THE PRICING DECISION
OF AN
AUTOMOBILE AGENCY

By
BARTON WILLIAM-POWLETT

B.A., Oxford University, England (1961)

SUBMITTED IN PARTIAL FULFILLMENT
OF THE REQUIREMENTS FOR THE
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January, 1965

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on Graduate Students

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SUBMITTED TO THE ALFRED P. SLOAN SCHOOL
OF MANAGEMENT ON JANUARY 18, 1965
IN PARTIAL FULFILLMENT OF THE
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Many consumer durables, and automobiles in particular, are bought at negotiated prices. Most of these goods can be bought by retailers in unlimited quantities and at constant prices. This thesis describes an investigation of the bargaining process. An attempt is made to discover how that price is set below which a retailer will refuse to sell.

Economic arguments are outlined to show how theoretically one would expect the retailer to be prepared to sell at any price that contributed to fixed costs. The pricing procedure of an automobile dealership, which is then described, suggests that in most situations the dealership will not sell an automobile except at a price which contributes substantially to fixed costs. Further more, the minimum acceptable price was found to be highly volatile, varying from hour to hour.

The method adopted for this study of the dealership's pricing procedure was to build simulation models of the decision processes of the two Sales Team Managers who were responsible for accepting or rejecting the deals negotiated between salesmen and customers. The simulations show how the Sales Team Managers simplify the problem into a search for a single minimum acceptable figure, and then derive that figure by applying a complex set of decision rules to data currently available to them.

Analysis of this process suggests that the complex decision rules evolve randomly and survive just as long as the results of their implementation continue to satisfy the Sales Team Manager's superior and subordinates. It is argued that adoption of the simple economist's rule of accepting any deal that contributed to fixed costs, could result in more profitable operations.

Title: Associate Professor of Industrial Management.
Professor William C. Greene  January 18, 1965
Secretary of the Faculty
Massachusetts Institute of Technology
Cambridge, Massachusetts 02139

Dear Professor Greene,

In accordance with the requirements for graduation, I herewith submit a thesis entitled "The Pricing Decision of an Automobile Agency".

I would like to express my appreciation to the owners and managers of the automobile dealership in which the research for this thesis took place. I am particularly grateful to the two Sales Team Managers, who figure so prominently in these pages, for their co-operation and for their endless patience in answering my questions.

I would also like to thank Professors William F. Pounds and Geoffrey Clarkson for their helpful suggestions and comments, and my wife for her encouragement and assistance.

Sincerely yours,

Barton William-Powlett
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CHAPTER I

STATEMENT OF THE PROBLEM.

INTRODUCTION.

Bargaining over prices is associated in many people's minds with oriental bazaars. Yet this primitive custom still plays a large part in our more sophisticated Western economies.

Americans spend more than twenty billion dollars 1 on new cars each year and perhaps as much again on used cars, all at negotiable prices. One can bargain in discount houses for most other consumer durables even though the very same items will be sold at regular list prices across the street to less price conscious customers.

Two conditions appear to be necessary but not sufficient for bargaining to take place. There must be no price agreements among sellers and there must be no legal restrictions on selling below list price.

2 Even where legal restrictions such as resale price maintenance apply, the law may be evaded if other conditions hold. For example wherever used goods are traded in for a new item, it is impossible to prevent dealers offering inflated trade-in prices.
If these conditions are fulfilled, then the proportion of sellers who are prepared to negotiate will vary with the price of the good or service for sale. Every consumer has a price above which he becomes price-conscious and will feel it worth while to shop around and to negotiate. For virtually all consumers an automobile is above this price. Therefore all automobile dealers will negotiate prices. Many people do not bother to shop round for goods in the £100-£200 range and therefore televisions, washing machines, etc., can be bought at fixed prices.

It is not known what percentage of consumer spending takes place at negotiated prices. It can only be suggested that it is not inconsiderable. This thesis discusses a particular aspect of the bargaining process.

There are two parties to every bargain, a customer and a salesman. The bargaining process determines either that price at which the customer is prepared to buy, or that price below which the salesman is not prepared to sell. It is this second price decision with which we are concerned in this study. How does the salesman, or if he is not his own boss, his employer, decide at what price he is not prepared to sell?

3 The only exceptions are dealers selling cars such as Volkswagens where demand exceeds supply.
THE FORM OF THIS STUDY.

In Chapter II the problem is discussed in economic terms. Some economic theories and assumptions are examined and used to develop a prediction of how the minimum acceptable price will be set.

Part II, Chapter III to VI, describes a detailed study of the actual decision process in a particular automobile dealership. Chapter III sets the stage. Chapters IV and VI describe the decisions of the General Sales Manager and two Team Managers.

In Part III the implications of these detailed studies are analysed and related to the economic predictions of Chapter II. The practicability of applying the economic theory prescriptively is examined in Chapter VII. Chapter VIII presents a summary and conclusions.
CHAPTER II

ECONOMIC ANALYSIS AND PREDICTION.

THE CLASSICAL APPROACH.

Alfred Marshall, as long ago as 1890, suggested that "there is in each trade and in every branch of each trade a more or less definite rate of profits on turnover which is regarded as 'fair' or 'normal'". This normal profit is a net profit after all expenses, both fixed and variable. He goes on to explain how "the whole of the normal profits enter into true or long-run supply price". This normal profit was to account for the fact that companies in competition did not cut profits to the bone. Normal, accepted, fair, traditional profits would neither tempt new individuals to drop their price to attract a greater volume of demand. The alternative to this gentlemanly margin of profit was a price war.

Samuelson cannot accept the efficacy of this normal profit. He does not feel that it necessarily keeps the number of companies in a trade down to a level where demand is sufficient to allow profits. In his discussion of imperfect competition he states, "Many fields are characterised by an excess number of firms. Most


2. Ibid., p. 619.
of these do a small volume of business and remain in the industry only until they have lost their capital." In answer to the question "why do new firms enter the industry in the face of the fact that most existing firms are making losses?" he can only suggest that it is "partly out of ignorance and partly because 'hope springs eternal'."

Both Marshall and Samuelson are talking about trades in which a fixed price is charged. Marshall shows how price is set to give a normal profit on turnover. Samuelson shows how normal, or even below normal, profit is not a sufficient deterrent to new-comers, and how supply will therefore expand to or remain at a point where normal profits cannot be earned. But what happens if instead of a fixed price all prices are subject to bargaining, and instead of Samuelson's U-shaped supply curve, costs were constant whatever the volume? Then it would seem that theoretically there would be even greater instability.

If following Marshall and Samuelson, one assumes that all companies attempt independently to maximize their profits, then it will logically follow that normally the minimum acceptable price will be only marginally above direct cost. Companies will fix this minimum acceptable price either at a point just low enough to attract customers to take up the total supply or at a point marginally above

direct cost, whichever is greater. Where supply is not a constraint--
the normal situation for consumer durables in the United States--
no price will be low enough to sell the total available supply.
Therefore companies will be prepared to accept any price above their
direct selling cost and it follows that profits will depend entirely
on the wit of the salesman and the irrationality of the customers.
If all customers were hard bargainers they should be able to get the
price down to almost cost.

The alternative situations of constrained and unconstrained
supply are shown in Figure I.

Fig. I (a)                                             Fig. I (b)

In Fig. I (a) the supply curve (SS) shows an absolute limit
to supply. The seller will set his minimum acceptable price at OA.
At this point he will just sell all his stock and is certain to make a gross margin of at least SA and after allowing for fixed cost (FS), a profit of AF on every article sold. This we might call the fixed 'return to scarcity'. Over and above this profit the seller will make the profit represented by the area between the irregular curve PB and AB. This we might call the 'return to wit'. Customers, though prepared to pay prices specified by the demand curve DD, if they had to, would only be willing to pay OA if they this price was acceptable to the seller. The vertical distance between PB and AB shows the extra money some customers were persuaded to pay by the crafty salesman.

In Fig. I (b) supply is unlimited. The seller will therefore be prepared to accept any price which contributes to fixed cost (FS). He will set a minimum at cost (OS). There is no 'return to scarcity'. Any margins achieved depend on the wit of the salesman and the irrationality of the customer. There can be no 'normal' profit. It is only by duping the customer that overheads can be covered.

The crucial point is that, even if there were only two retailers of a particular article in the community, if demand for that article was known by the sellers to be one article less than supply, then profits could be eliminated if all customers were determined bargainers.

Consider two situations. In the first one there are two retailers
of widgets in a community where we assume that all consumers are hard bargainers. The widgets are bought from a single manufacturer at a set price. The monthly quota per dealer is ten. In this case the two retailers have an agreement to sell at the same fixed price, which gives each a normal profit. In January the fixed price is just low enough to attract twenty buyers and each retailer has in stock his monthly quota of ten. Twenty are demanded and twenty sold. In February only eighteen are demanded at the set price. By chance each retailer sells nine. The lost profit for each dealer amounts to the normal profit on one item.

In the second case the conditions are the same except in two respects; this time the retailers have no agreement and are prepared to bargain. They also have perfect knowledge and can forecast accurately. In January knowing that their joint stocks amount to twenty, with perfect forecasting they each independently set a minimum price that will just attract ten buyers. This minimum price would be the same as the fixed price in the first case, because in both cases it is just sufficient to attract the twentieth buyer. In February the companies forecast that sales will be eighteen at the previous minimum price and that only one more will be sold even if they drop their minimum price to cost. What happens? Neither retailer is prepared to let a customer walk out of his shop for fear that a sale will be lost to his competitor. The clientele of hard

a mass-produced consumer durable
bargainers will play one retailer off against another and each and every sale will be made at a price that only contributes marginally to overheads. The companies will make no profit at all. They will scarcely make an impression on the overhead. This is shown diagrammatically in Fig. II

\[\text{Fig. II Price setting diagram.} \quad D_J = \text{January Demand.}\]
\[D_F = \text{February Demand.}\]

GAME THEORY.

Salesmen may be persuasive and customers highly irrational, but it would seem strange if companies who according to our theory rely entirely on this combination, not only covered their overheads but in general made larger profits than regular fixed price retail outlets. It is not known beyond doubt that this is the case, but there is at least some evidence that it may be true. The automobile
business, as has been remarked above, is perhaps the only retail business where bargaining is universal. Yet Fashigan using figures for years 1938 to 1955 concludes that "The profit rates of General Motors and (quite likely) Ford Dealers have generally exceeded the profit rates of incorporated retail firms". As further evidence of profitability he cites the rate at which companies went out of business. Figures were only available for General Motors Dealers. He states that "It would appear that the turnover rate of incorporated firms has tended to exceed the turnover rates of General Motors Dealers (both corporated and unincorporated)."

A possible solution to this paradox is found in the Game Theory. While in one short game a competitor will always be motivated to adopt the strategy that maximizes his immediate pay-off, in a game with an infinite number of plays, competitors may act differently. If independent maximizing strategies result in an equilibrium point that is a joint minimum, competitors may take a long view and pursue a strategy which, if followed also by their opponent, will result in a joint maximum. The threat of retaliation by competitors may be sufficient to prevent players from adopting independent maximization strategy. As Shubik puts it, "In general we observe that the threat of reprisal in a game of economic survival creates equilibria which do not exist in the subgames of finite duration. It may even be possible.

6 Ibid p. 22.
to have a joint maximum enforced non-cooperatively".  

However, as he goes on to say, "whether this can happen depends upon the willingness and ability of firms to take 'police action' against those who break faith". In the kind of business that we are considering this policing is particularly difficult. Bargains that are struck are private contracts between buyer and seller. The price is not publicly known as it is when prices are fixed. Furthermore, as Pashigan points out in the case of the motor industry, any such policing has got to cover so many factors which contribute to the profit margin—finance charges, accessory prices, and perhaps most difficult of all, the price allowed on a trade-in.

CONCLUSION.

Both traditional economics and Game Theory point to the conclusion that in a competitive bargaining situation a company will accept, if it can persuade the customer to part with no more, a price only marginally above direct cost. Part II of this thesis describes in detail how a company was found to behave in practice.

8 Ibid.
9 Pashigan, opus cit. p. 65.
PART II

CHAPTER III

THE ABC COMPANY.

CHOICE OF RESEARCH SUBJECT.

An automobile dealership was chosen for this study. It has all the relevant characteristic of a bargaining retailer, while at the same time performing a relatively straightforward operation. A dealership sells only one manufacturer's products. Every deal is very much like another, thus making the study easier. A retailer of photographic equipment, for example, would not have this simplicity. He would be selling the products of a large number of manufacturers, on each of which he would be offered different terms. An automobile dealership buys at one price only from its manufacturer, whereas retailers in other fields may be able to obtain volume discounts, or if large enough may even be able to bargain over price with the manufacturer. A further complication avoided by choosing an automobile dealership is that of competing against fixed price as well as negotiating outlets.

THE COMPANY.

The impressive showrooms of the ABC Company are located alongside those of other major dealerships in the center of a metropolitan area. It is the kind of dealership that is visited by shoppers from out
of town who want to buy at city prices or want to check the price which they have been given by their local dealers. The ABC Company, though long in the automobile business, had only recently moved to this location and acquired a Ford franchise. Sales had been disappointing since the move and a new General Sales Manager had been hired in an effort to boost volume.

Figure III shows the organization structure at the time of this study. New car salesmen were divided into two teams under Team Managers. 'B' Team Manager, Bruce, was brought in by the General Sales Manager shortly after his arrival. He was an acquaintance of the General Sales Manager and, like him had run his own business up to the time of his employment with ABC.

\[
\begin{align*}
& \text{MR. ABC AND SON} \\
& \text{GENERAL SALES MANAGER} \quad \text{SERVICE MANAGER} \\
& \quad \text{'A' TEAM MANAGER} \quad \text{'B' TEAM MANAGER} \quad \text{USED CAR MANAGER} \quad \text{SERVICE DEPT.} \quad \text{PARTS DEPT.} \\
& \quad \text{SALES} \quad \text{SALES} \quad \text{SALES} \\
\end{align*}
\]

Figure III. Organization Structure at ABC Company.
'A' Team Manager, Albert, was an old time employee of ABC. His experience was in selling used cars and he had only been moved from Used Car Manager a few weeks before this study was started. Salesmen were paid a straight 25% of the gross margin on a sale.

THE SALES PROCESS.

The Salesmen on the floor are the front men in an automobile dealership. It is they who meet the customer as he comes through the door, assess his needs and endeavour to arouse his enthusiasm for a particular car to the point where he is ready to sign a contract. If a salesman can hold the customer's attention for long enough, at some point the moment will be reached when the customer will turn the conversation to price. At ABC this is the cue for the salesman to guide the customer to his office.

If the customer would be trading in a car, the Used Car Manager is asked to make an assessment. The salesman will stall on prices until he gets the coded trade-in value from the Used Car Manager. The bargaining will then begin in earnest. The upper limit that the salesman will ask is the full manufacturer's 'suggested price' less the trade-in value. If the customer is at all worldly wise discounts will soon be offered bringing the gross margin down to somewhere a little above the average price the salesman has recently been receiving. If the customer cannot be persuaded to meet the salesman's price, the
salesman may ask the customer to sign a contract at the price he wishes to pay. This at least shows that the customer is a serious prospect. As soon as the contract has been signed, at whatever price, responsibility for further negotiation switches from the salesman to his Team Manager.

The Team Manager has to decide whether to accept the deal, ask for more or reject it. If he decides to ask for more he can either do it through his salesman or he can join in the bargaining himself. Then at some point he has to make the decision whether to accept or reject the deal. He is responsible to the General Sales Manager for this decision.
CHAPTER IV

THE GENERAL SALES MANAGER'S CALCULATIONS.

THE CALCULATIONS.

The first person to explain how ABC set its price was the General Sales Manager. He explained how the overheads are projected monthly and divided 50%, 10%, 20% and 20% between New Car Sales, Used Car Sales, Service and Parts Department. To the figure for the New Car Department, with which alone we are concerned, is added an allowance for 'normal' profit. This normal profit allowance will be an optimistic figure which will vary according to the season in line with historical results.

At the beginning of each month the combined overhead and profit figure is communicated to the two Team Managers as the month's objective. Each team is responsible for half the total. This, in the General Sales Manager's words, is 'to encourage positive thinking'. The optimistic nature of the profit objective ensures that the combined overhead and profit figure will seldom, if ever, be achieved by the Company as a whole. To expect this figure to be achieved by the teams alone, when 30%–40% of sales are made personally by the Managers and owners and do not contribute to the teams' totals, is more wishful than positive thinking. The expectations bear little
relation to reality or past performance.

As well as explicitly stating the gross margin objective for each Manager, the General Sales Manager makes suggestions about how the gross figure should be split down by units and margins per unit. At times of the year when profits have been high an optimistic figure for next month's unit sales is divided into the month's overhead and the quotient will be suggested as a minimum acceptable margin. The General Sales Manager in this case is setting a minimum which, given that sales are in the neighbourhood of his prediction and that not all customers will succeed in buying at the minimum acceptable price, will ensure a "normal" profit margin.

At times of the year when sales are poor this "normal" margin is approached in a different way. The combined overhead and "normal" profit allowance, described above, is divided by an estimate, based on current results, of the average margin for the coming month. The quotient in this case is the suggested unit sales objective. The Team Managers will be given inly the estimated average margin and will be expected to set their own minimum acceptable levels. The General Sales Manager is here setting an average price which will give a "normal" margin on turnover, but it is almost certain that demand will come nowhere near the unit sales quote. As has been pointed out above the company as a whole is unlikely to achieve this objective. It is
almost an impossibility for the Sales Teams alone. This supports Samuelson's theory that a cost + normal margin price will be set but not achieved because of inadequate demand. An example will make this method of price setting more clear.

In the month of December a quota was set of 150 cars at $250 gross margin per unit. The previous December 110 cars has been sold. Actual sales by the two teams turned out to be 33 and 37, a total of 70, less than 50% of the quota. This looked like and was treated as a pretty poor performance by the Team Managers, though in fact according to previous year's sales they were their usual 60% - 70% of total company sales. Stunned by this apparent failure the General Sales Manager decided that in January a lower margin must be set to encourage salesmen to sell more cars. A figure of $200 was chosen which when divided into the combined overhead and normal profit allowance gave a quota of 200 units for the month. Sales in the same month of the previous year, only slightly below the seasonal trend of the industry, were eighty-nine. Even if one allows that based on this figure the mean prediction would be 100 cars, one would not expect the Sales Team to generate more than about sixty sales, 30% of their quota. By the end of January both Team Managers find themselves out of a job.
RELEVANCE OF THE CALCULATIONS.

It might be objected that it is unreasonable to compare this year's sales figures with last year's or last month's if the General Sales Manager is suggesting a change in the required minimum. A drop in average margins from $250 to $200 might bring about the necessary expansion of sales from 100 to 200 units. This is not denied but nonetheless there is every reason to doubt that sales will expand as a result of the General Sales Manager's suggestion, because the General Sales Manager's suggestion is not a factor in the decision to accept or reject deals. As it will appear in the analysis of the Team Manager's decision the General Sales Manager's suggestions are not relevant variables.

The reasons for this are several. In the first place the quotas are unrealistic. Their only function is to indicate to the Team Managers the extent of the pressure which the General Sales Manager is about to exert on them. The Team Managers are used to being under pressure to produce more profits, and within limits new pressure will not cause them to reject rules for accepting deals which have enabled them to survive in the past.

1 See Chapter IX for a case where these limits are exceeded.
It appears that the profit objective, set by the General Sales Manager, has some use as a control device. He can tell on a day to day basis whether the company is making a profit on new car sales. This same objective gives some indication to the Team Managers of how they stand with the General Sales Manager. However, the General Sales Manager's breakdown of the profit figure into unit quotas and suggested margins is not relevant to the pricing decision of the company. At various times one Team Manager was not aware that any specific margin had been suggested, the other though knowing the figure, thought it was a net figure whereas it was intended by the General Sales Manager to be gross. In neither case was their action affected.

In these circumstances the General Sales Manager's setting of objectives will not be studied in detail. We will go on to describe the decision processes of the Team Managers. It is they who make the executive decision.
CHAPTER V

THE TEAM MANAGERS' DECISION

THE APPROACH.

NATURE OF THE DECISION

Neither Team Manager knew how he decided what action to take on a deal brought into him by a salesman. Both felt it was a 'seat of the pants' decision. They treated each case on its own merits.

Offhand they could think of a few rules that guided their action. Albert, the one who had recently been Used Car Manager, mentioned that if a deal was marginal he would persuade the Used Car Manager to pay more for the trade-in. To some extent his successor in the used car lot relied upon him for advice and assistance, and he was thus in a position to get his trade-ins up valued and so raise the new car profit margin.

Bruce remarked that he was always prepared to drop the margin by $25 on the first deal of the day. He believed very strongly that it was how his salesmen felt that was important. If they saw a sale early in the day marked up on the board that hung in the General Sales Manager's office, it would help put them in the right mood.
These were the only specific rules that the Team Managers could think of. It is interesting that they were both rules which the Managers probably felt were controversial and perhaps risqué. One was using undue influence to the advantage of his own team and himself and to the disadvantage of the used car department. The other was giving away $25 more of the company's money than he would normally have thought justified. These were exceptions. The bulk of the decision process which they went through several times a day they could not recall. It all depended on how they felt was the nearest one could get to an answer. At the beginning of this study they had no specific figure of what margin they wanted, just vague ranges that would be satisfactory.

At first sight it may seem strange that the rules could not be recalled by which this decision, believed to be of fundamental importance to the dealership, was made. However, just because the rules cannot be recalled in retrospect it does not mean that rules do not exist nor that they cannot be recalled at the moment they are put into operation. One can draw analogy between this decision process and the decision process of a man walking to work every day by the same route. He is unable to recall the decisions he is making all the time as he sidesteps to avoid other pedestrians, takes a short cut across the park and so on. Yet if you walk along
with him tomorrow he will be able to describe to you exactly what he does. He has learnt a routine that gets him satisfactorily from one point to another. He can only recall the unusual or controversial decisions like never stepping on the cracks of the sidewalk or taking a free ride on the footplate of a streetcar. Everything else is a learned routine. Only if he finds one morning that the sidewalk has been roped off and a large hole dug in the road may he become conscious of his action and perhaps consider new routes.

In much the same way the Team Managers have evolved decision routines which are satisfactory in the sense that they enable the Team Manager to keep his job and his self esteem. He can remember only the controversial decisions. Only if he is suddenly faced with a new situation and the realization that his present routine is unsatisfactory will he consider new modes of behaviour.

If this analogy is accepted we might expect that it would be possible to describe and simulate the routine process by which deals are accepted and rejected. If the Team Managers are applying set rules in a particular sequence to selected pieces of information, then it should be possible to discover what information is selected, the rules applied and the sequence of application. Clarkson supports this argument when he hypothesizes that decision processes "can be represented by a series of straightforward mechanical processes... that
they can be broken down into their elemental parts, e.g. memory, the rules for processing information, and the rules for combining these processes into whole programs, which in turn consist of collections of simple mechanisms." On this hypothesis a detailed study was begun of the decision processes of the two Team Managers when confronted with a deal.

METHODOLOGY.

The method used during the first few days was simply to sit with one of the Team Managers, observe his behaviour when a salesman came into his office with a deal, and when the salesman left, to ask why the Manager had said what he had. These early sessions established the pattern of the decision procedure, but the method was time consuming. One Team Manager seldom made more than five decisions in one day. Subsequently a tape recorder was used. When a salesman came into the office with a deal the Manager switched on the tape recorder. When the salesman had gone he recorded his comments and tried to give reasons for his action. Later in the day the tapes could be played back and if there was anything that needed further explanation the Team Manager could be asked to recall the decision. Playing back the recording seemed to bring the Manager's mind vividly back to the question, and enabled him to answer questions as readily as if he had just

completed a deal.

In this way Charts I (A) and I (B) to VI were developed. The numerals signify different phases of the decision process. The letters indicate that the chart describes either Albert's or Bruce's decision.

The charts can be read in the manner of a program. The elements in the program are questions which can be answered either 'Yes' or 'No', and instructions that depend on the answer to the questions. The questions can be answered by the Team Managers from their memory of recent events. The program traces the logical steps that are performed by the Managers, in order to come to their decisions. For example, one step in their decision might be:

```
Is today Saturday?

Y  N

Add 10 to Limit

Continue
```
'Y' stands for 'Yes' and 'N' for 'No' and this element in the program would mean 'On Saturdays add $10 to LIMIT_t'. LIMIT_t stands for the lower limit of gross margin per unit on day (t) beyond which a deal would normally be rejected.

The margin, for which the lower limit is prescribed in these charts is the gross margin of sales price over cost. In the cost are included the invoiced cost from the factory and a $40 package to cover handling and carrying costs. The invoice cost conceals a hidden 2% rebate which is returned to dealers at the end of the year.

A convention of the program is that this limit may be the limit on current models or on the previous year's models. This is in general the only discrimination which Managers make between different cars. If the limit is $200 above cost on current model Falcon, it will equally be $200 on a current model Galaxie, although the value of the Galaxie is much greater. The limit will be somewhat lower on cars remaining in stock from the previous years, although again the margin will not differ between models of a different price. The same program can be used to determine whether a Team Manager will accept a deal on a current model as on a previous year's model. However, if his decision process is being traced with regard to a current model, LIMIT_t must be understood to refer to the limit on current models. If the decision is being made on a previous year's model
then $\text{LIMIT}_t$ refers to the limit on the previous year's models.

The complexity of the simulation is more apparent than real. It is the inevitable result of the formal layout. In practice for most decisions only a small part of the program will be used. The Team Manager will automatically bypass some program segments. In many others he will not have to ask himself formal questions such as 'Is it Saturday?'. The switches, as it were, will be pre-set.

The mathematical precision of the simulation may also be queried. For example, surely Bruce in the Chart I does not calculate an exact average of the previous day’s margins? That would hardly be consistent with a decision which he would say was 'off the top of his head'. The answer is that of course he does not consciously go through this mathematical performance. Nevertheless, observations will show that this average, accurate within narrow limits, will be the figure which he feels reflects the state of the market. The mathematical calculation is a description of this process only in the sense that a table can be described in terms of atoms, or, to return to our former analogy, in the sense that our pedestrian's route can be described geometrically. Furthermore, it cannot be guaranteed that the actual figures in these charts are completely accurate. Undoubtedly, there will be some random variations, (or at least
variations that must be termed 'random' until their causes can be
discovered and described). All that can be said is that in general
the simulation described in Charts I to VI will duplicate the
performance of the two Team Managers.

TESTS OF THE SIMULATION.

In all experimental studies the problem must be faced that
observation and measurement will in inevitably affect the subject of
the experiment. This is no less so in a decision simulation of the
type attempted in this study. Constant observation and questioning
certainly made the Managers more aware of their own decision processes.
At the beginning of the study neither Manager has a clear idea of
what was the lowest acceptable margin. By the end they could at
least give a figure. This was not, in fact, the lowest figure
they would accept, but it probably bore a constant relationship to
the lowest figure.

Whether greater awareness of the way their minds worked affected
their decision processes can never be known. If one accepts the
hypothesis, expressed in the first section of this chapter, that only
a change of circumstances, making their present routine unsatisfactory
will lead them to change their routine, then the answer is probably 'No'.
Throughout this study every effort was made to avoid arousing doubts
in the minds of the Team Managers about the adequacy of their decision
rules. By the end of the study they were more aware of their own
decision rules but hopefully had no less faith in them.

Even if it could be proved that the simulation was a copy of the decision process and not vice versa, it would never be possible to test fully the accuracy of the match. In a program of this complexity, some of the possible combinations of circumstances have probably never occurred even in real life. Furthermore despite the complexity there are only two possible outputs—accept or reject. Only borderline cases will seriously test the final output of the simulation and these are infrequent and difficult to identify. To test these cases experimental subjects were found who has serious intentions of buying a Ford. These subjects were sent to the showroom and told to offer no more than a price $25 less than the simulation suggested the Team Manager on duty would accept. In no case was a car bought under these circumstances. In two cases where the customer found a car that he wanted and got down to bargaining, the Team Manager eventually stood his ground at a price within $10 of the simulation figure. These might be two isolated examples but they at least do nothing to disprove the approximate accuracy of the simulation.

In addition to tests of the output it was found possible to test in isolation that part of the simulation described in Chart I. As has been noted, by the end of the period of study, both Team Managers were able to give a figure each day which they felt represented the
lower limit of acceptability. It was found that this figure could be predicted within narrow limits.

Finally it was found possible to apply an adaption of Turing's Test\(^2\). Whenever a deal was accepted\(^3\) the behaviour of the Team Manager and the factors which he subsequently said had affected his decision could be compared with the predictions of the simulation. The results of these tests though not conclusive were encouraging. The bargaining procedure did not always take place quite as mechanically as is suggested in Chart IV. Factors not included in the simulation sometimes intervened. However, the correspondence between the simulation's predictions and reality was particularly satisfactory when reasons were being found for accepting a lower than normal price (Chart V).

In general it can be asserted that the simulation described in the next chapter is a fair approximation of the actual process.


\(^3\) The rejection of deals was not such a satisfactory subject for test since in this organization, with pressure from above to keep up margins, the onus of proof was on the acceptor of the deal. A deal was deemed rejected until it could be proved worthy of acceptance. As a result deals were rejected because they 'did not offer enough money' rather than because they just failed to satisfy rules 1, 2, 3......n.
CHAPTER VI

THE TEAM MANAGERS' DECISION --

DESCRIPTION.

OUTLINE.

Charts I through VI describe the decision processes of the two Team Managers. Each has a rough idea of what margins are generally acceptable on a particular day. The derivation of this margin is shown in Chart I. Chart II shows how this general limit can be modified as the day progresses. Chart III describes special circumstances in which either the required margin can be further modified to the rules of that decision process itself can be changed. Chart IV is a description of the bargaining process that takes place between the Team Managers and the customer with the sealsman acting as intermediary. In Chart V the process is shown by which the marginal decision is made-- when the Team Manager is considering a deal which does not offer a gross profit as large as the minimum requirement that has been derived in Charts I through III. Finally in Chart VI it is shown how 'A' Team Manager may have an afterthought and reject a deal he had previously accepted.

THE MARKET PRICE.

In Chart I there are significant similarities and differences in
CHART I - 'THE MARKET PRICE' - ALBERT

1
Limit

\[
\text{Minimum } > 25 ?
\]

\[
\begin{align*}
\text{Y} & : \text{Limit} = \text{Limit}_{t-1} - 25, \text{ or Absolute Minimum}_{t-1} \\
\text{N} & : \text{Absolute Minimum}_{t} = \text{Absolute Minimum}_{t-1} \\
\end{align*}
\]

2

\[
\text{Limit} > 20 ?
\]

\[
\begin{align*}
\text{Y} & : \text{Limit} = \text{Limit}_{t} + 15 \\
\text{N} & : \text{Add 30 from Limit(s) affected}_{t} \\
\end{align*}
\]

News at sales meeting of restricted supply (strikes, quotas, etc.)?

\[
\begin{align*}
\text{Y} & : \text{Add 30 from Limit(s) affected}_{t} \\
\text{N} & : \text{Subtract 30 from Limit(s) affected}_{t} \\
\end{align*}
\]

News at sales meeting of relaxation of supply (end of strike, excessive stock of previous year's model, etc.)?

Is today Saturday?

\[
\begin{align*}
\text{Y} & : \text{Add 10 to Limit}_{t} \\
\text{N} & : \text{Team's average daily sales for past three days} \\
\end{align*}
\]

Yesterday's sales highest of last three days?

\[
\begin{align*}
\text{Y} & : \text{Add 20 to Limit}_{t} \\
\text{N} & : \text{To Chart II - Albert} \\
\end{align*}
\]

1 See Chart II

2 Absolute minimum (This Year's Model) = 100

Absolute minimum (last Year's Model) = -50
CHART I - 'THE MARKET PRICE' - BRUCE

Omitting sales where Margin Limit \( t-1 \) + 200,
was there more than one sale on last working
day \((t-1)\) ?

\[
\text{Limit} = \text{Average Margin on those} \\
\text{t sales (to multiple of 10} \\
or 25 nearest \text{Limit} \) \( t-1 \) - 50
\]

News at Sales Meeting of supply shortage

\[
\text{Limit} = \text{Limit} + 30 \\
\text{t} \quad \text{t}
\]

News at Sales Meeting of supply relaxation

\[
\text{Limit} = \text{Limit} - 30 \\
\text{t} \quad \text{t}
\]

Average daily sales by Team for last three days \( \leq 2 \)?

\[
\text{Limit} = 100 \text{ for current models}
\]

To Chart II * Bruce
the processes of the two Managers.

The notable similarity is that information received at the regular nine o'clock sales meeting that there was a supply shortage or surplus produced the same reaction in each Manager. £30 was either added to or subtracted from the minimum margin which would otherwise have been in force. These sales meetings were presided over by the General Sales Manager. The only difference in the Managers' reactions seemed to be that while Albert reacted to the General Sales Manager's information, Bruce reacted to the General Sales Manager. A general request for higher margins from the General Sales Manager or a request based on a hypothesis with which he was in disagreement would have no effect on Albert. Bruce, however, would adjust his margin requirement by the regular £30 in every case.

These £30 adjustments could be applied either across the whole range of models or to a specific style of a particular model. For example it might be pointed out at the sales meeting that there were twenty Ford Customs in stock of the previous year's model and that it was now some months after the introduction of the new model. The required margin on those Ford Customs would be reduced to £30. Alternatively, news of a nationwide strike in all Ford plants would
result in an increase across the board of £30. This is the only case in which there is discrimination among different models.

The significant difference between the processes of the Team Managers in Chart I is in the factors which affect their day to day price adjustments. Albert is interested in what he had felt about price on the previous day. This as we shall see in Chart II, is a function of the number of sales that have taken place at various times of the day. In effect it will be found that Albert drops his price whenever there were no sales on the previous day and raises it if there were more than a certain number. In essence it is sales volume of which he takes notice. Bruce on the other hand, only takes notice of sales volume when it drops so low that he fears for the morale of his sales force. He is interested in the margins he has been receiving on previous days. Discounting abnormally high margins on the grounds that they only indicate the chance arrival of unusually gullible customers, he takes an average of the other margins and then selects a cut-off point, £50 below this average.

To summarize their different approaches, Albert is operating in a manner consistent with a belief that sales are responsive to changes in price, while Bruce acts as though they are relatively unresponsive to price, that they are a function of the random arrival of customers and that it is average margins which most accurately show the state of the
market. When sales drop below a certain point and he does drop his price to the minimum, the reason given is not that he thinks a lower price in itself will bring more sales, but because slack sales depress his sales force and make them feel incapable of achieving higher than minimum margins. Albert believes that the state of the market is revealed by the number of sales, Bruce that it is shown by the trend of margins.

HOUR TO HOUR ADJUSTMENTS.

Chart II shows the same difference in philosophy of the two Team Managers. Albert lowers his price throughout the day if there are no sales and maintains it low even if in the afternoon some sales are made. He only raises his price if more than a certain number of units are sold. As was noted in Chart I, if at the end of the day his views of the market have changes sufficiently from the morning, his satisfaction or depression will carry over to the following day and bring an adjustment to his general limit.

Bruce's hour to hour strategy has no similar pretension to follow the market. He drops the price $25 for the first deal of the day, however many cars have been sold the day before and however high or low the margins were. After a day of no sales he will drop the price of the first car the next day by more than $25. After a blank Saturday, he will drop even further. Similarly if no sales have come by a late hour, he will drop the price of the first sale
CHART II - 'TEMPORARY MINIMUM' - ALBERT

From Chart I - Albert

Team's first sale of day?

Y

Before noon?

Y

Saturday?

N

Before 5 p.m.?

Y

Saturday?

N

6th sale to-day?

N

4th sale to-day?

Y

Minimum = Limit + 20 t

Minimum = Limit t

Minimum raised before noon?

N

Y

Add 25 to Minimum

Add 10 to Minimum

After noon?

Y

Minimum = Limit - 20 t

Saturday?

Y

Continued overleaf

Continued overleaf

Continued overleaf
Continued from the preceding page

1. Subtract 25 from Minimum
2. After 5p.m.? Subtract 20 from Minimum
3. Minimum < Absolute Minimum Limit?
   Y
   N
   Minimum = Absolute Minimum Limit

To Chart III - Albert
CHART II - 'TEMPORARY MINIMUM' - BRUCE

From Chart I - Bruce

X

<table>
<thead>
<tr>
<th>Team's first or contemporaneous with Team's first sale of day?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
<tr>
<td>Y</td>
</tr>
<tr>
<td>N</td>
</tr>
</tbody>
</table>

Y

One or more sales Day (t-1)?

N

Minimum = Limit - 25

Y

Minimum = Limit - 50

N

Monday?

Y

After 4 p.m.?

N

Minimum = Limit - 75

or, if current model, 100, whichever greater

Y

Saturday?

N

Minimum = Minimum - 25

or, if current model, 100, whichever greater

X

To Chart III - Bruce
equally drastically. However, in none of these cases does he drop the price on subsequent sales. He drops the price not because he believes that the market price has fallen, but because he believes his salesmen will be affected by the lack of business. If they see no sales on the board they will not be in a fit frame of mind to achieve high margins. One sale at whatever price will break the ice and start sales moving again.

SPECIAL CIRCUMSTANCES.

Chart III, which shows the special circumstances under which margins or the decision process will be modified, reveals the different backgrounds of the Team Managers. Albert is concerned with the value of trade-ins. In December he requires $75 more profit than normal if a trade-in is involved because he expects the price to fall by at least that amount if the car remains in stock over the New Year. If a car is being ordered and is not expected to be delivered for four weeks or more he requires $50 extra to cover the possible loss in value of the trade-in over that period.

Bruce is noticeably affected by the circumstances in which the decision is made. If he has to make a decision on a deal while he is involved in a discussion with his superiors or while negotiating with a difficult customer, he will shortcut the bargaining process and accept a deal before it is certain that it will provide the minimum
CHART III - 'SPECIAL CIRCUMSTANCES' - ALBERT

From Chart II - Albert

\( \times \)

Is it December?

\( \gamma \)

Trade in?

\( \gamma \)

Minimum = Minimum + 75

\( N \)

Last Year's Model?

\( \gamma \)

Minimum = Limit

\( t \)

Only one model in stock

\( \gamma \)

Minimum = Minimum + 50

\( N \)

New car from stock?

\( \gamma \)

Expected delay greater than 4 weeks?

\( N \)

Trade-in?

\( \gamma \)

Minimum = Minimum + 50

\( N \)

Minimum = Limit

\( t \)

to Chart IV - Albert
From Chart II - Bruce

Fleet Deal?

Minimum = Minimum - 50

Last year's model?

Only one of model in stock?

Minimum = Minimum + 50

Thunderbird or Ltd.?

Minimum = Minimum + 25

Busy on errand for Messrs ABC or in the midst of tense bargain with customer, or after hours?

Undercoat included in offer?

Offer > Minimum

Offer > Minimum - 30

After hours?

Bargain personally

Undercoat included?

Offer > Minimum? Offer > Minimum - 30?

Accept

To Chart IV Bruce
CHART III - BRUCE (CONTINUED)

Continued from preceding Chart

Car advertised at price below minimum?

\[ Y \rightarrow N \]

Extra equipment at full list price?

\[ Y \rightarrow N \]

Send salesman back for full list price

\[ Y \rightarrow N \]

Full list obtained or offer greater than minimum

\[ Y \rightarrow N \]

Accept

Reject

to Chart IV - Bruce
required margin. If he kept in the showroom after closing time, again he will bypass the full bargaining process and allow through a marginal deal. On cars that have been advertised in the local papers he will accept a deal only if full list price is paid for any extra accessories. He applies this stringent rule because by his standards cars are not always advertised at a price which he would regard satisfactory. On fleet deals, on the other hand, he is more forward in giving concessions than Albert. He immediately discounts cars sold to operators of fleets, whereas Albert first tries his usual bargaining technique, attempting to get as large a margin as possible; only if he fails does the fact that the customer is a fleet operator become an excuse for accepting a deal below the normal minimum.

In this Chart is found the only regular exception to the rule of non-discrimination between different models. Bruce does require an extra $25 on a Thunderbird or a Ford LTD, the two most expensive cars stocked. The list prices of these cars are more than twice the list price of the cheapest models in the showroom. The final idiosyncracy of Bruce, is that in certain circumstances he will actually try to avoid accepting a deal because it gives too large a profit margin. If the car is to be ordered and not delivered from stock and the deal gives more than $150 over the minimum, Bruce will encourage the salesman to switch the customer into a stock car even if it means
losing some profit. He will do this because he believes that it is most unlikely that the customer will fail to find out in the period before his car is delivered that he has paid too much. Rather than risk the possibility of losing a customer altogether, he will accept a reduced profit on a stock car.

The two Managers are in agreement about raising the minimum acceptable by $50 when only one of a particular model of the previous year remains in stock. This is done out of deference to the economists' Law of Supply and Demand.

BARGAINING THROUGH THE SALESMAN.

Chart IV describes the process by which the Team Managers bargain through the salesmen. Albert's procedure is almost mechanical. The amount he will tell the salesman to get is predictable within narrow limits. The amount that he will be satisfied with is similarly predictable not only by the reader of the program, but by the salesman. If his minimum requirement is not reached he will himself bargain with the customer.

Bruce's procedure is quite different. He does more than simply bargain. He attempts to probe the attitude of his salesman. Does the salesman believe that the customer will or should pay no more? If so, he will try and persuade the salesman that this is not the case.
From Chart III - Albert

Offer > Minimum + 75?

\( Y \)

Offer Minimum?

\( Y \)

Send back for 2(Minimum + 50 - offer) more, to nearest 10 above

\( Y \)

(Ne\( w \)) offer > Minimum + 50?

\( Y \)

(Ne\( w \)) offer (last) offer?

\( Y \)

Send back for 2(Minimum + 50 - offer) more to nearest 10 above

\( N \)

Undercoat included?

\( Y \)

Ask for undercoat

\( Y \)

ACCEPT DEAL

\( X \)

To Chart VI - Albert for afterthoughts

\( X \)

To Chart V - Albert
CHART IV - 'BARGAINING THROUGH SALESMAEN' - BRUCE

From Chart III - Bruce

Offer > Minimum + 150?

- Yes, Ordered car?
- No, Is salesman convinced that customer will pay no more?

- Yes, ACCEPT
- No, Average daily sales by Team for 3 days less than 2?

- Yes, Offer > Minimum - 50
  - Yes, Tell salesman to get a further sum to bring gross to bring gross margin to a multiple of 50 between 50 and 100 above minimum or offer whichever greater, (excepting upper limit for ordered cars is minimum + 150) discuss possible approaches.
  - No, Tell salesman he needs to get (Limit - offer) more
    - Salesman returns
      - Offer > Limit?
        - Yes, ACCEPT
        - No, Offer personal bargaining services, if salesman lacks confidence
          - services accepted?
            - Yes, Call in customer
              - Bargain
                - Offer limit
                  - Yes, ACCEPT
                  - No, to Chart V

- from Chart III

X

Bruce
He will try to discover how the salesman has presented the deal to the customer, and he will explore new approaches. His objective is not only to tell the salesman how much more money is needed but to give the salesman the confidence to get it. If the salesman returns after failing to persuade the customer to part with sufficient extra cash to bring the deal up to an acceptable level, Bruce will offer his own bargaining assistance, if he feels the salesman lacks confidence.

Albert will not bargain at all if the salesman brings him a deal offering $75 more than his normal required minimum. Beyond inquiring if undercoating 1 has been offered to the customer, he makes no attempt to raise the price further. Bruce will always encourage the salesman to ask for more, except where an ordered car is already yielding a profit margin of $150 above the minimum. He likes to give the salesman and the customer the idea that the deal is on the borderline.

THE BORDERLINE CASE.

The decision processes of the two Managers when it comes to deciding the marginal cases (Chart V) are sharply contrasted. Bruce, interested in developing his salesmen and raising their profit horizons finds few excuses for allowing deals to go through which do not provide

1 Any price that is received for undercoating from the customer is almost pure profit as all cars are undercoated at negligible cost on arrival from the factory.
CHART V - 'MARGINAL DECISIONS' - BRUCE

From Chart IV - Bruce

Price previously given or understood by customer to have been given?

Salesman convinced that it would be bad for the name of the house to go back on offer?

Demonstrator with more than 10,000 miles

Discount (1) = 50

Has salesman done a good selling job?

Finance deal?

Discount (3) = 25

Salesman's first sale for 5 days? or, did other team make more sales yesterday? or, is other team ahead in volume competition?

Discount (4) = 20

Has General Sales Manager or other Team Manager been taking deals below minimum?

Discount (5) = 10

Offer Minimum - Discount (i) or, if current model, 75; whichever greater

ACCEPT

REJECT
his minimum required margin. Albert, on the other hand, is interested in selling cars and finds every excuse for accepting a low deal.

Albert will discount any demonstration car $50 and will allow $100 mark down if it has a mileage of over 5000. Bruce is not willing to allow any discount on a car that has been used for demonstrations unless it has gone more than 10,000 miles. If the customer honestly believes he has been promised a deal at an earlier date which is now unacceptable, Bruce may allow $25 off. This small discount, the allowance to fleet operator and the allowance on a well worn demonstration model are the only concessions that Bruce will make unconditionally. If he makes any other concession he has to be convinced that the salesman did a good selling job. If he feels that the salesman could have presented the deal better and secured a higher margin, he will reject the deal without considering the mitigating circumstances. Rejection and acceptance are used as rewards and punishments in his case. If he is satisfied with the salesman's performance, he may give credit for a finance deal which is more profitable to the company than a cash deal. He may also relax his rule for a few dollars, if the salesman has not earned enough money in the past week, or if it has come to his attention that Albert or the General Sales Manager ² have been accepting deals giving smaller

² Though it is not the General Sales Manager's job to accept deals he will do so if the Team Manager is not available. He will also accept deals from his private customers. Since this is relatively unusual, I have not analyzed his decision process.
margins than his minimum. But in no case does he give credit for more than one of these discounts. He believes that if the salesman has already done a good job of selling the product there would be no need to grant concessions at all. This is consistent with his theory that the state of the market is shown by the level of recent margins. All that he is asking a salesman to do is to persuade the customer to pay somewhere near the market price.

Albert's approach is very different. He has a battery of discounts to offer - for regular customers, new salesmen, salesman's first sale of the week, customers with better offers elsewhere, convertibles during the winter months, fleet operators, fleet operators' employees - whenever he has failed to extract his normal margin from the customer. The list covers contingencies and he does not just offer one discount but the whole list cumulatively if each is applicable.

When sales are very slow his required margin will come down to an absolute minimum beyond which, in theory, he will not go. "Anyone who cannot make £100 on a car should leave the business". But, in fact, not even this absolute minimum is his rock bottom. When he can cut into his own margin no further he attacks the margin of the Used Car Department, as we have seen, by persuading the Used Car Manager.

3 This figure may also be chosen because salesmen are paid a minimum of £25 per unit sold. If a margin of less than £100 is accepted the salesman is receiving more than his 25% commission.
CHART V - 'DECIDING A MARGINAL CASE' - ALBERT

From Chart IV - Albert

\( \checkmark \)

Bargain

New offer > Minimum?

\( \checkmark \)

Regular Customer?

\( \checkmark \)

Discount (1) = 20

Customer has deal elsewhere?

\( \checkmark \)

Discount (2) = 20

Demonstration car?

\( \checkmark \)

More than 5,000 miles?

\( \checkmark \)

Discount (3) = 50

New salesman's first sale?

\( \checkmark \)

Discount (4) = 25

Last year's model convertible?

\( \checkmark \)

Has snow been forecast, or is temperature below freezing?

\( \checkmark \)

Continued overleaf

\( \checkmark \)

Continued overleaf

To Chart VI - Albert

\( \times \)

Undercoat included?

\( \times \)

Ask for undercoat

\( \times \)

ACCEPT

\( \times \)
Continued from preceding page

Discount (6) = 25

K months after model change and (5 - K) of this model in stock?

Discount (7) = 25

Fleet deal?

Discount (8) = 50

Discount (8) = 100

Fleet employee rather than operator?

This year's model?

Absolute Minimum = (Limit - 100)

or, (cost X 102% + 75), whichever greater

or, (cost X 102% + 50), whichever greater

Absolute Minimum = (cost X 95%)

Trade-in?

Absolute Minimum - (Minimum - ΣDiscount (1)) > 150 REJECT

Average sales per salesman for previous week < 1.5

Inter-team volume competition

Continued overleaf

Continued overleaf
CHART V - ALBERT (CONTINUED)

Continued from preceding page

Y

Raise appraisal by $50 or
Absolute Minimum - (Minimum - $ D(i) )
whichever smaller

Minimum = Minimum + Increase in Appraisal

Undercoat included?

Y

Ask for undercoat

Minimum - Discount(i) Absolute Minimum

N

REJECT

Y

ACCEPT

Z

To Chart VI for afterthoughts
to up-value the trade-in. This may give him as much as another £150 to manoeuvre with. The result is that he seldom refuses a deal to which he feels a salesman is in any way entitled. In a response to a questionnaire no member of his team admitted to ever having been refused a deal which he felt he deserved. Only two members of 'B' team made the same claim, other replies ranging from 'rarely' to 'frequently'. It is not even clear that these figures tell the whole story. The expectations of each team affected what each member felt he deserved. A member of 'B' team, expecting to have a deal giving £150 refused, may begin to feel that is what he deserves. Certainly during one period of this study 'B' Team members were apparently undismayed to have £150 margins turned down while deals with the same margin were being accepted without a query by the 'A' Team Manager. 4

The fact that 'A' Team Manager never turns down a deal which his salesmen feel that they deserve does not mean he never turns down deals. Even when sales are slow and his required minimum falls, he will not accept deals that give less than his absolute minimum if there is no

---

4 It is not known how much communication of margins there is between Teams or even Team Members. Discussion is discourages by 'B' Team Manager, on the grounds that gossip keeps salesmen from their job. Casual inquiries among the salesmen produced very different estimates of what the minimum margin was that their Manager would accept.
trade-in that can be up-valued to bring themargin to an acceptable level. Even when a trade-in is involved, he cannot up-value it more than $150. The Used Car Manager may not agree to accept as much as $150. When sales are buoyant the actual figure below which he will accept a deal will rise, but, since salesmen will be selling enough cars at good profits, their expectations will rise and they will not feel they deserve to have low margins accepted when there are so many fat ones around. The strategy of the 'A' Team Manager turns out to be, when sales are high, a policy of accepting sufficient deals to give the salesmen a comfortable living and a few more besides. Albert is always satisfied at a point just below that which his salesmen feel is 'right'. When times are bad, he concentrates on selling a high volume; when business looks up, he grows content and no longer feels the need to sign a deal with everyone who walks into the showroom.

AN AFTERTHOUGHT

Chart VI describes a process only observed in 'A' Team Manager. He may always accept a deal whenever anyone feels that it is in the least bit justified, but there are occasions when he will reverse his decision. It was clearly felt in the sales force — and no doubt Albert shared this view — that the new management in the shape of the General Sales Manager was extremely reluctant to pay out large bonus awards to the sales force. In the past there had been an occasion when a particular incentive game had been won by 'B' Team. The win
CHART VI - 'AFTER THOUGHTS' - ALBERT

From Charts III (a) and V (a)

ACCEPT

Is acceptance crucial to the team winning a bonus?

\[ \begin{align*}
\text{Y} & \quad \text{Has house achieved gross target during period of competition?} \\
\text{N} & \quad \text{Is bonus } 50 \times (\text{number of salesmen in team})?
\end{align*} \]

\[ \begin{align*}
\text{Y} & \quad \text{Is offer } X + 50? \\
\text{N} & \quad \text{Examine trade-in for lowest possible value}
\end{align*} \]

\[ \begin{align*}
\text{Y} & \quad \text{Is offer } (X + 50 - (\text{appraisal} - \text{lowest possible value of trade-in})) \\
\text{N} & \quad \text{RE-EXAMINE RULES AND CONDITIONS OF INCENTIVE GAME TO FIND IF HOUSE MUST PAY BONUS}
\end{align*} \]
had been acknowledged by the company but the sales force were convinced that the full winnings to which they were entitled had never been paid out.

Chart VI shows how Albert was observed to react when it became apparent that some deal which he had accepted was crucial to his team winning the bonus. If the company was not covering its overheads at the time and the bonus was substantial, Albert would re-examine the key deal. Here his influence with the Used Car Manager was put into reverse. The value of the car traded in was now looked at in the worst possible light and reassessed at the lowest reasonable figure. If the deal did not then show a profit considerably greater than Albert's normal requirement, it was called off. If it stood up to these tests the rules of the incentive game were re-examined to find out if the company was bound to pay up.

Bruce was not observed to go through a similar process. Whenever his team looked as if it may have won a bonus, the rules were found to have been misinterpreted and his team had not won after all.
CHAPTER VII

ANALYSIS OF THE DECISION PROCESS.

IMPLICATIONS OF THE TEAM MANAGER'S DECISION.

A characteristic common to both Team Managers is that they demand no higher margin if the car being sold cost $4000 than if it had cost $1500. The only exception to this rule is Bruce's $ extra requirement on the two most expensive models in the range. This does not in itself mean that the effective mark up was at a flat rate. The 2% rebate on all invoices paid by Ford at the end of the year gives some advantage to the higher priced models. A $5000 Thunderbird would earn $100 against $40 on a Falcon. Against this are the higher bank carrying charges on an expensive car, $20 to $30 higher on a Thunderbird than a Falcon. It does appear that the required gross profit per unit varies little over the whole range of models.

It might turn out that, though the required gross margin is constant for all models, the actual margins achieved are higher for the higher valued models or even proportional to list price. This does not appear to be the case. During the period of study, there were no significant differences between the margins achieved on different models. Cars are considered as undifferentiated units by both Managers and Salesmen. The subject of bargaining is not the price of the car
but the size of the margin. The fact that customers for the higher priced models are probably no more nor less price conscious than customers for the popular ones ensures that margins are distributed similarly for each model. The differentiated mark up suggested by Ford — 17% on compacts, 22% on full sized cars, does not seem to have any effect on actual margins achieved. The only function of the official suggested price is to set an upper limit on the asking price.

If the per unit profit remains constant, it logically follows that profit as a percentage of turnover must vary inversely with the cost of the unit sold. Therefore, it cannot be strictly stated that a 'normal' profit on turnover in the Marshallian sense is maintained. If profit per unit is considered rather than profit on turnover, it is clear that both Team Managers are fixing some sort of minimum margin at least during those months of the year when sales are high. If the company was selling fifteen automobiles a day, not even the most determined bargainer would be able to persuade either Manager to sell at a price below a minimum which would make a substantial contribution to overhead. There would be no question of the price being dropped to a point where it only just covered variable cost.

The labelling of new automobiles with the manufacturer's list price was made compulsory by Act of Congress 1956. Previously, unscrupulous dealers had been able to pack the list price and thus offer larger discounts and a superficially more attractive deal than their honest neighbours.
Albert requires this normal profit because he is making a satisfactory profit for the company and in these circumstances he feels it would be wrong to 'give' cars away. When sales are high his prestige and self-esteem depend on constantly obtaining high margins. He would find it difficult to explain to himself and to his superiors why he could not get good margins when trade was so buoyant. His salesmen are happy and do not expect to be allowed deals with low margins. His superiors are happy because he is bringing good profits for the company.

Bruce requires a 'normal' return at all times of the year whatever the sales volume. He does so in order to keep his salesmen's target high. His area of acceptance is from £50 below the mean of recent margins to £150 above. When sales are particularly slow he will drop this rule for current models, but he will still set a limit which gives some contribution to overheads beyond which he will not lower his price. He is at all times prepared to hold to a fixed price. If sales volume is not sufficient to provide a 'normal' profit to the company at this price, he will not compete for more sales by lowering his price. He will sink or swim at the price he thinks 'fair', at the price which his salesmen 'ought' to be able to get. Only on models of the previous year is it theoretically possible that he will sell below cost, if it should happen that the average price obtained dropped so low.
Albert's reaction to slow sales is quite the opposite. He feels that the pressure is on him to sell cars. His salesmen are hungry and selling cars is what he is in business for. He has a superficial minimum below which he will not in theory reduce his price and on the official report, which is seen by his superiors, the margin that he makes on a car will never go below this minimum. But when his reported margin is £75 after he has raised the value of a trade-in £150 above its original appraised value, there is a good possibility of a loss on the sale of the trade-in which would result in no contribution to company overheads at all.

In short, when business is bad Albert will accept any price which contributes to overhead, in accordance with the maximising principle of the classical economist. When business is better he adopts a satisfying strategy. Bruce adds to cost what he considers is a fair and normal margin. This is modified over time to reflect the current average margins in the market but only in the last resort does it respond to a decline in sales volume. Albert is primarily concerned with selling a satisfactory number of cars while editing the margins to conform with the Management's expectations. Bruce, believing that it is the salesmen that the price that sells cars, concentrates on keeping up margins and leaves the salesmen to take care of sales volume.
SOME GENERAL CONCLUSIONS.

Whatever the differences that are apparent in the policies of the two Team Managers, there are some striking similarities that may have general application.

Firstly it is clear that in no sense is either Manager making a consistent effort to sign every deal that would make a contribution to overheads even though supply is unlimited and costs do not increase with volume. As long as sales are satisfactory— and 'satisfactory' means for both Team Managers little more than "enough to keep the 2 salesmen fed" — they both refuse deals that would contribute to overheads.

The actual lower limit of acceptance seems to depend on the Manager's particular character and prejudices. But it does appear that for both Managers and salesmen there is a price that they feel they 'ought' to be able to get. In a sense a salesman measures his ability— however irrationally— by the margin he is able to get. Whatever the market pressures, he would be ashamed to accept a margin of less than $75, or whatever it might be. This is something different from the 'normal' margin which gives him a good 2

This was literally true on one occasion; when Albert wished to make a salesman leave, he refused him a deal which he would have accepted from anyone else, foregoing the profit to the house.
livelelihood. When times are good the price he feels he 'ought' to get, rises. He knows what sort of margin he and his friends are most often getting. A little below this level will be the figure he feels must always be within his grasp. If he cannot get near the average margin he feels that the fault must be in himself. The Manager who must set the acceptable lower limit for his salesmen will use this figure as a guide. Depending on his character, he will either let his salesmen fix their own figure by always accepting deals that they want accepted, or he will set a limit that will hurt some of his salesmen some of the time.

Only when conditions are desperate is there a move towards accepting deals that only marginally contribute to overheads. If the salesmen have earned no commission or perhaps if the rent is due, prices will come down. Even then some Managers will still stop at the figure they feel any salesman 'ought' to be able to get. Others will go further and then, if possible, cover up the shameful deed. The process of neither Team Manager took into account the supply and demand situation except when extremes were brought to their notice, e.g. twenty of a particular model of the previous year were still in stock the following January, or only one such model in stock. Even at these extremes the adjustments were crude. Current and previous year's models were normally discriminated between in price, but not in the process by which the minimum price
was reached. The same decision process was applied whether a current year's model was available in unlimited supply as if it had already met its quota. The same process was similarly applied to models of the previous year for which the supply was fixed. This is an example of how the Manager simplifies the problem before him by imposing standard rules on a complex world.

These observations are probably applicable to all situations where bargaining habitually takes place. One would suspect that other major durables were sold in much the same way as automobiles. It would be interesting to discover if in a camera shop the same minimum acceptable margin is applied to all cameras within a wide price range. The decision process of the sales manager would be made very much more complex if it were not.
CHAPTER VIII

COMPARISON AND PRESCRIPTION

A COMPARISON OF THE TWO POLICIES.

It is now relevant to inquire which of these two policies yields the higher profit. Simply to compare the actual results of the two Team Managers would not be relevant, since their achievements may only be partially a result of their peculiar policies. What we want to know is if each of the Team Managers had an identical team of salesmen in an identical environment, and an identical stream of customers walked into the showroom, which Team Manager would cumulate the largest profit over a period. Bruce would argue that (i) by accepting deals with lower margins, sales volume would not significantly increase, and (ii) any advantage in volume would be cancelled out because salesmen's aspirations would be lowered and they would get lower margins than at present for all deals. Albert would have to refute these arguments to show that his strategy produced the most profit.

As evidence on the first count, a direct comparison of the number of sales would not be useful because the composition of sales teams changes frequently and the ability of salesmen on different teams may not be comparable. It would be begging the second question if one counted the number of deals taken over a period by Albert which were lower than the minimum required by Bruce.
These deals, Bruce could argue, could have produced acceptable margins had the salesmen not been allowed to grow slack. However, evidence that is meaningful comes from the responses to a questionnaire completed by the ten salesmen who worked for the company for three months or more. In response to the question "Does your Team Manager refuse to accept deals which you think you deserve?", all five 'A' Team members replied 'Never'. The responses of 'B' Team were as follows:

- Frequently 1
- Sometimes 1
- Rarely 1
- Never 2

The man who replied 'rarely' was the salesman who, according to the records, produced the highest average margins and was perceived to do so by his Team Manager. It is suggested that this supports the view that at least three members of Team 'B', including the salesman with the highest average margin in the dealership, would have made more sales had the acceptance level of their Team Manager been lower. The fact, already noted, that the two policies will tend to give opposing team members different views of what they 'deserve', supports this view. 'B' Team members, though observed to be happy when they had deals refused which Albert would have accepted, nevertheless were sometimes refused deals which even they thought they deserved.

The question "Out of every ten customers who do not buy, how
many are lost specifically because of price?", received the following response:

<table>
<thead>
<tr>
<th>'A' Team</th>
<th>'B' Team</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>3</td>
<td>6</td>
</tr>
</tbody>
</table>

This result, besides supporting the theory that a lower minimum price will result in significantly more sales, also goes some way to disproving 'B' Team Manager's second assertion, that a low limit will result in lower aspirations on the part of the salesman. If that were so, one would expect to find price causing as much bother at 'A' Team's somewhat lower minimum, as at 'B' Team's higher one.

'B' Team sold a few more cars than 'A' Team at margins of more than £300, but this one would expect on other grounds. 'B' Team included the two salesmen with the best records for both sales volume and margins. Also, as has been noted in Chapter III, 'A' Team Manager, Albert, does not send his salesmen back for more money if the deal is showing a margin more than £75 above his minimum, whereas Bruce will ask for more in almost all circumstances.

Finally, although this may be the result of his methods rather than the high margins he sets, there is evidence that Bruce's strategy upsets his salesmen. The two members of his Team who admitted to having been refused deals they thought they deserved, both replied
in the affirmative to the question "Is your Team Manager ever inconsistent towards you in the application of rewards and punishments?" Both in subsequent conversations admitted to being mystified by their Team Manager's price policy and felt that their uncertainty about what he was going to accept adversely affected their performance. Their reactions seemed to range from lack of co-operation to sheer depression, neither of which attitude is conducive to selling automobiles. Of the other members of 'B' Team who filled in the questionnaire, two were the star performers of the dealership, no doubt satisfying their own income requirements without coming into conflict with the Manager and the third was prepared to accept his superior's opinions and judgements in all fields. None in 'A' Team found their Manager's policy disturbing.

These results are far from conclusive, but they do support the view that a lower minimum acceptable margin will allow more sales to be made, and they do not support the assertion that salesmen's aspirations will be lowered. Many things affect the salesman's ability to get a high margin. For most there is a wide range of margins which they will achieve off different customers and for different reasons. Some will have consistently higher margins on average than others, but it is not clear whether this lies in their peculiar ability or whether they specialise in a particular sort of customer.
Without further evidence it would be unwise to assume that, by setting a high minimum standard, the general level of margins would be raised. The weight of the evidence suggests the conclusion that in the hypothetical circumstances which we described at the beginning of the section, Albert's strategem will be more profitable. If, like Bruce, he sent his salesmen back for more money on nearly every occasion, this advantage would be more noticeable.

A LOGICAL EXTENSION OF ALBERT'S POLICY.

If we accept that Albert's policy is more profitable than his rival's because a lower minimum acceptance point attracts more sales and does not lower the general level of margins, we cannot logically avoid asking the next question. Why should the acceptance point not be lowered permanently to a level where variable cost is just covered? So long as some contribution is made to overhead, a deal should be welcome. Albert is happy to accept such deals when sales are poor. As a satisficer, he will not accept such deals when sales improve but, as logical maximisers of profit, why should not we?

First we must be sure that continued reductions in the required

4 This policy would not apply to the previous year's models still in stock, or to models for which the dealer's quota is full. It is rare for quotas to be full.
minimum will bring sales in addition to those that would have been made in any case at higher margins. A clear possibility of extra sales, apart from those that might result from a reputation for low prices, would be to those customers who, under present pricing policies decide to leave the showroom without signing a contract in order to check prices at other dealerships. These customers seldom return. They will be offered either the same price or a marginally better price by dealers whom they subsequently visit. The chances are that they will come to the conclusion that prices are much the same wherever they go, and they will buy a car from the dealership in whose showrooms they happen to be when this fact occurs to them. The first salesman whom they approach will certainly be at a disadvantage because, hoping that the customer will not try other dealerships he is likely to open the bargaining at a high price. Salesmen whom the customer visits subsequently will realize that he is shopping and will therefore give him a lower price. If all dealers are requiring a minimum price at a similar amount above cost, sales to these shopping customers will be randomly distributed among dealerships. Everyone will have an equal chance of making sales. If price conscious customers are on average shopping four dealers, an individual dealer could expect that, for every three customers who walked out of his showroom to shop elsewhere, one would walk in and buy. It is to prevent these three customers from walking out that our hypothetical dealership would be prepared to drop its minimum price to anything that
contributed to overhead. Estimates at ABC of the frequency with which a customer who left the showroom to shop elsewhere would return and buy at the required minimum price varied from 1 in 4 to 1 in 10. Therefore if the required minimum was $150, it would be profitable for the dealer to sell for any margin over about $30.

THREE OBJECTIONS.

Let us now look at three objections. It might be argued first that such a policy would give the dealer a reputation for low prices which leads customers to insist on low deals and bargain more effectively. Secondly it might be suggested that the advantage obtained would be so short lived that the policy could not logically be adopted by profit maximisers. Thirdly, though we have concluded that a marginally lower minimum will probably not lower salesmen's aspirations, this might not hold good if the minimum acceptable margin was set at zero in all circumstances.

1.) In answer to the first objection it must be pointed out that it is easier to persuade the customer that he is getting a very good price if the dealer has a reputation for low prices, than if he had a reputation for high prices. The point must be made that very few customers know how good a deal they are getting. A good salesman will always persuade an enthusiastic customer that he is getting a special deal. It does not seem likely that the
very small number of customers who accurately know the cost of the
car and accessories would increase. Without this exact knowledge
they must rely on the salesman and, if they are price conscious,
on competitive bids, to give them an idea of what sort of deal they
are getting. Even if they do pay a high price they will soon
convince themselves that they did not. It seems to be a fact
of human nature that car buyers 'forget' how much they pay for their
cars and are sure to underestimate when they tell their friends.

2.) It is not clear that a policy of accepting any deal that
offered a contribution to overhead would cause a general reduction
in the minimum acceptable prices of competitors. It can be argued
from Albert's case that his policy of accepting such deals when
sales volume is low does not prevent him from refusing when
conditions improve. He offers low deals to increase his sales
rather than to take sales from his competitors. As soon as his
sales volume is satisfactory he raises his minimum. That other
dealers may still be taking low deals is not a factor in his
decision net. As long as other dealers are behaving like
Albert, it could be argued, one would not cause a general reduction
in required minimums by accepting deals only just above cost.

The present 'low-ball' system, by which the customer is given
an unrealistically low price if it is clear that he is going to
check prices with other dealers, can be taken as evidence of this
point. A dealer, who hears of a competitor's low-ball from the
customer, can never be sure that the price is unacceptable to the
competitor. He can only guess and he will not base his own
margin on figures that he hears from the customers (who may be lying
in any case). His strategy will be either to give the customer
a low-ball himself or try to persuade the customer to buy at a price
that satisfies his own minimum requirements. Only if his sales
drop below a certain satisfactory level will he take a low-ball
seriously and offer a genuine lower price himself. Again it is
not his competitors' prices that affect his decision, but the state
of his own sales.

Finally it might be thought that there would be an intelligence
network among salesmen of rival dealerships, which would bring to
light out-of-line pricing policies. If one dealer was prepared
to drop to cost his competitors would soon hear of it. This is
true, but again it is not a factor which proved of any importance
to either of the Team Managers at ABC. As it happened such a situation
arose during the course of this study. A dealership where the
salesmen were on good terms with the salesmen at ABC was reported
to be taking deals at cost or even below cost. There was every
reason to believe this report since the dealership in question
was a new entrant trying to build up quickly to a high volume of
sales. Bruce's reaction was, at least publicly, to doubt the truth
of the report and to continue to persuade salesmen that they 'ought'
to be able to get his required margin. Albert took no action at
all. If a customer claimed to have a better deal at this dealership he gave no greater concession than if the customer had named any other dealer.

3.) The third objection is that the aspirations of the salesmen would be lowered if all deals were accepted that made some contribution to overheads. No evidence can be offered on this point beyond that which has been already used to show that small differences in required margins probably do not affect aspirations. However, whether or not there is a tendency for aspirations to drop, it should be possible to keep statistical control of individual salesmen's performances. The number of sales and distribution of margins is known under the present system for any historical period. When the required margin was dropped to zero, one would want to test that after seasonal adjustment the number of sales, above the previous required margin, did not decline and that their distribution did not change for the worse.

At best such information might act as a self-regulating mechanism, comparison with his own past performance itself being sufficient to maintain the salesman's aspirations. At worst, it would allow for an estimate to be made of lost profit which would be recovered by a return to the previous system.
CONCLUSION

It appears possible that our policy would not only increase profits initially but would survive unchallenged by competition for some time, until competitors' sales dropped below the 'level of satisfaction'. The theoretical assumption of independent maximisation put forward in Chapter II appears to be a practical possibility.
CHAPTER IX

SUMMARY AND CONCLUSION

SUMMARY.

In this paper we have examined the process by which the seller determines the lowest price that he is prepared to accept in a competitive bargaining situation. Economic arguments were shown to predict that the seller would accept any price which contributed to fixed cost. When a case from real life was studied in detail, the General Sales Manager was found to suggest a minimum acceptable price which, given a demand to match his optimistic predictions, would have given a Marshallian 'normal' profit on turnover. However, this price did not turn out to be one of the factors considered by the Team Managers who in practice made the minimum price decision.

The Team Managers were found to apply a complex set of rules to each deal as it was presented to them. When sales were high both Team Managers set lower limits to margins which ensured that each deal would make a substantial contribution to fixed costs. The minimum acceptable margin was not related to any fixed cost calculation or break even point analysis; it was the margin which the Managers felt any salesman 'ought' to be able to obtain. This margin was 'normal' not in the Marshallian sense.
but in the sense that it was the 'going rate'. When sales were poor, both Team Managers were concerned to provided their salesmen, whose only income was from commissions, with an adequate living. At these times one Team Manager would accept virtually any deal that covered direct costs. It is argued that this policy could profitably be adopted whatever the state of sales.

CONCLUSION.

Neither the profit maximising assumption of the Classical Economists nor the competitive assumption of the Game Theory were corroborated by this research. The Team Managers, who made the pricing decision, refused deals which would have added to Company profits. Competitors' policies were not important factors in their decision processes nor were their own policies aimed at benefiting themselves at the expense of competitors.

The Team Manager is seen as a buffer between the General Sales Manager and the salesmen. It does not matter what price he sets so long as it satisfies the demands of his superiors and subordinates. The rules of his decision process are a rationalisation of the price he sets and could be randomly generated. All are acts of faith, and one suspected that they will satisfy him only so long as his results continue to satisfy his superior and subordinates.

This presents an interesting subject for further research.
If the Team Manager's decision is based on guesswork, what will he do if he finds that his results are no longer satisfactory? Will he make the opposite guess? Events at the ABC Company at the end of the period of study suggest this may be the case. The General Sales Manager expressed strong dissatisfaction with both Team Managers' results. The response of Albert, who had previously kept his price low in order to meet his profit quota by selling a high volume, was to raise his price. The response of Bruce, who had previously kept his price high believing demand demand was price inelastic, was to drop his price. Here there is an analogy with the event matching strategy noted in binary choice experiments. It is not the nature of human beings, when faced with uncertainty, to choose the logically most profitable solution and stick to it. Stedry and Kay have done some research on the response of foremen to unrealistic increases in quotas, but it has not been shown whether the random results which they observed were caused by differences in the characters of the foremen, or simply by event matching, some foremen making lucky guesses and others not.

Further research into price setting under competitive bargaining could also usefully be undertaken. It would be interesting to know if it is the practice in other automobile dealerships and other consumer durable outlets to simplify the problem into a search for a single minimum acceptable margin, and then to devise a complex of decision rules to set this margin higher than the theoretic optimum and to revise it hourly. If this is general practice then there are opportunities for the rational entrepreneur and problems for theoretical economists.
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