market pricing than companies which produced custom made products.

Clearly, in the United States and Canada, the reaction of government agencies to product line prices appears to have a significant effect on pricing practices: "where the government was perceived as playing a reactive role to the firm's pricing decisions cost-plus pricing occupied a dominant role. In those firms where the government was perceived as being less reactive to prices, pricing based on market conditions dominated" (Gordon et al, 1981: 24).

Appendix 1(d) shows pricing based on market conditions is also significantly correlated with the importance attached to the price of directly and near directly competing substitutes and to the importance attached to the quality of competing products.[14]

Commenting on the significant positive correlation between pricing based on market conditions and the importance attached to the company's level of

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14. Many other important factors were found correlating significantly with the incidence of either cost-plus or market related pricing; especially concerning the purpose of pricing.

employment and the company's image, this study stated: "These findings were expected in that image and employment issues can be more directly affected by market pricing than by cost-plus pricing" (25).[15]

Thus it would appear that in America and Canada the empirical evidence of pricing practices supports the conclusion of the theoretical analysis of this chapter of this study which found scope for pricing decisions in all market structures including oligopoly. Indeed factors other than market structure were more strongly correlated with pricing practices.

2.5.2 A South African Study

The findings of a study of pricing behaviour in the South African manufacturing industry can now be examined. Dollery (1983) categorised the 288 firms which participated in the study as being in market structures which are either highly concentrated "and may be taken to approximate monopolistic markets" (188) or medium concentrated "and may be considered to approximate the oligopolistic market form" (188) or lowly concentrated "and may be thought of as approximating workable competition or at least monopolistic competition" (188).

Considering the importance of target return on investment as a method of cost-plus pricing, and the importance of profit maximisation as a goal to neoclassical theory, it is pertinent to our study that in studying the

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15. This will be discussed in chapter 5.

Blair target return on investment model[16], Dollery (1983) asked the firms to rank a number of possible goals in importance to their pricing policy.

It must be stressed here that profit maximisation does not have to be the main or only goal (it just has to be an important goal) for the profit maximising pricing model to be a useful tool in the maximisation of a firm's resources.[17]

Appendix 2(i) shows that there was a correlation between market structure[18] and the ranking of an acceptable rate of return as the primary objective of pricing policy. 68 per cent of firms in the monopolistic market structure and 66,3 per cent of firms in the oligopolistic market structure ranked this goal foremost but only 41,6 per cent of firms in monopolistic competition ranked it foremost.

However, when testing whether there was any significant relationship between type of market structure and the manifestation of this goal in actual pricing behaviour, in the form of evidence of the a priori expected behaviour traits of the target return hypothesis, no significant correlation was found. When considering firms which experience rising unit costs when volume of production falls, the Blair return on investment model

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16. See Blair (1972: ch 18).

17. Chapter 5 will study the integration of a number of goals into the profit maximising pricing model approach to pricing decision making.

18. In appendix 2(i) the categorisations of low, medium and high refer to the degrees of concentration described above.

predicts that the monopolistic and oligopolistic firms will raise their prices in order to maintain their target rate of return. Conversely, the model predicts that competitive firms will be forced to either reduce their prices or to keep them constant.

However, on investigation, Dollery (1983) concluded that they were "forced to accept the null hypothesis" (208) and no significant correlation was found between market structure and this price behaviour".

Similarly, if the target return on investment model hypothesis, which was ranked as being of differing importance in different structures, was being implemented as ranked, then it would be reasonable to expect firms in concentrated industries to pursue a policy of price stability when actual production exceeds standard volume since they are already achieving their target rate of return, and to expect firms operating in a competitive environment to increase their prices in such circumstances in the absence of economies of scale. However, appendix 2(ii) shows "no significant differences in the manner in which all three concentration categories responded" (Dollery, 1983: 210).

Thus, although market structure appeared to be significant in terms of ranking the target rate of return as a pricing goal in South Africa, efforts to find a correlation between market structure and actual practical pricing behaviour consistent with the target return on investment goal, proved unproductive and the null hypothesis of no correlation had to be

accepted.[19]

At this stage it must be pointed out that the object of this chapter is not to prove that there is no correlation between market structure and pricing practices. Indeed, the theoretical part of this chapter specifically illustrated how an oligopolistic market structure could eliminate pricing discretion. However, the theoretical analysis proved that oligopoly could produce many different types of competitive structures and that some of these do allow for price discretion and the scope for the application of the profit maximising pricing model in setting price. Thus, even if the importance of the target return on investment goal, which showed a correlation with market structure, had also shown a correlation between its practical implementation and market structure, this would not have contradicted the argument in this chapter.

Furthermore, it must be noted that it was not 100 per cent of oligopolists or any competitors among any market structure who ranked the target return on investment as their primary pricing goal. Indeed, appendix 2(iii) shows that as many as 18,9 per cent of oligopolistic firms ranked obtaining the maximum profits possible as the primary goal of their pricing policy. Over 40 per cent of respondents in the competitive group ranked profit maximisation foremost and over 18 per cent of monopolies. Thus, once again, whilst a correlation between market structure and the ranking of obtaining the maximum profits possible as the primary goal of pricing policy was found in South Africa, the findings still confirmed our own

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19. See Dollery (1983: 211)

theoretical analysis which found scope for the profit maximising pricing model in all market structures.

Again, looking at actual pricing practices together with market structure, the Dollery (1983) study asked questions concerning the incidence of the use of pricing rules and questions concerning the incidence of the use of cost-based versus market-based pricing policies.

Considering the importance of market structure in traditional pricing theory one would expect a positive relationship between market structures and the incidence of the application of pricing rules. Appendix 2 (iv) shows no significant correlation between market structure and the application of pricing rules: "with the value of chi-square at only 0,59708 and 2 degrees of freedom this is clearly not the case; that is, the degree of market concentration per se does not shed much light on the evidence of pricing rules" (Dollery, 1983: 238).

Looking at significance of market structure to cost-based versus market-based pricing and to the use of pricing rules, appendix 2(v) shows a bias towards cost based practices in all market structures in South African manufacturing industry. However, there is no significant correlation between market structure and the use of cost-based or market-based practices or the use of pricing rules. "Seen as a two way contingency table, the value of chi-square for Table 31 is 7,39820 with 3 degrees of freedom which is not significant at the 5 per cent level. We therefore accept the null hypothesis of no relationship between the variables" (Dollery, 1983: 276). Dollery (1983) in fact, commented: "The influence

of the degree of market concentration on the variables in question is minimal" (276).

Consistent with the American and Canadian study, it is noteworthy that the majority (77%) of all the South African respondents described their pricing as being both cost-based and market-based.[20] It is worth reiterating that the profit maximising pricing model is a decision model which inherently sets price taking costs and market considerations into account.

The Dollery (1983) study did find a correlation between market structure and factors which could influence pricing policies - but not determinately.

In contrast to the American and Canadian study, a correlation between market structure and respondent's ranking of the importance of the different strategic variable in their marketing policy was found. 42,5% of firms in monopolistic competition ranked pricing as highest in importance, whereas 23,4% of firms in oligopolistic market structure ranked pricing highest, and 33,3% of monopolies ranked pricing highest in importance. It must be pointed out that even in oligopoly then, 23,4% ranked pricing as highest.

This shows scope for the profit maximising pricing model for some firms in oligopoly even if the ranking of pricing in importance in the marketing strategy was determinate in the choice and application of a firm's pricing practice.

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20. See Dollery (1983: 216).

A correlation was also found between other factors and market structure, such as, the correlation between the importance of trade associations to pricing and market structure, and the correlation between the speed of price adjustments in response to changes in demand and market structure.[21]

However, consistent with the American and Canadian study, all efforts to find a correlation between market structure and the actual application of a pricing practice were unfruitful.

2.6 Conclusion

In sum, it has been shown in this chapter of this study that the profit maximising pricing model can be used to determine the profit maximising output level in all market structures. Further, the theoretical part of this chapter proved the assertion that some competitors in some oligopolistic market structures do have pricing discretion and do have scope for the use of the profit maximising pricing model in setting prices. The examination of the empirical evidence of two major studies supports these conclusions of our theoretical analysis. The Dollery (1983) study found some correlations between market structure and some factors which could influence pricing policy but not between the actual application of pricing practices in the form of cost-plus versus market related methods and market structure. The American and Canadian study went further and concluded that trying to explain pricing decisions based on market structures proved to be "naive" (Gordon et al, 1981: 41). This shows that the oligopolistic market structure does not, per se, exclude the use of the profit maximising pricing model as alleged by Garrison (1985)[22].

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21. See Dollery (1983: 198).

22. See Garrison (1985: 503) as quoted on page 28.

APPENDIX 1(a)

Extract from Gordon et al (1981: 41)

Exhibit showing market structure facing products for the firms studied

ECONOMIC MARKET STRUCTURE

Industry / Economic Market	Food Processing		Chemical		Heavy Equipment		Transportation Equipment		Totals	
	U.S.	Can.	U.S.	Can.	U.S.	Can.	U.S.	Can.	U.S.	Can.
Pure Competition	0	0	1	0	0	0	0	0	1	0
Monopolistic Competition	5	1	1	2	0	1	0	0	6	4
Oligopoly	1	5	6	2	3	5	5	6	15	18
Monopoly	0	0	0	0	0	0	0	0	0	0
TOTALS	6	6	8	4	3	6	5	6	22	22

APPENDIX 1(b)

Extract from Gordon et al (1981: 42)

INTENSITY OF PRODUCT LINE COMPETITION

Industry / Intensity of Competition	Food Processing			Chemical			Transportation Equipment			Heavy Equipment			Overall Total
	U.S.	Can.	Total	U.S.	Can.	Total	U.S.	Can.	Total	U.S.	Can.	Total	
Price	4.16	3.83	3.995	3.875	4.0	3.877	4.2	3.83	4.015	4.3	4.0	4.059	4.000
Product Quality	3.83	4.167	3.998	3.375	3.75	3.465	4.2	3.08	3.64	3.66	3.833	3.737	3.715
Service	3.66	2.0	2.83	3.375	4.0	3.547	4.8	4.25	4.525	4.0	3.5	3.63	3.624
Obtaining the Best Channels of Distribution	3.83	2.667	3.248	2.75	3.0	2.805	4.2	3.08	3.64	3.33	2.16	2.524	3.077
Product Innovation	2.33	2.83	2.58	3.125	3.0	3.052	3.6	2.83	3.215	2.66	2.667	2.667	2.885
Advertising and Promotion	3.33	3.25	3.29	2.0	2.5	2.145	3.2	2.083	2.642	2.83	1.83	2.141	2.579

1 – Low Intensity
3 – Moderate Intensity
5 – Extreme Intensity

APPENDIX 1(c)

Extract from Gordon et al (1981: 35)

RELATIONSHIPS BETWEEN TARGET MARKET AND PRICING METHOD

Market Type	Cost-Plus Pricing		Market Pricing	
	Coefficient	Significance Level	Coefficient	Significance Level
Target market requires standard product	−.0126	.469	+.1920	.112
Target market requires custom-made products	+.2842	.034*	−.0593	.353

*Statistically significant relationship at the 10%, or lower, level. Relationship was based on sample correlation coefficient.

APPENDIX 1(d)

Extract from Gordon et al (1981: 36)

FACTORS RELATED TO PRICING METHOD

Important Factors	Cost-Plus Pricing		Market Pricing	
	Coefficient	Significance Level	Coefficient	Significance Level
Price of directly competing products	−.2894	.032*	+.3790	.006*
Price of near substitute products	−.1381	.198	+.3994	.005*
Quality of competing products	+.2755	.037*	−.3914	.004*
Effect of price on company's level of employment	+.1542	.165	−.2463	.056*
Effect of price on company's image	+.0415	.397	+.2870	.031*
Reaction to firm's price by government agencies	+.2432	.060*	−.2164	.082*
Level of backlog orders	+.2584	.059*	−.1378	.201

*Statistically significant relationships at the 10%, or lower, level.
Relationships were based on sample correlation coefficients.

APPENDIX 2(i)

Extract from Dollery (1983: 202)

SAMPLE GROUP	MEASURE	RANKING OF ACCEPTABLE RATE OF RETURN ON INVESTMENT						
		1st	2nd	3rd	4th	5th	6th	ROW TOTAL
LOW	COUNT	32	25	7	11	2	0	77
	ROW %	41,6	32,5	9,1	14,3	2,6	0,0	
	COLUMN%	19,9	47,2	25,0	47,8	66,7	0,0	
	TOTAL%	11,9	9,3	2,6	4,1	0,7	0,0	28,6
MEDIUM	COUNT	63	12	8	10	1	1	95
	ROW %	66,3	12,6	8,4	10,5	1,1	1,1	
	COLUMN %	39,1	22,6	28,6	43,5	33,3	100,0	
	TOTAL %	23,4	4,5	3,0	3,7	0,4	0,4	35,3
HIGH	COUNT	66	16	13	2	0	0	97
	ROW %	68,0	16,5	13,4	2,1	0,0	0,0	
	COLUMN %	41,0	30,2	46,4	8,7	0,0	0,0	
	TOTAL %	24,5	5,9	4,8	0,7	0,0	0,0	36,1
	COLUMN TOTAL	161	53	28	23	3	1	269
		59,9	19,7	10,4	8,6	1,1	0,4	100,0

Appendix 2(ii)

Extract from Dollery (1983: 209)

Response When Production Exceeds Capacity Utilisation Upon Which Cost Computations are Based

PRICE RESPONSE	MEASURE	LOW CONCEN-TRATION	MEDIUM CONCEN-TRATION	HIGH CONCEN-TRATION	ROW TOTAL
INCREASE PRICE	COUNT	4	6	2	12
	ROW %	33,3	50,0	16,7	
	COLUMN %	4,8	6,3	2,0	
	TOTAL %	1,4	2,2	0,7	4,3
DECREASE PRICE	COUNT	5	3	2	10
	ROW %	50,0	30,0	20,0	
	COLUMN %	6,0	3,2	2,0	
	TOTAL %	1,8	1,1	0,7	3,6
HOLD PRICE CONSTANT	COUNT	75	86	95	256
	ROW%	29,3	33,6	37,1	
	COLUMN %	89,3	90,5	96,0	
	TOTAL %	27,0	30,9	34,2	92,1
	COLUMN	84	95	99	278
	TOTAL%	30,2	34,2	35,2	100,0

APPENDIX 2(iii)

Extract from Dollery (1983: 216)

Ranking of the Goal of Obtaining the Maximum Possible Profits

SAMPLE GROUP	MEASURE	RANKING OF OBTAINING THE MAXIMUM POSSIBLE PROFITS						
		1st	2nd	3rd	4th	5th	6th	ROW TOTAL
LOW	COUNT	31	13	8	5	11	9	77
	ROW %	40,3	16,9	10,4	6,5	14,3	11,7	
	COLUMN%	46,3	25,5	15,4	18,5	26,2	30,0	
	TOTAL%	11,5	4,8	3,0	1,9	4,1	3,3	28,6
MEDIUM	COUNT	18	20	24	10	15	18	95
	ROW %	18,9	21,1	25,3	10,5	15,8	8,4	
	COLUMN %	26,9	39,2	46,2	37,0	35,7	26,7	
	TOTAL %	6,7	7,4	8,9	3,7	5,6	3,0	35,3
HIGH	COUNT	18	18	20	12	16	13	97
	ROW %	18,6	18,6	20,6	12,4	16,5	13,4	
	COLUMN %	26,9	35,3	38,5	44,4	38,1	43,3	
	TOTAL %	6,7	6,7	7,4	4,5	5,9	4,8	36,1
	COLUMN TOTAL	67	51	52	27	42	30	269
		24,9	19,0	19,3	10,0	15,6	11,2	100,0

APPENDIX 2(iv)

Extract from Dollery (1983: 238)

Use of Pricing Rules

USE OF PRICING RULES	MEASURE	LOW CONCEN-TRATION	MEDIUM CONCEN-TRATION	HIGH CONCEN-TRATION	ROW TOTAL
USE PRICING RULES	COUNT	63	69	78	210
	ROW %	30,0	32,9	37,1	
	COLUMN %	74,1	70,4	75,0	
	TOTAL %	22,0	24,0	27,2	73,2
DO NOT USE PRICING RULES	COUNT	22	29	26	77
	ROW %	28,6	37,7	33,8	
	COLUMN %	25,9	29,6	25,0	
	TOTAL %	7,7	10,1	9,1	26,8
	COLUMN TOTAL %	85 29,6	98 34,1	104 36,2	287 100,0

APPENDIX 2(v)

Extract from Dollery (1983: 275)

Cross Tabulation of Employment of Pricing Rules with Pricing Method

DESCRIPTION OF PRICING	MEASURE	EMPLOY PRICING RULES			DO NOT EMPLOY PRICING RULES			ROW TOTAL		
		L	M	H	L	M	H	L	M	H
ENTIRELY COST-BASED	COUNT	10	12	8	8	6	7	18	18	15
	ROW %	55,6	66,7	53,3	44,4	33,3	33,3			
	COLUMN %	15,9	17,4	10,4	36,4	20,7	26,9			
	TOTAL %	11,8	12,2	7,8	9,4	6,1	6,8	21,2	18,4	14,6
MOSTLY COST-BASED SOME MARKET CONSIDERATION	COUNT	39	31	57	10	13	16	49	44	73
	ROW %	79,6	70,5	78,1	20,4	29,5	21,9			
	COLUMN %	61,9	44,9	74,0	45,5	44,8	61,5			
	TOTAL %	45,9	31,6	55,3	11,8	13,3	15,5	57,6	44,9	70,9
MOSTLY MARKET-BASED SOME COST CONSIDERATION	COUNT	10	19	11	3	10	2	13	29	13
	ROW %	76,9	65,5	84,6	23,1	34,5	15,4			
	COLUMN %	15,9	27,5	14,3	13,6	34,5	7,7			
	TOTAL %	11,8	19,4	10,7	3,5	10,2	1,9	15,3	29,6	12,6
ENTIRELY MARKET BASED	COUNT	4	7	1	1	0	1	5	7	2
	ROW %	80,0	100,0	50,0	20,0	0,0	50,0			
	COLUMN %	6,3	10,1	1,3	4,5	0,0	3,8			
	TOTAL %	4,7	7,1	1,0	1,2	0,0	1,0	5,9	7,1	1,9
	COLUMN TOTAL	63	69	77	22	29	26	85	98	103
		74,1	70,4	74,8	25,9	29,6	25,2	100,0	100,0	100,0

CHAPTER III: THE ESTIMATION ARGUMENT

3.1 INTRODUCTION

The profit maximising model's approach to product pricing rests on the mathematical truism that profits are maximised when the difference between total revenues and total costs is greatest. Since prices must be set at the beginning of a given period of trading, it is immedately clear that the model's application involves estimating costs and revenues into the future, and the future is uncertain. Consequently, the model is as good as the accuracy of the estimates which it embodies of expected costs and revenues.[1]

Garrison (1985) puts it as follows:

> "... the cost and revenue data available to managers are generally sufficient to provide only rough approximations of the shape of the various cost and revenue curves depicted in the models. As our methods of measurement are improved and refined in years to come, this situation may change, but at present managers usually have only a general idea of the shape of the demand curve that they are facing." (503)

Proponents of cost-plus pricing frequently raise the uncertainty inherent in these estimations as an argument in favour of cost-plus pricing on the

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1. See Jackson and Dollery (1984: 683) Sections 3.1 and 3.2 of this chapter are based on this joint article which I published with Dollery.

presumption that the information requirements of the cost-plus approach are more accurately met.

This study disputes that claim. The modus operandi of this chapter begins with an attempt to show that both methods are based on essentially similar estimates of cost and revenue data and that cost-based methods of pricing in no sense overcome the estimation objections levelled against the profit maximising model. It will then be argued that, in fact, the profit maximising model's approach is superior to the cost-plus approach in coping with the uncertainty of estimations into the future, and that the profit maximising approach to the problem has other advantages for the pricing decision. Further, it will be shown that, in any case, there is much progress in the field of making the required estimations and that some firms in practice are making use of sophisticated estimation techniques.

3.2 AN ANALYSIS OF THE DATA AND PROCESSES UPON WHICH THE COMPETING MODELS RELY

In cost-plus pricing, a target volume is selected, and the cost per unit of product is estimated at this volume. A desired markup is added to this cost to arrive at a target selling price. Adjustments are then made to this target price according to an appraisal of what the market can bear, in order to arrive at the actual selling price.

As pointed out in Jackson and Dollery (1984: 692) two steps are taken here which involve the cost-plus price setter in making essentially similar estimates of cost and revenue data as those upon which the profit maximising model's approach is based.

Firstly, a target volume is selected at which the average cost per unit of product is computed. The volume which is selected will have an impact on the cost per unit because fixed costs per unit are determined by the number of units produced, and even marginal costs per unit are not always constant for all ranges of production. Furthermore, the volume produced must be sold. It then becomes clear that one has to question why this volume is chosen in preference to other volumes of production. It must be that the price setter feels that this volume is superior to other possible volumes of production. "The crux of the matter is that by selecting this volume of production he has rejected all other possible volumes of production" (Jackson and Dollery, 1984: 692). Thus, even although the cost-based price setter has not left a trail of his workings and has not necessarily committed his mind carefully to each possible volume of production, he has nevertheless estimated that the volume which he uses is the optimum one, by rejecting the others and selecting one.

Secondly, when the cost based price setter considers whether an adjustment to the target price is necessary in terms of his appraisal of what the market can bear, it must be questioned how the estimation is made of the necessity and size of that price adjustment. "It is submitted that just as with the profit maximising model, estimations must be made about the impact of price changes on volume" (Jackson and Dollery, 1984: 689). Once again, the selection of this price entails the rejection of all other prices and the price setter must have estimated that, considering the effect on volume and cost, this price is the optimum price. The fact that cost-plus pricing

does not call for the documentation of estimations does not mean that they do not have to be made.

Commenting on the fact that these estimations and decisions are still made under cost-plus pricing approaches, albeit that they are informally made, Edwards (1952) put it as follows:

> "This process of examining the pros and cons, of considering the likely effect of a little more or a little less in product quality, in output, in price, in selling effort, is none the less important because it takes place over the telephone or while walking around the factory, or because the actual details of the discussion may very soon be forgotten" (299).

Thus, it is submitted that even under cost-plus pricing informal estimations are made concerning the cost-volume-profit relationship, both in the preparation of the cost estimation "and between its preparation and the actual determination of the price" (Edwards, 1952: 298).

It is, in fact, this choice of volume and price which prompted Horngren (1981),[2] to allege that cost-plus pricing entails circular logic because the markup which is added to the computed cost to arrive at a price to achieve a target (a return on investment, for instance), is thought to be determined by the cost, but the cost itself is determined partly by the volume, and the volume which can be sold is determined largely by the price

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2. See Horngren (1981: 94) as referred to in chapter one.

which is set. Clearly, the profit maximising pricing model which requires documented estimations of the impact of price on volume and the impact of volume on cost would be helpful for optimal decision making.

Uncertainty is an attribute of the future and the fact that estimations frequently have to be made into the future is simply a fact of life. Noting the difficulty sometimes encountered in estimating a firm's demand curve, Arnold and Hope (1983) commented somewhat harshly: "the cost-plus solution to this problem is simple; ignore it" (165). They went on to further criticise the cost-plus approach saying that such an approach contravenes a basic principle of good decision making: "... it is better to obtain an answer that is approximately right than one that is precisely wrong" (165).

We now turn our attention to an examination of the manner in which the profit maximising model deals with these uncertainties.

3.3 THE MANNER IN WHICH THE PROFIT MAXIMISING MODEL COPES WITH THE UNCERTAINTIES INHERENT IN THE DECISION MAKING PROCESS

In coping with the required estimations, the profit maximising model has the dual advantages of:

(1) forcing the decision maker to consciously apply his mind to the task of estimating the effects of different prices on costs and volumes; and

(2) leaving a trail of the expected results of the different options.

An approach which forces the decision maker to consciously apply his mind

to the tasks involved in making a decision facilitates a more thorough and logical process. The American Institute of Certified Public Accountants recognised this well when it said that as an advisor, the "CPA ... approaches the problem in a professional and analytical manner rather than relying on intuition as management frequently does in its pricing actions" (AICPA, 1965: 1).

The profit maximising model specifically requires estimates of cost, volume and revenue at different prices. This necessitates, inter alia, an evaluation of the production technique and all aspects of the marketing mix at the different prices considered. The formal commitment to an estimate for the different options requires an actual articulation of thought processes, which must facilitate better analysis.

The advantage to the analytical process of articulating thoughts must not be underestimated.

Polyani (1973) in his much celebrated enquiry into the nature and justification of scientific knowledge points out the vital role played by the acquisition of linguistic skills in the development of a child's intelligence. Based on intelligence tests designed to observe the development of intelligence in children, Polyani (1973) noted a critical acceleration in the development of intelligence once the child begins to understand speech and speak itself. Polyani (1973) commented that "by this one single trick in which it surpasses the animal, the child acquires the capacity for sustained thought" (69).

It is important to note that Polyani does not in any sense allege that linguistic advantages are the only intellectual advantages that man has over animals - man did have the pre-linguistic advantages. However, his point is that without articulation man would not be able to develop these intellectual advantages. Polyani (1973) sums it up as follows:

> "(1) Man's intellectual superiority is almost entirely due to the the use of language. But (2) man's gift of speech cannot itself be due to the use of language and must therefore be due to pre-linguistic advantages. Yet (3) if linguistic advantages are excluded, men are found to be only slightly better at solving the kind of problems we set to animals" (70).

It is in this sense that it is submitted that the fact that the profit maximising model calls for the estimations of the cost - volume - profit relationship of the various options to be consciously addressed and documented by the problem solvers, is a considerable advantage.

It must be stressed that the profit maximising model as illustrated in chapter 1 page 10 is in fact calling for an articulation and documentation of estimations. The fact that the illustration is done graphically does not mean that the thoughts are not articulated. The curves on the graph are in fact, a kind of short hand (a very efficient short hand) for words. For example, a plotting of a Price P_1 and volume Q_1 is actually <u>saying</u> "It is estimated that this firm will be able to sell Q_1 units at a price of P_1". This should in no sense be taken as showing a disregard for the intuitive thought processes involved in the decision making process.

Indeed, Edwards (1952) himself stated "the 'hunches' of the manufacturer are not, however, to be disregarded" (304). It is just that the profit maximising model with its required estimates of the firm's revenue and cost curves can arguably help to:

(1) ensure that the "hunches" are applied to all the options under consideration
(2) facilitate the commitment of the decision maker's mind to all the aspects and procedures which are believed to comprise the outcomes of the different options
(3) co-ordinate the estimations made in the various steps by the different people involved in this multi-disciplinary decision
(4) leave a trail of workings which can be used for both checking the logic and accuracy of the procedures in the decision making process and for communicating the estimations and expected outcomes relating to the options under consideration to others in the organisation.

It must be pointed out that it is not necessarily being argued that firms should build up an estimation of their entire cost and demand curves. An adaption of the profit maximising method, which may frequently be more practical, is one that was referred to by the American Institute of Certified Public Accountants as far back as 1965 when considering the cost - volume - profit relationships at two different volume levels for the fictional "Raynor Company".[3] Expanding on this, the marginalist approach could consider two, or three or four different prices and, together with

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3. See AICPA (1965: 18)

the appropriate production techniques and marketing approaches and sales forecasts at each price, the profit could be calculated for those price options under consideration. In this manner one could at least get the estimated profit opportunities at the current price and at a higher price and at a lower price.

It must be recognised that costs will be incurred in order to gain the benefits of having the estimated cost and revenue data. Clearly, the more price options considered the greater the number of estimates and the higher the cost. Also, the more thorough the research on the expected impact of price changes the greater the cost of the data. Thus, in deciding on the nature and extent of the research upon which the estimates will be based, the decision maker has to make a cost-benefit analysis. The value of the expected benefit can only be quantified once the estimated data is obtained.

Fortunately, the costs of the research are more easily obtained. For sophisticated market research work, which we will review in section 3.5 of this chapter, cost quotations can be obtained.[4]

This dilemma of deciding whether it is worth incurring a cost for an unquantified benefit is analogous to the usual internal control decision, where the cost of the control is known (for example, an extra person should be employed to separate the duties of the cashier and credit controller) whilst the benefit remains unquantifiable.

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4. See footnotes on pages 91 and 92.

Clearly the concept of materiality is relevant. A very comprehensive estimate of revenue at a given price, costing, say R70 000, would not be feasible for a small, owner managed firm with a turnover of R100 000 per annum. However, such a survey would be feasible for a multinational company launching a new product and standing to lose say, R3 million if the product fails. In fact, in that case the question becomes not so much whether the firm can afford to do the research for the estimations, but whether it can afford not to do the research.

We have already seen in chapter one that increasing attention is being paid to the distinction between the management of smaller firms and that of the larger corporate businesses. The Close Corporations Act, No 69 of 1986, recognises the different requirements of smaller, owner managed firms from larger, professionally managed ones. It seems reasonable then too, that in this area of pricing, the nature and scope of some research and estimation plans would be such that the benefits would only exceed the costs for very large firms and smaller firms could only consider much less costly forecasting techniques.[5]

Considering the benefits of a formal commitment to the estimations inherent in the pricing decision, it is submitted that sometimes the reason for not making the estimations required by the model is likely to symptomise X-

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5. See footnote 10 on page 91 on the cost of the simple interview approach and regression analysis and footnote 12 on page 92 on the cost of the comprehensive predictor research model.

inefficiency or the failure to apply maximum effort which Liebenstein (1978) found to be relevant to decision making on the grounds that "we should regard decision making itself as an effortful activity" (p 28). It is indisputable that the cost-plus method, which does not call for a range of estimations, is a less effortful decision making model. This may be the true reason for using a cost-plus approach, instead of making the estimations called for under the profit maximising approach.

Further, the absence of estimations of the results of other prices may also be an inefficiency in the form of a potential opportunity cost to the firm. It is pertinent to note Leibenstein (1978) on the subject of opportunity cost:

> "Part of the inputs available to a firm is knowledge of opportunities open to it, or the information on how to obtain such knowledge. Thus the deviation between the value of maximising the opportunities open to the firm and those actually utilised is also part of the X-inefficiency phenomenon" (18).

The different profits illustrated by the various differences between the total revenue curve and the total cost curve should be regarded as different opportunities. The cost-plus approach which works with one volume may therefore be symptomatic of X-inefficiency since it excludes consideration of information about alternative opportunities.

The fact that the thoughts and information of people involved in the decision can be communicated to others in the organisation must be credited

as an efficiency advantage of the profit maximising model over the cost-plus approach. Kaplan, Dirlam and Lanzillotti (1958) showed evidence of the different perceptions of the pricing problem held by different people within the organisation. Cases were cited of the pricing officials who actually made the decision perceiving the problem in terms of a required percentage return on sales, whereas top management who did not actually make the decision had viewed the problem in terms of a required return on investment.[6]

Leibenstein (1978) categorizes two ways in which the lack of communication can cause inefficiency. Firstly, "even though the possibility of an improvement might be clearly known somewhere in the organisation, there is no way of getting the appropriate information to the attention of individuals who may be either capable or interested in instituting the profitable changes" (175). In this regard, the profit maximising model is able to get the information and opportunities down on paper and passed on to others. Secondly, "there is frequently a division between those capable of introducing changes as against those who might be interested in doing so" (175). Again it is submitted that the documentation of thoughts will facilitate getting the knowledge of the existence of opportunities across to those capable of implementing them.

In sum then, it is suggested that both approaches rest on essentially similar estimates of cost and revenue data, but that the documentation

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6. See Kaplan, Dirlam and Lanzillotti (1958: 18 and 274).

required by the profit maximising method copes better with the difficult tasks of making these estimations and making the final decision.

We now turn our attention to showing that, in any case, progress is being made by firms in making those estimations. When considering the cost and revenue estimations it must be acknowledged that the difficulties with sales forecasting are greater than with cost estimation.

3.4 PRODUCT COST

The ascertainment of product cost is so integral a part of cost accountancy and costing as to be frequently regarded as virtually synonomous with those terms. Certainly, it is so large a part of those subjects as to make a survey of product costing procedures quite impossible here, given the vastness of the literature. It is also unnecessary, given the fact that the ascertainment of product cost is formally a standard step for both the cost-plus and the profit maximising approaches to product pricing. In fact, many commentators, in analysing the difference between the economist's approach and the accountant's approach to pricing, perceive the accountant's approach to be the cost-plus one, and further, they see the ascertainment of cost as the essence of that approach. Oxenfeldt and Baxter (1961) in this context, explained the accountant's approach to pricing by saying that the accountant "pays scant attention to demand; he collects cost data and arrives at price by manipulating these" (401).

Owler and Brown (1975: 1), in that year's edition of the famous Wheldon's

Cost Accounting text, setting out the scope of the subject stated:

> "These costs may be ascertained:
>
> (a) historically, i.e. after they have been incurred, or
>
> (b) by predetermined standards, combined with subsequent analysis of variances between those standards, and the actual cost incurred; and
>
> (c) by the use of marginal methods of presentation for either (a) or (b), involving the differentiation between 'fixed' and 'variable' costs."

Today, various methods to aid in differentiating between fixed and variable costs including the use of simple and multiple regression analysis,are covered in standard texts on cost and management accounting.[7] The principle of regression analysis which rests on the identification of causative factors which influence a dependent variable (like cost) will be looked at later in this chapter when revenue forecasting is examined.

Nevertheless, one addition to the vast literature on the subject of product cost does deserve mention here. The aid to practitioners in assisting clients with product pricing issued by the AICPA in 1985 puts so many of the ideas of the literature into the form of a work programme for the practitioner that it serves as an excellent check list in the task of ascertaining product cost.

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7. See Garrison (1985: 171-177) and Horngren (1982: 286, 300) and Killough and Leinenger (1984: 697-720).

Appendix 1 contains a random extract, by way of example, of the AICPA programme.

We now turn our attention to the more difficult task of revenue estimation.

3.5 REVENUE ESTIMATION

Historical sales data are generally used as a starting point in preparing a sales forecast. "Forecasters examine sales data in relation to various factors, including prices, competitive conditions, availability of supplies and general economic conditions" (Garrison, 1985: 305). Broadbent (1980: 532) noted that two major decisions have to be made in every brand's annual plan; namely, its price and the amount to be spent on advertising. Indeed, as will be discussed in chapter four of this study, all of the elements of the marketing mix have to be decided. Broadbent went on to explain that even if firms did not know the price elasticities of their products, those elasticities still, of course, exist. At the Vienna conference he said that, in fact, his argument was that "we do now know how to estimate and use price and ad(vertising) elasticities" (536). This is not to say that he felt these elasticities could be perfectly estimated. He acknowledged that such an ideal could never exist, but it does show the confidence with which he could embrace the topic of these estimations.

So rapid has been the progress and prevalence of forecasting techniques in the last decade, that the Harvard Business Review published a review article by Georgoff and Murdick (1986: 113) which included the compilation of a chart which identified what they considered to be the "20 most common

forecasting techniques" and gave a brief evaluation of them.

Mindful of the fact that pricing is a multi-disciplinary act and the National Association of Accountant's advice (Gordon et al, 1980) that "pricing decisions utilise the talents and know-how of many individuals across several functional areas" (11) it is not necessary and would not be productive for an accounting analysis to attempt to make a study of the marketing discipline's role of sales forecasting. The object of the accounting and economic analysis was just to show that the profit maximising pricing model is best designed to cope with and use the marketer's forecasts. However, by way of evidence that marketers are making these estimations and to encourage the accountant's reference to the marketer's models (many of which are refined to the point of user friendliness for specialists outside of the marketing discipline) a brief overview will be made of the approaches to forecasting and a case history will be cited.

Georgoff and Murdick (1986: 113) categorised four different approaches to forecasting: (1) judgemental; (2) counting methods; (3) time series methods; and (4) association or causal methods.

Judgemental methods are self explanatory, varying essentially in terms of the care given to each step in the estimation and to the number and selection of the people involved in the judgemental estimates.

Counting methods consist of market testing, consumer market surveys and industrial market surveys. Market testing is described as "representative

buyers' responses to new offerings, tested and extrapolated to estimate the product's future prospects" (Georgoff and Murdick: 113). The approach of market surveys is described as one under which "attitudinal and purchase intentions data (are) gathered from representative buyers" (113).

Under time series methods, time is the variable against which a pattern is analysed. The major methods of the time series approach are: (1) moving averages; (2) exponential smoothing; (3) adaptive filtering; (4) time series extrapolation; (5) time series decomposition; and (6) Box-Jenkins.[8]

Association or causal methods attempt to identify the variables upon which the forecasted item (volume of sales, for example) is dependent and to measure the estimated effect of these variables on the dependent variable. The major methods are: (1) correlation methods; (2) regression models; (3) leading indicators; (4) econometric models; (5) input-output models.[9]

In order to get an idea of the prevalence and sophistication of approaches to estimating the impact of price on volume of sales in South Africa I visited a leading marketing consulting firm in Johannesburg. They assured

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8. See Wits Business School (October 1986) pages 5.4 to 6.6 and pages 15.1 to 15.6.

9. See Georgoff and Murdick (1986: 110-120) and Wits Business School (October 1986) pages 10.1 to 16.7 and Brodie and de Kluyver (1984: 194-201).

me that they regarded price as a very important variable in the marketing mix and, indeed showed me that they do, in fact, do research for clients on estimating the impact of price on volume of sales.

This marketing firm found that one useful way of categorising all its pricing research approaches was into three broad categories, namely:

(1) Surveys;

(2) Surveys including the use of a simulated test market;

(3) Historical data techniques.

Surveys can take the form of simple questioning techniques concerning the respondent's preferences at different prices or more sophisticated methods embracing trade-off choices by the respondent.[10] Concerning trade-off analysis, respondents are asked to make a choice amongst options with different attributes being considered. The different combinations of attributes could, for example, be different prices of the client's own brand and different product qualities, like quality and pack size, and different possible retaliatory prices of the competing brand which could be expected to coexist with the client's different price options. Appendix 2 is an extract from an illustration used in the in-house training of a leading South African marketing consultant. The trade off data is then analysed for this marketing consultant via conjoint analysis by the aid of

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10. This company would quote approximately R8 000 for the simple questioning research study and about R20 000 for the conjoint analysis with three prices and two other attributes. Each extra price considered on the conjoint analysis would cost approximately an extra R5 000. The starting price for a regression analysis model would be approximately R2 000.

a computer program developed by Demotab Limited, their London consultants.[11] This enables an estimated demand curve to be drawn for any brand under any combination of its possible attributes and a competitive brand's pricing.

Turning our attention to the approach of a survey including a simulated test market, we now encounter a very comprehensive model which tests all the main marketing variables in a realistic environment and makes predictions of market shares under the different conditions of the variables in the marketing mix (including price) for the options under consideration. It is especially popular for the launching of new products. A number of models are available which incorporate computer programmed analysis of the data by experts, for example, the Predictor model produced by Demotab Limited, London, and the Assessor Model produced by Novaction, Paris and the Bases Tracking Model produced by Burke, Marketing Research Ltd, in the United States of America. The market research firm which I interviewed in Johannesburg uses Predictor. The research programme using Predictor involves two stages, namely, the central location interviews and the in-house recall interviews.[12]

At the central location stage, via questions, preference data relating to the various elements of the marketing mix are obtained. The next step is

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11. See Green and Vithala (1971: 355-363) on conjoint analysis and Green and Wind (1975: 107-115) and Johnson (1974: 121-127) and Mohn, Roane and Stanton (1982: 106-111).

12. This market research firm quotes R50 000 - R60 000 for the complete Predictor research study. Each additional price tested would cost an extra amount of approximately R10 000.

to take the respondents into a simulated shop in which a set of shop shelves have been erected. The test brand is merchandised with all the main competitive brands. The ruling current prices of all brands and pack sizes are labelled. A quote from the in-house literature of this market research firm states "the test brand can either be tested at one or more than one price point to measure potential at different prices". The respondents are given money vouchers to spend however they wish in the simulated shop. They take home whatever they buy with these vouchers. In order to make the test as realistic as possible the respondents are even allowed to cash in the vouchers for real money which they can keep and not purchase anything in the simulated shop.

The second stage consists of a recall interview three to four weeks later to get a measure of expected repeat buying behaviour. The informants are also given an opportunity at this stage to purchase the test product again with their own money.

This particular Johannesburg market research firm then sends the data for processing to Demotab in London, who have in-depth experience in the technique and have developed specialised software for the model. The major output is a prediction of the market share, which can be translated into a volume of units. It is noteworthy that the model has been employed in over five hundred studies worldwide.

Considering now the historical data techniques, the most important for pricing for this marketing firm currently is multiple regression, with an

increasing interest in the Box-Jenkins model.[13] The General form of the multiple regression equation is:

$$Y = a + b_1X_1 + b_2X_2 + b_3X_3 + \ldots + b_mX_m + \text{error}$$

where,

Y is the dependent variable; for example, Sales,

$a, b_1, b_2 \ldots b_m$ are the regression coefficients

$X_1, X_2, X_3 \ldots X_m$ are independent variables, (such as price of brand, competing brands price, advertising, etc.)

The object, of course, is to "unscramble" the data in order to get a measure of the impact which each of the variables effecting sales has on sales.

This marketing firm is particularly impressed with the Adstock Model which, via autocorrelation (correlating a variable with itself, but a period lagged, to account for the time lag inherent in the effect which advertising, for example, has on sales), can weight the relative importance of the different variables in the marketing mix and estimate future sales for alternative marketing mixes.[14]

Considering the difficulty of estimating competitor's price retaliations, it should be noted that when analysing the effect on sales in the past, of changes in the marketing mix, including a price change, the historical

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13. See Wits Business School (October 1986) pages 15.4 to 15.6 on Box-Jenkins Modelling.

14. See Broadbent (1984) on the Adstock model.

change in sales of the firm will have included any price retaliations which the firm's price change will have caused. Further, it must be noted that under cost-plus pricing a decrease in price due to a decrease in cost could also cause pricing retaliations by competitors. Also, under any form of pricing, unless one commits one's mind to making the estimates, one would not know whether a current price is not, in fact, a price which is causing retaliations by competitors. The fact will always remain that, no matter how difficult the task is of estimating the impact of price on volume, a method such as the profit maximising model, which calls for a commitment to estimating the effect of options, must be an aid in coping with the uncertainty inherent in the availability of choice.

It is optimistic to note the commitment of market researchers to rational estimation. When visiting this market research firm in Johannesburg, I was fortunate enough to be privy to the actual data of a case history of an actual estimation of sales based on an historical data analysis and the actual results. We note that the modelled line, which is based on the coefficients calculated for the independent variables, is only used for prediction if it fares well when tested against the actual past sales.

Figure 1 shows the actual and the modelled sales for an actual product of a company.

A CASE HISTORY

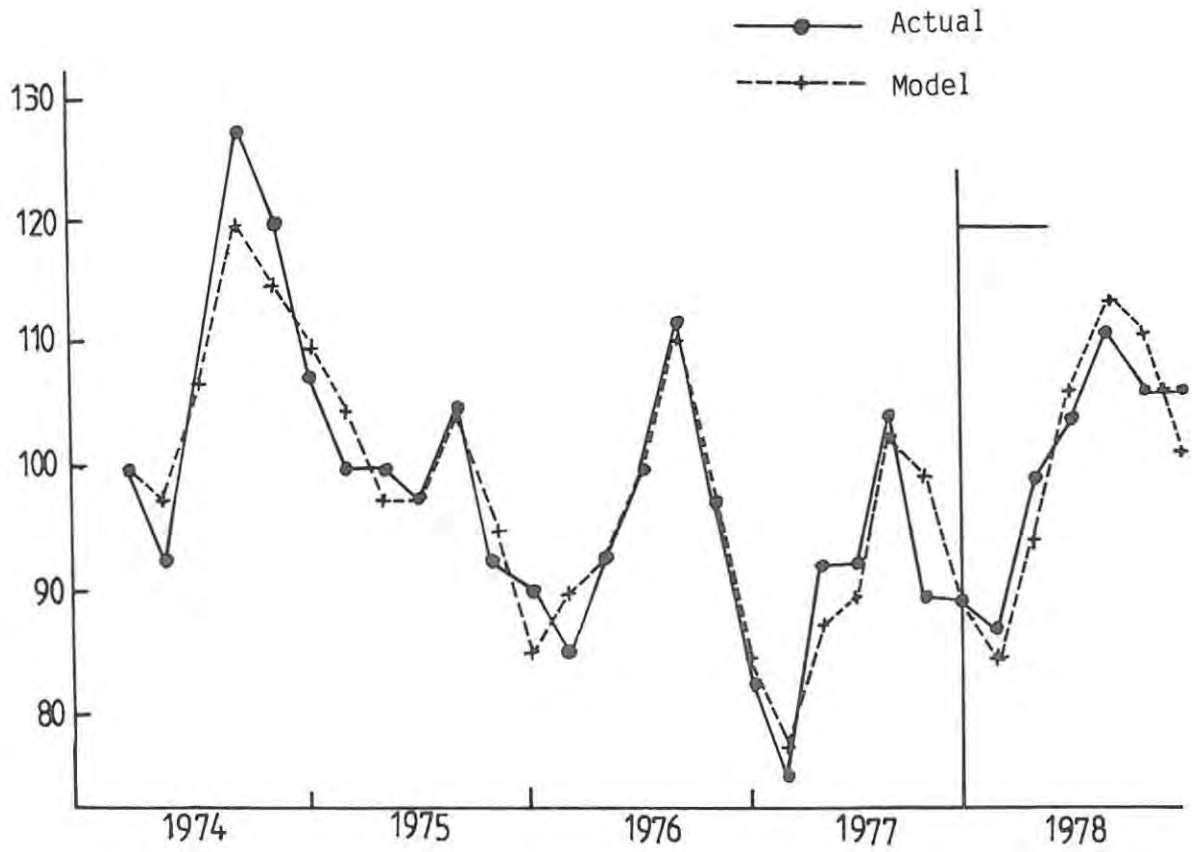

Figure 1: Model predictions to actual sales in 1978

Thus we see that there are firms which are estimating their sales and that this can be done skilfully.

3.6 CONCLUSION

We have seen in this chapter that both the cost-plus and profit-maximising models rely on estimates of essentially similar data. It is further submitted that the profit maximising model copes much better with these estimates and the analysis of them, than cost-plus pricing. Furthermore, we have seen that firms are making these estimates in practice and advancement in this field of estimation is progressing rapidly.

It is fitting to conclude this chapter by quoting the concluding remark of Broadbent's (1980) paper delivered at the Admap conference in Vienna.

Commenting on the fact that elasticities could never be estimated perfectly he said that what is nevertheless suggested, is an aid to successful adaptation and concluded by saying:

> "Any successful, surviving organism explores its environment, observes, learns and adapts. What is suggested is an aid to the successful evolution of a brand" (538).

Indeed, we are forced to question whether the failure to use a model which demands a committed exploration of options is not a manifestation of Leibenstein's (1978) X-inefficiency.

Appendix 1

Extract from American Institute of Certified Public Accountants (AICPA 1985: 20) publication "Assisting Clients in Determining Pricing for Manufactured Products".

Project Planning Chart

Client LF&L Manufacturing Company Date _____ Phase 2 Page 4 of 4
Phase Description Data Analysis

Task	Description	Staff	Hours	Day 1	2	3	4	5	6	7	8	9	10
k.	Analyze how interest rates and regulatory agencies (if applicable) impact client's pricing practices.												
l.	Prepare interim report to management, documenting weaknesses and deficiencies and preliminary conclusions resulting from data analysis phase.												
	PAGE TOTAL												
	CUMULATIVE PHASE TOTAL												

Client LF&L Manufacturing Company Date _____ Phase 3 Page 1 of 3
Phase Description Conception and Design

Task	Description	Staff	Hours	Day 1	2	3	4	5	6	7	8	9	10
1.	Based on results of data analysis phase, develop recommended improvements. Group them into the following categories: ° Management pricing practices ° Cost accumulation and accounting methods ° Pricing formula												
2.	Analyze manufacturing overhead items, and segregate them between fixed and variable elements.												
3.	Calculate fixed and variable overhead rates by using a uniform basis (e.g., direct labor hours, machine hours, or direct labor dollars). Note: Depending on number of products and departments involved, it may be necessary to calculate separate overhead rates for major cost centers.												
	PAGE TOTAL												
	CUMULATIVE PHASE TOTAL												

Appendix 2

Trade Off Analysis

Extrade from An Illustrative Example used In-House by a Market Research Consulting Firm

A hypothetical example of a particular respondent's choices is shown below:

	PRICE						
	-15%	-10%	- 5%	CUR-RENT	+ 5%	+10%	+15%
Brand A	23	24					
Brand B	25	26					
Brand C	7	8	15	16	21		
Brand D	13	14	19	20	22		
Brand E	1	2	5	9	10	17	27
Brand F	3	4	6	11	12	18	

Starting all brands off at 15% below their current price, this respondent's first choice is Brand E. The price of this brand is increased to 10% below current price. The choice is again Brand E. The process is continued up to choice number 27.

Demotab, our London consultants, has developed a computer programme to analyse the trade-off data.

It enables a demand curve to be drawn for any brand under any combination of the competitive brands' pricing.

CHAPTER IV: THE MARKETING MIX ARGUMENT

4.1 Introduction

Another standard argument used to support the exclusion of the profit maximising model is the fact that many factors other than price can have a significant impact on the volume of units of a product which can be sold. The argument as stated by Garrison (1985) reads:

> "A third limitation of the general models arises from the fact that price is just one element in the marketing of a product. Many other factors must also be considered that can have a significant impact on the number of units of a product that can be sold at a given price. Among these factors are promotional strategy, product design, intensity of selling effort, and the selection of distribution channels." (503)

Whilst this study fully agrees that there are many other elements which comprise the marketing mix and which effect the number of units sold, it disputes the claim that this precludes the application of the profit maximising model in setting price and volume of production. To the contrary, it will be argued that the modus operandi of the model is particularly well suited to embracing the total cost and total revenue estimations associated with the various marketing mix options facing a product line and illustrating the expected outcomes of these options.

The criticism is really just a "straw man" argument. A false proposition is initially set up implying that the profit maximising model alleges that

price is the only variable impacting on the number of units sold. This false proposition is then attacked with the demonstration of the banal fact that other factors also affect the number of units sold. The slain straw man, in the form of this defeated false proposition, is then offered as proof of the inadequacy of the model.

4.2 The Model Identifies the Marketing Options by Their Price

At the outset it must be emphasised that in no sense whatsoever does the profit maximising model assume or suggest that the full gamut of marketing variables are not used at any of the prices under consideration. The model simply calls for the estimations of cost and volume at the different selling prices, taking fully into consideration all the elements of the marketing mix which will be applied at the different prices.

Indeed, the fact that the total cost, including all marketing costs is required at each option under consideration, will facilitate the commitment of the decision makers' minds to the marketing mix at the different prices and thus emphasise these elements and help identify different marketing mix opportunities. This will further aid the task of forecasting volumes of sales; and the model integrates the forecasted revenues with the expected costs of sales, including marketing costs, to show the net expected results.

Nobody would deny that price is an important element of the marketing mix. As can be seen in Appendix 1 of this chapter, Dollery's (1983) study of South African manufacturing firms showed 42,5% of competitive firms ranking

pricing as the most important aspect of their marketing strategy and 23,4% of oligopolistic firms ranking pricing as the most important element of their marketing strategy and 33,3% of monopolistic firms ranking pricing as the most important element of their marketing strategy. We recall that in chapter two of this study we noted that overall, the firms in the American and Canadian study did view pricing decisions as a key item in their product's survival.[1]

In addition, of course, many other factors effect volume of sales. The elements of the marketing mix (also called 'marketing decision variables' or 'parameters of marketing action') are defined as "all variables under the firm's control that can affect the level of demand" (Kotler, 1971: 53). No list could ever be considered to be exhaustive, especially when it is considered that the length of such a list depends partly on the categorisation method and specification detail employed in the making of the list.

Kotler (1971: 53) refers to a list compiled by Borden (1965) with twelve categories and thirty one variables as one of the most extensive.[2] Kotler (1971) analyses the marketing mix under the four variables of price, product, distribution and promotion. This four-factor classification was led to prominence by McCarthy (1964).

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1. See Appendix 1(b) of chapter 2.
2. See Neil H Borden: "The Concept of the Marketing Mix" in George Schwartz, ed, "Science in Marketing" (New York: John Wiley & Sons Inc, 1965), pp 389-390.

Now, in no sense at all, is it required that pricing must be the most important element of the marketing mix in order for the estimations of the costs and revenues associated with the various optional mixes to be organised in a manner which identifies the selling price of each mix, as does the profit maximising model.

4.3 The Model embraces the Entire Marketing Mix

The model as illustrated in chapter one page 10 could, in fact, have the X-axis labelled so as to identify, at each predicted volume of units sold, not only the price, as is traditional, but also the other elements of the marketing mix associated with each price. This is to say that underneath price P_1 for Mix 1, it could also show A_1 as a shorthand for the promotion plan included in Mix 1, and Pr_1 as a shorthand to identify the product design of Mix 1, and D_1 as shorthand to identify the distribution plan of Mix 1.

We would then have a graph labelled as in Figure 1.

As it is, the shorthand is more efficient and it is understood that the volume expected to be sold at price P_1 will be fully marketed with the appropriate marketing mix, and the total cost TC_1 is, indeed, the estimated cost taking all these factors into account.

Even if one of the other elements of the mix, e.g. advertising, were considered to be the starting point, the marketing plan could not be completed without setting a price, and once all the elements are set and

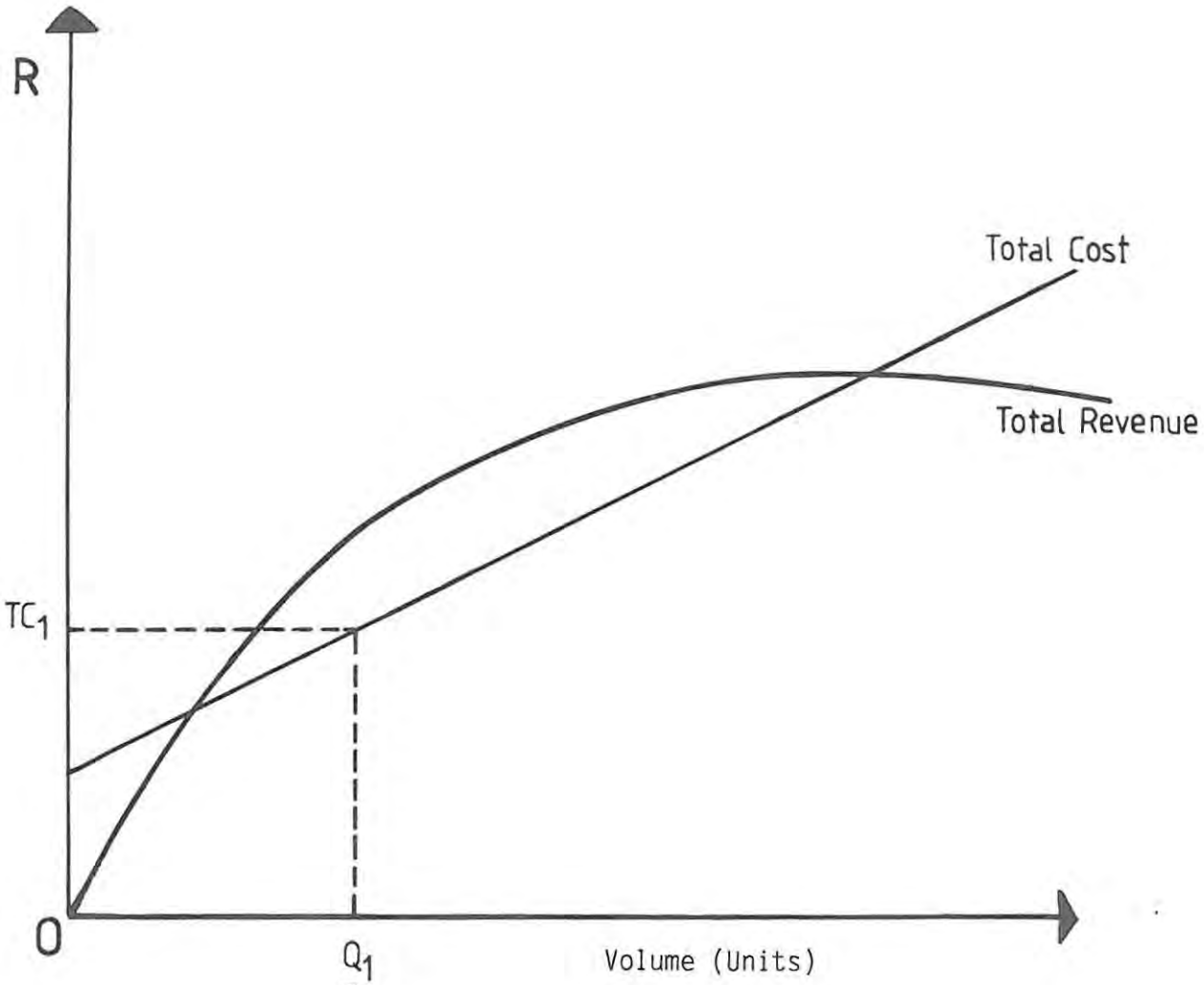
R
Total Cost
Total Revenue
TC1
0
Q1
P1
Pr1
D1
A1
Volume (Units)
Price (Rands)
Design (Draughtsman's Plan No.)
Distribution (Distribution Plan No.)
Promotion (Promotion Plan No.)

Figure 1

the costs appropriately estimated, the optional mixes can be identified on the x-axis in terms of quantity and selling price. This is done for the sake of simplicity and illustrative value, because total revenue, which is unarguably an important factor, is the volume of units sold multiplied by the selling price, and profit is the difference between total revenue and total cost.

4.4 Sales Estimation Takes the Marketing Mix into Account

Thus, it is just that the profit maximising model arranges the estimations of the options in price order. It does not exclude the other elements of the marketing mix. Indeed, much of the content of chapter 3 of this study, is in fact relevant to this chapter in that it also disproves the argument that the profit maximising model does not take into account the other factors impacting on volume of sales. This is so because the maximising model calls for estimations of volume for different options and this requires that sales forecasts be made. When we studied sales forecasting it became very clear that a core element of that subject is concerned precisely with identifying the factors which impact on sales volume and attempting to measure the effect of those factors.

In chapter three, when discussing surveys, we saw that under trade-off analysis, an attempt is made to measure the extent to which a consumer is prepared to trade off one attribute, for example, price, against others like product quality, or pack size or distribution ease. The marketing research firm which I visited used conjoint analysis and an extract from their in-house literature reads:

> "Conjoint analysis can be used for evaluating new products for altering elements of the product mix of an existing product, for evaluating importance of attributes, for testing price sensitivity and finally, for predicting brand share for alternative product combinations".

Clearly, the various elements of the marketing mix are taken into account and clearly, the volume forecast, based on the brand share, can be integrated into the profit maximising pricing model.

Similarly, this market research firm describes the basic aim of the Adstoch Model which we looked at in chapter three, as being "to explore the relationship between sales and various marketing inputs". For example, one case history showed that the relative weights of the marketing variables under consideration for a product were:

Distribution	100
Radio Advertising	59
Price	52
Television Advertising	48

This aids the estimation of market shares and volumes for the different marketing mix options under consideration. Once again, it must be stressed that the forecasts for the various options can then be integrated into the profit maximising pricing model.

Similarly, the historical data techniques take cognisance of all elements

suspected of influencing the volume of sales. For example, the variables in the multiple regression formula are typically the well established marketing mix elements.[3]

4.5 The Model Accounts for the Cost of the Whole Mix

Thus, in no sense whatsoever are other elements of the marketing mix ignored when forecasting volumes of sales at different prices. Sometimes, one element of the mix can vary whilst other elements can be held constant over the whole range of production being considered. In other instances price, for example, could be under consideration for a wide range of changes whilst it may be felt that one of the other elements in the mix, say advertising, could be held constant for a range of prices; but that it would have to be increased beyond a certain threshold price and that thereafter it could be held constant until another threshold price barrier is broken. This would be accounted for in the profit maximising pricing model as illustrated in figure 2.

Figure 2 shows total costs rising after P_1 to account for the fact that a fixed advertising cost increase would be incurred at prices higher than p_1 because a new marketing mix with more advertising expenditure would be used at prices above P_1.

Similarly, it could be that a more expensive packaging for example, would be used at prices above P_2.

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3. See chapter 3 page 94.

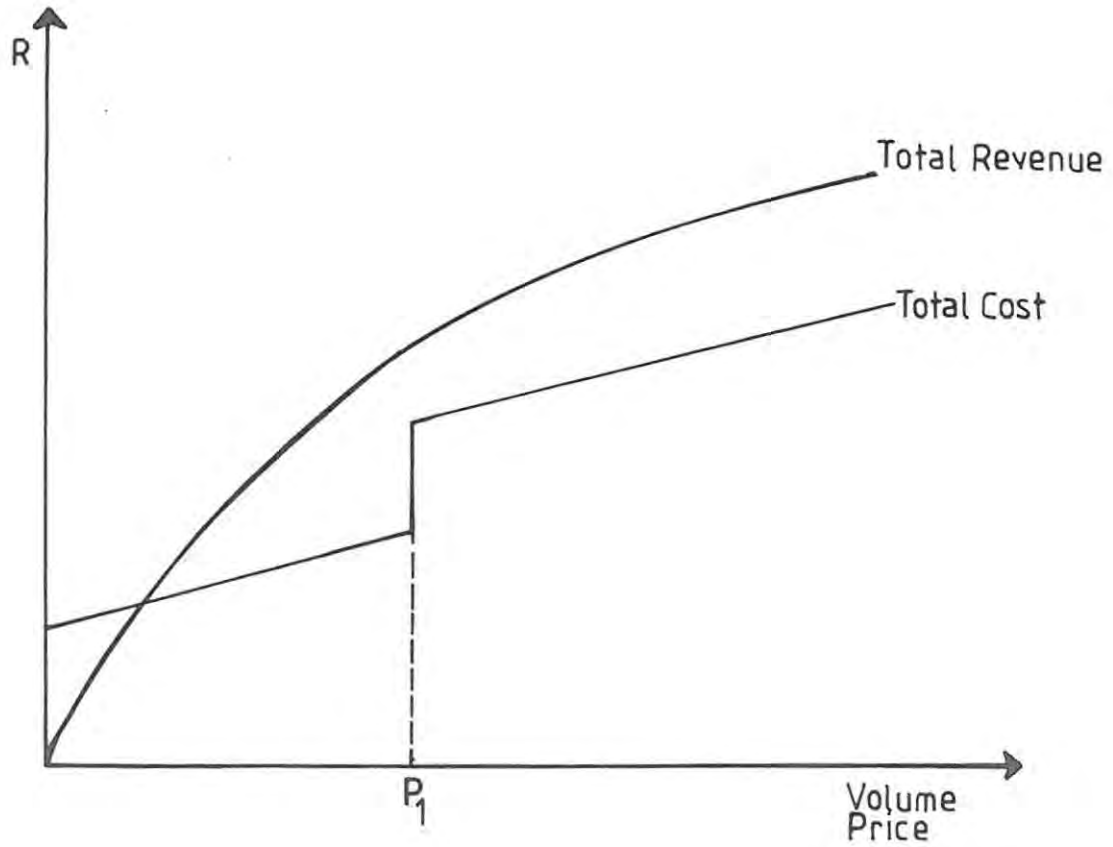

Figure 2

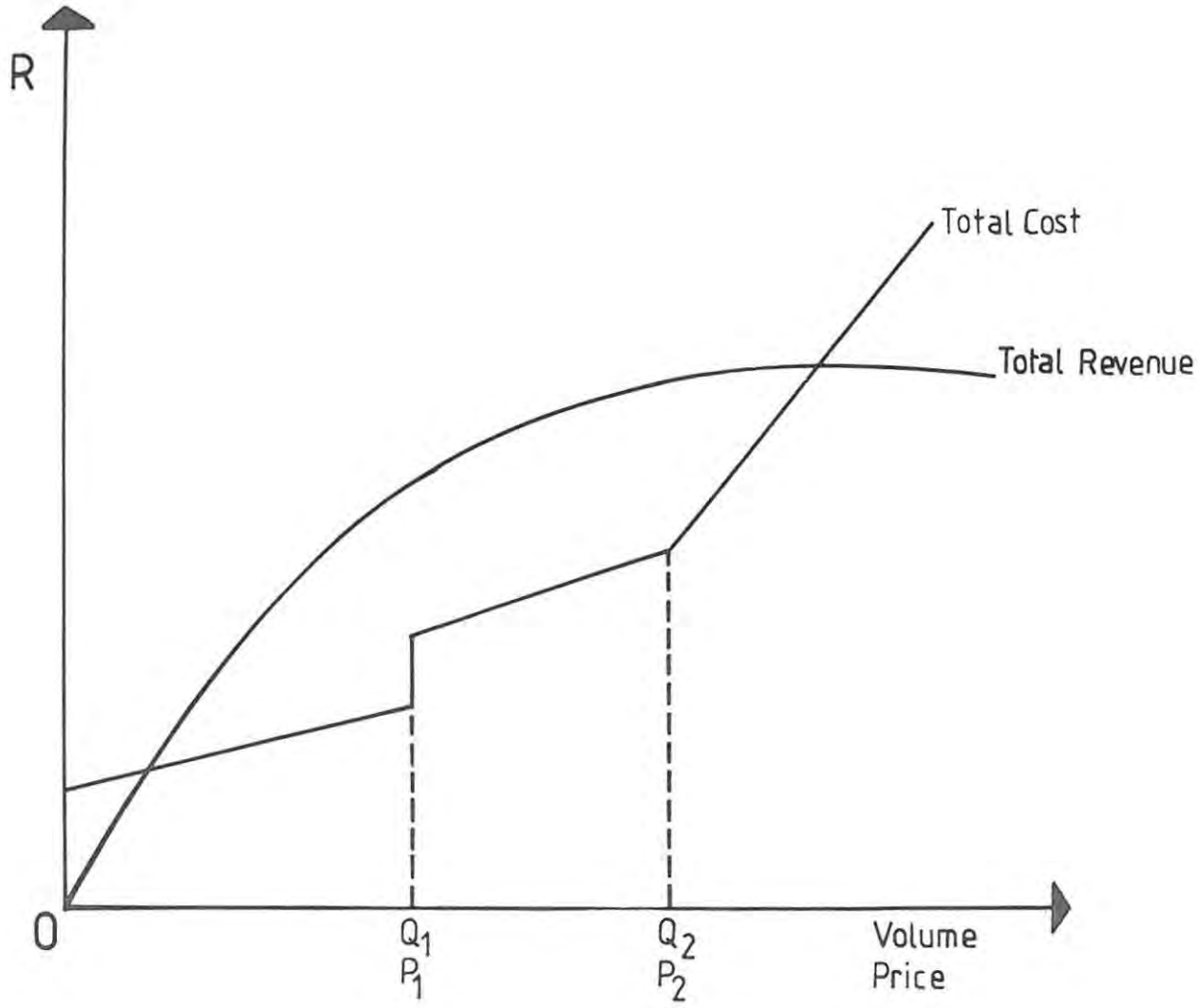

Figure 3

Figure 3 shows that the slope of the total cost curve is steeper after price P_2, accounting for the fact that more expensive packaging is used for each unit sold at prices above P_2.

In an extreme case of mix interdependency it could be that all the elements in the mix would have to change whenever any price change occurred. It has already been acknowledged in chapter three that it may not be feasible to draw up estimations of the firm's entire cost and revenue curves.[4]

Such a case would again call for the approach requiring cost and revenue estimations for only a few marketing mix options under consideration. Again, the cost benefit analysis suggested in chapter three would be necessary to determine the nature and extent of the research which would be suitable. Once again the scale of operation for the product under consideration would determine the size of the potential benefit and the level of cost which would be feasible.

4.6 Conclusion

Thus, we have seen that for both the sales forecasts and the estimates of the associated costs, all the elements of the marketing mix are taken into account. In the same paper in which Broadbent (1980) expounded on estimating price elasticities he also spoke of advertising elasticities and said that we must investigate how they effect volume and profit when changed "together" (534).

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4. See chapter 3 page 81 of this study.

The argument that one cannot consider the effect of price changes because there are other elements in the marketing mix is simply false. When a construction engineering firm builds bridges using a certain type of sand, it knows that sand is not the only element of the building mix. This does not stop it considering more efficient processes using a different texture of sand, even though that will cause other changes to be made to other elements of the building mix. If the strength of cement then, for example, must also change, that does not mean that the option of a progressive change is excluded. The fact that a mix of elements is involved is not peculiar to marketing. In all aspects of human endeavour, where a mix of inputs is used, a search nevertheless is made for the optimum mix.

In no sense can the difficulty in identifying marketing mix options for the estimations be considered to be an argument against the maximising model since a marketing mix will have to be chosen anyway. Furthermore, as we saw in chapter three, the selection of one option automatically entails the rejection of all other options and ignoring those options does not overcome the problem of assessing the value of those opportunities.

We have already seen in chapter three that part of the inputs available to a firm is the knowledge of opportunities open to it. The maximising model forces a commitment to an estimation of the results of the options and integrates the interdisciplinary data into an illustrative decision-making model. This study therefore submits that to preclude the use of the model on the strength of the false implication that the model excludes the non-price elements of the marketing mix, could be a manifestation of

Leibenstein's (1978) X-inefficiency.

This false argument brings to mind the imagery of Truu (1983). When arguing against another "straw man" argument he compared the author of the argument to Don Quixote who "attacked windmills because he mistook them for evil giants" (567).

Appendix 1

Extract from Dollery (1983: 227)

Importance of Competition Strategies

SAMPLE GROUP	MEASURE	AD., SALES PROMOTION & PUB. RELNS.	DISTRIBUTION CHANNELS & THEIR CONTROL	MANAGEMENT OF SALES PERSONNEL	PRICING	PRODUCT STRATEGY	TRANSPORT AND STORAGE	ROW TOTAL
LOW	COUNT	13	4	11	34	15	2	80
	ROW%	16,2	5,0	13,7	42,5	20,0	2,5	
	COLUMN%	41,1	16,7	25,0	40,0	22,2	40,0	
	TOTAL %	5,0	1,5	4,2	13,0	6,1	0,8	30,7
MEDIUM	COUNT	12	9	11	22	37	4	94
	ROW %	12,8	9,6	11,7	23,4	39,4	3,2	
	COLUMN %	38,7	37,5	25,0	25,9	51,4	60,1	
	TOTAL%	4,6	3,4	4,2	8,4	14,2	1,1	36,0
HIGH	COUNT	6	11	22	29	19	0	87
	ROW %	6,9	12,6	25,3	33,3	21,8	0,0	
	COLUMN %	19,4	45,8	50,0	34,1	26,4	0,0	
	TOTAL %	2,3	4,2	8,4	11,1	7,3	0,0	33,3
	COLUMN	31	24	44	85	72	5	261
	TOTAL	11,9	9,2	16,9	32,6	27,6	1,9	100,0

Chapter V: THE ARGUMENT THAT PROFIT MAXIMISATION MAY NOT BE THE SOLE OR MAIN GOAL OF THE FIRM

5.1 Introduction

Proponents of cost-plus pricing argue against the profit maximising model on the grounds that profit maximisation may not be the primary or sole goal of firms.

Garrison's (1985) exposition of this argument reads as follows:

> "A final limitation of the general models is that even if business firms had a precise knowledge of the slope of their demand curves, we cannot automatically assume that they would price in such a way as to maximise profits. The reason is that this might bring accusations from the public of 'profiteering' and 'charging all that the traffic will bear'. Rather than attempting to maximise profits, many firms seek only to earn a 'satisfactory' profit for the company. They think in terms of a reasonable return on the investment that has been made in the company, and they strive to set prices in such a way as to earn that return. The concept of a satisfactory profit underlies the actions of a great many business firms today" (503).

This study fully accepts that profit maximisation is not the only goal of the firm and that it is also frequently not the primary goal of the firm. However it disputes the claim that this precludes the use of the profit maximising pricing model in setting the firm's price and output levels.

Indeed, it will be argued that the coexistence of often competing goals makes the use of this decision making model all the more necessary and advantageous.

The modus operandi of this chapter begins by drawing attention to the fact that the maximising model illustratively summarises the volume, cost, revenue and profit effects of the different marketing mix options. It will be shown that this illustration can be used to achieve other objectives of the firm. It will then be argued that Garrison's (1985) explanation of the reason that firms may not maximise profits is an oversimplification of the problem and that this type of oversimplication leads to an omission in the standard managerial accounting texts' coverage on pricing of how the model is useful as a constraint-maximisation decision making model in the business environment of competing objectives. Reference will again be made to the empirical data of the two major pricing studies used in chapter two. An illustration will be given of how the maximising model can be used to advantage for a firm with many goals, taking into account all of the eight pricing goals which the National Association of Accountants considered to be the most important goals of the firm.

5.2 The Profit Maximising Model Can be Adapted into a Constraint-Maximisation Decision Model

At the outset it is important to remind ourselves that it was stressed in chapter one that it is not profit maximisation which is being defended in this study, but the profit maximising decision model. This distinction is vital because it is only when the model is properly perceived as a decision making model that its full illustrative value can be appreciated.

Referring to the general set out of the model in Figure 1 on page 10 it must be understood that the model illustratively summarises the revenue, cost, volume and profit which can be expected at each of the different prices under consideration. Each different price (which is associated with a whole marketing mix) yields its own volume, revenue and profit. All of these profits, volumes, prices and revenues are shown including but not only the profit maximising ones. This is the crux of the matter. Each different price must be seen as a different opportunity[1] - with the volume, revenue, cost and profit effect illustratively summarised. This summary can be used to indicate the price which best would achieve any goal, for example, revenue maximisation, or market share maximisation (volume) and further, it can be used to advantage to indicate the price which best would satisfy competing goals.

5.3 Revenue Maximisation

Baumol (1959) recognised the importance that firms attach to the value of their sales and, in what has been described as a "minor revolution in microeconomic theory"[2] he pioneered a model which sees revenue maximisation as the main goal of corporate management with the profit goal relegated to a constraint which management believes to be the minimum level of profit which the shareholders find acceptable. Graphically this can be represented as follows:

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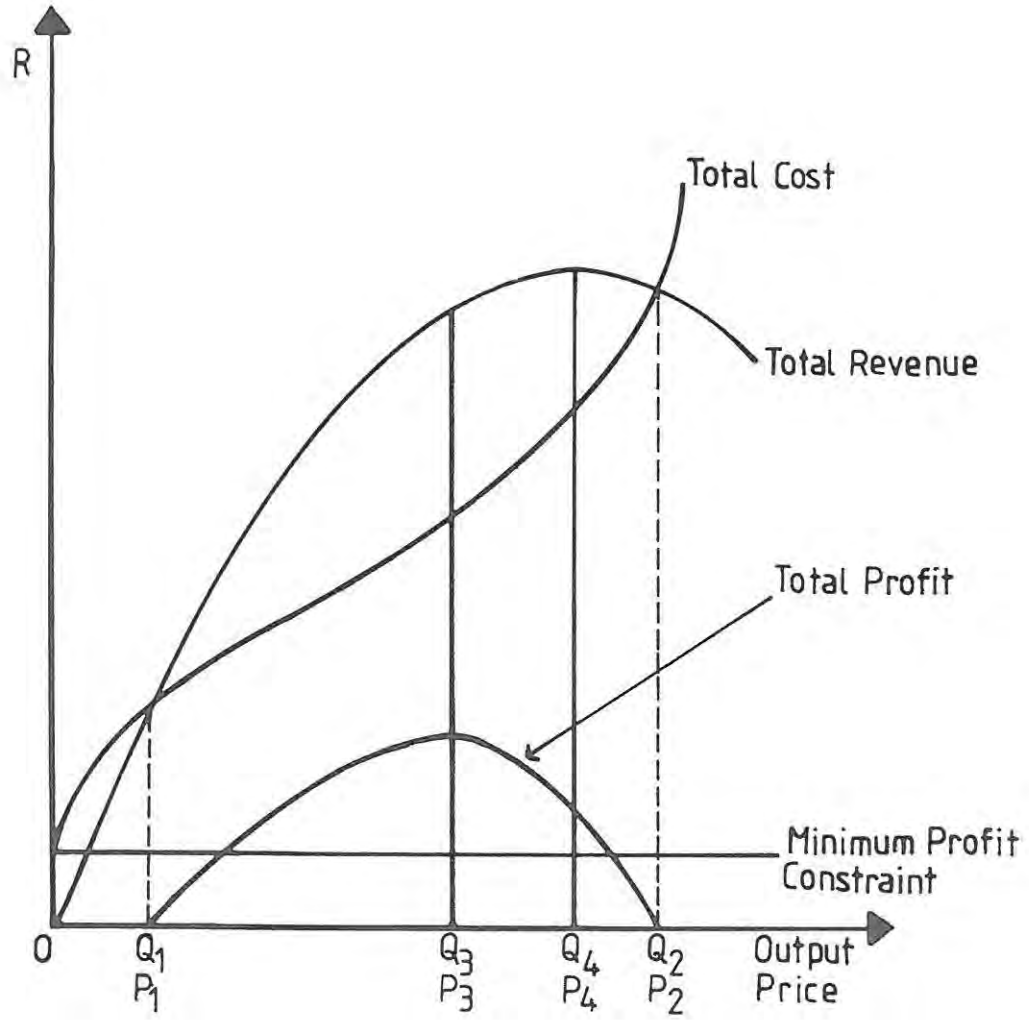
1. It must be noted that we saw in chapter 4 that Leibenstein (1978) saw the knowledge of opportunities open to the firm as part of the inputs of the firm which may or may not be used efficiently.

2. See Wildsmith (1973: 60).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Output
Price

Figure 1

Figure 1 indicates that revenue will be maximised at price P_4 and that the profit constraint will be satisfied at this price. The model shows that it would be feasible to set the price at P_4 although profit is maximised at price P_3. Of course, if the profit constraint were set at a higher level, with the minimum profit constraint intersecting the total profit curve before price P_4, then the model would indicate that revenue maximisation must be constrained to that point. Thus, clearly, the model can be used to achieve objectives of the firm other than profit maximisation. What is particularly noteworthy, and ironically so, is the fact that the above illustration shows how advantageous the model is in dealing with a target return on investment (the minimum profit constraint), together with other objectives. This is ironical because a target return on investment is sometimes argued as a goal which militates against the maximising model in favour of cost-plus pricing. Yet, the maximising model copes with the satisfaction of a target return on investment together with other goals.

5.4 Multiple Goals

Garrison's (1985) explanation of the reason that firms may not maximise profits is an oversimplification of the problem. He alleges that the reason is that profit maximisation might bring accusations of 'profiteering' and that firms therefore strive to earn what they consider to be a satisfactory profit. This explanation omits two whole schools of thought, namely, the managerial school and the behavioural school.

In chapter one we saw that the behavioural theorists perceived the goal of a satisfactory profit as consistent with a general trait of human

behaviour, namely, satisficing. We saw that human beings will frequently satisfice rather than undertake the more burdensome task of maximising. Leibenstein (1978) showed that we could expect this to be all the more prevalent in the case of an agent who is acting on behalf of his principal rather than for himself.

We also saw that with the growing separation of ownership from control of firms, the managerial school takes into account the fact that managers may maximise their own utility by pursuing different goals from those of the shareholders. Leibenstein (1978) also captured the essence of this when he said that "agents are likely to have different interests and effort levels from principals" (17). Furthermore, Galbraith (1967)[3] has argued that the different interest groups within management and employees of the large corporate enterprises will all have a bearing on decisions which are made.

Thus, within the firm there will be many competing goals pursued with different effort levels by different members of the organisation. It is only when this complexity is recognised that the value of the profit maximising decision making model can be fully appreciated.

5.4.1 Increasing a Minimum Constraint Level

Let us first consider the trait of agents satisficing with lower effort levels than principals. The use of the maximising model could illustrate to principals that profit options, other than the minimum profit constraint

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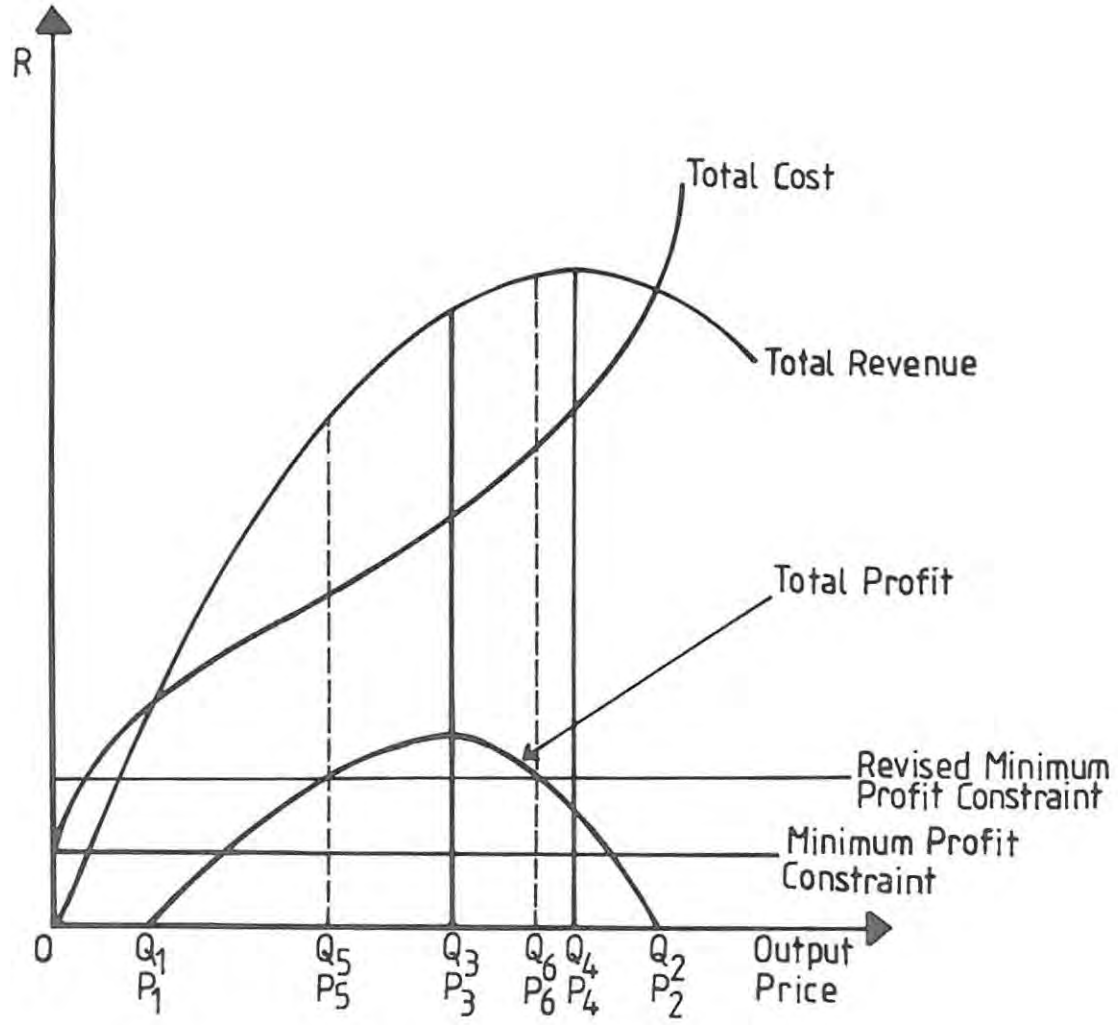
3. See Galbraith (1967: chapter 6).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Q_5 P_5
Q_3 P_3
Q_6 P_6
Q_4 P_4
Q_2 P_2
Output Price

Figure 2

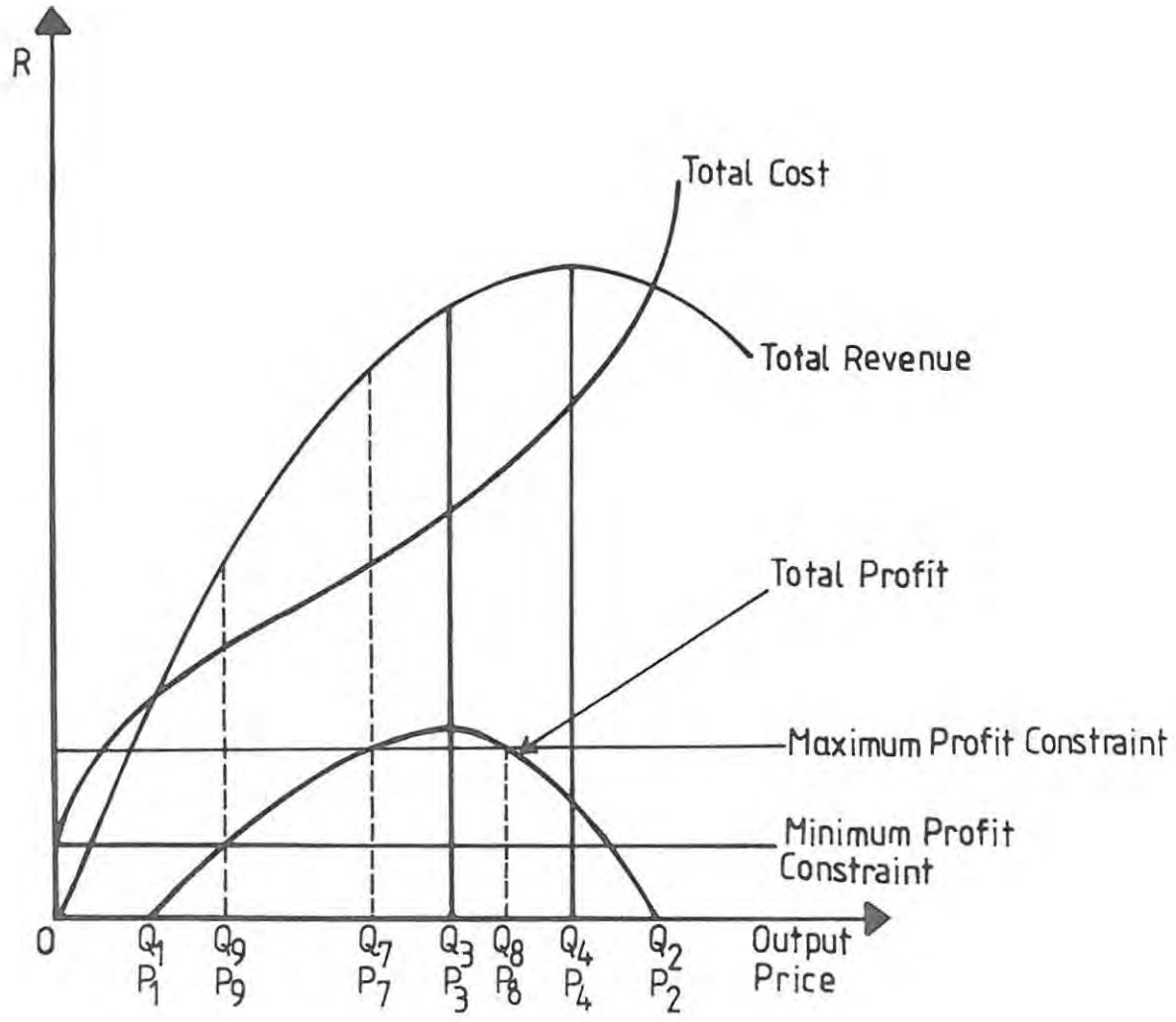
do exist, and they could attempt to raise the "minimum profit constraint" to a "revised minimum profit constraint" as shown in Figure 2.

The knowledge of the range of opportunities could cause the principals to attempt an increase not only in the constraint level but also in the degree of constraint concern. Leibenstein (1978) commented that "the less the degree of constraint concern, the less, on the average, an individual will feel a sense of obligation to what he views to be the interest of the firm" (26). Figure 2 shows that if the "minimum profit constraint" is raised to the "revised minimum profit constraint", prices will need to be set between price P_5 and price P_6.

5.4.2 Imposing a Maximum Profit Constraint

If the constraint on the profit maximisation goal was as simple as just the need to avoid a "profiteering" allegation as Garrison (1985) suggests, this could simply be accounted for in the maximising model by adding a "maximum profit constraint" at the perceived acceptable profit level as shown in Figure 3.

Figure 3 shows that in order to avoid a "profiteering" allegation, price must be set below price P_7 or above price P_8. Since the profiteering allegation is likely to be levelled at higher prices, this constraint would probably demand that the price be set between P_9 and P_7. Price P_7 would maximise revenue within this constraint.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Q_9 P_9
Q_7 P_7
Q_3 P_3
Q_8 P_8
Q_4 P_4
Q_2 P_2
Output Price

Figure 3

5.4.3 Satisfying Multiple Objectives

However, the problem is more complex because "firms pursue multiple objectives in setting their prices".[4]

In the study of American and Canadian firms conducted by the National Association of Accountants, the respondents were questioned on the importance of eight objectives often cited as important to pricing policies. They were asked to rate the importance of the objectives on a scale of 1 to 5, "where 5 indicated that the objective was of prime importance and 1 indicated that the objective did not play a role in pricing decisions".[5] Appendix 1 summarises the results of the responses received.

The study (Gordon et al, 1981) found that the firms "generally were concerned with a mix between satisfactory profits, return on investment, market share and total sales" (9). However, they did find differences between firms within this generalisation; for example, for "firms selling standard products, market share was the dominant"[6] objective, whilst firms dealing in custom made products were more concerned with return on investment and job security.

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4. See Gordon et al (1981: 9).
5. See Gordon et al (1981: 15).
6. See Gordon et al (1981: 15).

It is noteworthy that concern for total profits was the most highly rated pricing objective. It is also equally true that many other objectives must be taken into account.

Dollery (1983) found most South African manufacturing companies being primarily concerned with obtaining an acceptable return on investment and obtaining the maximum profits possible.[7] His study did show support for other objectives as well.

The usefulness of the model can best be appreciated with an illustration of its application in an environment in which a certain minimum level of profits is required simultaneously with the pursuit of all of the other seven objectives considered by the National Association of Accountants' study. In addition, the goal of a good image (not a "profiteer") will be included.

It will be assumed that the goal of a "return on investment" (ROI) imposes a minimum profit constraint and that the degree of satisfaction of the total profits goal is illustrated on the total profit curve.

The level of satifaction of the "sales" goal is illustrated on the total revenue curve. Market share is illustrated on the x axis (volume). The satisfaction of the concern with the price earnings ratio is consistent with the concern for total profits which is measured on the total profit line. It is likely that employee job security and industrial relations

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7. See Appendix 2.

will be served by a high volume of output which is measured on the x-axis, or, at least, with the maintenance of a minimum output level.[8]

Industrial relations could simultaneously be perceived as being dependent on good employee wages, salaries and benefits which could be seen to impose a minimum total cost constraint, which I have labelled the "revised total cost" curve. Lower selling prices (which are illustrated on the x-axis) would probably be conducive to a high stock turnover and would probably favour short-term liquidity.[9] The desire to avoid being seen as a "profiteer" imposes a maximum profit constraint. This can be illustrated graphically as shown in Figure 4.

Figure 4 shows that taking into account the maximum profit constraint (set to avoid a "profiteer" image) and the minimum profit constraint (set to satisfy a target return on investment) and a "revised minimum total cost constraint curve (set in the interests of industrial relations) the feasible price range is P_{12} to P_{14} and P_{15} to P_{13}. Since the maximum

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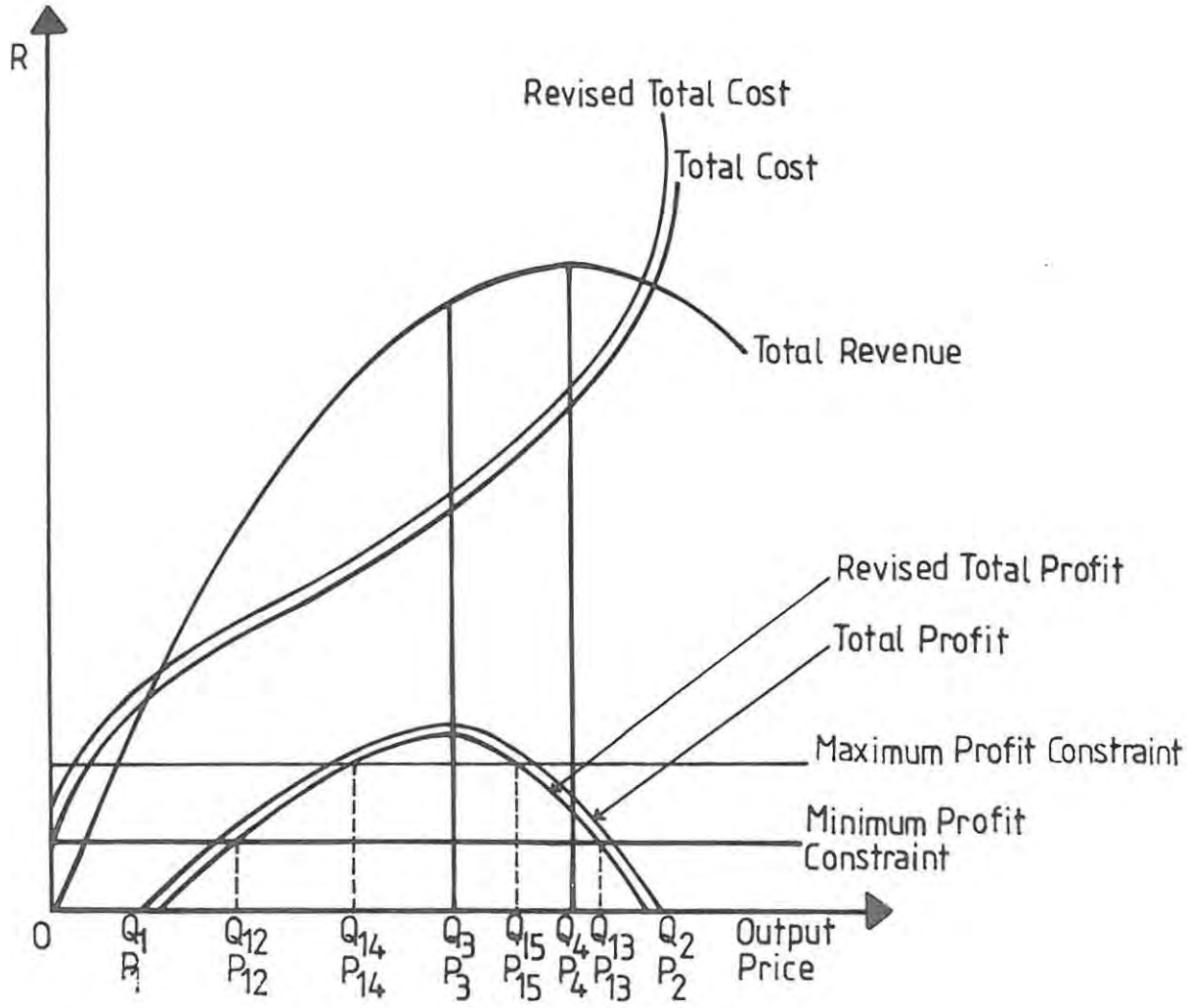
8. The employee level could also be threatened by a volume increase requiring a less labour intensive innovation. In that case, the concern for job security and industrial relations would have to be coped with by the model with the block-out of a range of prices and volumes. Figure 7 illustrates how the model can deal with a block-out of a range of prices.

9. It may be that expansion beyond a certain volume would require capital expenditure which would harm short-term liquidity. This could be taken into account in the model by a maximum constraint imposed at such a volume on the x-axis. Whatever the price range deemed necessary for any goal, it could be satisfied by imposing minimum and maximum constraint lines at either end of such a range on the x-axis. See Figure 6. The minimum and maximum constraints for liquidity would be derived best from cash flow forecasts.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Minimum Profit Constraint
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Q12 P12
Q14 P14
Q3 P3
Q15 P15
Q4 P4
Q13 P13
Q2 P2
Output Price

Figure 4

profit constraint is likely to have been aimed at curbing price increases, the feasible price range is likely to be P_{12} to P_{14}.

If those were the only minimum and maximum constraints set, the firm would have to seek to maximise its other objectives within this feasible area. Figure 4 shows that price P_{14} would maximise profit and volume (market share) and sales (revenue) and price/earnings ratio (determined largely by profit) and employee job security (volume of output).

However, if higher prices militate against the stock turnover rate and short-term liquidity, then the liquidity objective would best be satisfied at price P_{12}.[10] The situation of conflicting pressures on price to achieve conflicting objectives is better illustrated if the maximum profit constraint of Figure 4 is lifted as shown in Figure 5.

Now, Figure 5 shows that the minimum profit constraint, and the "revised minimum total cost curve" determine that the feasible price range is price P_{12} to price P_{13}. Within those constraints, profit will be maximised at price P_3 whereas sales (market share) and job security and industrial relations will be maximised at price P_{13}. Revenue will be maximised at price P_4 and liquidity (on the assumption made in Figure 4)[11] will be satisfied best at price P_{12}. Clearly, either a ranking of objectives or a compromise will be required in order to set the price and output levels.

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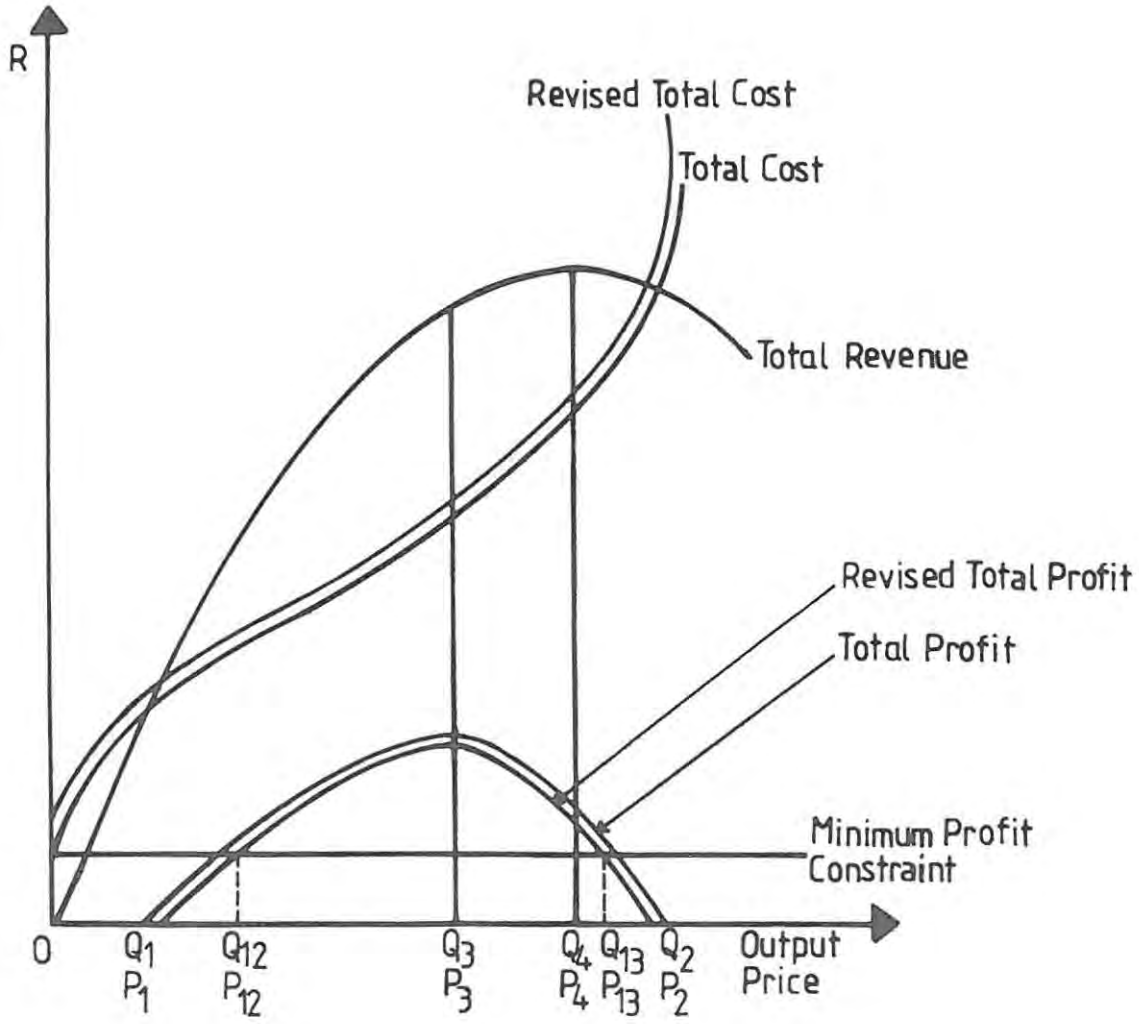
10. See footnote 9 on page 125.

11. See again footnote 9 on page 125.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Q_4 P_4
Q_{13} P_{13}
Q_2 P_2
Output
Price

Figure 5

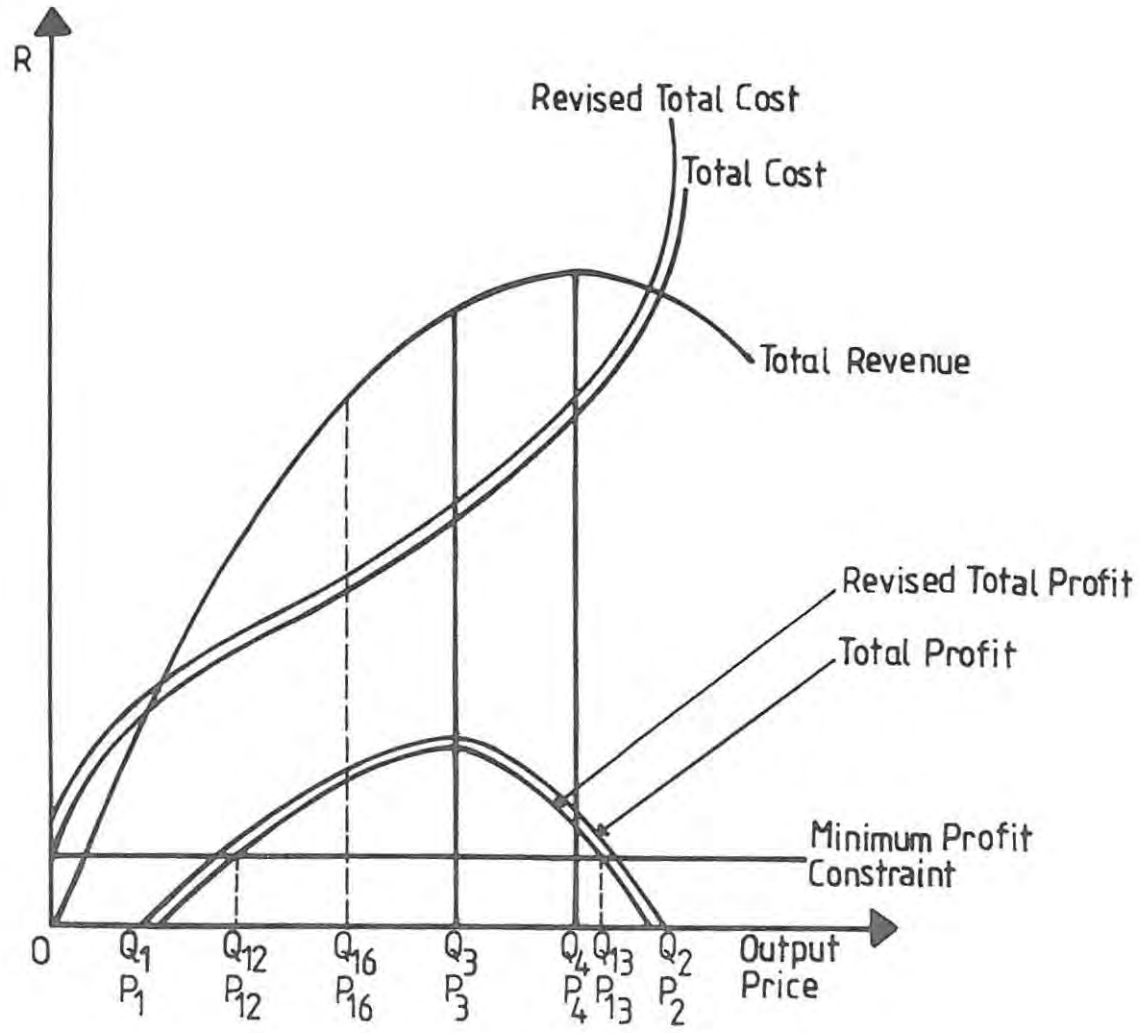
It must be stressed that Figures 4 and 5 indicate only the manner in which the model can be adapted to cope with competing objectives. If it was felt that an objective (for example, the liquidity objective) was best satisfied by a higher selling price rather than a lower one, then the model would be used in the same manner, except that it would illustrate that the liquidity objective is best satisfied at price P_{13} in Figure 5.

Also, any objective could be ranked as so important as to impose a minimum or maximum constraint. For example, the industrial relations objective or the job security objective could impose a minimum volume of output at volume of output Q16. This can be illustrated as shown in Figure 6.

Figure 6 shows that this additional constraint to those illustrated in Figure 5 would set the feasible price range between price P_{16} and price P_{13}.

Further if an objective blocked out a whole range of prices this could also be accounted for by the model. Assume that (further to the conditions illustrated in Figure 5) an objective rules out all prices in the range P_{17} to P_{18}. This could be represented diagrammatically by a block-out range of prices as in Figure 7.

Figure 7 shows that the feasible ranges of prices then become price P_{12} to price P_{17} and price P_{18} to price P_{13}.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Q_{12} P_{12}
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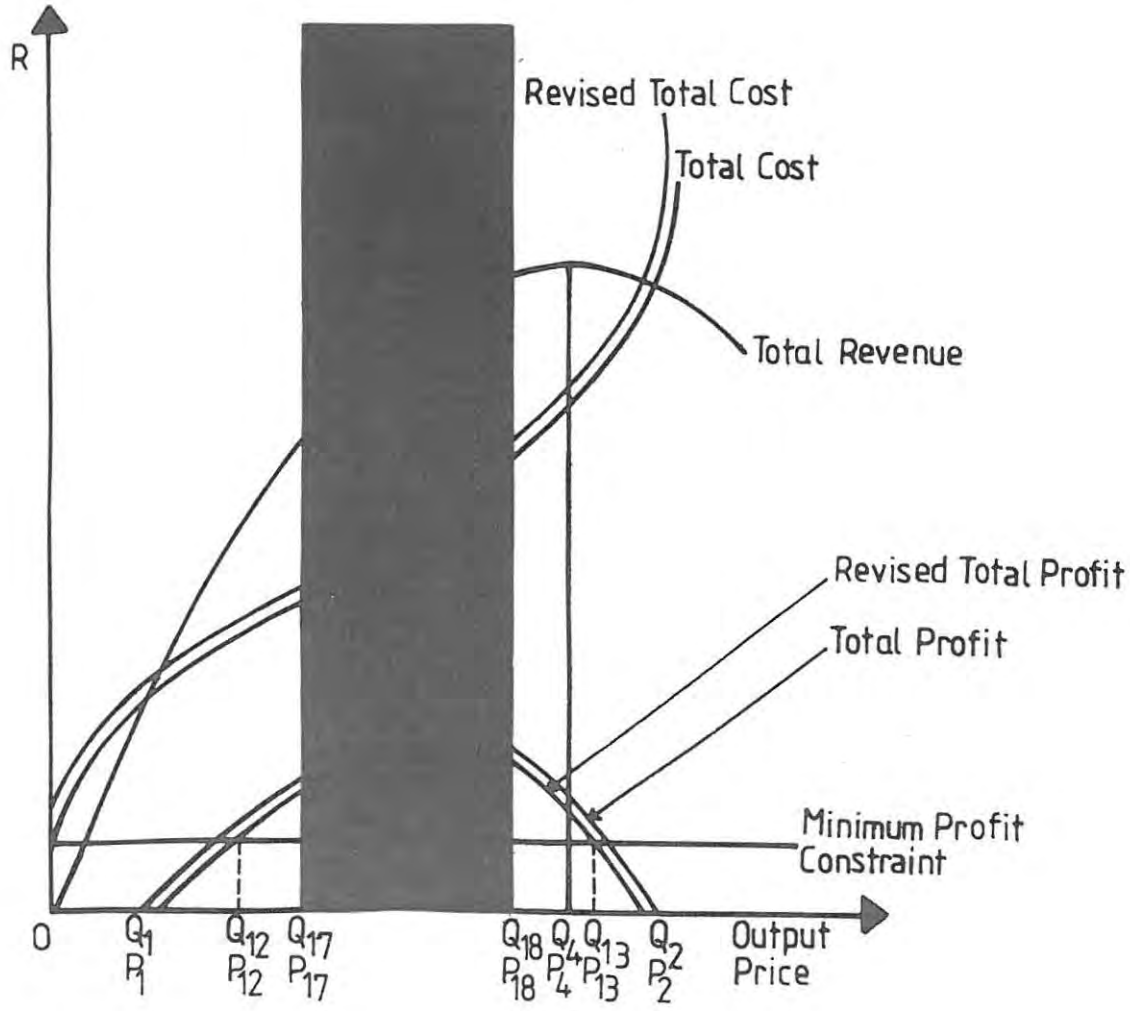
Q_4 P_4
Q_{13} P_{13}
Q_2 P_2
Output
Price

Figure 6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Q_{12} P_{12}
Q_{17} P_{17}
Q_{18} P_{18}
Q_4 P_4
Q_{13} P_{13}
Q_2 P_2
Output
Price

Figure 7

5.5 An Independent Role for the Accountant

An advantage of the profit maximising model is that it can be adjusted to a constraint-maximisation model as suggested here. Firstly, this provides for an illustration which indicates the feasible range for satisfying minimum and maximimum constraints. Secondly, it illustrates the effects of trading off the satisfaction of one objective against another.

The model's ability to illustrate the effects of trading off the satisfaction of one objective against that of another is an advantage which must not be underestimated. In chapter one we saw that with the growing separation of ownership from control of firms, Tricher (1979) suggested that the notion that shareholders control a company at the annual general meeting is a "fiction" (322). He suggested the need for a "governing body ... demonstrating the legitimacy of corporate activities to outside interests" (32).

Whilst in no sense commenting on the call for a governing body, when this is read together with the competing goals of the different interest groups of the firm, it does appear that there may be a role to be played by an independent party in the pricing decision, which is a pivotal decision to the scale and results of the firm's operations.

The National Association of Accountants has already suggested that its members may wish to consider expanding their role in the pricing decision. Their study observed that "whether or not management accountants should

expand the scope of the information they provide is a normative issue which was not part of this empirical study"[12]. Commenting on the information used in pricing, their study suggested:

> "Management accountants may wish to explore the possibility of providing some of this additional information to managers" (Gordon et al, 1981: 11).

As was suggested in chapter one of this study, the chartered accountant/certified public accountant, with his heritage of independence is uniquely poised for an independent role in the illustration of the trade-off effects of pursuing one objective in favour of another in the multi-disciplinary pricing decision. The present study suggests that further research should be conducted in order to determine the opinions of chartered accountants/certified public accountants as to the potential for an increased roll for members of the profession in the pricing decision and as to the nature and extent of that role.

5.6 Conclusion

The empirical evidence is that firms do pursue multiple objectives and that firms are concerned with profits.

This study submits that it is a considerable advantage that the profit maximising pricing model has the facility for constraint-maximisation decision making. The model is superior to the cost-plus approach in coping

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12. See Gordon et al, 1981: 11.

with conflicting objectives. Further, as seen in Figure 2, the maximising model can also be used to help raise a satisficing target and to raise Leibenstein's (1978) "degree of constraint concern" (26) on the part of agents.

It would also appear that there may be the potential for an increased role to be played by the chartered accountant/certified public accountant in the multi-disciplinary pricing decision.

Appendix 1

Extract from Gordon et al (1981: 16)

IMPORTANCE OF PRICING OBJECTIVES BY AVERAGE RESPONSE

Industry / Pricing Objective	Food Processing			Chemical			Transportation Equipment			Heavy Equipment			Totals			
	U.S.	Can.	Total	U.S.	Can.	Total	U.S.	Can.	Total	U.S.	Can.	Total	U.S.	Can.	Total	Std. Dev.
Total Profits	4.50	4.83	4.66	4.5	5.00	4.62	4.61	4.83	4.71	5.00	4.66	4.73	4.59	4.81	4.70	0.55
Total Sales	3.33	4.16	3.75	4.00	4.50	4.13	4.20	4.16	4.18	4.00	4.33	4.17	3.86	4.27	4.06	0.81
Market Share	3.83	4.33	4.08	4.00	4.50	4.13	4.80	4.00	4.40	4.00	3.83	3.84	4.14	4.13	4.13	0.83
Price/Earnings Ratio	2.33	1.67	1.99	1.37	2.25	1.65	3.20	1.83	2.51	3.00	1.83	2.20	2.27	1.86	2.06	1.31
Liquidity	2.83	2.42	2.62	2.37	3.00	2.56	3.20	3.83	3.51	3.33	2.83	2.96	2.82	3.02	2.91	1.40
Employee Job Security	2.82	2.00	2.41	3.25	3.50	3.30	3.60	3.83	3.72	3.67	4.01	3.85	3.27	3.30	3.29	1.15
Industrial Relations	3.33	2.00	2.67	3.37	3.51	3.38	3.81	3.67	3.74	3.67	3.50	3.52	3.49	3.13	3.32	1.17
Return on Investment	4.33	4.17	4.24	4.37	4.75	4.45	4.82	4.83	4.81	3.33	4.33	3.96	4.31	4.50	4.41	0.79

Appendix 2

Extract from Dollery (1983: 216)

Importance of Pricing Objectives

DISTRIBUTION OF OPTIONS RANKED FIRST BY RESPONDENTS

SAMPLE GROUP	MEASURE	ACCEPTABLE RETURN ON INVESTMENT	MAINTENANCE OF PRICE STABILITY	TARGET SHARE OF THE MARKET	MEETING OR PREVENTING COMPETITION	OBTAINING MAX. POSSIBLE PROFITS	AVOIDING PUB. & GOVERNMENT CRITISCISM	ROW TOTAL
LOW	COUNT	32	5	7	0	31	2	77
	ROW%	41,6	6,5	9,1	0,0	40,3	2,6	
	COLUMN%	19,9	31,3	53,8	0,0	46,3	100,0	
	TOTAL %	11,9	1,9	2,6	0,0	11,5	0,7	28,6
MEDIUM	COUNT	63	7	3	4	18	0	95
	ROW %	66,3	7,4	3,2	4,2	18,9	0,0	
	COLUMN %	39,1	43,7	23,1	40,0	26,9	0,0	
	TOTAL%	23,4	2,6	1,1	1,5	6,7	0,0	35,3
HIGH	COUNT	63	7	3	4	18	0	95
	ROW %	66,3	7,4	3,2	4,2	18,9	0,0	
	COLUMN %	41,0	25,0	23,1	60,0	26,9	0,0	
	TOTAL %	24,5	1,5	1,1	2,2	6,7	0,0	36,1
	COLUMN TOTAL	161 59,9	16 5,9	13 4,8	10 3,7	67 24,9	2 0,7	269 100,0

CHAPTER VI: CONCLUSION

The present study began with a review of the environment in which the pricing decision is made. To this end we examined the alternative pricing theories of managerial accounting literature and the three major approaches adopted by economists to the study of micro-economic theory from which the accountants' pricing theory is derived. In this examination we found that the management accounting pricing literature largely overlooked two whole schools of thought, namely, the behavioural and managerial schools. It generally supports the widespread exclusion of the application of the profit maximising pricing model on the grounds of four main arguments which are levelled against the model.

We noted the behavioural theorists' argument that satisficing is a well established trait of human behaviour and the managerial school's focus on the growing separation of ownership from control of the firm and the multiplicity of goals within the firm. Leibenstein (1978) encompassed vital principles of both these schools when he pointed out that not only could we expect agents to have different interests from their principals but that we could also expect them to have different effort levels.

Conscious of the resulting potential for goal incongruence we decided to examine carefully the arguments levelled against the profit maximising pricing model in order to determine whether its exclusion could be symptomatic of Leibenstein's (1978) x-inefficiency.

What were the findings of the examination of the arguments levelled against

the maximising model?

Chapter two concluded that the argument that the model is only applicable under conditions of monopoly and monpolistic competition is incorrect. It was found that there is scope for the application of the model in setting volume of output in all market structures and there is also scope for the use of the model in setting price under some of the many structures of oligopolistic competition.

Chapter three concluded that the argument that the information requirements of the cost-plus approach are more easily met than those of the maximising model's approach is illusory in that both methods are based on essentially similar estimates of cost and revenue data. Furthermore, it was shown that the maximising model's approach is superior to the cost-plus approach in coping with the uncertainties inherent in estimations and that, in any case, much progress is being made in the field of making such estimations. Mindful of the advantages of the model and the fact that it is a more effortful approach to pricing decision making, it was concluded that the exclusion of the model could be symptomatic of Leibenstein's (1978) x-inefficiency.

Chapter four found that the argument that the maximising model excludes the non-price elements of the marketing mix is, quite simply, false.

Chapter five concluded that in no sense at all does the existence of a multiplicity of goals preclude the use of the maximising model. Indeed, it was shown that as a constraint-maximisation decision making model, the

model is particularly well suited to the complexities of multiple goal incongruence. This corroborated the earlier finding that the model's exclusion from pricing decision-making could be symptomatic of Leibenstein's (1978) x-inefficiency. The goal incongruence of the different constituencies of the firm also led to the conclusion that there may well be a role to be played by the chartered accountant/certified public accountant as an independent party in the multi-disciplinary pricing decision.

What are the policy proposals which can be deduced from these findings in order to make some contribution to applied knowledge?

In general terms, the policy implications are two-fold. Firstly, the standard coverage of the pricing of manufactured products in the managerial accounting literature must be developed and corrected. Secondly, further research must be conducted in order to determine the nature and extent of the role to be played by the chartered accountant/certified public accountant in the pricing decision.

The literature must be developed to encompass the vital principles of the behaviourial and managerial schools' approaches to the study of the firm and Leibenstein's (1978) x-inefficiency concept. It must be revised to correct the errors discussed above in the arguments most commonly levelled against the profit maximising pricing model.

The research into the potential role of the chartered accountant/certified

public accountant should be designed to determine whether his role should be in his capacity as an independent party or in the sphere of providing more information for this multi-disciplinary decision or in both of these areas. It should also seek to establish whether any significant differences of opinion exist between the different constituencies of the firm and the different genre of chartered accountants as to the proposal of an increased role by the profession in the pricing decision and as to the nature and extent of that role.

A common theme throughout the present study has been the assertion that the profit maximising pricing model demands a commitment of the decision makers' minds to the different pricing options and an articulation of the expected outcomes of the options. The power of the model is that these articulated thoughts give the firm knowledge of its opportunities and the ability for sustained thought on the pricing decision.

It is fitting then to conclude this study in the words of Polyani (1973). Reconciling the increase in mental powers derived from formal instruments of thought with the intuitive act of knowing, he issued the following caveat:

> "If everywhere it is the inarticulate which has the last word, unspoken and yet decisive, then a corresponding abridgement of the status of the spoken truth is inevitable" (71).

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