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Source: *The Review of Economics and Statistics*, Nov., 1982, Vol. 64, No. 4 (Nov., 1982), pp. 613-626

Published by: The MIT Press

Stable URL: <https://www.jstor.org/stable/1923946>

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# CAUSES OF INCREASED COMPETITION IN THE U.S. ECONOMY, 1939–1980

William G. Shepherd\*

**A**LTHOUGH the trend of competition in the U.S. economy has been much debated, the research findings about it have been inconclusive. There was a substantial rise of aggregate and market concentration in the manufacturing sector during 1909–70. Yet for the entire economy, the latest study (covering conditions during 1939 to 1958) suggested that the degree of competition had risen slightly, but at no more than the pace of glacial drift.

More recently there have been signs of rising competition in a number of specific markets. Some utility sectors have been deregulated, and import competition has risen in a number of industries. Other forces may also have been at work.

It is now timely to measure how far these changes may have affected competition in the economy as a whole. For that purpose, I offer here a comprehensive estimate, comparing conditions in 1980 with those in 1939 and 1958. The general finding is striking: the scope of competition increased substantially during 1958 to 1980, virtually throughout the economy. A trend formerly measured in inches has jumped to a much higher level. The U.S. economy now appears to be far more competitive than at any time during the modern industrial period.

This rise is of prime significance in itself, but it may be even more important to discover why it has happened. Therefore I analyze here the main sources of the increased competition. Antitrust policies emerge as the strongest single cause of rising competition, although import competition and deregulation have also been important.

Section I reviews the literature and presents the methods used in this study. Section II pre-

sents the changing trends and patterns of competitive structure in the U.S. economy, with comparisons to earlier appraisals. Section III then assesses the several main causes of the changes: import competition, antitrust, and deregulation.

Finally, section IV briefly summarizes tentative lessons about policy. Rather than just a spontaneous occurrence, the rise of competition is in large part a result of definite public policies. It is important to maintain effective antitrust, regulatory, and international trade policies in order to sustain the new degree of competition.

## I. Issues and Methods

The research task is simple in concept but difficult in practice. The degree of competition in the U.S. economy is to be evaluated for successive periods in order to find the direction and strength of the trend.

Monopoly power is the ability of firms to control market outcomes, particularly prices and profit levels, product attributes and innovation (Kaysen and Turner, 1959; Scherer, 1980; Shepherd, 1975). Competition is the opposite: the degree of market pressure which limits each firm's ability to control the market. A market is competitive when the leading firms lack the ability to control it; they are instead themselves controlled by the market. This concept of competition is well established in the literature, including most empirical studies of competition.

### A. Past Studies

There are only a few published estimates of the extent of monopoly in the U.S. economy. The first comprehensive review was by Clair Wilcox (1940) for the 1930s, drawing partly on work by Means (1939) and Thorp and Crowder (1941). Wilcox provided sophisticated judgments about the whole array of sectors, but he avoided making a single economy-wide estimate of the scope of competition.

Later Stigler (1950) used Wilcox's evaluations to label markets in 1939 as either "monopoly," "competition," "compulsory cartel" or "not al-

Received for publication September 11, 1981. Revision accepted for publication April 16, 1982.

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I am greatly indebted to Theodora B. Shepherd and Barton L. Lipman for their extensive research assistance on this paper. Discussions with William J. Adams, Leonard G. Schifrin, Lee E. Preston, and Walter Nicholson clarified several main points. Other colleagues and students also influenced the interpretations, in seminars at Michigan, Williams College and Amherst College. Even so, the responsibility for the paper's content remains with the author.

TABLE 1.—ESTIMATES OF COMPETITION IN THE U.S. ECONOMY, 1939–1963

Author	Categories	Share of National Income in		
		1939	1958	1963
		(%)	(%)	(%)
Stigler (1950)	Monopoly	27.7		
	Compulsory cartel	2.9		
	Competition	62.8		
	Not allocable	6.7		
Nutter and Einhorn (1969)	Effectively monopolistic	20.4	15.9	
	Government supervised	20.2	21.5	
	Workably competitive	59.1	62.0	
Shepherd (1970)	Substantial market power			41.5
	Others			58.5

Note: Some totals may not add to 100.0% because of rounding.

locable." As table 1 shows, he reported that some 63% of 1939 national income arose in competitive industries, while 28% was in monopolies (regulated or unregulated).

Kaysen and Turner (1959) surveyed the degree of competition as of the middle 1950s. But they focused on the manufacturing sector, and they ventured no quantitative estimate for the entire economy.<sup>1</sup>

Nutter and Einhorn (1969) offered estimates for 1939 and 1958, classifying markets as "effectively monopolistic," "government supervised" or "workably competitive."<sup>2</sup> Their 1939 competitive share at 59% agreed broadly with Stigler's. Between 1939 and 1958 the competitive share appeared to rise slightly, as table 1 shows.<sup>3</sup>

I also offered an estimate of conditions in 1963 (Shepherd, 1970). The patterns were found to be broadly comparable with those reported by Nutter and Einhorn.

By the 1953–63 period about three-fifths of the economy appeared broadly to fit competitive conditions, and that share appeared to have been rising slowly. Yet the measured trend depended on whether "government supervision" was effective; if its effectiveness had changed over

<sup>1</sup> They noted that differing stages in the vertical chain of production are not entirely comparable in economic impact. Yet this problem may have only a slight effect on actual estimates, and it would affect intertemporal comparisons even less significantly—and none at all if the vertical composition of production is unchanged.

<sup>2</sup> Nutter's appraisal of 1939 had originally appeared in 1951.

<sup>3</sup> The pre-1939 trend is largely unknown. Nutter and Einhorn presented two sets of estimates ("upper" and "lower"), but the effort left matters unclear. The two sets give contrary lessons about the trend. Stigler suggests that monopoly rose during 1870–1920 but then decreased slightly by 1940.

time, then the true trend of competition down to about 1960 was uncertain. Moreover the division of industries into just two categories—monopolistic or competitive (with a residual category of supervised industries)—was probably too simple for a phenomenon which varies by degrees.

Taking the manufacturing sector alone (with about one-third of total national economic activity), there was a definite rise in the average weighted concentration ratios for individual markets during 1947 to 1963, a slower rise during 1963 to 1972 (Allen, 1976; Shepherd, 1979a), and no apparent change at all during 1972–77. These measures include only concentration ratios, not the more complex judgments discussed just above.

The trends are analyzed in appendix I at the end of this paper. The concentration ratios ignore imports, which were increasing their share in numerous U.S. markets. Rising import shares mean falling true concentration. Therefore the true weighted average of concentration ratios in the manufacturing sector probably declined in the last decade. In any event, manufacturing is less than one-third of all economic activity, and so its trends leave the total trend uncertain.

For the entire economy there has been no detailed evaluation at all for the years since 1963, despite a variety of major changes. Accordingly, there is an obvious need to estimate the recent trends.

### B. *The Choice of Methods*

The task here is (1) to develop a sufficiently detailed method for estimating the degree of competition in markets, and (2) to apply it to

1939, to 1958, and to the most recent year for which adequate information is available.<sup>4</sup> With such a large task, one aspires only to reach reliable approximations. In practice, most of the earlier studies' evaluations of markets in 1939 and 1958 turned out to be acceptable and consistent with only minor adjustments. The main new research was required in classifying markets as of 1980.

The methods used here grow out of the basic problem of measuring a distribution whose population has complex attributes.

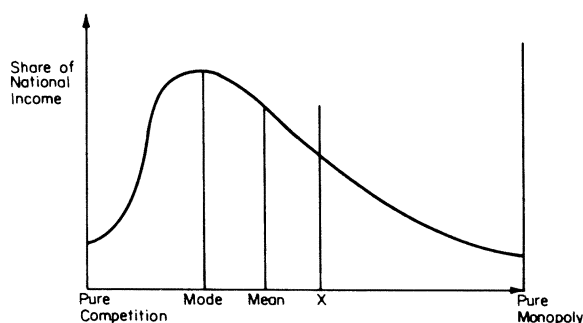
The actual distribution of an economy's markets at any moment according to their degree of market power (the reverse of competition) might be illustrated by the density function in figure 1. There is assumed to be a single index of competitiveness, varying continuously between the polar extremes of pure competition and pure monopoly. If complete information were available about market conditions, this frequency distribution of all industries could be measured for several widely spaced years. The usual parameters would be calculated; means, modes, skewness, variance, etc. The average degree of competition would be known for each year, and the trend of competition would be shown by the successive mean values.

Alternatively, one could measure the share of national income in industries lying above some critical value of monopoly power, such as X in figure 1. Changes in that monopolistic share would then indicate the trend in competition. If the "non-competitive" share above X were of special interest, this second method could be as accurate as successive mean values in portraying the trend of competition. In any event, the two methods would usually give parallel indications of the trend.

The first method is unattainable for two reasons. First, *adequate data are not available*. The information at hand is flawed and incomplete. These imperfections are more severe in earlier years, but even for recent years they are serious. It would be virtually impossible to measure the degree of monopoly for each market along a continuous scale. The closest approximation to such an index is the 4-firm *concentration* ratio, which is available for manufacturing industries

<sup>4</sup> 1939 and 1958 are chosen because they are covered by earlier studies. Also they provide two intervals of about two decades each, which permit one to judge the basic trends.

FIGURE 1.—AN ILLUSTRATION OF THE DISTRIBUTION OF ECONOMIC ACTIVITY BY THE DEGREE OF MONOPOLY



(Herfindahl "summary" indexes require far more information and their weighting among firms is controversial (Shepherd, 1979a)). Yet those ratios are imperfect and controversial, and for the non-manufacturing two-thirds of the economy they are not regularly computed. Therefore even the best single measure of market power is incompletely measured.

Second, *the degree of competitiveness appears in more than one dimension* (Scherer, 1980; Shepherd, 1979a). Concentration ratios measure only one element of market structure; other elements of structure include individual market shares, entry barriers, vertical patterns, etc. Moreover, market structure itself does not fully determine the degree of competitiveness. For each specific structure (apart from pure competition) a range of behavioral competitiveness is possible. For example, a tight oligopoly's behavior can vary between collusion and price competition.

Not only does competitiveness exist in multiple dimensions; also these dimensions may have conflicting values within each case. For example, the leading firm's market share may be high but entry barriers low; or vice versa. Therefore an element of judgment is required both (1) where the data are of varying quality and (2) where the various indicators of competitiveness give conflicting indications.

The earlier leading studies (Wilcox, Stigler, Kaysen and Turner, Nutter and Einhorn) have attempted to allow for these complexities. They have used a variety of objective evidence about structure and behavior to assign markets to categories, and they have focused on the shares of the economy in those categories rather than on such technical parameters as mean values.

That tradition is followed here, but the number

of categories is increased to four in order to provide more accuracy. The four classes reflect the well-established market types: pure monopoly, dominant firm, tight oligopoly, and all others (loose oligopoly, monopolistic competition and pure competition). The "all others" group can be regarded as effectively competitive, and so there is no attempt here to distinguish among them.

The first three categories have clear meanings in the literature of industrial organization. Each has a distinctive mode of behavior and has been treated by a different type of analysis.<sup>5</sup> The categories shade into each other at the edges, and so their edges are blurred in some degree. Assigning individual markets among them will often be debatable. Yet many markets can be put squarely in one category, and the doubtful cases are relatively few. Indeed, a majority of markets are clearly in category 4, and therefore no extensive research on them is needed.

Like the earlier studies, the present research relies on both structural and behavioral evidence in assigning markets among the categories. *Structure* includes mainly market shares, concentration ratios and entry barriers. Concentration ratios are abundant for the manufacturing sector during 1935–77, but about half of those ratios need adjusting to correct for serious errors in market definition (as was done in Shepherd, 1970; see also Shepherd, 1979a, and Scherer, 1980). In utilities, banking and a few other markets, there are detailed structural data in published sources. In other cases one must estimate structure from a variety of sources, discussed in the Technical Appendix.<sup>6</sup>

*Behavioral* evidence is based mainly on pricing behavior, especially as it has been shown in many antitrust investigations and in the business press and industrial journals. Also there is often reliable information from company and industry sources about profitability and innovation. However, these performance indicators are neither necessary nor sufficient evidence by themselves to determine competitiveness.

<sup>5</sup> Thus oligopoly theory is largely distinct from the analysis of dominant firms (the dynamic optimum market share approach); and both differ from the conventional pure-monopoly analysis.

<sup>6</sup> The sources of data and the estimations for individual industries are given in a Technical Appendix, which is available on request from the author.

### C. Criteria

The literature offers a continuing debate about how to use evidence to estimate the degree of competitiveness. Most of the doctrinal disputes about the pure structuralist and behavioralist approaches have now been resolved in a consensus that both types of evidence can be helpful.<sup>7</sup>

The method here first uses market share, concentration and barriers information to fit each industry to a presumptive category. This presumption can then be modified by strong contrary evidence about behavior.<sup>8</sup>

The specific standards used for the four categories are familiar in the literature (Scherer, 1980; Kaysen and Turner, 1959), as follows:

1. *Pure Monopoly*: Market share at or near 100%, plus effectively blockaded entry, plus evidence of effective monopoly control over the level and structure of prices. In practice this includes mainly certain utilities and patented goods.
2. *Dominant Firms*: A market share of 50% to over 90%, with no close rival. A high entry barrier. An ability to control pricing, to set systematic discriminatory prices, to influence innovation, and (usually) to earn rates of return well above the competitive rate of return.
3. *Tight Oligopoly*: Four-firm concentration above 60%, with stable market shares. Medium or high entry barriers. A tendency toward cooperation, shown especially by rigid prices. Excess profits are neither necessary nor sufficient to establish the existence of tight oligopoly. As a special case, government-regulated firms which are able to exert some degree of market power rather than to be wholly passive to regulation are included here. Also included are

<sup>7</sup> An example of an evaluation is in Preston and King (1979). Landes and Posner (1981) and Scherer (1980) also stress the need for several kinds of evidence.

<sup>8</sup> For example, an 85% market share indicates the presence of a dominant firm. But if there is strong evidence that the firm can neither control prices nor earn positive profits nor prevent rapid innovation, then the market would be reclassified as under effective competition (category 4). Likewise, an industry with concentration above 80% will be moved from category 3 (tight oligopoly) to category 4 if there is flexible pricing, rapid innovation, and competitive rates of return. But a sustained pattern of collusion and rigid market values may cause an industry with concentration of 40% to be put in category 3 as a tight oligopoly.



markets where the government assists collusion (e.g., milk markets), even if the market's concentration is low.

4. *Effective Competition*: Four-firm concentration below 40%, with unstable market shares and flexible pricing. Low entry barriers, little collusion, and low profit rates.

The approach taken here also attempts to reflect the post-1960 literature on the effectiveness of public regulation. Most utilities appear to be only moderately restrained by regulation (Kahn, 1971; Phillips, 1975; Breyer and MacAvoy, 1974; Shepherd, 1979b), while the effects of government actions in certain other markets (such as milk) have been to intensify their price collusion. Such cases are assessed individually, and where appropriate they are included as tight oligopolies.<sup>9</sup> The assignments use the available evidence, rather than leave the role of public policy in limbo as did Nutter and Einhorn.

#### D. Evidence

The research has drawn on a variety of sources, official, judicial, industrial and others, many of which have been used in the author's earlier studies (Shepherd, 1970, 1975, 1979a, 1979b, 1982). Concentration ratios for the 440 manufacturing industries are one body of information. Antitrust cases provide data about many of the industries. Other sources include government reports, industry analyses, research monographs, and a variety of specific articles. The main sources are noted in the Technical Appendix.

Two kinds of judgment are required. First, even when the data are full and reliable one must often use judgment in deciding which category the industry fits. Second, the evidence is rarely thorough and reliable. One must use imperfect, informal data sources, especially in assessing the current conditions. Four examples of industries are given in appendix II to demonstrate the methods of estimation.

The appraisals are tentative and some of them are debatable. But any errors in classification are likely to be random rather than biased either

<sup>9</sup> Most agricultural markets have an atomistic structure, although political controls do affect prices. These cases were regarded as competitive within the framework of the price and factor controls.

way. To wait for perfect data would be futile in most cases. Moreover, those perfect data would often still require judgment to resolve internal variations among the specific elements.

What of markets undergoing marked changes during 1979–81? In such cases the classification is based on the underlying conditions as they are expected to persist, rather than just on short-run conditions.<sup>10</sup>

Finally, the "1980" measures are based on competitive conditions during 1980–81, as indicated by a variety of sources including the 1977 concentration data as brought up to date with other sources. In weighting the industries to obtain the distribution according to competitiveness in 1980, 1978 national income data were the latest figures available. This slight variation in years probably introduces little or no error because the industrial composition of the economy changed little during 1978 to 1980.

## II. Patterns and Trends, 1939 to 1980

The total patterns for all three years, 1939, 1958 and 1980, are summarized in tables 2 and 3.

### A. Sectoral Variations

The patterns in tables 2 and 3 are broadly consistent with earlier findings about variations among sectors. Throughout 1939–80 effective competition was predominant in agriculture, mining, wholesale and retail trade, and financial markets. About half of the 1939 activity in the manufacturing and services sectors was in markets which were effectively competitive, but that share rose by 1980. The construction sector began with a low competitive share in 1939, but that share rose to 80% in 1980. Only in the transportation and utility sector did a majority of activity remain in categories 1–3 throughout.

### B. Trends

The main trends are immediately apparent. Following a slow rise during 1939–58, there was a sharp rise in competition during 1958–80.

<sup>10</sup> The automobile industry, for example, underwent import competition, a recession-induced drop in demand, and a change in consumer preferences toward smaller cars. The combined impact appeared to have made this market effectively competitive. Yet that view depends partly on doubts that the industry can quickly repel imports and regain its tight-oligopoly structure. If instead imports are reduced sharply, then the degree of competition may be less than it seemed during 1980–81.

TABLE 2.—TRENDS OF COMPETITION IN THE U.S. ECONOMY, 1939–1980

Sectors of the Economy	National Income in Each Sector, 1978 <sup>a</sup>	The Share of Each Sector that Was Effectively Competitive		
		1939	1958	1980 <sup>a</sup>
	(\$ billion)	(%)	(%)	(%)
Agriculture, Forestry and Fisheries	54.7	91.6	85.0	86.4
Mining	24.5	87.1	92.2	95.8
Construction	87.6	27.9	55.9	80.2
Manufacturing	459.5	51.5	55.9	69.0
Transportation and Public Utilities	162.3	8.7	26.1	39.1
Wholesale and Retail Trade	261.8	57.8	60.5	93.4
Finance, Insurance and Real Estate	210.7	61.5	63.8	94.1
Services	245.3	53.9	54.3	77.9
Totals	1,512.4	52.4	56.4	76.7

The Share of Each Category in Total National Income	(\$ billion)	Percentage Shares		
		1939	1958	1980
1. Pure Monopoly	38.2	6.2	3.1	2.5
2. Dominant Firm	42.2	5.0	5.0	2.8
3. Tight Oligopoly	272.1	36.4	35.6	18.0
4. Others: Effectively Competitive	1,157.9	52.4	56.3	76.7
Total	1,512.4	100.0	100.0	100.0

<sup>a</sup> 1980 figures reflect competitive conditions as of 1980. The industry weights are based on 1978 data for national income, the latest year available.

Between 1939 and 1958, the slow rise in competition was focused in the manufacturing, construction and transportation sectors. Taking all sectors together, in 1958 the markets with pure monopolies and dominant firms accounted for 8% of the economy, and the three categories with substantial market power had 44%. Tight oligopoly (category 3) was present in over one third of the entire economy. Market power in 1958 was substantially more important than Nutter and Einhorn indicated, and close to what Kaysen and Turner (1959) suggested.<sup>11</sup> Tight oligopoly was extensive, and a substantial share of the entire economy had either a high degree of market power and/or the presence of ineffective government supervision. The neo-Chicago-school belief in a competitive economy was not really tenable.

During 1958 to 1980 the degree of competition rose in every major sector, as tables 2 and 3 show. The rise was also widespread, if we view it in more detail. Outside of manufacturing, some 11 two-digit sectors and an additional 19 three-digit industry groups became more competitive during 1958–80. Within the manufacturing sec-

<sup>11</sup> Not only did Nutter and Einhorn overstate the scope of competition in 1958, they also overestimated the rise in that share during 1939–58. Only during 1958–80 have the trends that they were reporting earlier actually occurred.

tor, 48 four-digit industries moved to a more competitive class, while few made a reverse shift.

The evidence about this remarkable shift is not very sensitive to a few large industries.<sup>12</sup> Nor does it merely reflect changes in the composition of national income because of differential growth rates among industries or industrial sectors.<sup>13</sup>

<sup>12</sup> For example, three major industries—automobiles, steel and telephone equipment—have been classified as becoming more competitive by 1980. The sensitivity of the trend to these cases can be tested by leaving them in their 1958 competition categories, and then comparing the alternative total 1980 shares of national income as follows:

Category	Revised Shares	Shares in Table 2
Pure Monopoly:	3.7%	2.5%
Dominant Firm:	1.6%	2.8%
Tight Oligopoly:	20.4%	18.0%
Effectively Competitive:	74.3%	76.7%

The revised shares are little changed, with effective competition at 74% rather than 76% of the economy.

<sup>13</sup> The net total change in competition reflected two elements: (1) changes in the composition of national income owing to differential growth rates of industries, and (2) changes within individual markets in their degree of competition.

The more competitive markets might merely have grown faster than the average, while monopoly industries grew slowly or shrank.

This issue was studied in detail, using alternative-year weights to recalculate the trends. It eventuated that the

TABLE 3.—THE TREND OF COMPETITION BY SECTORS OF THE U.S. ECONOMY, 1939–1980

SIC Category	Sector	Competition Category <sup>a</sup>	Amount of National Income in Each Category (\$ million)		
			1939	1958	1980 <sup>b</sup>
0–9	Agriculture, Forestry and Fisheries	1	0	0	0
		2	0	0	0
		3	507	2,681	7,462
		4	5,519	15,229	47,261
10–14	Mining	1	0	0	0
		2	0	0	0
		3	211	443	1,116
		4	1,422	5,254	25,354
15–17	Construction	1	0	0	0
		2	0	0	0
		3	1,688	8,367	17,346
		4	654	10,624	70,247
20–39	Manufacturing	1	135	372	0
		2	2,053	6,777	18,032
		3	6,588	40,358	124,428
		4	9,318	60,234	317,042
40–49	Transportation and Public Utilities	1	3,827	9,557	38,171
		2	120	7,974	24,133
		3	3,856	9,917	35,828
		4	743	9,683	64,186
50–59	Trade	1	0	0	0
		2	0	0	0
		3	5,313	23,019	17,238
		4	7,291	35,227	244,542
50–69	Finance, Insurance and Real Estate	1	0	0	0
		2	880	203	0
		3	2,194	14,582	12,384
		4	4,917	26,090	198,351
70–89	Services	1	36	0	0
		2	213	1,185	0
		3	3,231	16,364	54,296
		4	4,074	20,831	190,950
Totals <sup>c</sup>		1	3,998	9,929	38,171
		2	3,266	16,139	42,165
		3	23,588	115,731	272,098
		4	33,938	183,172	1,157,933
Percent of Total National Income <sup>c</sup>		1	6.17	3.06	2.53
		2	5.04	4.97	2.79
		3	36.41	35.61	18.02
		4	52.38	56.37	76.66

<sup>a</sup> 1 is "pure monopoly;" 2 is "dominant firm;" 3 is "tight oligopoly;" and 4 is "effectively competitive" (loose oligopoly, monopolistic competition and pure competition).

<sup>b</sup> 1980 figures reflect competitive conditions as of 1980. The industry weights are based on 1978 data for national income, the latest year available.

<sup>c</sup> "Total National Income" is here actually private domestic national income plus the Post Office.

In 1980 about 76% of national income was produced under effective competition, compared with 56% in 1958. Pure monopolies in 1980 accounted for only about 2.5% and dominant firms for just 2.8%: together their share shrank from

change of composition did matter, but that it worked *against* the rise in competition by 3 percentage points. The rising degree of competitiveness within many industries simply overwhelmed the effect of changing composition. The spread of competition therefore represents even more genuine shifts toward competition within individual markets than the results in table 2 indicate.

11% to 5%. The share of tight oligopoly dropped by about half, from about 36% to 18%.

Although the rise in competition has been widespread, market power remains high in many markets such as computers, photographic film, drugs, newspapers, locomotives, soups, and in various utilities and city services.

Nevertheless the large rise in competition is striking, in an economy where by 1963 substantial market power existed in at least 40% of market activity. Neo-Chicagoans were premature by



two decades in the 1950s when they declared the advent of ubiquitous competition. Their view has now become more relevant. Indeed the U.S. economy is now an enormous test case for the functioning of competition in a large-scale industrial economy.

Several forces have caused much of the trend. Those forces are discussed in the next section.

### III. The Main Determinants

#### A. General Issues

Attributing the rise in competition during 1958–80 to its causes is a difficult but important endeavor. It can provide clearer expectations about future changes which may alter the trend. Interpreting the causes can also provide crucial lessons about policy.

A variety of causes were probably present, ranging from internal market forces to outside interventions. The task is to estimate their relative importance.

In the method adopted here, the main likely causes of changes were first defined, based on an evaluation of the professional and business literature. The initial search centered on five likely causes: rising import competition, antitrust, deregulation, changes in vertical structure, and reductions in the economies of scale. But changes in the scope of scale economies proved to be impossible to measure, given the present state of research.<sup>14</sup> There is strong general evidence and a growing belief that scale economies have dwindled since the 1950s as computers and electronics have replaced cruder manufacturing processes. But no precise measure of this trend could be applied here. Vertical changes also were beyond reliable measurement, except for the important case of the petroleum industry.<sup>15</sup>

The remaining three probable causes—rising import competition, antitrust, and deregulation—could be determined with some confidence for many markets, although some of the attribu-

<sup>14</sup> Only the existing economies as of about 1967–70 have been measured reliably, mainly in relation to conditions for plants rather than for entire firms. Moreover these estimates cover only about 35 manufacturing industries, a small fraction of the entire economy.

<sup>15</sup> OPEC has captured much of the leading oil firms' former market power since 1973. Those firms' high profitability since 1973 does not necessarily reflect high market power. Rather it consists mostly of economic rents created by the rise of oil prices.

tions are tentative. Table 4 summarizes the assignments of industries to these causes, following methods that are described shortly below. Further research may revise some of the details, but the main lines shown in table 4 will probably change little.

Inevitably there is some overlap among the causes, especially in numerous industries where antitrust actions were the stimulus for deregulation. Table 4 includes some such cases under both headings, rather than pretending that only one cause was present. Overlaps between rising imports and antitrust were fewer. Imports and antitrust are largely substitutable responses to market power, whereas antitrust and deregulation are usually complementary.

Altogether, table 4 includes markets accounting for \$234 billion of 1978 national income, when overlapping listings are allowed for. That amount is 16% of total national income. It equals 76% of the total rise in the share of effectively competitive markets during 1958–80.<sup>16</sup>

Therefore these three causes involve a high majority of the rise in competition. An infinitely complete study might add to the lists or revise them, but table 4 appears to be a reasonable first approximation.

#### B. Import Competition

*Method:* The aim is to identify industries which clearly had a substantial rise in import competition during the 1958–80 period. The industries listed in part 1 of table 4 are such cases. They met three criteria: (1) movement to a more competitive category between 1958 and 1980, (2) an import share that was above 15% of all U.S. sales in 1980,<sup>17</sup> and (3) imports that were genuinely competitive with U.S. products rather than just brought in by U.S. firms to be marketed under their own brand names.<sup>18</sup> Any possible

<sup>16</sup> The rise from 56% to 76% in competitive markets is a shift of \$308 billion of 1980 national income. That amount is the basis of comparison.

<sup>17</sup> An exception is blast furnaces and steel mills, where imports have had sharp effects in the 1970s even though they are only 13% of total U.S. sales. The effects on output and profits are evident from a variety of sources, especially Crandall (1981).

<sup>18</sup> The 13 markets listed in table 4 are only part of all U.S. industries that are affected by imports. Excluded are many markets with high import competition which were already effectively competitive by 1958. Also excluded are many where the imports were really semi-finished inputs rather than competitive final products.

TABLE 4.—THE ROLE OF IMPORTS, ANTITRUST AND DEREGULATION IN INCREASING COMPETITION, 1958–1980

SIC Code	Industry (1980 category)	Beginning of Period of Effect	Additional Causes <sup>a</sup>	Industry's National Income, 1978 (\$ million) <sup>b</sup>
<b>1. Increasing Imports</b>				
3312, 3315, 3316	Steel and products (4)	1970s	A	16,269
3711	Automobiles (4)	1970s		15,844
3721	Aircraft (3)	late 1970s		6,823
3011	Tires and tubes (4)	1970s		3,534
3731	Shipbuilding (4)	1960s		3,287
3671	Television tubes (4)	1960s		3,156
2824	Artificial fibers (3)	1960s		2,246
3651	Television sets (4)	1960s		2,090
3861 (part)	Cameras (3)	1960s		(1,000)
3861 (part)	Copiers (4)	1975	A	(3,900)
3635	Vacuum cleaners (4)	1960s		361
3751	Motorcycles (4)	1970s		284
3636, 3832	Sewing machines (4)	1950s		181
	Total			57,975
<b>2. Antitrust</b>				
2011	Meatpacking (4)	1920		2,469
2051	Baked goods (4)	1960s		3,310
2834	Drugs (3)	1960s		4,735
3334, 3353, 3354, 3355	Aluminum and products (3)	1950		3,754
3411	Metal cans (4)	1950		2,521
3559 (part)	Shoe machinery (4)	1950s		50
3611, 3612, 3613, 3621, 3622	Heavy electrical equipment (3)	1961		6,422
3661	Telephone equipment (2)	1970s	D	3,416
3662 (part)	Cable T.V. equipment (4)	1961		(120)
3861 (part)	Photographic equipment & supplies (3)	1954, 1973		4,905
481	Telephone service (long distance) (2)	1980	D	17,843
483	Radio and television broadcasting (3)	1944		4,741
60	Banking (4)	1963	D	24,649
62	Security, commodity brokers (4)	1975	D	5,428
653	Real estate agents (4)	1975		13,677
7395	Photofinishing labs (3)	1954		1,435
751	Automotive rentals (4)	1977		2,807
78	Motion pictures and theaters (4)	1948		3,347
794	Commercial sports (4)	1975		1,426
81	Legal services (4)	1977		16,232
	Total			123,287
<b>3. Deregulation</b>				
3661	Telephone equipment (2)	1970s	A	3,416
40	Railroad transportation (4)	1976	A	14,217
421	Trucking (4)	1978		25,917
45	Air transportation (4)	1977	A	12,054
481	Telephone service, long distance (2)	1980	A	17,843
60	Banking (4)	1970s	A	24,649
62	Security, commodity brokers (4)	1975	A	5,428
	Total			103,524

Sources: As described in the text and the Technical Appendix.

<sup>a</sup> A means that antitrust was also important. D means that deregulation was also important.<sup>b</sup> Figures in parentheses are estimates.

errors in applying these criteria are likely to have reduced the list in table 4 *below* its true level, thereby understating the role of imports.

In general, imports have risen strongly in importance since the middle 1960s, when they were over 10% of U.S. sales in relatively few industries. Now the import share exceeds 10% in scores of industries, with effects that are widely recognized.

*Results:* Import competition caused an increase in competition by 1980 in at least 13 significant industries (see table 4), accounting for 3.8% of national income. The industries' \$58 billion of value-added accounts for about one-sixth of the shift toward greater competition during 1958–80. Imports also took larger shares in many markets which were already effectively competitive in 1958.

The imports' inroads may be temporary in some industries. Yet in the automobile, tire, and steel industries, for example, the superiority of foreign technology and design appears to be lasting. U.S. firms have found it necessary to study or even to purchase the current technology of the foreign firms, in efforts to remedy the cost disadvantages they face. Meanwhile the foreign firms are continuing to develop still more advanced techniques of their own, which will prolong the U.S. lag.

That cost superiority has given the imports special force, beyond what their market shares alone would indicate. This is because these low-cost competitors are able to ignore the incentives for tacit agreement with U.S. producers in order to establish higher prices. Only such agreements might have enabled the U.S. auto producers, for example, to avoid the large losses they suffered in 1980–81. By causing a shift toward cost-based pricing, the imports have introduced a marked change toward the competitive outcome.

The effects of imports fit the classical analysis of free trade. U.S. firms in those markets had responded to their tight-oligopoly conditions by developing a degree of inefficiency and slow innovation. These effects were well researched and widely known (e.g., Adams and Dirlam, 1964, 1966; White, 1971), but little remedy by public policies seemed possible in the 1960s. Now import competition has provided much of the cure.

Yet import competition is not guaranteed to continue. It may be vulnerable to the creation of

new trade barriers and to a decline in the dollar's exchange value. Some domestic industries have sought protection from imports, with such results as quotas on steel and automobile imports, and the enforcement of "orderly marketing agreements." A sustained fall in the dollar's value could reduce imports even more quickly and broadly. That possibility has already been allowed for in the estimates in table 4.

### C. Antitrust Actions

*Methods:* Antitrust actions are subtler to evaluate for two main reasons. First, formal antitrust cases which proceed to final court decisions are only a small fraction of all antitrust activity. Many other cases are brought formally but settled by compromise. Others achieve effects by threats and responses, without reaching formal litigation at all. Others are started but dropped, after the companies yield in order to avoid further litigation. In still other industries, there are indirect effects: firms in industries A through X change their behavior because landmark cases in industries Y and Z set precedents which apply generally.

Also the two antitrust agencies pursue many actions (both formally and informally) in other public agencies and forums. They intervene with many regulatory agencies (the ICC, FERC, FCC, CAB and others) to prevent mergers, stop price-fixing and revoke monopoly franchises. These actions are often important and widely known in reliable detail, even though they do not take form in an official antitrust decision.

In all these ways, antitrust's economic effects have gone well beyond the instances that the legal casebooks report. Moreover, *private* antitrust cases provide added antitrust effects. Rising from several hundred cases yearly before 1960 to over 1200 yearly since 1970, these actions have had many direct and indirect effects. Though many of the suits have little economic substance or chance of legal victory, others are substantial enough to constitute a significant force.

Secondly, antitrust's economic effects are hard to estimate accurately. No complete evaluation of individual cases has been done, beyond pioneering efforts to assess various leading cases which have led to structural changes (including Whitney, 1958; Shepherd, 1975; and Waldman, 1978). Those few studies have left aside most of

the price-fixing cases and merger cases, as well as the actions toward deregulation.

An additional question is the duration of anti-trust effects. Some actions have only brief impacts, as when price fixers are penalized with fines but soon resume their collusion. But other actions have effects which develop over the course of many years; examples are the dissolution of the Standard Oil trust in 1913 and the Alcoa case outcome in 1945–50.

Because of such complexities, there is no complete set of past studies to draw upon, and it is beyond the scope of this study to prepare such a complete set. Yet the main task is a focused one, confined to the industries with rising competition during 1958–80. It is possible to assemble the main cases and informal actions that have affected industries, and then to estimate whether those actions have significantly raised competition. That was done for this study, using the full range of case, monograph and other material.

Finally, there has been a rising severity of penalties for price-fixing since 1975 under stiffened legal provisions. The level of fines has risen sharply, and jail sentences are more frequently imposed. Also federal laws permitting "resale price maintenance" were repealed in 1975. These changes have probably caused a reduction in the effects of collusive behavior in a wide range of markets, both beyond the industries where actual convictions have occurred and beyond the specific industries listed in table 4.

*Results:* From the estimations, some 20 industries are included in part 2 of table 4. Their \$123 billion of national income in 1978 was 40% of the rise in effective competition during 1958–80. If industries marked D are assigned solely to deregulation, then the remaining \$72.1 billion is 23% of the rise in competition. But instead, one may include the 20 antitrust-affected industries plus deregulated industries also affected by antitrust. Then the antitrust effects cover \$175 billion, which is 57% of the rise in competition.

Evidently, antitrust had a substantial influence on the degree of competition in the economy. Yet table 4 probably understates antitrust's total influence in three ways. First it omits all antitrust actions where the industry was already classed as effectively competitive or where the industry was not moved to a more competitive category. Second, it probably overlooks some competi-

tion-raising actions which an infinitely complete study would identify.

Third, antitrust performs an additional continuing function because it maintains competition throughout the economy much higher than it would otherwise exist. If antitrust were suddenly to cease, then a large wave of new mergers and collusion would soon raise the degree of market power in a wide range of sectors. By continuing to prevent that rise, antitrust has made possible the overall trend toward a rise in competition.

#### D. Deregulation

Much publicity has been gained by deregulation in the 1970s as a source of new competition. Yet the real impetus behind deregulation has often been the antitrust agencies, especially in the transportation, communications, stock market and banking sectors. For example, railroad mergers and pricing were the target of vigorous antitrust interventions before the Interstate Commerce Commission (ICC). During 1968–75, it was Antitrust Division pressure that led the Securities and Exchange Commission to abolish the fixing of stock-broker's fees in 1975. New competition in the telephone sector has partly been created by antitrust cases and pressure on the Federal Communication Commission. The deregulation of banking entry and pricing has also been advanced by a variety of antitrust actions.

Therefore most of the deregulation cases in part 3 of table 4 also reflect a large element of antitrust activity. Apart from that, table 4 shows that deregulation has affected seven main sectors, accounting for 4% of national income in 1978 and about 20% of the 1958–80 rise in competition. Some of this deregulation is recent and still in progress (e.g., airlines since 1975, trucking and railroads since 1976, and banking since 1978), and so its ultimate extent is still unknown. Trucking is especially doubtful, since the ICC in 1981–82 appeared to be restoring some regulatory bars to competition. Only airlines, air freight and stock markets can be considered to be substantially deregulated: they account for only 1% of national income.

Taken altogether, deregulation's part in the rise of competition has been limited and closely intertwined with antitrust. Moreover, some de-

regulation (e.g., in telephone service and trucking) has only begun and may readily be reversed.

#### E. Economies of Scale

There is also a need to consider whether changes in the economies of scale can explain the change in the degree of competition.

Research on industrial conditions in the 1960s has indicated that scale economies required substantially less industrial concentration than actually existed (Scherer, 1975, 1979 and 1980; Weiss, in Masson and Qualls, 1976). Also a recent study by the author focused on the largest industrial firms with high market shares in the 1960s. Only about 15% of the excess profits that they obtained can be attributed to economies of scale (Shepherd, 1982). The actual market shares of the leading firms probably exceed the minimum efficient scale (MES) of the firm in many industries with dominant firms or tight oligopoly. Such excess concentration has drawn divergent interpretations. Some see it as a strong reason to take antitrust actions which will reduce concentration. The Chicago School response has been that the measures of MES are inaccurate or are irrelevant to the true nature of competition, which is really "dynamic" and so cannot be judged by "static" cost curves.

It is possible but *unlikely* that MES increased broadly in U.S. industries while the degree of monopoly was declining so markedly. The opposite process—a broad decline of MES in a variety of industries—is much more likely to have occurred. That is further suggested by the fact that it has taken a large volume of mergers to maintain the level of concentration, both in markets and in the aggregate. Furthermore, rapid market growth in new industries (e.g., computers) creates new competitive opportunities even where MES is constant in physical terms.

The present findings suggest two alternative inferences about the role of scale economies. Competition would have risen as broadly as it has only if (1) MES were already well below actual market shares in many industries, and/or (2) MES has declined compared to market size during the period, especially since 1968. It seems probable that both conditions occurred in some degree.

#### IV. Summary

Theorists assuming the economy to be competitive have been one-half wrong until the 1960s: now they are only one-fourth in error. The U.S. economy experienced a large and widely spread rise in competition during 1958–80. It can now be viewed as a large laboratory case, in which the effects and maintenance of pervasive competition will be tested for the next decade or two. The effects on economic performance may be extensive.

Tight oligopoly still covers nearly one-fifth of the economy, but that share is down by half from 1958. Pure monopoly and dominant firms have shrunk to only about 5% of the economy, while the effectively competitive markets now account for over three-fourths of national income. Rather than reflecting differential growth rates among markets with competition and market power, the 1958–80 trend reflects true shifts toward competition within many industries.

Most of the shift appears to reflect three main causes: rising import competition, antitrust actions, and deregulation. Each has been important, but antitrust actions have had the largest influence. Also antitrust's effects have been longer established and may be less easily reversed than the others. By contrast, imports and deregulation can be quickly altered by shifts toward protectionism, by changing currency values, and by reversions to conventional utility regulation.

Several policy lessons can be suggested:

(1) There is no general case for reducing antitrust efforts. On the contrary, continued antitrust pressure is needed to retain the new level of competition.

(2) There is a particular need for maintaining restrictions against collusive behavior and horizontal mergers. By contrast, there are relatively few remaining dominant firms warranting structural cases under Section 2 of the Sherman Act.

(3) Free-trade policies are crucial to the continuation of effective import competition in a range of large industries. There has been a reversion toward import restrictions in some cases. Avoiding this tendency can be important to maintaining competition.

(4) Deregulation has had sharp effects in a narrow set of sectors, but many of those changes are still beginning or only partly complete. These



cases are open to reversal, and so deregulation's eventual effects are uncertain.

Whether competition is sustained at its new levels or is reversed will depend closely on the three kinds of policy choices.

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## APPENDIX I

## Concentration Ratios in Manufacturing, 1972-77

Though many of the ratios are flawed as indicators of absolute degrees of market power (Shepherd, 1979a; Scherer, 1980), their shifts over time may suggest trends. Because the ratios ignore imports, their shifts will be in error in cases where the role of imports has changed.

A weighted average of the concentration ratios unadjusted for imports shows no significant change during 1972-77. The weighted 4-firm ratio average remains at 40%.

Another test is the share of activity in markets with concentration ratios above 60%. That 60% value is widely accepted as the threshold level for tight oligopoly (Scherer, 1980; Shepherd, 1979a). It is possible to compare 1963 with 1977 for most of the industries, because 346 of the 440 industry definitions remained unchanged during that period. Moreover, of the 94 industries whose definitions did change, most of them were well under 60% concentrated in any event, and so their omission is not of consequence to this study. At any rate, the rest of those 94 cases can be compared during 1972-77, to check for any major changes.

The comparison is shown in table A-1. The number of these concentrated industries changed little during 1963-77, from 68 to 66. Their share of the total rose slightly, from 20.1% to 20.9% of the shipments by all manufacturing industries. Of the industries that had changed definitions, the shifts during 1972-77 were also slight, as shown by line 4 in table A-1. The rise in their share of shipments from 2.4% to 2.8% is not large.

A third test focuses on the industries that had large changes in concentration during 1963-77, by 12 or more concentration points (e.g., a rise in the ratio from 65% to 80% or a fall from 61% to 43%). Smaller changes are likely to be of minor significance, and so this test isolates the most important changes. There were 23 industries with such large declines during the 1963-77 period. Their shipments were 3.0% of all 1977 shipments in the sector. By comparison, 33 industries had large rises during 1963-77, but their shipments were only 1.6% of the sector's total shipments. Moreover they were mostly narrowly grouped within light industries: all but 4 of them were in foods, fabrics, clothing, games and toys, and a few other consumer products. By contrast, the 23 cases of

TABLE A-1.—INDUSTRIES WITH CONCENTRATION ABOVE 60%: THEIR RELATIVE IMPORTANCE DURING 1963–77

	Industries with 4-firm Concentration Ratios of 60% or Higher		
	1963	1972	1977
<b>346 Industries that Were Comparable in 1963–77:<sup>a</sup></b>			
Number	68	—	66
Value of shipments <sup>b</sup> (\$ million)	\$84,576	—	\$290,422
Share of total value of shipments	20.1%	—	20.9%
<b>94 Industries that Were Comparable in 1972–77:</b>			
Number	—	7	8
Value of shipments (\$ million)	—	18,002	31,858
Share of total value of shipments	—	2.4%	2.8%

Source: Bureau of the Census, *Concentration Ratios in Manufacturing, 1977, Census of Manufactures 1977*, MC77-SR-9 (Washington, D.C.: U.S. Government Printing Office, May 1981).

<sup>a</sup> In four cases, values for 1967 were used as estimators of values for 1963.

<sup>b</sup> For several industries, value of production or value added was reported instead of value of shipments.

large declines were in a variety of heavy industries as well as some light ones.

## APPENDIX II

### Examples of Assignment among Categories

*Meatpacking* (SIC 2011) in 1977 had a 4-firm concentration ratio of 19%: clearly in category 4. Leading business magazines confirm no change in structure between 1977 and 1980. Entry barriers are low, as discussed by various industry officials; recent rapid entry appears to confirm that. Does behavior instead fit tight oligopoly rigidity? No: pricing is flexible, profits are mostly at competitive levels or below, and innovation is rapid and varied. These conditions have become firmly fixed in the 1960s and 1970s, after the long decline of the leading meatpacking firms, caused partly by the antitrust constraints in the 1920 Meatpackers Consent Decree.

*Motor vehicles* (SIC 3711) in 1977 had an official 4-firm concentration ratio of 93%. Allowing for imports of 19%, the true ratio was about 74%. The leading firm held 43% of the market. By 1980 imports rose to 23%, reducing concentration to about 70% and the leading firm to a 40% market share. By structural tests, the market is at the low end of the tight oligopoly class.

The imports also forced major product innovations (toward more fuel efficient models) and caused all U.S. firms to incur

large financial losses. As of early 1982, no rapid change in these conditions is expected. Therefore, the market is moved to the effective competition class (number 4).

*Cereal breakfast foods* (SIC 2043) had in 1977 a 4-firm concentration ratio of 89% which has been stable since 1954. The leading firm has a stable market share in the 40%–45% range. Entry barriers are high. The industry's structure therefore fits in class 3. The FTC case against leading cereal firms has shown pricing, innovation and profit patterns which fit the conventional outcomes of tight oligopoly, even though the FTC in 1981 did not convict them of an antitrust violation (see also Schmalensee, 1978). Therefore, the market fits in category 3, tight oligopoly.

*Banking* (SIC 60) covers a range of commercial banking activities, with varying degree of concentration in relevant local, regional and national markets. Though some of them have concentration ratios above 60%, a weighted average of city-wide concentration is in the 50%–60% range. Since 1960 markets have been expanding both geographically and among types of services. The rise in competitive structure and behavior is thoroughly discussed in the business press. The rise is both a cause and a result of major deregulatory steps taken since 1960 by the Comptroller of the Currency, the Federal Reserve Board, and Congress. These changes have had clearly observable effects on banking activities, pricing, service innovations, and profitability. These changes appear to be firmly set, with little likelihood of being reversed. Therefore, banking is placed in category 4, effective competition.