

Profit, Entry and Changes in Concentration: The Case of the Malaysian Food Manufacturing Sector

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INTRODUCTION

One of the major concerns of the body of economic analyses surrounding the theory of the firm is whether the profit behaviour of oligopolistic industries differs from that of competitive industries. Theory suggests that where small groups of sellers account for a substantial proportion of an industry's output, the recognition of mutual interdependence will result in the absence of price competition. In recent years significant progress has been made in developing a theoretical model to explain concentrating impact among consumer goods industries, and a number of empirical studies have been carried out to test the hypotheses which have been advanced. The findings however, are not conclusive. The work of Ekelund and Maurice (1969) has shown that concentration has no effect on profitability. Mann, Henning and Meehan (1967) on the other hand contended that the two are intimately connected. Similar findings were recorded in the work of Comanor and Wilson (1967) as well as that of Collins and Preston (1969).

MARKET STRUCTURE AND PROFIT LEVEL IN DEVELOPING ECONOMIES

The original objective of this work was to test the simple hypothesis that excessive market power, by removing the need to keep prices down to their competitive levels, enables firms to earn excessive profits. It was thought that the market power enjoyed by a firm depends on two factors: the degree of seller concentration in the industry it is operating

in, and the height of barriers to entry into the market. The difficulty of entry was assumed to depend mainly on the importance of economies of scale normally enjoyed by large firms. The explanation for inter-market differences in profitability has generally been sought in the characteristics of market structure, such as market concentration, market size, product differentiation and corporate diversity. Bain's study (1956) was the first to test the hypothesis that there is a distinct break in profitability between concentrated industries. The importance of this work stems from many parallels. For instance, the attempt to mould traditional production techniques with modern flexible production systems in order to produce the kind of unique product which can be later exported to other developing countries, may find root in the food industries in Malaysia, and may consequently provide unequal profits. While on *a priori* grounds we would expect the variables that influence the relationship between market structure variables and profit levels to bear some similarities in developing countries to those in developed countries, there may be some special factors about the former that may affect the outcome. For instance, in most developing countries, the production techniques in the manufacturing sector can be dualistic, with the modern production techniques located mostly in the urban markets and the traditional production techniques serving the non-urban consumers. As such, it will be interesting to see whether the possible relationship which has been observed in the industrial economies may be different in the developing countries given

the availability of the different types of markets. For instance, the influence of advertising may be different in a market with less exposure to mass media, with mass illiteracy or with traditional retailing systems. Only empirical analysis can indicate how well the structural relationship discovered in advanced countries applies in the developing countries.

This work has another significant bearing particularly on government policy towards monopolistic competition and cost efficiency. For a developing nation which has witnessed the power of oligopolist firms enjoying uncontrollable profits in any of the developed economies, it may wish to see that the same thing is not repeated at home, particularly given that the objective of creating social justice has always had the utmost priority in the economic policies of the state. Nevertheless, developing countries will also be wanting to see that their economies move into real growth which can only be accomplished by costs reduction and production efficiency. Hence, the desire of a nation to encourage costs reduction in order to promote cost efficiency in firms can only be achieved through the attainment of economies of scale which in turn may only happen through mergers. Thus, there is a possibility of conflict between the desire to curb monopoly pricing by controlling monopolies and the promotion of cost efficiency through mergers. The empirical result of this work will provide the knowledge of how well the Malaysian government has succeeded in her attempt to create social justice in this respect.

Finally, seller concentration and entry barriers due to the possession of economies of scale which form the crux pax of market structure relate to capital intensity. It is almost a well accepted norm to regard capital intensity in the developing countries as a low level technological characteristic. Allowing this attribute to be true and with each industry having its own different technological characteristics, the outcome of this empirical test will provide valuable information which will help to identify the kind of expected technological skill prevalent in the developing countries and at the same time estimate the

expected rate of return available in the usage of that kind of technology in the developing countries.

MODEL AND MEASURES

This article reports an empirical attempt to relate industrial performance with market structure in the Malaysian manufacturing sector (consumer goods-food): measures of profit rates are regressed on measures of market structure. The basic model employs a firm's profit rates as a function of four market structure variables—concentration, product differentiation, market share and corporate diversity. Seller concentration relates to the activities of the producers in determining price and output in oligopolist industries and has often been described as the pre-existence of "the recognised mutual dependence" convictions which essentially bring about the smallness of the sellers. It is usual in the literature to find concentrated industries linked to those possessed by large-sized firms; one of the reasons advanced for this is that concentrated industries enjoy favourable access to capital. The four-firm concentration ratio is one measure of this: the larger the share of industry output supplied by a few firms, the greater the probability that these firms will evolve some implicit or tacit collusion to raise price and restrict output. The general observation on four-firm concentration should be positively related with profit rates.

Product differentiation is likely to have a positive effect on profit rates. The firm's discretionary control over prices is positively associated with its ability to differentiate its product in the mind of the consumers. Hence, consumer inertia attributed to awareness and desire will finally cause consumers to exhibit product loyalty. In addition, greater product differentiation may raise capital requirements for entry into the market by requiring large advertising expenditures upon entry. While product differentiation has been suggested as a possible cause of improving profit rates, the literature is also replete with suggestions that concentrated industries are likely to advertise more intensively than other industries in

order to differentiate products for reasons of increasing profits. Thus, product differentiation has a positive effect on profits.

Like product differentiation, the rate of growth of market share is generally regarded as an important structural feature of the market which has a bearing on the nature and intensity of competition in the industry. The existence of growth of market share has been found to promote industrial concentration and a higher market share would be able to raise or generate bigger profits. Results reported elsewhere suggest that market share tends to move positively with profit rates.

Another possible barrier to entry involves the diversity of output mix produced by individual manufacturing firms. Fuchs (1961) argues that industries composed of multi-plant firms have higher entry barriers than industries composed of single-plant firms. The prospective entrants, in order to be successful, may possibly require multi-unit operations, larger capital and greater managerial skills. Hence, industry concentration will normally be positively and strongly related to corporate diversity. One measure of corporate diversity is to take into account the number of products produced by the firm in relation to the number of unit plants in operation within the firm.

Data gathered for this study are from a series of annual reports, namely, the Federation of Malaysian Manufacturers, the Kuala Lumpur Stock Exchange Annual Report and the Report on the Industrial Surveys, Department of Statistics, Malaysia.

THE EMPIRICAL RESULTS

From our data which is shown in Table 1, we found that the top four firms in the 30 largest food manufacturing firms in Malaysia accounted for approximately 60% of the total assets of the food manufacturing sector in 1990. The estimates of the total assets for all manufacturing industries for the same period was 3.2%. Hence, it will be noted that the proportion accounted for by the 30 largest food manufacturing firms was not substantially less than any other sector, given

the total number of establishments recorded was 1324.

Another structural comparison can be seen in terms of sales. The top four firms in the 30 largest food manufacturing firms in 1990 accounted for approximately 40% of the reported sales of the food sector for the period. This figure, when compared with the overall manufacturing sectors' sales for the same period, was found to be slightly lower. The approximate figure of the contribution of the 30 largest food manufacturing firms was 7.9%. Turning to profits, it appears that 1990 was a particularly good year for food industries in Malaysia. Only two firms reported negative profits as compared to seven in the two preceding years. The year 1990 was characterized by falling interest rates, particularly the announcement of the cut in the base lending rates by the central bank, expanding credit schemes to small business entrepreneurs and the establishment of a special fund to help small and medium enterprises, introduced by the federal government. The immediate results of these exercises were translated into a reduction in interest rates by commercial banks and also expansion of credit available to businesses. Considering the reduction of costs that took place during the period, it is interesting to note that the 30 largest food manufacturing firms recorded 53% of the total profits accounted for in that manufacturing sector.

Table 2 sets out the main findings which measure the influence of the market-structure variables on the profitability of the food manufacturing industries of the Malaysian firms. The results serve to confirm the many expectations advanced above. Referring to the set of linear results first, all coefficients have the expected signs, and for the most part tend to be statistically significant, with the exception of corporate diversity. Overall, the best fitting equation, which includes all four independent variables, explains after correction for degrees of freedom, nearly 65% of inter-industry variation in profit rates. The statistical significance of the dependent variable is sensitive to the presence of the independent variables predicted. Product differentiation and market share both show strong positive effects on

TABLE 1. Summary Statistics Food Industries 1990
(RM)

	30 Largest Food	All Food	All Sectors
Output/sales	14.772m	17.771b	120.298b
Fixed assets	12.084m	3.809b	45.944b
Number of Employees	5886	80005	976937
Average plants/operation	3.5	3.5	4.0
Average products	3.5	3.6	5.0
Value added/profits	4.224m	2.513b	31.140b
Number of establishments	30	1234	7301

TABLE 2. Regression Results: Profit Rates Regressed on
Structural Variables
(RM)

Independent Variables				
Intercept	CR4	Prod. Diffn	Mkt.Share	Diversity
5.331	1.351	0. 679	0.397	0.075
(2.73)	(1.97)	(2.76)	(1.33)*	(1.22)*
Adjusted R-squared = 64.40				
F - statistic = 9.59				

(t- values shown in parentheses * are significant at 10%, others at 5%)

the changes of concentration and profit propensities, and the equations are all significant at 99 percent. These two variables explain more of the variation in the coefficient of the total significance shown in their high t-values, but not the variation in the simple correlation coefficient, which indicates the absence of collinearity between these two variables. The simple correlation between these variables is 0.537. In general the regression explains more of the changes in concentration level than changes in profit or entrance of a new firm into the food manufacturing sector. The results are as expected, however, and only two require further comment: the reduced significance and strength of product differentiation and the increased strength of market share. The product differentiation advantage, while still marginally small in terms of coefficient as

compared to market concentration, is very strong in terms of influence in view of the strong t-ratio which is significant at 99%. Hence, the acceptance of Malaysian customers to more market economy activities is evidently present and this increased share of the market has to some degree given impetus to the speedy effort of the government to introduce deregulations.

In summary, therefore, the findings of our tests so far suggest that there is a good deal of mileage in the explanation of profits based only on the nature of monopolistic advantage. The factors that make for concentrated structures in food industries within an industrialised country (in particular, product differentiation, market share and corporate diversity) also influence, to a greater extent, the food industries of Malaysia. The presence of positive coefficients

in the structural variables and the strong variations are all indications of the similarity of industrial market structure in Malaysian firms to those that exist in the developed economies.

CONCLUDING REMARKS

This was an exploratory paper which sought to critically evaluate the performance of the food industries in Malaysia with respect to the conditions which exist in the developed economies. Using secondary data from the food manufacturing sector, the study scrutinised the performance of firms in the food industry in terms of number of establishments, profits, concentration ratio, product differentiation, market share and corporate diversity relative to food manufacturing firms in the developed countries. While the initial findings indicated strong similarities to those depicted in the developed economies, both in terms of the influence of structural variables on the profit level and changes of concentration, the overall picture is still unclear.

With only just over 50 per cent of the variations explained by the variables identified in the study, the remainder of the variations are unexplained and ought to be addressed. Also, the sample in the consumer goods industries has been limited to food industries. Hence, the inclusion of other samples may

yield better results on the industrial market structure of Malaysian industries.

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