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# Food Industry Organization and Behavior: Some Recent Change Forces

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During the last five years, some key changes have occurred in our political economy which appear to have influenced the structure and behavior of our economy and have had a particular impact on the U.S. food industry. I would like to share with you today some tentative thoughts concerning a few of these key influences which seem to be changing the character of the food industry's organization, conduct, and performance.<sup>1</sup>

In a comprehensive discussion of this broad topic, one would want to document carefully some recent structural changes (e.g. changes in concentration, entry barriers, influence of multinationals and conglomerates, amount of vertical integration, etc.) and consider many structural and behavioral issues (including the influence of advertising, private labels, cooperatives, new product research and development, patents, etc.). Most contributions to industrial organization literature concentrate on the relationship between structure-conduct-performance, and place less emphasis on the interaction among those variables and basic environmental influences. Therefore, I have elected to discuss some key environmental changes which I hypothesize are important influences on overall food industry organization and behavior, today and in the future.

Although there is some sketchy evidence available, I have not attempted any careful or conclusive documentation, nor do I think that all the data required would be available to achieve that purpose. Rather, these observations should be considered behavioral hypotheses which may provide some insights into the changing motiva-

tion structure and resulting organization and behavior within the food industry and the rest of our economy. After suggesting a few possible implications of these hypotheses, I would like to consider briefly the reasons for heightened interest in vertical coordination within the food industry before suggesting a few research topics which might be professionally intriguing.

## World Interdependence

In recent years, it has become obvious that the economies of the world have become increasingly interdependent. Advances in communication technology are not the only contributor to increasing awareness and interaction in the political, social, and economic spheres of activity. World economies also are becoming more closely linked as a result of some trade barriers easing (e.g. China, U.S.S.R.). Agricultural commodity markets in the United States, for example, now surge and fall quite responsively to abnormal weather developments in major producing areas anywhere in the world. Thus, a production problem in one area is felt in other economies which are not "insulated" from those variations through protective internal policies. In fact, those areas of the world which are less "insulated", like the United States, undoubtedly bear more of the benefits or brunt of the adjustments required, compared with those that are more "insulated," like the European Economic Community. Also, with the onset of "floating" currencies, the ebbs and flows in the economies of the world are now more quickly and directly transmitted into changes in trade flows and corresponding economic activity in many other countries.

Among the many implications of this increasing interdependence of world economies is one which

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<sup>1</sup>Scherer described these as the "basic conditions" which influence market structure and conduct in his basic conditions-market structure-conduct-performance paradigm [2, pp. 5-6].

I would emphasize: the occasional contribution to increased volatility in our economy, and the related risk and uncertainty in the management and resource allocation decisions within the domestic food industry. Students of economics might also note that this stimulates both government and industry demand for improved economic and market intelligence and its interpretation so that they may operate effectively within this more volatile and risky environment.

### The Impact of Shortages

It has been the food industry's experience during the last several years that raw materials shortages have often cropped up unexpectedly. Certainly, some of the weather adversities which have been evident in major producing countries—in the U.S.S.R., China, India, Western Europe, and the U.S.—have contributed dramatically to the sharp swings in prices for the major grains and oilseeds, for sugar (particularly in 1974-75), and currently, for green coffee. These have contributed importantly to price inflation in many countries, to food shortages (particularly in some less developed countries), and to sharp adjustments in the livestock sectors of the developed economies most affected (particularly the U.S. in 1974-75, and the U.S.S.R. in 1975-76).

Perhaps the most dramatic shock to many economies in the last few years was the energy crisis, prompted by the OPEC oil embargo. Not only did this cause a significant shift in prices in its aftermath, but it also created some severe shortages of raw materials in many phases of our economy as fuel was allocated by government regulation to "priority" users. Undoubtedly, the overheated economy in 1973 contributed to a surge of demand which added to the backlog of orders, but other factors were also primary contributors to some short-term shortages which have been experienced in the last several years. The shortage of fuel and petrochemicals was compounded by the wage and price controls still in effect in 1974; companies unable to get as much fuel or other raw materials as they would like naturally had a tendency to allocate the scarce input to the most profitable production alternative, and that most profitable alternative under the structure of the wage and price control regulations was not necessarily the

item currently in the greatest demand by their customers. As a consequence, some artificial shortages were created which caused a lot of scrambling for substitute raw materials. This sometimes led, in turn, to other shortages.

### Recession and "Liquidity Crunch"

Emerging from a fairly long period of sustained economic growth without severe interruptions in the 1960s the roller coaster economy which we have observed thus far in the '70s may have had a significant impact (at least short term) on the structure and behavioral motivations within the food industry.

As the inflationary spiral circled even higher in 1974 from the combined impact of inflationary expectations fueling increased demand in the economy, the energy crisis, and the adverse weather in the mid-western corn belt, real domestic consumer demand weakened significantly as we slid into the most severe worldwide recession in several decades. At the same time, money demand for capital projects was still quite high, as was the operating capital required to finance the spiraling value of inventories in all sectors of the economy. Combined with the tight money policy of the Federal Reserve at that time, this precipitated a short, but severe liquidity crunch in the economy. Many firms were scrambling to stay afloat as cash requirements to operate their businesses were increasing, but cash inflows were sharply reduced due to the recession, and money seemed to be available only to those firms who were so financially solid that they didn't really need it.

Many marginal firms (mostly small, but a few large ones) entered bankruptcy or were rescued from a precarious position through merger or acquisition by more financially secure firms. Those firms which did not "go under" during 1974 and early 1975 gained a sharply increased awareness of the need for cash self-sufficiency in their enterprises. At the same time, the spiraling inflation rate spurred management's sensitivity to the increasing cost of replacing or increasing plant capacity in those enterprises where capacity shortfalls had been recently encountered, or where the future demand outlook was quite rosy. Perhaps this was why price-cutting was not in vogue, as was the case in earlier recessions, even though the 1974-1975

severe recession led to operating capacities less than 70% of capacity in several major manufacturing industries. Rather, maintenance of margins and internal cash flow probably became much more important objectives of those managers who could not acquire capital from the outside, and who would have to meet stringent profit targets on future plant and equipment proposals which would be based upon rapidly increasing "replacement" or "expansion" costs. The recent Securities and Exchange Commission requirement that replacement cost be used as a basis for financial reports will undoubtedly stimulate even more management attention to inflation in its pricing and investment decisions in the future.

When data for the last five years becomes available, I would wager that it will show that the economic structure in the food industry has become slightly more concentrated, not so much by the largest firms (which are effectively constrained from horizontal merger), but primarily through the internal growth of "medium-sized" firms, or their acquisition of smaller firms, and the elimination of some marginal firms. Since a severe recession often forces a corporation to re-evaluate whether it is recession-proof or recession-prone, many larger corporations may be motivated to diversify into other markets via acquisition or development of their own new businesses. Thus, concentration statistics may continue to show a slight increase; however, the competitive environment may be even tougher as the smaller firms grow, enhance their input and product market competitive ability, and become more viable in the long run.

### Policy Developments

During the last few years, a combination of unexpected policy developments and regulatory actions has led to definite changes in the perceived risk and uncertainty by the "actors" in our continually unfolding economic drama. Governmental commodity policy (combined with some bad Russian weather) led to an elimination of Commodity Credit Corporation grain stockpiles in the early '70s. Current commodity price policy for the major grains has freed up grain prices from the tight shackles previously imposed by large stocks and "high" price support levels.

As a consequence, prices are much more susceptible to substantial swings, as we've observed during the last few years when record price volatility has been experienced in many commodities.

Within the last five years, public pressures have led to the instigation of wage and price controls, in an effort to dampen the inflation rate in an overheated economy, and to export controls, to take the heat off fiery commodity markets and the public's concern about the adequacy of domestic supplies and sharply inflated domestic price levels. While some worries were alleviated by these controls, some resource misallocation also resulted, and some perceived risks were definitely increased.

For example, I'm sure that the reliability of the U.S. as an export supplier of basic commodities has been diminished sharply in the eyes of some of our export customers. Similarly, I have no doubt that wage and price controls had a carryover impact for quite some time on subsequent pricing decisions in many major U.S. industries. However, I'm certain that some consumers and industry participants feel that there has been a positive political response to the problems that they voiced even though the policies were sometimes too little, too late—or possibly aggravated the situation later.

In the area of regulatory actions, Food and Drug regulations have been playing a more important role in the food industry in recent years, as better testing methods combined with the extremely stringent restrictions imposed by the Delaney Amendment make old or new products much more susceptible to an unexpected problem developing, and therefore, much more costly and risky to develop. This probably discourages new product development and potential product competition to some extent, and can increase consumer costs on products which ultimately prove successful.

Theoretically, this should lead to reduced risk to consumers as the law intends, but the attendant influence on industry structure, conduct, and performance may lead instead to consumer costs outweighing benefits. While any questions involving the risk to human life are extremely difficult to resolve, the benefit/cost dimensions of alternative FDA regulations should be a fruitful area for economists to delve into to determine whether changes in policy guidelines might be in the public interest.

Another area of regulatory activity that I want to mention is anti-trust legislation and regulation. As new ground is being broken by the Federal Trade Commission, the Department of Justice, the courts, and the Congress; uncertainty increases concerning acceptable economic structure and behavior and corresponding legal overhead costs in operating a business. In addition to the pending anti-trust legislation in the Congress, there is some new ground being tested by the Federal Trade Commission staff. Let me quote part of a *Newsweek* article on the theory underlying the "cereal case" which is currently being tried:

In judging anti-trust cases, U.S. Courts have generally insisted that Adam Smith's suspicions be backed by hard evidence of conspiracy before they would hand down convictions for price fixing or restraint of trade. But now in a massive monopoly suit being tried against the four biggest cereal companies, the Federal Trade Commission is testing out a new legal theory. . . the concept of 'shared monopoly'—an economist's theory that in some industries, a handful of firms can control the lion's share of the market without any overt conspiracy. If upheld, it could set a staggering precedent, since the FTC believes such concentration exists in many key industries, from autos to steel. [1, p.79]

While the policy developments and regulatory actions which I have mentioned have obviously reduced risks in some segments of our economy and eliminated some uncertainties, I believe that the overall economic environment would probably be characterized by some food industry members as more uncertain today than five years ago, with potentially greater price, supply, and policy instability. Further, I'm sure that some of the shocks which have come from unexpected directions in the last several years have made investors and management in the food industry much more wary. My hypothesis is that there are larger risk premiums being built into product pricing decisions, new plant and equipment investment decisions, and increased motivation to transfer or eliminate some of those increased risks where feasible.

### Vertical Coordination

Greater uncertainty and instability in the food subsector of our economy has greatly increased the interest of industry participants in a variety of vertical coordination innovations or applications.

For instance, the increased volumes in commodity futures markets will attest to the increased commercial (and speculative) business being done utilizing futures markets. However, those contracts being traded quite openly in centralized markets probably are only the visible tip of an ever-growing iceberg. Firms in the food industry appear much more receptive to a variety of new vertical coordination innovations or applications, especially in those areas where they have seen problems crop up in recent years, and where they feel complete vertical integration would not be feasible or sufficiently profitable.

There are a variety of reasons why a firm may wish to contract for goods or services for an extended period, and shift or eliminate some risk elements in its business environment. For example, if a company is financially weak, it may be able to acquire capital for maintaining or expanding its business operations, and a signed long-term sales contract with a financially responsible customer is an excellent vehicle to acquire credit which may not otherwise be available. On the other hand, a customer concerned about the potential availability or possible price inflation in a strategic supply industry may be quite willing to contract for his estimated requirements at a cost considered reasonable, given the security of supply insured by the contact.

In production/processing/distribution systems where tight product specifications are quite important to one or more phases of the system, long-term contracts can often stimulate better quality control through more coordinated and reliable scheduling, or through tailoring the processing equipment or product selection to the unusual requirements of the customer. In addition to providing a vehicle for improving communication and increasing responsiveness to changing supplier and customer needs, there can be joint operational efficiencies achieved through sales/procurement cost reductions, increased stability in operating and accounting procedures, and reduced costs resulting from such standardization.

### A Sweetener Industry Example

The attractiveness of coordination innovations obviously varies widely according to the individual market environment, and the magnitude of the

“problems” perceived by industry participants. A prime example of an industry which has become more receptive to such innovations recently is the sweetener industry. Due to a) the supply of sugar becoming quite scarce in 1974, b) price increases of more than 600% for a brief period of time, followed by c) a sharp price decline leading to sharp fluctuations in export earnings for major producing countries, and compounded by d) the large influx of new corn sweetener capacity prompted by extremely high profit levels during the sugar price surge as well as the technological innovation of the sweeter high fructose corn syrup, and e) the elimination of the highly protective domestic sugar legislation, the sweetener industry might reasonably have been expected to be a prime candidate for structural and behavioral change. And it was. Without going into details, let me merely list a few recent developments in the sweetener industry:

- a) Long-term “participating” contracts between U.S. sugar refiners and the Philippine government, and long-term supply contracts between U.S. refiners and Dominican Republic producers.<sup>2</sup>
- b) Much more futures market participation by domestic sugar users and domestic sugar producers.
- c) Acquisition of a corn sweetener producer by the largest U.S. sugar refiner, Amstar.
- d) Acquisition of a corn sweetener producer by Heinz, a major food company.
- e) A joint venture by Miles Laboratory and Cargill, placing a corn sweetener plant next to a citric acid plant (which uses corn sweeteners as an input).

I’m sure that there are a variety of other long-term arrangements which have evolved in the sugar and corn sweetener industries which assure volume, price, or some combination. Certainly, this industry has been a fertile ground for new vertical coordination and integration efforts, as the convergence of several environmental changes has led to potentially significant structural and behavioral changes in an important subsector of our food industry.

<sup>2</sup>In participating contracts, the producer price will be related to the selling price of the refiner.

Some of the same environmental factors are present in many other subsectors of the food industry. I would hypothesize that there is an increasing awareness and receptivity to coordination innovations which shift or eliminate risk. While the motivation may be less strong, I’m sure that the status quo is continually being reexamined. However, the extent or degree of coordination innovations undertaken in any part of the industry also has its limits. By eliminating or shifting one risk element, another risk is sometimes created. For example, while you may be able to guarantee a volume bought or sold or a price, a firm may be exposing itself to an opportunity loss or a potential competitive disadvantage if prices drop below the price established, the risk of being unable to deliver or use the volumes specified (and the corresponding penalties involved), or the risk of a future competitive disadvantage if other supply sources or sales outlets are lost due to the long-term contract with someone else.

### Research Issues

Obviously, a key prerequisite for any of these research issues is keeping abreast of and documenting the key changes in the economic environment and corresponding structural and behavioral change in the food industry. I would propose that the market structure of the food industry is both an effect and a cause. The relationships between structure, conduct, and performance hypothesized as causal relationships by industrial organization theorists have some validity in my thinking, yet I feel that we do not know enough about the complex of horizontal and vertical relationships within many subsectors of the food industry to fully validate the conventional theory (or alternate hypotheses). At the same time, we need a better understanding of the dynamics of structural change, the environmental factors conditioning such behavior, the internal investor and management motivations and behavior which further contribute to structural change in the industry. In essence, we need to determine more precisely what stimulates the changing structure and behavior in the food industry, and better analyze the performance and policy implications.

As new vertical coordination innovations are developed or applied in new market areas, there

is a definite need to analyse the pros and cons for both the buyer and seller, other competitors, and the overall subsector equity and performance implications. In so doing, economists may stimulate greater industry awareness of the potential benefits and pitfalls involved in such arrangements, and point out some of the broader advantages and disadvantages which would befall other participants in the subsector.

With greater uncertainty and instability in the economy and market in which food industry firms operate, the increasing importance of accurate, timely information in imperfect markets prompts me to suggest that this often overlooked aspect of market structure needs more emphasis in industrial organization and marketing research in the food industry. Improved market information not only improves the long-range resource allocation decisions in the industry, but also can provide a substantial competitive advantage to firms which both acquire and act on timely information in highly volatile markets. Depending upon the type of use to which that advantage is put, significant change in industry behavior and structure can result. At the same time, this suggests that the derived industry demand for economists capable of acquiring and interpreting improved market information has been increasing. In my crystal ball, I see stable or increasing demand in the future for economists with that training and background. Thus, this research area may be fruitful both as an academic area of study, and as an area of application for those who become skilled in economic and market analysis.

Since the "shared monopoly" concept proposed as a possible legal precedent by the Federal Trade Commission staff could, if upheld, result in a radical change in the ultimate economic structure of many industries in the United States, the economics profession should probably re-examine very carefully the empirical evidence related to that theory. What is the threshold beyond which market concentration should not be permitted? Under what allied conditions? What would be the probability and economic consequences of type

one and type two errors which might result from such a decision rule?

Economic analyses and long-term forecasts are becoming more important inputs into the strategic planning process in the food industry. With increasing environmental volatility, larger gains or losses from management decisions are possible. As a consequence, there should be increased public and private benefits from economic research which contributes to the elimination of some uncertainties regarding the future world food situation, the overall economic environment, and associated government policy. By contributing to improving the economic intelligence required for effective long-term industry planning, and by eliminating some of the myths and preconceptions which might otherwise lead to misallocation of resources, improved food industry performance should result.

### Summary

I have offered a few tentative hypotheses concerning the recent environmental changes which may have prompted change in the structure, conduct, and performance in the food industry. In particular, I have suggested that the environment probably has become more uncertain and risky in the view of many industry participants, and that industry behavior and structural change have been and will continue to be conditioned by that environment. As analysts of food industry organization and behavior, we need to gain a better understanding of the "outside" stimuli which condition industry behavior, and the resulting dynamics of industry structure, conduct and performance.

### References

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