ANTITRUST POLICY FOR DECLINING INDUSTRIES

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# EXECUTIVE SUMMARY

## Introduction

A number of U.S. industries are coming under increasing pressure from foreign competition. To compete effectively with their foreign rivals, U.S. firms must be able to take advantage of any efficiency-enhancing potential of mergers. Since merger activity is regulated by the antitrust statutes, it is of particular importance that merger policy not frustrate the attainment of efficiencies in industries subject to foreign competition. On the other hand, it is important that anti-competitive mergers - those which raise U.S. prices and reduce U.S. firms' output - not be encouraged, since such mergers will led to a larger loss of sales to foreign competitors. This report evaluates the case for revising current antitrust laws for industries experiencing a long term reduction in output due to foreign competition, declining demand, or rising costs.

## The Evidence

The report begins with an examination of the ways in which mergers might create efficiencies in declining industries. It is clear that the existence of scale economies in production or marketing could lead to an incentive to reduce the number of firms as an industry declines. When such economies exist, the presence of industry-specific assets (e.g., machinery) of sub-stantially more value in the declining industry than in other uses might lead to efficient mergers. In addition, efficient

asset reorganization through merger might be induced in a multi-product setting if demand declines for several related product lines makes it economical to specialize production in fewer product areas than was true prior to the decline. Furthermore, mergers between growing and declining firms can combine production to use existing capacity more efficiently. However, mergers in declining industries need not always yield efficiencies. It is possible that firms in declining industries might be able to raise prices above competitive levels without substantial fear of new entry by rivals, and hence may have an incentive to merge to facilitate collusion.

To determine empirically whether mergers in declining industries might be important in achieving efficiencies, we examined available historical evidence on the extent of merger activity and the potential for resulting efficiencies in declining industries. The report gives a number of indirect tests of the importance of mergers in declining industries, the existence of efficiencies due to mergers, and the effects of the antitrust laws.

We first compare the frequency of mergers in growing and declining industries. We find that mergers are not generally more frequent in declining industries even after controlling for antitrust constraints on mergers. This evidence suggests that mergers may not be a more significant source of efficiencies in declining industries than in industries generally. We also examine the relationship between merger activity in declining

industries and the presence of scale economies and industry-specific assets, two factors that theoretically could be important sources of efficiency from mergers. The empirical results of tests that control for antitrust constraints on mergers do not support the proposition that scale factors or industry-specific assets are important determinants of merger activity in declining industries. While these results are subject to qualification because the measures of scale economies and industry-specific assets are quite crude and the data on mergers are subject to a number of deficiencies, the results do not indicate that mergers are a particularly efficient form of rationalization.

Given the lack of large sample evidence of clear efficiency rationales for mergers in declining industries, specific declining industries were also examined to determine whether mergers appeared to play a major role in the rationalization of industry capacity. Merger activity in the steel industry, the auto parts industry, and various other industries was reviewed. It appears that certain of these mergers had the potential to yield substantial cost savings because of economies of scale. Mergers might have improved the allocation of production as outdated plants were closed and technically efficient facilities were more fully utilized. As a result, one obtains an impression that some mergers are quite likely to have been efficient, but definitive proof of that point is not available. However, there is also evidence that some declining industries (synthetic soda ash,

rayon and receiving tubes) were able to restructure (presumably efficiently) without horizontal merger activity.

We also examined the role of antitrust and other public policies during periods of industrial decline. The National Industrial Recovery Act period (1933-35) in the United States is examined since it represented a weakening of antitrust policy in response to a cyclical industrial decline. The evidence from that period indicates that government support of industry codes of behavior led to anticompetitive effects and contributed little if anything to the economic recovery. Japan's response to industrial decline is also reviewed, in part, because that nation has a quite different antitrust policy from that of the United States. Depression and rationalization cartels are common, as is industry-specific legislation to aid depressed industries. The evaluation of the Japanese policies (based heavily on individual case evidence) indicates that Japan has not been very successful in encouraging exit or speedy capacity rationalization in depressed industries beyond the levels desired by the industry members initially. In addition, there is evidence that prices rose substantially in the concentrated industries covered by declining industry legislation.

Antitrust law changes are not the most common response to industrial decline or foreign competition, however. Much more frequently, trade restrictions are imposed to "protect" U.S. firms or subsidies are given to displaced workers. Several

industry-specific import restrictions exist, and general legisla-
tion such as the Trade Act of 1974 gives all industries a forum
for trade-related complaints. Economic evidence indicates that
trade restraints are generally a high cost "solution" to trade
problems. In addition, U.S. government policy toward trade-
impacted declining industries involves targeted employment
assistance under the Trade Adjustment Assistance program and
similar legislation. Evidence concerning the effectiveness of
the latter programs is not particularly encouraging. However,
they represent a relatively direct approach to solving some
problems faced by workers that have industry-specific skills.

In summary, review of the empirical evidence and historical
record does not reveal that mergers are especially efficient in
declining industries and government policies toward declining
industries in the past, including slackened antitrust enforce-
ment, have not been particulary successful. But even more
importantly, current antitrust policy will not prohibit mergers
in declining (or other) industries that are likely to lead to
efficiency gains.

Current Merger Policy

Since the U.S. does not have a special policy for declining
industries, mergers of firms in such industries would be handled
in largely the same manner as those in healthy industries. How-
ever, the Guidelines of the Department of Justice and the Federal
Trade Commission's Statement on Horizontal Mergers give sub-
stantial weight to three factors that could be important in

mergers in declining industries: (1) import competition, (2) merger specific efficiencies, and (3) the financial health of the firms.

Import competition clearly counts in merger analysis. If foreign firms have a substantial share of sales in the U.S., the domestic industry's market share will be small, and this will reduce the chance that a merger of two U.S. firms could have an anticompetitive impact. Even if foreign firms do not currently have a large market share, a merger of domestic firms would be unlikely to have an anticompetitive impact if the foreign producers could readily increase their U.S. sales if domestic prices rose. In either case current antitrust policy is not a bar to mergers.

Efficiencies also count is merger analysis. The two federal antitrust agencies examine the potential efficiency of each merger that is reviewed. Although our study does not yield evidence that mergers in declining industries are generally essential to a rationalization process, there are very likely to be cases where mergers are efficient. If they are, then these potential efficiency gains are considered in deciding whether a merger is anticompetitive.

Conclusion

A policy liberalizing the antitrust laws specifically for declining industries would be ill-advised. Such a move would open the way for anticompetitive mergers for which there is no

efficiency justification. Some have argued that such a liber-
alization might be justified to save jobs in areas hard hit by
declining employment and/or to improve the balance of trade.
However, there is no persuasive reason to believe that the
mergers that would be allowed under the liberalization in
question would increase employment or improve the trade balance.
Indeed, anticompetitive mergers that do not improve efficiency
could reduce U.S. employment and U.S. firms' ability to compete
with foreign firms as domestic prices rise and output falls. As
a result, changes in merger policy that allow anticompetitive
mergers are not a solution to the problem of industrial decline.

INTRODUCTION

This report evaluates the possibility that horizontal merger law should be liberalized for industries experiencing a long term reduction in output because of declining demand, rising costs, or foreign competition.[1]

This report concludes that such a liberalization would not be in the public interest. The existing merger guidelines already provide for the three principal considerations that might justify a merger in a declining industry in spite of significant concentration and barriers to entry, namely (1) that such a merger would lead to efficiencies that would offset potential anticompetitive effects,[2] (2) that the merger would not contribute to market power because of competition from imports,[3] and (3) that the acquired firm was failing.

A general policy of liberalizing the antitrust laws for declining industries would, therefore, permit mergers with potential anticompetitive effects even though no justification could be offered based on efficiencies and foreign competition. It might be suggested that such mergers would nevertheless be

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[1] For another discussion, see Langenfeld, 1984.

[2] However, see Fisher and Lande, 1983, for a criticism of case-by-case evaluation of efficiencies.

[3] For a discussion of the current Guidelines standards and some relevant case law, see Section V below. Both efficiencies and import competition were considered by the Department of Justice Antitrust Division in its evaluation of the LTV/Republic steel merger in 1983. See Section III below. DOJ explicitly rejected an additional "declining industries defense" in the statement accompanying its 1984 revised merger guidelines. CCH Trade Reg. Rep. 4409, 9-4-84, 6879-5.

justified to save jobs in areas hard hit by declining employment and/or to improve the balance of trade. However, as we will discuss below, there is no persuasive reason to believe that the mergers that would be allowed under the liberalization in question would increase employment or improve the trade balance. In any event, to deal with employment problems in specific industries, more focused policies such as direct compensation or explicit adjustment assistance including subsidized retraining might be more cost effective. To deal with the balance of trade under flexible exchange rates, more appropriate instruments are macroeconomic policies that affect net foreign borrowing.

This report is divided into five major sections. Section I characterizes declining industries, reviews the major causes of decline, and provides some limited evidence concerning the prevalence of industrial decline over time. Section II reviews incentives for mergers and acquisitions, with particular attention paid to the special reasons for mergers in declining industries. Section III provides evidence concerning the empirical relationship between the extent of horizontal merger activity and industry characteristics for declining industries. This section also reviews evidence from five case studies of decline, focusing on the steel and auto parts industries. Section IV discusses some of the policy issues relevant to declining industries and the differing ways in which governments have responded to decline. Section V reviews current merger

policy toward declining industries, and Section VI presents our conclusions.

I. <u>Industrial Decline</u>

To determine whether industrial decline poses serious policy questions, we define the problem, examine its causes, and analyze the extent to which the problem is long-lasting. Through the use of examples of industrial decline during the last 30 years, we illustrate various causes of decline. The causes emphasized include changes in technology and prices of substitutes, and changes in demand, input costs, comparative advantage, and government policy. In addition, we examine evidence on the extent of structural change over time. We find that industrial decline (at least as measured by national industry employment share shifts) did not increase in importance between 1950 and 1980. However, shifts in the regional composition of the manufacturing workforce did rise in the 1970's compared to prior decades.

A. <u>Characterizing a Declining Industry</u>

This report is concerned exclusively with industries that are adjusting to a long run or permanent decline in output.[4]

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[4] Some of the policy issues faced in a declining industry would also arise in an industry that overexpanded in anticipation of an output level that was not subsequently achieved, or in an industry in which changes in technology or transportation costs increased the minimum efficient firm scale. Examples are brewing, cigars, soft drink bottling, and flour milling. See Keithahn, 1978, pp. 33-62, and Harrigan, 1980.

Since changes in industrial structure are often long-lasting, the evaluation of mergers should not be affected by cyclical fluctuations in output.

In general, one would expect a declining industry to be characterized by decreasing employment and capacity as well as output; by a low rate of return based on historical costs, unless the industry was noncompetitive; and by excess capacity, unless firms anticipated the decline and the capital equipment was short-lived or not industry-specific.

If there is a decrease in demand or some other cause for industrial decline, in the short-run, when a substantial share of costs are fixed, it may be efficient for the industry to continue operating all facilities even though capacity utilization and rates of return are low. However, over a longer period, more costs will be variable: buildings, individual machines, or entire plants can be sold for scrap or to other industries; capital must be replaced; and other new investments may be required (e.g., to comply with new pollution regulations). It may then be efficient to close some capacity (for example, by scrapping certain plants or by combining the best machinery at a smaller number of plants) or to switch it to production of other goods.

In analyzing a declining industry, two problems of definition may arise. First, it may be difficult to determine whether the decline in output is permanent. Second, it may be difficult to delineate the industry clearly. There will be cases where the

output of a product or range of products declines but where the
equipment and firms can shift into the production of other
goods. If such supply-side substitution is possible, the
industry might not experience excess capacity or structural
change even though demand for a particular product fell sub-
stantially. This ability to shift resources into other uses
increases the flexibility of producers and reduces the extent of
worker and firm dislocation that might occur from industrial
decline. It is important to separate these cases from others in
which retrenchment of labor, excess capacity, plant closings, and
mergers are significant.

A study by Harrigan (1980) provides examples of industries
in which assets were switched to alternative uses when demand
declined. For example, baby food became a declining product
around 1960 because of a reduction in the number of births.
However, most of the assets used to produce baby food could be
used to make other processed foods, e.g., Gerber used some of its
capacity to produce ketchup and processed peas.[5] Similarly, most
of the assets used to produce electric percolator coffee-makers,
which became a declining product in the 1970s because of the
introduction of automatic drip coffee-makers, could be used to

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[5] Harrigan, 1980, pp. 144, 163, 165. However, short-run asset
switching may have been limited by the desire of baby-food
producers to remain specialized. Apparently, the producers could
have transferred the assets readily to other uses, but did not do
so due to fear of soiling their image as baby-food firms. This
should not, however, have prevented asset switching once a
decision to exit the market occurred. Ibid., p. 173.

produce other small appliances.[6]  By contrast, the excess

capacity left by the decline in rayon production after 1968 was

useless for any other purpose, and equipment was often junked,

or occasionally moved to another location or exported for use in

rayon production.[7]  Likewise, most of the excess capacity left by

the decline in acetylene production was useless for any other

purpose.[8]  The vacuum tube industry fell between these extremes.

With the decline in production in the 1960s, some plants were

mothballed, others were closed (with the buildings sold to

unrelated businesses and/or the machinery moved and used in one

of the firm's other plants), and still others were sold and

converted to produce items such as high-discharge lamps and

capacitors.[9]

B.  Causes of Industrial Decline

1.  Changes in Technology and Prices of Substitutes

Competition from more efficient substitute products, either

new inventions or products whose costs have declined, has reduced

the output of numerous products.  For example, production of

steam locomotives declined during the 1940s following the intro-

duction of diesel locomotives,[10] and production of vacuum tubes

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[6]  Harrigan, 1980, p. 190.

[7]  Harrigan, 1980, pp. 279, 292, 299, 307.

[8]  Harrigan, 1980, p. 353.

[9]  Harrigan, 1980, pp. 79-88.

[10]  General Motors Corporation, 1973, p. 3.

declined as a result of competition from transistors during the 1960s.[11] Other products that declined in part as a result of the development and increasing competitiveness of substitutes include rayon, synthetic soda ash, acetylene, and anthracite coal.[12]

## 2. Changes in Demand

Industrial decline may be brought about by a decrease in demand for a product or product line. In the case of consumer products, demand may decline because tastes change, incomes change, or the population in a relevant age range decreases. For example, changes in tastes reduced the demand for cigars and polyester fabrics. Demographic changes reduced the demand for children's products, e.g., baby foods. The demand for certain types of machinery or materials may decline because of a reduction in the output of a good that they are used to produce, e.g., reduced consumption of refined oil products led to a decline in demand for tankers and hence in the ship-building industry in Japan. Also, the development of radial tires, which last longer than ordinary tires, reduced the demand for tires and for carbon black, which is used primarily in the production of tires.

## 3. Changes in Input Costs

An industry may decline because of an increase in its costs of production, e.g., energy, labor, or natural resource costs.

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[11] Harrigan, 1980, p. 76.

[12] Harrigan, 1980; Pabst, 1940, p. 50.

The synthetic soda ash industry declined in part because an increase in energy prices increased the cost of producing synthetic soda ash compared to natural soda ash.[13] One of the reasons for the decline of the acetylene industry was the increase in the price of a principal raw material, natural gas.[14] Industries with a natural resource base may face increased costs because of depletion of natural resources, e.g., a reduction in the whale population caused an increase in the cost of producing whale oil,[15] and reduced availability of high quality ore reserves has increased the cost of copper production.[16] Unusually large increases in labor costs may have contributed to the decline of the automobile and steel industries. The increase in crude oil prices brought about by OPEC contributed to the decline of petroleum refining.

   4.   Changes in Comparative Advantage

Even if there are no changes in technology, demand, or costs for an industry, such changes elsewhere in the economy or abroad may erode a country's comparative advantage in that industry (i.e., domestic costs can increase relative to foreign costs even

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[13]  Harrigan, 1980, p. 123.

[14]  Harrigan, 1980, p. 353.

[15]  Maurice and Smithson, 1984, pp. 60-71.

[16]  USITC, 1984b, p. 32.

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if domestic costs are not increasing). These changes in comparative costs across countries may lead to the loss of export markets or increasing competition from imports, as in the case of steel, copper,[17] textiles,[18] footwear,[19] and automobiles. Lawrence (1984, p. 9) concludes that the U.S. comparative advantage has been shifting away from standardized capital-intensive and unskilled labor-intensive products toward high-technology products.

Shifts in the comparative advantage of different regions within the country can lead to the relocation of production and to problems of excess capacity and pressures to change industrial structure similar to those that occur in the case of a nationwide decline in the output of an industry. For instance, over time the textile and lumber industries shifted their production bases within the U.S. toward the Southeast from New England and the Northwest, respectively. The Northern sections of the country may be experiencing changes in comparative advantage in manu-facturing due to the increasing relative scarcity of "pollution rights" in more densely populated areas. This factor would raise the costs of producing in the North and make it more efficient

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[17] Ibid., p. 13.

[18] Toyne et al., 1983, pp. 4-12, 7-4; Esposito, 1978, pp. 53-56.

[19] USITC, 1984a, p. A-21.

for production to occur in the South.[20]  In addition, changes in relative wages and the need for skilled versus unskilled labor could cause shifts in comparative advantage and industrial movement toward low cost areas.[21]  While these shifts may cause some dislocation among industry-specific inputs, the ability of firms and workers to move to areas with the lowest total production and marketing costs enhances the ability of the U.S. economy to produce goods and services efficiently.

### 5.  Changes in Government Policy

Changes in government tax, subsidy, procurement, and regulatory policies can contribute to the decline of an industry.  For example, the costs imposed by environmental regulation can contribute to the decline of an industry, e.g., synthetic soda ash.[22]  Health regulations may reduce demand, e.g., for asbestos or lead-based gasoline additives and hence lead.

### 6.  Relative Importance of Changes in Trade and Domestic Consumption

It would be interesting to know which of the potential causes of industrial decline discussed above have been most important.  Lawrence (1984, pp. 54-63) has examined the relative importance of changes in domestic consumption and other factors

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[20]  See McKenzie, 1984, pp. 87-90.

[21]  See McKenzie, 1984, pp. 91-93; and Bluestone and Harrison, 1982.

[22]  Harrigan, 1980, pp. 117-26.

as souces of industrial decline. He calculated the percentage changes in output (value added) and employment in 52 two-digit U.S. manufacturing industries between 1970 and 1980. He decomposed these output and employment shifts into those due to changes in domestic consumption and those due to changes in foreign trade.[23] Had the foreign trade impacts not been partially or fully offset by changes in domesic consumption, changes in foreign trade would have led to a decline of at least 10 percent in value added for the apparel, footwear, radio and television, and motor vehicle and equipment industries. Changes in domestic consumption led to a decline of at least 10 percent in value added for the ordnance and wood containers industries. Lawrence also found that value added declined by more than 2 percent in five of the 52 industries. Of these five industries, only in footwear and iron and steel were changes in the balance of trade more important than changes in domestic consumption in contributing to the decline. Employment declined by more than 2 percent in 16 of the 52 industries. In only two of these (apparel, footwear) were changes in the balance of trade more important than changes in domestic consumption in contributing to the decline.

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[23] Lawrence discusses the methodology for decomposing output and employment changes into trade-related and domestic components at pp. 38-40. His methodology tries to account for both direct effects (e.g., changes in the output of a good that is imported) and indirect effects (e.g., changes in the output of goods used as inputs in producing the good that is imported).

C.  **Trends in Structural Change**

It would be interesting to know whether the extent of
industrial decline has been changing over time.  When employment
in one industry declines, either employment in other industries
expands or unemployment increases.  Thus, some inferences con-
cerning trends in industrial decline can be made from studies of
changes in the industrial structure of employment.  More reliable
inferences would also require information on structural unemploy-
ment, however.

One measure of the amount of structural change in employment
is:

$$S_t = \sum_{i=1}^{N} | I_{i,t} - I_{i,t-1} |$$

where $I_{i,t}$ is industry i's (i = 1,...N) share of total employment
at time t, and $\sum^{N} I_{i,t} = 1$.

Turvey (1977) presents computations of $S_t$ for one-year
intervals for 16 industries in each of five OECD countries for
1964 to 1974.  He found no evidence for either a general increase
or decrease in structural change over the decade.  Turvey also
presents computations for 53 two-digit SIC industries for the
U.S.  He finds that the level of structural change was higher in
1969-1971 than for the rest of the 1964-1974 period.  However,

this was due largely to slow growth of employment in 1969 and
1971.

Lawrence (1984, pp. 51-53) presents computations of a
modified index of structural change for decade-long periods
between 1950 and 1980 for the U.S. He finds that in the 1970s
the degree of structural change in manufacturing employment was
no greater than in the 1960s and was considerably less than in
the 1950s. However, regional shifts in employment patterns
increased in the 1970s compared to previous decades. Lawrence
attributes the increase in regional shifts to factors such as
regional wages, operating costs and regulatory policies, which
affect firms' location decisions. Lawrence notes that the
recessions in the early 1980s caused employment in both high
technology and basic industries to be below its long-run trend.
He concludes that structural change would not result in
significant unemployment if the U.S. economy could sustain growth
at long-run trend levels.[24]

II. Incentives for Acquisitions and Mergers

In the preceding section we characterized a declining
industry and discussed several factors that could lead to
industrial decline. These factors included changes in technology
and the prices of substitutes and changes in demand, input costs,
comparative advantage, and government policy. In this section we

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[24] Lawrence, 1984, pp. 9-10.

briefly discuss some general reasons why firms might choose to merge. We then consider the possible reasons that some of the incentives to merge might be greater for firms in an industry that is experiencing a long term decline. Of course, the decision of firms in a declining industry to merge depends on the attractiveness of merging relative to the alternatives: (i) continuing independent operation at a reduced scale; (ii) switching to production of another good; (iii) selling assets piecemeal; (iv) exporting the plant for use in another country; or (v) junking assets. The more important economies of scale are, the less likely firms are to continue independent operation when output declines. The more industry-specific assets are, the less likely a firm is to switch production to a different good. The less mobile the assets are and the more difficult it would be to realize the value of intangible assets sold separately, the less likely a firm is to sell the assets piecemeal. The longer the physical life of the firm's assets, the less likely it is to junk them.

A. Ceneral Explanations for Mergers

There are many explanations for horizontal mergers that might apply to stable and growing as well as declining industries.[25] Some mergers would permit achievement of efficiencies. For example, if changes in technology or transportation

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[25] Beckenstein, 1979.

costs increase the minimum efficient scales of plants or firms, there may be an incentive to merge existing firms.[26] Also, economies of scale and scope may be more important in marketing and distribution than in product development, at least in some high-tech industries such as personal computers. In this case, the pattern may be for small venture companies to develop new products, with the successful venture companies being acquired by large firms offering a broad product line.[27] If a firm is poorly managed, a merger may be used to achieve improvements in management.[28]

Other mergers are motivated by non-efficiency considerations. Some mergers, at least historically, have apparently occurred to achieve market power.[29] Others may be intended to reduce tax liabilities, e.g., where one firm has profits and the other has losses, or where a firm in a mature industry wants to

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[26] According to Weiss, 1965, p. 177, the minimum efficient scale plant increased during 1929-1958 in petroleum refining, automobiles, cement, and flour, and a substantial majority of mergers in these industries involved plants of sub-optimal scale. Similarly, an increase in the importance of economies of scale in production and distribution, i.e., an increase in minimum efficient scales for plants and for multi-plant firms, explains some mergers in the brewing industry. Horowitz and Horowitz, 1965, p. 151; Keithahn, 1978, pp. 33-62.

[27] Washington Post, October 31, 1984, p. G1.

[28] Fisher and Lande, 1983, pp. 1622-23, cite two examples.

[29] For instance, the consolidation of cast-iron pipe producers in the late 1800s and early 1900s is often cited as a classic merger to monopolize. See United States v. Addyston Pipe and Steel Co. 85 Fed. 271 (6th Cir. 1898) modified, 175 U.S. 211 (1899).

reinvest earnings so that the owners can realize income as capital gains. Some mergers may occur because of incentives created by government regulatory policies, e.g., regulations that treat interfirm and intrafirm transactions differently. Also, some acquisitions occur simply because one firm, which disagrees with market forecasts, believes that another firm is underpriced; the acquisition may be essentially a financial investment.

While one or more of the previously mentioned motives is likely to apply to any particular merger, the remainder of this section is concerned exclusively with incentives for horizontal acquisitions and mergers that one might expect to increase when an industry is in decline.

B.   Economies of Scale and Industry-Specific Assets

When economies of scale at the firm level make it efficient to reduce the number of firms as industry output declines, and when each firm has some industry-specific durable asset, horizontal acquisitions and mergers may yield efficiencies. This subsection discusses these economies of scale and industry-specific assets.

1.   Economies of Scale

The economies of scale in question may arise at various stages of the firm's operation, including general overheads such as management, research and development, production, or distribution. Economies of scale may arise at the plant level and for

multi-plant firms.[30]  The existence of economies of scale at the
plant level has been confirmed in many studies.[31]  Multi-plant
scale economies, i.e., economies available by combining more than
one plant of the minimum efficient scale into a single firm, have
been studied by Scherer et al. (1975), using impressionistic
information gathered from interviews in twelve industries in six
countries around 1970.  The results of that study are summarized
in Table 1, where cost disadvantages of operating fewer than the
minimum efficient number of plants range from slight (around 1
percent) to severe (more than 5 percent).  In seven of the twelve
industries, at least two plants would be needed to avoid a cost
disadvantage greater than 1 percent.  However, the right hand
column of Table 1 indicates that for most of these seven indus-
tries only a relatively small share of the then current U.S.
market was needed to exploit both plant and multi-plant firm
economies of scale.

However, it is possible that scale economies might cause
minimum efficient market shares to be higher than those in Table
1.  First, if markets are regional rather than national due to
high transportation costs or other factors, then a small national
share may be consistent with a large regional share.  Second, a
decline in the volume of sales in the national market could cause
the minimum efficient market share to become larger than it was

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[30]  Keithahn, 1978, pp. 33-62, concerning brewing.

[31]  Scherer, 1980, pp. 81-100.

# TABLE 1

## Summary of Single-Plant Firm Overall Cost Disadvantage Compared to Firm with the Optimal Number of Plants, 1970

| Industry | Overall disadvantage of representative general-line single MES plant firm | Number of MES plants needed to have not more than "slight" overall handicap | Share of U.S. market required in 1967 |
|---|---|---|---|
| Beer brewing | Slight to severe, depending upon inherited brand image | 3-4 | 10-14% |
| Cigarettes | Slight to moderate (borderline) | 1-2 | 6-12 |
| Fabric weaving | Very slight to moderate, depending upon product line | 3-6 | 1 |
| Paints | Slight | 1 | 1.4 |
| Petroleum refining | Very slight to moderate, depending upon regional market position and crude oil access | 2-3 | 4-6 |
| Shoes | Slight to moderate, depending upon product line | 3-6 | 1 |
| Glass bottles | Slight to moderate, depending upon location and products | 3-4 | 4-6 |

TABLE 1--Continued

| Industry | Overall disadvantage of representative general-line single MES plant firm | Number of MES plants needed to have not more than "slight" overall handicap | Share of U.S. market required in 1967 |
|---|---|---|---|
| Cement | Slight | 1 | 2 |
| Ordinary steel | Very slight | 1 | 3 |
| Bearings | Slight to moderate, depending upon product line | 3-5 | 4-7 |
| Refrigerators | Moderate (incl. other appliances) | 4-8 | 14-20 |
| Storage batteries | Slight | 1 | 2 |

Note:  MES = minimum efficient scale.

Source:  Scherer et al., 1975, Table 7.6, p. 336.

prior to the decline. Finally, if scale economies have increased over time or if the industries in Table 1 are not representative of industries generally, then minimum efficient market shares might be substantially higher than those listed for 1967. With these caveats in mind, Table 1 indicates that achievement of scale economies would not require a general relaxation of the merger guidelines concerning concentration, particularly if antitrust authorities weigh the benefits of scale economies in evaluating mergers.

In some cases, cost economies occur because consolidation eliminates underutilized duplicate inputs. The duplicate item may range from an employee, to a testing laboratory, to an entire plant, to a dealer network. In other cases, costs simply increase proportionately less than output. For example, there may be production cost economies related to plant or lot size. Economies of scale may also be realized as an increase in quality rather than a reduction in cost.[32]

In the following subsection, we will deal only with industries in which economies of scale would provide an incentive to reduce the number of firms if the industry declined. This assumption will not be restated each time it is relevant.

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[32] Fisher and Lande, 1983, pp. 1620-21, cite examples of achievement of economies of scale through mergers in steel, railways, and airlines.

## 2. Industry-Specific Durable Assets

A firm may have various types of assets that might be of more value if kept in the original industry than if moved to a different industry: (a) entire plants; (b) individual pieces of machinery; or (c) intangibles such as proprietary rights to differentiated products. If a firm that is exiting from an industry has any of these assets, they might give rise to a transaction with a horizontal competitor that would be subject to the antitrust laws. Some of the acquisition and merger possibilities that arise in connection with the three categories of assets just mentioned are discussed below.

### a. Plants

Suppose that initially each of the firms in an industry is operating at the minimum efficient scale with several plants of different vintages and/or in different locations. In this case, a decline in output might make it efficient to: (i) shut down some of the plants operated by each firm rather than to shut down all of the plants operated by a few firms, e.g., it might be efficient to keep the newer plants of each firm or to keep a combination of plants from different firms with an efficient geographic distribution, and (ii) reduce the number of firms in the industry by acquisitions or mergers that would combine efficient sets of plants into firms.[33]

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[33] There are cases in which one firm in a declining industry purchased a competitor's capacity and then retired it, e.g., American Viscose did this. Harrigan and Porter, 1983, p. 117.

b.  **Machinery**

It is fairly common in declining industries for a multi-plant firm to close a plant and move some of the machinery and equipment to one of its other plants.  This occurred in a number of cases in the vacuum tube industry.[34]  In other situations, machinery is sold to second-hand dealers for resale.  In yet other cases, one firm sells a plant to another and the latter firm moves the usable machinery and equipment to one of its plants.[35]  In some cases where machinery is industry-specific, efficient transfers of machinery might be subject to the horizontal merger laws.

c.  **Intangible Assets**

A firm in a declining industry may have an incentive to merge if it owns an industry-specific intangible asset such as a differentiated product with an established brand name, reputation, and/or distribution network.  During the decline of the vacuum tube industry, GTE Sylvania purchased rights and specialized equipment and tooling needed to manufacture proprietary products from RCA when RCA exited from the industry. GTE Sylvania moved production of the RCA tubes to one of its own

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[34]  Harrigan, 1980, pp. 81, 83.

[35]  Harrigan, 1980, pp. 84-85.

plants but sold the tubes to RCA for resale.[36]   In the tele-
vision and stereo industry, in 1974 GTE Sylvania purchased
Philco's brand name and distribution network, but not its plant
or equipment; Philco switched its production capacity over to
electronic products for automobiles.[37]   Such mergers may allow
differentiated products to share production and distribution
facilities, achieving efficiencies from use of the most efficient
plant or economies of scale.

C. <u>Rationalization of Product Lines</u>

Suppose that an industry is characterized by economies of
scale based on the length of production runs and that, prior to
the decline of the industry, each firm manufactured a wide range
of products.  If the output of each product declines, it might be
efficient for each firm to specialize in a limited range of
products.[38]  A competitive market would probably be able to
achieve this result without mergers, e.g., one firm might
unilaterally specialize in a few products and undersell its
competitors, which might respond by specializing in products no
longer made by the first firm.  However, one might argue that it
would be hard to achieve such a result without coordination among

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[36]  Harrigan, 1980, pp. 85-86.

[37]  <u>Wall Street Journal</u>, October 11, 1974, p. 12.

[38]  Specialization need not be the most efficient response if
there are gains (cost savings) from producing a full-line of
products.  However, if these economies of scope are small
relative to economies of scale in each product, firms in
declining industries have an incentive to specialize.

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the firms and that, since the antitrust laws would restrict explicit collusion to reduce competition on product lines, a merger might be used to achieve the same result.[39]

D. **Different Fortunes of Different Firms**

1. **Different Products**

When the output of an industry declines because of changes in demand or foreign competition, the outputs of at least some of the firms in the industry must decline. However, in an industry that produces a range of goods, some firms may face different demand or competitive conditions and may be expanding. In this case, it may be efficient for an expanding firm to combine with a declining firm and switch the latter's plants to the expanding firm's product lines.

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[39] Scherer et al., 1975, pp. 312-313, suggests that, because competition was limited by oligopolistic interdependence, three British bearing firms were producing the same product lines at inefficiently low scale in the 1960s. In 1969, with the encouragement of the government's Industrial Reorganization Corporation, the three firms merged, eliminated duplication, and lengthened production runs. Scherer et al, pp. 314-315, suggests that a similar problem existed in the British steel industry prior to the 1967 nationalization, which was followed by a reduction in the number of plants manufacturing individual products. Scherer et al, pp. 313-314, notes that product specialization agreements were used to achieve a similar result without merger in the Japanese bearing industry in the early 1970s and in the Swedish and German steel industries. Scherer et al., pp. 316 and 391, indicates that in the early 1970s the U.S. steel and antifriction bearing industries were characterized by limited price competition and a substantial incidence of inefficient small-lot production involving excess costs of 5 to 10 percent on a fourth to a third of industry output.

## 2. Different Regions

It is common for a firm to begin with a plant and distribution system in one region and to build or acquire plants and distribution systems in other regions as it expands. Particularly when the firm in question is in a stagnant or declining industry, such inter-regional entry might occur through acquisition or merger rather than or in addition to new construction. For example, inter-regional mergers occurred in flour in the 1930s and 1950s, cement in the 1940s, and brewing in the 1950s and 1960s; each of these was a slow growth or declining industry.[40]

### E. The Incentive to Collude

The incentive to merge to facilitate collusion to raise price may be greater in a declining industry. First, the incentive to raise price above the short-run competitive equilibrium level might be greater in a declining industry. A price increase might be less likely to induce entry if the competitive output was declining because the collusive price might still be below the long-run competitive equilibrium price. Also, if there is a significant cost attached to entry and exit, e.g., industry-specific assets, the market for the output of a declining industry would not be perfectly contestable even at the long-run competitive equilibrium price. Second, it might be easier to

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[40] Weiss, 1965, p. 178; Horowitz and Horowitz, 1968, pp. 50-51. Brewing was a stagnant industry in the 1950s but grew at a moderate rate in the 1960s.

enforce collusion in a declining industry, because cheating might be easier to detect.[41]

F. Conclusion

Incentives for acquisitions and mergers come from many sources. In this section we have discussed in some detail the reasons that firms in declining industries might merge. The existence of economies of scale in conjunction with industry-specific durable assets may provide an incentive for firms in a declining industry to merge. In addition, rationalization of product lines and product mix considerations may also make mergers particularly attractive in declining industries. Finally, acquisitions may be fostered by anticompetitive motives if mergers allow economic profits to be earned in markets where entry is unlikely.

Although we identified a number of horizontal merger motives that might apply in cases of industrial decline, our discussion does not suggest that firms in declining industries merge more often than firms in growing or stagnant industries. No such hypothesis could be justified without an analysis of merger motives in those other growth cases. Nevertheless, in the

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[41] Posner, 1976, p. 61. However, if a significant share of the assets that firms have at the long-run competitive equilibrium prior to merger are industry-specific, then marginal cost at outputs below the pre-merger output will be low. If this marginal cost is below marginal revenue, then collusion to raise price would not be profitable (Dowell, 1984). On the other hand, it is often suggested that a high ratio of fixed to variable costs increases the incentive to have a collusive agreement not to cut price in response to a decline in demand.

following section we will examine the empirical evidence on the relationship between horizontal merger activity and the rate of industry growth. We then proceed to the more important problem of empirically testing the hypothesis that horizontal mergers are more likely in a declining industry if that industry is characterized by scale economies and other conditions. If this hypothesis is supported, we would have some evidence for the proposition that the merger motives we have identified are of some empirical importance. That is the purpose of the next section.

## III. Merger Activity in Declining Industries

### A. Interindustry Analysis of Merger Activity

This subsection presents the results of two cross-sectional regression analyses of merger activity in four-digit SIC manufacturing industries during the period 1963 to 1977. First, we investigate whether the level of merger activity varied systematically with the rate of growth for a sample of 223 industries.[42] Second, for the 25 declining industries in this sample, we test the hypothesis that the number of mergers is greater when the incentive to merge based on economies of scale and other factors is greater and when the likelihood of an antitrust challenge based on the level of concentration is lower.

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[42] Not all 450 four-digit SIC manufacturing industries are in the sample because we excluded industries for which the industry definition changed over the period, industries defined as "not elsewhere classified" and "miscellaneous," industries for which data were missing, and industries that did not contain at least two establishments with annual sales of $10 million or more.

## 1. Merger Activity and Rate of Growth

While we suggested in Section II that some incentives to merge may be more important for declining than for growing industries, we have no theoretical reason to hypothesize that the level of horizontal merger activity varies in any particular way with the rate of growth across industries. Nevertheless, we investigated the possibility that there is some systematic relationship between an industry's horizontal merger activity and its rate of growth by regressing a measure of horizontal merger activity (HMAL) on the real rate of growth (RGROW) as well as RGROW-squared and RGROW-cubed. Because of the likelihood of errors in classifying mergers as horizontal and non-horizontal, we also used a measure of total (horizontal, vertical, etc.) merger activity (TMAL) as the dependent variable.[43]

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[43] HMAL and TMAL are the number of large horizontal mergers and large mergers of all types, respectively, in the four-digit SIC industry during 1963-77 divided by the number of large establishments in that industry in 1972. The data on number of large mergers are from the FTC's Large Merger Series, which lists mergers involving acquisition of more than $10 million in assets. The data on number of establishments are from the 1977 Census of Manufactures, vol. II. Large establishments are defined as establishments having annual sales of $10 million or more. RGROW is the percentage growth in real shipments between 1963 and 1977. Shipment data were taken from the 1977 Census of Manufactures. Current dollar values were deflated using the U.S. Bureau of Labor Statistics industry-specific producer price index. We also used another dependent variable, TMA, which is comparable to TMAL but based on all mergers and all establishments, with similar results. HMAL, TMAL, and TMA are based on 79, 356, and 6,921 mergers respectively.
　　We would prefer to use a dependent variable that measures the percentage of industry assets transferred by merger rather than the number of mergers per firm. However, data on the value of assets transferred are often missing.

The results are presented in Table 2. Because four-digit SIC industries vary considerably in size, we estimated the regressions not only by ordinary least squares but also by weighting the observations by value of shipments in 1972.[44] There is no statistically significant relationship between merger activity and rate of growth in three of the four regressions. However, there is a weak, essentially negative, relationship between total merger activity (TMAL) and rate of growth when observations are weighted by value of shipments.[45]

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[44] For a technical discussion of the use of weighted regressions to correct for heteroscedasticity, see Johnston, 1972, pp. 214-221.

[45] Regressions similar to those presented in Table 2 were also estimated using an alternative merger data set developed by David Ravenscraft. His data improves on the FTC data by correcting SIC categories and filling in missing mergers and transaction values. However, the observations are limited to mergers involving relatively large FTC Line of Business firms. Using these data and various definitions of horizontal merger activity, we found no consistent, significant pattern in the unweighted regression results. However, for the weighted regressions we obtained an often significant sign pattern (negative, positive, negative) for the coefficients on RGROW, $RGROW^2$, and $RGROW^3$. This pattern was apparent when horizontal merger activity was defined in a manner comparable to HMAL or TMAL (but not when merger activity was defined as the percentage of industry assets transferred via mergers). The pattern of coefficients indicated a negative relationship between merger activity and real growth during 1963-77 where real growth was less than 100 percent for all mergers and less than 200 percent for horizontal mergers. For real growth rates between 200 and 700 percent, the relationship between the merger activity and real growth was positive. However, our sample contains very few industries with real growth rates above 300 percent.

## TABLE 2

### Merger Activity and Rate of Growth[a]

| Independent Variable | Dependent Variable | | | |
|---|---|---|---|---|
| | HMAL | | TMAL | |
| | Unweighted | Weighted[b] | Unweighted | Weighted[b] |
| Constant | .0154 (3.0) | .0214 (5.6) | .0856 (5.7) | .1179 (7.5) |
| RGROW | .0081 (0.7) | −.0096 (−1.1) | .0128 (0.4) | −.0485 (−1.3)[c] |
| RGROW$^2$ | −.0038 (−0.5) | .0056 (1.0) | −.1430 (−0.7) | .0195 (0.8) |
| RGROW$^3$ | .0003 (0.3) | −.0008 (−0.9) | .0019 (0.6) | −.0028 (−0.7) |

Other Statistics

| | | | | |
|---|---|---|---|---|
| $R^2$ | .004 | -- | .006 | -- |
| $F_{(3,219)}$ | 0.3 | -- | 0.4 | -- |
| N | 223 | 223 | 223 | 223 |

[a] t-statistics are in parentheses.

[b] Observations weighted by value of shipments in 1972. Since estimation involves a model with zero intercept, $R^2$ and F calculated in the usual way cannot be used as measures of goodness of fit and significance. See Aigner, 1971, pp. 85-90.

[c] When RGROW$^2$ and RGROW$^3$ are omitted from the regression, the coefficient on RGROW has a t-statistic of −1.7, which is significant at the 5 percent level in a one-tailed test.

These results require qualification. The data on merger activity are rather crude. Mergers may be incorrectly classified by SIC number,[46] and some horizontal mergers may be incorrectly classified as non-horizontal or vice versa. Better data might produce different results. One might also obtain different results from an equation containing independent variables in addition to the rate of growth.

### 2. Mergers in Declining Industries

We hypothesize that the number of large horizontal mergers in a declining industry will be greater if two conditions are fulfilled: (i) there is an incentive to merge, based on economies of scale and industry-specific assets, for the reasons discussed in Section II, and (ii) antitrust policy does not prevent large mergers.

This hypothesis was tested for 1963-77 by regressing the measures of merger activity used above (HMAL and TMAL) on dummy variables measuring the extent of industrial decline (RGROWD), the extent of economies of scale (CDRD), the capital-output ratio (KOD), and the four-firm concentration ratio (CR4D).[47] We used

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[46] The SIC category recorded for any merger is often the major line-of-business of the acquired or acquiring company. Thus, the sale of a division by one diversified company to another might be classified in the wrong SIC category. Also, many mergers were placed in 3-digit SIC classifications. These observations could not be used because we did not know which 4-digit industry they belonged to.

[47] We also used a variable comparable to TMAL but based on all mergers and all establishments, with similar results.

the subsample of 25 industries for which real growth between 1963 and 1977 was negative, i.e., RGROW < 0.

As a measure of the extent of decline, we used RGROWD, a dummy variable set equal to 1 for those declining industries for which RGROW was greater in absolute value than the median for the set of 25 declining industries and zero otherwise.

As crude measures of economies of scale, we used dummy variables based on the "cost disadvantage ratio" (CDR), which is calculated as the average value-added per worker in the smallest establishments producing 50 percent of industry output, divided by the average value-added per worker in the largest establishments accounting for the remaining 50 percent.[48] We used alternative cost disadvantage ratio dummies ranging from CDRD100, which equalled 1 if CDR < 1 and zero otherwise, to CDRD80, which equalled 1 if CDR < .80 and zero otherwise. One obvious deficiency of these variables as measures of economies of scale is that they are based on value-added per worker rather than average cost per unit output. Thus, it is not clear that they provide a valid test of the role of economies of scale.

As an indicator of industry-specific assets, we used KOD, a dummy based on the capital-output ratio. KOD was defined as 1 for industries for which the capital-output ratio was greater

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[48] Use of this variable was first proposed by Caves et al., 1975. Kwoka, 1979, calculated the variable using data from the 1972 Census of Manufactures and made his data available to us. Contrary to expectations about economies of scale, CDR exceeds 1 in a large number of industries. See Kwoka, 1979, footnote 6.

than the median for the set of 25 declining industries and zero otherwise.[49] Since KOD does not distinguish between industry-specific and other assets, there is no strong theoretical argument for this variable. We included it because we could not obtain a measure of indusry-specific assets.

In order for a merger to take place, there would have to be not only an incentive to merge but also no successful attempt to block the merger on antitrust grounds. We included two alternative concentration ratio variables, CR4D50 and CR4D60, to allow in a crude way for the effect of the antitrust laws in 1963-77. CR4D50 and CR4D60 equalled 1 if the four-firm concentration ratio was less than 0.50 and 0.60 respectively and zero otherwise. Each of these CR4D variables enters the regressions in one of two ways. First, it enters additively, along with RGROWD, CDRD, and KOD. Second, it enters interactively. That is, in lieu of RGROWD, we include the product of RGROWD and CR4D, and similarly for CDRD and for KOD. Each interactive variable is equal to 1 if there would have been both an incentive to merge and, based on the antitrust laws, an opportunity to merge.

In summary, our hypothesis is that horizontal mergers should occur more often in declining industries when decline, scale economies, and sunk assets are more important and there are no legal barriers. The dummy variables equal one when decline is

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[49] The capital-output ratio is calculated as the gross book value of fixed assets divided by the value of shipments from the 1972 Census of Manufactures.

larger, scale economies are larger, sunk assets are likely to exist, and legal barriers are low. Thus, we expect all coefficients to be positive.

All regressions were estimated in two ways, first by ordinary least squares and then by weighting the observations by 1972 value of shipments. Some specific results are presented in Tables 3a and 3b for illustrative purposes. A few generalizations about these and other empirical estimates can be made. First, none of the regressions has high explanatory power as measured by the $R^2$. Second, taking all the alternative specifications and estimation methods, a majority of estimated coefficients had the expected positive signs, and many of these were statistically significant. However, these results are far from uniform. The estimates are highly sensitive to relatively minor changes in how the variables and the sample are defined, and to whether the observations are weighted. Estimates with equal theoretical basis vary considerably.[50]

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[50] We also estimated regressions similar to those shown in Table 3 using the previously mentioned merger series developed by Ravenscraft. The results showed no consistent patterns, and significant coefficients often had counterintuitive negative signs. These findings further weaken the faith one could place in the regression results.

## Mergers in Declining Industries[a]

| Independent Variable | Dependent Variable: HMAL | | | |
|---|---|---|---|---|
| | Unweighted | | Weighted[b] | |
| Constant | -.0081 (-0.8) | .0044 (0.8) | -.0116 (-1.2) | .0079 (1.5) |
| RGROWD | .0012 (0.1) | -- | -.0112 (-1.3) | -- |
| CDRD95 | .0137 (1.3) | -- | .0274 (2.4) | -- |
| KOD | .00003 (0.0) | -- | .0034 (0.3) | -- |
| CR4D50 | .0212 (2.1) | -- | .0359 (3.7) | -- |
| RGROWD*CR4D50 | -- | .0015 (0.1) | -- | .0002 (1.1) |
| CDRD95*CR4D50 | -- | .0245 (2.0) | -- | .0009 (2.1) |
| KOD*CR4D50 | -- | .0062 (0.5) | -- | -.0004 (-0.9) |

Other Statistics

| | | | | |
|---|---|---|---|---|
| $R^2$ | .21 | .23 | -- | -- |
| F(d.f.) | 1.4(4,20) | 2.1(3,21) | -- | -- |
| N | 25 | 25 | 25 | 25 |

[a]  t-statistics are in parentheses.

[b]  Observations are weighted by 1972 value of shipments.  The $R^2$ and F statistics cannot be used as measures of goodness of fit and significance.

## TABLE 3b

## Mergers in Declining Industries[a]

| Independent Variable | Dependent Variable: HMAL | | | |
| | Unweighted | | Weighted[b] | |
|---|---|---|---|---|
| Constant | -.0234<br>(-0.5) | .0262<br>(1.0) | -.0371<br>(-0.7) | .0146<br>(0.9) |
| RGROWD | .0299<br>(0.8) | -- | -.0461<br>(-1.2) | -- |
| CDRD90 | -.0213<br>(-0.5) | -- | -.0930<br>(-1.8) | -- |
| KOD | .0283<br>(0.8) | -- | .1400<br>(3.8) | -- |
| CR4D60 | .0672<br>(1.3) | -- | .1357<br>(2.6) | -- |
| RGROWD*CR4D60 | -- | .0448<br>(1.2) | -- | .0014<br>(2.6) |
| CDRD90*CR4D60 | -- | -.0186<br>(-0.5) | -- | -.00005<br>(-0.0) |
| KOD*CR4D60 | -- | .0377<br>(1.0) | -- | .0025<br>(12.0) |

## Other Statistics

| | | | | |
|---|---|---|---|---|
| $R^2$ | .16 | .15 | -- | -- |
| F(d.f.) | 1.0(4,20) | 1.2(3.21) | -- | -- |
| N | 25 | 25 | 25 | 25 |

[a]  t-statistics are in parentheses.

[b]  Observations are weighted by 1972 value of shipments.  The $R^2$ and F statistics cannot be used as measures of goodness of fit and significance.

In addition, as we indicated in the previous subsection, the data are subject to a number of deficiencies, and CDRD, KOD, and CR4D are at best crude proxies for the appropriate economies of scale, sunk asset, and antitrust policy variables. On balance, therefore, we do not think the empirical results can be given enough weight to be used, either way, for policy purposes. Of course, if better data were available they might support the hypothesis concerning the role of economies of scale and industry-specific assets in providing an incentive for mergers in declining industries.

B.  A Case Study:  The U.S. Steel Industry

In the preceding subsection we discovered no general relationship between industrial decline and the incidence of horizontal mergers, and we were unable to conclude that the available interindustry data support the hypothesis that economies of scale and sunk costs provide an incentive for mergers in declining industries. Nevertheless, it is clear that mergers play an important role in some specific declining industries. A leading example is the steel industry.

A number of measures indicate that the U.S. steel industry is declining. First, from 1963 to 1977 the blast furnace and steel mill industry, SIC 3312, was one of 25 four-digit SIC manufacturing industries whose real value of domestic shipments fell. U.S. producers' shipments of steel mill products fell from 85 million tons in 1964 to 67 million tons in 1983, well below the 1973 peak of 111 million tons. Second, the average number of

furnaces and the advent of larger blast furnaces and basic-
oxygen furnaces. An average estimate of the minimum efficient
scale for an integrated steel plant producing flat rolled
products in the 1960s was 4 million tons per year. Tarr (1984)
more recently estimated that in the mid-1970s the minimum
efficient scale for an integrated steel plant was 6 million tons
per year. Such a plant would include two optimally-sized blast
furnaces to feed one optimal basic-oxygen furnace and a rolling
mill that is above the minimum optimal level of 4.5 to 5 million
tons per year. Barnett and Schorsch (1983, pp. 190-92) give a
somewhat lower estimate of minimum efficient scale (MES). For
instance, they argue that MES for integrated cold rolled sheet
production is about 4 million tons with most scale savings
attained by the 3 million ton level. The major difference
between the Tarr and Barnett and Schorsch estimates is that
Tarr's estimates of efficient blast and basic-oxygen furnaces are
much larger.

Thus, available evidence indicates that the MES for inte-
grated steelmaking is not currently above 6 million tons per year

and may be as low as 3 to 4 million tons.[60] Since U.S. production of raw steel in 1983 amounted to 85 million short tons (USITC 1553, p. a-28), there appears to be room for 14 to 28 efficiently sized integrated steelmaking facilities in the U.S. Consumption of 83 million short tons of steel mill products supports this view.[61] It is not clear, however, that many individual firms are currently taking advantage of these economies. Of the 16 integrated steel producers, only 7 (Armco, Bethlehem, Inland, Jones and Laughlin (LTV), National, Republic, and U.S. Steel) had 1983 integrated production capacity of over 6 million tons per year.[62] In addition, since industry production is well below capacity,[63] it is unlikely that all 7 of these firms actually produce 6 million tons. Thus, there is some doubt whether many of the U.S. steel producers can achieve all available production scale economies internally given their current

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[60] There are, of course, continuing changes in steelmaking technology, e.g., horizontal versus vertical continuous casting (USITC 1553, pp. a-20-23). Whether these changes will lead to substantially larger efficient size plants is speculative at this point. However, many of the newer technologies (e.g., continuous casting and direct reduction-electric furnace production) do not appear to require large scale. Indeed, continuous casting seems to be more widely used in smaller minimills than in large integrated facilities (Barnett and Schorsch, 1983, pp. 184-5).

[61] USITC 1553, p. a-39.

[62] USITC 1553, pp. E-2-E-5.

[63] USITC 1553, pp. I2-I25.

production levels,[64] although the larger firms should be able to do so through internal rationalization of capacity. Also, firms might achieve some scale economies by specializing in end products without merging.

Minimills use ferrous scrap (as opposed to iron ore) as their basic input and thus avoid the need for blast furnaces. Rather, minimills use electric furnaces to convert scrap to molten steel. Current minimills cannot produce a full line of steel products. They tend to specialize in production of bars and smaller, finished products. For the products they do make, however, the minimills are easily competitive with the larger integrated plants due to lower wage rates and other production costs.[65] In fact, minimills have caused integrated firms to

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[64] A further complication is that the MES for rolling mills for various products differ. Pratten, 1971, estimated that in the 1960s MES slabbing mills were 4.5 million tons, blooming mills 4 million tons, and billet mills 5.5 million tons. Technological changes, particularly continuous casting, may have altered these values substantially. In addition, if natural gas is cheap relative to coal, the direct reduction-electric furnace technology may be most efficient. The MES for that technology is 0.5 to 3 million tons per year. Minimills that want to become less dependent on scrap as an input may be able to use the direct reduction technology to provide molten steel.

[65] See Barnett and Schorsch, 1983, pp. 83-100, 150, 179-180, 184-5; Tarr, 1984, p. 122; and USITC 1553, pp. a-32-33, 101-102. Minimill costs relative to integrated mill costs are partially a function of the price of scrap versus iron ore. As more minimills are built the price of scrap should rise (unless the supply of scrap is perfectly elastic), thereby lowering the minimill production cost advantage. However, Barnett and Schorsch, p. 99, argue that rising scrap prices are unlikely to be a problem in the future due to the more rapid technological change in minimills versus integrated plants.

reduce their output of the products that minimills can make. The minimum efficient scale of minimills is also difficult to pinpoint. It probably lies in the 0.5 to 3 million tons per year range depending on the end products.

### 2. Steel Industry Mergers and Antitrust Enforcement

Table 4 lists major steel industry mergers since 1950. Relatively few were horizontal. In this subsection we give a brief review of several of the most important of these mergers.

The attempted horizontal acquisition of Youngstown Sheet & Tube by Bethlehem Steel in 1956 was blocked by the Justice Department.[66] One of the arguments made for the proposed merger was that Bethlehem could not afford to construct a fully integrated steel plant in the Chicago market. Bethlehem contended that the cost of rounding out and expanding the existing Youngstown plant in the Chicago area would be about $130 per ingot ton, while the cost to construct a greenfield plant near Chicago would be about $300 per ton. However, after the merger was denied, Bethlehem did construct a greenfield plant at Burns Harbor, Indiana.[67]

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[66] United States v. Bethlehem Steel Corp., 168 F. Supp. 576 (1958).

[67] According to Barnett and Schorsch, 1983, p. 82, the construction of the Burns Harbor facility had mixed results. Although it contributed to overcapacity in flat-rolled products and to the eventual demise of Youngstown, which was purchased by Lykes in 1969, it was the only greenfield plant built since 1953.

# TABLE 4

Principal Acquisitions Involving Steel Companies, 1950-84

| Date of Acquisition | Acquiring Company | Assets of Acquiring Company (Million Dollars) | Acquired Company | Assets of Acquired Company (Million Dollars) | Type of Acquisition |
|---|---|---|---|---|---|
| Jan. 4, 1950 | Detroit Steel | 16.9 | Portsmouth Steel | 28.5 | Vertical |
| March 1951 | Kaiser Steel | 157.3 | Utah Fuel Co. | 21.4 | Vertical |
| Sept. 30, 1953 | Timkin Detroit Ax | 89.9 | Stand Steel Spring | 59.8 | Product Extension |
| Dec. 23, 1954 | Follansbee Steel | 20.5 | Consumers Co. | 10.3 | Conglomerate |
| Feb. 26, 1954 | Merritt Chapman | 36.7 | Newport Steel Co. | 26.5 | Conglomerate |
| Jan. 1, 1955 | Babcock & Wilcox | 161.5 | Globe Steel Tubes | 12.6 | Product Extension |
| July 31, 1955 | Harrisburg Steel | 19.6 | Precision Castings | 13.0 | Conglomerate |
| July 31, 1956 | Youngstown Sheet | 573.5 | Emsco Mfg. Co. | 19.6 | Product Extenstion |
| Sept. 14, 1956 | Acme Steel Co. | 60.8 | Newport Ste/Marrit | 29.4 | Product Extenstion |
| May 1, 1956 | Jessop Steel Co. | 11.7 | Green River Steel | 13.0 | Horizontal |
| Nov. 19, 1957 | Carpenter Steel Co. | 47.5 | Northeastern Steel | − 14.2 | Horizontal |
| Apr. 30, 1957 | Jones & Laughlin | 732.1 | Rotary Elec. Steel | 33.2 | Product Extension |
| Nov. 30, 1957 | Cooperweld Steel | 56.2 | Superior Steel | 16.5 | Vertical |
| Apr. 30, 1958 | Armco Steel Corp. | 612.8 | National Supply Co. | 154.7 | Vertical |
| Jan 14, 1958 | Armco Steel Corp. | 612.8 | Union Wire Rope | 11.6 | Vertical |
| Aug. 31, 1962 | Sharon Steel Corp. | 99.4 | Macomber Inc. | 10.6 | Product Extension |
| April 1964 | U.S. Steel | 5033.5 | Certified Inds. Inc. | 11.1 | Vertical |
| Dec. 21, 1964 | Allegheny Ludlum Steel | 196.9 | Special Metals Inc. | 11.0 | Product Extension |
| Dec. 17, 1964 | Interlake Iron | 142.6 | Acme Steel | 134.4 | Vertical |
| Dec. 31, 1964 | Screw & Bolt Corp. | 19.4 | Wyckoff Steel Co. | 11.8 | Vertical |
| April 1965 | Midland Ross Corp. | 130.9 | National Casting | 43.7 | Product Extension |
| Aug. 24, 1965 | Philadelphia & Reading Corp. | 145.0 | Lone Star Steel Co. | 156.0 | Product Extension |
| Oct. 12, 1965 | Old Ben Coal Corp. | | Interlake Steel | | Vertical |
| Dec. 31, 1967 | Teledyne Inc. | 170.4 | Firth Sterling | 22.1 | Product Extension |
| Dec. 5, 1968 | U.S. Steel | 5609.3 | Alside Inc. | 26.9 | Product Extension |
| June 24, 1968 | Ling-Temco-Vought | 485.1 | Jones & Laughlin | 1092.8 | Conglomerate |
| Dec. 5, 1968 | Wheeling Steel | 404.9 | Pittsburgh Steel | 193.6 | Horizontal |
| Dec. 31, 1968 | National Steel | 1221.8 | Republic Fol Inc. | 15.9 | Product Extension |
| June 30, 1969 | Crane Co. | 295.3 | CF&I Steel Corp. | 235.6 | Product Extension |
| Sept. 30, 1969 | Republic Steel | 1607.8 | Finkl A. & Sons | 14.5 | Vertical |
| Oct. 17, 1968 | Colt Industries | 197.1 | Crucible Steel Co. | 258.5 | Vertical |
| Mar. 5, 1968 | American Cement Corp. | 131.5 | Pascoe Steel Corp. | 11.2 | Product Extension |
| Dec. 1969 | Armco Steel Corp. | 1633.2 | Hitco | 60.6 | Product Extension |
| August 1969 | Allegheny Ludlum Steel | 357.0 | Jacobsen Mfg. Co. | 21.4 | Conglomerate |
| May 6, 1969 | Athlone Industries | 61.1 | Jessop Steel Co. | 48.5 | Conglomerate |
| May 28, 1969 | Lykes Corp. | 376.9 | Youngstown Sheet & Tube | 1026.7 | Conglomerate |
| Feb. 7, 1969 | NVF Co. | 25.2 | Sharon Steel Co. | 190.3 | Conglomerate |
| June 1970 | Cyclops Corp. | | Detroit Steel Corp. | 145.9 | Product Extension |
| Feb 27, 1970 | Bethlehem Steel | 3224.2 | Kusan Inc. | 14.3 | Product Extension |
| Feb. 17, 1970 | Inland Steel Co. | 1175.1 | Scholz Homes Inc. | 25.2 | Conglomerate |
| Dec. 27, 1971 | Marathon Mfg. Co. | 94.1 | Allison Steel Mfg. | 17.4 | Conglomerate |
| Aug. 16, 1971 | National Steel | 1567.6 | Granite City Steel | 312.7 | Horizontal |
| Jan. 12, 1972 | Cyclops Corp. | 304.5 | Smith, Elwin G. & Co. | 13.3 | Horizontal |
| June 1974 | Bethlehem Steel | 3919.3 | Mastic Corp. | 10.8 | Vertical |
| Dec. 1975 | Imetal Societe | 1195.6 | Copperweld Corp. | 158.3 | Product Extension |
| Apr. 25, 1975 | Timken Co. | 541.5 | Latrobe Steel Co. | 55.2 | Vertical |
| Oct. 1975 | Koppers Co. Inc. | 647.9 | Spout Waldron & Co. | 30.8 | Conglomerate |
| Feb. 28, 1975 | Allegheny Ludlum | 656.3 | Standard-Thomson | 16.4 | Conglomerate |
| Apr. 29, 1976 | Interlake, Inc. | 480.1 | Arwood Corp. | 19.7 | Vertical |
| May 1976 | Porter, H.K. | 144.6 | Fansteel Inc. | 62.3 | Conglomerate |
| Jan. 1976 | Porter, H.K. | 144.6 | Missouri Portland | 96.9 | Conglomerate |

TABLE 4--Continued

| Date of Acquisition | Acquiring Company | Assets of Acquiring Company (Million Dollars) | Acquired Company | Assets of Acquired Company (Million Dollars) | Type of Acquisition |
|---|---|---|---|---|---|
| March 1976 | Northwest Inds. | 1184.1 | Microdot Inc. | 140.3 | Conglomerate |
| May 1976 | Koppers Co. Inc. | 679.7 | Thiem | 11.7 | Conglomerate |
| Dec. 7, 1977 | Allegheny Ludlum | 664.7 | Chemetron Corp. | 420.3 | Conglomerate |
| Nov. 23, 1977 | Northwest Inds. | 1400.0 | Coca Cola LA | 104.4 | Conglomerate |
| Nov. 10, 1977 | Northwest Inds. | 1400.0 | Coca Cola Mid Am | 31.6 | Conglomerate |
| Dec. 12, 1978 | LTV Corp. | 2066.0 | Lykes Corp. | 1658.0 | Horizontal |
| May 1979 | Creusot-Loire S.A. | -- | Phoenix Steel Corp. | 119.6 | -- |
| Dec. 20, 1979 | Eastmet Corp. | 119.9 | UIP Corp. | 25.6 | Product Extension |
| Jan. 1980 | Armco, Inc. | 3095.5 | Oregon Metallurgical | 28.1 | |
| Dec. 1980 | Allegheny Ludlum | 1140.2 | Schenuit Inds. Inc. | 50.2 | |
| Jan. 2, 1981 | Brenco, Inc. | 60.5 | Washburn Wire Co. | 12.8 | |
| June 30, 1981 | LTV Corp. | 3826.5 | McLouth Stainless Steel (division of McLouth Steel) | -- | |
| Jan. 1982 | U.S. Steel Corp. | 13316.1 | Marathon Oil Co. | 5993.6 | Conglomerate |
| Jan. 2, 1982 | Allegheny Int'l | 1361.3 | Sunbeam Corp. | 628.1 | |
| Mar. 1982 | Hillman Co. | -- | Edgewater Corp. | 66.4 | |
| Mar. 31, 1982 | Lukens Steel Co. | 261.1 | General Steel Indus. | 91.5 | |
| Sept. 13, 1982 | National City Lines, Inc. | 118.6 | Keystone Consolidated | 232.1 | |
| Nov. 1982 | Tang Inds. Inc. | -- | McLouth Steel Corp. | 435.5 | |
| Sept. 1983 | LTV Corp. | 4023.2 | Sierra Research Corp. | 37.6 | |
| Feb. 1984 | Frates Invest. Grp. | -- | Kaiser Steel Corp. | 642.7 | |
| Jan. 1984 | Mgt-Empl Invt. Corp. | -- | National Steel/ Wierton Div. | 198.0 | |
| May 1984 | U.S. Steel Corp. | 19314.0 | Husky Oil | -- | |
| July 1984 | LTV Corp. | 4406.3 | Republic | 2751.8 | Horizontal |
| Aug. 1984 | California Steel Industries | -- | Kaiser Steel Corp. | -- | Horizontal |
| Aug. 31, 1984 | Nippon Kokan K.K. | 10,658.3 | National Steel Corp. (50% sale) | 1732.9 | |
| Nov. 1984 | Moore McCormack Resources | 967.4 | Globe Metallurgical Div. (of Interlake, Inc.) | -- | |

Source: Duke et al. (1977), 1950-1974; Federal Trade Commission (FTC) Large Merger Series 1975-1979; 1980 through 1984 data compiled by Mr. Lynn Carpenter, FTC, Bureau of Economics. Only those large acquisitions in which the asset value of the acquired company (division) was known were listed in the FTC's large merger series.

The Justice Department challenged a conglomerate merger involving a steel company in 1968. LTV, a broadly diversified conglomerate, acquired Jones & Laughlin, the fifth largest producer of raw steel. A consent decree was negotiated requiring LTV to divest itself of Okonite Company and Braniff Airways in order to retain the steel company.[68]

In 1968 a horizontal merger between Wheeling Steel and Pittsburgh Steel led to the formation of the Wheeling-Pittsburgh Corporation. Before the merger Wheeling and Pittsburgh were the industry's 10th and 16th largest producers, respectively. The new company became the 9th largest producer and has since grown to become the 8th largest producer of raw steel. In its 1977 steel industry study the FTC's Bureau of Economics noted that this horizontal merger did not lead to any plant closings or changes in specialization or operation of the plants.[69] Thus, no major capacity rationalization occurred.

Another major horizontal merger involved National Steel and Granite City in 1971. National was the 4th largest steel-maker in the U.S. and Granite City was 11th. As a result of this merger, National moved into third place. Although they did not compete geographically, the companies' product lines were sub-stantially alike, with heavy emphasis on flat rolled sheet

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[68] United States v. Ling-Temco-Vought, Inc., 315 F Supp. 1301 (W.D. Pa. 1971), 79.

[69] Duke et al., 1977.

products and galvanized steel. In the case of Granite City, utilization of strip mill capacity was said to have improved from 19 percent to 50 percent after the acquisition.

In 1978 the merger of LTV and Lykes resulted in a horizontal overlap between LTV's Jones & Laughlin and Lykes' Youngstown Steel Division. The merger combined two relatively large but unprofitable steelmakers. Although predictions of continued poor performance were common, the merged firms were reportedly able to gain enough efficiencies by eliminating duplication and reducing transportation to become profitable during the first half of 1980 when many steelmakers suffered large losses.[70]

Recently, horizontal merger activity has picked up as Jones & Laughlin (LTV), the 3rd largest U.S. producer of steel, announced its plans in September 1983 to merge with Republic, the 4th largest producer.[71] In addition, on February 1, 1984, U.S. Steel announced its intention to purchase National. U.S. Steel and National were the 1st and 7th largest U.S. producers of steel, respectively. These two mergers would have resulted in a

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[70] See Fisher and Lande, 1983, p. 1622; Barnett and Schorsch, 1983, p. 82. LTV was apparently able to turn Youngstown's Indiana Harbor plant into a profitable facility, and the 1979-80 boom in demand for steel products used by the oil industry, where J&L had a large share, helped lead to the combined firm's profitability.

[71] For a discussion of the J&L/Republic and U.S. Steel/ National mergers see USITC 1553, pp. a-213-15 and Antitrust and Trade Regulation Report, Vol. 46, pp. 502, 504, 505, 577 and Vol. 47, p. 246.

substantial increase in the concentration of the U.S. steel industry, with the top three firms increasing their share of domestic shipments from 38 percent to 66 percent (based on 1983 data). However, the U.S. Steel/National merger was called off in March 1984 by U.S. Steel when it became likely (due to a negative Jones & Laughlin/Republic decision) that such a merger would be challenged by the Department of Justice.

The Jones & Laughlin/Republic merger was originally challenged by the Department of Justice on February 15, 1984. However, the merger was later allowed by the Antitrust Division after a revised merger proposal was presented by LTV. The revision required the divestiture of a stainless steel plant in Ohio and a carbon steel plant in Alabama. These sales reduced the potential anticompetitive effect of the merger in specific steel product markets. During the investigation of the merger, the Antitrust Division reportedly examined evidence concerning efficiencies that might result from the merger including those that might flow from reduced overhead and transportation, raw material swaps, integration of facilities (especially in Cleveland), and rationalization of facilities used to make products for the oil industry. In addition, they considered the effect that foreign imports might have in mitigating the effects

of a U.S. producer price increase if one resulted from the merger.[72]

Following the demise of the National/U.S. Steel merger proposal, Nippon Kokan, K.K. (NKK), Japan's second largest steel producer, agreed to purchase 50 percent of National.[73] The acquisition was approved by the Justice Department, and National's board of directors became divided equally among representatives of National Intergroup and NKK.[74]

### 3. Conclusion

Some of the steel industry mergers (e.g., LTV/Republic) have apparently lead to substantial cost savings, and others might

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[72] The Antitrust Division found that merger-specific efficiencies were present but were not well quantified and that many of the savings claimed for the merger could be obtained without merging the firms. The Division also included only non-constrained imports in the steel market definition. Thus, constrained Japanese and EEC shipments were not considered. The U.S. Secretary of Commerce, Malcolm Baldridge, reportedly disagreed with the Antitrust Division's conclusions regarding efficiencies and the effect of imports, and his statements may have had some influence on the revised merger proposal. See New York Times, March 11, 1984.

[73] There are reports that many Japanese steel firms are currently interested in investing in the U.S. steel industry through purchases or joint ventures.

[74] National Intergroup intended to use the cash payment to continue the company's diversification into new growth areas. See Behr, P., "One-Time Steelmaker Embraces Japanese Partner," Washington Post, November 15, 1984, B1. On October 14, 1984, National announced plans to merge with Bergen Brunswig Corp., a leader in automated distribution of pharmaceuticals. However, that particular diversification plan may have failed. See "NII, Berger Mutually End Merger Plans," Washington Post, April 18, 1985.

conceivably do the same. First, it is possible that horizontal mergers in the steel industry would allow more integrated steel producers to reach the minimum efficient scale. Second, horizontal mergers might allow firms to combine steel production at the more efficient facilities while closing outdated plants. However, there is evidence that capacity rationalization occurred at a fairly rapid rate during the late 1970s through individual firm initiatives.[75] Whether further rationalization could occur without any merger activity is not clear from our review. Third, major production cost savings in steelmaking would probably result from product specialization (rather than full-line production by each integrated firm).[76] However, it is not clear why this specialization could not occur through individual firm decisions in the market.

C. **A Second Case Study: The U.S. Auto Parts Industry**

Although the U.S. steel industry may provide the prototypical example of a declining industry, there are several other substantial U.S. industries that have undergone some degree of decline. One of these is the auto parts industry. The U.S. auto

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[75] Bluestone and Harrison, 1983, pp. 36-37, state that between 1977 and 1981 the steel industry shut down enough plants to reduce U.S. steelmaking capacity by 11 percent.

[76] Scherer et al., 1975, pp. 312-15, 391-92, discuss some examples of efficient specialization that occurred under government auspices in Britain, Sweden, and Germany. However, they do not recommend specialization agreements as a remedy in the U.S. See Section II.C. above.

parts industry is characterized by declining demand and a sub-
stantial number of horizontal mergers. The demand for domestic
auto parts has declined by a number of measures. First, the
value of domestic shipments of SIC 3714, motor vehicle parts and
accessories, remained constant in nominal terms and fell by 35
percent in real terms between 1977 and 1982.[77] Second, the
number of employees in the industry fell from a peak of 476,000
in 1978 to 322,000 in 1982.[78] Of course, as in the steel
industry, some of this decrease in the number of employees may be
due to technological improvement in production.

Much of the apparent decline in this SIC classification may
be explained by the 1980-82 recession. However, estimates of
1983-85 industry performance suggest that the industry may face a
long term stagnation or reduction in demand. For example, while
the 1985 U.S. Industrial Outlook estimates a considerable rebound
in the industry's value of shipments for the years 1983-85, the
predicted real value of shipments in 1985 only modestly exceeds
the real value of shipments in 1972.[79] Also, while employment is

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[77] 1982 Census of Manufacturers Report MC82-I-37A-3(P), July
1984. The Motor Vehicles and Equipment Producer Price Index was
used to deflate nominal shipment figures. See 1984 Statistical
Abstract of the United States, p. 471.

[78] Id.

[79] Value of 1972 shipments for SIC 3714 was $18,334 million.
Estimated value of 1985 shipments, in 1972 dollars is $19,194
million. See 1985 U.S. Industrial Outlook, pp. 36-39, and
U.S. Department of Commerce Report MC82-I-37A-3(P).

estimated to have recovered to 402,000 workers in 1984, employment levels are substantially below the 475,000 workers employed in 1977.[80]

Further, because SIC 3714 covers a rather diverse collection of products, the aggregate figures may understate the demand decline for certain automobile parts, e.g., exhaust systems, shocks, and spark plugs. Also, products used in the manufacture or service of some auto parts may face a long term demand reduction. This is likely to be true for carbon black, a principal component in tire production, and carburetor repair kits.

Demand for domestic parts has fallen for a number of reasons. First, there is perhaps some long term decline in demand for domestic autos, a principal outlet for domestic auto parts.[81] Second, technological change has increased the quality and durability of parts, diminishing the demand for replacement parts.[82] For example, conventional automobile shocks are being replaced by McPherson Struts, which reportedly have a longer life than shocks. Similarly, the life of exhaust system parts has doubled in recent years due to the use of new materials, better placement of the muffler in the automobile, and smaller

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[80] Id.

[81] See, for example, Standard and Poor's Industry Survey of Autos and Auto Parts, Basic Analysis, vol. 152, no. 42, sec. 1, October 18, 1984, p. A-143 (Hereafter "Standard & Poor's").

[82] 1985 U.S. Industrial Outlook, pp. 36-9.

engines.[83] Also, radial tires last much longer than conventional tires, decreasing the demand for carbon black. Third, the size of automobiles in the domestic fleet has fallen, and fewer or smaller parts are needed for smaller automobiles. For example, fewer spark plugs are required per vehicle mile for a 4 cylinder engine than for an 8 cylinder engine, and much less carbon black is needed to manufacture a tire for a small car than for a larger car.[84]

1. Auto Parts Industry Scale Economies

Due to the heterogeneity of automobiles in the U.S. fleet, demand exists for a large variety of different sizes and styles of each part. The tooling costs for each stamp or mold for each different size or style of part, and set up costs for each production run, are very high, while the marginal costs of producing parts are quite low. These characteristics, along with a declining demand, have resulted in a number of efforts to rationalize capacity among producers through joint ventures and mergers.[85]

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[83] Automotive Marketing, April 1984, p. 31.

[84] Automotive Chain Store, August 1984, p. 8. Demand for some auto parts is not declining. For example, smaller engines operate at higher average RPM's than larger engines, requiring, among other things, more frequent oil and oil filter changes. Demand for other auto parts may grow due to an increase in the average age of the domestic auto fleet, increasingly restrictive government auto emission standards, and the growing complexity of automobiles. See Standard & Poor's, pp. A-151-53.

[85] 1985 U.S. Industrial Outlook, pp. 36-9. This trend is expected to continue. See also, Jobber/Retailer, December 1984.

## 2. Auto Parts Mergers and Antitrust Enforcement

More than 3,000 companies manufacture domestic auto parts,[86] and numerous mergers have taken place in recent years. Further, while a number of auto parts may individually characterize relevant product markets for antitrust analysis, many mergers in these product markets involve relatively small firms in markets with low concentration levels and hence do not warrant close scrutiny under the antitrust laws. To illustrate the quantity and diversity of mergers in the auto parts industry, a partial listing of mergers and acquisitions involving domestic auto parts firms between 1981 and 1984 is presented in Table 5.

However, in some relevant markets, concentration is quite high, and mergers have been scrutinized closely. Non-intervention in some of these cases suggests that mergers may be perceived to represent an effective means of capacity rationalization. For example, even though the heavy duty brake industry is quite concentrated, the antitrust agencies took no action when Echlin acquired Midland's heavy duty brake production facilities in 1982. Subsequent to the acquisition, Echlin closed Midland's Owosso, Michigan plant and consolidated Midland's Morgantown, North Carolina plant into Echlin's Berg division heavy duty brake plant in Iola, Kansas.[87] A similar asset

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[86] 1985 U.S. Industrial Outlook, pp. 36-9.

[87] Investex Report No. 403305, April 10, 1984, p. 8.

TABLE 5

Selected Mergers and Acquisitions Involving Domestic Auto
and Truck Parts Manufacturers, 1981-84[1]

| Date | Buyer | Seller | Product(s) | Price |
|---|---|---|---|---|
| 2/81 | Freuhauf Corp.'s Kelsey-Hayes Div. | Clifford Mfg. Co. | Engine components for automotive aftermarket. | n.a. |
| 3/81 | Echlin Mfg. Co. | M. Black Co. | Automotive wire and cable. | 2.1MM |
| 4/7/81 | Barnes Group Inc. | Herckelbout-Dawson (Fr.) | Auto springs and metal parts. | n.a. |
| 6/17/81 | Federal Mogul Corp. | International Harvester's Ball and Roller Bearing Unit. | Ball and roller bearings for trucks and farm implements. | n.a. |
| 7/81 | Echlin Mfg. Co. | Borg Warner Corp.'s auto aftermarket operations. | Carburetor repair kits, clutch rebuilding mfg., and an auto parts dist. network. | 65 MM |
| 9/16/81 | Dayton Malleable Inc. | Dynac Corp's Meridian MS plant | Aluminium castings for lightweight automotive parts. | n.a. |
| 10/1/81 | J.L. Clark Mfg. Co. | J.A. Baldwin Mfg. Co. | Oil, fuel, air coolant & transmission filters. | 46 MM |
| 12/12/81 | Intermark Inc. | Appliance Industries, Inc. | Specialty automotive & truck wheels. | n.a. |
| 12/24/81 | Midtown Brake & Electric | Bandag Inc.'s heavy duty parts sub.- Chicago Div. | Heavy duty truck parts. | n.a. |
| 12/24/81 | Parts Industries Corp. | Bandag Inc.'s heavy duty parts sub. | Heavy duty truck parts. | 13.6MM |
| 1/14/82 | G.T. Products | Chrysler Corp.'s Introl Plant. | Governors for diesel engines. | n.a. |

[1] This list is undoubtedly incomplete. For example, W.T. Grimm and Co. report (but do not list) 51 auto products and accessories mergers in the years 1981-83. Here only 45 mergers and acquisitions are recorded for the years 1981-84 in the possibly broader classification of auto and truck parts. Despite its incompleteness, this list is useful in that it illustrates both the quantity and diversity of recent auto and truck parts mergers. Mergers and acquisitions are listed on the basis of ready availability of public information. Information sources include 1981-85 editions of The Yearbook on Corporate Mergers Joint Ventures and Corporate Policy, Andrew D. Clapp, Editor, Cambridge Corp., Boston; 1983-84 editions of Merger & Acquisition Sourcebook, by Dr. Walter Jurek, Quality Service Co., Santa Barbara, Ca.; Investex Report No. 403305, 4/10/84 (summarizing several Echlin acquisitions); and Standard & Poor's News, June 17, 1981 (reporting Federal Mogul's 1981 acquisition of International Harvester's bearing operations.)

TABLE 5--Continued

| Date | Buyer | Seller | Product(s) | Price |
|---|---|---|---|---|
| 3/8/82 | Parker Hannifin Corp. | Cali-Blok Co. | Fluid systems components and automotive parts, including disc brake parts and relined brake shoes. | n.a. |
| 4/28/82 | Dyson-Kissner-Moran Corp. | Huffy Corp.'s Auto Parts Div. | Auto parts. | n.a. |
| 5/82 | Echlin Mfg. Co. | Wagner Electric | Air brakes. | 9.3MM |
| 5/82 | Bordon Inc. | Du Pont Co.'s Car Care Products Div. | Waxes, polishes, sealants, adhesives and decorator spray paints. | n.a. |
| 6/14/82 | Ingersoll Products Corp. | Firestone Tire and Rubber Co.'s Electric-Wheel Co. | Wheels for farm equipment. | n.a. |
| 6/82 | Spar, Robert | Automoco Corp. | Motor vehicles, parts and accessories. | 2.3MM |
| 7/82 | Sheller-Globe Corp. | Olsonite Corp. | Foam and plastic parts for automotive industry. | n.a. |
| 8/31/82 | Echlin, Inc. | Midland-Ross Corp.'s Midland Brake Inc. | Heavy duty truck, trailer, and construction equip. brakes and brake parts. | 17 MM |
| 9/7/82 | Investment Group | Emhart Corp.'s Bailey div. | Extruded rubber & molded components, molded & plastic cabinetry. | 10 MM |
| 10/4/82 | C&C Inc. | Alleghany International's Hurst Performance Inc. | High performance automotive aftermarket parts. | n.a. |
| 10/13/82 | Questco Holdings Inc. | Questor Corp. | Automotive, recreational products. | 137.9MM |
| 11/1/82 | Hrudka, Joseph | Wynn's International Inc.'s Cragar Industries | Automotive aftermarket specality wheels & high performance components. | n.a. |
| 11/9/82 | Regal Beloit Inc. | Rockwell Intl. Corp. | Transmission products for off the road vehicles. | n.a. |
| 11/82 | Echlin Mfg. Co. | Ristance Corp. | Automotive wire and cable. | 4.3MM |
| 12/10/82 | Dana Corp. | International Harvester Inc.'s axle and transmission business. | Truck axles and transmissions. | n.a. |
| 1/31/83 | Allied Corp. | Bendix Corp. | Auto, aerospace, electronics and industrial products. | 1.8Bil. |
| 5/9/83 | Fisher Group Inc. | Scott & Fetzer Co.'s Valley Ind. Div. | Trailer hitches & other recreational vehicles auto parts accessories. | n.a. |

TABLE 5--Continued

| Date | Buyer | Seller | Product(s) | Price |
|------|-------|--------|-----------|-------|
| 8/9/83 | Wilkinson, Mike | Allen Group Inc.'s Cal Chrome Division | Chrome plated wheels & painted steel wheels & off road accessories for the automotive market. | n.a. |
| 9/6/83 | Collins Industries Inc. | Classif Mfgr. Inc., Custom Comfort Seating Inc. & Diplomat Van Mfgr. Inc. | Van customising and manufacturing. | 3.5MM |
| 9/14/83 | J.P. EMCO Co. | General Tire & Rubber Co.'s Ada Oklahoma Plant. | Injection molded auto parts. | n.a. |
| 9/83 | Maremont Corp. | Ingersoll division of Van De Hout Assoc., Toronto, Canada | Shock absorbers. | 8.5MM (Can.) |
| 12/15/83 | Harvard Ind. | Beatrice Food Co.'s Harman Automotive Inc. unit. | Outside rearview mirrors for automobiles. | n.a. |
| 2/16/84 | McGraw Edison | Guardian Corp. | Automotive disc pads and brake shoes for the automotive aftermarket. | n.a. |
| 5/23/84 | Wynn's International Inc. | Star-Lite Industries. | Automotive seat covers. | n.a. |
| 7/2/84 | TRW Inc. | Firestone Tire & Rubber Co.'s Passenger Restraint Business. | Passenger restraint equipment. | n.a. |
| 7/3/84 | Mr. Gasket Co. | Rough Country Inc. | Products for off road vehicles. | 4.8MM |
| 7/13/84 | Modine Mfg. Co. | Beacon Auto Radiator Mfg. Co. | Replacement radiator cores, mfg. and dist. | n.a. |
| 7/27/84 | Hinterliter Ind. Inc. | Fred Jones Mfg. Co.'s Nationwide Automotive Parts | Automotive parts. | n.a. |
| 8/6/84 | TRW Inc. | D.A.B. Industries Inc. | Bearings and other engine parts. | 22.8MM |
| 8/8/84 | Echlin Inc. | Grau Bremse GMBH (W. Ger.) | Air brake systems. | n.a. |
| 9/27/84 | Dayco Corp. | Eaglemotive Ind. & Eagle Die Casting Inc. | Automotive cooling system replacement parts. | n.a. |
| 10/2/84 | Modine Mfg. Co. | Eskimo Radiator Manufacturing Co. | Replacement radiator & heating cores, cooling system chemicals. | n.a. |

TABLE 5--Continued

| Date | Buyer | Seller | Product(s) | Price |
|------|-------|--------|------------|-------|
| 10/24/84 | Mr. Gasket Co. | Allen Group Inc.'s Automotive Access-ories Division | Automotive accessories. | 25 MM |
| 11/28/84 | Echlin Inc. | Raymark Corp.'s Brake Systems div. | Friction materials, hydraulic brake parts for the automotive and truck replacement markets. | 55 MM |

consolidation occurred following Echlin's acquisition of two small automotive wire and cable producers.[88] Other mergers not challenged by the antitrust agencies involved relatively concentrated markets for asbestos brake shoes[89] and roller bearings.[90] The antitrust agencies issued complaints but ultimately did not find antitrust liability for mergers in relatively concentrated markets for windshield wipers[91] and carburetor repair kits.[92]

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[88] Echlin purchased M. Black in June 1981 and Ristance in 1982. Subsequent to the acquisition, Echlin consolidated production from its own Kravax division and from M. Black into Ristance's facility in Indiana. Investex Report No. 403305, April 10, 1984, p. 8.

[89] Echlin acquired Raymark in 1985. Wall Street Journal, March 21, 1985, p. 48.

[90] Federal Mogul acquired International Harvester's bearing operations in 1981. (International Harvester, 1981 Annual Report, p. 4). There is some evidence that this acquisition was part of an effort by Federal Mogul to rationalize bearing production. Federal Mogul closed its Salina, Kansas bearing plant in 1982, consolidating production into its Greensburg, Indiana and Lancaster, Pennsylvania bearing plans. (Federal Mogul, 1982 Annual Report, p. 10). Also, Federal Mogul started construction of a new Lancaster, Pennsylvania bearing plant in 1984. (Federal Mogul, 1984 Annual Report).

[91] The Commission dismissed a complaint challenging Champion Spark Plug's acquisition of Anderson Co., Champion Spark Plug Co. FTC Doc. No. 9141, June 20, 1094.

[92] The FTC dismissed its antitrust challenge to Echlin's acquisition of Borg-Warner's automotive aftermarket operations. FTC News, July 8, 1985. However, the FTC's decision did not turn on the declining industry argument, but rather on the absence of barriers to entry into the assembly and sale of carburetor kits.

In other instances, the FTC has blocked, or moved to block, recent auto parts mergers. Examples included two mergers the FTC blocked in the carbon black industry,[93] and FTC opposition to a recent shock absorber acquisition.[94]

In carbon black, substantial production scale economies and stable or declining demand motivated an industry shakedown.[95] Further, market power concerns may have been mitigated to some extent by the existence of a few large buyers, such as Goodyear, and an industry history of quite vigorous competition. However, it has been argued that a unilateral rationalization process that is well along would most probably lead to an industry configuration superior to the one that would result from the mergers.[96] Further, merger-specific efficiencies did not appear great and other buyers for the assets were available. Finally, a number of characteristics, including the homogeneity of the product, the

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[93] F.T.C. vs. Columbian Enterprises, FTC Doc. No. 9177, and F.T.C. vs. Bass Bros. Enterprises, FTC Doc. No. 9178, May 5, 1984.

[94] The FTC filed a complaint in the acquisition of Monroe Auto Equipment by Tenneco, FTC Doc. No. 9097. The FTC complaint was overruled in the 2nd Circuit. Antitrust and Trade Regulation Report, October 28, 1982, Vol. 46, p. 816.

[95] The industry has exhibited a trend toward fewer and generally larger plants, accompanied by a shutdown of smaller less efficient plants. Industry nameplate capacity has declined from 4.3 billion pounds in 1974 to 3.2 billion pounds in 1984, with 200 million more pounds scheduled to close in 1984. Affidavit of Douglas C. Dobson in F.T.C. vs. Columbian Enterprises and E.I. Dupont De Nemours and Co., Civ. No. C84-131, p. 26.

[96] Id., p. 32.

already high concentration level in the market, the lack of substitute products, the simplicity of pricing and distribution, and the inelasticity of demand all suggested a high probability of anticompetitive effects.[97]

In shock absorbers, the FTC opposed the acquisition of Monroe by Tenneco.[98] Here again, the industry was characterized by stagnant or declining demand,[99] declining profitability of existing actors in the industry,[100] and substantial economies of scale in production. However, a two-firm concentration ratio in excess of 75 percent, undisputed evidence of interdependent pricing, and substantial barriers to entry were sufficiently strong indicators of a probability of anticompetitive effects to motivate the Commission to file a complaint.[101]

### 3. Conclusion

It appears that a general desire to attain or maintain minimum efficient scale may have motivated a number of recent mergers in the auto parts industry. However, despite some important supply and demand characteristics common to many auto parts producers, other important characteristics appear to

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[97] Antitrust Trade and Regulation Report, Vol. 46, p. 1013.

[98] F.T.C. vs. Tenneco, Doc. No. 9097, Final Order September 23, 1981.

[99] Concurring Statement of Commissioner Clanton in F.T.C. vs. Tenneco, F.T.C. Decisions, 98 FTC, 630.

[100] Id., p. 633.

[101] F.T.C. vs. Tenneco, Init. Dec., at 185-6, 197 and 221-6.

diverge sufficiently in the auto parts industry for some mergers
to arouse antitrust concerns while others do not. Consequently,
a case-by-case evaluation of the potential efficiencies and the
potential anticompetitive effects of each merger appears
warranted. One important element of those evaluations should be
an examination of the ability and cost of attaining capacity
rationalization through individual firm action (partial shutdowns
of capacity or exit) relative to that through merger. Our evid-
ence regarding this important question is very incomplete.

D. Other Cases of Decline

At least some of the mergers in the steel and auto parts
industries have apparently led to savings, in part through
rationalization of capacity. However, there are other cases of
industrial decline in which mergers appear to have played little
if any role. For instance, Harrigan's (1980) study of the
synthetic soda-ash industry indicates that decline was
accommodated through individual plant closings.[102] The decline
of synthetic soda ash was precipitated by two major factors.
First, mining of natural soda ash became economically feasible in
the 1955-65 period. During that time two large buyers and one
producer of synthetic soda ash developed commercially viable
mines in Wyoming. Second, the costs of controlling pollution
caused by the synthetic process increased substantially during
the 1960s and 1970s. As a result of these factors, the 10 plants

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[102] Harrigan, 1980, pp. 105-137.

owned by 6 producers of synthetic soda ash in 1967 gradually
dwindled. By the end of 1978 only one low-cost producer, Allied
Chemical, remained and capacity had fallen from 5.4 million to
2.1 million short tons.[103] This capacity reduction was
apparently accomplished without mergers, asset transfers, or
equipment switching.[104] The firms simply closed plants as demand
declined.[105]

Individual plant closings appear to have been the common
means of exit from rayon, another declining industry. Harrigan
notes that from 1966 to 1978 capacity fell from 800 to 650
million pounds as competition from alternative fibers (nylon,
polyester, naturals) caused consumption to decline. Several
plant closings were reported among the five major producers
during the decline, but only one horizontal asset transfer
occurred. In 1972 American Cyanamid's IRC division shut down its
Plainesville, Ohio plant and FMC (Avtex) bought the rayon staple
producing assets. According to Harrigan (1980, p. 292), Avtex

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[103] The last U.S. synthetic soda ash plant, located in
Syracuse, New York, closed in 1985.

[104] Harrigan, 1980, p. 128, indicates that soda ash assets
were technology specific. Thus, they were not likely to be
switched to alternative uses.

[105] The process of closing synthetic soda ash plants may have
been aided by the age of the assets. Many of the plants were
originally built in the 1910 to 1930 era (Harrigan, 1980,
pp. 112-116). It is not clear how old the equipment in the
plants was on average, but most of the firms did not face massive
write-offs when the facilities were closed. By 1979 the only
remaining synthetic soda ash plant was the industry's newest, a
1948 renovation that had no pollution problem.

was ultimately disappointed with the purchase. Other transfers of ownership involved sales to management groups. In 1976 FMC sold the Avtex division to a group of former employees.[106] Likewise, in 1976, Beaunit was sold by its parent, the El Paso Company, to Beaunit's top management team. Later, in 1978, Beaunit sold a portion of its rayon assets to a Spanish firm for production in Europe.

During the receiving-tube industry decline, asset transfers were somewhat more common than they were in the soda-ash and rayon industries. Still, it appears that only one horizontal transfer of tangible assets occurred. For instance, in 1969, GTE sold a receiving-tube plant in Iowa to a firm that used it to make capacitors. The tube-making assets (which apparently were not included in the sale) were transported to GTE's Pennsylvania facility.[107] Similarly, in 1970 RCA sold two plants to unrelated industries and the useable receiving-tube assets were moved to RCA's remaining plant. In 1974, Philco sold an intangible asset, its brand name, (along with some radio and stereo producing equipment) to GTE. GTE then began to manufacture and sell color and black and white TVs and stereos under the Philco label.

The only horizontal transfer of tangible assets occurred in 1976 when RCA terminated production of receiving tubes. It sold

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[106] Horizontal competitors of Avtex had expressed some interest in purchasing portions of the division. Harrigan, 1980, p. 295.

[107] Harrigan, 1980, pp. 80-81.

10 percent of its equipment, in addition to other production rights, to GTE. These assets were then moved to GTE's facility in Pennsylvania and GTE continued to produce tubes for RCA to market. We have no evidence regarding any specific efficiencies achieved by the asset sale.[108]

E. Conclusion

We have examined two types of empirical evidence concerning horizontal mergers in declining industries. First, we estimated regressions using the FTC's large merger series. We found no evidence of a relationship between the level of horizontal merger activity and the rate of industrial growth across industries. Of course, this does not imply that horizontal mergers are unimportant in declining industries as a means of rationalization. We found no significant support for the hypothesis that for declining industries horizontal merger activity is greater where economies of scale or sunk costs appear to be important. However, this result might be explained by the poor quality of the data.

The second type of evidence we reviewed was taken from case studies of five industries. While the steel and auto parts industries provide examples of declining industries in which mergers may have been valuable in rationalizing capacity, a brief examination of three other industries (synthetic soda ash, rayon, and receiving tubes) gives less indication that horizontal

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[108] Harrigan, 1980, pp. 84-85, 102.

mergers have played a significant role. In these three declin-
ing industries some horizontal acquisitions occurred, but they
were apparently designed to facilitate transfers of intangible
assets rather than to rationalize capacity. It appears that
firms in those industries were able to reduce capacity through
independent action.


IV.  Policy Issues Raised by Industrial Decline

Several policy issues are raised by industrial decline.
Should the government take steps to reduce unemployment or labor
transition costs in industries heavily affected by demand
declines, cost increases, or increased import penetration?
What is the relationship between industrial decline and the
U.S. balance of trade generally or with individual trading
partners, and does the balance of trade deficit justify special
government policies toward declining industries?  In this section
we examine the most common rationales for special government
policies for declining industries.  We find that the problems
caused by decline are not likely to be efficiently solved through
changes in antitrust policy.  Rather, income subsidies and
macroeconomic policies might be more appropriate means of
addressing the employment and trade problems that might be
associated with industrial decline.  We also review previous and
current government responses to industrial decline, including
changes in U.S. antitrust policy during the 1930's, import
restrictions, and adjustment assistance.  The final portion of

this section reviews the response of Japan to internal industrial decline. The evidence from the Japanese experience tells a mixed story about the success of an interventionist policy.

A.  Justifications for Intervention

Proposals for government action, including relaxation of horizontal merger policy, in response to industrial decline are generally based on two concerns:  (1) problems, particularly unemployment of labor, involved in changing a country's industrial structure when there are industry-specific assets, and (2) balance of payments issues.

1.  Industry-Specific Assets

An asset is industry-specific if the value of its marginal product is substantially lower or nil outside the industry for which the investment was originally made.  The industry-specific asset may be a conventional input such as a skill or a machine or an invisible item such as a brand reputation.  The industry-specific nature of the asset may be a property of technology or the result of geographic immobility.

The existence of industry-specific assets may give rise to several concerns.[109]  First, Flam et al. have argued that some form of factor price rigidity might prevent the rental price of a

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[109] See Bluestone and Harrison, 1983, pp. 49-81, for a discussion of the costs associated with industrial decline where labor inputs are industry-specific.

factor from falling along with the value of the factor's marginal product during the course of industrial decline.[110] If this were the case, the factor's private and social costs would diverge, and in the absence of government intervention there might be inefficient unemployment.[111] The appropriate "second best" efficient policy given the distorted factor price might be a subsidy for use of the factor.

Second, it is risky to invest in industry-specific assets because of the possibility of industrial decline and the resulting drop in returns on or unemployment of the asset. It may not be possible for potential investors to insure against these risks to the extent that is efficient because of incomplete insurance markets for income maintenance.[112] In this case, there may be an efficiency argument for some degree of "social insurance." The most efficient form of social insurance would probably be partial compensation for loss of income or employment or, in the case of labor skills, subsidies for retraining.

Third, industrial decline makes the owners of industry-specific factors worse off. One might argue that these people

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[110] Flam et al., 1983, never state why such factor price rigidity might exist. They simply assume the lack of downward price flexibility.

[111] Flam et al., 1983.

[112] Hillman, 1982. Markets for insurance may be incomplete due to problems caused by adverse selection (where only those most likely to become unemployed obtain unemployment insurance) and moral hazard (where insureds have less than optimal incentives to avoid the outcome against which they are insured).

have a special claim, based on equity rather than efficiency considerations, to compensation from the government because they have been made worse off, beyond any general claims to transfer payments that all people may have in the event that their current incomes are low. However, one might argue that the government should redistribute income solely on the basis of current income and wealth levels, not with an eye to maintaining people in the style to which they have become accustomed. A variation on the preceding argument is that the government can minimize the disincentive effects of income maintenance programs by focusing them on special groups, e.g., unemployed steel workers, that are unlikely to include many people who are voluntarily unemployed rather than directing them at the poor in general. In any event, the most efficient form of compensation would be income transfers or, in the case of labor skills, subsidies for retraining.

No matter which, if any, of the preceding arguments one accepts, the policies that would seem to achieve the goals at lowest cost would be subsidies for use of industry-specific factors, subsidies for retraining, or income transfers. Relaxation of antitrust standards (and allowing anticompetitive gains) would be very indirect remedies and might simply subsidize the owners of declining firms. These subsidies would likely be used by the firms to diversify toward more profitable industries, rather than to ease the transition of workers out of a declining field.

## 2. Balance of Payments

Except when it is a result of a drop in domestic demand, industrial decline is typically associated with a loss of domestic markets to imports. When such losses occur, it is common to hear the argument that the government should take action (e.g., by restricting imports or relaxing antitrust policy) to arrest industrial decline because this would bring about an improvement in the trade balance.[113]

These arguments are often based on a misunderstanding of the major determinants of the balance of trade deficit. Under flexible exchange rates and with a high degree of international mobility of capital, it is useful to think of the trade deficit as a macroeconomic variable.[114] When macroeconomic policies are such that the country is consuming more goods and services than it is producing, the difference must be matched by an excess of imports over exports. The exchange rate provides the mechanism that determines the levels of imports and exports and ensures that the difference between imports and exports, or the balance

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[113] In an accounting sense a country's balance of payments will always be zero (abstracting from measurement errors). Discussions of balance of payments "problems" usually involve imbalances in imports and exports of goods and services, the major items in the current account. The offsetting flows of purchasing power are called the capital account. See Caves and Jones, 1985, pp. 289-300.

[114] For a discussion of the effects of macroeconomic policies on exchange rates and on the balance of trade, see Ethier, 1983, pp. 381-86 and Dornbusch and Fischer, 1978, pp. 637-41. The description of macropolicy effects given here is quite simplified, and some specific models of international trade might lead to different results.

of trade, equals the foreign capital inflow called for by macro-economic policy. Unless the underlying macroeconomic policies change, changes in the competitiveness of an industry will affect primarily the exchange rate and the levels of imports and exports, but have little influence on the balance of trade. In addition, a change in antitrust policy that allowed U.S. firms to reduce domestic competition without offsetting efficiency gains would lead to reduced domestic output. Such a policy change would harm U.S. competitiveness vis-a-vis foreign rivals. Furthermore, the imposition of a tariff will reduce imports but will also lead to an appreciation of the dollar which lowers exports so that the resulting effect on the trade balance may be slight.[115] Thus, it makes little sense to use microeconomic policies to deal with balance of payments issues.[116]

The effects of microeconomic policies on international trade are nevertheless important, even if they do not affect the size of the trade deficit, since they will affect the volume, composition, and terms of, and hence the gains from, trade.[117] For example, if an industry's costs are reduced, that industry may be able to export more. This will lead to a change in the exchange

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[115] The effects of protectionism on the trade balance are analyzed in Dixit, 1984, p. 14. Dixit concludes that unless protectionism causes the real interest rate to increase (which increases net domestic saving), protectionism will not lower the trade deficit. In addition, there is substantial evidence that tariffs and quotas are a costly method of reducing import levels. See, for example, Tarr and Morkre, 1984.

[116] Lawrence, 1984, pp. 49-50 and 87-88.

[117] Lawrence, 1984, pp. 10-11.

rate that will discourage other exports and encourage imports.
As a result, the level of trade will expand, imports will be
acquired at a lower cost, and the gains from trade will increase.

### 3. Conclusion

Loss of employment or factor incomes as a result of indus-
trial decline and balance of payments problems are not likely to
justify antitrust exemptions. Employment problems could be more
appropriately dealt with through macroeconomic policies,
subsidies for employment and retraining, and income transfers.
Balance of payments problems could be more appropriately dealt
with through macroeconomic policies.

### B. Government Responses to Industrial Decline

This subsection examines the U.S. government's use of
relaxed antitrust policy, import restrictions, and adjustment
assistance including subsidized retraining to deal with indus-
trial decline.

#### 1. Relaxation of Antitrust Policy

##### a. The Depression and the NIRA

The U.S. has traditionally not had a systematic policy
regarding industries experiencing long-run decline. However, a
general policy was developed to deal with the cyclical decline
during the Depression of the 1930s. According to one contempo-
rary account, the National Industrial Recovery Act (NIRA) of 1933
was passed in "direct response to insistent demands from all

sections of enlightened American opinion, for an orderly plan-

ning of industrial enterprise after an era of chaotic and

uncoordinated business rivalry."[118]  The NIRA was seen by some as

the beginning of a nationally planned economy.[119]

The NIRA allowed collective industry actions that would have

been illegal under previous interpretations of antitrust laws.

It empowered the President to approve "codes of fair competition"

that forced most producers to join trade or industry associations

with controls over prices, output, hours of plant operation,

wages, selling methods, and long-term investment.  The extent to

which the associations were able to control these functions

varied greatly among industries.  Direct price and output

restrictions were most nearly attained by natural resource

associations.  However, a substantial number of industries

increased price uniformity through open-price clauses and price

reporting,[120] standardized products to avoid disguised price

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[118]  Kirsh, 1933, p. 13.

[119]  Kirsh, 1933, pp. 16-17.  However, Hawley, 1966,
pp. 480-85, argues that for political reasons planning under
the NIRA was haphazard and that the Act led to the creation of
monopoly power without yielding any potential benefits from
rationalization of productive capacity.

[120]  Four hundred and three of the first 677 codes prohibited
sales below average cost, although some exceptions were made.  A
specific minimum price was set in some codes.  (Burns, 1936,
pp. 477, 479-81).  Some of these price-fixing provisions were
weakened in 1934 as the result of an administration policy change
to allow price-fixing only in emergency situations.  (Burns,
p. 486).  Of course, emergencies became more common.  In addi-
tion, many codes required that list prices be filed openly and
prohibited discounts below list.

competition, and controlled long term investment. In addition, the NIRA gave the President the power to stop or reduce the flow of imports if they tended to render the codes ineffective.[121]

In a recent study of this period, Himmelberg (1976) concludes that the NIRA codes were the culmination of a 15-year effort by business interests to relax antitrust policy. According to Kirsh, the NIRA was passed to "stabilize" industry prices at profitable levels by eliminating price-cutting. However, prices were not supposed to be set at joint profit-maximizing levels.[122] Due to amendments added to the original bill, the final Act stated that the codes were not to permit monopoly or monopolistic practices.[123]

Despite the assurances written into the legislation, it seems to be well-accepted that the NIRA had anticompetitive effects and contributed relatively little, if anything, to economic recovery.[124] Burns indicates that the likely effect of the codes was to raise prices well in excess of the increases in wages that occurred during the 1932-34 period.[125] He notes that

[121] Kirsh, 1933, p. 49. Kirsh, p. 47, also notes that penalties were allowed under the Act to deter code violations. Fines and imprisonment were authorized, and the President's licensing power could, in theory, disallow production by violators.

[122] Kirsh, 1933, pp. 21, 98-100.

[123] Kirsh, 1933, pp. 32-36; Burns, 1936, pp. 463-464; Himmelberg, 1976, p. 212.

[124] Himmelberg, 1976, p. 212; Hawley, 1966, pp. 79-97, 108, 479-85; and Miller, et al., 1984, pp. 14-20.

[125] Burns, 1936, pp. 516-17.

large corporation profits rose from $41 million in 1932 to $911 million in 1934 and that increases in industrial output were not likely caused by the NIRA but rather by other aspects of government policy.

Although the effects of some of the codes may have been long-lived, the NIRA itself was not. The Act was declared unconstitutional in 1935, and some of the National Industrial Recovery Administration's activities as an overseer of industry codes passed to the Federal Trade Commission.[126]

### b. Other Antitrust Policy Changes

Relaxations in antitrust policy, other than those made during the Depression, have not been used extensively in the U.S. in response to industrial decline. However, one law explicitly gives a particular industry a special (but limited) exemption from the antitrust laws.[127] The Newspaper Preservation Act (15 USCA 1801-1804 (1980)) gives the Attorney General discretion to exempt from antitrust scrutiny newspaper companies that are in probable danger of financial failure. In practice this allows newspapers to share printing and publication

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[126] During the Hoover administration in the mid to late 1920s, the FTC had held trade practice conferences for many industries. These conferences reportedly served as a means of reducing industry output and harming consumers through restrictions on competition among industry members. (See Miller, et al., 1984, pp. 11-13). Thus, the FTC had some prior experience as an overseer of industry-wide rules.

[127] There are a number of industries that are currently exempt from antitrust action (e.g., agricultural cooperatives, regulated utilities, insurance), and other industries (e.g., oil, coal) have been exempt in the past. However, current exemptions are not based on declining industry rationales.

facilities while maintaining separate editorial and other staffs. While the Act applies to specific companies, it represents a recognition on the part of Congress that an entire industry merits special treatment under the antitrust laws.

### 2. Import Restrictions

While general industrial policies and relaxation of the antitrust laws have not been used often in response to industrial decline in the U.S., restrictions on imports have been relatively common. These restrictions take the form of import quotas and tariffs, voluntary export restraints in supplying countries, and orderly marketing agreements.

Industry-specific protectionist trade policies for declining industries abound. The sugar program is a leading example. This program of import quotas and tariffs was begun in 1934 in response to fears that sugar production would not continue in the continental U.S. without support. Virtually all sugar producing nations have similar programs to protect their domestic sugar industries, and multilateral sugar export restrictions have been negotiated.[128] Similarly, the U.S. negotiated export quotas on natural and man-made fiber textiles to the U.S. during the 1960s and 1970s.[129] There have been voluntary export restrictions on Japanese cars shipped to the U.S. And recently, the declining U.S. steel industry was successful in obtaining a pledge from the

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[128] Johnson, 1974, and Morkre and Tarr, 1980, pp. 89-90.

[129] For a brief discussion of these multilateral textile trade agreements, see Olsen, 1978, pp. 123-27, and Morkre and Tarr, 1980, pp. 139-57.

President that voluntary export restraints would be negotiated with foreign steel suppliers to reduce the share of imports in domestic consumption from its 1984 level of 25 percent to 18.5 percent.[130]

In addition to industry-specific trade legislation, the Trade Act of 1974 gives all industries a forum for trade related complaints before the International Trade Commission. Under Section 201 of the Act the ITC may recommend to the President that temporary import relief is appropriate to facilitate orderly adjustment to import competition if it finds that increased imports are a substantial cause of serious injury to the domestic industry. There have been numerous investigations under this law since its inception, and it has not been uncommon for import relief to be recommended in the form of quotas, tariffs, and adjustment assistance.

Tariff rates on many products have been reduced over the last 20 years through a series of multilateral trade agreements. Presumably these tariff reductions apply to declining as well as growing industries. However, the extent of trade liberalization may have been less than is generally assumed. Ray and Marvel studied both tariff and non-tariff trade barriers for 328 four-digit SIC manufacturing industries in the U.S., Canada, the European Community, and Japan. They found that nominal tariff

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[130] Klott, 1984. As part of this program the U.S. placed an embargo on steel pipe and tubes from the European Community in November 1984. See S. Auerbach, "U.S. Embargoes European Steel Pipe, Tube," Washington Post, November 28, 1984, p. D1.

rates substantially understate effective tariff protection and that the use of nontariff barriers is increasing as a means of deterring imports of manufactured agricultural goods, consumer goods, and textiles. Low skill, slow growth industries (such as textiles, light manufacturing, and footwear) have been heavily protected.[131]

Import restrictions transfer income from consumers to those with industry-specific assets in protected industries, including stockholders and unionized and skilled workers. They also indirectly subsidize all units of the factors of production used intensively in the protected industries regardless of which industry those units of the factor are employed in. Finally, tariffs raise revenue for the government, and quotas benefit those to whom the quotas are granted, in some cases foreign producers. However, import restrictions also impose losses on consumers through higher prices and on those involved in export industries. The loss to those who are made worse off exceeds the gain to those who are made better off, especially if only

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[131] Ray and Marvel, 1984, p. 455.

benefits to U.S. gainers are considered.  Thus, from the point of the nation as a whole, import restrictions are inefficient.[132]

### 3.  Adjustment Assistance

The United States has also used targeted employment assistance for declining industries significantly affected by imports. The Trade Adjustment Assistance (TAA) program of the Department of Labor (DOL) provides assistance to workers in plants that the DOL has certified as trade-impacted.  This assistance may take the form of cash payments to workers (not to exceed 78 weeks

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[132] The case of steel import quotas is instructive.  The Congressional Budget Office calculated that a quota restricting steel and iron ore imports to 15 percent of U.S. consumption would cost consumers approximately $25 billion over five years. Ten to fifteen percent of this cost represents a deadweight loss while the remainder is transferred to U.S. and foreign producers. The employment "gain" associated with this $25 billion cost is 34,000 jobs.  However, this ignores jobs lost because of loss of exports due to foreign retaliation or exchange rate adjustments. See May, 1984.  Similarly, Tarr and Morkre, 1984, estimated that consumer losses from an 18.5 percent quota on carbon and alloy steel alone were approximately $1.1 billion per year.  The losses of the U.S. economy were estimated to be about $780 million annually.  The annual consumer cost per job saved (ignoring jobs lost in export industries) is $114,000.  Import restrictions in industries other than steel have also been very costly and inefficient.  For example, Tarr and Morkre found that in the case of automobile import restrictions the annual cost to consumers of each job saved was over $240,000.  In addition, these authors found that the annual cost to the U.S. economy of all tariffs and four major quotas (on steel, autos, textiles, and sugar) amounted to $8.5 billion and costs to U.S. consumers would be much higher than this.  Earlier, Morkre and Tarr, 1980, studied five cases of import restrictions: citizens band radios, color televisions, sugar, nonrubber footware, and textiles.  They found that in the four cases where effective restraints existed the benefits from protection were swamped by the costs from inefficient allocation of resources.  In addition, the loss to consumers from higher cost products was on the order of $7.8 billion while the gain from reduced employment adjustment costs totalled $0.28 billion.

in duration), training and job service allowances, and relocation allowances.[133] In addition to aid directed from the DOL, the International Trade Commission often recommends to the President that such assistance be available to import-impacted industries.

In some industries the amount of assistance has been substantial. For example, from April 1975 through March 1984 workers in the tire industry (SIC 3011) received $136 million, with an average payment of $4,850 per affected worker.[134] In addition, 321 workers in the industry received relocation benefits and 164 were placed in alternative employment (out of 3,552 employees who entered retraining programs). Similarly, workers in the steel industry (SIC 3312) and the auto industry (SIC 3711) received $364 million and $1.54 billion, respectively. Across all industries during this period cash payments amounted to $4 billion with an average payment of $2,800 per affected worker. Job search and relocation payments totaled $10.7 million, and 4,200 workers were placed in alternative employment out of 65,000

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[133] See Federal Trade Commission, May 1984, p. 29. Firms and communities also received adjustment assistance through the Secretary of Commerce. Financial assistance for communities has recently been stopped. Financial assistance for firms was limited to $3 million per firm in loans, and technical assistance is limited to $2 million per year per industry. Assistance under the TAA expires on September 30, 1985. Extension of the program is under review by Congress and the Executive Branch. Retraining benefits, but not weekly cash benefits, are available to dislocated workers in trade-impacted industries under the Job Training Partnership Act. The JTPA is a broadly-based training program that applies to non-trade impacted industries as well.

[134] All data are from U.S. Department of Labor, Employment and Training Administration, Trade Adjustment Assistance System, Report KG304RP1, March 28, 1984.

that entered and 24,600 that completed the retraining programs. The TAA program has been scaled-back recently, and aid to communities is no longer available. Worker assistance has also been reduced, but it is available after unemployment benefits have expired. The future state of funding for the program is unclear.

The effects of the TAA program on worker incentives and wages have been studied by Utgoff and Hughes (1983). Using data on matched subsidized and unsubsidized industries in Pennsylvania, the authors found that labor supply to subsidized industries increased leading to lower wages. In addition, temporary layoffs and job attachment increased after TAA payments were liberalized in 1974. Cropper and Jacobson (1982) also examined aspects of the TAA program using the same data from Pennsylvania and found that TAA was successful in smoothing the incomes of workers in import-impacted industries in the 1976-77 period. However, they note that if the firms in the industry are not required to repay the benefits over time, the system will produce a substantial incentive for increased layoffs. The authors recommend experience rating of the system (as with unemployment insurance), to avoid this perverse incentive problem.

Apart from trade-impacted industries the U.S. has not, apparently, had any major employment adjustment programs targeted at workers in declining industries. Rather, emphasis has been placed on the general unemployment insurance program, which makes benefits available to the unemployed for up to 52 weeks. Lovell's

(1984) brief review of the government's previous efforts to build effective manpower programs generally indicates that the programs have not been particularly successful. However, Lovell argues that prior failures (e.g., the U.S. Employment Service) are not a sound basis from which to judge more narrowly focused programs.

C. Japan's Response to Industrial Decline

As we have noted, the U.S. has not had an overall policy dealing specifically with declining industries. However, other countries have taken a more interventionist approach in this area.[135] This subsection discusses Japan's experience with industrial policies aimed at declining industries.[136] To begin, Japan has had a rather different view of antitrust policy than has the U.S. Japan's Antimonopoly Act, enacted during the U.S. occupation in 1947, prohibited monopolies, cartels, and price-fixing and restricted mergers and interlocking directorates. However, in 1953 the Act was amended to allow depression and rationalization cartels approved by the Fair Trade Commission (JFTC), Japan's version of the U.S. Federal Trade Commission. Cartel activity spread quite rapidly after 1953 under the guidance of the Ministry of International Trade and Industry (MITI), which encouraged cooperation among competitors

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[135] For a review of the policies of several nations regarding industrial decline see Adams and Klein, 1983, pp. 65-66, 69, 130. They note that several countries (e.g., U.K., France, West Germany, and Italy) have encouraged mergers aimed at capacity rationalization and greater international competitiveness.

[136] This section draws heavily on Mattingly, 1984, pp. 10-22.

to avoid excess capacity.[137] By 1963, more than 1,000 cartels affected over 28 percent of Japan's manufacturing output.[138] In 1968 JFTC-approved depression cartels existed in many industries including flax and ramie yarn, yeast, synthetic dye-stuffs, medium steel shapes, automobile tires, cameras, sugar, cotton yarn, vinylchloride tubes, sheet celluloid, and alloys.[139]

During the 1970s and 1980s specific legislation was passed. to guide capacity expansion in growth industries (e.g., semi-conductors, electronics) and capacity rationalization in declin-ing or "sunset" industries. With regard to declining industries,

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[137] MITI has favored an active government role in managing declining industries by rationalizing capacity (in part through encouragement of mergers), imposing production quotas, granting low cost loans and tax incentives, coverting resources, backing joint production and marketing arrangements, and relocating workers.

[138] It appears that most of these cartels were not authorized by the JFTC, which was generally more hostile toward cartels than was MITI. Indeed, during the 1970s the JFTC substantially reduced the number of non-authorized cartels from 1,079 in 1965 to 489 in 1980. Many of the cartels may have been formed in response to requests from Japan's trading partners for voluntary export restraints. See Christainsen and Hogendorn, 1983, p. 29.

[139] Depression cartels were allowed when excess capacity caused prices to fall below average production cost and a substantial portion of producers were in danger of failure. Christainsen and Hogendorn, 1983, pp. 30-31, reported that MITI hastened the demise of declining industries in coal (1960s), textiles (1970s), shipbuilding (1970s), and aluminum (1980s) through the use of loans from the Japan Development Bank and the decision not to erect protective tariff barriers. Peck et al., 1985, pp. 22-28, note that loans made under the 1978 Depressed Industries Law amounted to only $148 million. However, the aluminum smelting industry received a subsidy of about $112 million under a tariff exemption plan. Denzau, 1983, pp. 6-9, indicates that the Japanese government was quite unsuccessful in shifting resources out of textiles and that MITI badly misplanned its strategy for shipbuilding.

the Structurally Depressed Industries Law of 1978 provided

for coordinated reduction of excess capacity in industries

designated as depressed.  Under the law a depressed industry is

characterized by unusually excessive plant capacity and signifi-

cant financial difficulties.  In addition, two-thirds of the in-

dustry producers must petition MITI for designation of the

industry as depressed.  When an industry is so designated, the

appropriate ministry is authorized to draft a plan that may

include scrapping of capacity.  The law also gave the JFTC the

right to void or modify ministry plans it considers too anti-

competitive.  Initially, open hearth steel, aluminum, synthetic

fiber, and shipbuilding were designated as depressed.[140]

The Structurally Depressed Industries Law expired in 1983,

but the Diet passed similar legislation entitled "Temporary Law

for Structural Improvement of Specific Industries."  The new

law covers seven basic material industries that have suffered

from high energy costs, reduced world demand, and competition in

the domestic market.  These industries include electric furnace

steelmaking, aluminum smelting, chemical fibers, chemical

fertilizers, ferroalloys, pulp and paper, and petrochemicals.

The new law goes beyond its predecessor in permitting mergers and

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[140] Boyer, 1983, gives a longer list of designated industries
including aluminum, cardboard, cotton and wool spinning, electric
furnace steel, ferrosilicon, fertilizers, shipbuilding, and
synthetic fibers.  The petrochemical industry was also receiving
aid.  The industries targeted for action tend to be energy or
labor intensive, so that Japan had a comparative disadvantage
relative to less developed countries.  See Peck et al., 1985, for
a discussion of the capacity and production changes that occurred
in these industries under the 1978 Law.

joint ventures in production, marketing, research, storage and transportation so long as they increase the economic viability of the industry. For example, joint sales agencies are permitted if the participants have a combined market share of 25 percent or less. In addition, product swaps and tolling arrangements are encouraged as a means of reducing costs. Finally, MITI is given expanded authority to designate targets for disposal of excess capacity and to encourage increased industry concentration through tax incentives and financial support.[141]

It is not clear how extensive or successful Japan's policy toward declining industries has been.[142]  Under the 1978 and 1983

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[141]  Initially, MITI wanted the mergers and joint ventures formed under the law to be exempt from JFTC review, and the JFTC opposed such an exemption. The JFTC position apparently prevailed, and the reorganizations must be approved by the JFTC. See Japan Economic Journal, May 31, 1983, p. 8 and Peck et al., 1985, pp. 36-38. A private advisory group recommended to the JFTC in late 1982 that industrial adjustment should be left in most cases to free market forces. Observing that authorization of cartels under the earlier law did not solve the problems of the shipbuilding, textile, and fertilizer industries, its report concluded that government measures to restrict competition are ineffective. See Antitrust and Trade Regulation Report, March 3, 1983, p. 507.

[142]  The merits of a U.S. industrial policy have been debated extensively. Proposed policies focus on picking "winner" and "loser" industries and tactics such as subsidies, trade protection, low interest loans, employee training, etc., to encourage the winners and ease the transition out for the losers. Unfortunately, little empirical evidence seems to exist regarding the declining industry policy subset of the broader industrial policy debate. For a positive view of industrial policy generally, see Reich, 1982, 1983, and Thurow, 1981. For a positive view of radical industrial policy change, see Bluestone and Harrison, 1982. For considerably less favorable views, see McKenzie, 1983, Miller et al., 1984, Lee, 1983, and Sakoh, 1983. Sakoh presents data indicating that Japan has not heavily subsidized manufacturing and argues that where it did (e.g., coal, shipbuilding, aluminum) the industries often declined.

laws, 22 industries were designated as depressed. A MITI
survey indicated that the policies were successful in petro-
chemicals and pulp and paper but significantly less successful in
aluminum smelting, electric furnace steelmaking, ferrosilicon,
and chemical fertilizers.[143] In the case of aluminum the
industry attained MITI's target of a 57 percent capacity reduc-
tion, but that did not (and cannot) solve the basic problem
caused by high energy costs.

The planned capacity reductions also led to higher prices
(or a moderation in the rate of price decline) in the affected
industries that were concentrated. Substantial price increases
occurred in aluminum smelting, nylon and polyester filament,
urea, ammonia, and linerboard.[144] The system of capacity
reduction thus acted as an implicit tax on the consumers of
products manufactured by depressed industries. These consumers
financed much of the industry adjustment--a cost that otherwise
would be borne by stockholders, workers, or taxpayers.

Other evidence indicates that Japan's policies may have been
either unnecessary or unsuccessful. For instance, it appears

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[143] *Japan Economic Journal*, September 11, 1984, p. 5. Also
see Peck *et al.*, 1985, pp. 11-14, indicating that capacity reduc-
tion goals were met in most of the targeted industries. How-
ever, electric furnace steel and various manmade fibers were
exceptions to the general rule. Since capacity reduction goals
were initially set based on the firms' own plans for reduction,
it is not too surprising that a majority of industries achieved
their goal.

[144] Peck *et al.*, 1985, pp. 15-17. These price increases might
have encouraged entry, but the 1978 Law prohibits both incumbent
expansion and entry. Peck *et al.*, 1985, p. 9.

that labor moved out of many of Japan's declining industries at a rapid rate even before the 1978 and 1983 laws were passed. Christainsen and Hogendorn report that of the world's 14 industries with the largest percentage employment declines from 1973 to 1977, 9 were located in Japan.[145]  In addition, there have been a number of cases in which individual producers have at least partially thwarted MITI's efforts at capacity reduction as they attempt to be the survivors of the decline (e.g., electric furnace steel, polyolefins).[146]  It also appears that Japan has used trade policy to protect some admitted "sunset" industries. For example, apparel tariffs of 11 to 18 percent were maintained and the workforce in apparel rose from 1973 to 1979.[147]  On the other hand, MITI's plans for capacity reduction in shipbuilding did seem to work rather well, although MITI's efforts to push shipbuilding in the 1960s may have created the need to cut back in the latter 1970s.

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[145]  Christainsen and Hogendorn, 1983, p. 30.

[146]  Boyer, 1983, p. 60; _Japan Economic Journal_, September 11, 1984, p. 5.  In the case of polyolefins, the fact that the industry did not contract as quickly as MITI wanted may have been a blessing.  Demand increased substantially in fiscal 1983 and capacity utilization reached 92 percent even though only 25 percent of MITI's planned capacity reduction had been achieved.

[147]  Trezise, 1983, p. 17.  However, the story was different in textiles.  Christainsen and Hogendorn, 1983, p. 31, note that protection was avoided in textiles and that employment in textiles fell 42 percent from 1973 to 1977.  Movement out of textiles continued through 1983 in Japan.  From 1973 to 1983 textile employment fell absolutely from 8.1 to 5.0 percent of all manufacturing.  See _Yearbook of Labor Statistics_, Bureau of Labor Statistics, Japan, November 1984.

Finally, we have no estimates of the resource cost of
Japan's declining industries program or its anticompetitive
impacts. As a result, we have no basis for concluding that the
Japanese approach to industrial decline is superior to the less
interventionist approach of the U.S.[148] Indeed, the anecdotal
evidence might suggest the opposite.

D. Conclusion

Industrial decline is often said to pose two major policy
problems: (1) unemployment in specific industries, and (2)
balance of payments problems. Liberalization of antitrust policy
is not likely to be an efficient governmental response to either
problem, particularly if that change leads to lower levels of
domestic competition. During the 1930's such a response to
generalized unemployment was tried with no visible success.
Also, active government intervention in response to industrial
decline has not been a successful policy in the past in the U.S.,
and Japan's current use of that policy over the last 20 years has
produced ambiguous results.


V. Current Merger Policy for Declining Industries

The U.S. does not have special antitrust policies for
declining industries. In considering how a merger in a declining

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[148] It seems that no industry covered by the 1978 Depressed
Industries Law has completed its restructuring. Most are covered
by the 1983 Law and those that are not (shipbuilding, cotton, and
wool manufacturing) are covered by separate industry-specific
laws or are administered by the Ministry of Transporation (Peck
et al., 1985, p. 5).

industry would be treated, it is important to note that present-
ly merger enforcement is principally carried on by the federal
government, through the Department of Justice's Antitrust
Division and the Federal Trade Commission.  Only to a lesser
extent do private actions, through rulings in the federal court
system, affect merger enforcement policy.[149]  Historically,
private litigants have brought few merger cases.  Fisher and
Lande compute that between 1974 and 1981 the government brought
about 16 cases per year.[150]  Private litigants bring about five
cases per year.[151]  Cases in which formal action takes place are
only a small part of the story, however.  The antitrust agencies
examine about a thousand Hart-Scott-Rodino reportable mergers and

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[149] Note, however, the recent judicial rulings tending to
favor private merger enforcement, discussed below.

[150] Fisher and Lande, 1983, p. 1675 n. 312.

[151] Id.

acquisitions each year.[152]  It is through this process that most

merger policy is effectuated.

These non-adjudicative government examinations are not

public.  However, the government has made public the guidelines

by which it assesses mergers:  the 1984 Department of Justice

(DOJ) Merger Guidelines and the Federal Trade Commission's 1982

Merger Statement.  These guidelines give weight to three parti-

cular matters that are apt to be important in mergers in declin-

ing industries:  (i)  merger-specific efficiencies, (ii) the role

of import competition in limiting the possible exercise of market

power, and (iii) the financial health of the firms.

As we shall see below, the federal courts may not neces-

sarily give substantial weight to (i) and (ii).  Legal precedent

concerning these matters is scant, and courts historically have

focused primarily on market concentration.  Nevertheless, there

appears to be some movement by the courts toward recognition that

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[152] Federal Trade Commission Law Enforcement in the 1980's 48
(Federal Trade Commission, October 1984).  Under the Hart-Scott-
Rodino Act, firms contemplating large corporate mergers and
acquisitions must file advance notice with both the FTC and the
Department of Justice.  The HSR Act thus gives the agencies time
to review large mergers to determine whether they pose antitrust
concerns.  Between January 1, 1981, and December 31, 1984, the
antitrust agencies received advance notice of some 4,755 transac-
tions.  In 255 cases, the FTC or the Justice Department issued
so-called second requests requiring firms to submit additional
information for more detailed review.  Occasionally, firms will
abandon their attempts upon notice that the antitrust agencies
plan to challenge the transaction.  See FTC data on HSR filings
as of March 27, 1985.
    This should be contrasted with non-merger private and public
merger enforcement.  For example, in the year ending June 30,
1983, private litigants brought 1,192 actions (including mergers)
while the government brought 95.  15 National Journal 2136
(October 15, 1983).

considering efficiencies, foreign competitors, and other characterisics besides concentration is important in reaching sensible antitrust merger decisions.

A.  The Role of Efficiencies in Merger Enforcement

The 1984 DOJ Guidelines indicate the importance attached to efficiencies in current federal horizontal merger enforcement. They state:

> The primary benefit of mergers to the economy is their efficiency-enhancing potential, which can increase the competitiveness of firms and result in lower prices to consumers. Because the antitrust laws, and thus the standards of the Guidelines, are designed to proscribe only mergers that present a significant danger to competition, they do not present an obstacle to most mergers. As a consequence, in the majority of cases, the Guidelines will allow firms to achieve available efficiencies through mergers without interference from the Department. Some mergers that the Department otherwise might challenge may be reasonably necessary to achieve significant net efficiencies. If the parties to the merger establish by clear and convincing evidence that a merger will achieve such efficiencies, the Department will consider these efficiencies in deciding whether to challenge the merger. Cognizable efficiencies include but are not limited to, achieving economies of scale, better integration of production facilities, plant specialization, lower transportation costs, and similar efficiencies relating to specific manufacturing, servicing, or distribution operations of the merging firms. The Department may also consider claimed efficiencies resulting from reductions in general selling, administrative, and overhead expenses, or that otherwise do not relate to specific manufacturing, servicing, or distribution operations of the merging firms, although, as a practical matter, these types of efficiencies may be difficult to demonstrate. In addition, the Department will reject claims of efficiencies if equivalent

or comparable savings can reasonably be achieved by the parties through other means.[153]

In like manner, the 1982 FTC Merger Statement notes that:

...there are two ways merger guidelines might take efficiencies into account. One way is by raising the market share thresholds so that economies of scale generally can be realized to the fullest extent possible. The Commission supports an adjustment in the numerical criteria, in part, for this reason. Such an approach, however, may not account for all possible efficiencies. To accomplish the latter objective, an efficiencies defense could be allowed in individual cases. Of necessity, such a defense would require an assessment of both the magnitude of the efficiencies anticipated from their merger and the relative weight to accord this evidence vis-a-vis the potential market power effects of the merger.

To minimize measurement difficulties, it has been suggested that an efficiencies defense could be limited to measurable operating efficiencies, such as production or plant economies of scale. The efficiencies are also more likely to be of the kind that may eventually represent an improved state of the art available to all producers. While such evidence is appropriate for considera- tion by the agency in the exercise of its prosecutorial discretion at the pre-complaint stage, the Commission believes that there are too many analytical ambiguities associated with the issue of efficiencies to treat it as a legally cognizable defense. To the extent that efficiencies are considered by the Commission as a policy matter, the party or parties raising this issue must provide the Commission with substantial evidence that the resulting cost savings could not have been

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[153] Department of Justice Guidelines, June 14, 1984, Section 3.5.

obtained without the merger and clearly outweigh any increase in market power.[154]

The DOJ Guidelines and FTC Statement have been put into effect in a number of recent cases. The best known instance for DOJ was the 1983 LTV/Republic merger in the steel industry discussed in Section III. In that case efficiency considerations were important in allowing consummation of the revised merger plans.[155]

The FTC has recently gone beyond its 1982 Statement and indicated a willingness to consider efficiencies as part of the formal adjudication process. In the American Medical International (AMI) case, the Commission extensively discussed the efficiency evidence presented by the merging firms.[156] Although it did not find the evidence convincing in that instance, the legal discussion indicates that efficiency considerations will be an important element in future cases.

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[154] Federal Trade Commission Statement Concerning Horizontal Mergers, June 14, 1982, Section IV, footnotes omitted. Former Chairman James C. Miller III, believed that scale-type efficiencies should be part of the legal analysis directly.

[155] The DOJ Antitrust Division has also recently clarified its stand with regard to joint ventures in research and production. Current antitrust treatment of these ventures takes into account their efficiency-creating potential. The Division will not challenge joint venture restrictions under Sec. 1 of the Sherman Act if the restrictions are reasonably tailored to bring about significant efficiencies. See J.P. McGrath, Speech on Joint Ventures, November 2, 1984, reprinted in Antitrust Trade Regulation Report, Vol. 47, November 8, 1984, pp. 872-875.

[156] FTC Decision in American Medical International, Inc., and AMISUB (French Hospital), Docket 9158, July 2, 1984, pp. 44-53.

Although the role of the courts in merger enforcement has
not been substantial except in those infrequent cases when the
Supreme Court alters the analytical landscape with a sweeping
pronouncement, recent developments could alter this to a degree.
In the last few years, private litigants have shown a willing-
ness to challenge important acquisitions and mergers even after
the government declined challenge.[157] Whether this trend
continues will probably rest on the resolution of "standing"
decisions in Section 7 cases. The recent case of <u>Cargill
Inc. v. Montfort of Colorado, Inc.</u>, 761 F.2d 570 (10th Cir. 1985)
may very well lead to an important ruling by the Supreme Court on
the proper test for standing by competitors in Section 7 injunc-

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[157] Recent notable examples are <u>Chrysler Corp. v. General
Motors Corp.</u>, 589 F. Supp. 1182 (D.D.C., 1984) (challenging the
General Motors-Toyota joint venture that was permitted to proceed
under FTC-approved conditions); and, <u>White Consol. Indus.,
Inc. v. Whirlpool Corp.</u>, 1985-2 Trade Cas. (CCH) Para. 66,699
(N.D. Ohio 1985) (the Commission expressly voted to decline
challenge -- in less controversial cases the staff is allowed to
make this decision). See also, <u>Christian Schmidt Brewing
Co. v. G. Heileman Brewing Co.</u>, 753 F.2d 1354 (6th Cir. 1984) and
<u>Pennzoil Co. v. Texaco, Inc.</u>, 1984-1 Trade Cas. (CCH) Para 65,896
(10th Cir. 1984). Recently, the 2nd U.S. Circuit Court of
Appeals ruled in Lieberman, <u>et al</u>. (Docket 85-6023) that state
Attorneys General could not obtain access to documents filed
with the FTC under the Hart-Scott-Rodino Act. This ruling may
have some effect in reversing a trend toward more antitrust
merger activity by state governments, which historically had done
little in the merger area.

tion cases.[158]  The _Cargill_ case could have far reaching impacts, for it is not clear whether the courts will follow the led of the DOJ or FTC in examining efficiencies flowing from mergers.[159] One simply cannot evaluate the courts' handling of the efficiency issue because they see so few merger cases (and even fewer where efficiency is a substantial issue).  One might add that although courts are not bound by the government's guidelines,[160] on occasion they use them for guidance.[161]

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[158]  The Supreme Court may be asked to review a ruling by the Tenth Circuit that a competitor may obtain an injunction against an acquisition by one of its rivals when the competitor's only claim of injury to itself is that the merger will lead to increased competition and threaten the competitor's survival. The Tenth Circuit's ruling differentiated injunction actions from treble damage actions finding that  "it is much easier for a plantiff to show causation of its hypothetical antitrust injury by a putative antitrust violation" in a section 16 injunction case than in a damage action.

[159]  The Supreme Court in 1967 made the following pronouncement in _FTC v. Proctor & Gamble_, 386 U.S. at 590:

> Possible economies cannot be used as a
> defense to illegality.  Congress was aware
> that some mergers which lessen competition
> may also result in economies but it struck
> the balance in favor of protecting
> competition.

In its _AMI_ decision, however, the FTC notes that such statements were not made by the court in the context of an efficiencies defense and thus must be considered dicta only.  See also, Muris, 1980, and Areeda and Turner, Par. 701g and Par. 941b.

[160]  See, for example, _White Consol._, _supra_ at 91.

[161]  _Id._ at 95-96 (although coming to a different result than the government's review).  See also _Montfort of Colorado, Inc. v. Cargill, Inc._, 591 F. Supp. 683, 695 (D. Colo., 1983) (noting that the Antitrust Division is not bound by the guidelines either).  A court may also explicitly rule that the government improperly applied its own guidelines.  _U.S. v. Waste Management, Inc._ 1984 Trade Cas. Para. 66,190 at 66,700.

B.  Market Definition and Imports

The two federal antitrust agencies consider the effects of import competition in defining the relevant geographic market.[162] Both the DOJ Guidelines and the FTC Statement stress the fact that obtaining reliable capacity and sales data for foreign firms is often difficult.  However, neither would disregard import effects due to data imperfections.

Again, principally because of lack of opportunity, it is unclear whether the courts have caught up with the federal antitrust agencies in granting recognition to foreign competition. Still, the rationales used by the courts could be used to justify international markets when the facts support them.  In RSR v. FTC, 602 F.2d 1317 (9th Cir. 1979), the Ninth Circuit rejected the proposition that the proper geographic market should be defined as the area in which the acquired firm is in direct competition with other firms in the industry.  In that case, the court ruled that the market for secondary lead was nationwide. And in U.S. v. Crocker-Anglo National Bank, 277 F. Supp. 133 (N.D. Ca. 1967), the district court first stated that geographic market areas are not based on political boundaries but on

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[162] See the DOJ Guidelines, Antitrust Trade Regulation Report, June 14, 1984, Sections 2.3, 2.34, 3.23, and the FTC Statement on Horizontal Mergers, June 14, 1982.  If imports can increase sufficiently in response to a significant nontransitory price increase to cause a merger-induced price increase to be unprofitable, then the relevant geographic market would include the source of those imports.  For non-agency comments on the appropriate inclusion of foreign firms in a geographic market, see Foer, 1982, p. 825, and Werden, 1983.

economic considerations.  It then stated that when analyzing concentration ratios, some adjustment should be made for business done by out-of-state (foreign) banks.

In other cases, an international market definition failed apparently because of a lack of factual substantiation.  Thus, in U.S. v. Amax, Inc., 4021 F. Supp. 956 (D. Conn. 1975), the Department of Justice challenged a merger of two copper producing and refining companies.  The companies argued that the court should consider competition from imported copper.  The court found that while evidence of foreign competition could be relevant in measuring the effect of a merger, such evidence could not be relied upon in that case due to the uncertainty of foreign sources of supply.  In Geddes v. Anaconda Copper Mining Co., 25 U.S. 590 (1921), the plaintiff challenged the sale of copper mines of Alice Co. to Anaconda as a restraint of competition "in the markets of the world."  The court dismissed this challenge since the plaintiff provided "no statement as to the total production of the world."  In International Tel. and Tel. Corp. v. General Tire & Electronics Corp., 351 F. Supp. 1153 (D.C. Ha. 1972), a telephone manufacturer brought a private antitrust action against a telephone holding company.  In ruling that the U.S. and not "the world" was the relevant geographic market, the court stated (p. 1174, footnote omitted):

In the broadest sense, of course, since the
corporations engaged in the U.S. in the
manufacture of automatic switch equipment,
station apparatus and transmission equipment
offer such telephone equipment for sale
throughout the U.S., and also are prepared to
export the same to any customers throughout
the world, it could be said that the
geographic market is "the world." For the
purpose of it's complaint, however, the
parties do not seriously dispute that the
U.S. is the geographic market for telephone
equipment

In _Barry Wright Corp. v. Pacific Scientific Corp._, 555 F. Supp.
1264 (D. Mass. 1983), the Court limited the relevant market for
mechanical and hydraulic snubbers (shock arresters) to the
U.S. but implied that the presence of foreign competition
could expand its boundaries:

Defendant urges that the relevant geo-
graphic market is the entire world because
Pacific makes some sales in foreign countries
in competition with foreign manufacturers.
The market in which Grinnel is obliged to buy
and in which Barry was obliged to compete for
Grinnel's business was the United States. In
the United States market, Pacific was not
subject to competition from foreign manu-
facturers. The world market is thus
irrelevant to this case. The relevant market
is the United States. (555 F. Supp. at
1270.)

One court did refer to a "world" market, but only in
passing. In _Northrop Corp. v. McDonnel Corp._, 703 F. 2d 1030
(9th Cir. 1983), a defense contractor brought suit against an
aircraft manufacturer under the Sherman Act for attempted
monopolization. The relevant product market in this case was
the F-18 weapons system, and the district court described the

relevant geographic market as "arguably the world" since

components and materials are supplied by vendors worldwide.[163]

C.  Failing Firm Defense

Both the DOJ Antitrust Division and the FTC recognize the

financial condition of merging firms as one factor to be con-

sidered in evaluating the competitive significance given to a

firm's market share.[164]  In addition, the antitrust laws

recognize an explicit failing firm defense derived from the

Supreme Court's language in International Shoe Co. v. FTC, 280

U.S. 291, 303-2 (1930).

Current legal interpretation of the failing firm defense is

quite strict.  For instance, the 1984 DOJ Guidelines follow the

Supreme Court's ruling in Citizen Publishing Co. v. United

States, 394 U.S. 131 (1969) in stating:

> The "failing firm defense" is a long-
> established, but ambiguous, doctrine under
> which an anticompetitive merger may be
> allowed because one of the merging firms is
> "failing."  Because the defense can immunize
> significantly anticompetitive mergers, the
> Department will construe its elements
> strictly.
>
> The Department is unlikely to challenge
> an anticompetitive merger in which one of the
> merging firms is allegedly failing when:  (1)
> the allegedly failing firm probably would be
> unable to meet its financial obligations in
> the near future; (2) it probably would not be

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[163]  704 F. 2d at 1055.

[164]  DOJ Guidelines, June 14, 1984, Section 3.22, and the FTC
Statement, June 14, 1982, Section III.A.2.

> able to reorganize successfully under Chapter
> 11 of the Bankruptcy Act, and (3) it has made
> unsuccessful good faith efforts to elicit
> reasonable alternative offers of acquisition
> of the failing firm that would both keep it
> in the market and pose a less severe danger
> to competition than does the proposed
> merger.[165]

Given this strict interpretation (which may also apply to failing divisions of larger firms), firms may have a difficult time availing themselves of the defense. Commentators have argued that it might make sense to loosen the interpretation to allow sales of low profit (but not necessarily failing) firms to competitors if the firm is clearly in long-run decline and a substantial effort has been made to find a less anticompetitive purchaser.[166] In addition, various scholars have noted that allowing the failing firm defense may imporve welfare in cases where (1) a less anticompetitive purchaser does not exist and (2) the alternative to the purchase is employment of the assets in a much lower valued use (e.g., as scrap).[167] In such cases the sale to a rival may reduce output but by less than the alternatives. On the other hand, Baxter (1982) finds the defense to be strange based on its original purpose. He argues that the defense was originally intended to ameliorate suffering on the part of shareholders, employees, and the community that might be affected by the disappearance of the firm. However, the

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[165] DOJ Guidelines, June 14, 1984, Section 5.1-5.2.

[166] Campbell and Averitt, 1982.

[167] See Campbell (1984) and Shughart and Tollison (1985).

productive assets of a failing firm usually do not disappear if failure occurs. Rather, they will often continue to serve their productive function if they are economically viable.[168] Thus, the merger may not save any jobs or shareholder value to offset the anticompetitive effect.

## VI. Conclusion

The U.S. antimerger laws and horizontal merger guidelines need not be altered for declining industries. Current antitrust policy is flexible enough to allow consideration of the efficiency gains, including rationalization of industrial capacity, that might occur as a result of mergers. The antitrust agencies can determine, on a case-by-case basis, whether such merger-specific efficiencies are likely to occur. If they are, then these potential gains can be weighed against any possible anticompetitive effects of a merger and the proper balance can be struck. In addition, current merger law acknowledges foreign competition in the market definition process. If foreign firms are able to increase their supplies in response to an anticompetitive domestic price rise, such that the price rise would be unprofitable, then the geographic market would include those foreign firms. As a result, if imports can constrain the market

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[168] In the case where the firm failed due to a generalized industry decline (and not due to firm-specific factors), the productive assets may go out of production permanently, but in such a case the permanent shutdown would presumably be efficient.

power of U.S. producers, no challenge to a merger of U.S. firms would occur.

A general policy that liberalized antitrust laws would, therefore, be ill-advised.  Such a move would open the way for anticompetitive mergers for which there is no efficiency justification.  Some have argued that such a liberalization might be justified to save jobs in areas hard hit by declining employment and/or to improve the balance of trade.  However, there is no persuasive reason to believe that the mergers that would be allowed under the liberalization in question would increase employment or improve the balance of payments.  In any event, to deal with employment problems in specific industries, direct compensation or explicit adjustment assistance including subsidized retraining might be more cost effective policies.  To deal with the balance of trade under flexible exchange rates and capital mobility, more appropriate instruments are macroeconomic policies that affect net foreign borrowing.

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