

## CHAPTER 11

# DEVELOPMENTS IN MANUFACTURING, 1950 TO THE PRESENT

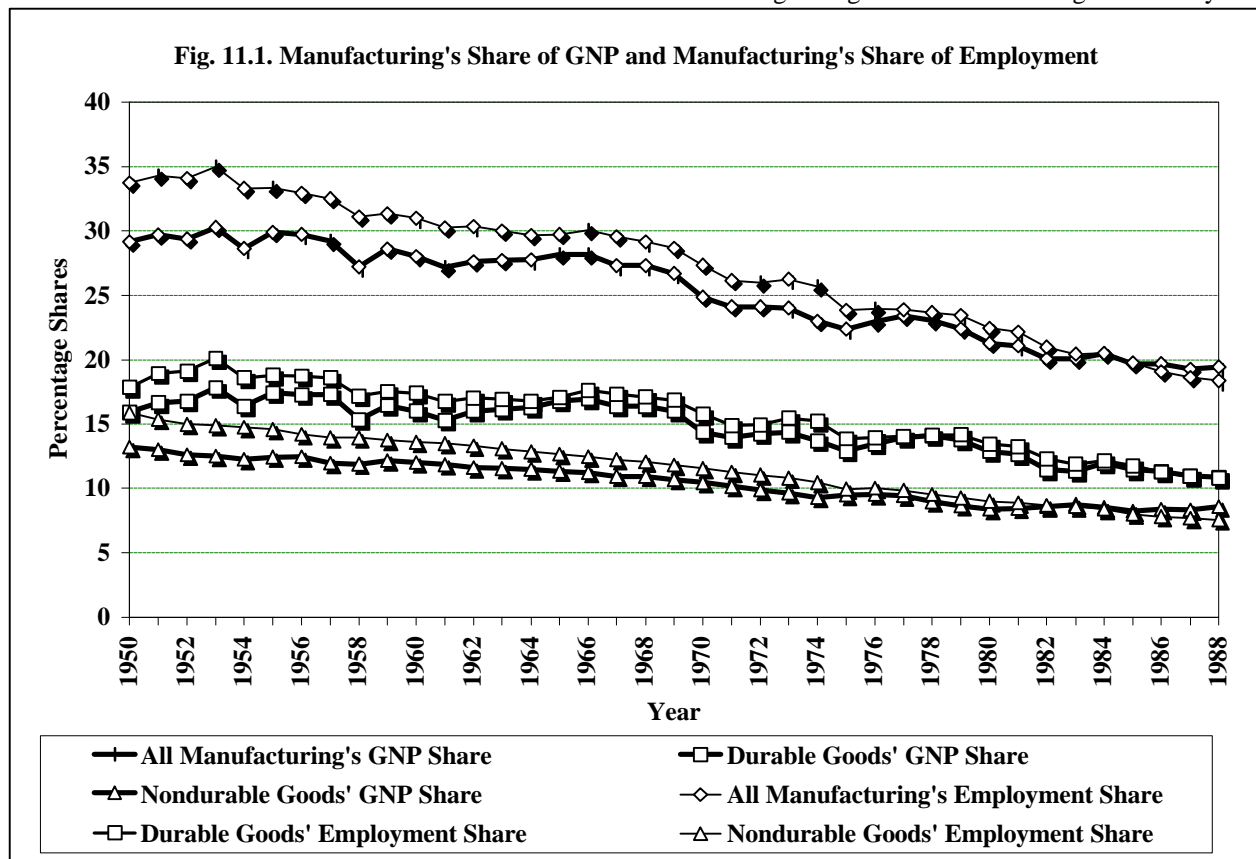
It is common to use “industrialization” as the touchstone of economic development and to exhort other nations to “industrialize” and therefore spur economic development. If those countries concentrate on the production and exportation of primary products and raw materials, it is often taken as a sure sign of failure to promote economic development. However, this fails to recognize that economic development is a much broader process than simply “industrialization.” At the same time that a manufacturing sector was emerging in most of the now advanced countries, agricultural and transportation developments were allowing fewer farmers to support a growing number of “nonfarmers,” thus allowing a continued shift of labor from agricultural to manufacturing and service activities.

Industrialization, therefore, is only a part of the much broader economic development of a society. The manufacturing sector is important because of its sheer size in relation to the rest of the economy and because of the size of the individual

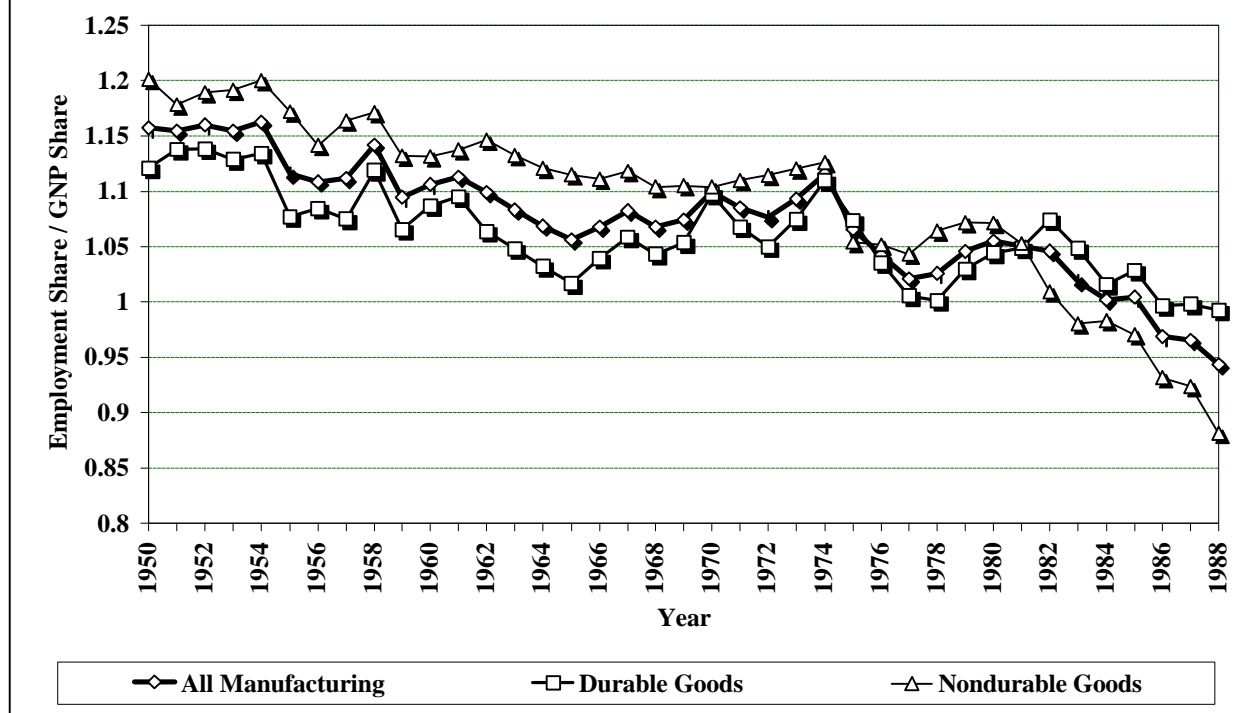
firms in the sector. The phrase “big business” was first used in the late nineteenth century to describe the large manufacturing firms that came into being at that time and is used in the same sense today. Manufacturing still dominates the American economy in many ways. It accounts for a major portion of the corporate profits received, and the largest and most visible manufacturing concerns continue to have great economic and political influence.

### Manufacturing’s Importance: Size, Growth, And Location

We begin our examination of manufacturing in the postwar American economy by considering its size. Figure 11.1 presents data on the share of GNP that originates in all manufacturing as well as in the components of durable and nondurable goods manufacturing. Similar data are shown for the share of total employment in manufacturing. The share of GNP originating in all manufacturing declined by 1.1



**Fig. 11.2. Manufacturing's Employment Share Divided by Manufacturing's GNP Share**



percentage points per year between 1950 and 1988, while durable goods share declined by 1 percentage point a year and nondurable manufacturing's share declined by 1.1 percentage points a year. As can be seen, employment shares behaved in a similar manner.

Figure 11.2 presents the yearly employment share divided by the GNP share. Changes in this ratio over time can be thought of as crude measures of changes in labor productivity in manufacturing compared to the other sectors of the economy. If labor productivity in manufacturing is rising faster than in the other sectors of the economy, then even though manufacturing's share of GNP is falling, its share of employment will be falling faster, and the ratio of the employment share to the GNP share will decline. However, if labor's productivity is rising more slowly than in the other sectors of the economy, then manufacturing labor will not be released as fast, and the ratio of the employment share to the GNP share will rise. As can be seen, the employment to GNP shares fell over the 1950 to 1988 period, indicating that labor productivity in manufacturing was rising more rapidly than in most other sectors of the economy. The most rapid declines came between 1974 and 1977 and between 1982 and 1988. Both were periods of difficulty for many manufacturing firms as rising energy prices and increasing

competition from imported products forced manufacturers to strive to improve productivity and lower production costs.

Manufacturing activity is not evenly dispersed around the United States. Historically, the New England states were the first to develop an industrial sector, and these were followed by the Middle Atlantic states and then the states in the East North Central region. In the twentieth century manufacturing activity has become more evenly dispersed. In the postwar period the the south and west coast areas have been the largest gainers. The primary gains in shares of manufacturing employment have been in six states, North Carolina, Georgia, and Florida in the South Atlantic region; Tennessee in the East South Central region; Texas in the West South Central region; and California in the Pacific Coast region. California's gain in the share of national manufacturing employment overwhelms all of the other states' gains.

The New England, Middle Atlantic, and East North Central regions have had the highest real wage rates. As firms matured and plants and machinery began to be replaced, they began to migrate toward lower labor cost areas, particularly the southern "sunbelt" areas. By no means, however, can all of the shift be attributed to the actual migration of firms out of the northeastern

**TABLE 11.1 MANUFACTURING VALUE ADDED: SELECTED INDUSTRIES AND YEAR**

(Billions of 1982-1984 Dollars)

<u>Industry</u>	<u>1947</u>	<u>1958</u>	<u>1967</u>	<u>1977</u>	<u>1987</u>
Transportation Equipment	22.401	52.889	84.353	106.091	119.527
Food and Kindred Products	34.447	61.194	79.704	92.512	107.459
Chemicals and Allied Products	20.477	42.467	70.509	93.599	106.727
Machinery Excluding Electrical	29.817	42.882	83.341	110.929	104.942
Electric and Electronic Equipment	14.863	35.969	73.314	83.112	84.470
Printing and Publishing	16.294	27.471	42.979	52.772	78.528
Fabricated Metal Products	18.782	32.606	54.021	75.102	66.464
Instruments and Related Products	4.122	10.055	19.216	30.960	62.929
Paper and Allied Products	10.973	19.747	29.210	36.586	43.773
Primary Metal Industries	22.004	40.384	59.814	61.993	40.990
Rubber and Misc. Plastics Products	4.973	11.339	20.359	32.574	38.990
Apparel and Related Products	16.958	20.799	30.132	32.460	29.323
Stone, Clay, and Glass Products	8.802	19.152	24.949	31.568	29.116
Lumber and Wood Products	9.531	11.014	14.889	26.771	25.168
Textile Mill Products	20.385	16.809	24.410	26.576	22.900
Furniture and Fixtures	5.260	8.145	12.485	14.723	17.816
Petroleum and Coal Products	7.691	8.713	16.246	27.026	16.196
Miscellaneous Manufacturing	7.977	16.453	30.506	16.982	15.345
Tobacco Products	2.447	4.889	6.089	7.167	12.554
Leather and Leather Products	5.851	6.567	7.865	6.137	3.763

Sources: *Statistical Abstract of the United States* (Washington, D.C.: U.S. Government Printing Office, Various Years).

“snowbelt.” Part of the shift is due to the location in the sunbelt and Pacific Coast regions of newer industries and firms. The national capital market leads firms, all else the same, to choose a location where wage rates are somewhat lower, such as the south. The advent of air conditioning has particularly aided industrial development in the southern states by making them much more attractive to firms and workers. Improved, lower cost communications systems allowed firms to disperse more of their manufacturing activity while still being able to adequately monitor, coordinate, and control activity among widely scattered manufacturing plants. The result has been a dispersion of manufacturing activity among regions such that differences in their industrial-agricultural orientation have become far less pronounced.

American industries have also grown at different rates. In the postwar era the output of nondurable goods has grown slightly faster than the output of durable goods; although there is great variation within each category. Among the durable goods industries, electrical machinery and instruments were the fastest growing, while primary metals production was the slowest and, in fact,

primary metals production declined between 1970 and 1988. Excluding the primary metals industry, in the most recent period the fastest growing durable goods industries grew twice as fast as the slowest growing industries.

Similarly, among the nondurable goods industries the rubber and miscellaneous plastics products and chemicals and allied products industries grew much faster than other industries, while leather and leather products declined. Increasingly leather products, especially shoes, have been imported, and many domestic producers have either gone out of business or moved their production to foreign plants. Other than the leather industry, in the most recent period the fastest growing nondurable goods industries grew from 2.3 to 8.4 times as fast as the slowest growing ones.

Table 11.1 ranks industries according to their real value added in 1987.<sup>1</sup> Transportation equipment and food and kindred products have been the largest industries throughout the postwar period. The instruments and related products and rubber and miscellaneous plastics products grew much faster than other industries, whereas the primary metals, apparel and related products, textile mill products,

and leather and leather products industries grew the slowest—in fact, the leather and leather products industry declined over the period. There also is a considerable disparity in size. The largest 5 industries have a larger value added than the next 15 industries.

In general, the declining or slower growing industries were those producing basic consumer products such as food, textiles, and leather products, while the faster growing ones tended to produce complex scientific products such as chemicals, scientific instruments and related products, synthetic rubber and plastics, and producers' goods such as machinery. Although risky when discussing such broad industrial categories, a few tentative generalizations can be made. The income elasticity for food products and many other consumer nondurable commodities tends to be lower than for consumer durable goods and services, which contributes to the slower growth of the food and kindred products, textile mill products, apparels, and leather industries. The proliferation of consumer durable goods since the Second World War helps explain the more rapid growth of producers' durable goods industries because these products can be used to produce many types of consumer durables.

Contrary to what seems to be the popular opinion, it is not easy for the largest firms to remain dominant. Changes in technologies, consumer tastes, and the availability of natural resources require continuous adjustments by firms. Not all firms respond to the same extent. As a result there seems to have been considerable mobility among the largest industrial firms. Richard C. Edwards notes that there is a general consensus that “of the top one hundred firms in the opening decades of the century, roughly thirty to forty-five would appear on the list fifty years later.”<sup>2</sup>

Edwards has recently examined this while correcting for entrants and exits resulting from mergers and court-ordered dissolutions. Using several measures he finds greater corporate stability in the post-1920 period than in the 1890 to 1920 period. “In the earlier period, on the average two to four firms every year dropped below the minimum (constant dollar) assets of the smallest firm in the top one hundred in the base year. In the later period, it took approximately five years for one firm to drop out of the group.”<sup>3</sup> His conclusion is that the industrial system emerging from the pre-1919 consolidations was a system of “monopoly capitalism—a system in which the industrial center of the economy is dominated by large, oligopolistic, ‘eternal-life’ corporations.”<sup>4</sup>

Other economists have also noticed that once a firm attains a larger size, it tends to remain relatively larger, suggesting greater corporate

stability in the latter part of the twentieth century. Herman Krooss suggests that rather than indicating the development of monopoly capitalism, “this argues more for the stability of the American economy and the astuteness of management than it does for anything else.”<sup>5</sup> With the increasingly sophisticated techniques available to evaluate markets and the demand for potential (and existing) products, one would expect to find that the firm failure rate is lower today than in the past. With today's diversified firms the failure of a single product no longer means the firm's failure. Thus, the lower failure rate may well indicate an improved ability to allocate resources in the present economy.

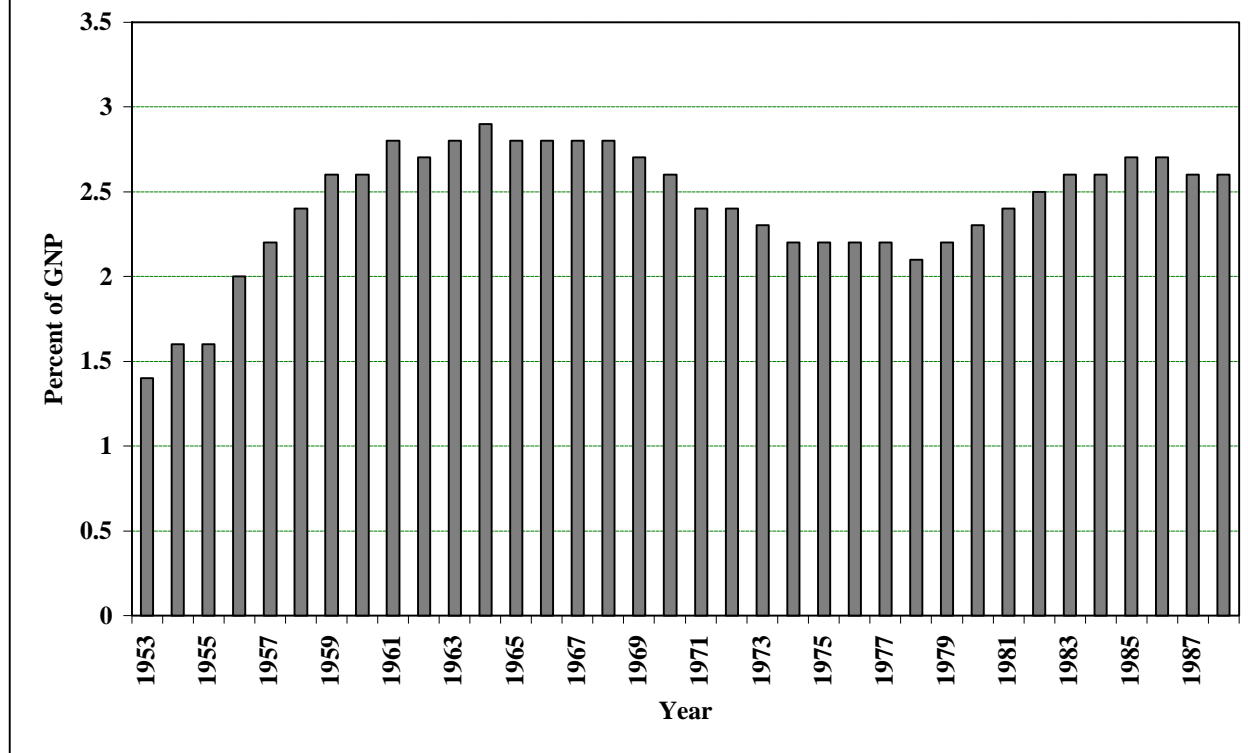
## Productivity Developments

It has been common during the past two decades to blame manufacturing for most of the decline in productivity growth in the American economy. Agriculture's share is too small to have much influence, and the service industries have historically had lower levels of labor productivity growth. We know that some part of the well accepted decline in productivity growth since the late 1960s is due to the shift of resources, particularly labor, from manufacturing to services, but most of the decline is blamed on a declining rate of productivity growth in manufacturing.

An examination of average annual growth rates of output per labor-hour for all manufacturing and selected manufacturing industries shows no such decline—in fact, the decade of the 1980s was one of the fastest growing periods. Growth rates did vary sharply between industries. Growth in output per labor-hour in bakery products was, on average, slower than for bottled and canned soft drinks. Growth for petroleum refining was relatively rapid through 1975, but in the 1975-85 decade, with higher real prices and relatively higher profits, output per labor-hour growth fell sharply. Since 1985, with much lower petroleum prices and profits, output per labor-hour growth has risen sharply. Output per labor-hour in footwear manufacturing has been extremely slow and actually declined from 1975-80 and 1985-87, helping to explain why production moved overseas where relatively lower real wage rates prevailed.

Two industries that have tended to epitomize the problems in American manufacturing in the last two decades are motor vehicles and steel. Motor vehicle output per labor-hour growth has varied sharply from little growth in the late 1960s and late 1970s to much more rapid growth in the early 1970s and early 1980s. In the early 1970s production and sales were growing rapidly as domestic production of

**Fig. 11.3. Research and Development Expenditures as a Percent of GNP**



passenger cars was 8.6 million in 1971, 8.8 million in 1972, and 9.7 million in 1973. Though sales were high in the late 1970s, growing competition from imports and the necessity to redesign and retool toward smaller cars in response to the rapid escalation of fuel prices reduced productivity gains. In the early 1980s, the severe contraction and growing imports led Chrysler to retrench and cut the number of plants and employment nearly in half. GM and Ford both began revising production techniques to raise labor productivity.

Output per labor-hour in the steel industry grew a respectable 4.36 percent per year between 1960 and 1965. After 1965 the slowness to adopt the newer, lower cost technologies such as the Basic Oxygen Furnace and relatively high wages led to a much slower growth in labor productivity. A reduced growth in the demand for steel—due to competition from imported European and Japanese steel, and from other materials such as structural concrete, plastics, and new types of ceramics—led to declining plant utilization further reducing labor productivity. In the 1980s as the integrated steel producers such as United States Steel (now USX) and Bethlehem closed or modernized a few plants and reduced employment, and as the newer, smaller mini-mills expanded production, output per labor-hour grew more rapidly.<sup>6</sup>

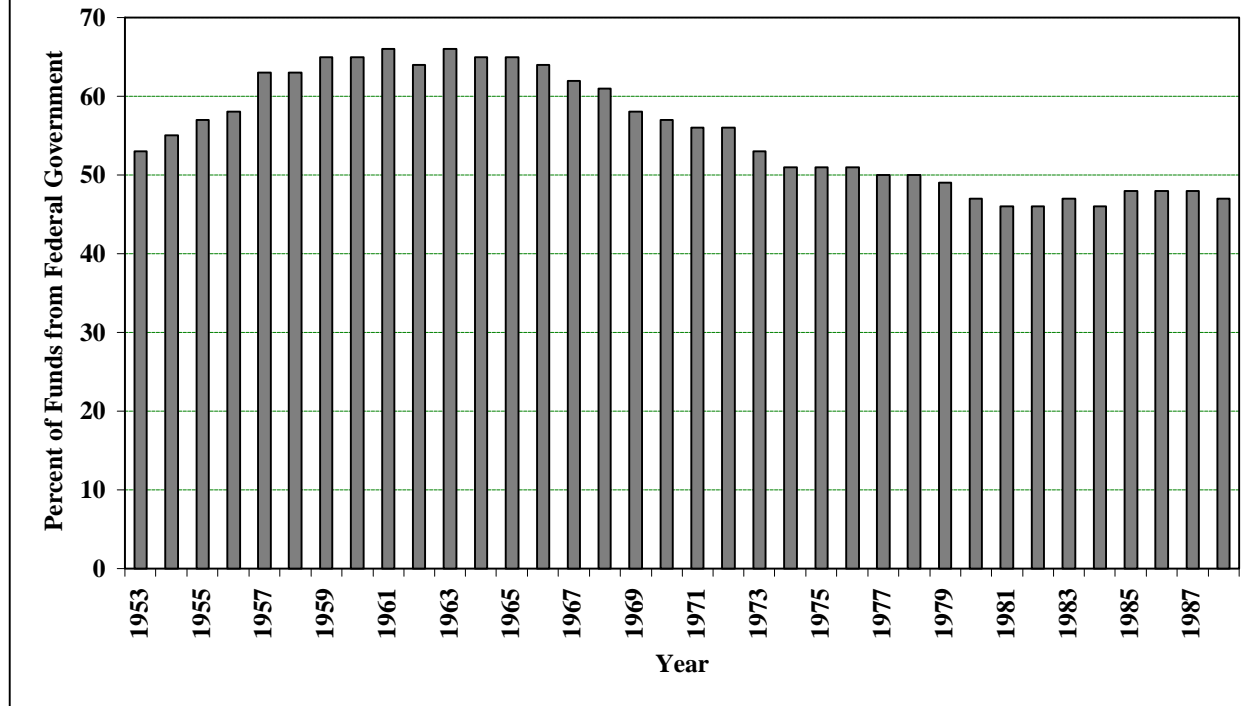
### ***Research and Development***

The most important source of productivity growth is technological change either through new machinery, new inputs, new processes or managerial innovations in directing and coordinating production processes. The expenditures on research and development (R&D) represent one measure of the attempts to bring about technological change but not the success of those efforts. Figures 11.3 and 11.4 provide data on R&D expenditures from 1955 to 1988. R&D funds as a percent of GNP peaked in 1964, fell through 1978, and rose into the 1980s. The share of the funds that came from the federal government exceeded 60 percent during most of the 1960s but then began falling and was less than 50 percent in the 1980s.

The share of R&D expenditures devoted to defense has declined since the early 1960s, while space research peaked in the late 1960s. Generally two thirds of all research and development has been devoted to development. In private industry, basic research has comprised about 7 percent of R & D expenditures, applied research 25 percent, and development about 70 percent.<sup>7</sup>

Edwin Mansfield reports that, “results obtained during the 1960s provide reasonably persuasive evidence that R & D has had a significant effect on the rate of productivity increase in the

**Fig. 11.4. The Percent of Research and Development Funded by the Federal Government**



industries [chemicals, petroleum, and agriculture] that have been studied.”<sup>8</sup> There has been a direct relationship between R & D spending and productivity growth, with the private rate of return on R & D spending averaging 17 percent though “higher in chemicals and petroleum, lower in aircraft and electrical equipment.”<sup>9</sup> Another study found a considerably higher rate of return of 30 percent.<sup>10</sup> The evidence also suggests that industrial R & D raised productivity in other industries, because many durable goods industries produce machines and other inputs used in other manufacturing processes.

**Patents**

Another indicator of technological change is patent activity, a measure often used to indicate the rate of invention in various industries. However, as Mansfield reports, there are some disadvantages in using patents in this manner. The relative importance of patents to an industry may vary considerably over time and place, and “the proportion of the total inventions that are patented may vary significantly.”<sup>11</sup> Most patents have been for inventions, and this activity has become increasingly dominated by corporations in the postwar era with a few industries dominating the receipt of patent grants.

There are some who argue that the patent system needs to be changed. Patents, though generally short lived, create legal, monopolistic property rights that bar entry and reduce the quantity of resources devoted to utilizing the knowledge covered by the patent. However, patents yield positive benefits because the creation of property rights in new knowledge provides the financial incentive to induce greater efforts in advancing knowledge. Nathan Rosenberg points out that most research is now undertaken by collective enterprises, a process he has described as “the increasing socialization of knowledge production,” a change that calls into question the “privatized, individualistic conception” that is the basis of the patent system. An appropriate patent system would be one in which the marginal benefits due to the patent laws would equal or just exceed the marginal costs of monopoly restrictions on the use of the knowledge. The continued retention of the American patent system presupposes that the incremental benefits exceed the incremental costs but “this presupposition is, under present circumstances, certainly far from obvious.”<sup>12</sup>

**The Materials Revolution**

Nathan Rosenberg has been one of the leaders in examining technological change in the nineteenth- and twentieth-century American economy.<sup>13</sup>

According to Rosenberg, in the twentieth century “an increasing proportion of technological changes have been dependent upon prior advances in systematized knowledge, a knowledge which has brought with it a much more deeply-rooted understanding of the forces of nature and the physical universe.”<sup>14</sup> Technical advances in the twentieth century are much less dependent upon casual empiricism, practical knowledge, and mechanical ingenuity and much more dependent upon applications of knowledge from such scientific disciplines as chemistry and physics. The development of increasingly sophisticated instruments brought together data and knowledge from several scientific areas.

This growing knowledge of materials led to the developments such as the use of chromium and tungsten in steel alloys and new uses for materials such as titanium and magnesium. Entirely new industries devoted to producing artificial organic polymers have developed. New products include the whole range of plastics, synthetic fibers, packaging materials, synthetic rubber, lightweight thermal insulation, water-repellent coating, and high-strength adhesives—all coming from the petrochemical industry. These twentieth-century developments have worked to reduce our dependence upon specific natural resource inputs, especially unprocessed natural resources.<sup>15</sup> Finally, by increasing the number of good substitutes for industrial products, new dimensions to the competitive process have been created.

### *Managerial Developments*

Another source of productivity improvements is innovations or changes in the way in which manufacturing firms are managed. There is considerable historical evidence of the importance of the management and organization of firms. Alfred D. Chandler, Jr.’s work on the historical development of the multidivisional, decentralized firm is among the best expositions of this.<sup>16</sup>

Martin N. Baily and Alok K. Chakrabarti have recently suggested that part of the recent productivity lag in the United States may be due to a frequent failure of management to take advantage of productivity-enhancing technology.<sup>17</sup> They contend that American companies have not developed any system for exploiting new ideas. Eric von Hippel suggests that the way to overcome this is to organize the process of innovation and that firms need to pinpoint the sources of innovation in their industries and develop networks to communicate that information as well as incentives to develop and use such innovations.<sup>18</sup> In addition to technical staffs in companies, innovations are frequently developed by the product users. An important part of the process is

then to develop links, say among the field-service representatives and the sales force, to bring information on innovative developments back to the firm. Baily and Chakrabarti believe that in recent decades the performance of managers in promoting a continuing flow of new ideas and applying those new ideas has been less than satisfactory.

### *Manufacturing Productivity Changes in the Postwar Period*

The brief survey has not answered the question of why there is a productivity lag in American manufacturing. When we look at the growth of output per labor-hour we see that it varies significantly across industries but was not systematically lower in the 1980s—in fact, it was often higher. Research and development expenditures as a percent of GNP declined during the 1970s but rose in the 1980s as private sector funding increasingly replaced federal funding. Neither do patents show any decline reflecting reduced inventive activity. The productivity lag in American manufacturing compared to other countries may simply be due to weaknesses in management, something that is not as easily quantified. However, there is considerable anecdotal evidence to support this.

In 1991 a small firm in Danville, Illinois, was producing lightweight pickup truck bumpers for Japanese automobile manufacturers.<sup>19</sup> To increase productivity at the firm and raise the quality of the output, Toyota sent a team of manufacturing experts to conduct a crash course in the Toyota Production System. As a result, productivity at the firm rose by 60 percent and the number of defects dropped by 80 percent.

An Orrville, Ohio foundry was losing \$125,000 a month when the Condec Corporation decided to close it down. The former general manager bought the foundry, cleaned it up, purchased some new and salvaged machinery, and found lower priced sources for raw materials. His new company saw sales increase from \$2 million to almost \$9 million, and the foundry generated pretax profits of nearly \$500,000 in 1990. Labor productivity improved fourfold, and the improved quality attracted many new customers.<sup>20</sup>

Throughout much of the 1970s the Chrysler Corporation experienced losses and by the end of the decade was on the verge of collapse. In the United States in the 1970s, two of Chrysler Corporation’s domestic models, the Dodge Aspen and the Plymouth Volare, earned unenviable reputations for poor-quality construction and components. However, the Chrysler subsidiary in Mexico was producing the *same* cars, under the old names of Dart and Valiant, and it experienced much more rapid growth than

other Mexican automobile producers because of their cars' reputation for high quality.

In 1974 Matsushita Electrical Company, which markets Panasonic products, bought the Motorola Corporation and took over Motorola's TV manufacturing plant in Franklin Park, Illinois. The plant had been operating at a loss with a high rejection rate on its television sets. Matsushita brought in a new management team, cut some existing managerial staff, and reorganized production. By 1978 productivity at the plant had risen 25 percent, and the rejection rate on TV sets had dropped from 20 percent in 1974 to 2 percent in 1978.

During the late 1970s and the 1980s the American automobile producers struggled under a severe cost disadvantage compared to Japanese automobile producers. In the last half of the 1980s, GM, Ford, and Chrysler began programs to reorganize the design and development and production of their cars. By the early 1990s Chrysler and Ford had reduced the cost disadvantages to less than \$150 per vehicle. Chrysler had reduced its product development teams from 2,000 to 740 people and engineered cars in 39 months compared to 54 months in the early 1980s.<sup>21</sup> General Motors, unable to restructure effectively, suffered a \$795 cost disadvantage compared to Ford and Chrysler and continued to incur huge losses. Of the three companies, it was General Motors that had invested most heavily in new plants and technology, particularly robots, but this did not offset the weaknesses of its internal structure and management.

Though difficult to quantify and neatly categorize, it is clear that the management of a firm can play an important role in raising productivity. These examples suggest that a part of the productivity lag in American manufacturing may be traced to American management.

### **Competition, Monopoly, And The Government**

Monopolization in American industry has long been a concern of many politicians and economists. In the 1970s several congressional bills to break up large firms were introduced. Other recent proposals included government-mandated divestiture for the huge oil companies. Contrary to such proposals, however, it is not clear that there is increasing monopolization in American industry nor that excessive monopoly power already exists. Neither is it clear that merely the absolute size of a firm is an indication of its monopoly powers. This section briefly examines the structure of the manufacturing industry since the Second World War. Historically,

mergers have been an important means of increasing market power, so we consider this before we examine the development of and changes in antitrust policy by the federal government. We conclude with some brief evaluations of industry performance.

### **Mergers**

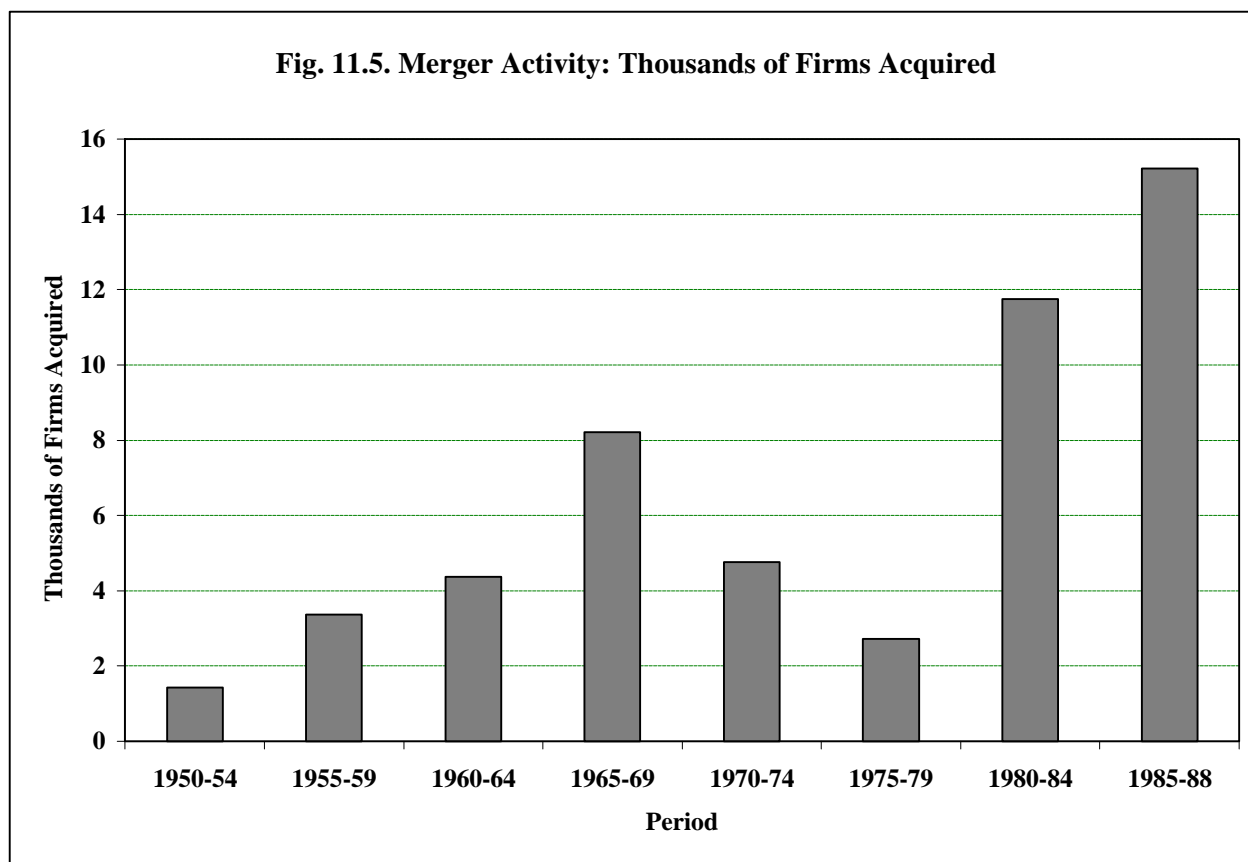
Most of the mergers since the 1950s have been termed *conglomerate mergers*. Under FTC classifications, conglomerate mergers are classified as *product line extensions*, *market extensions*, or *pure conglomerates*. Scherer and Ross illustrate a product line extension merger by Procter and Gamble's attempted purchase of Chlorox, where a leading detergent maker attempted to acquire a leading bleach producer. A market extension merger can be illustrated by Safeway's acquisition of supermarkets so as to move into geographic markets that the chain had not previously served. Pure conglomerate mergers are those lacking such complementarities, for example, Beatrice Food's diversification into luggage manufacturing and the production of auto parts.

As Figure 11.5 shows, there was a cluster of mergers in the late 1960s—due primarily to a sharp increase in pure conglomerate mergers. After declining during the 1970s, merger activity increased sharply in the 1980s. Several features differentiated the 1980s merger wave from previous ones. When it started, there was no boom in the stock market. In fact, stock prices were not uncommonly below the book value of the physical assets of a firm so that it was often less costly to expand by purchasing an existing firm than by constructing new plants and equipment. As Scherer and Ross describe it, "Bargain seeking merger activity soared."<sup>22</sup> With the onset of a stock market boom in 1983, more traditional merger activity occurred, and firms rushed in to buy other firms before stock prices rose more. When stock prices collapsed in October of 1987, merger activity did not follow a similar path. Rather, as Scherer and Ross report, foreign firms, lured by a weak dollar and relatively low stock prices in the United States, began purchasing American firms.

The Reagan administration adopted a more lenient antitrust policy, and an increasing number of mergers in the 1980s were horizontal mergers. The Federal Trade Commission approved nine huge mergers that were the largest in American history: Socal and Gulf, Texaco and Getty Oil, Du Pont and Conoco, United States Steel and Marathon Oil, Mobil and Superior Oil, the Southern Pacific and Santa Fe railroads, the Connecticut General and INA insurance companies, Texas Gulf and ELF Aquitaine, and Cities Service and Occidental Oil. It also approved a joint venture between General Motors and Toyota,



**Fig. 11.5. Merger Activity: Thousands of Firms Acquired**



the first- and third-largest automobile manufacturers in the world.<sup>23</sup>

Another difference in the 1980s was the dramatic growth of hostile takeovers using new financial devices, especially junk bonds. In some cases friendly takeovers were engineered to deflect hostile takeovers. In other cases managements created “poison pills” to increase the costs of hostile takeovers in an attempt to deflect such activity. These new devices allowed raiders to take over some giant firms such as Gulf Oil, Getty Oil, RCA, Burlington Industries, Trans-World Airlines, and Federated Stores, among others.

Assessing the results of mergers is, at best, difficult. The two standard methods are to analyze stock prices using the logic of the Capital Asset Pricing Theory or to examine other indices of firm performance such as profitability, sales, and market shares. In general, the studies of stock prices have found that prior to the merger the shareholders of the firm to be acquired gained while the shareholders of the acquiring firm usually neither gained nor lost. However, studies of performance after the mergers found that stock prices generally declined.<sup>24</sup> The other evaluation methods provide somewhat different results. Most studies of mergers in the 1950s, 1960s, and 1970s have found that prior to the merger the target firms were considerably more profitable than

the acquiring firms, and this was particularly so the smaller the firm to be acquired. There was evidence that the premerger growth in profitability of the target firms had slowed, leading to stock market price declines because profits growth trigger changes in stock prices. In the case of tender offers, it appeared that the target firms were often in industries that were experiencing difficulties, rather than the individual firms experiencing the difficulty themselves.

When the postmerger performance of merged firms is assessed, a pessimistic picture emerges, one that Scherer and Ross describe as “widespread failure, considerable mediocrity, and occasional successes.”<sup>25</sup> Frequently, lines of the acquired firms were sold, profits declined, and market shares eroded. The erosion in market shares was much larger for conglomerate mergers than for horizontal mergers. Scherer and Ross conclude that although arguments for mergers are generally made in terms of greater profitability and efficiency, the statistical evidence generally does not support this. It appears, in fact, that efficiency is reduced, particularly when smaller firms are merged into “bureaucratic” enterprises. Of course, counterexamples of increased efficiency can be found, but “the overall record is far from reassuring.”<sup>26</sup>

### ***Postwar Antitrust Policy***

Essentially the entire edifice of United States federal antitrust laws rests upon the Sherman Act of 1890 and the Clayton and Federal Trade Commission Acts of 1914, but over the years the interpretation of those laws has changed. Though initiated in 1937, the *Alcoa* case was not ruled upon until 1945, when Judge Learned Hand presented his decision that overturned the “rule of reason” and made sheer size illegal per se. The *United Shoe Machinery* decision reinforced this.<sup>27</sup> In 1949 A&P was found guilty of conspiring to monopolize but not of actually monopolizing because its nationwide share of retail grocery sales was less than 10 percent. In general, by the 1950s a large firm dominating its market had become illegal simply because of its size under the changed interpretation of the antitrust laws. It made no difference how the size was attained or maintained.

Section 7 of the Clayton Act deals with corporate mergers by condemning those that substantially lessen competition or tend to create a monopoly. The Celler-Kefauver amendment in 1950 closed what was considered a loophole by also prohibiting asset acquisitions. The *du Pont-General Motors* case, decided in 1957, marked two changes in application. First Section 7 was extended to apply to vertical mergers; second, it dictated that a merger’s legality was to be decided on the facts existing at the time the case was brought to trial—the conditions existing at the time of the merger were not relevant to the lawsuit. The courts ruled that *du Pont*’s purchase of 23 percent of GM stock in 1917-19, when General Motors did not dominate the automobile market, foreclosed much of the market for automotive finishes and materials to competing companies in the 1950s.

The revised section 7 and the concept of *incipiency* began to take their toll with the *Brown Shoe* decision of 1962. The concept of *incipiency* holds that it is possible to ascertain practices that potentially limit competition and to stop those practices before they reduce competition. The *Brown Shoe* decision ruled that the purchase of the G. R. Kinney Company, mainly a retailer, by the Brown Shoe Company, mainly a shoe producer, threatened to substantially lessen competition at both the manufacturing and retailing levels. It did not matter that the shoe industry was close to the classroom model of pure competition and characterized by extreme ease of entry.<sup>28</sup> The *Continental Can* and *Alcoa* cases of 1964, and the 1966 *Von’s Grocery* and *Pabst* decisions continued this type of reasoning. Ernest Gellhorn suggests that the *Pabst* decision indicated that the government only had to show that a merger would have a substantial effect somewhere in

the country without requiring the market to be defined.<sup>29</sup>

With horizontal and vertical mergers severely diminished, more attention was given to conglomerate mergers. In 1967 the Supreme Court presented the *Procter and Gamble* decision, whereby Procter and Gamble’s acquisition of the Chlorox Company was found illegal because, among other rationales, Procter and Gamble was the leading potential candidate for entry into the bleach market, so the merger was anticompetitive because it diminished actual and future competition.<sup>30</sup> In addition to the potential competitor theory, the FTC also developed a “toehold” theory and applied it in 1971 rulings against the Bendix Corporation’s acquisition of Fram and Kennecott Copper’s acquisition of Peabody Coal. Each should have purchased a much smaller firm to gain a “toehold” in the industry and therefore “improve” competition in the auto filter and coal markets.

In 1973 the FTC charged that Xerox had monopolized the copier industry by using leasing and patent tactics similar to those used by United Shoe Machinery 25 years earlier. In the middle of 1975, a consent decree was signed whereby Xerox agreed to license its patents (including up to three patents royalty-free on each copier product) and to supply its know-how to all competitors except IBM. Xerox’s market share subsequently declined, though other factors were also responsible.<sup>31</sup>

Other cases initiated in the 1970s have turned out differently. In 1972 the FTC launched an attack on the four major breakfast cereal manufacturers under a “shared monopoly” concept. The FTC did not contend that the four firms conspired or colluded; instead it charged that through advertising and brand proliferation they shared monopoly prices and barred entry by “little guys” who could not afford the necessary advertising outlay. In September of 1981, the complaint was dismissed as the FTC apparently abandoned its shared monopoly concept.<sup>32</sup>

The Justice Department’s case against IBM, which began in 1969, was settled in 1982. IBM had been charged with using tactics that monopolized the computer industry, but it vigorously fought the charges, and the case stretched out for a decade. By 1982 conditions in the computer industry had changed. New mainframe computers, minicomputers pioneered and produced by other firms such as Digital Equipment Corporation, and the microcomputer revolution led by Apple Computer were creating pervasive new competition for IBM. Scherer and Ross comment that “the case had become a historical relic, and the government had good reasons for withdrawing.”<sup>33</sup>

Beginning in 1974 the Supreme Court took a more lenient attitude toward horizontal mergers. In the *General Dynamics* case, the Supreme Court reversed lower court rulings and found that the coal companies that General Dynamics' subsidiary had acquired to become the nation's fifth-largest coal producer did not reduce competition in two states. In 1979 Pillsbury's acquisition of Fox Deluxe Foods, was allowed to stand even though both of them produced frozen pizzas. New merger guidelines, written in 1982, recognized this position. Though the Reagan administration allowed some large horizontal mergers, especially among petroleum companies, others, such as the proposed merger between Republic Steel and Jones and Laughlin Steel and the proposed merger between the brewers Schlitz and Heileman, were opposed.<sup>34</sup>

By the 1970s there was a growing criticism of antitrust policies. In 1978 Robert Bork argued that the tendency to view productive efficiency "as pernicious by calling it a 'barrier to entry' or a 'competitive advantage'...is probably the major reason for the deformation of antitrust's doctrines."<sup>35</sup> Yale Brozen argued that "open entry is sufficient to enforce competitive behavior in most, if not all, circumstances," but the Antitrust Division had found barriers to entry that were not barriers at all and, in the process, may have become an entry barrier in its own right.<sup>36</sup> Antitrust policy has always had political and social dimensions as well as an economic one. Criticisms such as these led to an elevation of the economic dimension and a recognition that many past antitrust decisions and policies had, in fact, worsened the economic impact while achieving social and political goals.<sup>37</sup> This was an important force leading to the dominance of the economic dimension of antitrust policy. Marc Allen Eisner has pointed out that current antitrust enforcement focuses on price-fixing and related forms of white-collar crime, while vertical restraint and mergers have received less attention; this, he argues, is consistent with the focus on antitrust as economic policy.<sup>38</sup>

This change can be seen in monopolization cases where there was an increased emphasis on the "rule of reason criteria" and a retreat from the strong structuralist position represented by the *Alcoa* decision. Merger policy also began to allow horizontal mergers that a few years earlier would likely have been challenged. When Ronald Reagan assumed the presidency, his administration further altered antitrust policy. "Key antitrust agency positions were staffed with more conservative individuals, and a stream of new appointments accelerated the federal judiciary's drift toward greater skepticism of government intervention into markets,

whether its purpose was ostensibly to stimulate or (through regulation) restrict competition."<sup>39</sup>

The announced goal of the Reagan administration was to reduce the intrusive role of government into everyday affairs and, in the process, revitalize market mechanisms, "thus reestablishing the foundations of a strong, vital economy."<sup>40</sup> A reformation of antitrust policy was a part of the Reagan revolution, and the policy revolution was executed through administrative means by appointing "Chicago school lawyers and economists to leadership positions in the antitrust agencies."<sup>41</sup> Though this is a common explanation, it is also incomplete. The redefinition of policy had been taking place throughout the 1970s as part of an evolutionary change. "Despite their rhetorical elegance and analytic rigor, the Reagan appointees were preaching to the converted. Indeed, it is questionable whether any enforcement agenda other than that supported by the administration could have been possible."<sup>42</sup> In many ways, these changes resulted from a convergence of law and economics in antitrust policy. The rebuilding of the FTC in the 1970s had brought in academic economists with Ph.D.s, and their influence had grown. The appointment by Reagan of William T. Baxter as assistant attorney general for antitrust furthered this process because, "Baxter's desire to redefine policy in the terms suggested by the Chicago School was as striking as his faith in economic analysis."<sup>43</sup>

In a kind of cyclical process, policy changes since the 1970s seem to have moved back toward the rule-of-reason policies prevalent in the interwar period and away from the structure-conduct-performance paradigm prominent in the two and a half decades after the Second World War.

### ***Industrial Concentration and Economic Performance***

The structure-conduct-performance paradigm asserts that the greater the dominance of a few firms in an industry, the more they should be able to conduct their businesses in a manner yielding the supranormal profits indicative of economic inefficiency. In the postwar era considerable efforts were devoted to measuring and assessing the relationships between industry concentration and industry profits. If established, these relationship could then guide public policies designed to reduce industrial concentration and improve economic performance in the American economy.

Empirical studies of the relationship between industry concentration and profitability faced a number of daunting measurement problems.<sup>44</sup> How were supranormal (or higher than normal) profits to be measured, and how was the

concentration of firms in an industry to be measured? Several measures of supranormal profits have been proposed and used. One early attempt was the Lerner index for the difference between price and marginal cost. However, marginal cost can rarely be observed for a single product, let alone a multiproduct firm. In addition, the index depends upon the price elasticity of demand and is neither very sensitive nor useful. Other surrogates, such as the accounting rate of return on the stockholder's equity or on capital; Tobin's  $q$ , which measures the divergence between the market value of a firm and the replacement value of its assets; the Census Bureau's plant-specific price-cost-margin; and the Profit Impact of Market Strategy (PIMS) data set were used at various times. The data used often presented problems due to differences in accounting techniques because it is common for firms to use different accounting methods for the IRS as compared to financial reporting.

Other measurement problems in empirical studies included the problem of how to allocate common costs such as for the central office, joint sales forces, and basic research facilities, the arbitrariness of internal firm transfer prices; the sometimes extraordinarily high salaries for the managers of owner-managed firms, and the capitalization of monopoly returns through mergers. Other empirical questions focused on how to measure concentration, for example, with a four-firm concentration ratio or the Hirfindahl-Hirschman Index (the measure now generally favored), how to define the industry; the functional form for estimation; and the difficulties associated with measuring entry barriers.

The studies that followed Joe Bain's pioneering efforts attempted to overcome these problems.<sup>45</sup> Most of these cross-sectional studies found, in varying degrees, evidence of a positive relationship between concentration and profitability.<sup>46</sup> The results began lending support to calls for changes in public policies to reduce industrial concentration and thereby increase economic efficiency. However, there were a number of economists who raised questions about such studies and urged restraint in any policy changes.<sup>47</sup>

In the 1970s these economists proposed that the higher industry profits in more concentrated industries were explained by the larger shares of the dominant firms that earned the higher profit rates because of their superiority. Harold Demsetz has shown that rates of return did not rise for all of the firms in concentrated industries, and, in fact, there was a negative correlation between concentration and profit rates of smaller firms in either a time-series or cross-sectional examination.<sup>48</sup>

Until the early 1980s these arguments were viewed skeptically by industrial organization economists accepting the structure-conduct-performance paradigm. At that time studies using better data began consistently showing that "price-cost margins were positively associated with lines' market shares...but if anything, *negatively* associated with seller concentration."<sup>49</sup> It is now conceded that for most studies up to the early 1980s where positive relationships between seller concentration and industry profitability were found, the associations were spurious, "a construct of aggregating from the line of business to the industry level."<sup>50</sup> Time-series studies in the 1980s have offered some evidence supporting an association between concentration and profitability, but weaknesses with statistical techniques and data continue to leave open the empirical question of such an association.

How significant are monopoly distortions in the American economy? After reviewing other estimates of the deadweight welfare loss due to monopolistic resource misallocation, Scherer and Ross estimate that it "lies somewhere between 0.5 and 2 percent of gross national product."<sup>51</sup> This is not far from Arnold Harberger's much-criticized 1954 estimate that the deadweight welfare loss in the 1924-28 period was slightly less than 0.1 percent of GNP.<sup>52</sup> However, this quantitatively insignificant figure may still understate the costs. For example, costs may be higher due to a monopoly firm's lax efforts to control costs and to wasteful expenditures in "rent seeking" (or expenditures undertaken in the attempt to obtain monopoly profits). Considering this, Scherer and Ross still conclude "that the social costs directly ascribable to monopoly power are modest."<sup>53</sup> They explain this by providing the following reasons, listed in descending order of importance.

Probably half or more of the American economy is composed of industries with enough sellers to maintain workable, though not perfect, competition—as long as government does not intrude to encourage and/or condone anticompetitive behavior. Second, many oligopolistic industries do not possess the power to hold prices above costs for any extended period because of the ease of entry of new firms, the expansion of existing firms, and/or the entry of additional imports. Third, high long-run elasticities of demand due to potential product substitution discourage firms from trying to exploit short-run monopoly power. Fourth, countervailing power from large buyers may offset the power of large sellers. Finally, public policy has played a role in constraining monopoly power.<sup>54</sup>

It seems fair to say that American manufacturing in the postwar era has been reasonably competitive.

## Selected References

- Armentano, Dominick T. *The Myths of Antitrust*. New Rochelle, NY: Basic Books, 1978.
- Bain, Joe S. "Relation of Profit Rate to Industry Concentration: American Manufacturing, 1936-1940." *Quarterly Journal of Economics* 65 (August 1951): 392-24.
- \_\_\_\_\_. *Barriers to New Competition*. Cambridge, MA: Harvard University Press, 1956.
- Barnett, Donald F., and Louis Schorsch. *Steel: Upheaval in a Basic Industry*. Cambridge, MA: Ballinger Publishing Co., 1983.
- \_\_\_\_\_. *Up from the Ashes: The Rise of the Steel Minimill in the United States*. Washington, D.C.: The Brookings Institution, 1986.
- Bork, Robert. *The Antitrust Paradox: A Policy at War with Itself*. New York: Basic Books, 1978.
- Brozen, Yale. "Competition, Efficiency, and Antitrust." *Journal of World Trade Law* 3 (1969). Reprinted in *The Competitive Economy: Selected Readings* Edited by Yale Brozen. Morristown, NJ: General Learning Press, 1975.
- \_\_\_\_\_. "Concentration and Structural and Market Disequilibria." *Antitrust Bulletin* 16 (Summer 1971): 244-48.
- Caves, Richard E. "International Trade and Industrial Organization: Problems, Solved and Unsolved." *European Economic Review* 28 (August 1985): 377-95.
- Chandler, Alfred D., Jr. *Strategy and Structure: Chapters in the History of American Industrial Enterprise*. Cambridge, MA: The M.I.T. Press, 1962.
- \_\_\_\_\_. *The Visible Hand: The Managerial Revolution in American Business*. Cambridge, MA: Harvard University Press, 1977.
- Demsetz, Harold. "Industry Structure, Market Rivalry, and Public Policy." *The Journal of Law and Economics* 16 (April 1973) 1-9.
- \_\_\_\_\_. *The Market Concentration Doctrine*. Washington: The American Enterprise Institute, 1973.
- \_\_\_\_\_. "Two Systems of Belief About Monopoly." *Industrial Concentration: The New Learning*. Edited by Harvey J. Goldschmid et al. Boston: Little Brown, 1974.
- Edwards, Richard C. "Stages of Corporate Stability and the Risks of Corporate Failure." *The Journal of Economic History* 35 (June 1975): 428-57.
- Eisner, Marc Allen. *Antitrust and the Triumph of Economics: Institutions, Expertise & Policy Change*. Chapel Hill, NC: University of North Carolina Press, 1991.
- Gellhorn, Ernest. *Antitrust Law and Economics*. St. Paul: West Publishing Co., 1976.
- Geroski, Paul A. "Pursuit of Monopoly Power: Recent Quantitative Work in Industrial Economics." *Journal of Applied Econometrics* 3 (April 1988): 107-23.
- Harberger, Arnold C. "Monopoly and Resource Allocation." *American Economic Review* 44 (1954): 77-87.
- Hippel, Eric von. *The Sources of Innovation*. New York: Oxford University press, 1988.
- Krooss, Herman. *American Economic Development*, third edition. Englewood Cliffs, NJ: Prentice-Hall, 1974.
- Mancke, Richard B. "Causes of Interfirm Profitability Differences: A New Interpretation of the Evidence." *Quarterly Journal of Economics* 88 (May 1974): 181-93.
- Mansfield, Edwin. "Technology and Productivity in the United States." *The American Economy in Transition*. Edited by Martin Feldstein. Chicago: University of Chicago Press for the National Bureau of Economic Research, 1980.
- Markham, Jesse. "Survey of the Evidence and Findings on Mergers." *Business Concentration and Price Policy*. New York: National Bureau of Economic Research, 1955.
- Nelson, Ralph L. *Merger Movements in American Industry, 1895-1956*. Princeton: Princeton University press, 1959.
- Peterman, John L. "The Brown Shoe Case." *The Journal of Law and Economics* 13 (April 1975): 81-146.
- Porter, Glenn. *The Rise of Big Business, 1860-1910*. New York: Thomas Y. Crowell Co., 1973.
- Reid, Samuel Richardson. *Mergers, Managers, and the Economy*. New York: McGraw-Hill Book Co., 1968.
- Rosenberg, Nathan. *Technology and American Economic Growth*. New York: Harper and Row, 1972.
- \_\_\_\_\_. *Perspectives on Technology*. New York: Cambridge University Press, 1976.
- Scherer, Frederick M. and Ross, David. *Industrial Market Structure and Economic Performance*, 3d ed. Boston: Houghton Mifflin Co., 1990.
- \_\_\_\_\_. "Antitrust: Ideology or Economics?" *Critical Review* 5 (Fall 1991): 497-511.
- Schmalensee, Richard L. "Inter-Industry Studies of Structure and Performance." *Handbook of Industrial Organization* Edited by Richard L. Schmalensee and Robert D. Willig. Amsterdam: North-Holland, 1989.
- Terleckyj, Nestor E. "What Do R & D Numbers Tell Us About Technological Change?" *American Economic Review* 70 (May 1980): 55-61.

Waldman, Don E. *The Economics of Antitrust: Cases and Analysis*. Boston: Little Brown and Co., 1986.

Weiss, Leonard W. "Quantitative Studies of Industrial Organization." *Frontiers of Quantitative Economics*. Edited by Michael D. Intriligator. Amsterdam: North-Holland, 1971.

\_\_\_\_\_. "The Concentration-Profits Relationship and Antitrust." *Industrial Concentration: The New Learning* Edited by Harvey J. Goldschmid et al. Boston: Little Brown, 1974.

## Notes

1 Industries can also be ranked by the number of employees. Though there are differences, the rankings are roughly consistent.

2 Richard C. Edwards, "Stages of Corporate Stability and the Risks of Corporate Failure," *The Journal of Economic History* 35 (June 1975): 430.

3 Ibid., 438.

4 Ibid., 442-43.

5 Herman Krooss, *American Economic Development*, 3d ed. (Englewood Cliffs, NJ: Prentice-Hall, 1974), 205.

6 Donald F. Barnett and Louis Schorsch, *Steel: Upheaval in a Basic Industry* (Cambridge, MA: Ballinger Publishing Co., 1983); and *Up from the Ashes: The Rise of the Steel Minimill in the United States* (Washington, D.C.: The Brookings Institution, 1986).

7 Nathan Rosenberg, *Technology and American Economic Growth* (New York: Harper and Row, 1972), 182.

8 Edwin Mansfield, "Technology and Productivity in the United States," in Martin Feldstein, ed., *The American Economy in Transition* (Chicago: University of Chicago Press for the National Bureau of Economic Research, 1980), 569.

9 Ibid., 569.

10 Nestor E. Terleckyj, *Effects of R & D on the Productivity Growth of Industries: An Exploratory Study* (Washington, D.C.: National Planning Association, 1974), cited in Mansfield, "Technology and Productivity," 569. See also Nestor E. Terleckyj, "What Do R & D Numbers Tell Us About Technological Change?" *American Economic Review* 70 (May 1980): 55-61.

11 Mansfield, "Technology and Productivity," 575.

12 Rosenberg, *Technology and American Economic Growth*, 187-89.

13 Rosenberg, *Technology and American Economic Growth*, and *Perspectives on Technology* (New York: Cambridge University Press, 1976).

14 Rosenberg, *Technology and American Economic Growth*, 117.

15 Ibid., 145.

16 Alfred D. Chandler, Jr., *Strategy and Structure: Chapters in the History of the American Industrial Enterprise* (Cambridge, MA: The M.I.T. Press, 1962), and *The Visible Hand: The Managerial Revolution in American Business* (Cambridge, MA: Harvard University Press, 1977).

17 Martin N. Baily and Alok K. Chakrabarti, "Innovation and the Productivity Crisis," The Brookings Institution, cited and discussed in Lindley H. Clark, Jr., "Speaking of Business: Productivity Lag May Be Management's Fault," *The Wall Street Journal*, 11 January, 1989.

18 Eric von Hippel, *The Sources of Innovation* (New York: Oxford University Press, 1988), cited in Lindley H. Clark, Jr., "Speaking of Business: Productivity Lag May Be Management's Fault," *The Wall Street Journal*, 11 January, 1989.

19 Joseph B. White, "Foreign Aid: Japanese Auto Makers Help U.S. Suppliers Become More Efficient: Toyota Drills an Illinois Firm in Fine Points of Building Bumpers Faster, Cheaper," *The Wall Street Journal*, 9 September, 1991.

20 Joel Kotkin, "The American Way," *Inc.: The Magazine for Growing Companies*, 13 (September 1991), 98.

21 Paul Ingrassia and Joseph B. White, "Major Overhaul: Determined to Change, General Motors is Said to Pick New Chairman: It's Expected to Give Smale Stempel's Job and Speed Pace of its Downsizing." *The Wall Street Journal*, 23 October, 1992.

22 Ibid., 158.

23 Marc Allen Eisner, *Antitrust and the Triumph of Economics: Institutions, Expertise & Policy Change* (Chapel Hill, NC: University of North Carolina Press, 1991), 221.

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24. Ibid., 170.
25. Ibid., 173.
26. Ibid., 174.
27. In many respects the case against United Shoe Machinery was no different from the monopolization case against the firm 35 years earlier when it was found not guilty of monopolization.
28. John L. Peterman has charged that the government's evidence was extraordinarily weak and at times bordered on fiction. [John L. Peterman, "The Brown Shoe Case," *The Journal of Law and Economics* 13 (April 1975): 143.] Robert Bork has said that the *Brown Shoe* decision has considerable claim to the distinction of being "the worst antitrust essay ever written" and that the decision transformed Section 7 of the Clayton Act into a "virulently anticompetitive regulation." [Robert Bork, *The Antitrust Paradox* (New York: Basic Books, 1978), 198 and 210.]
29. Ernest Gellhorn, *Antitrust Law and Economics* (St. Paul: West Publishing Co., 1976), 333.
30. Dominick T. Armentano, *The Myths of Antitrust* (New Rochelle, NY: Basic Books, 1978), 263.
31. Don E. Waldman, *The Economics of Antitrust: Cases and Analysis* (Boston: Little Brown and Co., 1986), 71-72.
32. Ibid., 75. See also Scherer and Ross, *Industrial Market Structure and Performance*, 466. At the same time that the FTC attacked advertising as an anticompetitive device creating a "shared monopoly" for the cereal companies, it also adopted regulations outlawing bans on advertising for eyeglasses and examinations because advertising is a competitive device. It is not clear how the FTC could conclude that advertising was simultaneously a monopoly barrier and a creator of competitive conditions.
33. Scherer and Ross, *Industrial Market Structure and Performance*, 462.
34. Ibid., 97-101.
35. Bork, *The Antitrust Paradox*, 405.
36. Yale Brozen, "Competition, Efficiency, and Antitrust," *Journal of World Trade Law* 3 (1969), reprinted in Yale Brozen, ed., *The Competitive Economy: Selected Readings* (Morristown, NJ: General Learning Press, 1975), 8.
37. F. M. Scherer, "Antitrust: Ideology or Economics?" *Critical Review* 5 (Fall 1991): 502-503.
38. Eisner, *Antitrust and the Triumph of Economics*, 235.
39. Scherer and Ross, *Industrial Market Structure and Performance*, 190-191.
40. Eisner, *Antitrust and the Triumph of Economics*, 184.
41. Ibid., 185.
42. Ibid., 185.
43. Ibid., 188.
44. These measurement problems are discussed in detail in Scherer and Ross, *Industrial Market Structure and Performance*, 411-426.
45. Joe S. Bain, "Relation of Profit Rate to Industry Concentration: American Manufacturing, 1936-1940," *Quarterly Journal of Economics* 65 (August 1951): 293-324, and *Barriers to New Competition* (Cambridge, MA: Harvard University Press, 1956).
46. Scherer and Ross, *Industrial Market Structure and Performance*, 412, suggest examining the following surveys: Leonard W. Weiss, "Quantitative Studies of Industrial Organization," in Michael D. Intriligator, ed., *Frontiers of Quantitative Economics* (Amsterdam: North-Holland, 1971), 362-411; Leonard Weiss, "The Concentration-Profits Relationship and Antitrust," in Harvey J. Goldschmid et al., *Industrial Concentration: The New Learning* (Boston: Little Brown, 1974), 201-220; Richard E. Caves, "International Trade and Industrial Organization: Problems, Solved and Unsolved," *European Economic Review* 28 (August 1985): 377-95; Paul A. Geroski, "Pursuit of Monopoly Power: Recent Quantitative Work in Industrial Economics," *Journal of Applied Econometrics* 3 (April 1988): 107-23. Richard L. Schmalensee, "Inter-Industry Studies of Structure and Performance," in Richard L. Schmalensee and Robert D. Willig, ed.s, *Handbook of Industrial Organization* (Amsterdam: North-Holland, 1989).
47. For example see the following: Yale Brozen, "Concentration and Structural and Market Disequilibria," *Antitrust Bulletin* 16 (Summer 1971): 244-48. Harold Demsetz, "Industry Structure, Market Rivalry, and Public Policy," *Journal of Law and Economics* 16 (April 1973): 1-9, *The Market Concentration Doctrine* (Washington, D.C.: The American Enterprise Institute, 1973), "Two Systems of Belief About Monopoly," in Goldschmid, ed.,

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*Industrial Concentration*, 175-181; Richard B. Mancke, "Causes of Interfirm Profitability Differences: A New Interpretation of the Evidence," *Quarterly Journal of Economics* 88 (May 1974): 181-93.

48. Demsetz, "Industry Structure, Market Rivalry, and Public Policy;" and *The Market Concentration Doctrine*.
49. Scherer and Ross, *Industrial Market Structure and Performance*, 429.
50. *Ibid.*, 430.
51. *Ibid.*, 667.
52. Arnold C. Harberger, "Monopoly and Resource Allocation," *American Economic Review* 44 (1954): 77-87.
53. Scherer and Ross, *Industrial Market Structure and Economic Performance*, 678.
54. *Ibid.*, 678-679.