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MARKET PERFORMANCE: Concepts and Measures

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ABSTRACT

The need exists for new criteria to reflect the qualitative as well as quantitative aspects of market performance. Also emphasized in the report is the multidimensional nature of performance. The U.S. Department of Agriculture and the Marketing Science Institute jointly sponsored a project to evaluate current market performance concepts and measures and develop new or improved ones.

At this point, industrial organization theory provides the only analytical framework of market performance that is well developed and empirically tested. The structure of markets and their performance have been found to be related—but not in a linear fashion.

Vertical market relationships need further analysis to expand on the few existing insights into market performance. Empirical and theoretical work have focused mainly on horizontal relationships. This report brings together several recent efforts to expand conceptual models of vertical market systems.

Two new measures are presented: The value of retail exchange services and an Index of Consumer Satisfaction. These attempt to overcome the lack of attention given by existing measures to the level and distribution of consumer satisfaction with goods and services.

Given the numerous and changing dimensions of market performance, and the narrow focus of most performance measures, a multidimensional information system on market performance needs to be set up. Such a system could provide greater continuity among the uses of existing performance measures, assimilate the findings of individual studies, and act as a catalyst for further examination of the factors influencing market performance.

Keywords: Market performance, industrial organization, performance measures, competition, market structure.

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PREFACE

Since passage of the Sherman Anti-Trust Act in 1890, the U.S. Government has been engaged in monitoring and attempting to influence the structure, conduct, and performance of U.S. industries. The competitive models of economic theory have been used considerably as guidelines. These models emphasize certain aspects of performance—technical and allocative efficiency in particular. Many of the existing performance measures thus carry these orientations.

Consumers, farmers, manufacturers, and distributors have an important stake in the performance of marketing systems, for both agricultural and nonagricultural products. However, present methods of evaluating market performance are not deemed adequate to provide information needed by public policymakers and others interested in this subject matter. In addition, there does not exist an adequate body of theory to guide analysts in formulating more effective measurement tools. An improved conceptual framework and operational techniques for measuring market performance are needed. While the contents of this publication are not restricted to agricultural markets, they can be directly applied to the evaluation and understanding of the food and fiber sector. The research effort which generated this publication was initiated to examine the existing measures and to suggest new or improved ones. Wendell Clement, formerly with the Economic Research Service (ERS), U.S. Department of Agriculture (USDA), and Victor Cook, formerly with Marketing Science Institute (MSI), were the main instigators of the research effort. The ERS contract with MSI resulted in 10 working papers on various aspects of market performance.

The aim of this publication was to summarize and place into perspective the 10 working papers. In the process of preparation, it became apparent that a more comprehensive and valuable document on market performance could be provided if this report was not limited to the materials developed in the working papers; in several cases they lacked either scope or caliber. Much additional research became necessary. The resulting report is partly a summary and expansion of the working papers and partly contributions from the additional research.

The Introduction and Chapter 1 provide a broad perspective of market performance. This chapter suggests four commonly held perspectives of market systems along with the appropriate performance measures.

Chapter 2 describes and defines several important aspects of market performance. Chapter 3 contains a substantive review and critique of concepts and considerations that are particularly germane to market performance. Market structure theory, concepts of dynamic competition, power concepts, and vertical systems analysis all receive extensive comment in what constitutes the major theoretical digest of the publication.

In Chapter 4, several existing performance measures are briefly reviewed and critiqued. Because of the difficulty of distilling into a few pages the essential features of these measures, the chapter is probably the most difficult one for persons whose acquaintance with performance measures is limited. Mainly, we have attempted to identify the critical issues concerning each measure. Much fuller treatment is available through some of the original working papers and the many sources noted.

Chapter 5 focuses attention on two new measures of performance that attempt to measure consumer satisfaction directly. Neither of these measures is usable at the present time and we expect both will encounter difficult operational problems. However, they represent thought-provoking and imaginative approaches to performance evaluation and are thus included. Currently, the operational feasibility of the Index of Consumer Satisfaction is being tested by ERS in a project supervised by the junior author.

The final chapter contains comments on implications of the findings for public policy. Chapters 1 through 5 have drawn extensively on the original working papers. We gratefully acknowledge contributions of the authors, among them—Victor Cook (University of Chicago), Rolando Polli (McKinsey Company), Susan Douglas (Temple University), Martin Pfaff (Wayne State University), Anita Pfaff (Wayne State University), Louis Stern (Ohio State University (OSU)), and Yoram Wind (University of Pennsylvania). However, since we have selected portions from the original papers, and have expanded or modified the ideas presented, we accept full responsibility for the contents.

Others whose assistance we acknowledge are Lee Preston, State University of New York at Buffalo; Dan Padberg, Cornell University; Tom Stout, OSU; and several other professional colleagues in USDA.

This publication was initiated during 1969-70 while the senior author was Research Associate at MSI and Visiting Research Fellow at the Graduate School of Business Administration, Harvard University. Completion of the work would not have been possible without the understanding and support of the administration of Ohio State University during the last 2 years, however. Others helping us were Roberta Riddle, OSU, and Sandra Gurick, USDA.

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SUMMARY

New criteria are needed for market performance evaluation as are better performance measures. Those examined in this report were found to have shortcomings and in general, to be inadequate. Measures studied included market structure, productivity, food market basket and marketing bill statistics, flow analysis, and welfare economics. These are partial measures of performance and, in the main, lack acceptable norms with which the performance of different markets can be compared and evaluated. Existing performance measures usually reflect the emphasis placed on allocative and technical efficiency by the competitive models of economic price theory. Other important performance dimensions are largely neglected.

Economic theory defines the structure of markets as being a key factor influencing the conduct and performance of firms and markets. But it provides no basis for positing the form of the relationship. At this point, industrial organization theory provides the only analytical framework of market performance that is well developed and empirically tested.

To the extent that its characteristics are closely related to various performance dimensions, market structure can be used as a proxy "measure of performance." Structure and performance are related—but not in a linear fashion. Rather, certain threshold levels of structural characteristics seem to be required in the market or markets before performance is significantly altered. The strongest relationships exist between the structural variables of seller concentration and barriers to entry, and the performance dimension, allocative efficiency.

In comparing the productivity of different industries, total productivity measures, rather than partial ones such as labor productivity, are preferable since they allow for differences in labor and capital intensity. Measures of total productivity remain questionable in accuracy, as do measures that attempt to partition productivity gains to various inputs. Productivity measures focus largely on the technical efficiency aspects of performance. Because no norms exist with which the productivity of different industries can be compared, interpretation is easier when different time periods of the same industry are examined.

The market basket and food marketing bill statistics are descriptive "measures" of performance which provide useful insights into some of the changes in the food marketing sector. In most instances, these statistics by themselves are not enough to evaluate performance.

Currently, flow analysis seems to represent a useful, although highly cumbersome, analytical approach. Because of its complexity, practical applications are likely to be rare without significant simplifications. Potential use of flow analysis in evaluating market performance is limited because of the lack of

norms. Because of its usefulness in examining vertical market systems flow analysis does represent a desirable extension of the scope of performance considered.

Welfare economics, as an approach to market performance, continues to be plagued by operational and conceptual limitations in examining aggregate welfare or satisfaction. Breakthroughs in the area of aggregate welfare, both conceptually and operationally, could make welfare economics more relevant for performance measurement.

Two experimental performance measures are presented in the report: the value of retail exchange services, and the Index of Consumer Satisfaction. These attempt to overcome the lack of attention given by existing measures to the level of consumer satisfaction generated by market systems. If these measures can be made successfully operational, they will provide direct feedback concerning the extent to which market supply offerings match demand preferences. They will also act as an indicator of the responsiveness of market systems to changes in consumer preferences, an important performance dimension.

The Index of Consumer Satisfaction (ICS) constructed will reflect relative changes in satisfaction. It will also allow for an aggregation of satisfaction measures across attributes to products, products to product groups, and product groups to overall satisfaction. The ICS will be sensitive to differences in satisfaction between population groups and between time periods.

The conceptual base for studying market performance needs expansion. Various aspects of power and vertical market relationships were examined as determinants of market performance. Little is known about the total impact, interrelationships, and influence of economic power. Frequently, discussions of market structure focus solely on the implications only of economic power; yet the economic, political, and social implications of power in all forms are an underlying concern of many policy decisions.

No adequate theory exists of vertical system behavior. The distribution of power and level of cooperation and conflict throughout a vertical system affects the performance of that system, and also the efficiency with which coordination and adaptation are accomplished. Adopting the perspective of vertical systems as evolving, interdependent social and economic systems should not be considered a substitute for industrial organization theory. Rather, this theory is used, plus social systems concepts, to analyze the behavior and performance of entire vertical systems.

Given the numerous and changing dimensions of market performance, and the narrow focus of most performance measures, a multidimensional information system needs to be set up to provide systematically the type of information needed for performance evaluation. Such a system could also bring about greater continuity among the use of existing measures, assimilate findings of individual studies, and act as a stimulus for further analysis of factors influencing market performance.

MARKET PERFORMANCE: CONCEPTS AND MEASURES

by Bruce W. Marion and Charles R. Handy¹

INTRODUCTION

History may well identify the present period as one of the greatest tests of the U.S. free enterprise system. Long considered to represent the height of efficiency and ingenuity and the source of the good life, the performance of our capitalist market economy has entered a new period of examination and questioning. Does the system primarily benefit the wealthy? Has adherence to "the market" in search of profit resulted in inferior products, consumer exploitation, and environmental abuse? Has the political strength of large companies made them largely immune to the regulatory and monitoring agencies that were established to help control the forces of the market system? Have large firms escaped the discipline of the market, as Professor Galbraith suggests (46)?² Does the economic system control the society it supposedly serves?

These are serious questions that we can ill afford to ignore. To answer them in a penetrating and honest manner requires information about market performance; information that allows us to understand the forces driving and shaping industries in a dynamic, evolving environment; information that to the extent possible provides measures of performance that can be compared to standards that are ideal or have been used over a long period.

Some of the questions hardly lend themselves to quantifiable measures. However, the difficulty involved is not sufficient grounds to abstain from attempts at measurement. As Bauer and others suggest in considering the challenge of developing indicators of social welfare and change: "Is it better to have a crude measure of the variable you are really interested in, or a precise measure of the variable which is only an approximation of what you are interested in?" (11, p. 37).

For whom and what purpose will performance information be gathered? This question warrants careful examination; how it is answered circumscribes the areas and questions to be considered. The response of many economists will be to provide information to public policymakers on the *economic* performance of various industries so that the effectiveness of existing regulations and programs can be appraised. Certainly, this purpose is important. Yet it may narrow the area of concern too much by focusing largely on direct economic

¹Bruce W. Marion is with the Department of Agricultural Economics and Rural Sociology, Ohio State University. Charles R. Handy is with ERS, USDA.

²Italicized numbers in parentheses refer to items in References at the end of this report.

factors. Are there noneconomic or indirect dimensions that should be considered? To allow for this possibility, we begin our inquiry with an overall perspective of society, after which, we examine the role of the economic system, and finally, look at the relevant performance measures for firms and industries within this system.

An Overall Perspective

In a simplified model of American society, five systems can be defined:

1. Social organizations (family, community, classes, and so on)
2. Political
3. Economic
4. Education
5. Religious institutions

These are seen as existing within an environment consisting of people, geography and natural resources, and culture (beliefs, values, norms, knowledge, skills, and technology) at any point in time. The interaction and interdependency of the five systems—both with each other and with their environment—is recognized as a dominant characteristic of any society (132).

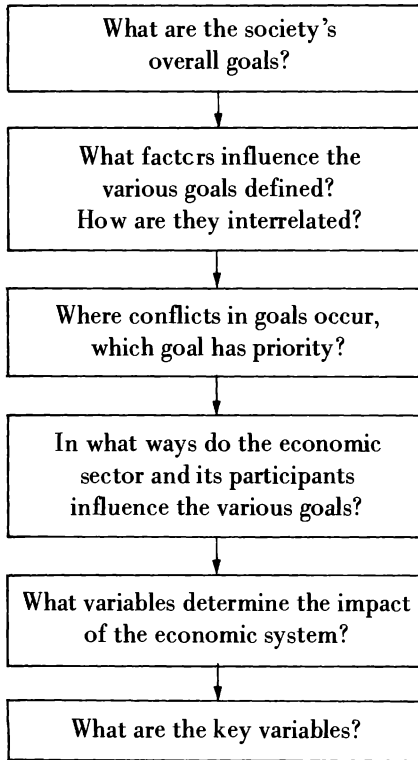
Each system—political, economic, and so on—performs certain essential functions for the maintenance, operations, and preservation of the larger society. The economic system attracts necessary resources, organizes and combines these resources to produce desired goods and services, and distributes returns among the resources involved. In performing its primary function, the economic system interacts and influences the other parts of the larger society. Too often, attempts to evaluate the economic sector ignore the interface with other sectors. Though the interdependency is recognized, performance frequently is measured only from the standpoint of its primary function. Yet the second order effects of the economic system—on the political system, environment, and societal values—may be of greater concern at certain points in a society's evolution than the effects of the primary function of the economic system.

Some persons would maintain, perhaps correctly, that concern for secondary effects is a luxury a society can only afford once its economic system is well organized, technologically advanced, and providing the population with a high standard of living. However, the concerns being expressed in the Nation in recent years suggest that many of its citizens believe the society can now afford this luxury.

Recognizing the interdependence of the various sectors of society, and hence their positive or negative effects on one another, complicates the task of defining the most relevant dimensions of performance and of developing evaluative measures and norms. Instead of only examining how well the economic sector is performing its primary function, we are challenged to determine the second- and third-order effects as well.

One possible approach to the challenge of defining relevant performance criteria for the economic sector is what we refer to as the "outside-in" method,

delineated below:



Adopting this approach would be much more difficult than using the more typical method, which focuses concern on a single industry or sector. The questions at each step of the “outside-in approach” are difficult to answer definitively. The approach does have merit, as it should help avoid undue concern with performance dimensions that may be insignificant when viewed from a societal perspective. Further, dimensions can be identified that are of considerable significance to society.

This approach begins with an examination of society’s goals. Thus, the following section contains a discussion of national goals and their interrelationships to determine the usefulness of these goals in defining appropriate performance dimensions for the economic system.

National Goals

During 1969-70, a group appointed by President Nixon and designated the National Goals Research Committee studied the subject of national goals. A report released by the group received this comment:

A White House study on national goals has reached the conclusion that the White House cannot set goals for America. . . . that the Government should instead provide the information the public needs to engage in debate about the sort of society it wants (83, p. 1).

At a time when priorities, values, and goals in the country are being challenged and are in a stage of ferment, the position taken by the Committee may well be the only sensible one. Goals and priorities are undergoing change; yet such changes are likely to be gradual and evolutionary. Someone has observed that history turns few sharp corners.

The present period of national introspection will more probably result in a shift in the priority of goals than in a significant change in the goals themselves. Thus, results of past efforts to define national goals can serve as a starting point.

The President's Commission on National Goals (1960) defined some 80 goals in 11 broad categories. While nearly all of these have interrelationships with the economic system, some are more directly involved with economic performance (table 1).³

As we examine this subset of the goals defined in 1960, several things are apparent. First, some changes have occurred. For example, the present concern about environmental pollution and ecological balance was not mentioned in the 1960 list. In the main, however, most of the earlier goals would be endorsed today. The Commission did not establish priorities; we can only suggest that some shifts have occurred.

Secondly, little guidance was provided with the goals about the conditions necessary for realization of such goals. For example, what are the factors necessary to improve the standard of living, assure U.S. competitive strength, or preserve individual dignity? In other words, what are the intervening variables?

For example, does improving the standard of living mean increasing *real* incomes for U.S. citizens? If so, economic theory suggests that increased productivity of factor inputs is one of the essential intervening variables. (As long as effective competition exists in either product or factor markets, increases in productivity will result in higher factor income, greater purchasing power, or both. To realize maximum benefits, competition must be effective in both factor and product markets.) Increased productivity may be caused by improved technology developed in private or public research, better quality inputs (such as through education), or changes in the organization of an economic sector to achieve scale economies or eliminate functions. The last set of factors are influenced by several things, among which are the support and priorities for public research, incentives for private research and development, and regulations affecting the organization of industries and market systems.

Many of these variables are also related to other national goals. Frequently, action that may stimulate progress toward one goal (for example, increased public research to get new technology to increase productivity to raise real income) may hinder the achievement of other goals:

³These were selected by the authors from the complete listing in (11, pp. 147-152).

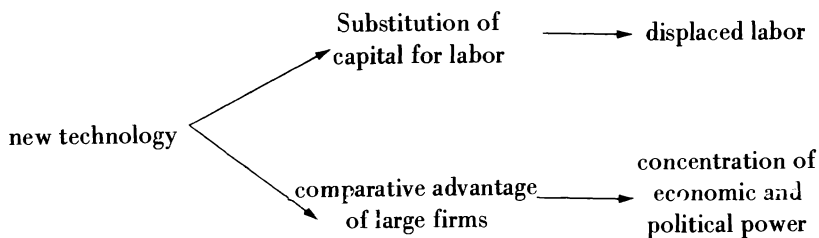


Table 1—Goals with direct relevance to the economic system, President’s Commission on National Goals, 1960

Goal	Description
Individual:	Status of individual Individual dignity Development of capabilities Free economic choice
Equality:	Eliminating religious, sexual, and racial discrimination Access to employment Occupational access and promotion
Democratic process:	Information media: quality and coverage Legitimacy of pressure group action Dispersion of power: State and local jurisdiction
Arts and sciences:	General improvement of health and economic growth Use of manpower efficiently, based on capacity not formal training
Democratic economy:	Government regulatory agencies independent of private interests Collective bargaining to set wages and working conditions Labor-management-public conferences for mutual understanding of economy Corporations and unions limiting influence over private lives of members Unions developing better grievance and legitimate opposition procedures Professional organizations and trade associations to operate on a democratic basis Faster and fuller pension rights to improve employee mobility Removal of barriers to employment for women Expansion of employment of older workers
Economic growth:	Maximum rate consistent with maintaining free enterprise and avoiding inflation

Continued

Table 1—Goals with direct relevance to the economic system, President's Commission on National Goals, 1960—*Continued*

Goal	Description
Economic growth— <i>Con.:</i>	<p>Full employment: 13.5 million new workers in 10 years</p> <p>Tax overhaul to encourage new ventures with high risk and growth potential</p> <p>Improving products through basic research</p> <p>Assuring U.S. competitive strength</p> <p>Education aiming at more flexible work force</p> <p>Forced savings and reduced consumption if Gross National Product (GNP) does not grow at 5 percent</p> <p>Improved standard of living</p> <p>Achieving growth rates necessary to meet goals for defense, education, healthy private economy, rising living standards, and foreign aid</p>
Technological changes:	<p>Promoted with planned impact</p> <p>Retraining by firms or by locally managed programs</p> <p>Relocation of some industry in depressed areas</p>
Agriculture:	<p>Market demand with fair return achieved gradually</p> <p>New opportunities for farmers through retraining and relocation of industries; new jobs locally for 1.5 million farm operators</p> <p>Reduction of farm surpluses by improving nutrition</p> <p>Price support to cushion transition without fundamental adjustments</p>
Living conditions:	<p>Relief of crowding of low-income and minority groups in city slums</p> <p>Stopping haphazard suburban growth</p> <p>Increasing construction of low-income homes and apartments</p> <p>Financial innovations to provide moderate-cost housing</p>
Health and welfare:	<p>Reduced cost of medical care: equalize coverage of social insurance institutions</p> <p>Jobs for growth yet maintaining labor standards</p> <p>Sick time income provided</p>

The type of trade-off illustrated above is the heart of many public policy deliberations. The course of action chosen may be somewhat different if the total impact on national goals is considered, compared with limiting consideration to economic goals. However, trade-off decisions ultimately hinge on (1)

the values and priorities of the decisionmakers and (2) their perspective and understanding of how the various parts of a society are interrelated.

One person might place high value on increasing the standard of living and also believe that the quest for and adoption of new technology is an essential dynamic force in a healthy economic system. This person's course of action would differ substantially from that of someone who is primarily concerned about individual dignity and freedom, and sees new technology as a mixed blessing leading toward larger and more powerful organizations, less individual freedom, and an increased rate of human obsolescence. Thus, each of these people following the outside-in approach would define quite a different set of key performance dimensions.

The difficulty of understanding the complex interrelationships within a society often leads to ambiguous and inconclusive definitions of key variables. Thus, as an operational means of defining relevant performance dimensions, the outside-in approach is definitely limited. This drawback does not detract from its usefulness in developing a philosophical perspective about performance. Most people have difficulty avoiding "tunnel vision"—which results from specialization and concentration. We are constantly in need of vehicles to restore our perspective, and here, the outside-in approach is highly useful.

The foregoing presented the philosophical framework found useful in approaching the subject of market performance. A rather broad interpretation of the term is suggested. Unfortunately, the breadth of this approach far exceeds the traditional scope of market performance evaluation. While some pioneering work has explored the impact of economic behavior on social values and behavior (for example, the effect of television advertising and program content on children), the existing body of knowledge is too meager to suggest more than a small number of noneconomic performance dimensions. For this reason, the bulk of this publication will focus on measuring the economic dimensions of market performance—the area where ignorance seems the least. Before moving to a more conventional look at market performance, however, four different perspectives of market systems will be discussed in the following chapter. These should provide useful insights into the appropriateness of different performance measures for different concepts of market systems.

Chapter 1

PERSPECTIVES OF MARKETS AND MARKET SYSTEMS

Since the view one holds of market systems strongly influences the performance dimensions identified as “relevant,” several alternative views will be discussed in this chapter. First, however, the meaning of some of the terms we use will be clarified. Terms such as *markets*, *marketing*, *market systems*, and *marketing systems* are common, but carry a variety of meanings. Our purpose here is to specify how we will use the terms.

A *market* includes a group of potential buyers and sellers of a particular product who are engaged in settling the terms of its sale. An integral part of a market are the rules and institutions that influence buyer-seller relationships, whether these rules and institutions are unique to a particular market or apply generally to all markets within an economy.

The market, from a societal perspective, is an organizing and coordinating institution that is an integral part of a capitalistic economic system. *The market* provides coordination of the economic activity of private enterprises by presenting alternative profit incentives associated with producing the products, organizing their production in different ways, and employing various resources. A market for a particular product is relied on to perform the same coordinating functions for the buyers and sellers in the particular market.

An industry includes all firms selling a similar product within some geographic area. Frequently, the boundaries are national. Thus, if we refer to the food retailing *industry*, the steel *industry*, or the shoe *industry*, we are considering the aggregate of food retailing firms, steel manufacturing firms, and shoe firms in the United States. The term *industry* generally applies to firms at one stage in the vertical industrialization process—not to the whole vertical complex. The vertical broiler system, as an illustration, is now composed of three basic stages: foundation breeders, broiler integrators (production and processing of broilers), and food distributors. One or more industries may operate at each stage. For example, at the food distributor stage, more than one industry can be defined—food retailers and eating establishments.

Both a market and an industry carry spatial dimensions. The group of sellers in a market may be only a subset of an industry. Defining the geographic characteristics of a market depends on a subjective appraisal of competitive forces: are these forces essentially local, regional, or national? The competitive focus of retailing firms tends to be local, while competition among durable goods manufacturers is regional, national, or international. When a market and

an industry relate to different areas, examining the effect of industry structure on market performance may produce spurious conclusions.⁴

Marketing has been defined as “the performance of business activities that direct the flow of goods and services from producer to consumer or user” (4). From a broader frame of reference: “Marketing in a free society is the system which tries to make certain that the goods and services produced by private enterprise reflect reasonably well the preference of the population” (123, p. 125).

Central to most concepts of marketing is the linkage provided between customers and producers or manufacturers. Thus, influencing, interpreting, and communicating customer demands are central functions. Serving customer demands is also a fundamental part of marketing, but disagreements exist as to which of the relevant activities should be included. USDA and many agricultural economists include all those activities “beyond the farm gate” in marketing. Thus, creating useful product forms in processing and manufacturing is included. Marketing faculties at business schools would largely disagree, contending that the “serving of demands” aspect of marketing refers primarily to the distribution, pricing, and merchandising of products.

Similar discrepancies in meaning exist for the term *marketing system*. In general, we interpret a marketing system as the vertical array of consumers, firms, markets, and associated institutions and arrangements involved in marketing a product. Which components are included as part of a marketing system obviously depends on how one defines marketing.

These considerations are mainly semantic and general usages are difficult to change. Thus, we choose only to point out the differences, to encourage recognition of both demand sensing and influencing and demand serving functions of marketing. In this publication, marketing excludes the form-changing functions of processing and manufacturing (except when the “food-marketing bill” is discussed) but includes the advertising, pricing, selling, and physical distribution activities performed by processors and manufacturers.

Market system is another term needing clarification. *The market system* usually refers to a free enterprise, market-coordinated economic system. A *market system*, as we use the terms, refers to vertical complexes involved in the production, processing or manufacturing, and marketing of specific products. These are complexes that include consumers, firms, markets, market rules, and associated institutions all interrelated and interdependent in accomplishing the objectives of the system. Thus, in an industrialized economy, market systems often include several industries, the activities of which are coordinated by the markets that connect them.

Market systems consist of two subsystems; production and marketing. For some purposes, it is useful to define the marketing system as being composed of two subsystems also: marketing supply and marketing demand. A schematic presentation of various components of a market system is presented in figure 1,

⁴For a good discussion of this point and its implications for market structure analysis, see (114, p. 446).

A MODEL OF A MARKET SYSTEM

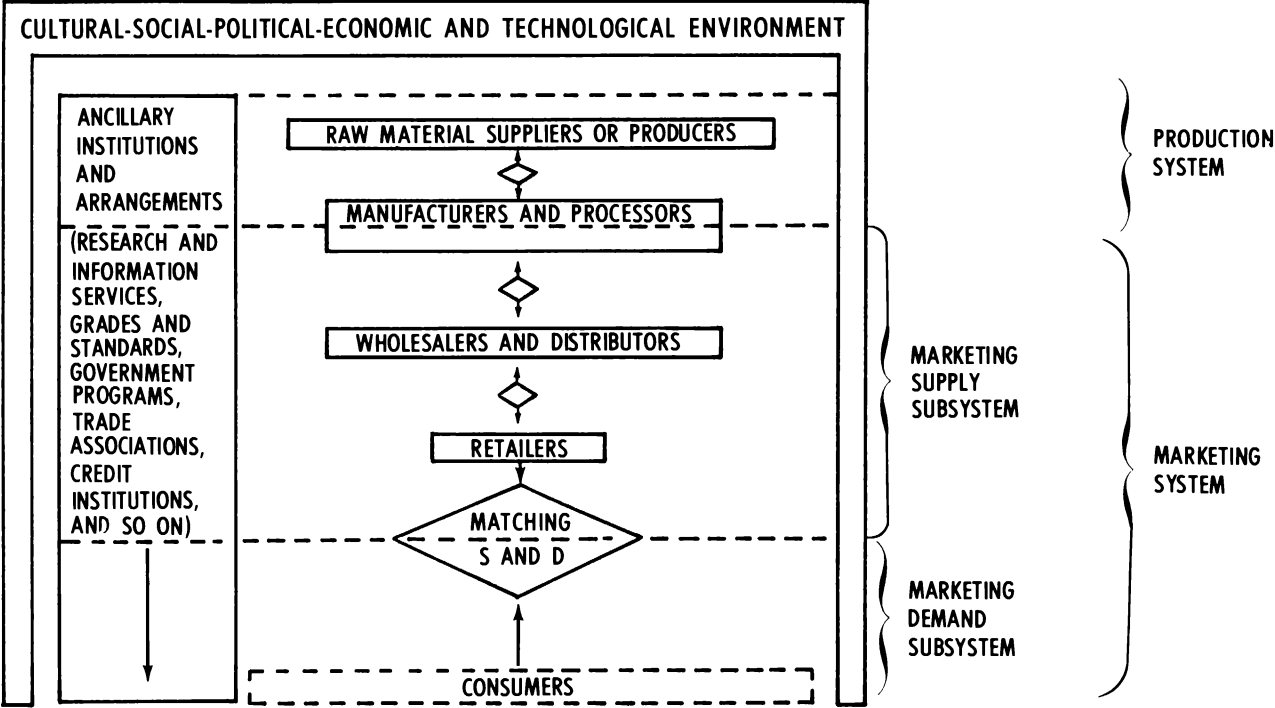


Figure 1

which identifies the matching of supply and demand as a process connecting the marketing supply and demand subsystems. Traditionally, such matching is assumed to occur through the operation of competitive markets; hence it does not require direct examination. One proposed performance measure to be discussed later concentrates on measuring the extent to which the matching of supply and demand is actually achieved.

MARKET PERFORMANCE

Caves defines market performance as “the appraisal of how much the economic results of an industry’s market behavior deviate from the best possible contribution it could make to achieving (relevant socio-economic) goals.” Examples of goals are efficient uses of resources, full employment without unreasonable inflation, progressiveness, and equity in distributing real output (19). Our interpretation is somewhat broader: market performance is the appraisal of the extent to which the interactions of buyers and sellers in a market—as influenced by market rules and institutions—stimulate results that are consistent with social purposes. However, not only measures of *market* performance are examined as we will also consider measures of approaches that are relevant for evaluating the performance of market systems or marketing systems.

PERSPECTIVES OF MARKET SYSTEMS

The literature suggests several views of the nature and purpose of market systems and the extent to which they are interrelated with the total societal environment. Pfaff has delineated four basic perspectives of market systems—each of which indicates certain performance criteria (89):

1. A logistics-distribution system
2. A cybernetic behavioral system
3. A mechanism for economic growth
4. A social mechanism

The first two perspectives focus on the nature of a market system; the former emphasizes the physical, technological, and economic dimensions, and the latter stresses the dynamic, adjusting, and human decision dimensions.

The last two perspectives, on the other hand, consider market systems in their larger environments of the total economic system and society. Yet these four views are not necessarily disparate, as market systems embrace all of them. However, many people tend to restrict their view of market systems to one of the four perspectives.

Logistics-Distribution System

The logistics-distribution system reflects the emphasis in economic theory on efficient resource allocation and combination, given certain tastes and

preferences, as well as the equilibrium-tending characteristics of market theory.⁵ Market systems are therefore seen as responses to, not influences on, consumer demand. Gradually changing consumer preferences—an important dynamic feature of real-world markets—are ignored. The forces of competition, together with consumers' free-choice option, are assumed to assure consumer satisfaction.

Thus, this perspective emphasizes the structural properties (entities, functions, spatial and temporal characteristics, and product flows) of market systems. Raw materials are produced at agricultural or mining establishments, and transformed into products at processing or manufacturing plants. The products are transported, stored, sorted, and dispersed in the distribution channel and finally consumed by the end user.

While this view focuses on some of the essential functions of market systems and can provide useful insights, it is rather mechanistic and tends to ignore the dynamic evolving dimensions of market systems. Technological-economic concepts of market performance are suggested, with particular emphasis on efficiency and process innovativeness. Relevant performance measures include physical productivity, value added, and flow analysis.

Cybernetic Behavioral Systems

In the cybernetic behavioral system, attention focuses on dynamic dimensions neglected in the logistics viewpoint. In particular, information flows, lead-lag relations, decision points and rules, and the effect of behavioral learning and adjustments are included as fundamental aspects, both in the operation and modification of market systems.

Cybernetic models of market systems are “transient”—changing over time—whereas logistic-distribution models are generally “steady state systems.” The latter present the system as a snapshot of its state at a point in time, or as a summary of its activity over some time period.

Cybernetic models, on the other hand, focus on the *process* of an operating, adjusting system. Two well-known works that exemplify the cybernetic perspective are those of Bonini and Forrester (13) and (42). Bonini focused on *intrafirm* relationships in an effort to simulate a firm's dynamic behavior. In particular, he melded concepts from organizational theory (penalty-reward structure, premises and values of individuals, pressure and organizational slack, and so on) into the information and decision system (aggregate of decision centers and rules) for the firm.

One of the important dynamic forces within a firm identified by Bonini was the disparity between aspirations and actual (or projected) performance. He suggested that an iterative process of adjustment takes place until aspirations equal actual (or projected) performance.

While Bonini focused on the process of internal firm adjustments and change, Forrester studied the process of coordination and change within a vertical

⁵ Readers desiring a more complete treatment of this aspect of market systems are referred to (27).

market system (intrasectorial coordination). Forrester's effort encompassed the logistics-distribution aspects of the system, but considered also the influence of information flows, delays, and decision points and rules on the operation and adjustment of the system. Management was perceived as an "information converter;" information flowed in and a stream of decisions flowed out. Decisions performed the essential tasks of regulating the flow of products and information, and of coordinating the operation of the system. Thus, Forrester identified information flows, delays, and decision rules as critical determinants of whether decisions led to a "stable system" (tending to return to an equilibrium) or an "unstable system" (tending toward increasing oscillations).

The contributions of Bonini and Forrester are highly complementary. Both focused considerable attention on the factors, influences, and results of management decisions, but at different levels of aggregation.

A cybernetic perspective of market systems recognizes both interfirm and intrafirm relations as important influences on system dynamics, along with environmental forces that stem from sources external to the system. Particularly characteristic of cybernetic models are their dynamic instabilities and the various adaptive response patterns.

The measures of performance that apply to this view of market systems include indices of:

1. Responsiveness of the system to environmental change;
2. Patterns of oscillation and stability;
3. Time lags in adaptation and innovation, both for the total system, and for various levels of the system; and
4. Effect of learning behavior on overall system performance.

Apparently, these measures have not been developed or used formally, although market systems are often subjectively evaluated based on some of these measures. A cybernetics view suggests not only different performance criteria, but presents a wider set of factors affecting performance. The corrective action that this view implies for a poorly performing market system may therefore be quite different from that suggested by the logistics-distribution system view.

Mechanism for Economic Growth

The view of market systems as a mechanism for economic growth shifts attention away from the internal workings of systems to their effect on the overall economy:

Industrialization and general economic development are two of the dominant goals of nations, rich and poor alike. The market mechanism has played a very significant role in the development of Western economics and of many industrialized countries who have not adopted central planning as the dominant approach to development. Even in the socialist countries an increasing importance is given to the role of the market mechanism in helping to promote overall economic development (89).

Kuznets suggests:

Economic growth is often accompanied by a shift in economic activities from the household into the marketplace; or by a more rapid rise in the volume of market or society bound activities than in the volume of those within the household (60, p. 6).

One way of studying the interrelationships between the development of market systems and the total economy, according to Pfaff, is to focus on changes in the capital and labor inputs employed by the marketing system (88). Measures of these inputs are thus used as proxies for the volume of products distributed through a market system as opposed to the volume of products in a "nonmarket" (subsistence) system. These data may be compared with indices of total economic growth in an effort to determine the relationships. Two questions often arise. Is market development—the process of growth in the market-bound sector of the economy—related to overall economic development? Does market development lead economic development, or does the latter bring on the former?

To illustrate Pfaff's approach, assume that:

- A, the percentage of the labor force in agriculture, will be used as an inverse measure of development in the agricultural sector.
- M, the percentage of the labor force in manufacturing, will serve as a measure of the significance of the manufacturing sector.
- C, the percentage of the labor force in trade, will represent a measure of the development of the marketing system.

C and the ratios, $\frac{C}{M}$ and $\frac{C}{A+M}$, may be used as indicators of change in the importance of market-oriented activities. They may be analyzed in conjunction with indicators of overall economic development (per capita GNP, for example) to study the pattern of development by developing nations.⁶

One of the early studies to focus attention on the function of marketing in economic development was conducted by Galbraith and Holton (53). Since then, several authors have emphasized the role of efficient marketing systems. Rostow has contended that balanced growth of rural and urban sectors in a

⁶This approach would be more inappropriate if capital inputs were also included for the various sectors. Using the volume of labor input in trade as a proxy for the development of the marketing system may be appropriate for an economy that is in the early stages of the shift from a household-oriented subsistence economy to a rudimentary market economy often characterized by small-scale operations and poor coordination. However, as efficient, well-coordinated marketing systems are developed during later stages, the quantity of labor employed by trade may decline, or at least fail to reflect the development that has occurred. As Slater suggests: "... the food marketing systems of underdeveloped areas are usually very labor-intensive, and most reforms reduce the proportion of labor needed to carry forward the marketing tasks" (112, p. 19). These authors are referring particularly to shortrun transition problems. In the long run, the quantity of labor employed in a modern marketing system tends to increase as the system handles greater quantities of products and performs more marketing services.

developing country is necessary for sustained economic growth. Obtaining “national markets” and integrating rural and urban areas are essential steps in the development process. Rostow’s strategy for “national market integration” reflects his perception of the role of market systems in development (102):

1. A buildup of agricultural productivity;
2. A revolution in the marketing of agricultural products;
3. A shift in industrial output toward simple inputs and cheap consumer goods for the mass market; and
4. A revolution in marketing methods for manufactured goods, especially in the rural areas.

Rostow’s strategy calls for a “revolution” in marketing methods, not simply increased efficiency in the existing system. Technological and organizational innovations are needed, however, and these are often slow to be adopted in underdeveloped countries. Wish and Harrison indicate:

As a result of existing condition (especially small scale atomistic competition, insufficient education and training, and inadequate communication) businessmen in developing nations find themselves trapped in a position of inability to improve productivity through technological innovations. . . . evidence that small scale atomistic competition dampens initiative and inhibits productivity gains, shows that policy norms for developing nations should go beyond the static theory of perfect competition to a dynamic view of the economic process (134, pp. 19, 20).

This view of market systems suggests that in evaluating the performance of *individual* market systems in developing countries, measures of progressiveness and responsiveness may be particularly relevant.

From an aggregate perspective, measures of performance that focus on the relationship between market development and economic development are appropriate. Thus, indices of market and economic development similar to those suggested by Pfaff might be constructed to indicate whether development of market systems in a country are effectively stimulating—or retarding—economic development.

Particular applications of this view of market systems may be found under the following circumstances:

1. Comparisons are made of national market systems and overall economic development;
2. The existence of particular stages or lags in market development are related to similar stages or lags in overall economic development of a given economy;
3. Alternative measures for the reform of the market systems of developing countries are contemplated; and
4. An assessment is made of the contributions that market processes can make to economic development.⁷

⁷For additional literature on the relationships between market systems and economic development, see (111, pp. 398-429), (113, pp. 173-182), and (63).

A Social Mechanism

The most comprehensive perspective of market systems is one that focuses on their interrelationships with the social system in which they function. Thus, as has been suggested, this view considers both economic and noneconomic results attributable to market systems. Societal goals, which include but are not limited to economic goals, are the point of reference in appraising the performance of market systems.

In order to postulate this role of the market mechanism in the overall society, a theory or a model of the functioning of markets in relationship to the other institutional aspects of society must be formulated. Such a theory must relate the market mechanism as one level of social action—to the cultural, social, political and economic mechanism, as the other levels of a social hierarchy (89, p. 17).

This viewpoint suggests a cybernetic approach to social processes in order to perceive the communications, controls, values, and interrelationships that shape the characteristics of society over time.

For example, communications and various types of controls are involved in conditioning people to the norms or values of a particular culture (or sub-culture). As these values are reflected in individual behavior in the marketplace, firms respond by adjusting their output. However, the same firms may participate in the acculturation process through product advertising that encourages certain value positions. Thus, economic factors perform both as responses to and influences on social and cultural values.

Conflicts frequently occur between the calculus of a market economy, and the cultural, social, and political goals of the larger society. Major criticisms of the capitalistic market economies made by Marx (73) and later by Polanyi (92) focused on the undesirable consequences from the tight coupling of the social and institutional environment with the market mechanism. This, in Polanyi's view, reduces human labor to a commodity status to be bought and sold; therefore, social ends over and beyond economic needs are subordinated to the whims of the marketplace. Since human ends are not met under such a market-dominated society, Marx and Polanyi conclude that the operation of the market mechanism leads to the destruction of society.

Pfaff comments:

There is a persuasive logic attached to this point of view if, in fact, the market mechanism does operate to control all cultural, social, political, and economic and market transactions. In fact, it does not. A whole class of nonmarket phenomena—or unilateral transfers or “grants” have risen which to some degree compensate the operation of the market mechanism.⁸ A specific example can be found in the unemployment compensation “grants” to those who have been deprived of the opportunity to work due to the logic of the market system—not due to their unwillingness to work. The areas of health, welfare and education also exemplify the operation of the “grants

⁸See, for example, (87) and (14).

economy” to compensate for some of the deficiencies of the market mechanism (89, p. 20).

However, although these nonmarket transactions are increasing in importance, the operation of the market economy remains the dominant means of achieving social ends. A fundamental question that is receiving much discussion is what are realistic expectations of a market economy in contributing to social ends that have very indirect relationships to the market? Should a market economy be expected to help attain social or cultural goals for their own sake, rather than as intervening or complementary factors in the attainment of economic ends?

Unfortunately, these questions are seldom explored in sufficient depth to examine specific instances or the overall implications. Clearly, contributing to certain social ends may, in certain ways, involve no significant conflict with the economic interests of a firm. The more debatable issues arise where significant conflicts occur. For example, suppose that the economic incentives of the market discourage:

1. Production of safer, more durable, or more wholesome products;
2. Development of manufacturing processes or products that eliminate environmental pollution;
3. Employment of the hard-core unemployed;
4. Development of adequate marketing facilities and programs to serve low-income minority groups; and
5. Reduction in persuasive advertising that is to be replaced by more complete and objective information for customers.

In these cases, what is the desired function of a firm operating within a profit-oriented market system? A persuasive argument can be made that private industry should concentrate on performing their direct economic functions well, contribute to solving social problems that are consistent with, or at least not in conflict with economic goals, and leave remaining social problems to public agencies. This argument suggests that to do otherwise would undermine the soundness of the economic system. Firm management would have to establish priorities for social problems that stockholders (through use of dividends) or Government (through taxes) might be in a better position to identify and treat.⁹

Few people believe that private enterprises do not carry definite responsibilities for the quality of their products, the honesty of their advertising, and the effect of their activities on the environment. At the same time, individual profit-seeking firms—responding to the market—are not likely to honor such responsibilities voluntarily if significant economic costs are involved, unless competing firms do likewise, either voluntarily or by Government mandate.

What then are the alternatives for private industry in solving social problems? One course of action, operating outside the market, is social or governmental pressure, persuasion, or criticism. Such pressure, which may have no direct

⁹Milton Friedman is one of the leading spokesmen for this position. See (43, pp. 132-136).

effect on a firm's success in the market, has been instrumental in stimulating some companies to become more involved in the social problems of minority groups and the physical environment.

The above approach may be quite effective as long as business leaders have a strong interest in and sense of responsibility for social problems, and significant costs or competitive disadvantages are not involved. Where either of these two conditions are not present, approaches that attempt to influence behavior by changing the nature of the competitive game may be more effective. Some of the more obvious possibilities include:

1. Changes in market rules and regulations;
2. Changes in the incentive mix of the market through tax provisions, sources and terms of financing, investment protection, and so on;
3. Public control or operation of certain functions of the market system, such as price or rate control, collection and dissemination of information for consumers or market participants, foreign trade barriers, and quality standardization and control; and
4. Industrywide voluntary action that benefits social welfare but does not alter the competitive balance.

Many social issues may not require *significant* economic sacrifices for firms to act in the best interest of society. For such issues, the performance of market systems could be measured by the extent to which they are responsive to social welfare needs. For issues involving strong conflicts between welfare of the firm and society, similar measures could be utilized—but would instead reflect the adequacy of existing market rules, incentives, and public control in stimulating socially beneficial performance.¹⁰

Measures of performance that are relevant to the social mechanism perspective of market systems include indices of:

1. Responsiveness of the market to consumer satisfaction or dissatisfaction as a crude measure of social welfare;
2. Responsiveness of the market mechanism to changes in the cultural, social, political, and economic sectors; and responsiveness of these sectors to changes in the market mechanism;
3. Time lapse involved in firm or firms' adapting to change;
4. Processes tending to enhance or reduce shocks or chaos within the *body politic*;
5. Attributes of stability, equity, and system maintenance; and
6. Effect of learning and innovation on the linkage between the market and its embedding institutional environment.

No doubt these measures of the social performance of the market are more complex than existing performance measures. Moreover, the lack of indicators reflecting social well-being would tend to make such measurements hard to come by. However, the climate of society today points to the need for coming to grips with these wider issues of social concern. As long as the market system

¹⁰This discussion has largely assumed that the powers and resources of the state are employed to protect and enhance public welfare. An alternative view is expressed in the last section of this chapter.

is a dominant organizing principle in society, measures of the performance of the market in meeting social ends are essential.

These four perspectives of market systems suggest a wide variety of performance measures, only a few of which have been employed thus far. The measures most frequently used best fit the view of market systems as logistics-distribution, a rather simplified representation of reality. While addressing a necessary and important aspect of market performance, these measures are insufficient to measure the dynamic characteristics of market systems, or their effect on the larger economic and social environment.

THE RESPONSIVENESS OF GOVERNMENT REGULATION TO THE PUBLIC WELFARE

The previous discussion of market systems as social mechanisms assumed that Government regulation of industry is primarily for the protection and benefit of the public at large. Is this an idealistic and naive assumption? Stigler contends that this widely held view ignores the nature of the political process. In developing a theory of economic regulation, he argues that industries and professions, in fact, seek the use of public resources and powers to increase profits. The primary policy vehicles used are (121):

- Direct subsidies
- Control over entry of new rivals
- Reducing the threat of substitutes
- Price fixing

The "supply" of such services is regulated by political parties and officeholders. Stigler comments:

The industry which seeks regulation must be prepared to pay with the two things a party needs: votes and resources. The resources may be provided by campaign contributions, contributed services (the businessman heads a fund-raising committee), and more indirect methods such as the employment of party workers (121, p. 12).

This perspective of Government control and regulation can be amplified by information on the concentration of wealth in the United States. The classic study of wealth was done by economist Lampman for the National Bureau of Economic Research. The wealthiest 1 percent of the adult population held (61):

- 27 percent of the assets of the personal sector
- 76 percent of the corporate stock
- Virtually all state and local government bonds
- 32 percent of U.S. Government bonds
- 12 percent of the real estate held by the personal sector

These figures are for 1953. However, recent data on the distribution of annual income provides no indication that wealth has become less concen-

trated. In fact, figures for 1967 developed by Pechman of the Brookings Institute indicate an increase in the gap between rich and poor. Ranked by income received, the lowest fifth of U.S. families garnered 3.2 percent of total income, compared with 45.8 percent for the highest fifth, and 19.1 percent for the highest 5 percent (85).

These figures suggest that virtually all the productive wealth continues to be controlled by 1 percent of the adult population. It seems likely that this small minority has a strong influence on the political process: the candidates that are elected and the way in which resources and powers of the state are used. If we assume that this minority is concerned primarily about protecting and enhancing its sources of wealth, can we expect the political system to respond to social needs that conflict significantly with profit opportunities? Perhaps such response can occur only when strong concern exists among the majority of citizens. As Stigler comments:

The political system is calculated to implement all strongly felt preferences of majorities and many strongly felt preferences of minorities but to disregard the lesser preferences of majorities and minorities (121, p. 12).

This perspective of gaining public regulation may oversimplify the linkages between wealth, the control and functioning of the business community, and the use of governmental resources and power. But some questions are raised that need further examination. Accepting Stigler's argument would not change the relevant performance measures much; however, it would certainly alter the set of actions that one might consider desirable to improve performance.

Before leaving this topic, one other point seems appropriate. In practice, it may be difficult to define in which cases social needs conflict with the profit motive. The alleviation of some social problems might appear to be conflicting, but could in fact be neutral or positive in their effect on profits. For example, power utilities that are forced to reduce the air pollution from their plants may be able to pass on to consumers the full cost of this corrective action, through increased power rates. With an inelastic demand for power, and the possibility in some cases of greater income from the sale of byproducts, such companies could emerge with both increased profits and an improved social image.

Chapter 2

DEFINING RELEVANT PERFORMANCE DIMENSIONS

In the previous chapter, the broad conceptual framework relevant to defining and measuring aspects of market performance was discussed. Essential differences were identified that cause problems in communicating about market performance, agreeing on public policy direction, or agreeing on relevant performance dimensions.

The lack of clearly defined, consistent, and generally accepted goals for the economic sector and a variety of perspectives of the nature and responsibility of market systems were delineated as some of the major differences that confuse and encumber efforts to define relevant performance dimensions. In this chapter, performance dimensions are discussed in more specific detail.

PERFORMANCE DIMENSIONS, MEASURES, AND NORMS

Performance dimensions are characteristics resulting from firm and market behavior which are selected as being important criteria of the firm's or market's performance. In general, the performance dimensions relevant here are those defined as important indicators of public welfare. However, they may also be selected to indicate the welfare of an industry or the economy, or to serve the interests of a particular group.

Performance dimensions that are capable of being measured, either in ordinal or cardinal terms, can be appraised by *performance measures*. One of the most difficult problems in the field of market organization is developing performance measures that accurately reflect the dimensions in question. Measuring the adaptability to change in any objective fashion is extremely difficult, for example. With the present state of the arts, subjective evaluation may be the only method of appraising certain performance dimensions since measures have yet to be developed.

In many cases, the measures used represent only part of the overall performance dimension, or are proxies for a dimension. Progressiveness, for example, cannot be measured directly. Proxy measures, such as R and D expenditures and number of patentable inventions, have been used. An inherent danger in employing this type of measure is that persons using it may accept the measure as being synonymous with the dimension involved.

Performance norms are socially accepted ideals or standards with which

actual performance can be compared and evaluated. Operationally, it is desirable if norms are expressed in a way that allows performance measures to be compared directly with them. Again we encounter a serious problem because frequently we must resort to an operational norm that is a proxy for a theoretical ideal. In addition, no single norm may exist for some measures. For example, there is probably no one norm for advertising as a percentage of sales that is socially ideal for all industries or all firms within an industry.

The identification of relevant performance dimensions and norms relies heavily on goals of society, perspectives of market systems, and theories of business behavior. The first two points were discussed in chapter 1; the third point is examined in chapter 3. In each case, a considerable lack of unanimity of opinion was found.

DESCRIPTIVE PERFORMANCE

For the most part, we are concerned with evaluative performance measures (measures that can be compared with an ideal, or least with measures in other industries or market systems). We also must recognize the value of descriptive performance studies and measures. These can provide useful insights into the characteristics of a market system. The following breakdown might be used in an examination:

1. Participants: organizations, institutions, and so on, that are an integral part of the system;
2. Functions performed by participants;
3. Resource inputs used by participants;
4. Market rules and arrangements that influence participant behavior;
5. Structure of authority and decisions within the system which control and coordinate it; and
6. Environment within which the system operates.

Where descriptive studies focus on the operation of a system over time, they may provide useful, albeit subjective, evaluatory information on the ability of the system to coordinate its functions effectively and to adapt and adjust in response to changes in the environment. Since the important performance dimensions are difficult to measure, descriptive studies provide one of the few ways of intelligently appraising them.

Some commonly used performance measures are descriptive. For example, the total value of output from an industry, market system, or the total economy is used to describe performance. The "market basket" and "farm food-marketing bill" statistics of USDA are examples. Cox developed estimates of market value added by types of firms that are both distributive and nondistributive, in terms of functions performed and products produced (27). Flow analysis, as developed by Cox, is also illustrative of descriptive performance analysis (36).

Descriptive measures of the value of output are useful from two standpoints. "They indicate the relative contribution (value added) of each institution (or

function) to final market value. For example, Cox estimated that in 1954, production contributed 54.7 percent and marketing 45.3 percent to the final market value of goods consumed in the United States" (26). Shaffer suggested that the value added by farming is 15 percent of total food expenditures (109, p. viii). These figures by themselves are helpful.

In addition, market value-added figures may also be combined with measures of inputs used to develop indices of efficiency and productivity. Value added per man-hour, for example, while not free of weaknesses, certainly has distinct advantages over sales per man-hour as a comparative measure of productivity.

EVALUATIVE PERFORMANCE

In the main, we are concerned about performance measurement for purposes of evaluating the results of firm, industry, or system behavior. Measures of productivity, progressiveness, growth, and profits are often used for evaluation. Evaluation, however, is a relative matter. For an evaluative measure to have meaning, it requires a norm or ideal to which it can be compared. In fact, the existence of a norm is the primary distinguishing feature between descriptive and evaluative performance. Since absolute norms are extremely difficult to define for obvious reasons, the performance of other industries, or of the same industry in previous time periods, are frequently used benchmarks. In a few cases, largely with respect to productivity measures, ideal standards may be available from economic-engineering-type studies of different-sized plants in certain industries.

The researcher most frequently selects norms or standards, usually with a public policy orientation. An alternative that may well have merit is the definition of norms by persons within the industry or market system. Consider, for example, the performance dimension of responsiveness. In a dynamic economic system, firms, industries, and market systems that are responsive to customer preferences, changing opportunities, and societal needs are highly desirable. Yet, how could such a dimension be measured and appraised? Later we will discuss potential measures of consumer satisfaction. Would it be possible to develop measures of customer satisfaction at each level in a market system, based on opinions of firm personnel as to their satisfaction with their supplying firms and industries? Even given rough categorization of responsiveness, discriminant analysis might be used to determine if certain common factors are associated with responsiveness.

Perhaps the use of industry definition of performance dimensions and evaluation merits further consideration. While the difference in perspective and lack of precision might pose problems, the internal route could allow a wider variety of performance measures to be employed operationally.

MARKET PERFORMANCE AND PERFORMANCE OF THE ECONOMY

The section, "Perspectives of Market Systems," in the previous chapter indicated the importance of specifying the level of aggregation referred to when analyzing market performance. Bain makes a useful distinction between performance dimensions relevant for judging the performance of individual industries or markets as opposed to performance dimensions appropriate for the aggregate economy (7, p. 11):

Market dimensions of performance applicable to all industries and market systems include:

1. Height of price relative to the average cost of production, and thus size of profits;
2. Relative efficiency of production so far as this characteristic is influenced by the scale or size of plants and firms (relative to the most efficient), and by the extent, if any, of excess capacity;
3. Size of sales-promotion costs relative to production costs;
4. Character of the product, including choice of design, level of quality, and variety of product within any market; and
5. Rate of progressiveness of the firm and industry in developing both products and techniques of production, relative to evidently attainable rates and relative to the costs of progress.

While the importance of these dimensions is generally accepted, there is considerably less agreement on the appropriate norms. The possible conflict between profit rates and growth in investment, or low promotion expenditures and the introduction of new products is explored in the first section of chapter III. In assessing market performance, it is also important to consider vertical market relationships. Evaluating *market* performance by examining the performance of manufacturers or retailers only may lead to spurious conclusions. Both buyers and sellers must be studied if the total pattern of interaction and behavior on performance dimensions is to be observed.

When aggregate performance of the total economy is considered, relevant performance dimensions include (7, p. 13):

1. Volume of employment the economy provides;
2. Efficiency of production, and thus aggregate volume of output secured with any given volume of employment;
3. Relative stability, or freedom from fluctuations, of output and employment over time;
4. Rate of growth of output over time, or rate of "progress;"
5. Composition of aggregate output as among alternative goods to be produced; and
6. Distribution of income among various potential income recipients.

It is important for clarity to distinguish between market- and economy-wide dimensions of performance. Market dimensions focus on the performance of an industry in isolation from the rest of the economy; for this reason, they are often not sufficiently comprehensive. That is, an industry which is technologically progressive, efficient in the use of resources, responsive to customer

demands, innovative in developing new products, and whose prices reasonably reflect costs would likely be judged to be performing well—in a market sense. The same industry, however, could be using discriminatory practices in the purchase, hiring, or payment of inputs, or be contributing to unemployment by implementing new equipment and relocating plants without serious efforts to retrain, relocate, or otherwise assist the employees involved. Here, economy-wide dimensions of performance are relevant.

In appraising the performance of the total economy, Bain emphasizes that “the enterprise sector is only one of several important contributors.” Other contributors include labor unions, Government policies and agencies, and private individuals. This point is obvious, yet the focus of performance efforts is inevitably the enterprise sector. And, its performance is often compared with the performance dimensions suggested by economic theory. These “are appraisals of the working of a private enterprise system operating through a complex of relatively unregulated free markets” (48, p. 39).

Hence, poor performance by a market or the economic sector is more likely to be attributed to deficiencies in the structure or competition of the enterprise system than to market rules, Government action, labor union behavior, and so on. However, as Shaffer suggests:

The market rule is one of the most important points of leverage in the market system. . . . It is especially important to evaluate the relationship of the market rules to market performance, rather than limit investigation to the relationship of a structural factor and a single performance characteristic, for a rule may have very significant positive and negative side effects (109, p. 8).¹¹

This point is very relevant; reminding us that performance measures relate to markets—in their full dimensions—not only to the buyers and sellers. “Market rules;” Government programs, actions, and postures; and the role of input suppliers are important aspects of the market environment and warrant examination for their effect on market performance.

A third classification of performance which until recently was generally ignored but applies at both the market- and economy-wide level, is the increasingly popular concept of social dimensions. Thus, an industry that is performing well, both in terms of the market and the economy, may have harmful externalities (depletion of natural resources and pollution, for example). Or this industry may be producing unsafe or unwholesome products which consumers are inadequately qualified to judge and hence, cannot make their preference known in the marketplace.

Measures reflecting social dimensions have wide applicability as indicators of the extent to which industries are not producing detrimental social effects. The

¹¹ Shaffer defines market rules as “the set of rights and obligations established by law, custom, and covenant which define the relations among members of a community in respect to the exchange of goods and services . . . Market rules include the laws of property and contract (and customs of honesty), rules of entry and exit, licenses, grades and standards, collective bargaining rights, patents, brands, franchises, dealerships, restrictive covenants, tariffs, price regulations, etc.”

extent to which industries are contributing in a positive sense to alleviate social problems is yet another matter. As indicated earlier, this question must be approached with considerable caution.¹²

Traditionally, emphasis has been placed on the market dimensions of performance, with perhaps passing interest in economywide dimensions and little if any explicit attention to social dimensions. As an economy moves through different stages of growth and development, it seems logical that the emphasis on different dimensions should shift. The desirability of this shift has certainly been apparent in the concerns expressed in the country during the late 1960's and early 1970's. Efficiency and productivity have taken a back seat to concern for the following areas:

1. Responsiveness of firms and industries to consumer preferences and needs and to societal needs;
2. Extent to which existing power is used to benefit society both in the immediate and long run;
3. Degree to which existing market rules and public agencies effectively regulate the conduct and performance of the enterprise system in accord with public welfare; and
4. Impact on societal values that have encouraged new technology, "progress," and a higher standard of living—on the quality of life.

Such periods of reflection are extremely beneficial. In calling into question the emphasis on certain aspects of performance, they result in a reappraisal of performance dimension priorities.

THE ROLE OF PERFORMANCE MEASURES

Performance measures are primarily used to monitor the outcome resulting from competition of firms, industries, markets, or entire economies. They tell us how the firm or system is currently performing and identify trends over time. It is apparent that measures of the "right" performance dimensions can be very helpful in periodic times of appraisal. Unfortunately, up to now performance measures have not been developed for some of the dimensions germane to "big picture" analysis. Existing measures have largely focused on market dimensions of performance. Their role, therefore, has been confined primarily to appraisal of industries or the market system.

Even with existing measures, we find several differences in how they are used. Studies of industry or market performance are often limited to measures of a single performance dimension (for example, profits or productivity), or, at best, a small subset of dimensions. For example, a series of USDA studies look exclusively at pricing efficiency in evaluating the performance of particular commodity marketing systems. A few studies appraise a wide range of performance dimensions and attempt to reach an overall evaluation of industry

¹² Grether presents some related aspects of this question in (48).

performance.¹³ Such overall evaluations, however, tend to be highly subjective. Most suffer from the lack of empirical data, and all lack standardized procedures for aggregating across performance dimensions.

Industrial organization economists frequently use performance measures as dependent variables in models designed to test a hypothesized relationship with measures of market structure. (For example, industry profit = f , industry concentration.)¹⁴ Economists remain divided concerning the relative influence of market structure on overall market performance. Those placing heavy emphasis on market structure contend actions are needed to protect both the “number of competitors” and “competition,” while those of the performance school would downplay the former as long as “competitive results are satisfactory.”

A grocery company’s antitrust case clearly presents these contrasting views (125, p. 270). Justice Black writing for the majority states: “The facts of this case present exactly the threatening trend toward concentration which Congress wanted to halt.” In contrast, Associate Justice Potter writes on the case: “The record simply cries out that the numerical decline in the numbers of single store owners is a result of transcending social and technological changes that persistently preclude the inference that competition has suffered because of the attrition of competitors.”

Government agencies use performance measures directly as sources of current market intelligence to help guide regulatory decisions. For example, the Price Commission employs extensively such performance measures as price-cost margins, profits, and productivity in rulings on allowable price increases.

While the emphasis thus far has been on the interpretation of market performance by economists and public policymakers, performance measures certainly have much broader uses. Company managers and trade associations use them to compare individual firms in their industry with those of others. Labor unions and other market participants may find the measures helpful as a guide to bargaining for better terms of trade. Prospective entrants to an industry and individual investors are likely to use such measures in deciding whether to commit resources. Consumers find performance measures useful in comparing the United States with other countries and in confirming or allaying their concerns about certain aspects or particular segments of the economy. As new or improved measures are developed for additional characteristics of performance such as social dimensions, adequacy of market alternatives, and availability of product information, the general public will find performance measures a more helpful device for narrowing the gap between their expectations of industry and what they perceive industry as providing.

¹³ See for example (80), especially chapter 15.

¹⁴ Chapter 3 comments further on research findings concerning market structure-performance relationships.

FUNDAMENTAL WEAKNESSES OF PERFORMANCE MEASURES

Unfortunately, performance measures may often be more misleading than helpful. Evaluatory performance measures, by their nature, are *relative*. Performance may be good, bad, or inbetween—compared with some norm or ideal. The difficulty is in defining an acceptable norm.

... in the search for the ideal, one of two standards or both are customarily brought forward. The first is a performance consistent with the existence of pure competition, or of some variant that may take account of a "real" desire on the part of the buyers for some degree of product differentiation. The second is "progressiveness," "dynamism," or some rate of innovation (74, p. 195).

The norms of pure competition may be acceptable in some instances but in most cases, they are clearly not appropriate. An example would be using such norms to evaluate the performance of the automobile industry.

While the standard of progressiveness is more in touch with the realities of the American economy, it suffers from lack of precision. Is progressiveness to be judged relative to the industry *potential* to employ new equipment, develop new products, and so on, to the progressiveness of other industries, or what? Because of the difficulty of defining concrete performance norms, evaluations of the "goodness" or "badness" of an industry's performance inevitably involve a considerable amount of judgment.

This difficulty leads to a second fundamental problem of performance measures—that of establishing weights for aggregating several measures into an overall evaluation. Since the many performance measures now in use may not be well correlated, no unambiguous weighting scheme has been devised for developing a single index of overall performance change.

A third problem with performance measures which we will go into later, is the narrow focus of many existing measures. Only certain dimensions of performance are measured. Measures of efficiency—used by themselves—may suggest excellent performance by an industry, when in fact, its performance in anticipating and serving consumer demands might be quite poor. In addition, major impacts on society of an increase in technical efficiency are often unrecorded. For example, what is the transitional cost to the economy of underemployed labor which has been released from a technologically progressive industry?

A fourth limitation of performance measures is that they tell us only what has happened in the past. They are not able to explain why certain performance results were achieved, nor are they effective forecasters or predictors of future performance.

Finally, certain performance measures may be misleading as to causal relationships. Increases in labor productivity, for example, may be attributable to infusions of capital equipment or to the transfer of functions to another industry. To some extent, this problem can be alleviated with improved measures—but not entirely.

These fundamental weaknesses of performance measures—plus the lack of measures for some dimensions of performance—encourage a cautious approach to their use and interpretation. What they do not tell may be as important as what they do tell. However, despite their limitations, they are used (and misused) by many people. Additional understanding and improvement of these measures is certainly warranted.

Chapter 3

DETERMINANTS OF MARKET PERFORMANCE

Adherence to a competitive economic system in the United States has seldom been seriously challenged. Beginning with the Sherman Anti-trust Act in 1890, the Nation has given "... almost universal support for free enterprise or a competitive system as an ideal." However, a "body of clear policies to achieve that goal has not been formulated" (75, p. 2).

The lack of a "body of clear policies" is due partly to the substantial ignorance that remains concerning a competitive system. If we were to ask what comprises the essential ingredients of a competitive system, a considerable array of answers would be forthcoming. The presence of competitive markets would certainly be mentioned, but a divergence might be found in interpretations of what constitutes a competitive market.

These issues will not be resolved in this chapter. Nor will we attempt to give the rationale for different points of view, since this information has been adequately presented elsewhere.¹⁵ We will, however, briefly comment on some of the more important conceptual issues concerning competitive markets and market performance.

CONCEPTS OF COMPETITION IN ECONOMIC PRICE THEORY

For many years, economic price theorists have attempted to develop models that describe the conduct and performance of groups of firms in different types of markets. The performance resulting from perfect competition or monopoly, the two extreme types, has been rigorously defined by economic models. But the conduct and performance of market types inbetween these extremes—where nearly all real-world markets fall—cannot be precisely described by existing theoretical models. The theory of oligopolistic markets, in particular, continues to be an underdeveloped area in the theory of markets.

Given the situation of precise market models at the extremes, and imprecise models inbetween, interpreters of economic theory have tended to assume that the competitive performance of markets becomes progressively "less perfect" as the characteristics of the market (its structure) depart farther and farther from perfect competition. That is, market performance is often *expected* to be

¹⁵F. M. Scherer presents a particularly lucid discussion. See (103, pp. 8-38).

related to the structure of markets similarly to lines A or B in figure 2. In either case, a monotonically increasing function is hypothesized.

It should be clear, however, that while this functional relationship is frequently assumed or inferred, the theoretical underpinning is weak. No *a priori* basis exists for postulating that a reduction in market imperfections will necessarily result in improved (more perfect) performance. (An example would be an increase in the number of firms in a market from 20 to 30.) Thus, though economic theory defines market structure as a key factor influencing conduct and performance, it provides no basis for positing the *form* of the relationship. Is it linear, curvilinear, monotonically increasing, discontinuous, or something else? The form of this relationship is the subject of considerable speculation. For example, does rivalry among several firms stimulate performance that is socially comparable with that *compelled* by atomistic markets? Just *how much* competition is necessary to eliminate excess profits? Empirical analysis on the degree and form of this relationship has been a major focus of industrial organization economists. Some of their findings will be commented on shortly.

Another major issue in the theory of competition revolves around the suitability of the perfectly competitive model as a *policy norm* or ideal. Though its unrealistic nature is recognized, perfect competition remains attractive as a model of social and economic *equity*. No monopoly power is present to generate monopoly profits, distort the allocation of resources, and limit freedom. However, is society willing to sacrifice (or at least risk) some equity for other types of gains? If some degree of monopoly in a market is necessary to achieve scale economies, finance research and innovations, and

MARKET CONCENTRATION, PRODUCT DIFFERENTIATION, AND ENTRY BARRIERS

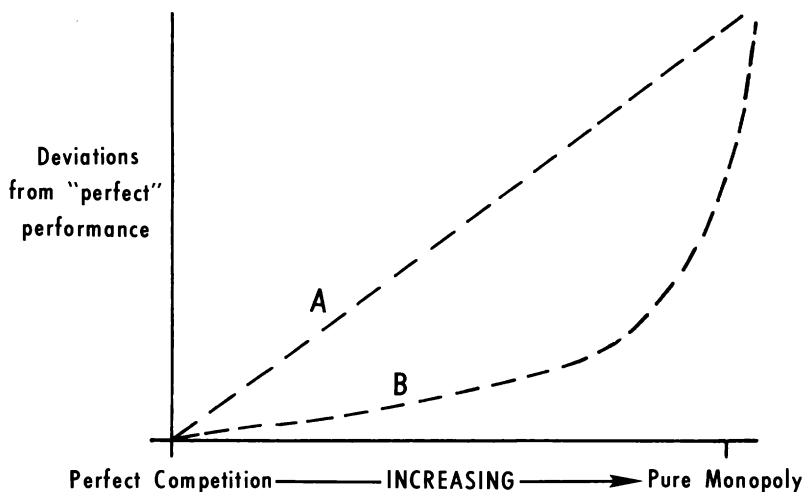


Figure 2

provide a variety of products, is this arrangement worth some loss in the assurance of perfect equity and compelled efficiency?

This type of tradeoff question is difficult to answer without a more definitive idea of the consequences of different levels of market imperfections and monopoly power. Scherer comments:

Consumers are willing to sacrifice some allocative nicety for variety, and so the social ideal must be not pure competition but some alloy of pure and monopolistic competition. The question of market organization then becomes a quantitative one: How much purity to sacrifice in order to maximize social welfare? And on this question, economic theory has no operational answers (103, p. 22).

If the purely competitive model is not acceptable as a norm, are the performance criteria it suggests adequate? They are relevant to certain aspects of social welfare, but other important performance dimensions are not covered in this model (product and process progressiveness, for example). Some of these may be more important in a postindustrial society than pricing and technical efficiency—the performance factors emphasized in the competitive models. Unfortunately, none of the concepts of competition provides a useful approach to ranking the importance of different performance dimensions.

The lack of greater realism in the market models of economic theory has also resulted in challenges to their relevance and accuracy. A frequent focus of “adversary attack” has been the assumption that the dominant goal of firms is to maximize profits.¹⁶ This assumption has been questioned in at least three ways.

First, firm managers normally confront numerous goals, some of which are not consistent with profit maximization. Their personal desires for job security, prestige and power, and doing good works often result in some suboptimal behavior, particularly as the ownership and management of firms is becoming increasingly separated. In addition, if managers confront several divergent firm goals (growth in sales, growth in profit, stability of profits, and so on) in a changing and uncertain environment, they may strive for satisfactory results—not maximal ones.

Second, given the conditions of uncertainty under which many decisions are made, and the variance in time horizons and propensity to risk among managers, is profit-maximizing behavior either definable or likely? Uncertainty about the future may result in suboptimal behavior, or it may cause firms with monopoly power to protect their position by keeping costs low and prices at competitive levels.

Third, modern firms are often large complex organizations in which communication is less than perfect, goals at different levels or departments conflict, and the information received by management is often diffused and inaccurate. Under these conditions, profit-maximizing behavior is highly unlikely.

¹⁶ The publications on this subject are too numerous to cite. For summaries of some of the main issues, see (103, pp. 27-36) and (67).

These concerns emerge from the managerial theory of the firm and are particularly relevant to market conditions in which considerable monopoly power is present. In a competitive environment (not necessarily pure competition), firm managers may have difficulty determining and executing profit-maximizing behavior. But, the most astutely operated (or luckiest) firms are likely to approach this optimum. These firms, in turn, set survival standards for their competitors which allow for little management discretion in pursuing other goals.

It seems reasonable to believe that the natural selection process is a stern master in a competitive environment. That it will work equally well under monopoly does not follow. If natural selection is to function in the economic sphere, its activating mechanism must be the competitive challenge of firms better adapted to their environment and opportunities. But when firms with market power are shielded by entry barriers, product differentiation, government favoritism, and the like, threats to their survival may be sufficiently blunted that they can survive for decades without ever maximizing profits or minimizing costs. On this point there is little dispute. The crucial question is, how sheltered from the forces of natural selection are firms with market power? How far can they depart from profit-maximizing rules and still remain viable? (103, p. 35).

Answers to these questions largely depend on the amount of discretion that firms with market power *perceive* themselves to have. Here, there is little theoretical or empirical evidence to suggest an answer.

Baumol contends that the primary objective of many firm managers is to achieve maximum sales and sales growth consistent with a given level of profit (often close to the average for the industry) (10), (86), and (133). His position is reinforced by studies that indicate executive compensation (salaries plus bonuses) is more closely related to sales volume than to profits.¹⁷

As Baumol demonstrates, firms motivated primarily by sales maximization will approach the social goal of price equal to marginal costs. Further, in markets that are reasonably price sensitive, if only one entrepreneur pursues a sales-maximizing objective, competing firms will be placed under pressure to adopt similar pricing practices. The effectiveness of strategies to restrict output and increase prices would be reduced or eliminated in such situations.

There appears to be considerable support for Baumol's contention; many firms do seek to maximize their sales or rate of growth. However, if public policymakers accept the objective of sales maximization, it has the uncomfortable characteristic of being subject to management discretion. In highly concentrated markets, tacit collusion might well result in sales maximization being replaced by profit maximization, or in an "acceptable" profit level being established considerably above a "normal" level. Competitive performance would thus depend on adherency by managers to the objective of sales maximization, rather than on elements of the market structure or business environment.

¹⁷See studies cited in (103, p. 33).

The theoretical foundation for industrial organization analysis bears one other real-world limitation that warrants comment. It is inadequate in dealing with multiproduct, multimarket, and even multinational firms in a longrun time horizon. Industrial organization theory relates to singleproduct firm behavior in the short run; its application to multiproduct firms is thus limited *unless* such firms manage the pricing and output of each product as if it was *unrelated* to all other firm products. For large diversified firms, considering products independently is highly unlikely because of the difficulty in allocating overhead and joint costs. Also, limitations exist in applying received theory to firms whose behavior is essentially long run in orientation. The theory assumes the long run is nothing more than a series of consecutive short runs. In essence, there is no longrun theory of firm behavior. Yet the larger the firm, the more likely that its behavior will be strongly influenced by longrun growth considerations.

Because of these limitations, the objective determinism hypothesized by industrial organization theory is frequently challenged, particularly when considering large diversified firms. Are the external factors on which industrial organization focuses determinants of—or even important influences on—behavior of these firms? In a recent critique of industrial organization, Grether suggests:

The most important issue for the field of industrial organization is how to bring the large diversified corporation within the framework of analysis. The crux of the matter is whether the market structure framework can be employed at all; in other words, is it revelant? If such large corporations are free of the market, as some allege, it would seem futile to try to analyze their behavior and performance results in a market structure framework. The focus of research then should be on internal organization, policies and strategies, and their performance results. Orientation should then be from performance results back into internal organization and decision making. But if there is a significant amount of market determinism and constraint, even if only for a period of time under given structural characteristics, it would seem reasonable to use the market structure framework of analysis (49, p. 35).

Grether's survey of 21 active colleagues in the industrial organization field indicated a strong need for "theoretical-empirical work in the field of oligopoly and especially on problems of diversification and conglomerateness." Grether encourages study of the internal dynamics of large organizations, particularly the synergetic relations among the internal product lines, subsidiaries, and so on, of large diversified corporations, and the continuing interactions between internal firm organization, policies and practices, and market structures. Such study would provide greater insights into the ways market structure influences, or is influenced by, the behavior of large diversified companies.

WORKABLE COMPETITION

Given the above reservations and questions about the adequacy and appropriateness of economic theory as a model for policy, it is not surprising

that alternative norms have been proposed. Considerable effort has been focused on developing concepts of "workable" or "effective" competition to fill the void in economic theory concerning imperfectly competitive markets and to provide more relevant norms for evaluating real markets.

Devotees of workable competition have generally emphasized the importance of personal rivalry in imperfect markets as a motivating force that is comparable or superior to the compelling discipline of the impersonal market in atomistically *structured* markets. For example, J. M. Clark views competition as "the effort of business units, acting independently, to make a profitable volume of sales in the face of offers of other sellers of identical or similar products" (23, p. 195). And, while competition normally involves rivalry, Clark suggests that this aspect may or may not be direct and conscious. Under conditions approaching those of pure competition, as in the case of midwestern corn farmers, rivalry is indirect and experienced primarily through the "market price." For oligopolistic-type markets, however, as breakfast cereal manufacturing, rivalry is direct and conscious.

Clark and others have also stressed progressiveness as a critical performance dimension, one in which the norms of workable competition are more appropriate than the ideal of pure competition. Clark observed: "The theoretical models are uniformly presented as operating toward an equilibrium . . . the nature of this equilibrium is the main thing studied. . . . In the field of theory, the most challenging opening seems to be for an approach that would shift the emphasis from competition as a mechanism of equilibrium to competition as a dynamic process. . . . equilibrium models in general afford no positive interpretation of the forces of progress" (22, pp. 43, 2, 4).

In a similar vein, Alderson described dynamic competition as the search for a differential advantage over competitors; the desire to be different. Alderson suggested that this natural driving force means that heterogeneity in markets is the normal and prevailing condition rather than homogeneity; and that conditions of disequilibrium tend to exist except where the forces of competitive rivalry have "temporarily stalled" (2).

As these comments infer, devotees of workable competition tend to place less emphasis on the structure of markets as the dominant influence on performance, contending instead that desirable performance may be realized with many different market structures. Thus, not too surprisingly, conditions defined as necessary for competition to be "effective" frequently include structure, conduct, *and* performance elements.

Sosnick has effectively summarized the literature on workable competition (115). In a more recent article, he proposed 25 undesirable market characteristics—none of which should be present if a market is to be considered "effectively" competitive (116, pp. 827-853). The first 10 he defines as undesirable, *per se*; the last 15 as undesirable only because of their effects. Undesirable, *per se*:

1. Unsatisfactory products—needless reduction of durability, suppression of new products, incomplete standardization, needlessly hazardous or uneven in quality;

2. Underuse or overuse—unprofitably high or low pricing, failure to increase or phase out capacity when economically indicated;
3. Inefficient exchange—no opportunity for buyers to choose less costly alternatives, unnecessarily large transaction costs, price ceilings or floors that create shortages or surpluses, failure to transmit retail price differentials to primary markets;
4. Inefficient production—inefficient size, techniques, locations, and organization;
5. Bad externalities—inflicting costs when the persons affected could, with mutual advantage, contract out of the situation;
6. Spoliation—needlessly or inefficiently extracting or using natural resources;
7. Exploitation of employees by management or of employers by workers or labor unions;
8. Unfair tactics—fraud, malicious interference;
9. Wasteful advertising—false, misleading, or valueless; and
10. Irrationality—self-defeating choices by buyers or sellers.

Undesirable because of their effects:

1. Undue profits or losses—persistent positive profits for sellers of inferior goods, high costs, and overcapacity—persistent losses for sellers having superior quality, efficient costs, and full utilization;
2. Inadequate research;
3. Predation—malevolent price-cutting—not merely unloading excess inventory or *bona fide* attempts to meet competition;
4. Preemption—of patents, raw materials, outlets, or contracts with the intent and effect of hindering existing or potential competitors;
5. Tying arrangements—exclusive dealerships, tie-in sales, reciprocal dealing;
6. Resale price maintenance—imposing minimum or maximum resale prices;
7. Refusals to deal;
8. Undesirable discrimination—similarities or differences in terms of sale to different patrons, not justified by cost differences, changing conditions, or meeting competition, and which imperil small patrons and disadvantage some areas;
9. Misallocation of risk—inadequate warranties, cost-plus procurement, unnecessary consignment;
10. Undesirable collaboration—refusals to cooperate that reduce efficiency, and cooperative agreements that reduce initiative;
11. Undesirable mergers—vertical or horizontal combinations that do not reduce costs, and which create opportunities to injure competitors through foreclosure or squeezing, or which reduce the number of competitors to fewer than three;
12. Undesirable entry—entry by a noninnovator when undue losses exist, or when capacity or the number of sellers is larger than efficiency permits;
13. Misinformation;
14. Inefficient trading rules; and
15. Misregulation—Government action or inaction that fosters inefficiency.

While Sosnick's list is much more specific than the conditions set forth by many writers on workable competition, it suffers from considerable ambiguity in interpretation. Terms such as "unsatisfactory," "inefficient," "unfair," and "undue" must be interpreted before these conditions can be empirically verified. Also, how is a market to be evaluated if some but not all conditions

are satisfied? These are problems frequently encountered in trying to apply concepts of workable competition.

The approach proposed by Markham over 20 years ago provides an interesting contrast in that it is unspecific and focuses attention on improvements that are possible through public policy measures:

An industry may be judged to be workably competitive when, after the structural characteristics of its market and the dynamic forces that shaped them have been thoroughly examined, there is no clearly indicated change that can be effected through public policy measures that would result in greater social gains than social losses (71).

The greater realism of the norms established by workable competition are attractive, particularly when trying to evaluate markets involving differentiated oligopolies. One of the more disturbing aspects of workable competition efforts (aside from the operational difficulties) is the lack of definitive cause-effect relationships. From a public policy standpoint, there are strong arguments for, and efficiencies in, dealing with *causal factors* so as to perpetuate effective competition, rather than to correct ineffective competition. The present state of workable competition concepts would not make such a policy approach easy.

The foregoing describes the nature and some of the deficiencies of the theoretical underpinning of industrial organization. This underpinning does provide a modest guidance system both for the policymaker and for the student of market performance. However, rather substantial wilderness areas are also present in the theoretical map. We will now consider the results of empirical work that confirm, challenge, or modify these theoretical constructs.

EMPIRICAL STUDIES OF THE ORGANIZATION AND PERFORMANCE OF INDUSTRIES

Industrial organization economists have examined many U.S. industries using the models and tools of economic price theory. Many of these efforts have analyzed the hypothesis of objective determinism; that is, the structure of an industry determines (or strongly influences) the conduct of the sellers comprising it, and their conduct determines (or greatly affects) their collective and individual performance.

The results of empirical analysis have led to the definition of some variables and relationships not specified in price theory, as industrial organization economists have struggled to develop models that adequately explain the actual performance of industries. For example, the primary independent variables suggested by price theory are the degree of seller and buyer concentration, the level of product differentiation, and the conditions of entry. Industrial organization economists have suggested additional variables that are important aspects of the environment or structure of any industry. These include:

1. Price elasticity of demand;

2. Growth rate of market demand;
3. Ratio of fixed to total costs in the short run for the typical firm;
4. Degree of vertical integration;
5. Amount of diversification and conglomerateness; and
6. Level of international trade barriers.

The influence of the latter group of variables has received much less investigation than have seller concentration, product differentiation, and entry barriers. Thus, we shall limit our comments largely to the empirical studies of the most popular structural variables. It is important to note, however, that these are not the only exogenous forces that have been recognized as affecting market performance.

Problems of Empirical Analysis

Industrial organization economists encounter several rather serious empirical problems that should be noted. Several of the structure, conduct, or performance variables cannot be measured directly. Thus, in many cases, a measurable dimension is used as a surrogate for the characteristic of primary concern (for example, advertising expenses as an indicator of product differentiation; research and development (R and D) expenditures as an indicator of progressiveness, and so on). This substitution complicates analysis further, since yet another casual relationship must be examined. For example, does advertising cause or result from differentiated products?

Stern makes the following rather pessimistic comments:

The problems of obtaining objective measurements of the elements of market structure are legion and should not be understated. In fact, some of the problems are so critical that there is real doubt as to whether any theory grounded on these elements can ever be verified (119).

Among the measurement problems he noted are:

1. Difficulties in defining industries or markets in a manner that is consistent with theoretical models or competitive reality;¹⁸
2. Questionable use of four-firm concentration ratios which ignore differences in the dispersion of market shares;
3. Lack of acceptable measures of product differentiation or barriers to entry, despite some innovative work by Bain and others; and
4. Difficulties in developing acceptable measures of several dimensions of performance (progressiveness, income distribution, and technical efficiency, for example).

Stern also identifies the analytical procedures used as a frequent deficiency in empirical studies. Too often, single performance characteristics have been related to single market structure variables (with linearity and continuity often

¹⁸Smith and Dahl comment on this point, indicating that *industry* structure is often related to *market* conduct or performance. Since industries, as defined, are frequently not synonymous with one side of a market, such comparisons "may be completely meaningless." See (114, pp. 465-469).

assumed). More fruitful results might be gained by examining the relationship between *combinations* of structure and performance dimensions, and in analyzing the interrelationships between performance variables, such as profits and progressiveness. Kaysen and Turner argue for a multivariate approach and for caution in the use of individual performance criteria:

. . . a standard of profit performance should depend not only on the result of efficiency, which by itself requires that the long-run profit in excess of the supply price of capital and entrepreneurship be zero, but also on the result of progressiveness, which conceivably might call for higher profits in any industry deemed capable of innovating. In practice, though, our knowledge does not permit us to discuss what the profit standard should in fact be, if progressiveness as well as efficiency are taken into consideration. . . . we lack the basis in either theory or experience for making any generalized statements about profit standards which reflect the relation of profits to all the desirable results we seek to achieve (57, p. 62).

Empirical Results

Considering the empirical problems in market structure analysis, the results of past studies warrant careful examination.¹⁹ Stern found that earlier efforts to verify the influence of market structure variables on market performance "have been frequently inconclusive, conflicting, or extremely tenuous" (118, p. 53).²⁰ In summarizing his analysis of the empirical efforts to relate the three market structure variables to the six performance criteria identified by Bain (allocative efficiency, technical efficiency, selling costs, product performance and technological progress, income distribution, full employment), Stern states:

Given the present body of knowledge on the subject, it appears that the strongest links, from an *a priori* perspective, involve the structural elements of seller concentration and barriers to entry *and* the performance criteria of allocative and technical efficiency. Other links are either nebulous, contradictory, or non-existent. Kaysen and Turner's insight, in this respect, provides a fitting concluding statement with regard to the relationship between market structure analysis and the performance goals of (1) efficiency in the use of resources; (2) progress; (3) stability in output and employment; and (4) an equitable distribution of income:

Not all of this quartet of virtues are connected to the functioning of markets in an equally intimate way. Efficiency is most closely dependent on the operation of markets. While the existence and character of market competition is one of the forces influencing the pace of innovation, it is only one; and others, including the supply and training of technical personnel, the expenditures by government on industrial research, the attitude of consumers toward new products and of manage-

¹⁹ For a more complete discussion of empirical evidence concerning market structure-performance relationships, see (128).

²⁰ A much fuller treatment of empirical results is in this working paper which is available from Marketing Science Institute.

ments and workers toward new methods of production, are in the aggregate of greater importance. To the extent that an equitable distribution of income implies the passing along of the fruits of efficiency and progress to consumers, it is related to the functioning of markets. To the important extent the ideas of equity involve judgments that some income receivers should receive more and some less than they could get from the market—no matter how competitive—equity must be sought by policies . . . other than those which affect the operation of markets. Finally, fluctuations in output and employment are primarily responses to fluctuations in aggregate demand rather than to events in particular markets, and again, policies designed to promote stability find their primary means outside the sphere of market organization (57, pp. 11-12).

Although Kaysen and Turner are advocates of the structural approach to analyzing our performance in allocating resources, they point out that income distribution, employment stability, and progressiveness in productivity ought to be evaluated by approaches other than market structure analysis (119, pp. 54-55).

The relationships between market structure and allocative efficiency (as reflected by profit rates) is strongly supported by empirical studies—but not as a monotonically increasing relationship. Several studies have found little relationships between seller concentration or entry barriers, or both, and profit rates until a certain *threshold* of monopoly power is achieved.

For example, Bain, the Federal Trade Commission (FTC), and Mann suggest that industries in which the largest eight firms control 70 percent or more of the industry output are likely to have significantly higher profit rates than industries with lower levels of concentration (127). Mueller indicates that “profits approximate the competitive norm (that is, they about equal the cost of capital plus a risk premium) when four-firm control is less than 40 percent of the market” (81, p. 106).

Limited evidence suggests a similar threshold effect for entry barriers. Mann found no significant difference in the profit rates of highly concentrated industries with “substantial” entry barriers compared with profits in highly concentrated industries with “moderate to low” barriers. Highly concentrated industries with “very high” entry barriers, however, experienced average profit rates from 1950 to 1960 that were nearly 50 percent higher than the other two groups with lower barriers (68).

The relationship and direction of causality between product differentiation and allocation efficiency are more difficult to unravel. Comanor and Wilson conducted a multivariate analysis of 41 consumer goods industry groups (25). They found that industries with *high* advertising outlays realized profits approximately 50 percent higher than those with *modest* advertising expenditures. This study and others suggest that abnormal profits likely result from high advertising expenditures that create or are accompanied by high entry barriers. These results again suggest a threshold-type of relationship between market structure elements and allocative efficiency.

The interpretation of product differentiation influences is not that clear-cut,

however. In the first place, advertising expenditures carry strong limitations as a proxy for product differentiation. As Caves indicates:

Sellers without product differentiation have little to gain from advertising . . . By contrast, where product differentiation exists, each rival must advertise to keep some buyers in a frame of mind to prefer his product to others. In industries where producers can easily maintain this differentiation by the design of the product itself—its styling or special features—less of the pressure falls on advertising and sales promotion. But in industries like soap and cigarettes, where only minor physical differences separate one producer's brand from his rivals', advertising plays the heavy role in creating these differences in the eye of the public. Thus we reach a slightly paradoxical conclusion: Product differentiation as a trait of market structure is responsible for heavy advertising expenditures. Among industries with high seller concentration, however, relatively slight physical differentiation of the product may lead to more advertising than if the physical product is abundantly differentiated (19, p. 107).

Furthermore, high advertising expenditures are frequently associated with new product introduction, particularly for consumer goods. Markham and Slater present evidence from food-manufacturing industries (the ready-to-eat cereal industry in particular) that high advertising expenditures, increasing market shares, and higher profits are often associated with high rates of successful new product introduction (72). The results of MSI's analysis of product life cycles, discussed in the section at the end of this chapter, lend support to this position.

Thus, in industries with high levels of new product introduction, advertising expenditures may reflect desirable product progressiveness, but abnormally high profit levels. Whether, in fact, such profit levels are necessary for the development and introduction of more new products is difficult to ascertain.

In industries where high advertising expenditures do not reflect new product introduction efforts, but rather intense efforts to differentiate physically similar products, a less persuasive case can be made for advertising's contribution to improved performance.

The strength of the linkage between market structure elements and technical efficiency is open to considerable debate. Bain concludes from his analysis of this relationship that the main impact of market structure is probably on dimensions of market performance other than technical efficiency (7, p. 437). Mueller supports this position when he states:

Recent studies on this subject are almost unanimous in concluding that productive efficiency dictates high concentration in only a small and declining share of manufacturing industries (127, p. 18).

Empirical studies of technical efficiency have concentrated on production economies, virtually ignoring important economies that may exist in marketing, finance, and planning. Mueller suggests that the requirements of product differentiation (especially the costs of large-scale promotion) and distribution explain the increasing concentration that is evident in consumer goods

manufacturing. However, producer goods manufacturing (where *production* economies are more of a factor) has generally declined in concentration. While there have been no studies, to the authors' knowledge, of scale economies in marketing, information on advertising rates and the cost of new product development and introduction²¹ suggests that scale economies are probably present in many consumer goods industries.²²

Thus, it appears that if *all* technical efficiencies were considered (marketing as well as production), a definite relationship with seller concentration and entry barriers would be expected among consumer goods industries. In producer goods industries, *high* concentration is not necessary to achieve technical efficiency. The extraordinary size of many U.S. markets makes it possible for many firms to be large in absolute size (and hence realize scale economies), but relatively small in their share of industry sales.

The logic of the relationship between technical efficiency and market structure elements is persuasive. However, given the magnitude of many U.S. markets, such a relationship may occur largely in consumer goods industries: in markets that are relatively small in total output but have definite scale economies and in larger markets with low levels of concentration and entry barriers.

For two other performance dimensions, progressiveness and the stability of prices and employment, some rather tentative relationships with market structure elements should be noted (besides those mentioned earlier). Although the measures of progressiveness leave much to be desired, the available evidence suggests that whatever economies of scale exist in research and innovative activity are achieved in most industries at low or moderate levels of concentration. This relationship is difficult to unravel since "high concentration and rich technological opportunity tend to coincide" (104, p. 245). However, Scherer, Caves, and others conclude that neither very low nor very high concentration is conducive to progressiveness; that a mixture of monopoly, and competition, and modest entry barriers appears to be called for. Thus, progressiveness and structural elements appear to bear a relationship similar to that in figure 3.

These hypothesized relationships are admittedly based on limited evidence. As Kaysen and Turner suggest, factors other than industry structure may have a greater impact on progressiveness. At the same time, given the available empirical results, it would also be misleading to suggest that no relationship is discernable.

The linkage between market structure and employment or prices, or both, is more difficult to ascertain, since empirical results are meager and often inconsistent. Of the various hypotheses advanced, the relationship between market structure and inflation is the most persuasive.

Mueller contends that sellers with considerable discretionary pricing power may cause a "cost-push" inflation by granting unwarranted wage increases

²¹ See for example (17).

²² For discussion of this point, see (118).

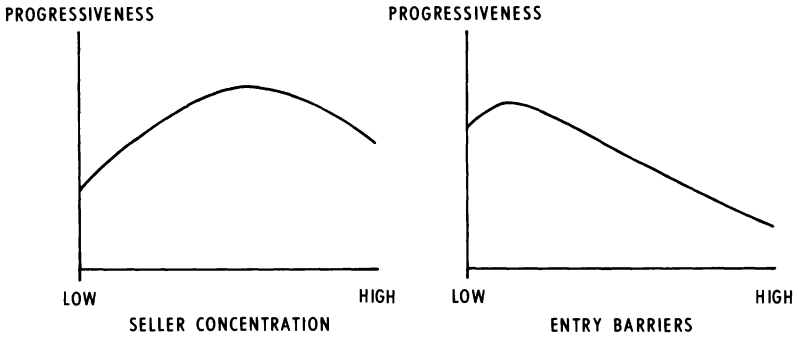


Figure 3

(which are passed on in higher prices), or by increasing product prices when demand is declining. This response by sellers, which is contrary to that in a "competitive" market, makes it difficult to control inflation. Their action also makes it harder to achieve full employment without inflation, through use of traditional monetary and fiscal policies which act to expand or contract demand forces (81, pp. 107-126). Recent history in the United States lends credence to this position. Efforts to control inflation by manipulating aggregate demand have met with limited success, particularly since President Nixon eliminated wage-price guidelines and the use of Government persuasion upon taking office in 1969. For example, the prices of metal and metal products rose an average of 1.4 percent per year during 1960-68. But, they went up 12 percent between January 1969 and January 1971—a period when aggregate demand was contracting because of fiscal and monetary policies. These price increases have been attributed to the "post-Johnson price orgy" enjoyed by the steel industry when guideline restraints were removed (82). Following this period, President Nixon instituted wage-price controls over much of the economy in an effort to slow the pace of inflation.

The evidence of the relationship between market structure elements and inflation or employment, or both, is both thin and somewhat mixed. Recent experiences, suggesting the detrimental effect of firms with strong discretionary pricing power, need further empirical examination. The information available at this time, however, seem to support at least a modest relationship.

IMPLICATIONS OF EMPIRICAL RESULTS

A review of the many empirical studies and conclusions of various scholars proved confusing. Empirical results do not present a clear, consistent picture of the determinants of market performance. This inconsistency can be interpreted in different ways, depending largely on the biases and beliefs of the interpreter. On the one hand, market structuralists may attribute the lack of greater consistency to empirical deficiencies; that is, to inappropriate proxy variables,

inaccurate measurements, inadequate analytical procedures, and so on. Studies that confirm the structure-conduct-performance relationships expected may be seen as indications of the true relationships that would be consistently found if empirical problems could be solved.

On the other hand, persons with serious doubts about the dominant role of market structure elements may interpret such inconsistency as evidence that other factors are often more important influencers of performance. That is, the various study results are seen as reasonably accurate and therefore demonstrate that the models of competition are inadequate.

For the student of industrial organization, the task of sorting through "facts" and "biased interpretations" to arrive at an independent, "objective" conclusion is extremely difficult. While we have tried to present an objective assessment of the various empirical studies, we suspect that our biases are evident at various points.

The foregoing capsule of empirical results indicates that market structure elements have a significant influence on certain performance dimensions, although the nature of the relationship is not defined clearly enough. In most cases, a continuous linear relationship is not apparent. Instead, certain threshold levels of structural elements appear to be needed before their influence on performance is evident. Because of this need and because other factors (including other aspects of the environment and structure of markets) may often influence performance as much or more than traditional market structure elements, *measures* of market structure are likely to be rather inaccurate proxy measures of performance.

Given this limitation, however, the empirical results of market structure-performance relationships do provide definite and valuable guidance to policymakers. Taken in total, the results suggest that the social benefits gained from allowing industries to become highly concentrated or to erect substantial entry barriers or to do both, will probably be meager or negative in most cases. Technical efficiency and product or process progressiveness warrant high concentration in few industries, and allocative efficiency (as measured by profit rates) tends to decline with high levels of concentration. The effect of the pricing behavior of concentrated industries on inflation and employment—while somewhat clouded—appears if anything to be negative. Thus, the benefits to be gained from allowing moderately concentrated industries to become more concentrated are rather dubious. (Marketing-scale economies in some consumer goods industries may be an exception, although the nature and magnitude of the "benefits" in such cases have yet to be determined.)

Moderate levels of concentration, on the other hand, seem to cause little injury to performance, and to prove beneficial to the progressiveness and technical efficiency of some markets. Thus, in some instances, an argument can be made for allowing an industry with low concentration, entry barriers, and so on, to become less purely competitive. These conclusions suggest that the model of pure competition should be abandoned as a viable *norm* for performance. From the standpoint of realism and the evidence regarding social benefits, models of effective competition (subjective and primitive

though they may be) appear more appropriate. Thus, models of effective competition that specify avoiding *high* levels of seller concentration and entry barriers will probably be more consistent with social welfare than models which allow high concentration or entry barriers, or both, as long as performance is acceptable. (See chapter 4 for further discussion.)

THE NEED FOR CONCEPTS OF GROWTH AND SYSTEM DYNAMICS

Many writers have emphasized the need for concepts of competition that recognize growth and dynamic change as important market forces. In extremely dynamic times with rapid changes occurring in the environment of business firms, developing such concepts seems to be a particularly relevant issue. For this reason, let us consider some that have been proposed and empirical results that may have bearing.

One of the earliest proponents of the considerable influence of innovative change was Schumpeter. In his now familiar quote, he commented:

... It is not (price, quality, or promotional) competition which counts but the competition from the new commodity, the new technology, the new source of supply, the new type of organization—competition which commands a decisive cost or quality advantage and which strikes not at the margins of the profits and the outputs of the existing firms but at their foundations and their very lives. This kind of competition is . . . so much more important that it becomes a matter of comparative indifference whether competition in the ordinary sense functions more or less promptly; the powerful lever that in the long run expands outputs and brings down prices is in any case made of other stuff (*105*, pp. 84-85).

McNair sounds a similar theme in proposing “the wheel of retailing” (77, pp. 18-19). In both cases, the emphasis is on periodic reorganization and reorientation that substantially alters the characteristics of a market system.

Chamberlain suggests that firms (and market systems, we would add) must achieve a balance between two ever present forces—a tendency toward systematic, efficient, smoothly running organizations (equilibrium), and a tendency toward reorganization and reorientation in response to changes in their environment (disequilibrium) (20, pp. 9-10). The comments of Schumpeter, McNair, and others indicate that with rapid technological and environmental changes, the balance between these two forces should favor disequilibrium though some sacrifices may be made in shortrun efficiency. With such rapid changes, firms and market systems that have developed “early warning radars” in the form of sound intelligence systems and are quick to respond when adjustments are needed should benefit society more and remain viable themselves, than those less alert but perhaps more efficient in the short run.²³

²³The works of Lawrence and Lorsch suggest that firms in rapidly changing environments may vary significantly in their organizational structures from those in more

More needs to be understood about the influence of new products, new technology, and the rate of growth on firm behavior in the long run. Schumpeter placed great faith in these forces as essential characteristics of capitalism. He describes his notion of "creative destruction" as follows:

The fundamental impulse that sets and keeps the capitalist engine in motion comes from the new consumers' goods, the new methods of production or transportation, the new markets, the new forms of industrial organization that capitalist enterprise creates . . . (this) process of industrial mutation . . . incessantly revolutionizes the economic structure from within, incessantly creating a new one. This process of creative destruction is the essential fact about capitalism (105, p. 83).

While Schumpeter's comments may not apply to a particular industry at a particular point in time, they do speak of a fundamental and pervasive force that seems to characterize the U.S. economy when viewed from a detached perspective. Especially important are the implications of the process of creative destruction for established positions of monopoly power. Economists have given insufficient attention to the temporal dimensions of monopoly power. In earlier periods with less rapid change, positions of monopoly power tended to prevail for considerable periods. With an accelerated rate of "creative destruction," one might expect existing power positions to be less securely entrenched and more transient in nature. But does this occur?

From their extensive analysis of the mobility and size structure of leading industrial companies, Collins and Preston conclude:

There is considerable reason to believe that firms now at the top of the industrial pyramid are more likely to remain than their predecessors. The evidence of mobility does accord with a general assumption that large-scale corporations enjoy an increasing amount of entrenchment of position by virtue of their size (24, p. 1001).

Galbraith's thesis in *The New Industrial State* also suggests that power is more securely entrenched—not less—since modern technology requires large firms and concentrated markets (46). Robert Averitt presents a similar argument to Galbraith's with certain important differences. In his book, *The Dual Economy*, Averitt proposes the oversimplified yet useful idea of two quite different economies in the country:

mature, static environments. These authors found that firms in rapidly changing environments that were responsive to changes in these environments have rather flat organizational structures with considerable freedom and authority at lower levels. Further, such firms placed considerable dependence on persons in direct contact with different markets or clientele for information concerning changes in the environment. That is, employees on the firing line were used more heavily as sources of intelligence and strategy information. This type of arrangement also suggests that different kinds of information may be relied on than in firms in slower changing environments. Whether there is any relationship between the organizational structure of firms or the flow of information, and the structure of the industry is not known at this point. See (64) and (65).

Contemporary American capitalism, then, is a composite of two distinct business systems. The new economy is composed of firms large in size and influence. Its organizations are corporate and bureaucratic; its production processes are vertically integrated through ownership and control of critical raw material suppliers and product distributors; its activities are diversified into many industries, regions, and nations. Financial support is readily available from both internal and external sources. Firms in the large economy serve national and international markets, using technologically progressive systems of production and distribution. The affairs of such enterprises are conducted with a view to survival in perpetuity as they meet economic crises with successive strategies of firm expansion. We shall call this network of firms the "center".

The other economy is populated by relatively small firms. These enterprises are the ones usually dominated by a single individual or family. The firm's sales are realized in restricted markets. Profits and retained earnings are commonly below those in the center; long-term borrowing is difficult. Economic crises often result in bankruptcy or severe financial retrenchment. Techniques of production and marketing are rarely as up to date as those in the center. These firms are often, though not always, technological followers, sometimes trailing at some distance behind the industry leaders. Let us designate the firms in the small economy by the term "periphery" (6, pp. 6, 7).

While center firms pay close attention to costs, Averitt states that in all but the worst times these firms concentrate on expanding sales rather than cutting expenses.

... By following various combinations of four basic growth strategies giant firms soon realized a rate of growth exceeding that of the market. These strategies were expansion of volume in traditional markets, geographical dispersion, vertical integration, and product diversification.

... Center firms must diversify to escape the inevitable decay that Marshall predicted. But diversify in what direction? What can be used as a reasonable guide to product acquisition? The answer is found in the force that plays the dominant role in creating economic turbulence. As center firms have discovered, the root of secular disturbance in economic patterns is *technological change* (6, pp. 9, 15).

In several respects, the pictures presented by Galbraith and Averitt of large diversified firms are similar. However, in certain fundamental aspects, they differ significantly. Galbraith contends that modern technological imperatives make concentrated markets with vast industrial enterprises inevitable; that large size is necessary for planning inventions, innovations, and production processes; and that concentrated markets are necessary to allow management of consumer wants, thereby guaranteeing markets.

Averitt, however, posits the relationship of large firms and technology in quite a different light, with much less technological determinism. His reasoning suggests that large firms are likely to be affiliated with industries where new technology is important *because* it represents growth and survival. Averitt thus envisions his center firms as sensitive chasers of new technology in a system

where market forces continue to threaten positions of complacency:

An enterprise that ties itself to the rhythm of a particular industry must ultimately ride to profit deterioration on the industry's life cycle. Should any firm, large or small, be so foolish as to associate itself solely with a particular mix of products, it undoubtedly must watch its profit margins dwindle near the end of the industry's rapid expansions phase when visible and sustained success attracts new capacity.

... Industrial economies do not hold a fixed form for long. A changing technology provides a slow but continuous metamorphosis in economic structure. Today's key industries may slide down the industrial hierarchy into relative oblivion.

... The challenge of survival greatly motivates those firms close to the scientific vortex. As the rate of technological change increases, the secular decline of all markets is speeded up. New products age quickly and this fact prods the center firm to sharpen its product development and marketing processes.

... Where technology leads, the center must follow, thus preserving itself from the twentieth century's most potent firm killer (6, pp. 11, 16, 75).

The divergence in these positions is important to understand, for they present markedly different interpretations of the operation of market forces and of the possibility and desirability of controlling market structures.

Unfortunately, neither Galbraith nor Averitt substantiate their arguments with empirical observations. The limited amount of evidence available lends more support to Averitt's position. We have already discussed the evidence concerning progressiveness; little indication was found that highly concentrated markets are required or necessarily desirable. (The development or successful introduction, or both, of some new consumer products may be an important exception.)

However, past studies may reveal little about major innovations that restructure or reorganize an industry since these represent a small minority of all innovations. Numerous cases suggest that major established firms seldom initiate innovations that shake an industry to its roots. Supermarkets were introduced by small foodstore operators fighting for a way to survive against chain organizations. Discount department stores were the progeny of general-merchandise mavericks, not established department stores. Research efforts on the steam and Wankle engines, as alternatives to the internal combustion engine, have occurred largely within firms outside the automobile industry.

Large firms that are firmly entrenched in an industry may have little incentive to promote an innovation that will make existing facilities and technology obsolete and will shake up the competitive balance. Thus, it is not too surprising that in many industries new entrants have been a prime source of invention, especially if such inventions are of "industry-shaking" magnitude.

The rather sparse evidence indicates no unique advantage for *extremely large* organizations in innovations of either large or small magnitude, with the possible exception of some new consumer products. Further, where flexibility, alertness, and willingness to change are particularly important, such size probably carries definite disadvantages.

At the same time, studies have also shown that:

1. Concentrated industries tend to be characterized by richer technological opportunities (104, p. 244);
2. Large firms are particularly active in concentrated industries;²⁴
3. Large firms represent the large majority of all research and development expenditures (103, p. 358) (much of this on new product development);
4. Aggregate concentration (the percentage of all manufacturing sales or assets represented by the largest 100, 200, or 500 firms) has been increasing while market concentration in total has been relatively stable during the last two decades. This change has occurred as large companies entered more industries, usually by merger (81, chapter 3); and
5. Consumer goods industries with highly differentiated products increased substantially in concentration, whereas those with undifferentiated products held about steady (81, p. 33).

There are undoubtedly several interpretations of the above points. One that seems plausible is that large firms have gradually expanded their technological capabilities (both management and scientific) in response to the broader technological requirements of many new products and to the threat of potential competitors with advanced technological capabilities.²⁵ These large firms have thus become both more "eligible" and more interested in entering a broad variety of industries in which they perceive technological opportunities—to invest their capabilities. Because of their financial, human, and technological resources, these large organizations have been able to enter "new lands of opportunity" with much greater ease than small organizations.

As the big firms have applied their technological capabilities in product development, marketing, systems engineering, and other areas, some industries they have entered have evolved toward greater concentration. This development occurs especially when the growth rate of the industry is relatively slow, or it produces differentiated consumer goods, or both. At the same time, strong forces have been eroding market power and offsetting tendencies toward greater concentration. More rapid technological and product obsolescence are two such forces that continually have threatened established positions in any given industry and have motivated large organizations to seek out other opportunities to use their technical capabilities and disperse risk.

Rapidly growing industries have naturally been very popular as new opportunities. As the same time, large firms have apparently not confined their entry interests to only these industries. Significant growth opportunities for an individual firm may be perceived in declining industries too. In fact, one source contends that growth is easier in a declining industry.

Information for 1947-66 suggests that the relative attractiveness of fast-growing industries probably results in a good many new entrants—which in

²⁴ A study of 135 manufacturing industries showed that the 200 largest manufacturers in the United States did 87 percent of the business in those industries where 4-firm concentration ratios exceeded 75 percent, but only 14 percent of the business in industries where the top four firms represented less than 25 percent of the market. See (81, p. 38).

²⁵ This reasoning is drawn in part from (131).

turn tends to deconcentrate these industries. During this period, both for producer and consumer goods industries, rapid growth was associated with deconcentration or a slower increase in concentration than for industries with slower growth rates.²⁶ Barriers to new entry are also probably more difficult to build and maintain in industries experiencing rapid growth.

This interpretation tends to support Averitt's thesis more than Galbraith's. It casts large organizations in the activist role of searching continually to fortify their differential advantage, employ their capabilities, and be where the action (and the profit) is. Thus, while forces are continually eroding existing sources of monopoly power, many firms at the top of the industrial pyramid have developed a different source of power; the *capability* to keep locating and developing new sources of monopoly power.

Economists have long been concerned about monopoly or market power. However, there are much broader dimensions of power that enter into policy deliberations. The extent to which economic, political, and social power are interrelated, for example, bears strongly on the concern that may be justified regarding various power concentrations.

This concern is evident in the following comment by then Attorney General John N. Mitchell in 1969:

In 1948, the nation's 200 largest industrial corporations controlled 48 percent of the manufacturing assets. Today, these firms control 58 percent, while the top 500 firms control 75 percent of these assets.

The danger that this super-concentration poses to our economic, political and social structure cannot be over-estimated (79, p. 16).

and in Sen. Gaylord Nelson's statement, also in 1969:

Americans, ever suspicious of concentrated political power, have permitted concentrations of economic power to develop, substantially unchallenged, that would make a Roman emperor gasp (79, p. 18).

Since power is such an omnipresent issue in the policies and market rules that affect the economic system, we will examine the various dimensions of power in the next section. To enable a better understanding of the logic of the different points of view, we first look at broad concepts of power that are relevant to American society. This discussion will be followed by a consideration of power in the economic system.

While power has a definite influence on competitive relationships, it is most apparent in vertical relationships. These will be examined later on as to their role in market or system performance.

²⁶ From 1947 to 1966, industries whose sales grew less than 25 percent had an average increase in concentration of 2.9 percent. At the other extreme, industries whose sales increases over 300 percent experienced an average decline in concentration of 3.3 percent (81, p. 64).

POWER IN A BROAD PERSPECTIVE

The dangers or desirabilities of concentrated economic power depend on an assessment of power and its influence in the greater society. Because of the obtuse nature of "power," solid empirical data are extremely difficult to obtain. Most of the analyses are thus a combination of the authors' hypotheses with bits and pieces of supporting circumstantial evidence.

There are two basic concepts of power in the United States, held by the elitists and pluralists. Their differences suggest some of the key issues concerning power.

Mills was one of the leading proponents of the elitist point of view.²⁷ Mills' central proposition is that power has become increasingly concentrated in the United States. A "power elite" made up of a relatively small, tightly integrated group of people occupies the command posts of large organizations (corporate, political, and military) and controls nearly all the important decisions. Below the power elite are two other groups; a middle power group made up of diversified interests and the "mass society"—a powerless, unorganized people controlled from above.

As reflected in Riesman's *The Lonely Crowd*, the pluralist approach holds that no single unified power group exists in the country (99). Instead of one "power elite," the pluralists perceive a number of amorphous special interest or "veto" groups, each concerned with protecting their particular concerns. The presence of multiple centers of power provides one of the important restraints on power. In fact, Riesman warns that power may become so fragmented that effective leadership cannot emerge.

The implications of these two points of view are radically different. The elitists carry a strong concern for the exploitive and manipulative effect of concentrated power that, in their minds, is largely unconstrained. The pluralists, on the other hand, believe that power is effectively constrained for the most part, and therefore fear its detrimental effects much less.

One of the critical issues in this debate is the relationship between large corporations, the very rich, and the body politic. Available data indicate that wealth is highly concentrated in the United States and there is no apparent trend toward deconcentration. (See the last section of chapter 1.) A strong ownership link exists between very rich people and large corporations. In 1953, the wealthiest 1 percent of the adult population held 76 percent of the corporate stock (21) and (78). Whether, in fact, these people effectively control most corporations is debatable. Parsons, Domhoff, and others have argued that the control of business has passed into the hands of professional executives who have reached their positions through means other than the exercise of property rights. Parsons and Domhoff discussed Bell's contention that the death of family capitalism and the rise of managerial capitalism has meant that the keys to power have shifted from wealth to education, technical skill, and political position (84) and (35).

²⁷For a compilation of several critiques and commentaries on Mills' work see (35).

Domhoff challenges this contention. Drawing from his book, *Who Rules America?* (33), he states:

. . . This study showed that the less-than-one-percent who make up the American upperclass contribute anywhere from 25 percent to 62 percent of the directors and partners of the largest banks, law firms, and corporations, and that these men and their hired employees dominate the philanthropic foundations, the boards of trustees of leading universities, the largest opinion-forming associations, the largest of the mass media, and the executive branch of the federal government. Two of the most important findings of *Who Rules America?* concerned the relationship between the old-line members of the upper class and the control of the corporate economy. On the one hand, it is clear that many members of the upper class continue to acquire the expertise necessary to function in the complex world of modern corporations and law firms. On the other hand, it is clear that rising executives are assimilated into the social institutions of the upper class . . . (35, p. 269).

A related issue, particularly in recent years, is the extent to which large financial organizations—which may be mainly controlled by the upper class—also influence or control other corporate entities. Discussing the situation in banking, Mintz and Cohen state:

. . . the Subcommittee on Domestic Finance of the House Committee on Banking and Currency . . . found that in 1967 institutional investors held \$1 trillion in assets. Of this sum, \$607 billion, or 60 percent, was held by the trust departments of the forty-nine commercial banks which the staff surveyed . . . Together, . . . the forty-nine banks in the survey held at least five percent of the common stock of each of 147 of the 500 largest industrial corporations. The same banks had a total of 768 interlocking directorships with 286 of the 500 largest corporations, or 'an average of almost three directors for each corporation board on which bank director representation is found' (79, pp. 19, 20).

Regarding concentration of power by newspapers, this same source comments that in 1910, 57 percent of the Nation's cities and towns had daily newspapers under two or more separate ownerships. By 1970, this share had dropped to 4 percent. In that year, 1,483 cities had monopoly ownerships, compared with 64 with competing ownerships (79, p. 96). Further, a growing number of newspapers, radio stations, and television stations are owned by conglomerate industrial and business corporations. The possibilities for conflicts of interest and incomplete reporting are thereby increased.

Accepting the implications of the above evidence indicating a broad swath of influence and power by persons with wealth or corporate leadership, or both, does not mean that these people are unified and operate as an *elite group*. Hunter's study indicated that many persons identified as top leaders knew several other top leaders (55). That interaction occurs is not particularly surprising. What is not known is whether they thus act with some degree of unity on major decisions. Pluralists contend that no such unity exists—instead, competition, not conspiracy, takes place between elites. Mills argues that the

structural trends of society, similar socioeconomic status, and similar psychological experience in large institutions all formed the basis for unity. Without more evidence to go on, it is difficult to judge who is right.

Too little is known about the total impact, interrelationships, and influence of economic power. The previous discussion has attempted to point out some of the key issues regarding power and to draw attention to the caution being expressed in certain quarters. Some will greet such comments about growing economic and political power as overexaggerated and unduly alarming. However, the potential detrimental effect on the U.S. economic, political, and social systems is too great to justify dismissing these concerns lightly. The dangers from erring on the side of too great a concern appear far less than erring in the opposite direction.

Frequently, discussions of market structure focus solely on the implications for economic performance; yet, the power implications—economic, political, and social—are an underlying influence in many policy decisions. While a difficult and somewhat sensitive subject, more explicit consideration of power seems warranted in most studies of market, industry, or system performance.

From a public policy standpoint, the *existence* of power is significant, whether or not it is used or misused. The very existence of power carries with it the potential for socially detrimental influence, and hence can legitimately be questioned in a democratic society. As Mintz and Cohen suggest:

It is the potential that is of foremost concern. The environment always to be sought is one which assures that ordinary men, not merely heroes, will reliably do what is necessary (79, p. 27).

POWER IN MARKET SYSTEMS

Power is defined by Emerson in terms of the dependence of one actor upon another actor:

The dependence of actor P upon actor O is (1) directly proportional to P's motivational investment in goals mediated by O, and (2) inversely proportional to the availability of those goals to P outside of the O - P relation (39, pp. 32-33).

O's power thus depends on P's *perception* of O's ability to satisfy or inhibit P's desires and the number of alternatives perceived by P. This general definition can be applied to power in the marketplace, political arena, or society in general.

In the economic system, the structure of markets has a definite effect on dependency relationships. For example, if both sides of a market are made up of many firms with no product differentiation, little if any power (dependency) would exist in the market. This example is rarely found in real markets.

Several aspects of market power were discussed earlier in this chapter. Empirical studies indicate that certain combinations of market structure

variables do provide the potential power to realize monopoly profits (high concentration with moderate to high product differentiation, and moderate to high entry barriers). Whether this potential power is *realized* or *used* depends on whether it is offset or neutralized in some way, whether the firms involved accurately perceive their power, and whether management exercises restraint in using power.

Power is obviously a *relative* force. A firm may have considerable power in dealing with some suppliers, for example, but relatively little in dealing with others. The use of power would also seem to be influenced by the temporal characteristics of exchange relationships. When firms expect to be dealing with each other over an extended period of time, power may be constrained to stimulate more cooperative and harmonious working relationships.

Nader contends that power, to be responsible, must be insecure (110). The durability of one's source of power would certainly influence the sense of security. Monopoly power has frequently been viewed by economists as quasi-permanent. Yet, there apparently are forces that continually erode existing positions of power. These include:

1. The life cycle effect on product differentiation;
2. Higher rate of technological change;
3. The difficulty of avoiding organization "dry rot" and inefficiency in a firm with considerable market power;
4. Increasing willingness and ability of firms to enter unfamiliar industries; that is, the number of potential entrants has risen;
5. The tendency for countervailing power to develop to offset or mute existing power; and
6. Greater competition from imports in many industries.

The existence of a life cycle for many products means a gradual decline in product differentiation in the maturity stage, frequently accompanied by the increased importance of private labels. (See the last section of this chapter.) This phenomenon also stimulates the development and introduction of new products, which in turn may shorten the life of older products. The impact of the life cycle on different industries varies greatly, however. Positions of monopoly power are more solid and thus should be of more concern in relatively stable, slowly changing industries, than in those where rapid changes and short life cycles prevail.

The increasing rate of technological change represents another threat to established positions of power. Changes in process, management, or product technology, or in all three, often provide opportunities for new entrants or smaller firms to challenge and compete successfully with established firms in an industry. This possibility is particularly true where new technology makes obsolete large investments of existing firms. Such firms may be understandably reluctant to "write off" former investments unless they are forced to by an aggressive innovator. Low entry barriers are obviously important for this event to occur.

A frequent result of market power is reduced uncertainty and risk. Thus, a firm with considerable market power is likely to experience less anxiety and

stress. The atmosphere of a relaxed firm, however, may allow a certain amount of organizational ineptness—which in time could result in the erosion of its power base.

The growth of conglomerates, the expansion of technical competence in many firms, and the venturesomeness of the new breed of entrepreneurs has eliminated much of the hesitancy of firms to enter new and unfamiliar industries. This force alone has had a marked impact on the security and contentedness of many “old-line” firms with established positions in certain industries.

The extent to which power tends to be neutralized, offset, or muted is unknown. Situations such as the growth of unions; the increase in farmer bargaining; the development of black power, student power, and consumer power; and the development and growth of farmer cooperatives and retailer buying organizations have had varying degrees of success in neutralizing or gaining access to the power of corporations, Government, or other institutions. A firm's location within the marketing channel and the characteristics of the channel influence its degree of market power. In some systems, the retail distributor is closely tied to the manufacturer as far as products handled (the petroleum and automobile systems, for example). In these systems, the power of retail distributors is likely to be less than when they handle the product lines of many manufacturers and are essentially independent in their operations. In food retailing, for example, products of many vertical systems are handled (including private labels), and retail firms can be relatively independent in dealing with manufacturers. Thus, though several food processing or manufacturing industries are differentiated oligopolies, their power tends to be muted by large retail organizations. If anything, the balance of power now lies with large retailers.

The foregoing forces cause a continual shift in the *bases* of power (for example, shifts in products, technologies, or services). These forces do not necessarily cause a reshuffling or redistribution of power itself if existing firms are successful in finding and exploiting new sources of power. If, as Averitt suggests, many large firms have a guidance system that is “locked on” to product and technology changes that represent growth opportunities, they may be successful in continually refortifying their power position. Large firms should be more adept at playing the game for shifting sources of power than most smaller firms because of the former's longer run orientation and greater emphasis on growth.

The prevalence of countervailing power as a socially beneficial balancing force is challenged by Nader. In the introduction to *America, Inc.*, he states:

During the past generation, a new theory of self-correcting mechanisms—countervailing powers or economic pluralism—gained acceptance. One power bloc, it is said, substantially curbs the excesses of another power block, whether they be big sellers, big buyers, big unions, big government, or the collective feedback of ultimate consumers.

. . . During the past six years, the realities of the corporate condition have begun to spill into the public domain . . . Countervailing power

turns out to be mostly an accommodating power which transfers the results of corporate abuses from one point on the market or the environmental or governmental continuum until they land on the point of least resistance—the consumer-citizen-taxpayer (79, p. xv).

In commenting on the resilience and endurance of corporations, Nader strongly suggests that they are largely immune to the above transient dimensions of power.

The management of power in a complex society is built around institutions. In our country, the most enduring, coordinated and generic manager of power is the corporate institution. Controlling great wealth and metabolized by the most fungible of factors—the dollar—the modern corporation possesses a formidable unity of motivation and action with great stamina.

Historically, many of our country's struggles have been challenges of the corporate power to define the area of its accountability. This was true of the Populist and Progressive movements as well as the challenges of organized labor and the regulatory state of the New Deal. Against these and lesser buffetings, the corporation, with its peerless resiliency of bending now and consolidating later, prevailed only to increase its power (79, pp. xi, xii).

Market rules have an important influence on the transience and distribution of power. Tax laws, antitrust statutes, legislation on information that must be provided to consumers—these and many other “market rules” influence the dynamics of power. An important vehicle by which large corporations maintain and increase their power is the corporate merger. The stance of Federal regulatory agencies on mergers involving large companies can influence significantly the trends of power concentration over time and also the extent to which firms can maintain power through merger activity.

Industrial organizations theory deals with power largely from the standpoint of the extent to which the competitive structure of a market allows firms to alter the terms of trade for their benefit. The focus is thus on competitors as restraints to market power. The structure of both sides of a market is recognized as influencing the terms of exchange that are realized. However, industrial organization theory provides few insights into the market power resulting from certain types of market dyads, particularly oligopoly-oligopsony.

In addition, power in a market system often has vertical manifestations beyond a particular market. The distribution of power throughout a vertical system definitely affects the performance of that system. However, the perspective differs; vertical systems and relationships are emphasized compared with the horizontal, competitive orientation of industrial organization theory. While vertical systems analysis represents a far less developed body of thought than industrial organization theory, it does hold potential for improving our understanding of the behavior and performance of vertical market systems.

VERTICAL SYSTEMS ANALYSIS

Vertical relationships have long been recognized as significantly influencing the behavior and performance of industrial organizations. Yet the preponderance of empirical and theoretical work has focused on horizontal, competitive relationships. Part of the reason may be the difficulty of developing adequate conceptual models of vertical market relationships. Although there have been several recent efforts to improve the conceptual models of vertical market systems, vertical systems analysis remains in the embryonic stage of development. Scholarly contributions have provided some useful insights into the characteristics of vertical systems and have contributed to a broader Weltanschauung of economic activity. However, these insights do not constitute a valid theory of vertical system behavior.

Perhaps the key problem in visualizing vertical market systems is the interaction of firms at different levels within a system. The paucity of research on interorganizational behavior results in few theoretical insights into vertical market relationships. Because exchange in a vertical system often depends in part on negotiation skills, market power, and factors in addition to traditional demand and cost functions, the models of economics only suggest a range of possible outcomes.

Quite understandably, some of the recent inquiries into vertical system behavior have attempted to apply concepts from the behavior sciences. Stern views market channels as *social* systems performing economic functions. He contends:

Channels can be viewed strictly as economic systems; however, such a perspective also limits knowledge of the relationships and interactions within them. The perspective must be broadened to include social and behavioral variables, for channels are social systems first and then economic systems (117, p. 5).

Past studies of vertical market systems can be categorized into at least three different orientations:

1. Descriptions and analyses of the physical flow of products, value added, and functions performed at different stages; and the structure of the industries operating at different stages. This approach provides a snapshot of a system at a point in time, but often gives little insight into the dynamic properties of a vertical system.
2. Description and analysis of vertical system coordination, including the institutions and arrangements involved in communication and exchange within the system. This approach examines one of the essential dynamic functions of vertical systems, but generally assumes the existing or a hypothetical organization and purpose of the system.
3. Description and analysis of vertical system adaptation and evolution, including the forces of change or inertia. This approach is longer range in perspective, focusing on a second critical dimension of systems—that of adaptation and adjustment.

The first approach is a rather straightforward anatomical examination of a

system. At least to some extent, this approach is necessary before the coordination or adaptation aspects of the system can be examined. The performance of vertical systems, however, depends heavily on the efficacy with which coordination and adaptation are accomplished. Since both of these tasks carry significant behavior dimensions, we will consider some of the behavioral concepts that are applicable to vertical systems analysis.

Behavioral Dimensions

Vertical market systems inherently involve both cooperation and conflict. For a vertical complex of organizations to be considered a "system," some degree of interdependency is required. Vertical interdependency, in turn, means some commitment by each member firm to the survival of the system and other system members. The level of commitment of members determines the extent to which their individual interests will be subordinated to the effectiveness of the total system—and hence to the level of cooperation that will prevail.²⁸

Alderson has emphasized the cooperative aspects of market systems, contending that a theory of cooperation is needed to accompany theories of competition (3, p. 239). Baligh and Richartz have commented:

The essence, therefore, of any vertical market structure is the cooperation that must of necessity exist for exchange to occur (8, p. 3).

Cooperation within vertical systems would appear to be particularly important in contributing to smooth coordination and system equilibrium. Baligh and Richartz suggest three requisites for system equilibrium:

The first is that every firm within the structure be incapable of changing the cooperative relationships which it has with other firms already in the structure to its economic advantage . . . Second . . . no firm from without the structure finds it possible and profitable to alter it by entering into cooperative relationship with those firms already a part of the structure . . . Third . . . that every firm in the structure at equilibrium performs a function (8, p. 8).

While cooperation is an essential ingredient for system survival, conflict may be an equally natural—and perhaps equally important—dimension of vertical systems. In an interdependent system, the behavior of one member frequently threatens the goal satisfaction of other members. The result is conflict.

Dahrendorf has contended that, in fact, conflict and change are ubiquitous in social systems; that equilibrium models, therefore, provide a distorted and incomplete understanding of system behavior. He comments:

²⁸ See Alderson's comments about organized behavior systems in (3, pp. 37-45). Alderson perceives an organized-behavior system as a group perpetuated by the members' belief that they have more to gain by belonging to the group than by independent action. Alderson draws a definite distinction between an organized-behavior system (where each member has a stake in the survival of others) and a loose coalition of firms.

All utopias from Plato's Republic to George Orwell's Brave New World of 1984 have had one element of construction in common: they are all societies from which change is absent.

... whether by rational argument or empirical analysis, it is hard to link the wide river of history—flowing more rapidly at some points, or slowly at others, but always moving—and the tranquil village pond of utopia.

... at least one other model of society is required. The model I have in mind has as long a tradition as the equilibrium [social systems] model... this alternative model [is] the "conflict model of society"... all units of social organization are continuously changing, unless some force intervenes to arrest this change. It is our task to identify the factors interfering with the normal process of change rather than to look for variables involved in bringing about change.

... As with change, we have grown accustomed to looking for special causes or circumstances whenever we encounter conflict; but again a complete about-face is necessary in our thinking. Not the presence but the absence of conflict is surprising and abnormal, and we have good reason to be suspicious if we find a society or social organization that displays no evidence of conflict. To be sure, we do not have to assume that conflict is always violent and uncontrolled. There is probably a continuum from civil war to parliamentary debate, from strikes and lockouts to collective bargaining... we must never lose sight of the underlying assumption that conflict can be temporarily suppressed, regulated, channeled and controlled, but that neither a philosopher-king nor a modern dictator can abolish it once and for all.

There is a third notion that goes with change and conflict to make up the armamentarium of the conflict model of society; the notion of constraint. From the point of view of this model societies and social organizations are held together not by consensus but by constraint, not by universal agreement but by coercion of some by others. It may be useful for some purposes to speak of the "value system" of a society, but in the conflict model such characteristic values are ruling rather than common, enforced rather than accepted, at any given point in time. And, as conflict generates change, so constraint may be thought of as generating conflict.

... Because there is no certainty... there has to be constraint to assure some livable minimum of coherence. Because we do not know all the answers, there has to be continuous conflict over values and policies. Because of uncertainty, there is always change and development... the conflict model is essentially nonutopian; is the model of an open society... we need both [the equilibrium and the conflict] models for the explanation of sociological problems. Indeed, it may well be that society, in a philosophical sense, has two faces of equal reality; one of stability, harmony, and consensus, and one of change, conflict, and constraint (31, pp. 107, 108, 126-128, bracketed phrases added).

While Dahrendorf's comments are aimed at social systems in general, they are germane in considering vertical market systems and business organizations. One finds, for example, that certain vertical systems and firms are characterized by rapid change, conflict, and reorganization. In others—often where technology is

more dormant—stability, harmony, and efficient organization are dominant features.²⁹

The comments of Cyert and March strike some similar notes, albeit related to organizations. They view an organization as a coalition, but one that naturally embodies some degree of conflict.

Basic to the idea of coalition is the expectation that the individual participants in the organization may have substantially different preference orderings (i.e., individual goals). That is to say, any theory of organizational goals must deal successfully with the obvious potential for internal goal conflict inherent in a coalition of diverse individuals and groups (30, p. 27).

Sufficient similarities may well exist between intraorganizational behavior and the behavior of organizations within a vertical system. Thus, studies of the former can provide many insights into the latter. Certainly, at this point in time, theories of organizational behavior are more developed than theories of vertical system behavior.

Since some degree of dependency is involved in all vertical systems, power is also present and may influence the level of cooperation and conflict. Palamountain has observed:

It is apparent that a principal factor differentiating vertical conflict from horizontal or intertype competition is that it is so directly a power conflict (117, p. 135).

Stern suggests that there are five bases of power in vertical market systems: rewards, coercion, expertness, legitimacy, and identification, or referent power (117, p. 95). The first base, rewards, is closely related to "gain" bargaining power (do this for me, and I will do something for you). The second base, coercion, is related to "pain" bargaining power (do this or else). These two bases are the most explosive and will probably generate conflict and reaction from other members of the system.

In some cases, the exercise of reward or coercion power may stimulate efforts to counter or neutralize such power. Galbraith suggests that it is natural for the weaker members of a power dyad to attempt to equalize the power relationship (45). Equalization may be achieved by forming coalitions or altering the dependency relationship.

Power is frequently viewed in a negative, exploitive sense. However, as Stern suggests:

Power can be used to break down resistance to change, depending on the domain, weight, and scope of the power held by the agent seeking change, and to serve as a means for coordinating the efforts of all participants in the channel (117, p. 113).

²⁹ For an interesting analysis of the organization and behavior of firms in different types of environments, see (64).

In a similar vein, power may affect system coordination positively by resolving conflict and stimulating greater commitment to and cooperation with a particular vertical system. Parson suggests that, in fact, power may be necessary for an industrial society to function (84).

Cooperation, conflict, and power are important characteristics of vertical systems, not in themselves, but because of their effect on system coordination and adaptation, and competition at different levels in a system. Coordination is relied upon to integrate and synchronize the functional inputs of different system members to achieve a smoothly functioning whole that effectively achieves its purpose. Adaptation reflects the extent to which the system responds and adjusts to its environment. Over time, the relevancy and survival of the system are at stake. While volumes have been written about competition, the basic nature of coordination and adaptation have received much less attention. A few comments appear warranted.

Coordination

At any given point in time, coordination of a vertical system depends on:

1. Existing institutions and arrangements (including markets, rules and regulations, trade practices, and facilitating organizations);
2. Flow of information (including its accuracy, quantity, and timing); and
3. Decisions.

Existing institutions and arrangements are the instruments or vehicles through which coordination takes place. They have a strong influence on the extent to which market signals are accurately and promptly relayed to system members—hence, on system responsiveness. One of the benefits from contracts, compared with open or spot markets, in linking system members is the increased information flow that often occurs. If the contract is part of a long-term continuous relationship, higher levels of cooperation and understanding might also be expected, although such a change would be determined by the degree of dependency of each party on the other.

Given the institutions and arrangements and flow of information in the system, management in decisions actually performs the coordinating task. In this respect, the concept of a system “decision anatomy” may be analytically useful. The decision anatomy refers to the network of decision points and associated authority extending throughout the system. It represents the “nervous system” by which coordination and adjustments take place.³⁰

The decision anatomy of a system provides an overall view of the control points and the distribution of authority and influence for the entire system. In some cases, decisions rest on sovereign authority, as with Federal regulations; in others the authority is shared between two entities; for example, in bilateral transactions. In other instances, decisions are unilateral—due to property rights, customs, or other bases of authority. Attempting to define and

³⁰ For further comments on this approach, see (5, chapter 7) and (70).

understand the decision anatomy of a system necessitates examining the location and basis of decision controls.

The structure of authority and decisions within organizations in a system also has a bearing on system coordination. Lawrence and Lorsch found, for example, that firms facing rapidly changing, uncertain environments need to have a relatively flat organizational structure in which considerable authority and freedom are delegated to lower levels. On the other hand, firms in a relatively unchanging environment can operate with less delegation, tighter internal controls, and simpler channels of communications (65). Since an organization must carry on transactions with its environment simply to survive, organizational characteristics need to be consistent with the various segments of the surrounding environments. Thus, in trying to understand coordination (and adaptation) in a vertical system, the distribution of decisions and authority both for the total system and for individual firms may warrant examination.

The foregoing suggests the importance of understanding the distribution of authority and decisions within a system. Attempting to understand *why* certain decisions are made requires examining yet another dimension—the set of forces affecting decisionmakers. These factors include: competitive forces, goals and values of individuals and organizations and their perceived role and power in the system, economic-political-social forces, and so on. Both the forces and the interpretation of them may change from one decision point to another. The greater the difference in the forces influencing decisionmakers at different levels in the system, the more difficult the integration and coordination task.

It may be useful to distinguish between coordination of individual vertical networks of firms and coordination of the total product system. Individual firm networks may be tightly coordinated in the sense that their functions harmonize with the goals and strategies of the firms involved. Whether in fact the composite behavior of individual firm systems yields good coordination for the total product system is another matter. For the total system, the composite effect of the goals and strategies of many individual firms is important.

The vertical broiler system is a case in point. Tightly coordinated, compact individual firm systems have not led to more responsive resource allocation for the system in total *if* the stability of prices and profits are used as indicators. These individual systems have led to a more streamlined, efficient total system, however, and consumers have benefited through low-priced broilers.

Adaptation

Vertical systems are generally evolving, as opposed to steady state systems. They are continually adjusting and adapting to pressures and imbalances emanating from horizontal competition, vertical conflict, and environmental forces. However, not all vertical systems are equally responsive and adaptive.

The factors influencing a system's adaptability are open to conjecture. McCammon has suggested:

... institutional change in marketing tends to be a process in which firms and channels maneuver for short-run advantage and in which they adapt almost imperceptibly to environmental disturbances (76).

Since members of established vertical systems often resist or respond only incrementally to innovations, major innovations—particularly those that threaten to restructure the system—are generally introduced by firms completely outside the system. Relatively free entry would therefore appear to be important in facilitating system adaptability.

The structure and control of the vertical system may also influence its responsiveness and adaptability. For example, although empirical data are lacking, one might hypothesize that the accuracy with which consumer preferences are transmitted through the vertical system (and hence the possibility that system adjustments will be relevant) improves under certain conditions. Retail outlets would be *organized* (so they have some power in the marketplace), they would be free of significant manufacturer control, and they would handle the products of several manufacturers. The opposite extreme would be manufacturer owned and controlled retail outlets.

In addition, logic suggests other influences on system responsiveness, such as the presence of innovative firms at different levels in a system to set the pace for others, the growth-maturity stage of the system, the existence of Government guarantees or other shields from market forces, and the balance of conflict and cooperation in the system.

Performance

Our perspective of (system) performance may be that of a critic evaluating the system in the light of its contributions to society or that of the individual entrepreneur seeking to survive and prosper within the system (16, p. 3).

In either case, however, one encounters the dilemma of whose goals are to be chosen and how the relevant performance measures are to be aggregated. Streamlined, efficient, and tightly coordinated systems are desirable, as are innovative, adaptive, and responsive systems. But, can both types of performance be realized in the same overall system? There is no clear answer. Probably both sets of system characteristics are present to some degree in all systems. However, the balance varies greatly. In discussing market organization and economic development, Preston suggests:

... the evaluation of marketing-organization alternatives in the development context requires consideration of the informational, adaptive, and innovational functions of marketing agencies as well as their routine distribution of staple product lines. The most efficient organizational patterns for distributing standard products to existing markets are probably the least desirable ones for rapid and imaginative market development (96, p. 133).

In studying the U.S. food industries, Handy and Padberg found that two parallel vertical systems are emerging (51). One of these links core manufacturers and fringe retailers in a system that emphasizes product progressiveness and nonprice competition. National brands and in-store merchandising and service are primary competitive weapons. The second system links core

distributors with fringe manufacturers in a system which emphasizes physical efficiency and economy. Private labels and low prices are the important competitive weapons.

Such parallel systems are not developed for all products, but for the large majority of products handled in supermarkets, they are. From a performance standpoint, this arrangement gives consumers greater choice in the marketplace; they benefit from both product progressiveness and product economy. While core distributors and manufacturers continue to deal with one another, their interdependency has probably declined. Direct confrontations between the two loci of power are largely avoided.

One of the important factors leading to the development of parallel systems has been the development of a distribution oligopoly in food. Without question, the large core distributors are the captains of the private-label vertical systems. In industries where distribution oligopolies have not evolved, private-label economy-oriented vertical systems have generally not developed to the same extent as in the food industries.

Here, it would appear that one vertical system could not perform equally well, considering both product progressiveness and economy dimensions of performance; and that different performance criteria are warranted in evaluating the two parallel systems.

While at this point, the opportunities for building similar parallel systems in other industries are not clear, the food industry model does suggest that expecting a given vertical system to be both progressive in developing new products and highly efficient may be unrealistic. Perhaps the more realistic approach is to evaluate systems in terms of their primary performance characteristic, and to encourage development of alternative systems that specialize in providing other desired aspects of performance.

Linkages and patterns of coordination in vertical systems are undergoing both change and searching examination. Contracts, joint ventures, and vertical ownership are being used more widely in lieu of spot markets.

Both the reasons for and consequences of these changing linkages need to be understood better. Often more durable interfirm agreements have developed to redistribute risks, allow easier financing, accelerate adoption of new technology, protect investments and markets, or circumvent market rules and institutions that impede market responsiveness and coordination (for example, labor unions, antitrust laws, and tax laws). In some cases, these interfirm agreements are the instruments distribution firms have used to organize their vertical supply networks. The growth of motel, restaurant, and retail chains and large institutional feeders such as the airlines has resulted in a rising number of "planned" vertical systems that provide greater product control or more efficiency and synchronization, or both.

For example, large food and department store retailers now control significant portions of their supply networks through ownership, joint ventures, or contracts. The Nation's largest fried chicken company now operates its own vertically integrated broiler growing and processing system.

In some instances, planned vertical systems have also stemmed from the

initiative of manufacturers. For example, tire, paint, clothing, and dairy manufacturing companies have developed chains of retail outlets to distribute their products.

Three basic types of planned vertical systems have been identified (76):

1. Corporate: Based on vertical ownership;
2. Administered: Coordination is achieved through programs developed by one or more firms, and the system depends on exercise of economic and political power; and
3. Contractual: Based on some types of voluntary or cooperative contractual relationship.

McCammon contends that planned systems approach peak efficiency quicker than vertical systems that gradually evolve. This theory may well be true since the coordinator of planned systems has greater authority and power to stimulate efficiency. The longrun effect of such systems on competitive intensity, responsiveness to consumers, innovativeness, equity, and other performance dimensions is subject to greater debate. Though data are lacking, one might suspect that while planned systems become tightly coordinated—efficient vertical systems more quickly than unplanned systems—they may also be more rigid—particularly corporate types of planned systems—and over time may encounter problems of adaptability and responsiveness.

In comparing entrepreneurial planning (particularly through contracts or ownership) and market exchange, Farris has suggested that neither are inherently superior as methods of coordinating economic activity. “Supplanting the market by entrepreneurial planning occurs at least in part because market coordination is too slow in allowing potential gains from new technological possibilities to be achieved” (40, p. 255). To the extent that this idea is accurate, the benefits from entrepreneurial planning may be episodic, depending on the number and importance of technological improvements that are being developed. When the technology of a system stabilizes, the reason for entrepreneurial planned coordination no longer exists. Reversion to market exchanges as coordinating instruments might become desirable.

One of the important consequences of these linkage changes may be a shift in conflict, cooperation, and power. Since contracts and joint ventures usually involve buyers and sellers in a longer run working arrangement, such agreements apparently move a system toward greater *cooperation*: toward a partnership arrangement and away from an adversary vertical relationship. However, when alternatives are limited, these agreements could result from market power “persuasion.”

These arrangements do carry inherent dangers. Some system members may find themselves locked into a satellite relationship with the system “captain.” Such positions of extreme dependency might be desirable for both entities as long as the marriage lasts. They could, however, impede warranted divorces. Most certainly, the satellite firm suffers serious hardship if the relationship is abruptly ended.

What are the consequences of increased vertical cooperation? Many economists and business persons would find such relationships somewhat suspect,

believing that sooner or later, one of the parties would capitulate or be taken over by the other. However, if such arrangements develop because substantial benefits accrue from cooperation among system members, some degree of equity and integrity *might* be maintained.

In his recent book, Bloom identifies several technological or organizational changes that could improve productivity in food marketing—but which often require uniform adoption throughout the system (12). Uniform product codes, for example, are necessary for management of electronic checkout and computerized inventories to realize their full potential. Bloom contends that such changes depend on a stronger system orientation and on increased interfirm cooperation; further, that technological and organizational changes are where the greatest opportunities for increased productivity lie rather than in increasing efficiency within individual firms.

If in fact there are potential benefits from greater interfirm cooperation, are there also potential costs? Increased cooperation should be conducive to improved coordination, but what about system progressiveness and adaptability? Logic suggests that as cooperation increases, conflict will decline. Can firms become too cooperative?

Gross has commented:

Conflict among and within systems is probably the greatest source of continuing change . . . The common interests and goals that keep a system together are always embedded in a network of divergent and competing interests and goals . . . Some degree of conflict—both internal and external—is an essential stimulus to system adaptability and creativity (50, pp. 176-177).

Yet conflict may also be excessive and dysfunctional. Whether it is may depend on the leadership and influence of persons in a system who have the power to lead. Whether power and leadership in a system are used responsibly probably depends on the orientation of those in power (long run versus short run; industry versus system), the source and permanence of their power, and the perceived benefits from “responsible” leadership.

System performance may be enhanced by moderate levels of conflict, cooperation, and power. Extreme levels of these behavioral factors, on the other hand, could be dysfunctional or unhealthy for the system. Thus, there may be a socially desirable balance of these three forces.

The interrelationships of cooperation, conflict, and power with the more traditional economic variables of market structure, growth rate, new technology, market rules, and competition itself need further examination to allow possible use of a social systems approach to market and vertical system performance. The intensity of horizontal competition in a system may influence or be influenced by the balance of vertical conflict and cooperation within the system. For example, a firm facing intense competition could place greater pressure on its suppliers, producing in turn, greater conflict vertically. The dynamics of these relationships are not yet well understood.

The problem of measuring the behavioral dimensions of a vertical system

must be overcome before interrelationships can be examined. Solving this problem has rarely been attempted in a rigorous or systematic fashion. Stern suggests measuring the performance of firms in a three-dimensional space of competition, conflict, and cooperation, based on how the other firms in the vertical system or at the same level in the system perceive these dimensions (120). Similarly, an index of conflict-cooperation between firms within a vertical system might be developed founded on the perceptions of input suppliers who service several vertical systems and hence have some basis for comparison. The modest success of Stern and colleagues in measuring conflict and power in vertical systems provides some encouragement that such an index may be operationally testable (101), (38).

If, in fact, conflict, cooperation, and power can be measured, the factors influencing them can be analyzed. Regardless of the soundness of the hypotheses concerning these behavioral variables, their usefulness to policymakers will probably depend on identification of the factors affecting these variables. In other words, what factors, over which the public sector has some control, influence the conflict-cooperation-power balance? Further, what are the interrelationships between conflict, cooperation, power, competition, and system coordination and adaptability? As the dynamics of vertical systems receive further attention, these are some of the critical questions needing an answer.

Assessment of Vertical Systems Analysis

These comments have shown vertical market systems as evolving, interdependent social and economic systems that both influence and are influenced by the broader environment in which they are embedded. No adequate theory exists of vertical systems—cast in this light.

Thus, the foregoing discussion has attempted to summarize some of the concepts and hypotheses concerning vertical system behavior. The behavioral dimensions of conflict, cooperation, and power were discussed at some length, because of their perceived influence on system coordination and adaptation.

Relatively little empirical work has focused on the behavioral dimensions of vertical market systems. While many intriguing hypotheses can be forwarded, few have been verified or refuted at this point. Hopefully, we have identified some of the more germane questions and issues.

Although the present state of vertical systems analysis is rather bleak, the conceptual approach remains extremely attractive. Adopting the perspective of vertical systems as evolving, interdependent social and economic systems stretches one's vision beyond the structure of industries or the logistics-physical transformation focus of some analysts. Such a position encourages consideration of:

1. Both horizontal competitive relationships and vertical relationships;
2. Market rules and institutions that influence system behavior, as well as the structure and conduct of corporate entities;
3. System adaptation and evolution, as well as the efficiency and coordination of an existing system; and
4. Behavioral forces, as well as economic forces and relationships.

This perspective should not be considered a substitute for industrial organization theory. Rather, it draws on this theory plus social systems concepts to analyze the behavior and performance of entire vertical systems. Thus, the Weltanschauung suggested is broader and more realistic. Whether, in fact, this view is so broad and complex as to defy rigorous and definitive analysis remains to be seen.

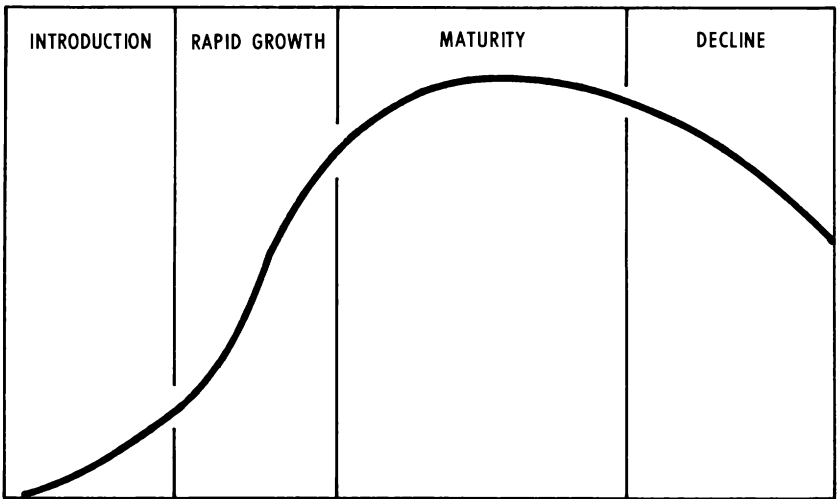
THE PRODUCT LIFE CYCLE AS A DYNAMIC FORCE

Underlying many of the concepts of growth and change is the notion of a "life cycle" for products. The product life cycle represents a force which continually erodes existing positions of power. According to this concept, a product tends to experience a certain sales pattern during its life. This pattern is also associated with product profitability, and firms are thus encouraged continually to introduce new products and diversify into new product lines.

The pattern of sales generally hypothesized for products is that shown in figure 4. The characteristics of the life cycle curve are consistent with Rogers' theory of the diffusion and adoption of innovations (100). The validity of the

Note: The material in this section is drawn largely from a Marketing Science Institute Special Report on Product Life Cycles, by Victor Cook and Robert Buzzell, Nov. 1969; from (95); and from (17).

GENERALIZED PRODUCT LIFE CYCLE PATTERN



TIME

Figure 4

model was examined by Polli and Cook in an MSI-supported study of approximately 200 consumer products. Three levels of aggregation were tested: product class (tea), product form (instant tea), and brand. Through use of a rather rigorous test of fit, 39 percent of the product classes, 54 percent of the product forms, and 71 percent of the brands tested fit the product life cycle model (brands were tested mainly for cigarettes). In some cases, marketing efforts by firms resulted in recycling of well-known products. (Such products entered a new cycle of growth and leveled off at a higher point in the maturity stage.) Perhaps, then, the forces causing products to move through maturity into a stage of decline are not always irreversible. Successfully recycled products accounted for part of those that did not fit the model. Some difficulty was also experienced with the fit of products when supply conditions significantly affected product and price offerings (many food products, for example).

The length of the various stages is difficult to predict with great accuracy. The growth stage is generally limited to 16 to 18 months for a new brand in an established product category, but can be 3 to 5 years for a new brand that creates a new product form. The maturity stage is the longest in the history of most products. Most of those studied by Polli and Cook had not yet left the maturity stage; it accounted for about 60 percent of the product life.³¹ The transition from growth to maturity can be detected and predicted; the same cannot be said, however, for the transition from maturity to the declining stage. The MSI Special Report suggests:

... the beginning of the decline stage can be *caused* by management decision, but it is not easily predicted. Maturity ends because some new sub-category is introduced which is considered by consumers to be a superior substitute for an existing alternative. This event is difficult to predict within the context of the product life cycle.

The results of MSI's research suggest that the life cycle model describes reasonably well the sales pattern of many products, particularly the product forms and brands, and when demand forces have the greatest effect on sales. Given this finding, however, does it provide any insights into competitive behavior?

Buzzell suggests a definite tendency for the pattern of competition to change as a product moves through its various stages (17, pp. 18-24). These competitive characteristics are summarized in table 2. The sales, prices, and advertising for instant coffee shown in figure 5 graphically reflect the changing pattern of competition for this product over a 19-year period.

While it is acknowledged that the evidence for these conclusions is based on an insufficient sample and other products need to be studied similarly, definite

³¹ Buzzell in (17) suggested three distinct sales patterns for the maturity stage—stable maturity (similar to the pattern of fig. 4), growth maturity (product continues to grow gradually in sales per capita), and innovative maturity (recycled products, or new product forms added to a product class).

Table 2—Summary of changing competitive patterns at different stages of the product life cycle

Stage	Competitive situation
Introduction	Heavy promotion—aimed at building primary demand
Growth	More competitors Increasing pressure on prices Lower rate of promotional expenditures—shift to brands, specific features
Maturity	Increasing private-brand competition Prices, promotional expenditures stable or declining Efforts to “recycle”
Decline	Further declines in price, promotion

implications are apparent for evaluating market performance. If these competitive patterns hold true, for example, one would expect the advertising and gross profit levels of individual firms in an industry to be closely related to the proportion of their sales coming from products in the introductory or rapid growth stages. In examining total industry performance, one would expect the advertising-sales ratio and level of gross profit to show a positive relationship over time to the volume of new products being developed and introduced. An industry with a high proportion of sales from mature products would be expected to have low levels of advertising and gross profit (relative to previous periods) and declining levels of product differentiation.

The relationship between competitive characteristics and product life cycles warrants further examination that brings in other variables as well, such as market structure. Buzzell indicates:

... there are some exceptions to the general relationships between stages of the life cycle and patterns of competitive behavior. It may be noted that three of these exceptions are products for which the degree of seller concentration is quite high; thus, it may be that concentration and the Product Life Cycle *both* affect competitive behavior, and that any attempt to explain actual behavior and performance must take account of both of these factors (17, p. 23).

INSTANT COFFEE SALES, PRICES, AND ADVERTISING 1946-64

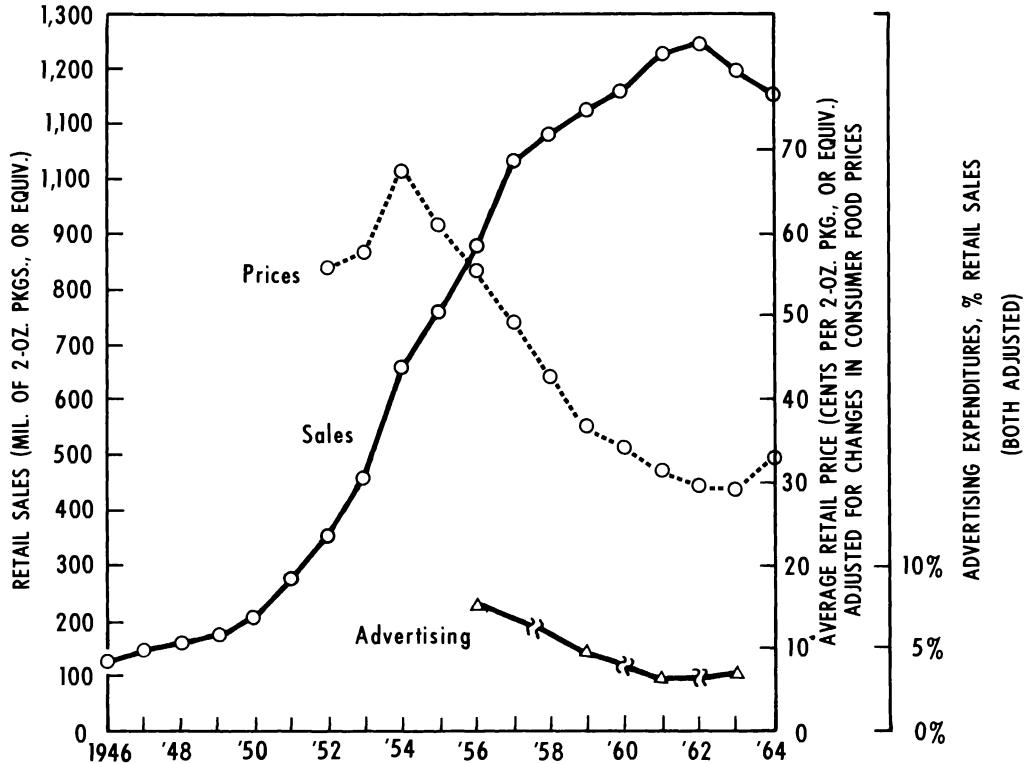


Figure 5

The product life cycle is a concept of *product* performance. Like the economic theory of the firm, its implications can be easily transferred to firm behavior *as long as* the firm produces only one product. The theories of the firm and the product life cycle both experience some limitations in application to multiproduct firms.

However, the life cycle concept has been an effective management tool for some multiproduct companies.³² But from a public policy standpoint, the issue is whether a weighted index of the life cycle states of a firm's products can be calculated and useful in understanding the firm's behavior. Given accessibility to the necessary data, it clearly seems plausible to construct such an index. Whether it would prove useful in understanding or predicting business behavior is open to conjecture until some sound research is done to test the transferability of the life cycle concept to the firm or industry level.

The life cycle represents a force that is largely—although not entirely—beyond the control of the individual firm. Its presence tends to encourage continual introduction of new products or new forms of existing ones, and discontinuance of old products in the declining stage. This process has occurred at an accelerating rate and is the force behind the product proliferation problem in many industries.

Other factors influence firm behavior and performance. Some of these, such as management goals and organizational structure, are clearly endogenous to the firm and largely within its control. It is important to understand the significance of these factors relative to exogenous factors; such as market structure, product life cycle, or vertical relationships. However, from a policy standpoint, endogenous factors are of limited value because of management's ability to control and change them. While management may also be able to alter exogenous variables in the long run, these variables are clearly less vulnerable to manipulation.

³² See, for example, the central role of the life cycle at the Pillsbury Company in the MSI Special Report by Cook and Buzzell, pp. 50-60.

Chapter 4

EXISTING PERFORMANCE MEASURES

A large number of performance measures have been developed, tested, or proposed. Many represent minor variations of other measures, and most also tend to focus on a limited span of performance, or performance rather narrowly defined.

In this chapter, we examine four existing measures or conceptual approaches to market performance. We review productivity measures and comment on USDA's market basket-marketing bill measures, flow analysis, and the application of welfare economics. Each existing measure is related to the classification system developed in chapter 2. Market structure measures, another widely used approach, were reviewed in chapter 3.

PRODUCTIVITY MEASURES

The story of productivity, the ratio of output to input, is at heart the record of man's efforts to raise himself from poverty. The record for the United States begins mainly in the latter part of the nineteenth century. This is a relatively brief segment even of modern history, but it is a period and a setting in which efforts to raise productive efficiency were notably successful. Of the fourfold increase in real net national product per capita between 1889 and 1957, productivity advance accounted for about three-fourths. This meant not only a large gain in the plane of living, but an increase in the quality and variety of goods and an expansion of leisure time, while increasing provision was made for future growth and for national security (59, p. 3).

This quote from Kendricks's exhaustive analysis of productivity suggests some of the broad societal implications of changes in the productivity of resources. In part because of the recognized importance of resource productivity to the public welfare, productivity data and measures have risen substantially in number during this century.

Productivity measures reflect the physical, technological, and economic efficiency dimensions of market performance emphasized by a logistics-distribution perspective of market systems. These evaluative measures generally have no ideal standard or norm, relying instead on comparisons with other industries and time periods. In these times of rapid inflation and problems with the balance of payments, productivity measures have received considerable emphasis. Labor productivity measures have become a major tool used by both the Price Commission and the Wage Board in considering requests for price and wage increases.

Productivity measures are developed at various levels of aggregation—from the firm or plant level, to the industry or vertical sector level, to the overall economy. Since the methods of calculation and interpretation vary, it is important to define the level of aggregation and type of use involved. For example, productivity measures developed by industry may be quite different than those developed by governmental agencies to compare the productivity of different industries. Because industry does not encounter problems as severe in comparing “apples and oranges,” it can generally more easily develop and interpret productivity measures.

We are primarily concerned with productivity measures as indicators of industry, market system, or market subsystem performance (as defined in chapter 1). Relatively few engineering-economic studies are available to provide a norm of optimum productivity in particular industries. Thus, performance generally must be judged by comparing different time periods, different industries, or both. While such comparisons definitely involve problems caused by differing products, they do provide one basis for performance evaluation that is widely used. Perhaps the greatest challenges are to keep in perspective the limitations of productivity measures, avoid the tendency to link quantification with accuracy, and question continually the relevance of various measures. As Gross points out, greater accuracy in economic data often leads to greater irrelevance, since it usually involves zeroing in on smaller, narrower dimensions of the problem. Gross argues that it is better to have “imprecise answers to the right questions, as opposed to precise answers to the wrong questions (50, pp. 166-170).

Since volumes have been written on the methodology of developing productivity measures, comments in this report will be brief. The bulk of these measures at the industry or economy level focus on technological or physical efficiency opposed to economic efficiency.³³ Such measures grow out of the production-function concept of economics which relates the physical quantity of products produced to the physical quantity of inputs. These measures thus tend to focus on the logistics and physical transformation aspect of market systems.

They therefore must be used in combination with other measures to evaluate the broader social dimensions of market performance. For example, only labor that is actually used, contrasted with labor available, is included in labor productivity measures. The degree to which the entire labor force is employed is an aspect of social rather than technical efficiency.

In economic efficiency, which adds the dimensions of scarcity and utility to physical production relationships by introducing factor and product prices, the concern is with maximizing consumer satisfaction at the lowest cost of factor inputs. Thus, an adequate range of choice and effectively competitive markets

³³Scitovsky has contrasted economic efficiency with technological efficiency. He defines the former as production in “conformity with the community’s wishes,” while the latter is “the achievement of the greatest possible output with given means or the achievement of a given output with the smallest means” (108, p. 148).

are necessary so that the relative prices of products and services approach their marginal costs. Studies have been made of the economic efficiency of certain industries, such as agriculture, using market prices as a surrogate for consumer satisfaction. Such studies thus serve both as enterprise profitability studies, and from a societal viewpoint, studies of economic efficiency.

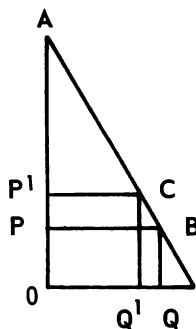
Because of the reluctance to use product prices as surrogates of utility or consumer satisfaction, measures of economic efficiency are not used widely in comparing industries or market systems.³⁴ When more than one industry is involved in creating the value of a product in the vertical industrialization process, it is also clearly not appropriate to attribute the total value (product price) to any particular industry. Measures of value added per dollar of factor input are more appropriate indicators of economic efficiency in comparing different industries.

Productivity measures that focus on physical or technological efficiency frequently use factor or product price data—but largely as surrogates for quality (in the case of labor), physical quantity (in the case of capital), or as a common denominator that allows combining different factors.

Labor productivity measures (output per man-hour, per man-year, and so on) are by far the most widely used physical productivity measures. While these are partial in that they relate all changes in output to only one factor input, labor, they do provide insights into the utilization of human resources in an industry, market system, or segment of the economy. Partial productivity measures indicate the economies achieved over time in the requirement or use of a certain input. They do not indicate changes in the efficiency of using an input since a change in partial productivity ratios may result from factor substitution. In some cases, wage rates are used as a surrogate for labor quality in weighting man-hours.

Attempts to measure capital productivity (also a partial productivity measure) have been more recent and pose more serious conceptual and operational problems because capital investments are heterogeneous and intangible capital cannot be measured. Thus, such measures largely focus on the productivity of tangible capital, measured by the cost (interest) of net capital invested.

The availability of detailed expenditure data allows USDA to measure annual



³⁴Product prices are undistorted signaling devices only in the absence of monopolies, indivisibilities, externalities, increasing returns, and imperfect information. Without the above "market failures," price remains more an indication of marginal satisfaction from the last unit purchased rather than of total satisfaction gained. This limitation is analogous to the question of consumer surplus from conventional demand analysis. In the diagram, at price P and quantity Q, total expenditures are POQB. Total satisfaction is POQB plus consumer surplus APB. If price is increased 10 percent to P' and quantity falls only 2 percent to Q', total expenditures will increase but total satisfaction will fall by CQ'QB.

capital inputs in agriculture directly by summing actual capital expenditures including depreciation, repairs, and maintenance of buildings and equipment, interest, fuel, tools, fertilizer, pesticides, insurance, taxes, livestock, and miscellaneous purchases. Indexes of labor, real estate, and capital inputs are combined into a total productivity index.³⁵

Efforts to combine capital and labor inputs in order to compute a *total* productivity measure have been achieved generally by converting both inputs to dollar values, or to equivalent labor units.³⁶ Kendrick arithmetically adds the cost of labor and capital to determine his “total productivity” measure. While such measures carry definite advantages over partial productivity measures, they do not include intangible capital investments and are frequently difficult to interpret. Total productivity ratios, according to Kendrick, “reveal the *net* savings achieved in the use of inputs as a whole, and thus the degree of advance in efficiency of the productive process” (58, p. 40).

The results of Kendrick’s analysis of productivity changes in the U.S. economy, using both partial and total productivity measures, are shown in table 3. With the total factor measure for 1889 to 1957, it is evident that about half the growth in output was due to increases in the productivity of inputs, and half was due to additions to real labor and capital inputs.

In this case, output is measured by real gross product, which is appropriate in examining the domestic economy as a whole. If different industries or segments of the economy are to be examined, however, real value added is a more appropriate output measure. Though measures of value added often have been calculated by deducting from the value of finished products the cost of materials used, Furst suggests that a somewhat different calculation is appropriate when calculating the value added by labor and capital. Figure 6 depicts the difference between the conventional value added measure (“net production value”) and the “net value added” measure Furst sees as a more

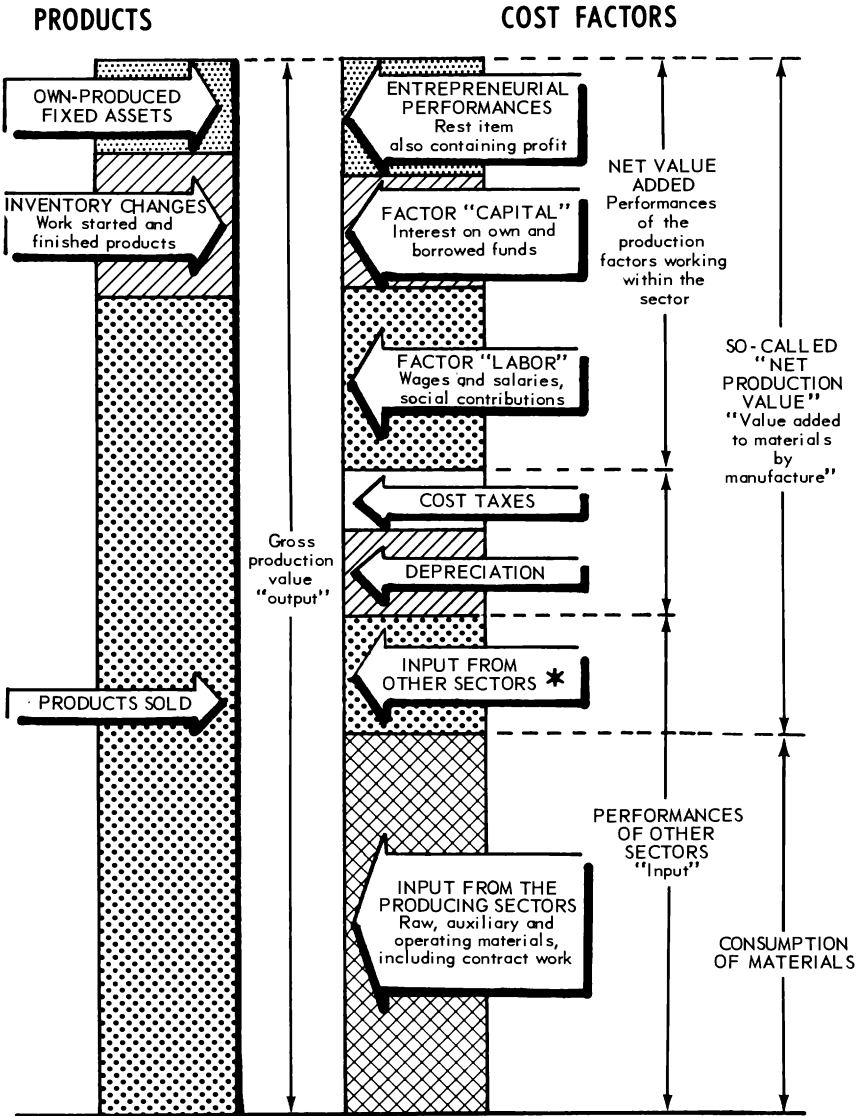
Table 3—Private domestic economy: Growth rates in real product and productivity ratios, 1889-1957 (average annual percentage rates of change)

Period	Real gross product	Real gross product per unit—			Real gross product per manhour (unweighted)
		Total factor input	Labor input	Capital input	
1889-1957 . . .	3.5	1.7	2.0	1.0	2.4
1889-1919 . . .	3.9	1.3	1.6	0.5	2.0
1919-1957 . . .	3.1	2.1	2.3	1.3	2.6

³⁵ For a detailed discussion see (126).

³⁶ For an excellent discussion of two approaches to total productivity analysis, see (32).

OUTPUT AND NET VALUE ADDED



* TRANSPORT, INSURANCE, AND SO ON.

SOURCE: PRODUCTIVITY MEASUREMENT CONCEPTS, VOLUME 1, EUROPEAN PRODUCTIVITY AGENCY, PUBLISHED BY THE ORGANIZATION FOR EUROPEAN ECONOMIC COOPERATION, PARIS, P. 68.

Figure 6

accurate indicator of capital and labor productivity. As composed, "net value added" includes the reimbursement for the factors of production employed; that is, wages and salaries, interest, rents, and profits. If possible measurement problems are ignored, this measure represents an improvement over the more traditional value added measure. Measures of physical output (number of automobiles, tons of coal, and so on) are preferred for use in physical productivity measures. However, measures of the value of output or value added are necessary when different types of output must be combined or when intermediate products are to be deducted from total output to indicate the net output of an industry.

Productivity and the Service Economy

Because of data available, productivity analysis generally has focused on the entire economy or the manufacturing industries. A recent study by Fuchs, however, indicates that the focus is rapidly changing from an industrial to a service economy.³⁷ That is, the service sector's share of total employment has grown from about 40 percent in 1929 to over 55 percent in 1967, whereas industry's share remained constant at around 40 percent and agriculture's share dropped to about 5 percent (44, p. 19). The primary reason for this marked shift of employment is the much slower growth rate in output per worker in the service sector than in the other sectors. In fact, the service sector's share of output (measured in constant dollars) remained constant at around 48 percent from 1929 through 1965. Thus, shifts in demand were not a major cause of employment growth.

Fuchs found three major reasons for the lower average annual growth rate of labor productivity in the service sector (1.1 percent) than in industry (2.2 percent) between 1929 and 1965:

1. A more rapid increase in the quality of labor in industry than in service; thus, a faster rate of growth of human capital per worker in industry;
2. A greater decline in hours worked per person in service than in industry; and
3. A differential trend in physical capital per worker in favor of industry.

The differential trends in hours, human capital, and physical capital account for all but 0.5 percent of the sector differential in growth of output per worker. The residual suggests more rapid technological change in industry, or that industry benefited more from growing economies of scale (44, pp. 4-5). This section illustrates one use of productivity measures for analyzing growth rates between sectors and over time.

Measuring the Productivity of Marketing

Measures of productivity have generally included all the functions performed by an industry, market system, or segment of the economy. However, in

³⁷(44). The service sector is defined as wholesale and retail trade; finance, insurance, and real estate; general government; and the service proper (professional, personal, business, and repair services).

attempting to measure market performance, it may frequently be desirable to examine the production and physical transformation segment and the marketing segment of a vertical system separately. While some efforts have been made to determine the productivity of marketing, these have largely focused on physical distribution; that is, on the demand-serving aspects of marketing.³⁸ Demand sensing and influencing activities (marketing research, advertising, promotion, and so on) have seldom been included in measures of marketing productivity—probably because of measurement problems of both inputs and outputs.

The calculation of productivity for wholesaling and retailing industries, in which “marketing” can be said to embrace the total activities of these firms, could be achieved using a real value added measure of output and a sum of the cost of inputs as a measure of input. Advertising, for example, would be treated as any other input, either with or without a lagged dimension. An alternative would be to consider advertising a capital investment, but one in which both the interest cost and the amortization of the investment represent factor inputs over time.

Since the marketing productivities being measured include demand-influencing activities which, if successful, may change taste patterns and hence prices, price changes should not be completely eliminated in calculating marketing productivity. General price level changes from inflation (or deflation) should be adjusted for, however.

A more difficult problem involves measuring marketing productivity for firms that also perform product transformation (grocery manufacturers, for example). Marketing inputs can be defined and handled in a manner similar to that for marketing productivity. Measuring output, however, involves estimating the value added by marketing activities. Though it will be somewhat arbitrary, a transfer-pricing system can be developed which will define the cost of the product to the marketing department, and when deducted from selling price, allow calculation of value added. This procedure is far from being uncontested or easily agreed on. However, used over time, such a measure should provide some indication of changes in the productivity of marketing activities.

Explanation of Changes in Productivity

Although we may define changes in total factor productivity as changes in “productive efficiency,” this is a broad term which needs further clarification to give it more definite meaning. Productive efficiency may change as a result of technological innovation, changes in scale of output, and changes in the rate of utilization of capacity. It may also reflect changes in inputs of “intangible capital” designed to increase the quality of the input of the tangible factors, and such change is not readily susceptible to measurement. Mere *description* of the components of changing productive efficiency does not, of course, *explain* the causes of the changes (58, p. 11).

³⁸ See, for example, (9) and (27).

In an effort to understand the *causes* of different rates of productivity increase in several industries, Terleckyi examined the effect of barriers to entry, seller concentration, and several other variables (122). No significant correlation was found between rate of productivity growth and the two market structure variables. Variables measuring changes in output, investment in R and D (proxy for innovational effort), and the magnitude of business cycles were significantly related to productivity changes, albeit rather weakly.

Since productivity changes are due at least in part to changes in intangible capital that are not measured, Kendrick suggests including the following as capital inputs (58, pp. 104-110):

1. Investment in persons, including education and health expenditures that are traditionally classified as consumption outlays; and
2. Intangible investment by business and Government in research and development, training, and improved methods.

Schultz suggests attention be paid to five categories of human investment (106):

1. Health facilities and services,
2. On-the-job training,
3. Formally organized education,
4. Study programs, and
5. Migration to adjust to changing job opportunities.

Though imperfect surrogates might have to be used to estimate these inputs, some insights could be provided into the causes of productivity change.

In addition to these deficiencies in measuring inputs, “a general deficiency of all measures of output—and thus of productivity—is their failure to take adequate account of change in the quality of output. This, it is likely, subjects them to a downward bias” (58, p. xlii). Measures of output in the service industries are especially subject to both upward and downward biases (69) and (124).

Some scholars suggest that output data should be adjusted for changes in utility resulting from changes in quality. Perhaps some of the recent developments in psychometrics will allow such adjustments on something other than a “guesstimate” basis in the future.

Evaluation

The foregoing has attempted to criticize in highly abbreviated fashion the problems and possibilities in using productivity measures. While these measures have definite shortcomings, they do provide some insights into the efficiency of resource use and progressiveness, both important dimensions of market performance. Since the measures do not carry normative characteristics, their use in evaluating market systems or industries requires considerable judgment. At the same time, they do represent quantitative measures that are widely developed and available, and that are widely—if imperfectly—understood.

A more important use for such measures than as direct indicators of market

performance, may be in trying to understand the forces causing changes in productivity. Besides market structure variables, other variables should be tested as possible contributors to productivity change; variables such as the level of stress and conflict within the vertical system, and ratings of the technological improvement opportunities in an industry. Together with improvements in the scope of inputs measured and the qualitative adjustment of output measures, such steps may open another door to understanding the dynamics of market performance.

MARKET BASKET AND MARKETING BILL STATISTICS

The U.S. Department of Agriculture compiles and publishes a wide range of statistical series which provide knowledge of the market for the general public and data for assessing market performance in the food and fiber sector. Eleven of these statistical series are described in detail in Agriculture Handbook No. 365, *Major Statistical Series of the U.S. Department of Agriculture*. Volume four of this Handbook, "Agricultural Marketing Costs and Charges," describes the market basket and marketing bill statistics which are regularly published by the Economic Research Service in the *Marketing and Transportation Situation*.

Market basket and marketing bill statistics attract wide attention and are frequently used by researchers, farmers, Government officials, businessmen, consumers, and the news media. Farm-retail spreads for a market basket of foods were first published in 1936; and since the mid-1950's, funds have been appropriated by the Congress specifically for deriving and studying marketing spread statistics.

Market basket and marketing bill statistics are descriptive performance measures—there is no absolute or relative norm with which they can be compared. While these statistics are not designed to measure directly the performance of the food-marketing system, they provide useful and timely information to help make such evaluations. The direct use of these measures as indicators of market performance can be misleading.

Farm-Food Market Basket Statistics

The market basket contains the average quantities of domestic farm-originated foods purchased annually in retail foodstores per urban household. Foods that consumers buy in away-from-home eating establishments are not included. A sample of 65 foods is used to compute the following series: (1) retail cost to consumers, (2) farm value, (3) farm-retail spread, and (4) the farmer's share of the consumer's food dollar.

The retail price of each food is collected from a sample of retail foodstores. Each price is multiplied by a quantity weight (reflecting quantity consumed), and the weighted values are summed to obtain the total monthly retail cost of the market basket.

Farm value is the payment farmers receive from the marketing system for the

quantity of farm products equivalent to the unit sold at retail. When, however, byproducts are obtained in processing, the portion of farm value that is derived from these byproducts must be deducted from the gross farm value. For most products, the farm product equivalent is larger than the quantity sold at retail because of the removal of byproducts and the losses from waste and spoilage at some point in the marketing system.

The farm-retail spread is the difference between the retail cost and the farm value. It is a measure of the gross margin received by marketing firms for assembling, processing, transporting, and distributing products in the market basket. Over time, the spread measures variations in the cost of performing services connected with marketing a fixed quantity of foods of a constant type and quality.

The farmer's share is the farm value expressed as a percentage of the retail cost. It reflects changes in two price series: (1) the prices of marketing services relative to (2) the prices received by farmers for farm-product equivalents of the market basket.

Measurement Problem

The farm-retail spread and farmer's share statistics are only as accurate as the retail prices and farm values from which they are derived. While retail prices are subject to sampling and reporting errors, they are considered to be quite accurate. Recent improvements include procedures for taking into account the effect of price specials for beef and pork, updating byproducts and shrink allowances, and improving comparability in retail prices when changes occur in the sample of cities or stores used in obtaining retail food prices. When retail prices are collected that are not comparable with earlier time periods, the previously published prices are gradually adjusted to the new levels. These adjustments have a negligible effect on variations in prices between months and, generally, between quarters, but they may affect longer term comparisons.

There are, however, several possible measurement problems. For example, retail and farm prices do not always cover the same time period. For some products, farmers may have performed more or less marketing operations than are accounted for by the reported farm price. Conversion factors for estimating the farm product equivalents of the retail unit sold may not reflect variable conditions of the farm product or changes in handling and processing technology. The farm-retail spread is designed primarily to reflect changes in price. Over a period of several years, factors other than price can have an influence; however, from year to year, such factors have only a minor effect.

Applications

The major purpose of market basket statistics is to measure variations over time in prices—changes in retail prices, farm prices, and prices of (or charges for) services associated with marketing a fixed quantity and form of farm foods. Market basket statistics enable changes in retail prices of farm foods to be disaggregated into changes in marketing charges and farm prices. Analyzing

spreads and prices over time provides some insights into the nature and causes of the changes that have occurred.

The term “farmer’s share” has, for many people, an equity or welfare connotation (135, pp. 638-639). This interpretation is usually inappropriate. The farmer’s share varies widely between individual products and is not necessarily related to the producer’s economic welfare. Over a period of several years, there may be no direct cause and effect relationship between changes in the farmer’s share for particular products and changes in the farmer’s income position, since the statistic does not take into account changes in agricultural productivity. A sharp rise or decline in the farmer’s share from the previous year, however, probably does reflect a similar change in net farm income.

Decreases in the farmer’s share do not reflect substitution of convenience foods for less highly processed foods, as has often been claimed. Changes in the type and form of products included in the market basket sample are infrequent, and when they are made, weights are revised to avoid artificial changes in total retail cost and farm value. Item specifications in the basket are adjusted from time to time to account for differences in consumption patterns and marketing practices. To maintain comparability, previously published prices are adjusted to new specifications; such prices are multiplied by a constant ratio of the new price to the old price in the overlap period. The farmer’s share can, however, be influenced by changes in marketing services not identified with individual foods. For example, if supermarkets increase (or decrease) services and retail prices are affected, the farm-retail spread statistic would obviously also be affected.

Farm Food Marketing Bill

The objective of the marketing bill statistics is to provide information on trends and annual changes in *total* costs or value added associated with marketing U.S. farm foods to U.S. civilians. The marketing bill is the difference between civilian expenditures for these foods and total returns to farmers.³⁹ A breakdown is provided of total value added among types of marketing agencies (processors, retailers, and so on); among seven commodity groups; and among individual cost components, such as labor, taxes, and profits. These statistics show the extent to which changes in consumer expenditures for farm foods consist of shifts in various marketing components or in the farm value, or both.

For census years, the commodity flow method is used to estimate the marketing bill. Channels of distribution are traced for different manufactured and nonmanufactured product groups, and the markup at each stage is determined. Estimates for intercensus years are extrapolated from census years; a marketing bill series is used that is derived from annual civilian food consumption of individual commodities and their farm values.

³⁹In addition to food purchased from retail stores, the marketing bill includes food purchased in away-from-home eating establishments, in institutions such as schools, and consumer purchases directly from farmers, processors, and wholesalers. Imported foods, alcoholic beverages, food for the Armed Services, and nonfarm foods are excluded.

Steps to improve the marketing bill statistics include a more comprehensive breakdown of individual cost components; such as containers, labeling, fuel, and costs identified with the institutional food market. Further, a separate value-added series or marketing bill soon will be computed for the away-from-home eating market, which accounts for one-fourth of total consumer expenditures for farm foods. Since eating establishments have gross margins 2½ times those of foodstores, the faster growth rate of away-from-home eating has a strong impact on the marketing bill. Separate marketing bills will provide data for analysis of changes in the volume and value added associated with marketing foods through public eating places compared with foodstores.

Analysis and Application of the Marketing Bill

As indicated above, marketing bill statistics give valuable information concerning changes in total consumer expenditures for farm food and the allocation of those expenditures among marketing agencies, farmers, commodities, and individual cost components. Unlike market basket statistics, marketing bill statistics are affected by: (1) changes in marketing services per unit of product, such as additional processing, and increases in away-from-home eating; and (2) changes in total volume marketed. Both series of statistics are affected by changes in the prices of marketing services or inputs. During the 1960's, about half the total rise in the marketing bill was due to the greater volume of food marketed, one-third to higher prices of marketing services, and the remainder to increases in marketing services per unit of product.

These breakdowns of the total marketing bill are widely used to help understand the constantly changing food-marketing system. As with market basket statistics, however, a change in the marketing bill or one of the components does not in itself indicate that market performance has either improved or deteriorated.

One use of marketing bill statistics is to separate the increase in marketing service into price and quantity components. Typically, a problem of this type is solved by deflating a value (prices times quantity) series by an appropriate price index.

Waldrof used this approach to develop a series representing the quantity of marketing services (the farm food marketing bill) in "real" or constant dollar terms (129, pp. 42-60). He divided civilian expenditure for farm foods by an index of retail food prices and divided the equivalent farm-value series by an index of farm prices for foods entering the market system. In Waldrof's words: "The difference between the deflated consumer-expenditures series and the deflated farm-value series is the farm food marketing bill expressed in constant prices, the measure of food marketing services X_m " (129, p. 47).

Symbolically,

$$X_m = \frac{\sum_i P_{rl}^i X_{rl}^i}{P_r} - \frac{\sum_j P_{fl}^j X_{fl}^j}{P_f}$$

Where:

X_{rl}^i = Number of units of the i th retail food product purchased at time l .

X_{fl}^j = Number of units of the j th farm product marketed at time l .

P_{rl}^i = Retail price of the i th retail food product purchased at time l .

P_{fl}^j = Farm price of the j th farm product marketed at time l .

P_r = Retail prices index.

P_f = Farm prices index.

Waldrof's double-deflating procedure for measuring the quantity of marketing services in "real" terms has been questioned by Polli (93). What Waldrof's measure tells clearly depends on how the retail price index is constructed. If the latter is based on BLS retail prices of standard products over time, then Waldrof's measure primarily reflects changes in the aggregate volume of processing (form changing) services and excludes changes in transportation, advertising, and retail services. Increases in the latter services per unit of product result not in a great quantity of food retailed but rather in a higher price. Polli claims that using a retail price index as a deflator keeps the quantity of retail, advertising, and transportation services artificially constant, which results in a downward bias in Waldrof's measure of marketing services.

However, this downward bias in marketing services may be partially offset by an upward bias in the farm price index because of quality improvements in farm products. An upward bias in farm price index results in a downward bias in real farm value and leads to an upward bias in marketing services. In addition, when Waldrof compared his double-deflated value-added index with a margin-weighted measure of net output,⁴⁰ the margin-weighted index rose significantly less than the double-deflated index. Thus, the trend to self-service and discounting has apparently offset general improvements in retail foodstores (larger selection, fancier stores, and so on) (130, pp. 88-93).

Waldrof used his X_m series to derive a series of the "real price" of marketing services by dividing the value of marketing services—that is, the farm food marketing bill—in current dollars by the marketing bill in constant dollars. Since the 1950's, the real price of marketing services has been stable.⁴¹

In evaluating the criterion of real-price stability as an indicator of market performance, Polli asked whether the marketing services currently offered match the desires of ultimate and intermediate consumers, given a *certain* environment, technology, and price structure (93, pp. 16-17). For marketing services, especially retail, says Polli, consumers often do not have the opportunity to purchase services separately, but are compelled to buy all services tied to the products of an individual store. This problem is the subject of a proposed new measure of market performance discussed in chapter 5.

⁴⁰ Margin-weighted net output is a measure that accounts for differences in the quantity of service per dollar of sales across manufacturers and retail store types. Output is measured in constant dollar sales weighted by the gross-margin percentage for each store type.

⁴¹ If the downward bias in the measure of marketing services is greater than the upward bias in the farm price index, the real price of marketing services has declined.

A second question is whether the given marketing services are offered as efficiently as possible. One way to answer this question would be to contrast the actual market price with the lowest feasible price, given a particular supply function. In this respect, the "real" price stability criterion may lead to unfair judgments in at least two instances. The first is when performance is considered good and might have been better (that is, decreases in "real" price were possible). The second occurs when performance is considered bad but might not have been better (that is, increases in the "real" price were unavoidable under given conditions).

Polli has raised some very valid points that must be resolved if Waldrof's contribution is to find further application. The use of a wholesale rather than retail price index would allow changes in the quantity (and price) of retail services to be included, but would eliminate changes in transportation or advertising that affect per unit wholesale price.

It is recognized that increases in some marketing services may not result in higher prices. Larger advertising expenditures that sufficiently increase product sales may cause no change in wholesale prices; yet the volume of marketing services has risen. To avoid this problem, an index of the prices of marketing services (wages, advertising rates, transportation rates, and others) weighted by their importance in the marketing bill could be used as a deflator. The above approaches might measure the volume of marketing services more accurately, which would be of interest in and of itself. The use of such a measure to *evaluate* market performance, however, would require considerable caution.

Another approach used to measure and analyze the output of marketing services is Schwartzman's study of output and productivity in the retail trade (107). He measured output by using margin-weighted constant dollar sales as opposed to Waldrof's double-deflated method. Schwartzman assumed that retail service per constant dollar sales remains constant over time within store type. He estimated an increase of real output of about 2.8 percent per year and an increase in output per man-hour of 1.7 percent per annum. The major conclusion was that growth in output per man-hour in retail trade is primarily explained by growth in transaction size and decline in service per transaction. The increase in transaction size is associated with the growth in personal income while the reduction in service per transaction is explained by the rise in the price of retail services relative to goods. The relatively high price of retail services has resulted in a substitution of goods for services and has had a strong influence on the growth of low-margin retailing.

Evaluation

The market basket, the farm food marketing bill, and derived measures prepared by USDA are extremely useful for a better knowledge of the food-marketing system. The accuracy of both measures is acceptable for the purposes for which they are intended. The market basket statistics are more reliable as indicators of shortrun changes in retail and farm prices than as measures of absolute price levels or price changes in the long run. The marketing bill statistics are more comprehensive, but require greater estimation

for their computation. Their accuracy is sufficient for showing trends in the volume of food marketed and gross returns to farmers and for indicating changes in cost components and channels of distribution.

In most instances, it is inappropriate to use these measures as direct indicators of market performance. Unfortunately, the terminology of the farmer's share and the marketing bill carry equity or welfare connotations which in some cases has led to their misuse and misinterpretation.

FLOW ANALYSIS

Flow analysis is a technique developed by Cox and Goodman to measure in "real" terms the amount of work performed in distributing a product or group of products to a given location at a given time. As such, it may be more appropriate to consider the technique as analytical rather than as a "measure" of market performance. As a descriptive measure of performance, flow analysis somewhat resembles work simplification. While no absolute or relative norm exists with which results from a flow analysis study may be compared, detailed flow analysis studies of particular industries may be used to evaluate whether particular costs incurred are justified.

The only study employing such analysis examined the vertical flows of housebuilding materials required to construct a particular house (28) and (29). Cox and Goodman viewed the task performed by marketing as essentially that of assembling the goods and services at a given point in time and space in accordance with *prespecified demand*. As a result, the emphasis is on physical and logistical aspects of the marketing task. Since all products were traced back to their origin, the data reflect a vertical marketing system constituting several channels placed end to end. The vertical approach entails a broad view of the functions of marketing, including both tangible and intangible activities.

In particular, the study was aimed at answering three principal questions:

1. How much marketing is performed in assembling the materials for building a house?
2. How effective is the marketing of housebuilding materials?
3. How would some of the common proposals for change in the system alter the effectiveness of marketing?

Since the primary objectives were to find out how much work was performed in marketing and how effectively this work was performed, monetary units or costs were not considered adequate units of measurement. Furthermore, managerial controls very often must be imposed in real terms rather than in monetary ones; that is, in the number of salespeople employed and the number of calls they make; the number of times and the distance goods are shipped; and the time during which goods are held in storage.

Note: The material in this section is drawn largely from (36).

Consequently, the authors set out to find nonmonetary units to measure the work done by marketing. These nonmonetary measures could be used as a basis for evaluating the costs incurred. The indicators devised were suggested by viewing marketing as a set of flows carrying products from their origin to their points of consumption.

Most obvious is the physical flow of goods. They start out, we have already seen, as ore beds, or growing farm crops, or standing timber; usually they move physically from their extraction points through a succession of processing plants and on to the building site, although a few products require no processing at all and some go through a single processing plant. Also evident is the need to carry these goods through time. "Production" in the broadest sense we have given the term, is not instantaneous. Goods must be held by someone, both in the sense of physical holding and in the sense of ownership, during the entire period of production and on into the period of consumption. Finally there is a flow of what we may call impulses to buy and sell as goods move from owner to owner on their way through the successive stages of extraction, processing and distribution (28).

In the housebuilding study, seven counts of work performed in carrying building materials through these flows were identified. These were:

1. The number of days required to produce and assemble at the site each of the principal materials to be used in the house.
2. The dollar days of investment accumulated in the materials for the house as they move from first extraction to final assembly at the building site down the channel.⁴²
3. The number of geographical places in which the materials are processed or handled.
4. The number of times the materials of a house are loaded, moved, and unloaded during their progress from the places at which they are extracted to the building site.
5. The number of ton-miles of transportation performed for the materials in their progress from places of extraction to the building site.
6. The number of owning and nonowning business entities that participate in extracting, processing, and handling the materials in their progress from places of extraction to the building site.
7. The number of transactions arranged in moving the materials from places of extraction to the building site.

The total number of days required to assemble the materials is a rough indicator of the dimensions of the overall task performed. The accumulation of dollar days suggests the dimensions of the financing task. This count suggests how effective the marketing mechanism is in synchronizing and organizing the coordination of tasks performed in each flow.

The counts of place, loading, and ton-miles reveal whether the total amount of work could be reduced by using closer sources, early deletion of waste materials, and eliminating crosshauling or backhauling. The counts of partici-

⁴² A dollar day of investment is defined as the owning of 1 dollar's worth of a product or material for 1 day.

pating business entities and of transactions indicate the number of changes in ownership and possession and also suggest the complexity of the organizational process involved in the movement and assembly of goods.

From the original data, Cox and Goodman developed flow charts from which totals of the various work units were computed. These charts were examined to determine if the work performed could be reduced. Any reduction in marketing which for some reason resulted in a more than offsetting increase in nonmarketing tasks was considered undesirable.

Flow analysis does not, therefore, provide an absolute measure of marketing performance; that is, it does not result in statements that marketing performance is x percent efficient or effective. Instead, it gives a quantitative description consisting of a set of heterogeneous measurements of the work performed. Only after a detailed and qualitative examination of each of the counts both independently and in conjunction with others, can a judgment be reached as to how effectively the marketing task is being performed.

The underlying assumption of the technique is that performance is optimal when the amount of work to distribute a given product or set of products at a given time and location is minimized. Other more specific aspects of performance can also be considered; such as, adaptability to change, application of the postponement principle, and the principle of massed reserves.⁴³ However, relevant aspects and criteria may vary, depending on the product or products considered and the particular objectives of the study.

There are additional analytical applications for flow analysis data. Bucklin applied factor analysis to the Cox and Goodman figures to determine the factors associated with the absolute and relative lengths of the flows (15, pp. 24-30). Five factors were thought to be associated with the system's structure:

- Factor 1. Number of Channel Levels. The number of levels (agencies in the vertical sequence) in each flow of a channel is influenced positively by the extent of the marketing work to be accomplished;
- Factor 2. Physical Flow Congruence. The number of levels in the physical flow relative to the number of transactions is increased by the need to move heavy, bulky goods that do not require much processing;
- Factor 3. Business Entity Congruence. The number of places a product is handled relative to the number of transactions is diminished in systems where goods are moved over long distances and timespans;
- Factor 4. Product-Handling Congruence. The number of times that a product is handled (loaded and unloaded) relative to the number of transactions is diminished when the size and value of the shipment to the customer is high; and

⁴³The postponement principle concerns the desirability of delaying the commitment of resources to a specific end use until the last possible minute. The massed reserves principle refers to the notion that central holding of stocks or capital reduces or shares the burden of risk. For further elaboration, see (2, p. 423).

Factor 5. Exchange-Flow Congruence. High-value products generate market channels that consist of relatively and absolutely larger numbers of firms than market channels which handle primarily low-value products (15, pp. 29-30).

The lack of available data in the appropriate form and the vast amount of work required to collect relevant information have largely precluded more widespread application of flow analysis. Its very narrow focus and emphasis on the logistical aspects of marketing makes justifying the large investment in time and resources difficult. In addition, the technique can probably provide insights into the organization and operation of vertical systems, but performance is difficult to evaluate by using flow analysis. This problem arises particularly in demand creating and influencing activities, which were not considered in Cox and Goodman's study. The technique is also static; the interaction of environmental forces and the marketing system, resulting in an evolving marketing system, is not considered.

Flow analysis in its present stage of development is, therefore, suited primarily to measuring performance in the marketing of a particular product, given a demand for the product. On the positive side, using a vertical opposed to a horizontal approach provides a comprehensive view of marketing activities. Marketing is viewed as activities performed to carry products from their point of origin to points of consumption rather than as activities of a particular enterprise to sell its goods. The counts, therefore, reflect the complexity of the organizational process and the size of the marketing task; these are frequently understated in traditional horizontal methods of analysis. Furthermore, the vertical approach enables consideration of work performed by agencies customarily regarded as outside the channel; that is, those not taking title to goods—brokers and carriers, for example—as well as those performing primarily marketing functions.

On balance, however, because of its serious limitations and operational problems, flow analysis seems destined to very limited application, particularly in measuring or appraising the performance of various marketing systems. The technique, if simplified, seems more appealing as an analytical technique for persons choosing to study selected industries in considerable depth.

WELFARE ECONOMICS

Welfare economics attempts to evaluate whether the manner in which the economic system operates best attains the goals regarded desirable by society. Its focus is thus evaluative rather than descriptive, explanatory, or predictive. Whereas price theory attempts to describe the effect of various market organizations on price and output in the market, welfare economics tries to evaluate the social welfare emanating from the different market organizations.

Note: The material in this section is drawn in part from (89).

Welfare economics is, therefore, much more than a “measure” of market performance. It represents a conceptual approach for evaluating performance in terms of social welfare. The different schools or perspectives of welfare economists suggest that there are actually several conceptual approaches.

We will not summarize this branch of economics here, but instead will attempt to sketch briefly the implications for measuring market performance. Questions to consider include insights and guidelines that may be provided, measures that seem relevant, and whether the concepts involved are operational.

Focusing on the welfare of society brings us back to the “big picture” discussed in the opening chapter. While welfare economics attempts to maximize total community welfare, the analysis starts with individual consumption and production units and their interaction. An immediate problem is what constitutes “social welfare.” Lacking a universally accepted set of measurements, an individual judgment is necessary concerning what can be considered welfare and what constitutes an increase in the welfare of a community. The minimal set of value judgments for welfare analysis is that (1) each individual is the best judge of his or her well-being; and (2) the welfare of the community depends only on the welfare of its members. A generally accepted judgment is usually added: (3) The welfare of the community is increased if at least one member benefits, though not at the expense of another. These “ethical assumptions” leave a wide range of changes in welfare situations undecided; for example, they provide no way to handle changes that leave some people better off and some worse off. A major problem is therefore left unsolved: How and by whom should additional ethical assumptions be made? Further, what goals for the economic system are commensurate with social welfare as defined?

Two social goals frequently identified are: (1) an optimum standard of living for society, and (2) an optimum pattern of income distribution. To achieve the first goal, welfare economics specifies that by equalizing marginal products, utilities, and costs, the following can be optimized:

1. Resource allocation in consumption;
2. Resource allocation in production; and
3. Coordination between production and consumption; that is, the product rate of substitution in consumption equals the product rate of substitution in production.

To derive a unique equilibrium, the following assumptions are made:

1. Tastes are assumed given and constant;
2. One person’s satisfactions are independent of another person’s satisfactions;
3. A general optimum is defined as a state at which it is not possible to make some individuals better off by a change without making others worse off;
4. Industries are assumed to yield decreasing returns to scale;
5. An equilibrium price system has been reached; and
6. A breakdown into very small units is possible.

Optimum societal resource allocation in production is rather straightforward, at least conceptually. The same cannot be said for optimum societal resource allocation in consumption. The major conceptual and operational problems that have stymied welfare economists revolve around individual and aggregate satisfaction or welfare.

There are significant differences in interpretations of what constitutes "optimal" resource allocation in consumption, particularly as one moves from individual consumption patterns to aggregate consumption. Marginal utility analysis and indifference curve analysis, while conceptually useful in defining optimum consumption patterns and levels of satisfaction for individuals, encounter problems of adding individual utility schedules and comparing levels of utility between individuals or groups in moving to the aggregate level. Attempts to circumvent this problem have included Pareto's criterion that a change that makes some individuals better off without making others worse off constitutes an increase in total welfare; Kaldor and Hicks' compensation principle;⁴⁴ Marshall's and Hick's consumer surplus; and Pigou's marginal social units.⁴⁵ Despite these efforts, a theoretically sound and definitive approach to aggregate welfare or satisfaction continues to represent a major barrier in the development of welfare economics.

Similar difficulties are encountered in addressing the second social goal, an optimum pattern of income distribution. Achieving this goal depends on the utility or satisfaction gained from money income. Due comments:

The difficulties in the path of obtaining a more satisfactory definition of the optimum pattern of income distribution greatly reduce the significance of contemporary welfare theory, the preciseness and strength of its conclusions, and the force of policy recommendations based upon them (37).

An optimal income distribution would be characterized by equal marginal utility of money for all persons (not necessarily equal distribution of money, since identical marginal utility schedules are not assumed). Given the problems of developing cardinal utility measures and comparing utilities of different persons, however, such a criteria is presently inoperative. Welfare analysis thus has largely been confined to a given income distribution. A separate optimum is associated with each stipulated income distribution.

Other criticisms of welfare economics have been (90, pp. 15-16):

⁴⁴The compensation principle states that a change has increased total welfare if persons who are better off *could* compensate those who are worse off and have some gains remaining. The compensation Kaldor and Hicks proposed was hypothetical. Whether compensation was paid, Kaldor and Hicks left to the political decisionmakers. See (56, p. 549) and (52, p. 696).

⁴⁵To allow for deviations from perfect competition, to maximize welfare of a community, it may be necessary to equate marginal social, not private, units. That is, marginal costs, utilities, and products accruing to the whole community have to be considered. See (91, p. 134).

1. Underlying value judgments, as to their admissibility, acceptability, necessity, and completeness;
2. No rules are provided for evaluating a change that makes some persons in the community better off and others worse off;
3. No relative optimum was defined for the case in which some elements of the economy did not allocate their resources in conformity with the optimum rules;
4. The abstract nature of the conditions or the difficulty of assessing the size of the relevant variables makes the theories of welfare economics irrelevant to real-world situations;
5. The assumption of independence of individual welfare is unrealistic; and
6. The assumption of given and constant tastes is unrealistic.

With the increased concern for the quality of life in the United States, a conceptual approach is needed that focuses on total social welfare and on the allocation of resources to material and nonmaterial types of wealth. Some of the present ecology issues, for example, would seem to be prime targets for the concepts of welfare economics. Unfortunately, both the conceptual and operational deficiencies of welfare economics limit its usefulness for real-world problems. Certainly, the societal welfare orientation is useful. And, if aggregate demand is used as a surrogate for aggregate satisfaction (albeit a highly imperfect one), some analysis is allowed of activities and resource uses involving a market. These are, however, rather minor net additions, if additions at all. We must conclude that, in its present state of development, welfare economics offers little that an applied economist can use in evaluating market performance.

OVERALL CRITIQUE OF EXISTING MEASURES

The previous sections have examined several of the more commonly used measures of or conceptual approaches to market performance. Although most have serious limitations, they will continue to be used until improved measures are developed. Our review should drive home the importance of recognizing that these measures of performance are partial, generally imprecise, and lacking in acceptable norms with which the performance of different markets can be compared and evaluated.

Market basket and food marketing bill statistics are descriptive "measures" of performance and should not be used by themselves to evaluate performance. These statistics do provide useful insights into some of the changes in the food-marketing sector, however.

Flow analysis, as it is presently formulated, seems to represent a useful, although highly cumbersome, analytical approach. Because of its complexity, practical applications are likely to be rare without significant simplification. Its potential use to evaluate market performance is limited because of the lack of norms. Since it examines vertical market systems, flow analysis does represent a desirable extension of the scope of performance considered.

Welfare economics, as an approach to market performance, continues to be

plagued by operational and conceptual limitations in dealing with aggregate welfare or satisfaction. The new measures of performance that will be discussed in the succeeding chapter suggest methods of measuring consumer satisfaction. These do not resolve some of the problems of welfare economics; rather, they suggest direct measurement of consumer satisfaction despite limitations. Break-throughs in dealing with aggregate welfare both conceptually and operationally could make the approach more relevant for performance measurement.

The other two measures reviewed are already used widely; namely, market structure (reviewed in chapter 3) and measures of productivity. Productivity measures are easier to interpret when year-to-year comparisons of the same industry are examined. In comparing the productivity of different industries, total productivity measures, rather than partial measures such as labor productivity, are more appropriate to allow for differences in labor or capital intensity. Measures of total productivity remain questionable in accuracy, as do measures that attempt to partition productivity gains to various inputs. Of particular concern with most measures of productivity is their inability to include intangible capital inputs or to adjust for changes in the quality of inputs and outputs.

Productivity measures focus largely on the technical efficiency aspect of performance, which in turn reflects the progressiveness of an industry in adopting new or improved transformation procedures. Because no norms exist with which the productivity of different industries can be compared, evaluation must be subjective.

To the extent that market structure characteristics are closely related to various performance dimensions, market structure can be used as a proxy "measure of performance." The strongest relationships apparently exist between the structural variables of seller concentration and barriers to entry, and the performance dimension, allocative efficiency.

Partly because market structure draws from a concept of business behavior that is more complete, logical, and encompassing than anything else available, it will probably continue to be attractive as an indicator of market performance. Much remains to be learned about the major forces influencing business behavior. Some of these factors affecting performance other than market structure were commented on in the latter section of chapter 3.

This review of existing performance measures is rather sobering. Some of their more apparent deficiencies include:

1. Emphasis mainly on economic and technical efficiency, with many other important performance dimensions largely ignored;
2. Lack of acceptable norms in most cases to allow accurate evaluation of performance;
3. Inability to deal with the dynamic and the vertical dimensions of markets and market systems; that is, to measure their performance as evolving, adaptive, cybernetic systems;
4. Preoccupation with demand-serving aspects of marketing with little attention to demand-influencing activities or to the level of consumer satisfaction; and
5. Many measurement, data, and interpretation problems.

The measures discussed certainly do not exhaust the measures that have been used. If we refer back to the performance dimensions defined by Bain (see chapter 2), we find that performance measures of some type have also been developed concerning:

1. Size of sales-promotion costs relative to production costs;
2. Level of capacity utilization;
3. Rate of progressiveness of the firm and industry in developing both products and techniques of production; and
4. Stability of output and employment.

On the other hand, no measures that the authors are aware of consider the following performance dimensions:

1. Character of the product, including the design, quality, and variety within a market;
2. Equity of income distribution;
3. Level of consumer satisfaction generated; and
4. Responsiveness and contributions of firms and industries to societal problems, quality of life, and other areas.

What measures do exist for some of the above dimensions are frequently inadequate. Consider, for example, product or process progressiveness. While measures such as R and D expenditures and the number of patents issued may shed some light on progressiveness, the light is dim indeed. It ignores such matters as the opportunities for innovations (which vary by industry), and the distinction between idea creation and development, and implementation or marketing of a developed innovation. For example, a not unusual situation is that in which the idea for a new product or process originates with a large company, is developed and tested by a small company (not infrequently managed by former employees of the large company), and is mass produced and marketed by a large company. Who is responsible for such a product or process innovation? It would appear that large companies should receive much of the credit. Yet many ideas would not be developed and tested unless small firms will accept the high risk-high reward environment need to develop and test such innovations. Both large and small companies are necessary for the progressiveness of the industry, and may operate very effectively in a quasi-partnership arrangement. Measuring progressiveness in such situations is difficult; attributing the innovations to a particular firm may be impossible.

Because of the difficulty of accurately measuring and evaluating the various dimensions of performance, and because of the strong public policy appeal of focusing on cause rather than effect, concepts that help *explain* business behavior, thereby defining some of the causal forces, have a very receptive audience. Unfortunately, these concepts are seriously lacking in both number and proved accuracy. At this point in time, industrial organization theory is the only well developed and at least partially operational theory that policymakers can look to for guidance.

The previous discussion of market structure analysis (chapter 3) identified some of the questions and limitations that surround industrial organization

theory as an explanation of business behavior. Some of the difficulties in verifying this theory empirically are particularly disturbing and raise questions concerning its validity. It is also possible that these difficulties stem from some of the measurement and data problems previously discussed. That is, the theory may be sound, but because of inappropriate selection or measurement of variables (often surrogates), unavailability of data, or inappropriate analytical procedures, the hypothesized relationships do not emerge. The deficiencies noted in most of the performance measures certainly leave room for this explanation.

Many persons will choose, however, to explain the empirical verification problem by the irrelevance or errors of the theory. In part because of dissatisfaction with the economic theory of the firm, alternative concepts of business behavior have been developed. Some of these were discussed in the preceding chapter. While a few provide useful insights into the behavior of individual firms, they are of limited value in understanding the behavior of groups of firms, such as in an industry or market system.

At this point, after a rather pessimistic summary of existing performance measures, we will look at two new measures developed in the course of this study to go beyond existing measures.

Chapter 5

NEW MEASURES OF PERFORMANCE

The previous measures that have been discussed largely focus on the supply or input side of a market system. They tend to operate under the assumption that consumer preferences will be revealed through market transactions, and that the task of a market system is to provide the goods and services demanded in the market as efficiently as possible. This position reflects classical consumption theory, which assumes that the consumer has definite preferences for varying quantities of a finite number of commodities and that he or she maximizes satisfaction by choosing the best combination *available*, subject to a given total expenditure (54, p. 722). The word "available" is italicized because for consumers to maximize satisfaction and reveal their true preferences, a sufficient number of alternatives apparently must be available from which to choose.

The existence of an adequate range of alternatives is in itself a performance dimension. Poor performance could result from excessive alternatives as well as too few alternatives.

Perceived value and market value are inexorably related in consumption theory via free choice in a market offering goods and services at known prices. Classical consumption theory (54, pp. 704-740), (90), (41, pp. 335-378), or the more recent extensions (62, pp. 132-157) assume that the equivalence of perceived and market values is assured by the consumer's willing allocation of his or her limited income among products. However, this assurance depends on a sufficiently large number of alternatives from which to choose, each yielding known (perceived) utilities at known prices. If prices of individual goods or services are concealed within the total price for a package of goods and services, perceived and market values may not be equated.

Existing measures of market performance depend on the market mechanism to provide a sufficiently large number of alternatives at identifiable prices, and on the consumer's ability to assign perceived values in accordance with his or her utility schedule. Three of the basic assumptions of these measures are (1) alternatives, (2) prices, and (3) individual utility schedules.

The existence of an individual utility schedule, applied to choice behavior, can hardly be questioned, whether or not an individual's (unique) schedule can be measured. If a schedule exists, it is applied in income allocations among alternatives, and the best evidence of its form is revealed in those choices. If a person's utility schedule does not affect his or her market choices, there is no reason to attempt measuring it in some direct fashion, because it is irrelevant.

So, we turn our attention to the ability of the market to supply a sufficient number of alternatives at known prices.

Assume, as Alderson (3, pp. 18-20) has argued, that market demand is infinitely heterogeneous, or, following Lancaster (62, pp. 133-137), that utility is derived from the multidimensional properties or characteristics of goods in use, rather than from the "goods" themselves. If these propositions hold, we must conclude that not all persons can, from the comparatively limited choices available, maximize their utility in accordance with their idealized utility schedules. Economies of scale in mass production and distribution of goods, which tend to reduce prices per unit, mitigate against the infinitely heterogeneous supply necessary to match demand and supply characteristics for all consumers. Under these conditions, we can postulate that while perceived and market values are equal, they do not reflect optimal conditions, because more preferred combinations of characteristics are not always available. This assumption suggests the need for nonmarket (direct) measures of utility to identify the disparity between real offerings of goods and service characteristics and ideal offerings.

Concerning the provision of price information, "prices" of both the direct and indirect service attributes associated with a given exchange are embedded in the price of the good itself. The direct service attributes provided by the good (package, precooked, and so on) enter into a person's evaluation of its utility. However, indirect services, such as parking and checkout, that are associated with the *act of exchange* have their utility diffused over many products and their cost hidden in the price of the goods. The utility of these "exchange-facilitating services" may be perceived, but their cost is unknown to the consumer (and often to the producer). Thus, the second dimension of the exchange process not treated under existing measures of market performance is the existence of "hidden prices" for services offered at the point of exchange.

To summarize: If an underlying utility schedule exists and is operable among a sufficiently large number of alternative product and service configurations, each with known prices, its effect is revealed in market choices. In this event, there is no reason to attempt nonmarket measurement of utilities. But market demand could be heterogeneous to the point that many desired product or service alternatives would not be satisfied by a relatively homogeneous supply offering. Or, prices on some important subset of the service offerings could be hidden in the cost of the goods. Then direct measurement of preference orderings (utilities) at revealed prices is necessary to uncover the degree to which the market mechanism equates supply offerings with demand.

The foregoing provides the rationale for direct measures of consumer satisfaction, or the degree of "match" between actual supply offerings and the preference schedules of consumers. Direct measurement of consumer satisfaction may also be viewed as an indicator of "effective competition." Since the latter is difficult to measure in any direct sense, we have had to rely on surrogate measures of those factors causing or resulting from effective competition. Since effectively competitive markets are responsive to consumer

preferences, direct measures of consumer satisfaction could provide useful insights into the competitive nature of the market.

The two new measures of market performance discussed in this section represent efforts to measure consumer satisfaction directly. The retail service measure has only undergone a laboratory test. The technical feasibility of the consumer satisfaction measure has been demonstrated in a pilot field study. Both are likely to encounter operational problems, and embody assumptions that may be challenged. What they lack in the sense of being thoroughly tested and proved measures, however, they compensate for by their imaginative and thought-provoking characteristics.

THE VALUE OF RETAIL EXCHANGE SERVICES

General Concept

Assuming that an important dimension of market performance is the matching of supply offerings with demand preference, the following is proposed as a measure of market performance:

$$P_e = 1 - \left| \left[\frac{\sum_{i=1}^i \sum_{j=1}^j a(s_{ij}|c_{ij}) - b(d_{ij}|p_{ij})}{N_i} \right] \right| \quad (1)$$

Where:

- P_e = Measure of performance for the e th type of exchange (for example, retail food stores); maximum value of 1
- s = Relevant characteristics of the supply of goods and services
- d = Relevant characteristics of demand
- j = Level of supply or demand for the i th characteristic of the good
- a = Ordered frequency of offerings of the j th level on the i th characteristic
- b = Ordered frequency of demand for the j th level of the i th characteristic
- N_i = Number of characteristics of the goods and service included
- c_{ij} = Supply cost of the i th characteristic at the j th level
- p_{ij} = Perceived value by consumers of the i th characteristic at the j th level.

The expression $a(s_{ij}|c_{ij})$ represents the proportion of sellers offering level "j" on each characteristic "i" conditional upon its cost while $b(d_{ij}|p_{ij})$ represents the proportion of buyers desiring level "j" on each characteristic "i" conditional upon its price.

In terms of the earlier discussion, whenever p_{ij} is unknown (or hidden in the price of some other characteristic, like the physical product) the performance of a market is indeterminate; that is, prices on the i th demand characteristic

Note: this section attempts to summarize the salient points from (26).

must be revealed to consumers via changes in the traditional price-making procedures, or through experimentation (either in the market or in a nonmarket environment).

Market performance is diminished whenever the vectors d_i and s_i contain unequal elements. In this case, consumers desire alternatives which are not provided by the market, or, the market continues to provide alternatives which are no longer relevant to consumers.

Similarly, market performance is diminished when the frequency with which a service is offered at each level "j" by all stores in a market differs from the frequency with which levels of that service are desired among all buyers in the market. Apparently, this reduction occurs as a result of suppliers' inability (or unwillingness) to detect consumers' preferences on a given characteristic (alternative), with a given price.

To illustrate, suppose a census of all buyers and sellers in a market yields the following data. The entries in table 4 are proportions of buyers desiring level "j," for a single characteristic "i," conditional upon its price, $b(d_{ij}|p_{ij})$, and the proportions of sellers offering each combination, conditional upon its cost, $a(s_{ij}|c_{ij})$. The characteristic chosen was waiting time at a foodstore checkout counter. Four different levels of waiting time were considered.

From equation 1, the value of performance (P_e) for this single retail service is calculated by:

$$P_e = 1 - \left[\frac{0.40}{1} \right] = 0.60$$

If the demand and supply vectors for this service perfectly matched, the value of P_e would be 1.00.

Thus, the sources of "poor" market performance, or a diminished value in P_e , are (1) hidden prices, (2) different elements in the characteristic vectors of supply and demand, and (3) different distributions of ordered-offer frequencies and ordered-preference frequencies. Whenever a market is working sufficiently

Table 4—Correspondence between demand and supply of a single characteristic "i," waiting time at a foodstore checkout counter

Level "j" (waiting time)	$a(s_{ij} c_{ij})$	$b(d_{ij} p_{ij})$	Absolute difference
none	0.10	0.20	0.10
5 minutes50	.50	.00
10 minutes20	.30	.10
20 minutes20	.00	.20
	$ \sum_{j=1}^j a(s_{ij} c_{ij}) - b(d_{ij} p_{ij}) = .40$		

well, in the long run, the matrix of ordered-offer frequencies A will equal the matrix of ordered-preference frequencies B over all d_{ij} 's and s_{ij} 's. If all prices are known, the market may be said to be performing at its maximum. Under these conditions, $A = B$, $c_{ij} = p_{ij}$, and $P_e = 1$. Further, consumers are able to maximize their utility, subject to an income constraint.

Application to Retail Grocery Services

The authors postulate that more support exists for the point that hidden prices, on retail grocery services, for example, tend to disrupt the market mechanism and lead to poor performance. Less substantiated is the idea that markets are so imperfect as to lead to sustained and substantial inequalities between the matrices of supply offers and demand expectations, given price information. For this reason as well as others, retail grocery services are used to illustrate the above general concept.

Four principle forms of exchange services may be identified:

1. Assortment—Width; that is, number of product classes; and depth; that is, number of brands offered within a product class;
2. Information—Prices, assortment, services, quality, and so on;
3. Place—Proximity to consumer, parking facilities, store hours, and so on; and
4. Transactional—Mode of selection, check cashing, return policy, and so on.

Various services may be identified within each of the four principal categories, and each of them can be offered in varying degrees. For example, parking facilities may range from none to several times the size of the store; depth of assortment may range from only a few major brands to all major and minor brands available in a given geographic area. Thus, for each service, there are a number of possible variants (or levels) which the retailer may provide.

Most services can be scaled so that, other things being equal, customers will prefer more of these to less. In some cases, an increase beyond a certain point may be regarded as undesirable by the customer. For example, an excessive proliferation of product sizes, brands, or product classes may tend to confuse the consumer and increase the effort required to make satisfactory purchasing decisions.

The corresponding supply characteristics are those associated with the supply of the same marketing services at the retail level. The provision of services generally implies a cost to the retailer which is ultimately borne by the consumer in the purchase price of products.⁴⁶ Thus, we need to measure not only ordered preferences for different services and variants, but also how much

⁴⁶For a retailer, providing a service may constitute a differential advantage and may lead to an increase in sales volume and to a reduction in unit cost per item sold. For present purposes, however, it is assumed that over time this advantage will probably be matched by competitors; hence, its effect will be dissipated. Thus, in the aggregate, an increase in service will be translated in terms of an increase in cost.

the consumer is willing to pay for them. Preferences expressed without awareness of the costs involved in providing the services are meaningless.

Another issue is whether preferences should be measured for each service individually or for combinations. If interdependence or interaction exist, the aggregation of preferences for individual services to obtain a measure of performance may hide a lack of correspondence between the demand and supply of individual services.

Since interdependence appears likely, the proposed units of measurement of the demand for retail grocery exchange services are the *combination* service variants required by a consumer at a given price level in the retail store.

$$D_k = (d_{1j}, d_{2j}, \dots, d_{ij}, L) \quad (2)$$

where D_k = demand for exchange services of the k th consumer

L = Price level a consumer k will accept for a given combination of service variants

d_{ij} = J th variant of the i th service demanded by the consumer

The corresponding units of measurement for the supply of exchange services are the specific service variant combinations offered and the associated costs to the store.

$$S_r = (s_{1j}, s_{2j}, \dots, s_{ij}, c) \quad (3)$$

where S_r = Supply of exchange service by the r th retailer

c = Change costs associated with providing a given combination of service variants

s_{ij} = J th variant of the i th service supplied by the r th retailer

For a given exchange, perfect correspondence (equality) is obtained when the combination of service variants preferred by the consumer at a certain price level exactly matches the combination of service variants and associated cost offered by the grocery retailer.

Thus at least two dimensions are present in the match between supply and demand characteristics for a given exchange:

1. The match between the price level a consumer is willing to accept and that which exists in a retail store for a certain service variant combination and
2. The match between the combination of service variants required by a consumer for a given exchange and those offered by the retailer.

If we assume that a "typical cost" can be associated with the provision of a given service variant, and that significant differences between size of store can be estimated, a specific price level can be associated with given combinations of service variants. The combination of service variants preferred by a sample of consumers for a given type of exchange can be determined. The performance

of a retail grocery market may be measured in terms of the correspondence between the proportion of consumers preferring a certain combination of service variants for a given type of exchange and the proportion of retailers offering that specific combination. Since consumers have different consumption rates and stores have different sales volumes, the proportion of customers should be weighted by their purchase rates, and the proportion of retailers, by their sales volume.

Thus, the performance of a retail grocery system for the e th type of exchange in a given market will be represented by:

$$P_e = 1 - \left| \frac{\sum_{i=1}^i \sum_{j=1}^j \left[\frac{n(s_{ij})}{N_s} \cdot \frac{V(s_{ij})}{V_s} \right] - \left[\frac{n(d_{ij})}{N_d} \cdot \frac{E(d_{ij})}{E_d} \right]}{N_i} \right| \quad (4)$$

where:

- P_e = Performance of the retail grocery market system in a given geographic area for the e th type of exchange
- N_d = Total number of buyers in the sample
- N_s = Total number of suppliers in sample
- i = Service characteristic index
- j = Level of service for the i th characteristic
- $n(s_{ij})$ = Number of suppliers in the sample offering service combination ij
- $n(d_{ij})$ = Number of buyers in the sample preferring service combination ij
- $V(s_{ij})$ = Sales volume of suppliers in the sample offering service combination ij
- V_s = Sales volume of all suppliers in the sample
- $E(d_{ij})$ = Consumption expenditures of buyers in sample preferring service combination ij
- E_d = Consumption expenditures of all buyers in sample

The Exchange Services Game

Various techniques may be used to measure preferences expressed by consumers for combinations of service variants and associated price levels. The method suggested here is one that allows variations in both the level of prices and the levels of service.

Initially, consumers would be given a list of services. Each variant of each service would be assigned a unit value. For example, check cashing might receive a value of two units; for depth of assortment, four units might represent a choice of 20 advertised and five unadvertised brands, and two units, a choice of 10 advertised and three unadvertised brands; for proximity, one unit might equal a store over 10 minutes driving time from the consumer's home, two units might be a store within 5 minutes driving time, and so on.

The number of units assigned to a service variant would correspond to the marginal cost to the retailer of providing that service variant compared with the base level of the service (that is, the level of service valued at zero units). The consumer would also be offered the choice of changes in the price level of the

goods available in the hypothetical store. Assuming that changes in the cost of providing services would result in parallel changes in the price level of goods, a unit would correspond to a certain percentage change in the price level. Thus, if a unit represents a 0.001 increase in costs, 10 units means a 1-percent change in the price level.

The consumer would get a number of units corresponding to the maximum number of service units which can be selected, and would be asked to allocate these units among the levels of service and changes in the price level. A specific number of price units would correspond to the base price level (for example, 15 units). If more units (over 15) were allocated to the price level, there would be a corresponding decrease in the price level; if less (under 15) were allocated, there would be an increase.

The measurement of the supply of retail services is not likely to pose conceptual problems comparable with those involved in the measurement of the demand for such services, but it may raise operational difficulties.

Since the number and range of services offered should differ with the type and size of store, a representative sample of stores selling the selected product classes should be selected. A survey would be made of the service offerings of each store (that is, the specific level for each service and the associated price level). In some cases, the specific service variant offered could be determined by direct observation (for example, check cashing, or number of parking spaces). Measurement would be necessary in such cases as checkout time, price level, and marginal costs.

The distribution of service variants over stores could thus be established and weighted by the sales volume of each store. A frequency distribution of service offerings comparable with that for the demand for services could therefore be obtained.

At the same time, estimates of the costs of providing specific service variants by store type must be obtained. A detailed examination of cost data hopefully would allow estimates of the marginal costs associated with changes in the level of service offerings.

An Illustration of the Exchange Services Game

Suppose that a consumer were able, in an experimental situation, to choose the services to be provided by a grocery store. Each service or variant would be worth a number of units and these would be indicated on a questionnaire (table 5). Since the cost of these services is normally included in the purchase price of the goods, providing such services will affect the price level, or the average price of goods. The reduction or increase in average price resulting from providing a given number of service units would also be indicated. Thus, instead of choosing a combination of services having a total value of units, the respondent can choose a predetermined percentage decrease in the price level of the hypothetical store by allocating a certain number of units to the service, "price level."

Assume that a respondent had a total of 40 units to spend on services and price level. This consumer would be asked to circle the number of units he or

Table 5—Selected service characteristics, levels, and tradeoff values

Characteristic ¹	Level ¹									
Parking	0	1	2	3						
Checkout time	0		2	3					6	
Hours of business	0	1	2	3						
Proximity	0	1	2	3	4					
Choice of brands	0	1			4	5				
Range of products	0	1	2	3						
Butcher service	0		2							
Information on prices	0	1	2	3	4					
Cleanliness	0		2		4					
Credit	0				4					
Check-cashing service	0		2							
Price level	0	5	10	15	20	25	30	35	40	

¹ Definition of service levels for selected characteristics and tradeoff (unit) values

Parking:

- 0 units—none
- 1 unit—50 percent chance of finding a parking space
- 2 units—75 percent chance of finding a parking space
- 3 units—certainty of finding a parking space

Checkout waiting time:

- 0 units—20-minute wait
- 2 units—10-minute wait
- 3 units—5-minute wait
- 6 units—no wait

Hours of business:

- 0 units—not open evenings and Sundays
- 1 unit—open 2 evenings a week
- 2 units—open 6 evenings a week
- 3 units—open 6 evenings a week and Sundays

Proximity:

- 0 units—more than 20 minutes driving time
- 1 unit—more than 10 minutes driving time
- 2 units—within 5 minutes driving time
- 3 units—within 10 minutes walking time
- 4 units—within 5 minutes walking time

Choice of brands:

- 0 units—2 or less brands in each product class
- 1 unit—private brand plus 2 major brands
- 4 units—private brand plus all major brands and some local brands
- 5 units—private brand plus all major brands and all local brands

Continued

Table 5—Selected service characteristics, levels, and tradeoff values—*Continued*

Range of products:

0 units—groceries only

1 unit—groceries plus fresh fruits and vegetables

2 units—groceries plus fresh fruits and vegetables plus fresh meat

3 units—groceries plus fresh fruits and vegetables plus fresh meat plus household and health products

Butcher service:

0 units—none

2 units—butcher service

Price information:

0 units—none

1 unit—prices marked on most merchandise

2 units—prices marked on all merchandise

3 units—prices marked on all merchandise and advertised in local paper

4 units—prices on all merchandise and advertised in local paper and handbills

Cleanliness:

0 units—dirty

2 units—fairly clean

4 units—very clean

Credit:

0 units—none

4 units—monthly book credit

Check-cashing service:

0 units—none

2 units—check cashing

Price Level:

0 = 1.5-percent price increase

5 = 1-percent price increase

10 = 0.5-percent price increase

15 = standard price level

20 = 0.5-percent price decrease

25 = 1-percent price decrease

30 = 1.5-percent price decrease

35 = 2-percent price decrease

40 = 2.5-percent price decrease

she would choose for each service. A unit would not have to be selected from each service. The respondent could choose to allocate all units to a change in the price level. However, all 40 units must be assigned.

Small-scale pilot testing of the exchange services game, as outlined here,

suggests that it approximates a reasonable, though admittedly artificial, instrument for obtaining preference frequencies for service offerings at revealed prices. Consumers apparently considered the questions and tradeoffs meaningful and provided consistent responses. Of course, empirically derived estimates of price level changes and marginal costs of service increments should be used and alternative instruments should be tested.

Evaluation

Application and validation of the exchange services game would provide a useful measure of the value of retail exchange services among different consumer groups. Without such a measure, the "value" of these services must continue to be measured by their "cost" in a market environment which does not reveal these costs to the consumer who must bear them.

However, many questions and limitations surround the measure as it is presently constructed. Besides some of the obvious operational problems, there are also some assumptions that are open to question. For example, the sales of retail stores have been treated as being independent of service combinations and levels offered. If, in fact, they are not, as many persons would argue, the marginal cost of various services would be very difficult to determine. Another central issue is the extent to which one can expect different stores to offer different service combinations so as to match the demands of customers. Retail stores tend to adopt a "me-too" operating philosophy, whereby they neutralize the moves of their competitors. A question that can be raised is: What proportion of the consumers in the area must desire a service before *all* stores begin offering it? If, for example, a store offers a new service that only 10 percent of the consumers want, but successfully attracts 10 percent of all other stores' customers, would these other stores adopt the same service? The idea that the "marginal float" in a market has an inordinate influence on competitive emphasis in a market is not new. It does have a rather central bearing on the validity of the proposed measure, however.

The proposed measure also assumes that consumers can choose among alternatives in accordance with their objectives, and that the choices may be reliably measured through expressed preferences. It is not entirely evident that consumer preferences are internally consistent, reasonably stable over time, or directly measurable through expressed judgments. Further, even if consumers are able to express their preferences accurately, the proposed measure would seem to be limited to existing services or services with which consumers have had experience. Such services as code dating, unit pricing, or electronic checkout operations, for example, would be difficult for consumers to evaluate if they had never been exposed to them.

The validity of making interpersonal comparisons of preferences can also be challenged. This issue has been one of the most difficult for persons interested in direct analysis of consumer utility. Without resolving the issue directly, Rescher suggests a procedure for aggregating individual preferences to determine optimal societal choice (98, pp. 99-110). While interpersonal comparisons of utility continue to be an unresolved, yet germane concern, the

academic community may have allowed this problem to deter its efforts too long. From the standpoint of reality, someone will decide about the offers of a market or of public institutions; and frequently, the decisions will be based on inadequate information. Perhaps additional exploration into direct measures of consumer preferences and satisfactions—conducted with full knowledge of the limitations—will provide useful insights into patterns of consumer preferences and the problems of aggregation.

Finally, the proposal tends to be a static measure of market performance. Unless used periodically, the measure would not indicate the extent to which suppliers are responsive and adaptable to changes in consumer preferences.

AN INDEX OF CONSUMER SATISFACTION

This section discusses a second approach to the problem of directly measuring consumer satisfaction.⁴⁷ Examined first are general objectives and applications of the proposed Index of Consumer Satisfaction (ICS). Next, the research strategy used to construct indices of consumer satisfaction is presented.

General Description

The demand for information on consumer satisfaction from both the public and private sector is increasing. Knowing how the various segments of the population feel—their attitudes and frustrations—is increasingly necessary for the development of farsighted corporate and public policy. Sources of consumer dissatisfaction are not static. Rather, they require periodic monitoring since they may stem from changes in consumer values, attitudes, and expectations, as well as from physical characteristics of products and services.

To date, there has been no systematic attempt to monitor periodically a wide cross section of consumers as to their relative level of satisfaction with goods and services supplied by either the private or public sector. The interplay of market forces is generally relied on to match market alternatives to consumer preferences. However, rising consumer restlessness and complaints indicate that, in many cases, traditional market signals are either not sufficiently sensitive or inadequately communicated or they are misinterpreted. The ICS attempts to supplement these signals with direct feedback from consumers.

Recent statistical techniques such as nonmetric scaling are used to formulate social indicators of market performance. The ICS is based on respondents' own

⁴⁷This approach is under development by the Economic Research Service, U.S. Department of Agriculture, together with Martin Pfaff, Professor of Economics, Wayne State University. For a more detailed discussion of this research, see series of papers on consumer satisfaction published in M. Venkatesan, ed., *Proceedings of Association for Consumer Research—1972*, Iowa City: Association for Consumer Research Conference, University of Iowa, 1973; and U.S. Department of Agriculture, Economic Research Service, *The Index of Consumer Satisfaction (ICS)*, Interim Report of Contract No. 12-17-05-1-610, unpublished report.

evaluation of their satisfaction with various products and services provided by the market economy. This measure would indicate how consumers perceive their satisfaction with specific products and product attributes. It would also suggest how satisfaction or dissatisfaction is distributed across various socioeconomic groups and would provide a means of monitoring changes over time.

The ICS focuses on performance at the market or product level rather than at the individual brand level. It reflects the "social mechanism" perspective of market systems, discussed in chapter 1, which considers both economic and noneconomic results. Social and cultural values, as well as economic factors, influence expectations, and thus satisfaction, with products and services. A greater awareness and concern with problems of ecology could decrease a person's expressed satisfaction with a product, although the performance of the product itself remained unchanged. Responsiveness becomes an important performance dimension, given this dynamic perspective of market systems. The ICS as a performance measure would provide empirical information concerning the responsiveness of the market to consumer satisfaction and to social and cultural change.

The performance norm or theoretical ideal for this measure would be the elimination of expressed dissatisfaction. Dissatisfaction can be reduced if producers improve products and services and provide new products to fill market voids, or if consumers adjust their expectations. In a dynamic environment, this ideal is not likely to be attained, but it is a desirable direction in which to move.

Index Formulation

Procedures for collecting satisfaction scores and constructing indices of consumer satisfaction are being tested in a USDA pilot study begun in 1971. The purpose of the study is to test and refine methodology suitable for constructing indices of consumer satisfaction from national surveys. Indices can be developed for overall satisfaction with a market basket of products or services, such as for food; for individual product classes, meat, for instance; and for individual products, for example, beef. The overall ICS thus represents a set of subindices that can be computed for different groups of respondents and geographic regions, individual products, and product classes. In many cases of policy application, the subindices would be more useful since the aggregate overall index would hide contradictory tendencies in the subcomponents.

In computing the ICS, consumers are assumed to select from market alternatives that product which conforms most closely to the mix of attributes (price, quality, and so on) they perceive as important. Their overall satisfaction with the product will be determined by their satisfaction with the attributes. However, some attributes probably influence overall product satisfaction more than others.

Empirical data for the ICS consist of scores that measure consumer satisfaction with particular products and their attributes, with product classes, and with an overall market basket. Satisfaction is measured on a five-point

scale ranging from "very satisfied" (A) to "not at all satisfied" (E). Letters, rather than numbers, are used to avoid suggesting a specific quantitative relationship between points on the scales.

Two different methods are used in arriving at scores for each person: (a) raw scores (RS) and (b) optimal *monotonic* scores (OMS). Using raw scores (assigning numbers one through five to the letters A through E) assumes positions on the scale are equally spaced. It implies that respondents perceive a movement from point two to point one as being equally as easy or difficult as a movement from point three to point four.

The second scaling system (OMS) is also used to obtain satisfaction scores.⁴⁸ This technique does not presuppose equidistant spacing between adjacent points on the scale. It allows intervals between points to be stretched (or shortened) while maintaining their order, so as to maximize the average correlation among the items scaled (in this case, a product and its attributes). Rescaling the original raw scores (one through five) into OMS scores also maximizes the average correlation between a dependent variable (for example, a product satisfaction score) and a set of predictors (in this case, product attribute scores). The process greatly facilitates aggregation of scores across products and persons.

The OMS scaling procedure was used to analyze the USDA pilot study. Scales for one of the products included in the study, lunch meat, and five preselected product attributes are shown in table 6 to illustrate the technique. In this instance, a seven-point scale was used. Both the RS satisfaction scale and the OMS satisfaction scales are shown to compare results.⁴⁹

The intervals in the OMS scales appeared quite different from those in the RS scale. This difference occurred because raw attribute scores were rescaled, thus maximizing the average correlation among these five attributes. Both the RS and OMS scores indicated that these respondents were most dissatisfied with the price of lunch meats (RS mean of 4.39) and most satisfied with the availability (RS mean of 2.32).

The OMS scales are useful in comparing relative levels of satisfaction when absolute comparisons would be difficult. It is questionable whether reporting being "very satisfied" (raw score 1) with price and with availability really mean the same thing, and whether they should therefore be denoted by the same score. For example, being "very satisfied" with the price of lunch meat is indicated by a score of 2.65, whereas being "very satisfied" with availability is denoted by a score of 1.27. The higher value for price occurred because only a few respondents checked the category "very satisfied," and because mean

⁴⁸ For a more detailed discussion of multidimensional scaling, see (66, pp. 49-68).

⁴⁹ The OMS procedure yields values whose mean (across all respondents) is zero and whose variance is unity. Therefore, to facilitate comparison over time, the respective means for lunch meat and the attributes based on raw scores have been added in. The mean response of the 342 respondents in the pilot study, with lunch meat satisfaction based on raw scores, was 2.98; for packaging, the mean response was 2.63; and so on.

Table 6—RS and OMS values for lunch meat and five attributes

RS scale	OMS satisfaction scale for—					
	Lunch meat	Packaging	Taste	Nutritional value	Availability	Price
1	1.70	1.45	1.48	1.59	1.27	2.65
2	2.48	2.38	2.44	2.46	2.36	3.13
3	3.14	3.06	3.11	3.15	3.03	3.71
4	3.75	3.62	3.58	3.71	3.51	4.20
5	4.06	4.08	3.95	4.13	3.97	4.68
6	4.48	4.34	4.31	4.56	4.22	5.05
7	5.00	4.79	4.81	5.05	4.60	5.80
RS mean	2.98	2.63	2.67	2.97	2.32	4.39

satisfaction with price (4.39 in terms of raw scores) was relatively low compared with that for availability (2.32).

The “product” satisfaction scale, with lunch meat again as the product, is developed by transforming raw product satisfaction scores to a set of OMS satisfaction scores via a form of regression analysis in which satisfaction for each product was “best” predicted by its attributes. A set of raw satisfaction scores for each product was the dependent variable, with OMS-scaled attributes as the independent variables. Each person must implicitly have some kind of model by which evaluations of the individual attributes are put into an overall judgment about the entire product. The problem of finding the appropriate composition model is, therefore, one of estimating for a person or group the weight that is subjectively associated with particular attributes in arriving at judgments of overall product satisfaction.

OMS scales for each product were computed by equation (5):

$$P_{ik} = \sum_{j=1}^n \beta_j a_{ijk} + e_{ik} \tag{5}$$

Where:

P_{ik} = OMS scale for products; that is, the column labeled “lunch meat” in table 6 ($i = 1, 2, \dots, N$ observations; $k = 1, 2, \dots, m$)

β_j = Beta (importance) weights for $j = 1, 2, \dots, n$ attributes

a_{ijk} = Set of OMS satisfaction scores for attributes of products ($i = 1, 2, \dots, N$ observations; $j = 1, 2, \dots, n$ attributes; $k = 1, 2, \dots, m$ products)

e_{ik} = Residual or error component for individual i on product k

In the above equation, beta weights for the five attributes were: 0.06 (packaging), 0.60 (taste), 0.13 (nutritional value), 0.02 (availability), and 0.11

(price). For lunch meat, the attribute “taste” overshadowed all other attributes in explaining consumer satisfaction.

Every person’s satisfaction score for any given product can be recomputed from these scales. For example, a respondent may have checked letter “A” on the seven-point A-G satisfaction scale used in the questionnaire in expressing satisfaction with the product. This person’s score would be translated to 1.70 (taken from column 2, table 6); and so on, for the other respondents. Satisfaction of all respondents with lunch meat would be determined by the mean of all OMS satisfaction scores for this product. The Index of Consumer Satisfaction for any single product, k , is thus computed by:

$$ICS_k = \frac{1}{N} \sum_{i=1}^N P_{ik} \quad (6)$$

Where: p_{ik} = OMS scale $i = 1, 2, \dots, N$ observations; $k = 1$ product.

As an example, assume four people are surveyed concerning their satisfaction with lunch meat. They indicate their respective degree of satisfaction by checking letters “A,” “D,” “F,” and “B,” on a seven-point scale. From the OMS product satisfaction scale in table 6, these scores are given the respective values of 1.70, 3.75, 4.48, and 2.48. In this example, the ICS for lunch meat across all respondents would be:

$$ICS_k = \frac{1}{4} \sum_{i=1}^4 (1.70 + 3.75 + 4.48 + 2.48) = 3.10 \quad (7)$$

Where k = the product

This procedure can be generalized to product class and finally to overall market basket satisfaction ratings. Product class satisfaction is viewed as a weighted sum of satisfaction with products within the class. The composition model for product class satisfaction is:

$$c_{il} = \sum_{k=1}^{m^*} \beta_k P_{ikl} + e_{il} \quad (8)$$

Where:

c_{il} = Transformation of raw satisfaction scores to a set of scaled (OMS) satisfaction scores for each product class, the dependent variable, such that satisfaction with each product class is “best” predicted by satisfaction with its associated products ($i = 1, 2, \dots, N$ observations; $l = 1, 2, \dots, M$ product classes)

m^* = Number of products in a particular product class l

β_k = Beta weights for $k = 1, 2, \dots, m$ products

P_{ikl} = OMS satisfaction scores of each person for each product within a particular product class

e_{il} = Error component

As with products, the ICS for each product class is represented by the mean satisfaction score of all respondents (based on the OMS satisfaction scale for each product class computed by equation (8) above):

$$ICS_l = \frac{1}{N} \sum_{i=1}^N c_{il} \quad (9)$$

In like manner, OMS satisfaction scales for the overall market basket are computed from a weighted sum of satisfaction with the individual product classes. The overall or market basket satisfaction scale on which individual responses are recorded is computed by:

$$O_i = \sum_{l=1}^M \beta_l c_{il} + e_i \quad (10)$$

Where:

o_i = OMS satisfaction scale for the overall market basket ($i = 1, 2, \dots, N$ observations; $l = 1, 2, \dots, M$ product classes)

e_i = Error component

The ICS for the food market basket for all respondents is:

$$ICS_{(food)} = \frac{1}{N} \sum_{i=1}^N o_i \quad (11)$$

In many instances, we may wish to know how satisfaction differs between particular subsets of the sample based on various socioeconomic criteria. The ICS can be computed for a particular subset of persons at each level of aggregation (product, product class, or market basket). Thus, average satisfaction of white-collar workers with product class l is:

$$ICS_{gl} = \frac{1}{N^*} \sum_{i=1}^{N^*} c_{il} \quad (12)$$

Where:

N^* = Number of respondents in a particular group ($g = 1, 2, \dots, r$); in this case, g = white-collar workers.

In addition, to facilitate comparisons over time, the profile of consumer satisfaction indices at each level of aggregation can be normalized at $t = 0$ to 100. Future movements of the indices can be recorded as deviations from the base period score of 100.

Evaluation

Testing the procedures described above in the USDA pilot test indicated the methodology is technically feasible and produces meaningful results. Correlations were performed between consumer satisfaction scores and other general socioeconomic characteristics; such as income level, education level, and

general personality traits. On the whole, these "external" variables showed very weak patterns of association with mean consumer satisfaction scores. For example, whether a person was generally optimistic or pessimistic about improving his or her standard of living had no measurable effect on expressed satisfaction with products or services. While these results do not invalidate the possibility of significant differences between subgroups defined on the basis of these variables, they do suggest that consumer satisfaction is relatively independent of attitudinal and general personality factors. The meaningfulness of the indices is thus strengthened.

The ICS would provide an additional perspective or dimension to balance traditional economic, accounting, and engineering measures of performance. In effect, it measures the perceived extent to which product and service alternatives desired by consumers are not incorporated into any specific choice in the marketplace.

On a macro basis, the ICS can be viewed as a social indicator reflecting, over time, changes in satisfaction with specific and general aspects of the market economy. Increased experience with movements in the indices may help identify or predict buying trends and may also indicate potential consumer unrest.

As measures such as the ICS come into use, there will be serious questions of interpretation. Greater experience with indices of consumer satisfaction is needed to answer questions concerning their sensitivity. How stable are responses over time? How sensitive are aggregate satisfaction scores to changes in the specific products included in the survey? In addition, consumer satisfaction (in as much as it reflects consumer sovereignty) has limitations as a goal. Individual consumer preferences, in some cases, may have to be restricted or disallowed if longrun social costs outweigh private benefits.

Compared with existing measures of performance, the ICS is very comprehensive. The full range of market activities comes under evaluation. It incorporates a number of "marketing variables" often ignored by other measures. In general, the technical and economic feasibility of the ICS has been demonstrated; it provides worthwhile information and has a number of potential users. The pilot study empirically investigated subjective satisfaction at only one point in time and for a very small number of items and a small sample of persons. These results need to be extended over time and for larger samples before the ICS will be operational on a broader basis.

Chapter 6

CONCLUSIONS AND IMPLICATIONS

In recent years, concern about the performance of various components of the U.S. economic system has increased. With the current emphasis on qualitative rather than quantitative aspects of performance, the criteria for acceptable performance have obviously changed considerably since the early periods of U.S. economic development. Which performance dimensions and measures are most appropriate depend largely on one's perspective of markets and market systems, as discussed in chapter 1. The most frequently used measures of market performance are ill-suited to some of the criteria. In large part, existing measures such as productivity and value added or rate of profits reflect the emphasis placed on allocative and technical efficiency by the competitive models of economic price theory. While such measures are of value as partial measures of performance, the dimensions they measure appear to be decreasing in importance in contemporary American society. Other dimensions have become more significant; such as product and process progressiveness, responsiveness to consumer and societal needs and demands, influence on equity—considered in very broad terms—and the nature and type of externalities.

This shift in emphasis poses a dilemma for persons interested in evaluating market performance. In general, there are not adequate measures of these dimensions of performance; nor are there norms against which such measures can be compared. Further, only a vague understanding exists of the causal forces influencing these aspects of performance. (However, much of the same could also be said for more traditional dimensions of performance.)

The two new measures discussed in chapter 5 attempt to overcome the lack of attention given by existing measures to the level of consumer satisfaction generated by market systems. If these can be made successfully operational, they will also provide one indicator of the responsiveness of market systems to changes in consumer preferences. Such responsiveness is an important performance dimension, particularly in times of rapidly changing social values and consumer preferences. These "subjective" measures of market performance provide a direct feedback concerning the extent to which market supply offerings "match" demand preferences.

Further analyses of certain limited aspects of market performance will remain valuable, however. As more is understood about the relationship of market structure, rate of growth, and other variables with market performance, the economic aspects of the overall policy decision matrix are more clearly defined. Similarly, as more is learned about economic power and its influence

on political and social systems, the trade-offs that are almost certainly involved can be more clearly defined and evaluated. Unfortunately, restricted examinations too frequently lead to restricted interpretation. The multidimensional nature of market performance is an important perspective to retain, whether specific evaluatory efforts are narrow or broad.

The conceptual base for studying market performance, which to date has largely depended on industrial organization theory, is in definite need of expansion. Organizational theorists have made some contributions to understanding individual firm behavior; however, they have not analyzed the linkage between market characteristics and internal firm decisions. This additional step is needed.

The analysis of vertical market relationships—while appealing as a perspective of system behavior—has not been sufficiently developed to provide more than a few insights into market performance. With increasing attention being focused on vertical systems analysis, greater understanding of performance does seem likely, however.

Thus, at this point in time, industrial organization theory provides the only analytical framework of market performance that is well developed and empirically tested. Efforts to empirically verify the structure-conduct-performance relationships hypothesized in industrial organization theory have yielded very mixed results. Caves puts it well when he says:

... you have the evidence... on what market structures tend to produce good or poor performance. A prudent man will not think that it supplies a clear-cut answer. This economic evidence itself is thin. What we know about the determinants of market performance represents a few islands of knowledge protruding from a sea of ignorance (19, p. 110).

While we can despair that there are so few “islands of knowledge,” we can also be grateful that there *are* a few of them. Empirical results indicate that the structure of markets and their performance are related—but not in a linear fashion. Rather, a threshold level of structural characteristics seems to be needed before performance is altered significantly. Markets with *moderate* levels of concentration or entry barriers, or both, frequently do not experience excessive profit levels. There may be greater technical efficiency and more progressiveness in the products produced and processes employed than if such markets were less concentrated. However, markets with *high* levels of concentration or entry barriers, or both, frequently do realize significantly higher profits, yet are technically no more efficient, and are at best comparable with less concentrated markets in progressiveness. One important possible exception to these generalizations that has not been empirically examined is that of the scale economies in marketing and distribution that may be realized by firms in highly concentrated markets.

Because of the enormous size of many U.S. markets, firms may be large in absolute size without possessing a large share of the market. Thus, there are relatively few instances where the social benefit from allowing a market to become highly concentrated outweighs the possible social losses.

IMPLICATIONS FOR PUBLIC POLICY

The diverse, changing, and at times conflicting goals for American society make it difficult to develop a consistent pattern of policies toward the economic system. In addition, opinions differ considerably about essential characteristics of a "competitive system," which, in turn, may suggest different policy positions. As might be expected, this situation has resulted in public policies with a mixed and sometimes inconsistent thrust. Some policies *seem* to promote an atomistic concept of competition by protecting existing competitors (resale price maintenance, certain legislative acts, agricultural price supports, and others). In fact, many of these have the effect of restricting competition—either in the impersonal form of the purely competitive market or in the form of firm rivalry. By intervening in the working of the market mechanism, such policies may inhibit adjustments in resource allocation and restrict economic incentives.

Other policies primarily aim at promoting "fair game" rivalry. They forbid unfair competitive practices and actions that involve restraints of trade or will result in a concentrated market structure with tendencies toward monopoly. Other legislation contributes to customer competence and fair game rivalry by facilitating easier and more enlightened consumer decisions (improving information on credit terms and costs, for example).

Thus, some policies promote competition, while others restrict it. Massell has suggested:

... our feelings about competitive efficiency are ambivalent. We expect the more efficient companies to compete vigorously. Yet, when they are conspicuously successful, we entertain moves to restrain them (75, p. 37).

There is considerable truth in Massell's comment. Legislation to protect competitors is particularly open to question. At the same time, legislation aimed at maintaining and enhancing fair game rivalry apparently does not restrict seriously the internal growth of efficient companies. Empirical data indicate that significant increases in market concentration occur largely via mergers, not internal growth. Thus, antitrust legislation such as the Sherman or Clayton Acts serves as restraints on efficient companies largely in regard to mergers or practices that are predatory or hinder trade.

The desired position and antitrust agencies on mergers has been debated vigorously. Galbraith contends that antitrust laws are a "charade." Though they purport to be guardians of competitive markets, they in fact stifle competition by preventing smaller firms from merging so that they can compete on equal footing with large corporations.

He argues:

The most effective manifestation of economic power, all must agree, is simply the big firm. To be big in general and big in an industry is by far the best way of influencing prices and costs, commanding capital, having access to advertising, and selling resources, and possessing the

other requisities of market power. . . . If a firm is already large, it is substantially immune under the anti-trust laws. . . . But if two medium-size firms unite in order to deal more effectively with this giant, the law will be on them like a tiger (127, pp. 7, 8).

While the accuracy of Galbraith's comments may be challenged (as Mueller did at the same hearing), much of his argument depends on both the magnitude and nature of the competitive advantages of very large firms.

Our earlier review of empirical results suggested that extreme size is not generally necessary to achieve scale economies, except possibly in the marketing of differentiated consumer products. Though aggregate economic concentration has increased in recent years, concentration in industries manufacturing producer goods has largely declined. These trends suggest greater diversification by large firms, but declining market shares in some industries.

One might ask whether the first leads to the second. The authors are familiar with several cases where a large diversified firm entered an industry by acquiring an industry leader in quality, price, or progressiveness. More mediocre performance generally resulted and the market share fell. The largest firms in an industry are seldom those identified by industry members as the sharpest, best managed, most progressive, or pace setters in quality. They are more frequently viewed as price leaders, but whether because of pecuniary or technical efficiency advantages is not clear.

Reid's study of merged firms also raises questions about the "benefits" of large firms entering an industry by merger (97). Reid's examination of nearly 500 large corporations—some of whom had been involved in mergers—indicated that many of the frequently assumed benefits of mergers do not materialize. While merger activity was found to contribute to a more rapid growth of sales, assets, and number of employees, it did not help growth in earnings per share and in stock prices. Reid contends that merger-active firms are more oriented to managers' interests than to stockholders' interests; that, actually, stockholders are generally better off if their company expands internally.

The fact that increased profits are generally not associated with merged firms suggests that market power has not risen sufficiently to result in monopoly profits. However, if many mergers do not produce sounder and more efficient entities that accelerate per share earnings, yet do increase the concentration of economic and managerial power, the benefits to society must be questioned. Whom do such mergers benefit?

The concentration of various types of power in the United States is an overriding concern of public policymakers toward mergers. As indicated in chapter 3, the relationships and interactions between various power loci (the wealthy, large corporations, and political leaders) is not well understood. To some extent, the position one adopts depends on which type of power he or she fears the most.

Friedman, for example, expresses much greater concern for the growth of political power than the growth of economic power. He contends:

Our minds tell us, and history confirms, that the great threat to freedom is the concentration of power. . . . The characteristic feature

of action through political channels is . . . conformity. The great advantage of the market, on the other hand, is that it permits wide diversity. . . . By removing the organization of economic activity from the control of political authority, the market eliminates this source of coercive power. It enables economic strength to be a check to political power rather than a reinforcement (43, pp. 2, 15).

Other writers display a strong distrust of economic power, yet almost a blind faith that increased power in public agencies will be exercised wisely and in the public interest. This group is quick to transfer power and control from the private sector to the public sector. Others assume that power—wherever it occurs—is dangerous. Further, that the various loci of power frequently act in concert. The connection between economic and political power in particular is a frequent point of contention.

Thus, there is considerable ignorance yet strong distrust of power. Evidence suggests few if any public benefits from allowing large firms to become giants, or from allowing moderately concentrated industries to become highly concentrated, or from allowing mergers to occur on a wholesale basis. A strong antimerger policy would seem justified. Certainly this route is the safe one, for once mergers have occurred, it is both difficult and painful to break them up.

However, there are exceptions. While a strong antimerger stance seems generally necessary, particularly with respect to the Nation's largest 200-300 firms, some mergers are socially desirable. The proof that the public benefits from a merger clearly outweigh potential losses should fall on those proposing the merger. Whether a merger is allowed should be based on an assessment of its desirable and undesirable aspects. A partial list of these factors might be:

<i>Desirable</i>	<i>Undesirable</i>
A significant reduction in the cost of output because of scale economies.	Merger into an industry where capacity is fully utilized.
Needed equalization of the power to compete, such as by gaining access to financial and marketing resources.	No significant economies of scale benefits.
Balancing of power in a vertical system, or between parallel vertical systems; for example, development of a stronger retail industry where high concentration exists in manufacturing.	Takeover of a quality or innovation leader.
Necessary to save a firm in trouble, or to allow small-firm owners to translate nonliquid into liquid equity.	Substitution of absentee for local ownership.
Entry of an aggressive, innovative firm into a lethargic industry.	Increase in concentration and entry barriers of moderately concentrated industry.
Strengthening an alternative, secondary vertical system emphasizing a substantially different competitive mix.	Elimination of competitor or potential competitor.

In assessing proposed mergers and in considering other antitrust action, both horizontal and vertical relationships should be considered. Focusing on only the horizontal structure of a manufacturing or distributing industry, for example, may prevent one from recognizing vertical power relationships or the existence of parallel vertical systems. Empirical data from the food industries suggest that structural characteristics of vertical systems emphasizing efficiency may be quite different from ones emphasizing product quality and innovations.

The problem of weighting different types of performance is made easier when alternative vertical systems emphasize different types of performance and consumers are able to express their preferences through market choices. It seems appropriate that policymakers encourage the development of parallel vertical systems where they do not now exist, through actions that alter the balance of power between manufacturers and distributors or through other means, to expand the range of alternatives available in the marketplace.

We have focused particular attention on structure-oriented policy because of its significant long-range effect on American society. Policies aimed at regulating conduct or performance have grown in number, but in many cases with questionable results. These regulations generally involve much more direct interference, are considerably more cumbersome and costly to enforce, and in some cases are more of a deterrent than a stimulus to competition.

Given the complexity of the economy, however, some regulation of conduct and performance is necessary. Consumer sovereignty is a particularly critical factor in a market economy. Yet in an economy with a myriad of complex products supported by a barrage of advertising messages, feedback between consumers and producers often becomes distorted. Regulation of conduct or performance that leads to the strengthening of consumer sovereignty is highly desirable in many cases.

Finally, it is important to recognize that industry structure, conduct, and performance are influenced by a wide variety of Government policies in addition to antitrust laws. As Adams has observed:

In this era of "Big Government," it (industrial giantism) is often the end result of unwise, man made, discriminatory, privilege-creating government action. Defense contracts, R & D support, patent policy, tax privileges, stockpiling arrangements, tariffs, subsidies, etc., have far from a neutral effect on our industrial structure. . . . a competitive society is the product not simply of negative enforcement of the anti-trust laws; it is the product of a total integrated approach on all levels of government—legislative, administrative, and regulatory (*I*, p. 140).

MARKET PERFORMANCE INFORMATION SYSTEM

Given the numerous and changing dimensions of market performance and the narrow focus of most measures of performance, a multidimensional information system on such performance is called for. We propose that an existing Government agency be given the responsibility for the development and

coordination of such a system. This agency would not actually develop any or all of the performance measures. Rather, it would act as the coordinator of measures presently being prepared by various Agencies and as a catalyst in getting needed measures developed.

At the present time, most market performance studies are produced by individual Agencies or researchers in accord with their interest or needs with little or no coordination of methodology or data sources. In addition, some aspects of performance go unmeasured since no one is responsible for the *total* performance information network. Clearly, a system is needed to provide greater coordination and continuity of existing performance measures and to encourage the development of new measures where voids exist. Establishment of overall responsibility for coordination of a more uniform performance intelligence system would provide a timely and systematic flow of information that is relevant to changing societal values and goals. Some performance measures such as productivity, capacity utilization, stability of output and prices, industry concentration, and profit levels, can largely rely on existing data. Other measures, such as industry progressiveness and responsiveness, would have to be developed, possibly using evaluation by industry personnel who are in strategic positions to judge the performance of particular vertical systems. Measures of consumer satisfaction would also be highly desirable if the operational problems can be overcome.

An information system that continually develops a number of performance measures would allow constant monitoring, where it seems appropriate. It leaves unanswered the importance to be placed on different performance dimensions. Where sufficient market alternatives exist for customers to choose between different performance mixes, the market choices provide a weighting system. Where sufficient alternatives do not exist, customer attitudes and preferences may indicate the relative importance of different dimensions.

The norms by which to judge performance represent a challenging problem. It is probably unrealistic to expect industries and market systems to excel in all aspects of performance. Experience may suggest that market systems with certain characteristics can be expected to excel in some aspects of performance, while a quite different arrangement would excel in others.

An organized information system could provide not only a continual stream of information to policymakers, but also would be a catalyst for further study of the factors influencing market performance. As mentioned, there remains considerable ignorance in this area. However, public policy will continue to be made and implemented. A multidimensional performance information system could be an important step in leading to more informed public policies toward the economic system.

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