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# THE RELATION BETWEEN MARKET SHARE AND PROFITABILITY: AN ATTEMPTED SYNTHESIS

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# THE RELATION BETWEEN MARKET SHARE AND PROFITABILITY: AN ATTEMPTED SYNTHESIS

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The paper investigates the optimality of seeking higher market share as a means of increasing profits. By taking a theoretical rather than an empirical approach, several results from the literature are synthesized.

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# I. INTRODUCTION

In the last ten years, it has become something of a dogma in the theory and practice of strategic management that maximizing one's market share is a way to maximize one's profits.

On the empirical side, a positive association between market share and profitability has been demonstrated in several cross-sectional studies, most notably in the PIMS study by Buzzell, Gale, and Sultan (1975). The supporting theory most often cited is that of the experience curve effect, formulated by the Boston Consulting Group (1972). As an indirect measure of the impact of these ideas, Haspeslagh (1982) estimates that a majority of the Fortune 500 use some sort of portfolio planning technique. Finally, more anecdotal, chief executives of diversified firms often state it as a policy to participate only in those markets where they can occupy the number one or number two spot.

Some voices, however, have been raised in opposition to the seemingly widespread desire to increase market share at any cost. Several years ago, Fruhan (1972) cited numerous examples where attempts to gain market share proved costly to the involved firms, a finding which suggests that ample financial resources are a necessary prerequisite for engaging in a fight for market share. More recently, Rumelt and Wensley (1981) have argued that the price of getting market share, in analogy to the price of common stock, must be expected to adjust, so that one could not make a long-term profit on investments in market share. That is, the high returns from having a high market share are counterbalanced by a correspondingly high price paid earlier to get that market share. Rumelt and Wensley test the theory in a time series setting and cannot reject the hypothesis that the relationship between market share and profitability is due to stochastic effects only.

By taking a theoretical perspective, the present paper will attempt to develop a synthesis which can clarify the relationship between the above results and give a clearer answer to the question: Under what circumstances, and by how much, should a firm try to increase market share?

## 2. THE NATURE OF THE PROBLEM

The argument by Rumelt and Wensley--that it is necessary to look at long-term profits and subtract the cost of getting market share from current returns from it--is clearly valid. However, their statement, that one should expect the "price" of market share to adjust in such a way that no profits can be made on investments in it, is true only in situations where it is without interest. To see this, consider the following:

a. Assume that the static returns from having market share in a given industry are decreasing, so that the industry does not exhibit the positive cross-sectional association between profits and market share found in the aggregate PIMS result. Let us now hypothesize an auction in which N identical firms can buy small units of market share. In this auction, each buyer will want to buy until the marginal (net present value of long-term) profit of getting more market share is lower than the price of market share. Since all buyers are identical, this point will be the same for all of them and the ultimate price will be such that each gets 1/N of the market. If the price is lower, total demand will exceed one and if it is higher, it will be less than one. In a more complete analysis, N will adjust in such a way that each firm's net profit, after costs of buying share, will be just enough to keep it in the industry. So in this situation Rumelt and Wensley clearly have the correct analysis (See Figure 1).

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FIGURE 1

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b. Let us now look at the case Rumelt and Wensley examine, involving increasing static returns from market share. In a similar auction, buyers here maximize net profit by having either the whole market or nothing at all. So the market for market shares does not clear at any single price; there is either too much or too little demand (See Figure 2).

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FIGURE 2

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What Rumelt and Wensley run into is a variation of one of the major problems in modern economic theory, namely, the nonexistence of competitive prices in markets with increasing returns to scale.

The implication of this is that in the following PIMS, prevalent case with increasing returns from market share, a price, in the usual sense of the word, does not exist. This is not to say that getting more market share does not have a cost; it clearly does, but the cost depends on a number of factors, such as how much market share you have already, how much your competitors have, your and their cost positions, the stage of the product life cycle, etc. In any case, the price of market share is not of interest in itself for the practitioner. What is relevant is the relationship between different developments of the directly controlled variables (e.g., price, advertising, etc.) and long-term net profitability. Whether this relationship goes through market share and whether market share has a time- and state-independent price are issues of academic interest only. Let us therefore attack the main issue directly.

## 3. ANALYSIS[1]

Let us now analyze the profit-maximizing actions of firms in industries with increasing returns from market shares. For reasons of expositional

ease, we will first think about an industry with only two firms, A and B, competing on price only.

Let us start with a very abstract game, in which the firms can lower price and go for market share "early" or "late" in the product life cycle. The payoff matrix for this game will look more or less like that in Table 1.

TABLE 1

Payoff to firm A/B

| | | B: early | B: late |
|---|---|---|---|
| A | early | medium / medium | low / high |
| | late | high / low | medium / medium |

In the upper left and lower right squares, both firms are lowering price in the same period, resulting in heavy competition in those periods and a friendlier coexistence in the other half of the product life cycle. If one firm attacks "early" and the other "late," various mechanisms will make the former firm a much stronger defender than the latter. With increasing returns from market share (due, e.g., to economies of scale or brand loyalty effects), the "early" firm will have built up entry-barrier-type advantages, as a result of which the "late" firm faces an uphill battle. The "early" firm will therefore take the lion's share of the payoffs.

From this, the equilibrium of the game is clearly in the upper left-hand corner, where both firms lower price early. It is possible that this will lead to very low payoffs, especially if the firms have approximately the same

financial strength; but if you want to participate in the industry, this is the appropriate strategy. In a more realistic setting, new technologies, designs, or tastes might create enough turbulence to make it profitable to attack again later in the product life cycle; but to stay in the game, a firm should always at least attack early, especially if others are. If the others are too strong, a firm may choose to drop out; but a smaller firm can never afford to sit and wait while larger firms create entry barriers. It should be intuitively clear that this reasoning remains valid in an n-firm setting. So:

1. If a firm wants to stay in the industry, it should at least attack early.

The next logical question concerns the fierceness and duration of the attack. Let us start by establishing two simple facts:

a. The earlier the attack, the cheaper it is.

Early in the game there is a smaller volume on which to lower prices and entry barriers are not yet erected to any significant degree. Furthermore, the financial resources of most competitors are likely to be limited because their small revenue base leads to a small profit. The earlier the attack, the more unlikely it is that a competitor will/can finance ultralow prices.

b. The earlier the attack, the higher is the payoff.

The firm can take home profits on its "investment" (in the form of lower costs and higher market share) over a longer time period, and it will have a better cost position from which to defend its market share. Disregarding for the moment the firm's financial constraints, the general rule is to attack more fiercely very early and less fiercely a little later. In actuality, however, the firm's financial limitations are likely to be more constraining the earlier in the product life cycle it is. The firm will presumably get more and more cash flow as time goes by. If cash flow has some positive relationship to profit, a higher market share should produce disproportionately

more cash flow in an industry with increasing returns from market share. This cash will then permit the lowering of price. So while the ideal degree of attack declines over the product life cycle, the financial constraints under which most firms operate make a more and more vigorous attack feasible. In practice, the financial constraint is likely to be binding for quite a while, although it is hard to delimit the fraction of the product life cycle for which this is true. So,

2. Very early, all firms maximize growth subject to a financial constraint.
3. The larger and/or financially stronger firms fare best in the war.

Thinking further ahead in the product life cycle, it is clear that at some time the firms will stop maximizing growth and start taking profits home. The question is when.

To provide a partial answer to this, it is easiest to start out by considering the largest firm. This firm will be gaining market share as long as it maximizes growth. This will be more and more expensive, however, and less and less effective, since price has to be lowered on bigger and bigger market shares, while fewer and fewer customers are left to choose. On the other hand, the competitors could be at an increasing cost disadvantage because of the increasing size differences. On the whole, however, it is likely that the biggest firm will stop maximizing growth well before monopolization. If we abstract from regulatory influence and assume that the big firm does come close to monopoly, it might be tempting to persist long enough to squeeze the last competitor out so that one could practice monopoly pricing. This is an unlikely scenario, however; first, one cannot abstract from regulatory agencies, and second, a truly dominant firm will often be able to ensure near-monopoly markups anyway. Accepting that the biggest firm is unlikely to monopolize the industry, the next question is how it will choose to let

its market share develop. The same mechanisms which make monopolization expensive also make it tempting to "sell off" some market share, since increasing prices on a big market share will give high short-term payoffs. So

4. The largest firm will rarely want to monopolize the industry.
5. At some "late point in time," the largest firm will often reduce market share slightly.[2]

From the viewpoint of smaller firms, the pressures early in the product life cycle tend to work two ways. On the one hand, their declining market share will make price cutting cheaper; on the other hand, their declining relative size will, through economies of scale, tend to squeeze profit margins and available financial resources. The crucial instant is when the largest firm stops maximizing growth and starts to raise prices (or to let prices drop less sharply). If a small firm can turn out a profit at the new, higher prices, it will probably be able to stay in the industry, although it is unlikely to be very profitable. If it has lost too much in scale advantages, it will probably already have left the industry.

In terms of the long-run steady state of the industry, bigger and smaller firms face different cost and demand conditions. The bigger firm will have low marginal costs (because of economies of scale) but a relatively inelastic demand (because of the relatively small number of noncustomers in the market). The smaller firms, conversely, will have higher marginal costs and relatively more elastic demand. Both types of firms should price at the long-run profit-maximizing level, which for stable markets will be equal to marginal costs plus a markup, which is growing inversely with the elasticity of demand.[3] Let us now assume that changing market shares affect the marginal costs less than the demand-derived markup term. So economies of scale are

not too dramatic. In this case, the steady state price will increase as the firm grows very big, since marginal costs go down less than the markup goes up. Conversely, for the smaller firm, the steady state price will decrease as it grows smaller, since the markup will decrease more than enough to compensate for the loss in cost efficiency. The industry could therefore stabilize in an equilibrium where both smaller and larger firms charge the same price, but based on different costs and profit margins. Note that this equilibrium is stable, since a sudden change in market share will lead to a correcting price action. If the big firm gains (loses) market share, it will increase (decrease) price, since the effect due to changed elasticity of demand will outweigh the cost change. Correspondingly, if a small firm gains (loses) market share, the same effects would pertain. So

6. The industry could end in a stable long-run equilibrium where all firms maximize profit.

An interesting and related result, which holds under certain technical conditions, is that:

7. A "symmetric" industry structure, where firms are of the same size, is often unstable.

What happens is that a firm which gains (loses) a small advantage will affect price in such a way that the discrepancy is augmented. This is based on the assumption that the effect from economies of scale is larger than the effect from demand elasticity in the case where firms are of about equal size.[4] If the unstable equilibrium is disturbed, one firm will gain market share until the market structure is driven to the stable "asymmetric" size distribution, at which point the arguments against monopolization carry more weight (See Figure 3).

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Figure 3

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The short-run results (1-5) are summarized graphically in Figures 4 and 5.

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FIGURE 4
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FIGURE 5
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The long-run results (6-7) are illustrated in Figure 6, which depicts a two-firm example.

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FIGURE 6
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In Figure 6, $(MS_1, 1 - MS_1)$ is the stable asymmetric equilibrium, whereas (1/2, 1/2) is the unstable symmetric situation. The firms clearly gain in profitability by staying close to the stable equilibrium values and avoiding the unstable symmetric equilibrium. The only reason that firms will accept the low payoff from the price war of the symmetric equilibrium is that they both have a chance of moving ahead, thus ending up in the high payoff situation at $1 - MS_1$. Note also that it is irrational for the small firm to challenge the larger firm with a price war. So if you are established as a leader in an asymmetric equilibrium such as $(MS_1, 1 - MS_1)$, you are in a very secure position, at least in conventional warfare.

Let us now look at the normative implications of these results.

## 4. IMPLICATIONS

Note, first, that if a firm finds itself in a stable, asymmetric equilibrium, a higher market share will correspond to a higher profit from that time on. Over- or undershooting the equilibrium and trying to hold too big or too small a market share ($1 - MS_1 \pm \varepsilon$ in Figure 5) will, however, lead to maximum profits. Trying to hold too big a market share, for example, will often involve charging prices that are too low. So each firm has an optimal

market share to shoot for; and the higher this target, the higher the firm's profit. The target itself is dependent on the structural characteristics of the industry, such as relative cost positions and the relative price sensitivities of firm-specific demands. Pretending that the target is higher than it actually is and going for higher market share will be self-defeating. What is valuable is not market share, but the firm's relative cost position and the price sensitivity of its demand, of which market share, if equal to its equilibrium value, is an indicator. Trying to increase the value of the firm simply by increasing market share is like trying to put out a fire by blowing the smoke away. Again, even though higher sales can influence the firm's relative cost position and demand elasticity, it is net profit-maximizing to try to influence those once the industry is in a stable equilibrium. Hence the stability of the equilibrium.

Should a firm find itself in an unstable symmetric equilibrium with an associated "deadlocked" price war, it is safe to assume that the industry will eventually move to a stable asymmetric equilibrium and that the current casualties are part of the fight for the high-share/high-profit position. In these situations the firm has to decide whether or not to fight on the basis of an assessment of its chances of winning and the associated costs.

Because the firm's relative cost position and demand elasticity gradually freeze as the industry matures, the early phases of the product life cycle offer opportunities to jockey for position. To stay in the industry, the firm should always fight hard early in the product life cycle. Unless the firm is financially very strong, this fighting is likely to result only in smaller declines in market share than otherwise; but it is still the correct course of action. It is possible, of course, that the firm's strengths relative to present and future competitors are so limited that its total product life

cycle payoff will be negative, in which case it should not participate at all. To remain in the industry, however, requires fighting hard early on.

Sometimes opportunities to switch the relative cost and demand elasticity positions occur at selected points in time later in the product life cycle. This might happen, for example, with the advent of new technology, if one can develop a new product design or find a new strategy. As an example, Miller shifted market shares in the mature beer industry by using marketing techniques that were radically new for that industry. The Japanese have shifted shares late in many industries by offering a different price/performance package. A blind attack late in the product life cycle which is not tied to a major change in the cost or demand properties of the product is likely to be a failure, however.

In summary, firms should select the industries they want to be in, attack in periods of turbulence (such as the early stages of the product life cycle), and try not to overplay their cards in the stable periods of the product life cycle. Again, market share is not valuable in itself; it is a symptom of, and can be a means of obtaining, something valuable.

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## FOOTNOTES

1. This section draws heavily on Wernerfelt (1982a, 1982b, and 1982c), where the results are derived in the setting of differential game theory.

2. See also Scherer (1970), pp. 217-218.

3. If we maximize $q(p)[P - c(q(p))]$ with respect to p, we get the optimal price $p^* = c + c'q - q/q' = MC + p/\varepsilon$, where q, p, c, MC, and $\varepsilon$ denote the demand function, the price, the cost function, the marginal cost, and the elasticity, respectively, and where the prime indicates a derivative.

4. See Wernerfelt (1982a).

FIGURE 1

Market Share Auction with Decreasing Returns to Market Share

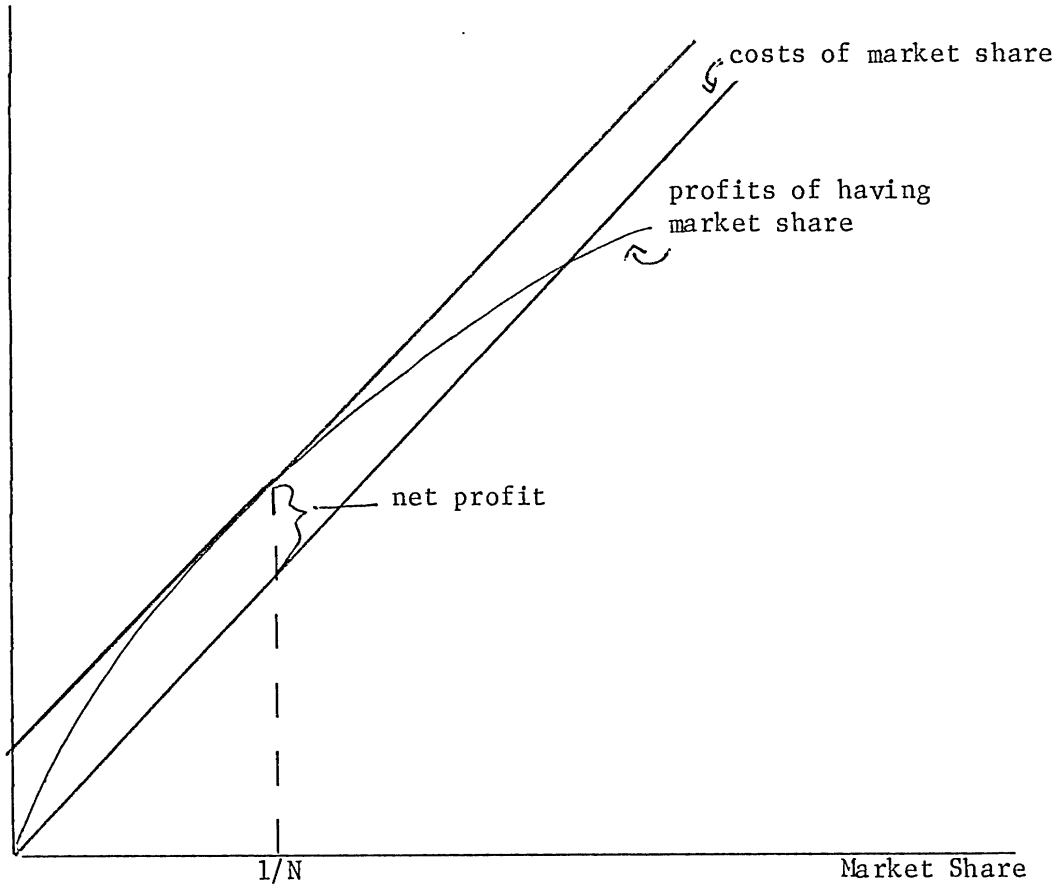


FIGURE 2

Market Share Auction with Increasing Returns to Market Share

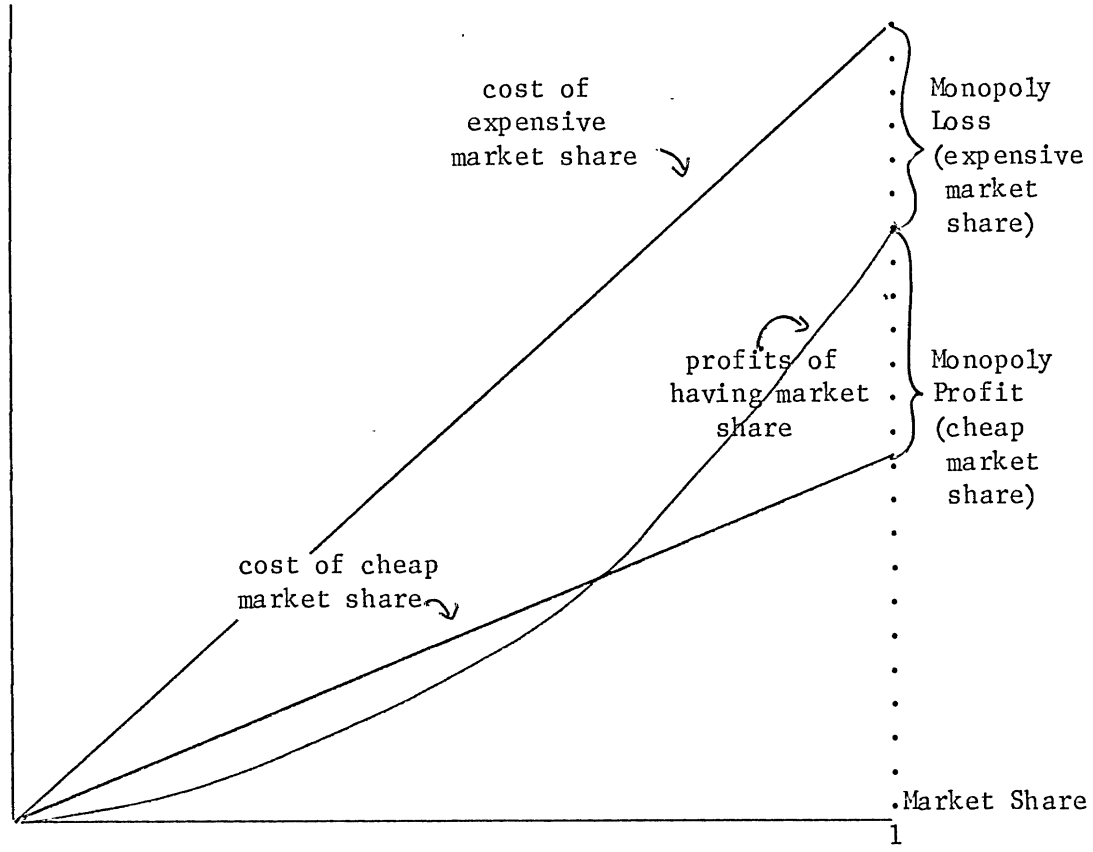


FIGURE 3

Steady State Prices as Functions of Market Shares

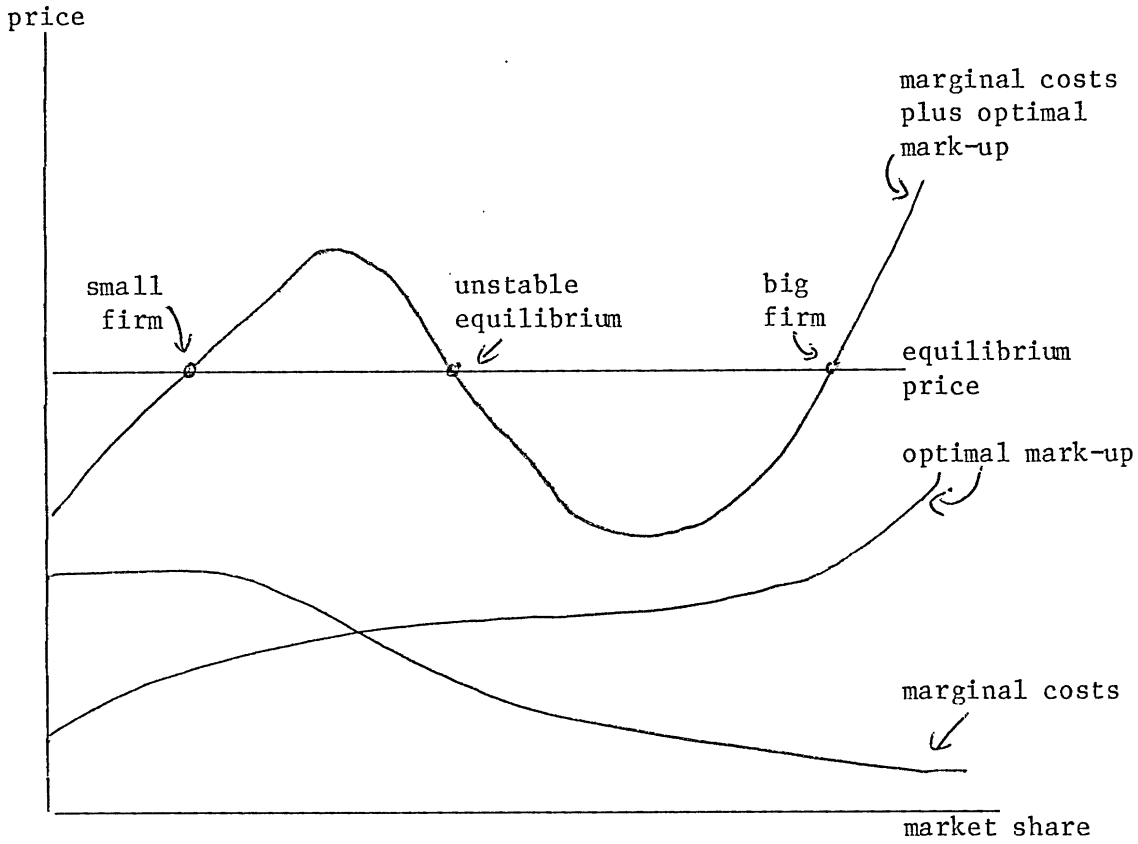
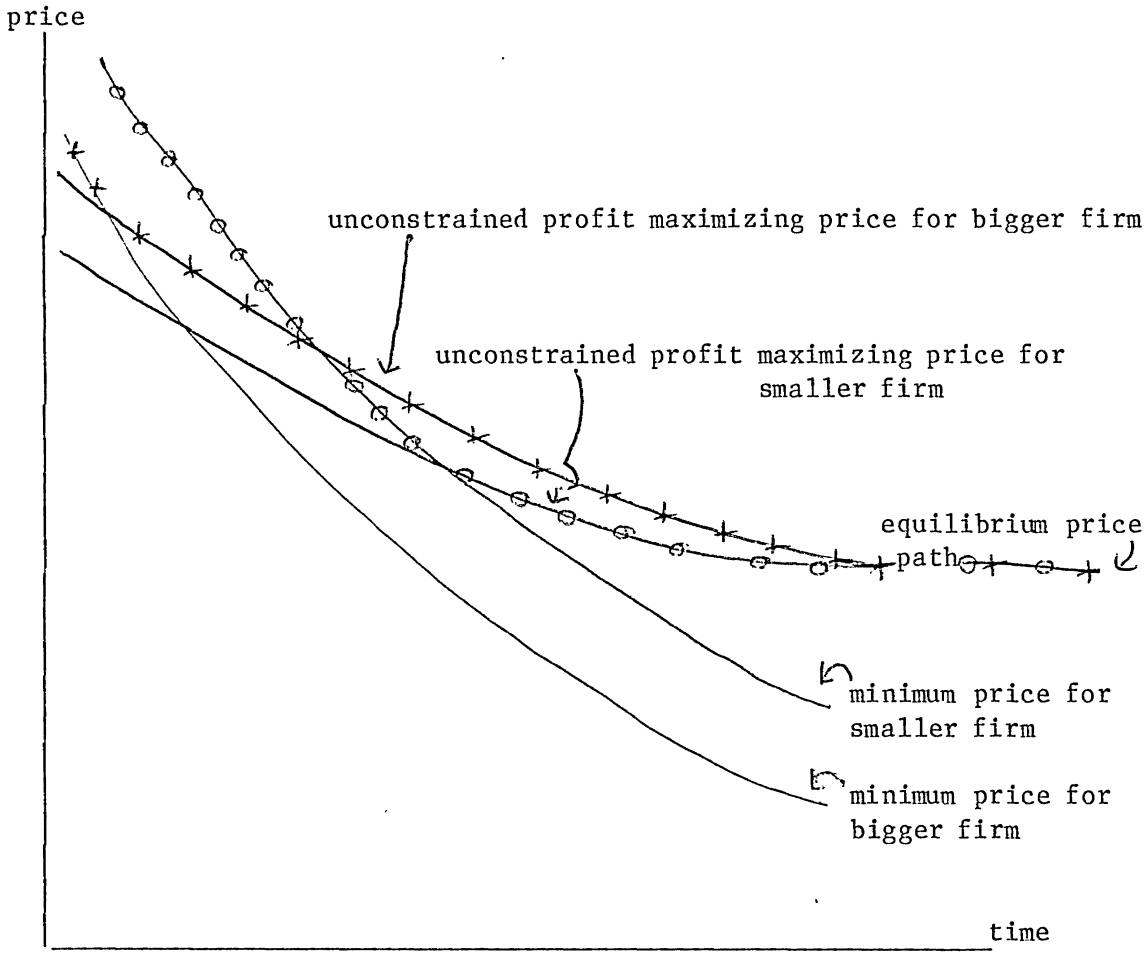


FIGURE 4

Price Paths for Bigger and Smaller Firms




xxxxx Actual price for bigger firm

ooooo Actual price for smaller firm

FIGURE 5

Market Share Paths for Bigger and Smaller Firms

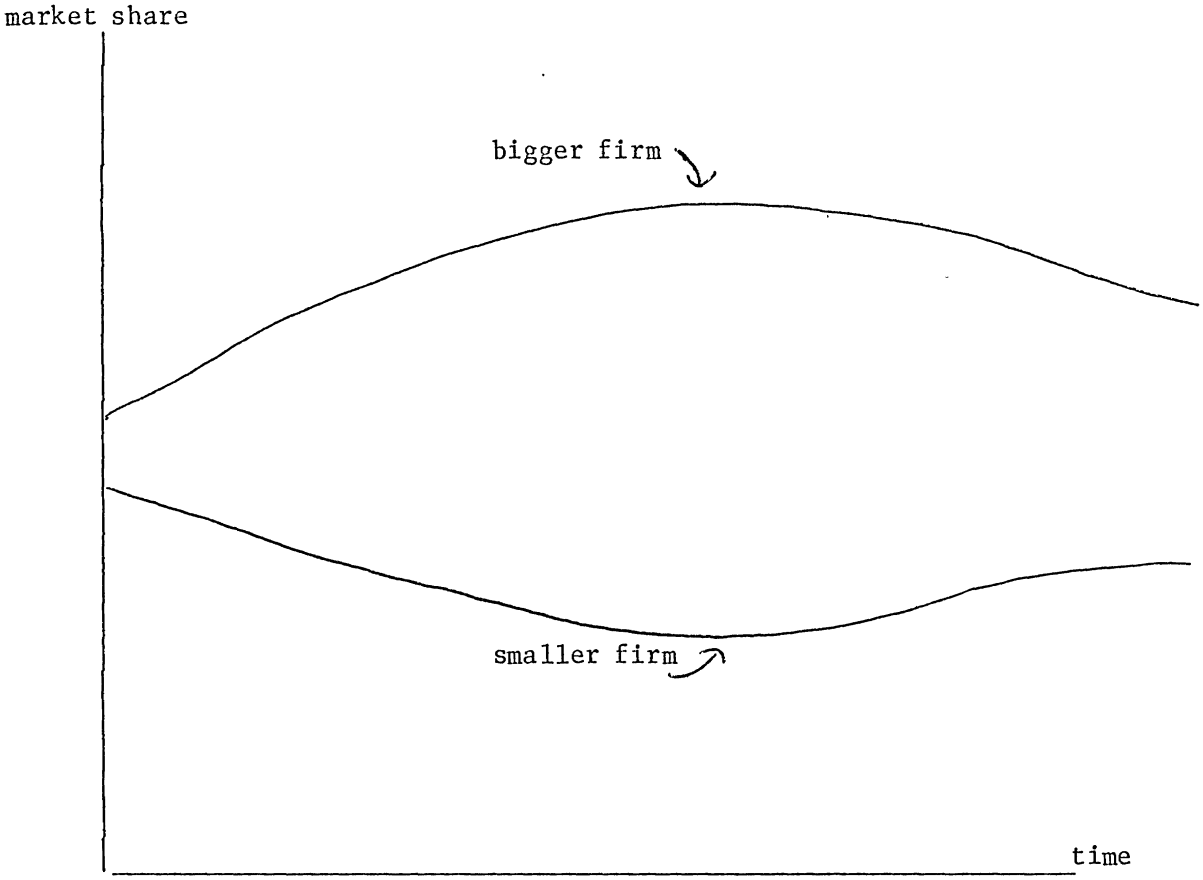


FIGURE 6

Equilibrium Profit for Different Market Shares, Duopoly