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### The Revival of the Rust Belt

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## The Revival of the Rust Belt

by Murray L. Weidenbaum and Michael J. Athey

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Washington University - St. Louis

This booklet is one in a series designed to enhance the understanding of the private enterprise system and the key forces affecting it. The series provides a forum for considering vital current issues in public policy and for communicating these views to a wide audience in the business, government, and academic communities. Publications include papers and speeches, conference proceedings, and other research results of the Center for the Study of American Business.

## The Revival of the Rust Belt

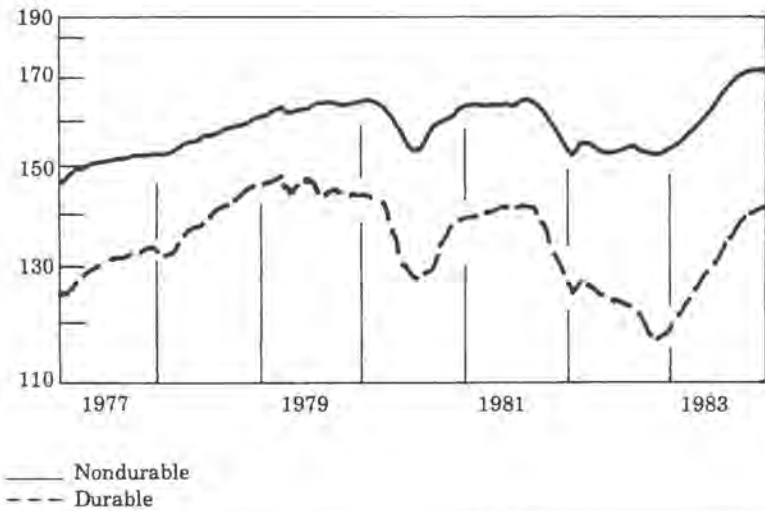
by Murray L. Weidenbaum  
and Michael J. Athey

Are America's basic industries, pressured by overwhelming import competition, becoming an anachronistic "Rust Belt"? Must government step in to assure the survival of older, heavy industries, especially in the Midwest? Are we becoming a service economy focusing on information, hamburgers, and dress shops?

The facts available to answer these questions are undramatic, not supportive of any extreme position, and thus uncompetitive in the marketplace for public policy viewpoints. The truth of the matter is that some of this nation's heavy industry is no longer competitive and is in the process of shrinking in size and importance; steel and automobile companies have reported the most dramatic cutbacks. Yet, on balance, the answer to each of the questions is a clear "no." If there is a "Rust Belt," it is far more a question of perception than reality.

Dr. Murray L. Weidenbaum is Mallinckrodt Distinguished University Professor and Director of the Center for the Study of American Business at Washington University in St. Louis. Michael J. Athey is John M. Olin Fellow research assistant at the Center. This report was originally published as "What Is the Rust Belt's Problem?" Chapter 6 in *The Industrial Policy Debate*, Chalmers Johnson, ed. (1984). Reprinted by permission of ICS Press, Institute for Contemporary Studies, Suite 750, 785 Market St., San Francisco, CA 94103.

**Figure 1**  
**Trend of U.S. Manufacturing Output**  
 (1967 = 100)



Source: *Federal Reserve Bulletin*, various issues.

### Analytical Traps

By and large, American manufacturing companies—hard goods and soft goods producers alike—are holding their own while adjusting to the business cycle. As can be seen in figure 1, both durable and nondurable manufacturing sectors in the United States have recovered from the 1981–82 recession. By December 1983, total industrial production had attained an all-time peak.

In view of these facts, how do we account for the gloom-and-doom talk about the sad prospects for U.S. manufacturing industries? First of all, the casual observer tends to generalize from a few highly publicized instances of true distress. Moreover, the positive side of economic events is rarely considered newsworthy and thus escapes widespread public attention.

But, perhaps most important, the authors of the new gospel of industrial policy—as well as other “megatrend” thinkers—have fallen into one of the oldest analytical traps. They have drawn heroic and long-term conclusions from the most recent data that they have seen. Many of the gloom-and-doom soothsayers were doing their writing in 1981 or 1982 when the economy was declining and, in a simpleminded fashion, they merely extrapolated that decline into the future. Such action is on a par with reacting to the spring rains by rebuilding Noah’s ark.

However, to react with euphoria to news of the upturn is, of course, as silly as treating the downside of a business cycle as a fundamental and lasting new development. It is intriguing to note that some observers at the conservative end of the political spectrum are beginning to do just that. To write about the runaway boom of the 1980s is also misleading because it sets up unattainable expectations.

It is useful to examine the trend of output in key sectors of the American economy. As shown in table 1, total durable goods production dropped 11 percent from 1981 to 1982. Smaller declines occurred in the broader aggregates, such as all manufacturing and total industrial production. All three aggregate measures, however, remained substantially above the levels of the 1970s. The point is not to underestimate the severity of the recent recession. Rather, it is to perceive the underlying strength of the American economy.

When we examine individual industry groups, we find a more diverse pattern. For example, primary metals (including steel) took a bad tumble, declining by 31 percent between 1981 and 1982. In contrast, transportation equipment (which covers both automotive and aerospace production) was down by 9 percent and instrument producers (a heavily defense-oriented sector) reported a 5 percent drop.

Of greater interest is the nature of the snapback in 1983. Two industry groups exceeded their 1981 highs: electrical machinery and transportation equipment. At the other end of the spectrum of performance, the 1983 recovery in primary metals (up 15 percent) did not bring that industry back to its 1975 level of output. Nevertheless, taking full account of the variations among industries, it seems clear that the decline in heavy manufacturing in-



Table 1  
**Production in Selected Durable Goods,  
 Manufacturing Industries**  
 (1967 = 100)

Industry group	1970	1975	1980	1981	1982	1983	Dec, 1983
Primary metals	107	96	102	108	75	86	91
Fabricated metal products	102	110	134	136	115	120	130
Electrical machinery	108	117	173	178	169	186	204
Nonelectrical machinery	104	125	163	171	149	151	163
Transportation equipment	90	97	117	116	105	118	128
Instruments	112	132	171	170	162	159	167
Total durable goods	102	109	137	141	125	135	145
All manufacturing	106	116	147	150	138	148	158
Total industrial production	108	118	147	151	139	148	157

Source: *Federal Reserve Bulletin*, various issues.

dustries that was so noticeable in 1982 did not represent a new and durable long-term trend. Rather, the decline was primarily the result of a severe but short-term cyclical contraction.

This report focuses on output as the prime indicator of the economic performance of business firms. Yet there is a great amount of interest in employment. It is the high levels of unemployment that exacerbate pressures for restricting imports and for providing federal bailouts of domestic corporations. However, public discussions rarely acknowledge the relationship between production, job creation, and productivity. That is, in an economy with rising productivity (technically, output per worker hour), we would expect that employment rises more slowly than does output. In fact, instances of slowly growing or stable output might be accompanied by declining employment. That is, declining employment does not automatically and inevitably imply declining production. And the health of an industry is determined not by its demand for inputs (labor, capital, etc.) but by its supply of output—by its contribution of goods and services to the society's standard of living.

It can be seen in table 2 that total manufacturing employment in the United States has fluctuated in the range of 18 to 20 million since 1970; 1982's performance, although low, was merely at the bottom end of the range. The decline that year was followed by an expansion in 1983 that extended to every major hard goods sector. These statistics clearly do not support a counsel of despair.

#### Statistical Analysis of U.S. Manufacturing, 1970-82

The burst of concern about the decline of U.S. manufacturing has focused on the older, low-tech industries often referred to collectively as the "Rust Belt." Let us see what the facts are. We divide the industries into two groups: high-tech and low-tech.<sup>1</sup> We do this by ranking manufacturing industries by the ratio of their R&D expenditures to sales. The high-tech industries are those whose ratio exceeds the average for all manufacturing in 1980. The low-tech sectors are those with R&D-to-sales ratios below this average.<sup>2</sup>

We now turn to the question "Is there a Rust Belt that is in decline?" To answer this, we examine the most comprehensive body of data available, the statistics on income produced by two-

**Table 2**  
**Employment in Selected Durable Goods,**  
**Manufacturing Industries**  
**(In thousands)**

Industry group	1970	1975	1980	1981	Dec. 1982	Dec. 1983 <sup>a</sup>
Primary metals	1,260	1,139	1,142	1,121	816	881
Fabricated metal products	1,560	1,458	1,613	1,592	1,359	1,448
Electrical machinery	1,871	1,702	2,091	2,092	1,957	2,146
Nonelectrical machinery	1,984	2,057	1,494	2,507	2,066	2,169
Transportation equipment	1,853	1,715	1,900	1,893	1,696	1,873
Instruments	527	550	711	727	695	705
Total durable goods	11,208	10,688	12,187	12,117	10,559	11,394
All manufacturing	19,367	18,323	20,285	20,173	18,193	19,271

<sup>a</sup>Preliminary.

Source: U.S. Bureau of Labor Statistics, various statistical releases.

digit manufacturing industry, as reported in the national income and product accounts for the period 1970-82.<sup>3</sup> On the basis of econometric analysis, we group each industry into one of the following three categories: (1) those that showed a rising trend in output over the period, (2) those that showed a stable trend, and (3) those that showed a declining trend. Results for the period are presented in table 3.<sup>4</sup>

As can be seen, there is no statistical support for the claim that the low-tech industries are declining or, as a group, even reaching a period of stagnation or stability. Why, then, do so many commentators contend that low-tech industries are declining? We suggest three possibilities: (1) they draw long-term conclusions from the data for the last few years, (2) they equate trends in employment in an industry with its overall health, or (3) they implicitly define "declining" as growing more slowly than the rest of the economy.

**Table 3**  
**Trend in Real Income Produced**  
**by Industry, 1970-82**

Trend in output	High-tech industries	Low-tech industries
Growth	Machinery, except electrical Electric and electronic equipment Other transportation equipment Instruments and related products Chemicals and allied products	Lumber and wood products Furniture and fixtures Stone, clay, and glass products Fabricated metal products Miscellaneous manufacturing Food and kindred products Tobacco manufacturing Textile mill products Apparel and other textile products Paper and allied products Printing and publishing Petroleum and coal products Rubber and miscellaneous plastic products
Stability	Motor vehicles and equipment	Leather and leather products Primary metal industries
Decline	None	None

Source: Murray L. Weidenbaum and Michael J. Athey, "The 'Decline' of U.S. Manufacturing: Empirical Evidence and Policy Implications" (St. Louis: Center for the Study of American Business, Working Paper no. 87, 1984).

**The business cycle rediscovered.** The period from 1970 to 1982 was a time of major economic disruptions. With supply shocks from the rapid rise in food exports and an oil embargo followed by a dramatic rise in oil prices, the U.S. economy was subjected to wide swings and deep recessions in 1973–75, 1980, and 1981–82.

The majority of two-digit manufacturing industries followed this same pattern. In the 1950s and 1960s, they showed a relatively stable upward trend, taking in stride the recessions that occurred during this time. This, however, was not the case in the 1970s and early 1980s. In the face of severe recessions, the manufacturing industries experienced much deeper and longer declines than in the earlier period. This is the environment from which the proponents of an industrial policy have developed their arguments.

Focusing our attention on the period 1981–82, we see all the industries suffering what appears to be a significant decline. But, on reflection, when the economy goes through a recession it is not surprising to see the manufacturing industries decline more than proportionately. The other side of the coin, however, is that in 1983 these same industries recovered from the recession more rapidly than the rest of the economy. Thus, historical data do not support the conclusion that the low-tech industries are declining.

**Is employment the problem?** To many people, an upward trend in employment is a sign of a healthy and growing industry. All but two of the high-tech industries experienced growth in employment over the period 1970 to 1982 (see table 4).<sup>5</sup> Thus, there is some logic in taking the trend in job creation in those industries as a rough approximation of general growth.

When the same analysis is made for the low-tech industries, we obtain more mixed results. Six of the fifteen low-tech industries show declining trends in employment, while only four industries demonstrate signs of growth.

The question that must be addressed, however, is whether or not it is necessarily true that an industry that is reducing its labor force is truly a declining industry. This proposition—which underlies so much of the popular writing on industrial policy—does not necessarily hold. Surely an industry whose output is declining

**Table 4**  
**Trend in Employment by Industry, 1970–82**

Trend in employment	High-tech industries	Low-tech industries
Growth	Machinery, except electrical Electric and electronic equipment Instruments and related products Chemicals and allied products	Furniture and fixtures Printing and publishing Petroleum and coal products Rubber and miscellaneous plastic products
Stability	Motor vehicles and equipment Other transportation equipment	Stone, clay, and glass products Fabricated metal products Food and kindred products Paper and allied products Lumber and wood products
Decline	None	Primary metal industries Miscellaneous manufacturing Tobacco manufacturing Textile mill products Apparel and other textile products Leather and leather products

Source: Murray L. Weidenbaum and Michael J. Athey, "The 'Decline' of U.S. Manufacturing: Empirical Evidence and Policy Implications" (St. Louis: Center for the Study of American Business, Working Paper no. 87, 1984).

is also likely to be reducing employment. Yet there are other reasons why employment may be decreasing. Referring back to table 3, we recall that most of the industries have been growing in terms of output, and the three exceptions are holding their own. This means that most of those industries that are declining in terms of employment are at the same time increasing their productivity.

More aggregate analyses show that, in each of the past six recoveries, a higher level of manufacturing output has been attained with fewer workers working fewer hours. This is primarily a result of the long-term trend in productivity growth, combined with the cyclical effects of overhead reduction and the closing of the least efficient production facilities.<sup>6</sup>

The relevant point is that employment problems may arise when a healthy industry is merely adjusting to changes in its environ-

ment. That is, many of the industries classified here as low-tech are becoming more automated in order to compete and survive in the marketplace. In many specific instances, company investments in new productive equipment have increased the productivity of individual workers and thus reduced the demand for total employment. For example, in the textile industry, lasers inspect 10,000 yards of cloth an hour—fifteen times faster than a human once could. In the steel industry, lasers and innovative sensing devices perform inspections and even check refractory lining wear in steel-making furnaces.<sup>7</sup> Economizing on labor costs, of course, can be a key to maintaining an industry's competitiveness.

**The manufacturing sector relative to the economy.** Some of those who worry that low-tech industries are declining do not focus on decreases in output in an absolute sense. They consider an industry's performance to be unsatisfactory if it is not growing at least as rapidly as the economy as a whole. Hence, if the low-tech industries are declining according to this definition, we should observe over the period 1970 to 1982 a significant negative trend in the ratio of industry income to national income.

To test this hypothesis, we use a statistical methodology similar to that developed for table 3.<sup>8</sup> In table 5, we see that high-tech industries have been growing at least as fast as the economy, two at a faster rate. That should come as no surprise. What about the low-tech industries? According to the proposition being examined, we should expect that these industries would demonstrate slower growth than the national average, or even a decline. This is true of some but not all. Five of the fifteen industries are growing less rapidly than the economy as a whole. However, such industries as tobacco manufacturing and petroleum and coal products have been growing faster than the economy. Hence, any tendency for low-tech industries to grow more slowly than the economy is by no means universal.

In short, the data on national income by industry, when viewed in real terms during the period from 1970 to 1982, do not support the claim that the old-time industries located in America's "Rust Belt" are going the way of the dinosaur.<sup>9</sup> All of the industries, both high-tech and low-tech, show at least stability over this period, with no examples of industries with absolute long-term declines in levels of output.

**Table 5**  
**Industry Growth Patterns Compared**  
**to the National Average,**  
**1970-82**

Trend	High-tech industries	Low-tech industries
Growing faster than national income	Machinery, except electrical Instruments and related products	Tobacco manufacturing Petroleum and coal products
Growing at about the same rate	Electric and electronic equipment Other transportation equipment Motor vehicles and equipment Chemicals and allied products	Lumber and wood products Stone, clay, and glass products Primary metal industries Fabricated metal products Food and kindred products Paper and allied products Printing and publishing Rubber and miscellaneous plastic products
Growing more slowly or declining	None	Furniture and fixtures Miscellaneous manufacturing Textile mill products Apparel and other textile products Leather and leather products

Source: Murray L. Weidenbaum and Michael J. Athey, "The 'Decline' of U.S. Manufacturing: Empirical Evidence and Policy Implications" (St. Louis: Center for the Study of American Business, Working Paper no. 87, 1984).

### Shortcomings of Existing Industrial Policy

In the debate on industrial policy proposals, it is important to note that many existing government policies affect industry in important ways and often have contributed to the difficulties faced by the manufacturing sector. These negative impacts of government action are, in the main, side effects of laws designed for other purposes: providing a more equitable tax structure, redistributing income and wealth, enhancing the quality of life, improving the physical environment, and so forth.

Intentionally or not, many of these policies have weakened the manufacturing sector of the economy, either by increasing its costs or by reducing the amount of capital available for expansion



and for new product development. This influence on the fundamental structure of American industry can be seen as manufacturing companies shift portions of their work force away from the creative and productive areas of business such as R&D, manufacturing, and marketing. The result has been an increase in overhead functions such as legal activities, accounting and finance, public affairs, and government relations.<sup>10</sup> For the individual firm, changes in the corporate work force may be essential to respond to pressures from government agencies and self-styled public interest groups. But the effect of these shifts on national productivity and competitiveness is negative. Poorer industrial performance, in turn, leads to calls for an industrial policy.

If we overlook these structural responses to existing governmental policy, all that is visible are pleas for bailouts, subsidies, and other special assistance. But, on reflection, the willingness of government to bail out a Lockheed or a Chrysler is not surprising. It is the price that Congress pays to avoid dealing with the underlying industrial problems that arise from the present pattern of governmental intervention in the economy.

A focal point for the current advocates of industrial policy is the proposed reestablishment of the Reconstruction Finance Corporation (RFC), sometimes under a more euphonious name such as a "national development bank." Attention is usually focused on the contributions that the RFC made during the Great Depression of the 1930s and World War II. Yet, most of its loans to business were made in the postwar boom period of the late 1940s and early 1950s.

There is much to learn from the operations of the RFC. Its history shows that government subsidy of business encourages a misallocation of resources and provides opportunity for political favoritism. The RFC experience also demonstrates that government programs develop a life of their own and persist long after the problems for which they were created have been solved.<sup>11</sup>

Variations on the negative theme of propping up the economy's "losers" are not limited to the notion of bringing back the RFC. Some would attempt to stop economic change by dealing with the so-called "runaway plant problem"; their response is to make it extremely difficult and costly to move or close down an industrial facility. This "King Canute" approach ignores the reasons why

companies are forced to take such actions in the first place. Frequently, in fact, those plants have lost their competitiveness due in large part to the government policies advocated by the same groups that now support legislation against runaway plants. Proposals also overlook the negative signals that would be sent to any company considering building a new plant in a region that had adopted restrictive legislation (and a few states already have done so).

Close cousins of this negative approach are proposals to "protect" various industries and markets from foreign competition and to inhibit American investments overseas. None of these approaches would lead to a more productive or more competitive economy. They often would shelter companies and localities from their own mistakes.

The simple-minded dichotomy that sees only expanding high-tech and declining low-tech industries needs to be examined more carefully than has been done by the widely publicized prognosticators of the demise of traditional industry. If industrial giants of the past such as Andrew Carnegie and Harvey Firestone were to visit their old companies, they would be pleasantly surprised by the array of high technology now in use: industrial robots, sophisticated process control, laser inspection, flexible manufacturing systems (FMS), automated material handling, and CAD/CAM (computer-aided design along with computer-aided manufacturing).<sup>12</sup>

Deere & Company's sprawling tractor works provides a good example. The facility includes four FMS installations and sixteen machining centers—groups of totally automated machines and conveyors linked to a computer. In addition, visitors can see robotic welding and robotic spray painting with computers providing total integration of conveyors, towlines, monorails, cranes, and automated storage and retrieval systems. There is hardly a conventional forklift truck in sight.

Many companies have adopted "flexible manufacturing," a high-tech marriage of robots and computers. Deere's plant can turn out tractors in more than 5,000 configurations. General Electric now makes 2,000 versions of its basic electric meter at a single small plant.<sup>13</sup> In a new facility, General Motors has installed a robot system that paints its cars. The man-machine in-

terface is being redefined. Manual operations using gears, pulleys, and belts have often been replaced by microprocessors, keyboards, electronic switches, and cathode ray tubes.

It is ironic that, just when the promoters of industrial policy in the United States are bemoaning the effects of reliance on free markets, writers in the USSR are blaming that nation's poor economic performance on the centralized nature of the Soviet state. Here are some of the "outdated . . . peculiarities of the system of state economic management" that Soviet economists bemoan:

- "a very high degree of centralization in economic decision-making"
- "the inhibition of market forces"
- "a centralized system of allocation of materials and supplies to all enterprises"
- "the centralized regulation of all forms of material incentives for workers"
- "overlapping authority and resulting confusion among ministries and agencies"
- "the limited economic authority and, as a result, the limited economic liability of enterprises for the results of their economic performance"<sup>14</sup>

It is intriguing to read the Soviets' own description of how individuals attempt to adjust to this "most rigid regimentation of economic behavior":

The population always enjoys a certain amount of freedom to respond to the limitations imposed by the state. . . . When established rules and regulation . . . affect the vital interests of certain categories of people, they look for ways to circumvent the constraints and satisfy their requirements. Then the state introduces still harsher measures to block undesirable forms of activity, in response to which the population comes up with more refined methods that make it possible to meet their interests under the new conditions.<sup>15</sup>

All this, however, need not lead to a do-nothing approach to the serious economic questions that face the United States. There is a growth strategy that involves no expansion in government power or federal spending. Its elements are basic: tax simplification,

regulatory relief, lower deficit financing, and curtailed government lending. In each of these areas, much can be done.

The 1981 tax reductions were surely helpful. But the sad fact of the matter is that the tax code is far more complicated today than it was just a few years ago. To anyone who has ever tried to fill out the tax forms for a small company, it is clear that simplification is not just a pleasant thought, but rather a vitally important need.

Similarly, the regulatory relief effort has accomplished much in reducing the burden of new rules. But fundamental improvement can come only from revising existing statutes that mandate unreasonable burdens of compliance, such as the "zero discharge" goal of the Clean Water Act and the "zero risk" provision of the Delaney Amendment to the Food, Drug, and Cosmetic Act.

Furthermore, it is ironic to contemplate the numerous industrial policy proposals for funneling federal funds to "worthy" private investment areas at a time when the federal government is running budget deficits in the neighborhood of \$200 billion a year. The most effective way to increase private capital formation is just the reverse of the RFC approach—to reduce the federal drain on private saving represented by massive deficit financing. Finally, federal lending programs are a classic example of robbing Peter to pay—or lend to—Paul. They do nothing to increase the pool of private saving. But they do reduce the amount available in the private market.

The most effective strategy for encouraging economic growth is no secret: it is to reduce government barriers and achieve a better-functioning market economy. However, this approach is not accompanied by any guarantee. In a truly dynamic, competitive economy, we do not know in advance where the new product breakthroughs will occur. And the benefits will not be evenly distributed. But we do know that society as a whole will be better off, since it is likely that most—though not all—industrial workers and employers will enjoy higher real incomes and improved living standards.

Surely positive public policy should enhance productivity, capital formation, and international competitiveness. The negative approaches embodied in most industrial policy suggestions, which extend further the role of government in the economy, are all adverse to these key economic goals. Given the gap between

the ideal embodied in most policy proposals and the shortcomings of actual practice, a cynic would perhaps conclude that the optimum amount of change in government actions directed toward the industrial economy is zero.

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1. The categories are at the two-digit level of aggregation. See U.S. Office of Management and Budget, *Standard Industrial Classification Manual* (Washington, D.C.: U.S. Gov. Printing Office, 1972).

2. The R&D and sales data are taken from National Science Foundation, *National Patterns of Science and Technology Resources, 1982* (Washington, D.C.: U.S. Gov. Printing Office, 1982).

3. Technically, we measured the amount of national income attributed to each industry, without capital consumption allowances, in real terms. The deflators used are taken from the implicit price deflators for major categories of gross national product, 1972 = 100.

4. To determine whether a given industry has been growing or declining, we fit the data to the following equation:

$$Y_{it} = \beta_{i0} + \beta_{i1} t + \beta_{i2} CUR_t + \epsilon_{it}$$

where:  $Y_{it}$  = real income produced by industry  $i$  over time  
 $t$  = 0, 1, . . . , 12; 0 in 1970  
 $CUR_t$  = capacity utilization rate  
 $\epsilon_{it}$  = random error term for industry  $i$   
 $\hat{\beta}_{i1}$  = the estimated trend for industry  $i$  over the period from 1970 to 1982

5. To determine this trend the original model is used with full-time equivalent employees replacing real income as the dependent variable.

6. Robert F. Dieli, "Employment: One Year Later," *Continental Comment*, December 30, 1983, p. 1.

7. William H. Miller, "The Phony War Between High Tech and Low Tech," *Industry Week*, October 3, 1983, p. 39.

8. The equation used in this section is similar to the one developed above, except that the ratio of industry income to national income replaces industry income as the dependent variable and  $CUR_t$  is not included as an independent variable.

9. A similar position has been reached by Robert Z. Lawrence, "Changes in U.S. Industrial Structure: The Role of Global Forces, Secular Trends and Transitory Cycles," in *Industrial Change and Public Policy*, ed. Federal Reserve Bank of Kansas City (Kansas City, Mo.: Federal Reserve Bank of Kansas City, 1984), pp. 29-77.

10. See Murray L. Weidenbaum, *The Future of Business Regulation* (New York: Amacom, 1980).

11. Murray L. Weidenbaum and Reno Harnish, *Government Credit Subsidies for Energy Development* (Washington, D.C.: American Enterprise Institute, 1976), pp. 15-17; Arthur Denzau and Clifford Hardin, *Why Resurrect the RFC?* (St. Louis: Center for the Study of American Business, Washington University, formal publication no. 62, 1984).

12. Miller, p. 39.

13. John Holusha, "Deere & Co. Leads the Way in 'Flexible' Manufacturing," *Des Moines Register*, January 29, 1984, p. 10F.

14. "Excerpts from Soviet Study on the Need for an Overhaul of the Economy," *The New York Times*, August 5, 1983, p. 4.

15. Ibid.