

## CHAPTER 10

### Price Leadership

Price leadership describes the situation in which a single enterprise regularly initiates market price changes by changing its own price because all the other enterprises in the market follow and adopt those price changes. The enterprise that initiates those price changes is called the price leader and the enterprises that followed are called price followers. Therefore the questions which need to be answered is how does a enterprise attain the position of price leadership and how does it command allegiance to its price. These two questions will be answered by considering three situations - the first will be the archetype price leadership situation in which a dominant enterprise 'controls' the market price; the third will consider the situation in which price leadership has failed and enterprises have engaged in collusion to set the market price; and the second situation considered will deal with large enterprise price leadership as exercised through a trade association.

As indicated above, the notion of price leadership emerges when a enterprise in a market can dictate its price to the other enterprises in the market. (It must be clear, however, that the following enterprises accept the dominant enterprise's price because they believe that it is the best thing to do.) In particular, it was indicated that price leadership emerges in markets when a dominant enterprise appears. In stating this, a number of unanswered questions immediately comes to the fore; (i) how is a dominant enterprise identified (or quantified); (ii) why

would such a enterprise magically appear in a particular market; (iii) why is its price accepted by the remaining enterprises in the market; (iv) what impact does it have on the market price; and (v) how stable is it in terms of being a price stabilizing market institution? In answering these questions we will come to a better understanding of what dominant enterprise price leadership is.

### Price Leadership and the Dominant Enterprise

#### Dominant Enterprise Defined and Identified

The most obvious characteristic of a dominant enterprise, especially one formed via a horizontal merger, is that it is extremely large in comparison to the market and to the other enterprises in the market. To quantify this two-fold characteristic, we must first specify the manner by which the enterprise's size will be measured. As it turns out enterprise size can be measured in a variety of ways - in terms of total assets, value added, employment and sales. Because we are primarily interested in the dominant enterprise's relationship to the other enterprises in a particular market with respect to the determination of the market price, the only relevant measurement of size for our purposes is sales. More specifically, because we are only interested in the enterprise's size with respect to a single market, its size can only be defined in terms of its specific market sales. Therefore a multi-product enterprise might have a total sales of  $X$  but only a percentage of it is found in any one market; hence the enterprise's size for any particular market can be defined as  $y_d = aX$  where  $y_d$  is the

dominant enterprise's total sales in a particular market per accounting period,  $\underline{a}$  is the percentage of total sales accorded to the market, and  $\underline{x}$  is the dominant enterprise's total sales per accounting period.

Now we are in a position to quantify the statement that the dominant enterprise is large in comparison to the market. This is done by determining the dominant enterprise's share of market sales -  $s_d = y_d/y_m$  where  $\underline{y}_m$  is total market sales and  $\underline{s}_d$  is the dominant enterprise's percentage of market sales or market share.

To be a dominant enterprise with respect to the market  $s_d > 50\%$ . Historically, dominant enterprises produced by a merger have had  $s_d$  much greater than 50%. Now to quantify the statement that the dominant enterprise is large in comparison to the other enterprises in the market. That is what we are interested is a summary measure which for the inequalities of enterprise sizes in the market and the best measure for this is the Herfindahl-Hirschman Index (see chapter 7). When the market is occupied by only one enterprise the Index attains its maximum value of 1.0. The value declines with increases in the number of enterprises and increases with rising inequality among any given number of enterprises. In the case of the dominant enterprise, Index should be greater than .25. If  $n$  is less than, say, 5, the Index should be greater than .40; and if  $n$  is greater than 5, then the Index  $> .30$ . To summarize the above discussion, the dominant enterprise in a market can provisionally be identified if its market share  $s_d > 50\%$  and if the Herfindahl Index  $H > .30$  (if  $n > 5$ ) or  $H > .4$  (if  $n < 5$ ). Given this two-fold characteristic we

can conclude that the dominant enterprise has in part the ability to simply dominate the remaining enterprises in the market.

The size of the dominant enterprise, as discussed above, does not, by itself, permit it to dominate the other enterprises in the market. Therefore the size of the dominant enterprise must convey upon it a competitive advantage which the other enterprises in the market do not have. The most important and necessary advantage the dominant enterprise must have if it is to impose its price upon the market is a cost advantage. A second, but less important, advantage is financial.

If a dominant enterprise obtains a cost advantage from a horizontal merger, it is most likely to occur in the area of production. That is, let us assume that two enterprises are merging and each has three plants. The costs of the two enterprises are as follows:

Table 10.1

Enterprise A

plants	plant output	cumulative output	plant ADC	enterprise ADC	average shop expenses	average factory costs
A1	200	200	1.50	1.50	2.00	3.50
A2	175	375	1.86	1.67	1.07	2.74
A3	125	500	2.20	1.80	.80	2.60

Enterprise B

B1	200	200	1.50	1.50	2.00	3.50
B2	125	325	2.00	1.69	1.23	2.92
B3	100	425	3.00	2.00	.94	2.94

Assuming that the normal flow rate of output for enterprise A is 375, then its normal average factory costs (NAFC) is £2.74; likewise if the normal flow rate of output for enterprise B is

325, then its NAFC is £2.92. Upon merger, the dominant enterprise has a total capacity of 925. Assuming that the normal flow rate of output of the dominant enterprise is 700 and maximum flow rate of output is 825, the dominant enterprise's costs are as follows:

Table 10.2

Dominant Enterprise

plants	plant output	cumulative output	plant ADC	enterprise ADC	average shop expenses	average factory costs
A1	200	200	1.50	1.50	3.50	5.00
B1	200	400	1.50	1.50	1.75	3.25
A2	175	575	1.86	1.61	1.22	2.83
B2	125	700	2.00	1.68	1.00	2.68
A3	125	825	2.20	1.76	0.85	2.61

At normal flow rate of output, we find that the dominant enterprise's AFC is £2.68 - less than the pre-merger NAFC of enterprises A and B. This reduction in costs is due to the small reduction in enterprise ADC from concentrating production in the most efficient plants, and to the reduction in shop expenses following the re-organization of production and the scrapping of the inefficient plants. Turning to enterprise expenses, we can expect that when the integration of the two enterprises is complete, the total enterprise expenses will decrease (or remain nearly the same) with the elimination of duplicate activities (such as selling expenses). Assuming enterprise expenses to be £700 (as opposed to £800 assuming enterprises A and B have enterprise expenses of £400 each), the dominant enterprise's

average total cost schedule and  $NATC_d$  is as follows:

Table 10.3

cumulative output	200	400	575	700	825
$ATC_d$	£8.50	£5.00	£4.05	£3.68	£3.46

$$NATC_d = £3.68$$

Since  $NATC_d < NATC_{EA}$  (£3.81) <  $NATC_{EB}$  (£4.15), it can be concluded that the dominant enterprise has access to cost reductions via merger which are not available to the other enterprises in the market. Therefore, it can be concluded that in most instances the dominant enterprise will have lower average total costs at normal flow rate of output than the remaining enterprises in the market. Given this cost advantage, the dominant enterprise is in a position to set a price which will be less than the prices that the smaller more costly enterprises would desire. Therefore, as we shall see below, the smaller enterprises are 'forced' to accept the dominant enterprise's price.

Because of its size, the dominant enterprise's financial position is much stronger than that of its smaller competitors. That is, because of its size, the dominant enterprise has easier access to borrowing short (or long) term working capital and at lower rates of interest than its competitors. In addition, it has access to the capital markets, whereas the smaller enterprises are generally frozen out of those markets. As a result, as will be shown below, the dominant enterprise is in a much stronger competitive position viz. a viz. its smaller competitors, especially with respect to setting predatory prices as a way to establish its price as the market price.

Thus the dominant enterprise of a market can be defined as one which is able to control to a degree the competitive environment in which all other enterprises in the market operated. This enterprise's actions will shape the market outcome, especially with respect to the market price, without the explicit (or even implicit) consent of the other enterprises in the market. The principal characteristics of such a enterprise can be summarized as:

- (1) market share  $> 50\%$ ;
- (2)  $H > .30$  (if  $n > 5$ ) or  $H > .4$  (if  $n < 5$ );
- (3)  $NATC_a$  significantly lower than the NATC of any of the other enterprises;
- (4) access to the capital markets;
- (5) easy access to short and long term borrowing; and
- (6) significantly lower interest rates compared to its competitors.

#### Determining the Market Price

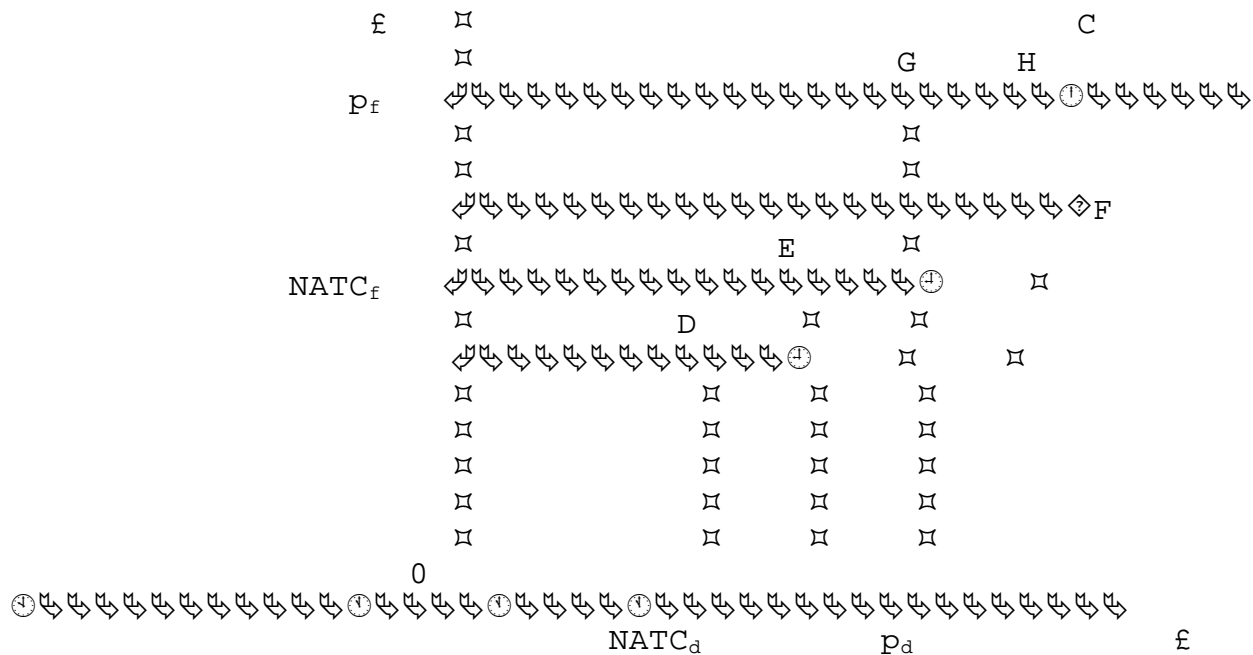
It is generally accepted that the dominant enterprise's price is accepted as the market price by the other enterprises in the market because of its cost and financial advantages. Still the question as to why the smaller enterprises accept the dominant enterprise's price has not been completely answered. To provide a complete answer let us undertake the following analysis.

Let us consider a two enterprise case in which one of the enterprises is a dominant enterprise. Considering the two enterprises together, it would be unusual if they each had

identical views about the most desirable market price. That is, in light of their differences in normal average total costs and their different financial requirements, the two enterprises would have different ideas as to what the market price should be. More specifically because of the dominant enterprise's significantly lower  $NATC_d$ , its ideal market price will most likely be lower than the smaller enterprise, even if its profit mark up is greater than the smaller enterprise's ideal profit mark up. Therefore, the dominant enterprise's price will rule in the market.

The above discussion can be delineated in the following model.

Figure 10.1



$p_f$  = the desired price of the price following enterprise;

$p_d$  = the price of the dominant enterprise;

$NATC_f$  = the normal average total costs of the price following enterprise;

$NATC_d$  = the normal average total costs of the dominant enterprise;

OC is a 45° line at which the ideal price for both enterprises is the same;

point D on OC represents the market price which would equal the dominant enterprise's  $NATC_d$  which is less than  $NATC_f$ ;

point E on OC represents the market price which would equal the following enterprise's  $NATC_f$  which is greater than  $NATC_d$ ;

point F on OC represents the market price of the price leader -  $p_d = [NATC_d][1 + r_d]$ ; and

point H on OC represents the ideal market price for the following enterprise -  $p_f = [NATC_f][1 + r_f]$ .

Along the OF segment OC both the dominant and following enterprise have the same views as to what the market price should be. At point F the dominant enterprise has reached its ideal price and will stay there. But  $p_d$  is not the ideal price of the following enterprise; therefore if the following enterprise wants to charge its ideal price, it must set a price higher than  $p_d$ , represented by point H. However, such a price differential (represented by GH) would result in a significant loss of market sales. Therefore the following enterprise accepts price  $p_d$  but does so by reducing its profit mark up below its ideal size.

It is sometimes argued that the dominant enterprise can use its financial advantage to force following enterprises who have an ideal market price less than its own to adopt its market price. First of all, it must be clear that financial advantage

can in part be seen as a cost advantage and has therefore been analyzed above. Rather what we are talking about is the financial ability of the dominant enterprise to engage in predatory pricing to force the following enterprise(s) to adopt its ideal market price. In this case, the dominant enterprise sets a price which is below its ideal price and which is far below the ideal prices of the following enterprises - in extreme instances it could be below the normal average total costs of some (all) of the following enterprises. Because the dominant enterprise has recourse to the banks and financial markets, the decline in its flow of profits due to the reduction in its profit mark up will not affect its ability to grow and expand. That is, over the foreseeable accounting periods, the dominant enterprise will set a 'low' price which will reduce its profit flow; however this reduction in profits will not affect its investment projects because it can borrow money from financial institutions or issue new stock to make up the difference. Therefore, the dominant enterprise is not under pressure to raise its price for a considerable period of time. On the other hand, the smaller enterprises will face economic hardship because they do not have access to external financial support - they will have to reduce their investment expenditures or cease them altogether. Therefore after a period of time the enterprises will either have to accept the dominant enterprise's ideal price or be forced into a permanently crippled state or from the market altogether.

#### Dominant Enterprise and the Market Price

Because the dominant enterprise's price is the market price,

the market price will move over accounting periods in accordance with the movements in  $NATC_d$  and  $r_d$ . Moreover because the dominant enterprise uses normal cost (or target return) pricing procedures, the price will be stable within the accounting period.

Let us take a closer look at the market price upon the emergence of the dominant enterprise. Prior to its emergence, the market price fluctuated greatly between boom and depression.

In the case of depression both costs and profit mark ups declined, while during the boom, both increased. However, with the emergence of the dominant enterprise, price fluctuations over the business cycle (accounting periods) would primarily reflect variations in costs since the determinants of the profit mark up are largely unaffected by the fluctuations in effective demand associated with the business cycle. Therefore, the dominant enterprise reduces price fluctuations over the business cycle.

Because the dominant enterprise usually comes into existence following a destructive price war, the market price is below the ideal price of all enterprises in the market, including the dominant enterprise. Thus you get the phenomena of the dominant enterprise being associated with a significant rise in the market price and defending the price rise as being reasonable. Once the ideal market price has been set, however, its value over time is closely connected to changes in  $NATC_d$  and  $r_d$  and thus explainable in terms of the dominant enterprise's cost structure and plans for investment and growth.

#### Appearance and Stability of the Dominant Enterprise

### Appearance

The emergence of the dominant enterprise is based on many factors - such as mergers, patents, innovation/invention, and product superiority. For example, United Shoe Machinery Corp., which owed part of its position of dominance to a merger, also relied on product superiority (loyalty) generated through its leasing policy and the trust as an organizational innovation. Mergers played a role in Pullman's acquisition of dominance, but they occurred simultaneously with invention and patent protection. At least one of the acquired enterprises approached Pullman because it was having difficulty competing without access to the Pullman patents. Kodak, Gillette, and Campbell also invented their products, but patents were required to prevent imitators. In addition, they were able to generate product loyalty as a result of the quality superiority of their products, advertising and dealerships. Coca-Cola followed a similar pattern. Although it did not invent the soft drink, it was associated with the development of franchised bottlers, a marketing innovation. Its formula for Coke was protected by secrecy rather than patents. However, in spite of all these factors, a common thread runs through them which is that they all help the dominant enterprise escape destructive competition and thus have more control over the market price.

### Economic Stability

As an industrial institution, the dominant enterprise is subject to change over time. That is, the factors which gave rise to its dominance can also contribute to its decline and as

well as to its continued dominance. To determine the conditions under which the dominant enterprise institution can change over time, let us consider two distinct situations - the first concerns costs and the second concerns competitive strategy.

### **Costs**

Let us consider the market and the enterprises within it in the context of sustained market growth over a period of time. Let us first consider the assumption that, given input prices and wages, market growth get translated into lower NATC through the adoption of new plant and equipment by the enterprises in the market. For the dominant enterprise and the market price, this implies the following: (1)  $NATC_d$  declines over time, (2) the market price will decline over time if the profit mark up is held constant or does not rise as fast as costs fall; and (3) thus we conclude that there is an inverse relationship between the size of the dominant enterprise in the market and the market price. For the price following enterprise the implications are as follows: (1) the following enterprise's NATC will decline over time, (2) its profit mark up will increase, decrease, or remain constant according as the decline of its NATC is greater than, less than, or equal to that of the dominant enterprise, and (3) thus we cannot conclude that growth in size will ensure that the price following enterprise profit mark up will increase.

Putting the above results together, we can reach the following conclusions. First, assuming  $r_d$  is constant, then the market price will decline over time (since  $\partial[(NATC_d)(1 + r_d)] = \partial P < 0$ ); and if  $\partial NATC_f / \partial NATC_d < 1$ , then  $\partial r_f < 0$ . Therefore in this case

the price following enterprises are being driven from the market because their profit mark up is being eliminated. In extreme cases,  $r_f < 0$  when the market price becomes less than  $NATC_f$ . With the elimination of the smaller price following enterprises, the dominant enterprise strengthens its dominant position in the market. Second, assuming  $r_d$  constant and a declining market price, if the price following enterprise is more energetic in introducing new technology than the dominant enterprise, its profit mark up will increase over time. Therefore its financial position with respect to the dominant enterprise will increase. More interestingly, if  $NATC_f/NATC_d < 1$  occurs because of its relatively aggressive stance towards technology, the smaller price following enterprise is in a position to become a price leader in the market. Lastly, the above two cases clearly indicate that, except for a fluke, market growth combined with technical change will lead to changes in the market - whether it be the relative growth of the dominant enterprise vis a vis its competitors or the relative decline of the dominant enterprise to the point that another enterprise will become the price leader. Thus we must conclude that (1) changing market structure is the state of affairs in growing markets faced with technical change, and (2) the dominant enterprise cannot maintain its market dominance (even though it has maintained its size dominance) if it does not keep up with the new technology. But it should be noted that up until the dominant enterprise is challenged as a price leader, the market price will remain stable throughout the accounting period.

Let us now consider the situation in which wage rates change, all other input prices and technology being held constant. The result will be a change in  $NATC_a$  and therefore the market price, assuming  $r_a$  constant. Since the price following enterprise faces the same wage changes, its cost/competition position vis a vis the dominant enterprise will not change significantly. Let us now introduce two new wrinkles into this state of affairs. Let us assume that the dominant enterprise's labour force is unionized and the following enterprise's labour force is not. Since the union will press for and obtain larger increases in the wage rate than will occur in the non-unionized enterprises, the dominant enterprise's cost will increase faster than the costs of the following enterprises. Thus, the situation can emerge when the dominant enterprise loses its cost dominance in the market and along with it, its price setting dominance.

Let us now assume that the wage costs associated with the new technology is very much lower than those associated with the vintage technology. Therefore since the dominant enterprise employs more of the new technology than the following enterprises, changes in the wage rate will affect the following enterprises more severely. Consequently, as the wage rate increases the  $r_f$  will generally decrease. Hence dominant enterprise's position in the market will be strengthened not only because  $\partial NATC_f / \partial NATC_a < 1$ , but also the following enterprises profit mark ups are declining, thus reducing their ability to obtain the funds needed to buy the new technology. Thus we can conclude that wage changes can lead to significant changes in the

organization of the market, especially when tied to technology or to unions.

The last situation which will be considered is the growth of the following enterprises market share in a growing market. Let us assume that the dominant enterprise is willing to grow but not at a rate which will maintain its market share. The result will be that the following enterprises will be growing at rates faster than the market with the results being  $\frac{\Delta NATC_f}{\Delta NATC_d} > 1$  and  $\Delta r_f > 0$ .

As a result, the dominant enterprise will be losing its dominance in terms of size, costs, and pricing within the market.

Consequently, a time will come when a new form of market organization will be needed to ensure a stable market price.

### **Competitive Strategy**

What is being considered here is what kind of competitive strategy must the dominant enterprise undertake if it expects to maintain its dominance in the particular market. It must be noted that a dominant enterprise can maintain its dominance in a market while simultaneously losing it in other markets.

Moreover, the dominant enterprise could control a particular market, while its competitors create new substitute markets or simply new markets, with the net result being that the dominant enterprise stagnates while its competitors grow. While such situations are important when dealing with the growth of the enterprise, they are outside the confines of this course.

Rather, what we are specifically interested in are the kind of strategies the dominant enterprise must undertake if it expects to maintain its dominance.

With the first mover strategy, the dominant enterprise maintains its position in the market by being the first enterprise in the market to, say, introduce novel additions to the product being sold or novel ways of selling the product in the market. Consequently, the other enterprises are always trying to 'catch up' with the dominant enterprise and therefore are never in a position to surpass it. The second strategy, similar to the first mover strategy, involves the creation of 'barriers' to entry and growth. One such barrier would be the control of patents which could be used 'to block entry' or inhibit growth through burdensome licensing agreements. Another barrier could be the control of inputs, such as the ownership of the cheapest resource inputs. And the third strategy would be to build capacity ahead of the growth in market sales so as to always be in a position to capture the 'new sales' and thus preventing any of the other enterprises from getting them. Each of these strategies, while designed to maintain the dominance of the dominant enterprise, could in fact lead to its downfall because they violate the antitrust laws.

#### Legal Stability

The dominant enterprise is a legal industrial institution and therefore is stable in that sense. That is, although the dominant enterprise is large compared to the market and provides the basis by which the market price is stabilized, it is not in per se violation of the U.K. various 'monopolies' statutes.

#### Terms

market share  
dominant enterprise

price leader  
Herfindahl-Hirschman Index  
cost advantage  
financial advantage  
first mover strategy  
barriers to entry and growth

### Exercises and Questions

1. Under what conditions will a business enterprise become a price leader? Will a price leader provide greater control over competition than a trade association? Explain.
2. Assume that the market is growing over time, then if
  - a. the price leader is growing relatively faster than the price following business enterprises, what will be the impact on the price followers' profit mark up and on the organization of the market; and
  - b. the price leader is growing relatively slower than the price followers, what will be the impact on their profit mark up and on the organization of the market (be sure to give a detailed description of the shift in market power).
3. Assume that a dominant business enterprise emerges in a market following a merger, discuss the following points:
  - a. what will be its impact on the market price with respect to its stability during the accounting period?
  - b. what will be its impact on the level of the market price if destructive price competition occurred in the market prior to the merger?
  - c. assume that the market is growing, prove that, given a constant costing margin, the market price will fall over time.
  - d. show that there is an inverse relationship between the size of the dominant enterprise and the market price.
4. What factors contribute to the economic stability of the dominant enterprise.
5. What legal factors contribute to the legal stability of the dominant enterprise.

### Readings

1. Chandler, A. D. 1990. Scale and Scope: The Dynamics of Industrial Capitalism. Cambridge: Belknap Press.
2. Hannah, L. 1976. The Rise of the Corporate Economy: the British Experience. Baltimore: The Johns Hopkins University Press.

3. Maunder, P. 1972. "Price Leadership: an appraisal of its character in some British industries." Business Economist 4 (Autumn): 132 - 140.