

Chapter 4

# Employment and Worker Displacement

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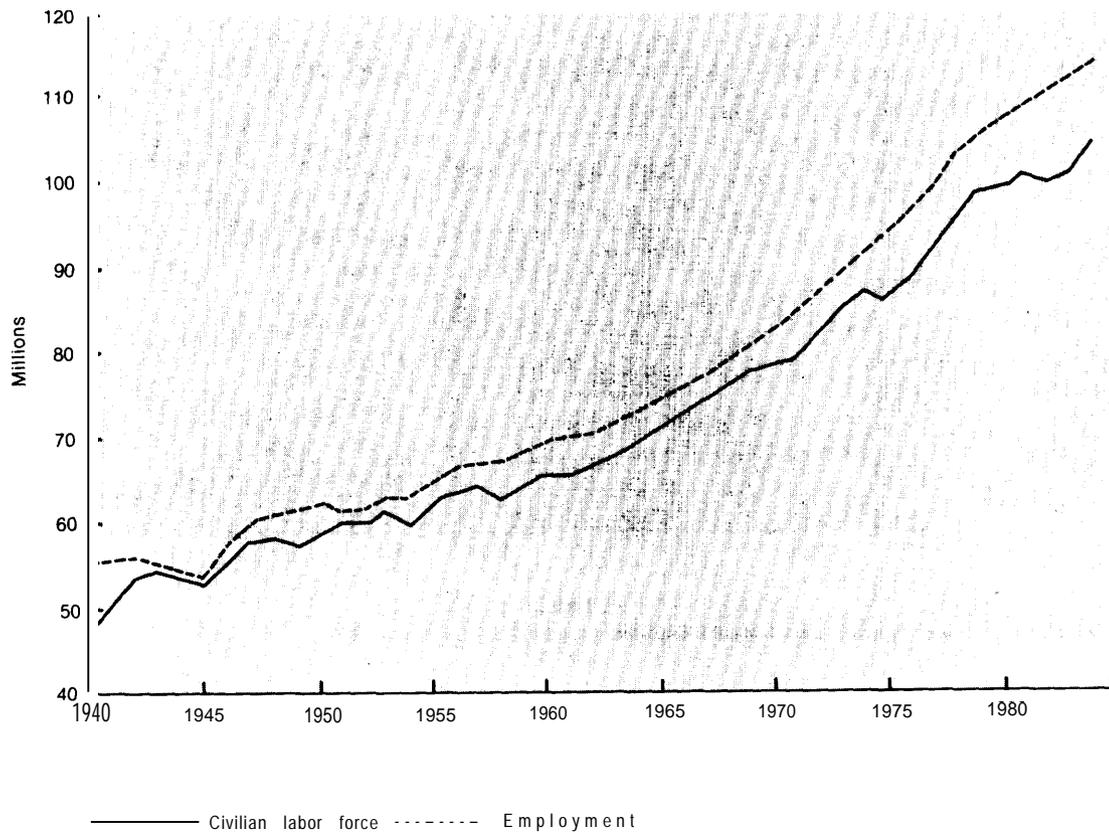
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Figure 4-1.—Labor Force and Employment in the United States, 1940=84



SOURCE: U.S. Department of Labor, Bureau of Labor Statistics, *Employment and Earnings, various issues*

crease it in hard times when jobs are scarce and adjustment is more difficult for those displaced—assuming that funding is adequate to begin with. (See ch. 5 or further discussion of this point.) But a better understanding of the relation between economic growth, job losses and creation, and displacement may help to steer a steadier course in responding to the problems of worker displacement.

#### Causes of Displacement: Technological Change

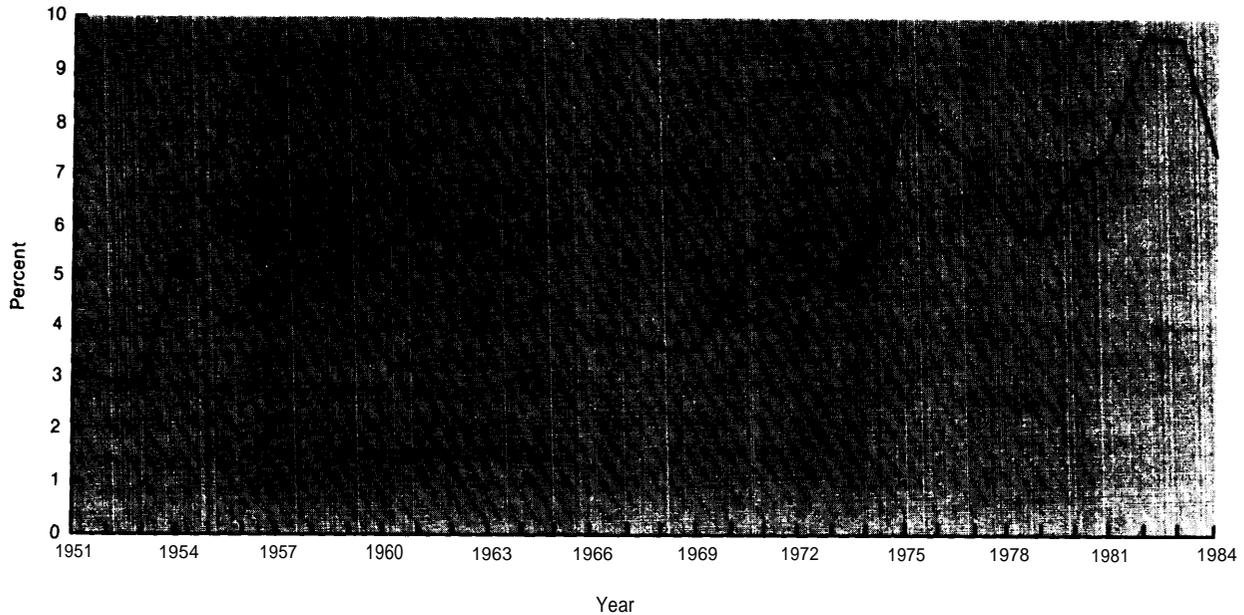
Technology has changed worklives for centuries, first enabling agriculture to support larger populations than hunting and gathering could do and later liberating people from subsistence agriculture. In the 20th century, technology has largely replaced human labor on

farms in industrialized countries. Increasingly, it is replacing some of the more dangerous, onerous, and repetitive tasks in manufacturing and services. Electronic technologies are now also helping with routine mental tasks, including manipulating figures and spelling.

These changes have naturally brought about displacement, some of it far from painless. In 1811, after England had been at war with France for nearly 20 years, the skilled knitters of Nottinghamshire faced soaring food prices, sluggish trade because of the French and English blockades, lowered wages, and loss of jobs to new machinery and cheap child labor. The workers smashed the machines. In 11 months, they destroyed over a thousand knitting frames.<sup>7</sup> At the same time, wool croppers and combers

<sup>7</sup>Witold Rybczynski, *Taming the Tiger: The Struggle to Control Technology* (New York: Viking Press, 1983), pp. 36-37.

Figure 4-2.—U.S. Unemployment, Civilian Noninstitutional Population 16 Years and Over, 1951-84



SOURCE: U.S. Department of Labor, Bureau of Labor Statistics, *Employment and Earnings*, July 1985, p. 10.

also lost income and jobs when machinery replaced their skilled labor, and also destroyed the machines. Despite a few early successes, the Luddites (named for the mythical General Ned Ludd) were soon crushed. An army of 12,000 soldiers was dispatched to put down the uprisings, and the English Parliament repealed statutes dating from Elizabethan times that assured minimum wages, and fair hours and working conditions for laborers. England's handloom weavers and shearers, once independent and well paid, became the new poor.

In 20th-century America, the long migration of workers from farms to cities became a mass exodus after World War II. The postwar revolution in agricultural technology—the adoption of mechanical cotton pickers and harvesters, chemical pesticides and fertilizers, high-yielding crop varieties—forced farmworkers off the land. Employment in agriculture dropped by 3.6 million (42 percent) from 1947 to 1964. Writing in 1965, the National Commission on Technology, Automation, and Economic Progress called this exodus “the most profound of all displacements.” Many of the displaced farmworkers, “suffering from deficient rural edu-

cations, lacking skills in demand in urban areas, unaccustomed to urban ways, and often burdened by racial discrimination, exchanged rural poverty for an urban ghetto.”<sup>8</sup>

In the same period, Appalachian coal mining collapsed, displacing large numbers of workers. Between 1948 and 1968, oil and gas took over most of the coal market, and technological advances in mining eliminated still more jobs. During this time, employment in coal mining fell from 436,000 to 126,000. Between 1947 and 1954 alone, coal mining employment fell by 46 percent.<sup>9</sup> Despite special efforts to bring economic development and new jobs to Appalachia, and despite some recovery in coal production and employment after 1968, the region has not yet recovered. For instance, the unemployment rate in West Virginia, the heart of the coal mining region, was over 13 percent in August 1985, higher than in any other State.

<sup>8</sup>U.S. National Commission on Technology, Automation, and Economic Progress, *Technology and the American Economy*, Volume 1 (Washington, DC: U.S. Government Printing Office, 1966), p. 20.

<sup>9</sup>*Ibid.*, p. xii.

These examples from the past illustrate how serious, long-lasting social difficulties can arise from worker displacement and that technology is a potent factor in causing displacement. *The conclusion is not warranted, however, that technological change alone is responsible for the problems of displacement, or that curtailing technological advance will minimize displacement.* Technological change is a powerful engine for economic growth. While technological change has destroyed some jobs, it has not destroyed work. Some observers have suggested that, with technology replacing people in many endeavors, there will eventually be less work left for people to do. So far, however, the ability of people to create new endeavors as old ones are mechanized, and to devise new products to satisfy old and new needs, has roughly kept up with the ability of mechanization to replace human effort. Indeed, technology has been a key ingredient in creating new jobs.

This idea is not new: it was a major conclusion of the National Commission on Technology, Automation, and Economic Progress in 1966. The Commission was created by Congress in August 1964, in response to national concern about the steady upward creep of the unemployment rate after World War II and widespread fears that automation would limit the growth of employment while the labor force continued to grow. By the time the Commission made its report in 1966, the unemployment rate had fallen to its lowest level in more than 10 years, and concern over displacement and technology had faded. The coincidence of a rapid fall in the unemployment rate, following on the heels of intense public concern over the displacement effects of automation, caused many observers to conclude unequivocally that technology creates more jobs than it destroys.

Certainly, technological changes have helped to create jobs; however, technology was only one of many factors responsible for the prosperity of the late 1960s. The fiscal stimuli and jobs programs of the period were extremely important. The experience of the 1960s may not repeat itself, nor does it support the view that technological change will always create more

jobs than it destroys. As the Commission itself concluded:

It has become almost a commonplace that the world is experiencing a scientific and technological revolution . . . According to one extreme view, the world—or at least the United States—is on the verge of a glut of productivity sufficient to make our economic institutions and the notion of gainful employment obsolete. We dissent from this view. We believe that . . . it diverts attention from the real problems of our country and the world. However, we also dissent from the other extreme view of complacency that denies the existence of serious social and economic problems related to the impact of technological change.<sup>10</sup>

Worker displacement is one of these problems. Undeniably, advances in technology have contributed to the strength of American industry, but it is equally clear that technology can promote industrial competitiveness while limiting employment. Changes in process technologies that increase productivity enable fewer workers to produce the same output. If productivity rises at a faster rate than output, the level of employment in the relevant sectors will fall. If changes in productivity are rapid and employment shrinks correspondingly, normal turnover and attrition cannot handle the needed work force reductions, and workers are displaced. Even if the economy is expanding and jobs are being created in other industries, many displaced workers still face adjustment problems.

Labor-saving technology has been a significant factor in the falling employment levels of the textile industry, for example. Between 1955 and 1977, production in the textile industry rose 113 percent, while employment dropped by 22 percent.<sup>11</sup> This trend still holds for the textile industry, and is increasingly found in other industries as well.

<sup>10</sup>Ibid., p. 1.

<sup>11</sup>Vinod K. Aggarwal with Stephan Haggard, "The Politics of Protection in the U.S. Textile and Apparel Industries," *American Industry in International Competition: Government Policies and Corporate Strategies*, John Zysman and Laura Tyson (eds.) (Ithaca, NY, and London: Cornell University Press, 1983), p. 259.

Employment in the steel industry dropped from a peak of 726,000 workers in 1953 to 289,000 workers in September 1985. Output rose moderately in the 20 years 1953-73, from 112,000 tons to 151,000, but declined afterward, dropping to 93,000 tons in 1984. \* According to one analysis, "there has been a steady improvement and change in technology that is used by the U.S. steel industry . . . This has led to the reduction in employment."<sup>12</sup> The outlook for steel employment, moreover, is not expected to improve: "The remainder of the decade will probably see further losses in jobs with total employment approaching the 200,000 level by 1990."<sup>13</sup>

The automobile industry probably faces a similar future. It has already lost jobs due to a combination of foreign competition, plant modernization, and maturity of the market.<sup>14</sup> In May 1979, employment in the auto industry was at an all time high of 1,048,000 workers. Six years later, in May 1985, employment in the industry stood at 883,000—a drop of 165,000, or about 16 percent. It probably will fall further by 1990, even if the industry's modernization and reinvestment program allows it to regain the competitiveness it lost in the 1970s,<sup>15</sup> because it is highly unlikely that the demand for motor vehicles will increase as rapidly as productivity.

Steelworkers are probably the most visible of today's displaced workers, but there are others from a variety of industries. Some ana-

—  
"American Iron and Steel Institute, Figures for 1985 were not yet final when this reported was prepared, but indicated a further drop in steel production, to below 90,000 tons.

<sup>12</sup>Joel S. Hirschhorn, Testimony at Joint Hearings, *Technology and Employment*, before the House Committee on Science and Technology, Subcommittee on Science, Research and Technology and the House Committee on the Budget, Task Force on Education and Employment, Serial No. 41 (Committee on Science and Technology), Serial No. TF4-4 (Committee on the Budget), June 1983, p. 283.

<sup>13</sup>Ibid., p. 285.

<sup>14</sup>U.S. Congress, Office of Technology Assessment, *U.S. Industrial Competitiveness: A Comparison of Steel, Electronics, and Automobiles*, OTA-ISC-135 (Washington, DC: U.S. Government Printing Office, 1981).

<sup>15</sup>See, for example, *ibid.*, p. 95; and Alan Altshuler, Martin Anderson, Daniel Jones, Daniel Roos, and James Womack, *The Future of the Automobile: The Report of MIT's International Automobile Program* (Cambridge, MA: The MIT Press, 1984), pp. 204-205.

lysts expect that the introduction of new technologies, such as computers and telecommunications, will make it increasingly difficult to maintain employment in a number of industrial sectors.

A critical question, of course, is the effect of technological change on employment as a whole, on the creation of new jobs as well as on the destruction of old ones. Rosenberg says:

It seems to be much easier to anticipate the employment-displacing effects of technological change than the employment-expanding ones . . . Even a casual glance back into history appears to confirm this . . . In the 1950s, when the computer was still in its infancy, it was confidently predicted that all of America's future needs would be adequately catered to by a dozen or so computers. Even Thomas Edison, a genuine inventive genius, is said by one of his biographers to have anticipated that the phonograph would be used primarily to record the death-bed wishes of elderly gentlemen!<sup>16</sup>

Whether technological innovation will in the future create more jobs than it destroys is not known. What is certain is that such innovation will continue to require reallocations of the work force.

Besides affecting the number of people working in particular industries, technology also powerfully affects the kinds of work people do. The aggregate effects of these changes, however, are neither simple nor predictable. Much has been written about the de-skilling effects (i.e., reduction in the skill requirements of jobs) of new technology, and there is equally voluminous literature on technology's stimulating effect on demand for more skilled and better educated people. Some observers think both things are happening, creating a gap in the middle-skill or middle-income range. However, *the effects of technology on the types of jobs*

<sup>16</sup>Nathan Rosenberg, Testimony at Joint Hearings, *Technology and Employment*, before the House Committee on Science and Technology, Subcommittee on Science, Research and Technology, and the House Committee on the Budget, Task Force on Education and Employment, Serial No. 41 (Committee on Science and Technology), and Serial No. TF4-4 (Committee on the Budget), June 1983, p. 283.

*available and the kinds of tasks workers perform is never independent of human decisions.* Managers, engineers, designers, and, to some extent, workers themselves all have some power over the design of work, but none of these groups has the exclusive power to define jobs. Each group is constrained by the actions and decisions of all the others. As a result, if jobs are de-skilled, or a skills gap created, the problem is not a failure of technology, but one of human systems, Chapter 8 gives a more detailed analysis of the-effects-of technological change.

### Causes of Displacement: International Competition

International trade, like technological change, can bring about gains or losses of jobs—gains from exports and losses (in a less direct and consistent way) from imports. In the middle 1980s, the losses were much more apparent than the gains. Trade has many important economic effects, of course, other than those on jobs—e.g., putting pressure on national economies to concentrate their resources on what they produce most efficiently, and bringing a wide variety of goods, at low cost, to consumers throughout the world. This brief discussion, and the more detailed consideration in chapter 9, does not cover the broader aspects of trade but concentrates on the employment effects, and in particular, on displacement of workers.

Loss of international competitiveness by U.S. firms employing U.S. workers also results in displacement. A few industries, such as steel, apparel, textiles, and shoes, have been strongly challenged by foreign competitors for decades. In the past dozen years, many more industries have been affected, a trend much accelerated in the 1980s. In 1971, the United States experienced a trade deficit in merchandise (manufactured and natural resource goods) for the first time in 90 years. It totaled \$2.3 billion.<sup>17</sup> Between 1971 and 1985, there were 2 years of

merchandise trade surpluses (1973 and 1975); otherwise, the picture has been one of mounting deficit. In 1984, the merchandise trade deficit was \$107 billion. The job losses due to deteriorating trade balances cannot be measured directly, but one source estimated that as many as 3 million Americans would be unemployed in late 1985 as a result.<sup>18</sup>

The great rise in the value of the dollar since 1981 is a major reason for the recent unprecedented trade deficits; the rise of the dollar, in turn, has been linked to large Federal budget deficits and high interest rates—all part of a set of complex relationships that are not considered in this report. In addition to the powerful influence of the overvalued dollar, a number of industries have longer standing and more basic competitive problems; they have been losing out to foreign producers at least since the late 1970s, when the dollar was undervalued. Examples are steel, autos, machine tools, agricultural machinery, radio and TV sets, and parts of the semiconductor industry, as well as apparel and footwear.

There is no one-for-one correspondence between job gains due to exports and job losses due to imports. The case of exports is simpler, however; exports add to the total demand for products made in the United States, and stimulate employment. Even so, exports can rise without a corresponding rise in jobs, if labor productivity is rising. This occurred in 1984; the value of merchandise exports went up \$20 billion, yet the number of export-generated jobs decreased slightly, from 4.6 to 4.5 million. The level of exports is still the major influence, however; jobs due to exports were estimated to be 6 million in 1980, and 5 million in 1982, after the value of merchandise exports fell from \$224 to \$211 billion (without adjusting for inflation).

The relationship between jobs and imports is more complex. If imports rise, jobs in the United States may not decline, for several rea-

<sup>17</sup>Thomas O. Bayard, *Trends in U.S. Trade: 1960-79*, U.S. Department of Labor, Bureau of International Labor Affairs, Economic Discussion Paper 7, October 1980, p. 13.

<sup>18</sup>C. Fred Bergsten, Director, Institute for International Economics, "U.S. Trade Deficit: Causes, Consequences and Policy Responses," testimony at hearings on the U.S. Trade Deficit, before the House Committee on Ways and Means, Subcommittee on Trade, March and April, 1984; Serial No. 98-73, p. 180.

sons. The most important is that rapidly growing world demand may compensate for increased imports, so that U.S. employment can rise even in an industry which is losing part of its market share to foreign producers. This was the case in the semiconductor industry from 1978 through 1984; despite rising imports, U.S. employment grew. Only in 1985 were some job losses registered in the industry, largely due to slumping demand. In the more mature auto market, on the other hand, where world demand has grown slowly or remained static in recent years, U.S. workers have lost jobs as foreign producers (mainly the Japanese) gained a larger share of the market.

Firms facing great pressure from imported goods or services may choose among several strategies to protect themselves, including:

- . retooling existing production facilities to cut cost and raise efficiency of production;
- moving production to low-wage countries;
- moving production to lower wage parts of the United States;
- going out of business, or moving into less threatened lines of business; and
- asking for trade protection.

Most industries faced with international competitive pressure take all or most of these steps, as did, for example, the textile and apparel industries. In 1933, in response to depressed prices, the Federal Government instituted price supports for cotton.<sup>19</sup> While this provided some relief to cotton farmers, it placed some cotton textile and apparel manufacturers, who were unable to buy cheaper foreign cotton (because of a restrictive quota) at a disadvantage. In addition, the apparel industry, which had always relied on the secondary labor market,<sup>20</sup> had to raise wages when minimum wage legislation was enacted (even though apparel wages remained much below the average private sector wage). Unable to compete effectively with cheap foreign cotton and cheap foreign labor, and facing smaller markets due to

substitution of other materials for cotton and declining per capita expenditures on apparel, firms in the industry turned to most of the strategies listed above. Many firms moved south to capture the lower non-union wages; many retooled to handle synthetic fibers. Some businesses did both. Some firms, particularly smaller firms, were unable to adjust, and went out of business. Finally, the industries lobbied for, and got, trade protection, first the Short Term Arrangement in 1961, then the Long Term Agreement, and later the Multifiber Arrangement, which is in force until July 31, 1986.

While these adjustments were taking place, many workers were displaced. Employment in the apparel industry fell from over 1.4 million in 1973 to less than 1.2 million in 1984. This loss represents only a fraction of the displacement that has occurred in this industry. Earlier, as firms moved south and west, the share of textile industry employment in the Northeast dropped from 40.5 percent in 1950 to less than 22 percent in 1970. The pattern was similar in apparel: employment in New York and Pennsylvania, which accounted for 47 percent of industry employment in 1950, dropped to 24 percent by 1975.

Many other industries today face the same kinds of pressure. Some, like the steel industry, have been pressured by international competition for decades; others, such as the semiconductor industry, have many challenges still ahead of them. Chapter 9 provides a more thorough discussion of the effects of trade on employment.

### **Causes of Displacement: Changing Consumption**

Finally, changes in domestic consumption patterns can cause worker displacement. Public tastes and preferences change. New products are introduced, old ones are abandoned. Blacksmiths lost jobs as the automobile replaced the horse as a primary means of transportation. Adding machines are replaced by hand calculators, and hand calculators, sometimes, by microcomputers. Often, just a slow-

<sup>19</sup>This description of the textile and apparel industries is drawn from Aggarwal with Haggard, *op. cit.*, pp. 249-312.

<sup>20</sup>The secondary labor market includes less skilled people who tend to enter and leave the labor market often or those who cannot command high wages.

down in the growth of demand for a product, while labor productivity is improving, is enough to cause displacement in an industry. This was true, for instance, in the apparel and footwear industries. Between 1950 and 1977, expenditures on clothing and shoes fell from over 10

percent of personal expenditures to to less than 7 percent.<sup>21</sup> Although personal expenditures rose in absolute numbers, growth in productivity exceeded growth in demand for apparel.

<sup>21</sup> Aggarwal with Haggard, op. cit., p. 256.

## UNEMPLOYMENT AND DISPLACEMENT

Displacement problems should not be confused with unemployment problems. They are related, of course. For displaced workers and others, finding a job is more difficult when the general unemployment rate is higher than in more prosperous times. Yet, for many displaced workers, getting a job is not simple even when the unemployment rate is low. Moreover, *what is considered a low unemployment rate has been changing steadily for more than three decades.*

The “natural rate” of unemployment is a theoretical concept, defined as the lowest unemployment rate the Nation can sustain without inflationary pressure. This “natural rate” has been altered to accommodate a steadily rising unemployment rate. This rate, also referred to as the “benchmark” rate of unemployment, is supposed to represent the rate of unemployment society considers acceptable; therefore, when the rate is at the benchmark, full employment is considered to exist.

The concept of a “natural” or “benchmark” rate of unemployment is an outgrowth of the theoretical relationship between unemployment and inflation. This relationship, according to the well-known Phillips curve, is inverse; i.e., as unemployment falls below a certain rate, inflation rises. In the early 1960s, this “natural” rate of unemployment was thought to be about 4 percent.<sup>22</sup> This rate was proposed by the Kennedy Council of Economic Advisors, who concluded that it represented frictional and structural unemployment expected to occur regardless of economic conditions. If un-

employment fell below 4 percent, many economists believed, inflation would begin to rise sharply.<sup>23</sup>

With the rising unemployment rate in the 1970s, some analysts attempted to reestimated the “natural” rate, using economic modeling techniques. Most current analyses conclude that the “natural” rate of unemployment has increased following World War II. According to a recent staff study of the Joint Economic Committee (JEC), the natural rate of unemployment increased by 2.24 percentage points in the 1960s and 1970s, from 4.38 percent between 1961 and 1969 to 6.62 percent between 1973 and 1979, and there are indications that it has risen still further since 1979. Connaughton and Madsen estimate that the rate increased from 4 percent in 1961 to 6.7 percent in 1981.<sup>24</sup> The increase in the “natural” rate is attributed to several factors, but most analyses emphasize the increased participation of women and teenagers in the labor force. The JEC, for example, attributes 57 percent of the increase in the natural rate to increased participation of so-called nonprime demographic groups, namely teenagers and women. These groups of people, according to the JEC study, have higher unemployment rates due to their lower skill levels and relative lack of work experience. There is some evidence, however, that this explanation is not entirely correct. In the early 1970s, it appeared that rising unemployment rates were due primarily to youth unemployment. By the

<sup>22</sup>John E. Connaughton and Ronald A. Madsen, “Estimating Benchmark Unemployment for the 1980s,” paper prepared for the 1982 American Economics Association annual meeting.

<sup>23</sup>Even inflation, according to some analysts, is not enough to keep unemployment below its natural rate in the long run. See U.S. Congress, Joint Economic Committee, *The Natural Rate of Unemployment* (Washington, DC: U.S. Government Printing Office, 1982).

<sup>24</sup>Connaughton and Madsen, op. cit.

late 1970s, however, unemployment among prime-age men had risen. It accounted for nearly 57 percent of the increase in the overall unemployment rate between 1977 and 1982; during the same period, the contribution of prime-age women remained unchanged.<sup>25</sup>

The other major causal factor in the rise of the “natural” rate, according to the JEC study, is the expansion of the social safety net, including unemployment insurance compensation, medical payments, food stamps, and other forms of social welfare. These programs change “people’s attitudes with respect to what is an acceptable job, producing an upward drift in the natural unemployment rate.”<sup>26</sup>

The fact that unemployment rates have been on an upward trend since the end of World War II suggests that structural unemployment is on the rise in the U.S. economy. To attribute this trend to a rising “natural rate” of unemployment implies that nothing needs to be or can be done about it—a very dangerous choice. Employment and training programs, both for disadvantaged and displaced workers, are attempts to counter the effects of structural causes that keep people who want jobs out of work. To the degree that these programs succeed, the trend of rising unemployment rates will be halted or reversed.

Most forecasters expect that, given steady economic growth and rising productivity, the

<sup>25</sup>Michael podgursky, “Sources of Secular Increases in the Unemployment Rate, 1969-82,” *Monthly Labor Review*, July 1984, p. 21.

<sup>26</sup>U. S. Congress, Joint Economic Committee, op. cit., p. 13.

unemployment rate will decline gradually or remain about where it is.<sup>27</sup> Some analysts, however, anticipate a labor shortage beginning in the late 1980s, marking the end of the 4(1-year trend toward increasing unemployment. According to this school of thought, the rising unemployment rates of the past 15 years were due mostly to demographic factors—particularly the entry of the baby boom generation and more women into the labor force.<sup>28</sup> As the number of people entering the labor force declines in the late 1980s, the unemployment rate is expected to fall. Analysts taking this view largely discount the effects of structural factors. Other observers, pointing to the pervasive and rapid adoption of new technologies, and growing problems of U.S. international trade and the national debt, are less sanguine.

Without strong, sustained economic growth, the most likely prospect is that unemployment rates will remain high relative to historical standards. With moderate growth, unemployment might decline slightly in the next few years; with slower growth we might see very little decline in unemployment, even with fewer new entrants to the labor markets. With any kind of recession, unemployment could easily climb above 10 percent again, and might stabilize at a level even higher than the current rate, if historical trends are any guide. In any case, it is likely that manufacturing employment will continue to fall.

<sup>27</sup>Jane Seaberry, “High Jobless Rate Said Socially Harmful,” *The Washington Post*, Feb. 22, 1985, pp. D1-D2.

<sup>28</sup>It should be recognized that neither of these factors explains the rising unemployment rates of the 1950s.

## EMPLOYMENT TRENDS: THE UNITED STATES IN THE WORLD CONTEXT

Despite the relatively high unemployment of the mid-1980s, the United States is currently the envy of much of the industrialized world for its ability to create jobs, in contrast to the recent performance of Western Europe. In the 12 years from 1973 through 1984, the United States created 19.9 million civilian jobs.<sup>29</sup> Dur-

<sup>29</sup>Comparative statistics in this section are for civilian labor force and employment. The numbers change slightly if military

ing the same period the work force increased by over 24 million people (about 27 percent), with a resulting rise in the civilian unemployment rate (see figure 4-2) from 4.9 percent in 1973 to 7.5 percent in 1984. Over the same

employment is included. Data for European countries are adjusted to approximate U.S. concepts. See Joyanna Moy, “Recent Trends in Unemployment and the Labor Force, 10 Countries,” *Monthly Labor Review*, August 1985; data for years earlier than 1975, U.S. Department of Labor, Bureau of Labor Statistics.

period, Great Britain, France, and West Germany together lost nearly 3 million jobs, while their combined work forces increased by nearly 3.3 million (4.5 percent). Civilian unemployment rates increased from 2.7 to 10.1 percent in France, 0.7 to 7.8 percent in West Germany, and 3.1 to 13.0 percent in Great Britain.<sup>30</sup> These three countries have fared substantially worse than some other Western European nations (figure 4-3), but are chosen for discussion because their economies most nearly resemble that of the United States.

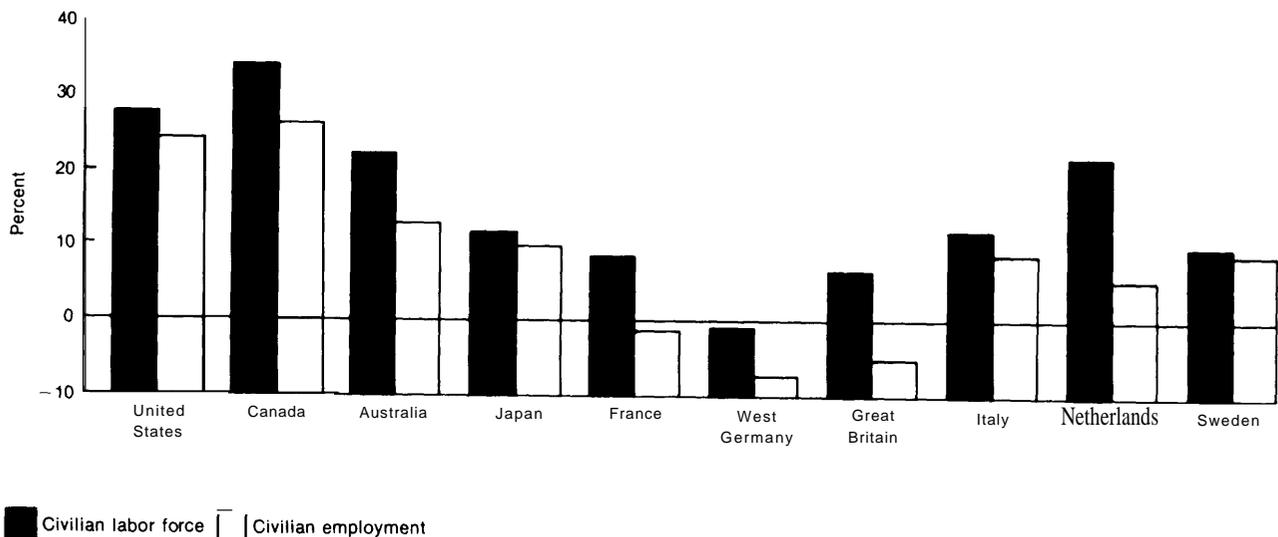
In light of this comparative record, it has been accepted that the United States is much more effective at job creation than Europe. Analysts and business writers on both sides of the Atlantic are engaged in policy debates on the reasons for the differences. U.S. “success” has been attributed to a variety of factors, ranging from different rates of investment in labor-saving machinery, to cultural values and attitudes toward risk taking. Much of the discus-

sion, however, begs a basic question: by what standards is the United States doing better than Europe? In aggregate numbers of jobs added, and also in the rate of job creation, the United States is far and away the stellar performer in the Western world—partly because it has the largest work force of all Western industrial nations, and has also had the greatest rate of increase in its work force in the past dozen years. Measured by unemployment rates, however, the “success” of the United States is a very recent phenomenon. The unemployment rates of West Germany and France were lower than that of the United States until 1984, and that of the United Kingdom was until 1980. The currently lower rate in this country may be due in part to a more rapid and complete recovery from the global recessions of the early 1980s, and not altogether to a fundamentally superior ability to create jobs.

Unemployment rates may not be ideal indicators of labor market success either. In the United States and many other countries in the Organization for Economic Cooperation and Development (OECD), the concept of unemployment involves an element of choice. To be considered unemployed, a person must be both out of a job and looking for one. Workers who

<sup>30</sup>Unpublished data, U.S. Department of Labor, Bureau of Labor Statistics. Unemployment data for European countries are adjusted to approximate U.S. concepts. Similar data on the civilian unemployment rate for selected OECD countries are in Joyanna Moy, “Recent Trends in Unemployment and the Labor Force, 10 Countries,” *Monthly Labor Review*, August 1985.

Figure 4-3.—Civilian Labor Force and Employment in Selected Countries, Percent Change 1973-84



are not actively searching for jobs are not defined as unemployed, but rather as nonparticipants in the labor force. In some cases, lack of participation may be due to attitudes and culture: for example, in some countries, it is not customary for women to seek work outside the home. However, poor prospects of landing a job may also discourage some people from looking for work. Thus, low participation rates may also be an indication of poor labor market performance.<sup>31</sup> It is useful to look at labor force participation rates in addition to unemployment rates, although neither is an adequate indicator of success, or lack of it.

Measured in terms of the total labor force divided by the population of working age (those 15 to 64 years old), U.S. labor force participation rates are high compared both to overall OECD labor force participation and the average of OECD Europe (figure 4-4). Interestingly, low participation rates appear to be related to high unemployment rates to some degree. Of the 12 countries with lower participation rates than the U.S. rate, 7 had higher unemployment rates. Only one of the four countries with higher participation rates than the United States had a higher unemployment rate. It is a mistake, however, to attach too much importance to this correlation. Japan, whose participation rate is the same as that of the United States, had a far lower unemployment rate (2.7 percent in Japan versus 9.6 percent in the United States in 1983). Both Canada and Great Britain, where participation rates are nearly the same as in the United States, had higher unemployment rates (11.9 and 12.8 percent, respectively).

Although comparing unemployment rates, labor force participation rates, and growth in employment cannot prove conclusively that the United States has a better record of job crea-

tion than Europe, this country has certainly been more successful than the largest Western European countries in the 1980s. No single reason can account for the difference. Although part of it may reflect faster U.S. recovery from recession, structural factors may play a part as well.

### Reasons for Differences in Employment Growth

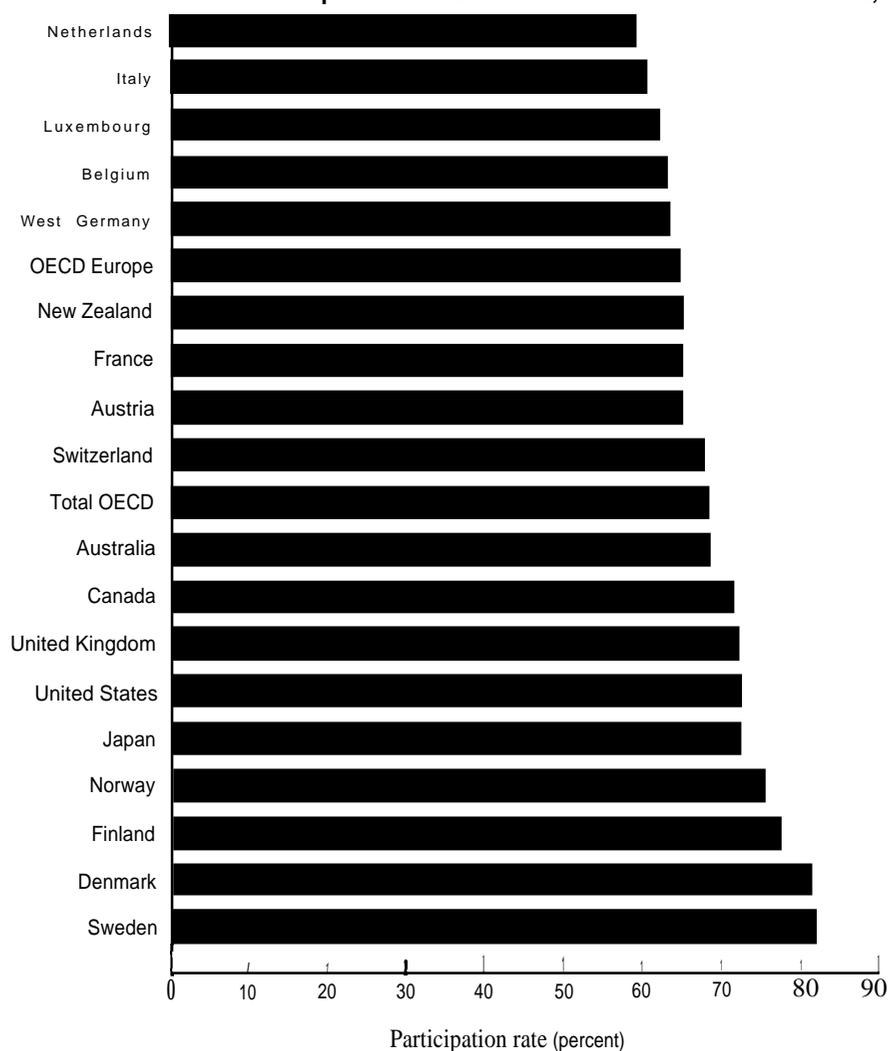
Job creation results from the birth of new enterprises, the expansion of existing ones, and immigration (relocation of enterprises from outside the area to inside). Job losses result from the death of enterprises, their contraction, and outmigration. In an economy whose labor force is growing, such as in the United States, more jobs must be created than lost simply to maintain employment rates. Even in countries with more stable work forces, like West Germany and the United Kingdom, job creation is important to offset the normal, ongoing economic processes that result in job loss,

There is little persuasive information on what factors account for high rates of job creation. Despite the obvious connection between macroeconomic growth and job growth, the growth of gross national product (GNP) alone may not be sufficient to provide enough jobs to keep employment up. Between 1975 and 1983, output in the United States and Canada grew by 23 percent, and employment increased 17 percent. In Japan, output went up by 42 percent while employment rose only 10 percent. In Europe, output rose 23 percent while employment fell 1 percent.<sup>32</sup> In West Germany, GNP growth was 1 percent in 1983 and 2.5 percent in 1984; yet the German unemployment rate rose in both years.<sup>33</sup> Growth of gross do-

<sup>32</sup>*The Economist*, "The Spectre of Unemployment at London's Feast," June 9, 1984, p. 44.

<sup>33</sup>It is possible that the statistics themselves are somewhat misleading. Some European economists believe European statistics seriously overestimate unemployment because they neglect the "shadow" or "underground" economy and the employment it creates. Economists estimate that the West German underground economy adds several percentage points to the country's gross national product, according to Eckhardt Wohlers, "The Shadow Economy—An Expanding Field of Activity," *Intereconomics* (Hamburg: Verlag Weltarchiv GmbH, September/October 1984), especially p. 215.

<sup>31</sup>In Italy, for example, discouraged workers (people who want a job but have given up looking because they think they cannot find one) outnumbered the workers counted as unemployed 11 to 10 in 1982 and 1983, using U.S. concepts. The number of discouraged workers in the United States amounted to 15 percent of the unemployed, both during the recession (last quarter of 1982) and during recovery (last quarter of 1984). Current data on discouraged workers are not available for all OECD countries. See Moy, op. cit., p. 17.

**Figure 4-4.—Labor Force Participation Rates for Western Industrialized Nations, 1983**

SOURCE: Organization for Economic Cooperation and Development, OECD *Employment Outlook*, (Paris: OECD, September 1984), p. 22.

mestic product in France has grown throughout the 1980s, averaging between 1 and 2 percent per year, while the French unemployment rate has risen steadily, from 6.4 percent in 1980 to 10.1 percent in 1984. As a result, European analysts take the notion of “jobless growth” seriously. Similar concerns are stirring in the United States as well. Recently, there have been warnings that the United States may undergo a “growth recession,” or a period of economic growth too slow to reduce unemployment.

The jobless growth Europe has experienced, and the faster growth in output than in employment in other countries, reflects rising productivity. Growth in productivity is, of course, a desirable economic goal, just as job creation is. The higher worker productivity is in a national economy, the higher the wages that can be supported without loss of competitiveness. Growth in output in firms or industrial sectors without growth in jobs means higher standards of living—at least for the people employed in

those firms and sectors. But unless job creation is going on elsewhere in the economy, and unless nations have workable ways of distributing the wealth that comes from rising productivity, the gap between the employed and the unemployed will widen.

Several factors may account for employment losses in major European countries over the past 10 years. These factors fall into three categories: 1) competitive problems, 2) economic structure and trade, and 3) labor and capital mobility.

### Competitive Problems

A significant loss of ability to compete in world markets can hurt employment. Several explanations have been put forward for recent losses in competitiveness of European industrial nations. Among the suggested explanations are failure to invest enough in technology that would modernize existing industries; overinvestment in mature industries with competitive problems and not enough innovation and investment in high-technology growth industries; and rising costs, especially labor costs, aggravated by inflated currency values. Some of these explanations contradict each other, and some apply as much to the United States as to Europe, thus failing to account for the relative success of the United States in creating enough jobs for people seeking them. However, some may provide a partial explanation.

Failure to enter new kinds of industries can damage the competitive position of industrialized nations. Europe, once a pacesetter in scientific advance and technological innovation, has fallen behind the United States and Japan, according to many Europeans. In one example of the effects of this loss of leadership, the European Economic Community (EEC) lost 17 percentage points of the market share in world exports of high-technology products between 1972 and 1980.<sup>34</sup> This trend is viewed as a partial explanation for European difficulties in creating jobs, and in some sectors, losing jobs.

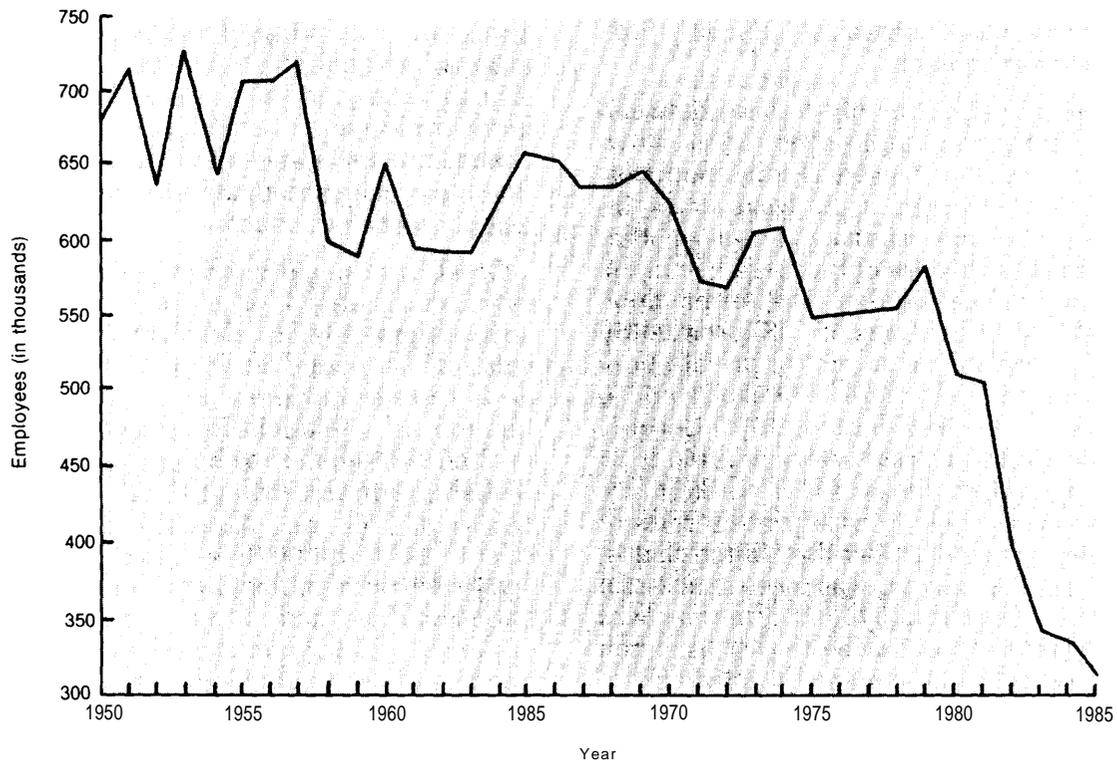
<sup>34</sup>Robin Knight, "Europe's High-Tech Gap Sets Off Warning Bells," *U.S. News and World Report*, vol. 98, No. 20, May 27, 1985, p. 45.

Failure to invest as rapidly as offshore competitors in technologies to modernize older industries has also been blamed for some of Europe's troubles. However, this argument applies equally to some U.S. industries, for example, steel. U.S. basic steel plants tend to be older, less efficient, and smaller than steelmaking facilities in other countries; failures to invest adequately in modern technology have contributed to the dwindling world market of the U.S. industry. Now, without protection, segments of the U.S. steel industry would have a hard time even in domestic markets. The U.S. industry's problems date back to the 1950s and 1960s; declining steel employment (due in part to rising productivity but also to loss of markets) is long-established (figure 4-5). Jobs in the industry fell, from a peak of 726,000 in 1953, to 289,000 in September 1985.

All industrialized countries, in fact, have lost competitiveness in industries that are particularly dependent on production labor. Steel, shipbuilding, textile, apparel, and automobile production and employment have been hurt in almost all major OECD countries, including the United States. One hypothesis for Europe's difficulty in maintaining employment is that the money spent by European governments to prop up mature industries with competitive problems diverts funds from other, higher growth sectors, and may only postpone job loss in the mature industries. This argument (which is somewhat contradictory to the one blaming loss of jobs on failure to modernize older industries) is a variant of the idea that European countries have not invested enough in technologically advanced growth industries. Whether investment funds are diverted to older industries at home, or to high interest ventures in the United States—currently a much larger diversion—the point is that new industries are not being nourished.

<sup>35</sup>See, for example, Robert B. McKersie and Werner Sengenberger, *Job Losses in Major Industries: Manpower Strategy Responses* (Paris, France: Organisation for Economic Co-operation and Development, 1983), p. 20; National Research Council, *The Competitive Status of the Steel Industry*, prepared by the Committee on Technology and International Economic and Trade Issues, Steel Panel, Office of the Foreign Secretary, National Academy of Engineering and the Commission on Engineering and Technical Systems (Washington, DC: National Academy Press, 1985), pp. 79-81, 99.

Figure 4-5.—Employment in the U.S. Steel Industry, 1950-85



Note\* 1985 figure is for March.

SOURCE: U.S. Department of Labor, Bureau of Labor Statistics, *Employment and Earnings*, various issues.

Overinvestment in declining sectors is an issue under discussion in West Germany. The German Government subsidizes a variety of industries, including agriculture and forestry, food, wholesale trade, energy, mining, iron and steel, shipbuilding, aerospace, railways, and shipping. Since 1979, subsidies per employed person have risen fastest in iron and steel, and shipbuilding.<sup>36</sup> While this kind of subsidy may postpone or stretch out the loss of employment in declining sectors, subsidies will not prevent eventual employment loss, and they probably discourage capital and labor from moving to higher growth sectors.

Labor costs and exchange rates also affect a country's competitive position. Labor costs depend on both wage rates and productivity. A country can afford to support higher wages

<sup>36</sup>Organisation for Economic Co-Operation and Development, Germany, *OECD Economic Surveys* (Paris, France: OECD, July 1984), pp. 47-49.

for its workers if their productivity is higher than that of workers in other countries. For this reason, both the United States and industrialized European countries have been able to afford a relatively high standard of living without sacrificing their ability to compete in a variety of sectors. However, when a country's wages outrun productivity, or when even high productivity cannot overcome the advantage of low wage rates, declining competitiveness results. Managers often seek to move production offshore or to substitute capital for expensive labor in response. Both these strategies hurt employment—although less than going out of business, which is sometimes the alternative.

High wage rates are often a deterrent to hiring new workers and an incentive to automate or produce offshore in order to reduce dependence on expensive labor. During the 1970s, European wages were rising faster than European productivity, and the result was that

European workers in some sectors priced themselves out of the market. European products became more expensive, hurting both sales and employment.

As an explanation for differences between U.S. and European employment gains, however, the argument is flawed. During the 1980s, the situation reversed. U.S. wage rates increased dramatically relative to wages in other nations, mostly because of the large rise in the value of the dollar. (In domestic terms, however, real hourly earnings of U.S. production and nonsupervisory workers on private non-agricultural payrolls were between 5 and 6 percent lower in 1985 than in 1977.) German manufacturing wage rates, once nominally 25 percent higher than those of U.S. workers, are lower than U.S. wage rates at present rates of exchange (figure 4-6).<sup>37</sup> Yet the United States, after the 1982 recession, was more successful in reducing its unemployment rate than was West Germany. Also, during the 1970s, when hourly compensation in many European countries (including West Germany, Sweden, Belgium, and the Netherlands) was higher in international monetary terms than it was in the United States, European unemployment rates were lower than U.S. rates.

The cost of other worker benefits, which can also increase labor costs, are not closely related to unemployment rates either. Total compensation, including wages, leave, financial bonuses, payments in kind (e.g., food, housing, medical treatment), and legally required private insurance, are higher in most major European countries, especially West Germany and France, than in the United States.<sup>38</sup> However, total compensation is also high in Japan, with its exceptionally low unemployment rate. The total compensation rates of the United Kingdom and Canada, where unemployment rates are significantly higher than in the United States, are close to corresponding U.S. figures.

<sup>37</sup>Richard S. Belous, "The Growing Gap Between U.S. and Foreign Labor Costs," *Congressional Research Service Review*, vol. 6, No. 3, March 1985, p. 10.

<sup>38</sup>Richard S. Belous, Library of Congress, Congressional Research Service, "An International Comparison of Fringe Benefits: Theory, Evidence, and Policy Implications," Report No. 84-815 E, pp. 13-16,

Exchange rates have a much more profound influence on competitiveness than simply their effect on wage rates. High currency values make all of a country's products more expensive to foreigners, and make foreign goods more attractive in the domestic market. If exchange rate imbalances persist, it becomes difficult to create employment in industries with heavily traded products.

Great Britain learned this lesson in the first two decades after World War II, when British governments tried to maintain the traditional value of the pound sterling to protect its role as a reserve currency and the position of London as a financial clearinghouse.<sup>39</sup> That created unrealistic exchange rates that hurt British exporters. Britain finally devalued its pound in 1967, and agreed to let the pound float in 1971, but by then a great deal of damage to British manufacturing and employment had been done; according to one analysis, "It is hard to exaggerate the devastating consequences of the overvalued currency on British industry."<sup>40</sup>

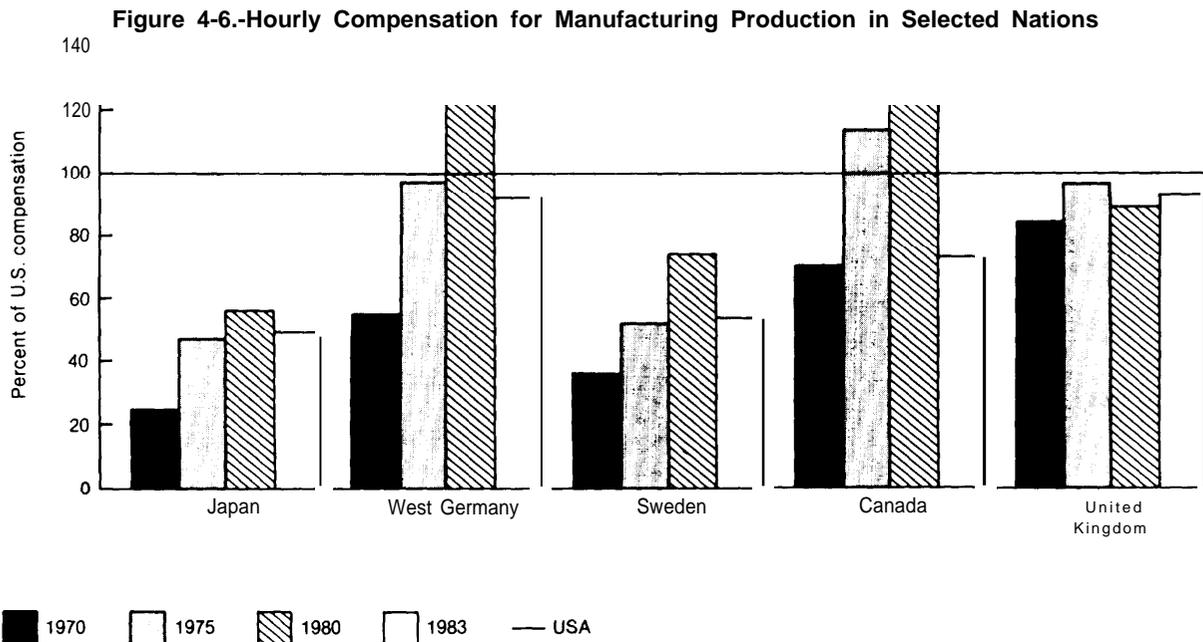
The effort to devalue the pound was undermined in the late 1970s. North Sea oil earnings strengthened the pound, not necessarily with respect to the U.S. dollar, but certainly compared to other EEC currencies. This further encouraged imports, depressed exports, and generally depressed domestic employment. It was not until 1984, as oil prices fell, that the pound dropped relative to other currencies.<sup>41</sup>

The United States now faces a similar problem. Since 1980, the dollar has risen significantly against other currencies (figure 4-7), depressing U.S. exports and encouraging imports and offshore production. The result is a rec-

<sup>39</sup>John Zysman, *Governments, Markets, and Growth: Financial Systems and the Politics of Industrial Change* (Ithaca, NY: Cornell University Press, 1983), p. 173.

<sup>40</sup>*Ibid.*, p. 174.

<sup>41</sup>During 1984, the pound fell 26 percent, to a record low of \$1.05; at one point, the pound sank below a one-to-one exchange rate against the Soviet ruble. The British central bank stabilized the pound at \$1.06. With the decline in the value of the dollar from its peak early in 1985, the pound had risen to about \$1.40 in autumn 1985. The source of most of these statistics is Lawrence Ingrassia, "Sterling Drops Sharply Despite Good Health of the British Economy," *Wall Street Journal*, Jan. 17, 1985 and *The Economist*, Mar. 9, 1985, p. 104,



SOURCE: Richard S. Belous, "The Growing Gap Between U.S. and Foreign Labor Costs," p. 10.

ord trade deficit, with an accompanying loss of up to 3 million jobs.<sup>42</sup> The trade deficit has been particularly tough on manufacturing. Manufacturing employment fell by over 1.6 million from 1979 (annual average) to August 1985. The overvalued dollar was a significant factor.

### Economic Structure

Manufacturing employment has declined in Europe as well as in the United States. Employment in industry declined in every OECD country except Japan in 1983, and average OECD employment in industry has fallen annually since 1979.<sup>43</sup> Most of the decline is in manufacturing. Most job creation has been in services, in OECD Europe as well as the United States.

Several interrelated reasons are often cited for losses of manufacturing employment: adoption of automation and other labor-saving ma-

<sup>42</sup>Bergsten, *op. cit.*

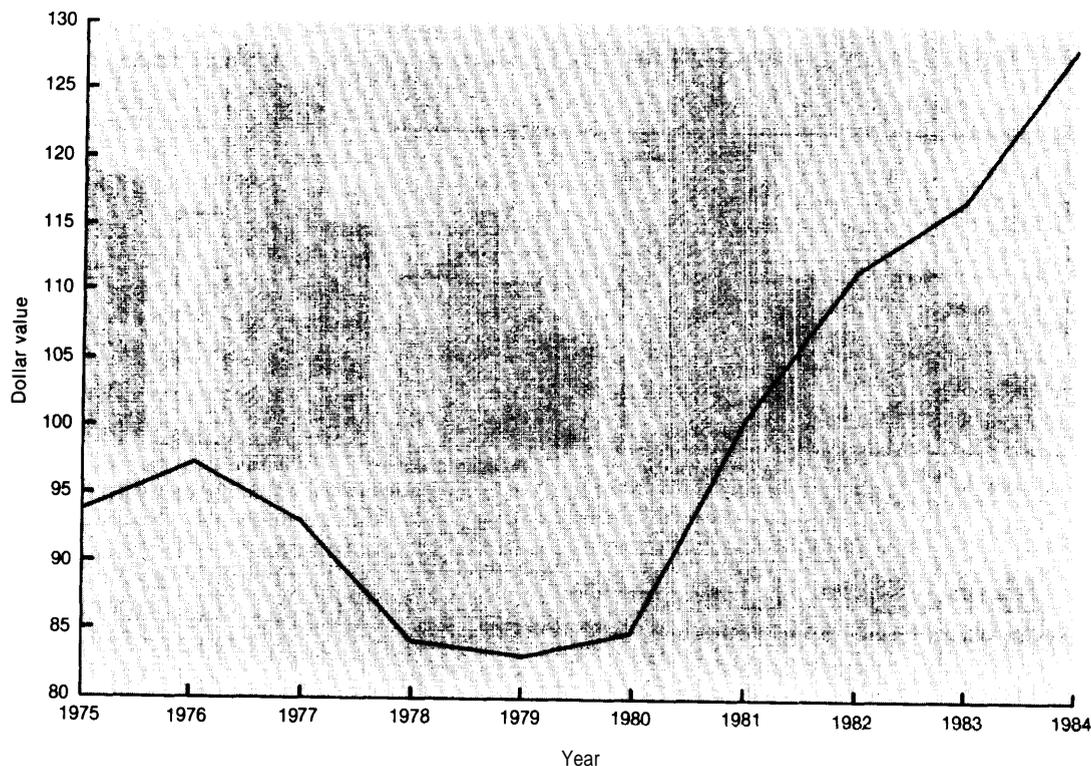
<sup>43</sup>OECD statistics show employment by three sectors: agriculture, industry, and services. Industry employment consists of manufacturing; mining; construction; and electricity, gas, and water. Most of this is in manufacturing: 70 percent of all industry employment in Japan is in manufacturing, 69 percent in Canada, 72 percent in the United States, 71 percent in France, 77 percent in West Germany, and 74 percent in Sweden.

chinery, competition from less developed and newly industrializing nations, and stagnant demand in many sectors. Manufacturing is certainly more vulnerable to foreign competition than are most service industries. As a result, few industrialized nations can expect to increase manufacturing employment, and many analysts expect absolute declines in manufacturing employment to continue.

Countries that depend greatly on manufacturing employment may have difficulty creating enough jobs in other sectors to offset their losses in manufacturing employment. This may be another partial explanation for differences in European and U.S. employment. Nearly 30 percent of employment in OECD Europe is in manufacturing, compared to about 20 percent in the United States. In 1981, nearly 34 percent of German workers were employed in manufacturing, down from nearly 40 percent in 1970. British manufacturing employment in 1983 was only 70 percent of what it had been in 1973, while services employment was nearly 10 percent higher<sup>44</sup>

<sup>44</sup>Organisation for Economic Co-operation and Development, *United Kingdom*, OECD Economic Surveys (Paris, France: OECD, January 1984), p. 28.

Figure 4-7.—Multilateral Trade-Weighted Value of the U.S. Dollar, 1975-84 (March 1973 = 100)



SOURCE: Board of Governors of the Federal Reserve System, cited in Executive Office of the president, *Economic Report of the President*, transmitted to Congress February 1985 (Washington, DC: U.S. Government Printing Office, 1985), p. 351.

### Labor Mobility

Labor mobility can be a key factor in job creation. There are two aspects to labor mobility: industry or occupational mobility, and geographical mobility. On both counts, European labor may be less mobile than in the United States.

Proponents of this argument point out that, to hire new people readily, employers must be able to let workers go without undue difficulty. Rigid rules governing firing practices and generous nonwage compensation may constitute undue difficulty. It is generally more difficult for firms in many European countries to fire workers (other than for cause) than for U.S. businesses. The European approach is to protect employed workers, even though jobs or operations may be eliminated or redefined. In Europe, a combination of collective bargaining agreements, legislation, and social understandings discourages or prohibits businesses from

laying off workers.<sup>45</sup> In West Germany, for example, one company reported that reducing its work force took several months and entailed negotiations on severance pay and benefits with almost every individual worker.<sup>46</sup> Severance pay can be quite high. When one automobile plant reduced employment in West Germany several years ago, the cost per laid-off worker was nearly \$13,000. AT

Although these policies probably make employers more reluctant to hire, and thus hinder job creation in Europe, they do have positive effects as well. At least until the recession of the 1980s, employment in most of Europe—particularly West Germany—has been more stable than U.S. employment in the face of cyclical economic variations. For individuals, this

<sup>45</sup>Mc Kersie and Sengenberger, cit., p. 70.

<sup>46</sup>John Alic, Senior Associate, Office of Technology Assessment, personal communication, June 19, 1985.

<sup>47</sup>Mc Kersie and Sengenberger, op. cit., p. 77.

stability is desirable. However, when structural economic change is needed to keep up with global competition, such stability may be bought at a high price. \*B

Geographic mobility is more difficult in Europe than in the United States for several reasons. First, movement across Europe's many national boundaries is considerably more difficult than movement within the United States. Aside from that, many Europeans are less willing to move or travel to a new job than U.S. workers.<sup>49</sup> In part, this may be a matter of culture. One British worker, with 13 years of experience at a clay factory before it closed in autumn of 1981, refused another job the company offered because it was 15 miles away. "It's a hell of a way off," he said. "I'm not a traveling man."<sup>50</sup> However, mobility could also be affected by the ease of transportation. U.S. workers may be more willing to take work farther from home because they are more likely to have automobiles. In the United States, the number of persons per car averages 1.9; comparable European figures are 2.5 in West Germany, 2.6 in France, 2.8 in Italy, and 3.4 in the United Kingdom.<sup>51</sup>

### Employment Trends in the United States

The foregoing sections have discussed some of the reasons why the larger industrial democracies of Europe have created fewer jobs than the United States. However, the apparent U.S. superiority originated fairly recently. In the 1970s, the unemployment rates of the United Kingdom, West Germany, and France were below the U.S. rate. Moreover, the United States shares, or is beginning to experience, many of the problems Europeans face in creating new jobs. The high value of the dollar makes exporting difficult, encourages imports and offshore production, and raises U.S. wages relative to

those of workers in other countries. U.S. involvement in world markets has increased, and so has the proportion of the U.S. economy which is exposed to foreign competition. In some sectors, outmoded plant and equipment diminish the competitiveness of U.S. industry. In much of the manufacturing sector there is great competitive pressure to invest in labor-saving machinery. Some service industries, such as banking and insurance, face similar pressure.

On the other hand, the greatest influx of new jobseekers into the U.S. labor market is over. According to many analysts, that flood of entrants was at least partially responsible for rising unemployment rates of the 1970s. Rates of labor force growth have slowed and are expected to continue slowing down. Between 1970 and 1980, the labor force grew annually by nearly 2.6 percent. The U.S. Bureau of Labor Statistics (BLS) forecasts that the labor force will reach 131.4 million in 1990, which means growth of less than 2.1 percent per year. From 1990-95, BLS forecasts labor force growth slowing to 1.0 percent per year.<sup>52</sup>

### Employment Growth

Overall employment grows when the number of jobs created exceeds the number of jobs that disappear. In the United States, published employment figures refer only to net developments, rather than aggregate numbers of jobs created and lost. In general, the United States loses about 8 percent of its jobs each year, meaning that it must replace about half of its job base every 5 years.<sup>53</sup> Between 1970 and 1984, the United States added 26.3 million net jobs. During the same period, the work force increased by 30.7 million people, and unem-

<sup>48</sup>Ibid., p. 71.

<sup>49</sup>Janet Norwood, "Labor Market Contrasts: United States and Europe," *Monthly Labor Review*, vol. 106, August 1983, p. 7.

<sup>50</sup>Barry Newman, "In Britain, the Jobless Tend to Stay Jobless as Hirers Shun Them," *The Wall Street Journal*, May 7, 1984, p. 24.

<sup>51</sup>Christopher Wood, "Another Turn of the Wheel," *The Economist*, March 2, 1985, p. 3.

<sup>52</sup>Randolph Brown, "Demographics of the Current and Future of American Work Force," *Profit Sharing*, vol. 32, November 1984, p. 6.

<sup>53</sup>David L. Birch, Director, Program on Neighborhood and Regional Change, Massachusetts Institute of Technology, testimony at joint hearings on Technology and Employment before the House Committee on Science and Technology, Subcommittee on Science, Research and Technology, and the House Committee on the Budget, Task Force on Education and Employment, Serial No. 41 (Committee on Science and Technology), Serial No. TF4-4 (Committee on the Budget), June 1983, p. 87.

ployment rose from 4.9 to 7.5 percent. The large increase in the work force was the result of two factors: the entry of most of the “baby boom” generation into the labor market, and the increase in the participation rate of women. Between 1970 and 1982, the participation rate of women in the U.S. labor force increased from 43.3 to 52.6 percent, while the participation rate of men declined slightly,<sup>54</sup> probably because rising Social Security benefits made it possible for a great many men to retire earlier.

With this expansion came a slowdown in productivity growth, which some analysts argue was the result of the entry of a large group of relatively inexperienced workers. Others believe that the rush of new jobseekers brought down wages, which made hiring new people more attractive, in many cases, than capital investment. While the rate of growth of capital investment per worker declined, employment increased.

### The Shift to Services

Nearly all the increase in employment since 1970 has been in service sectors. Of the 26.3 million new jobs added to the U.S. economy between 1970 and 1984, 23.3 million were on nonagricultural payrolls; the other 3 million were self-employed or employed in agriculture. Of the 23.3 million added nonagricultural jobs,

<sup>54</sup>Moy, *op. cit.*, p. 47”

only 223,000, or 1 percent, were in manufacturing (table 4-1).

The slight rise in manufacturing employment since 1970 conceals a shorter term trend. Manufacturing employment peaked in 1979 at 21 million people and has since fallen by more than 1.6 million employees.<sup>55</sup> The sectoral shift toward service industries is long-standing. Jobs in the service-providing industries began to outnumber these in goods-producing industries in 1922, and except for World War II have increased their relative share ever since. Job creation figures indicate that the shift toward employment in services is continuing. Between 1970 and 1984, manufacturing employment grew by an average rate of only 0.04 percent per year, while the number of employees on private sector payrolls grew at over 2.1 percent per year. Service employment increased at an annual rate of 2.76 percent. The growth rates of individual sectors ranged from 1.04 percent

<sup>55</sup>The decline in manufacturing employment may be overstated. After the 1970s, manufacturing employment fell and did not recover fully until 2 to 4 years following the recession. The recovery of manufacturing employment less than 24 months into the current recovery may therefore be incomplete. On the other hand, manufacturing employment fell between December 1984 and July 1985. While the recovery from the 1982 recession has been somewhat more rapid than recoveries from other postwar recessions, manufacturing employment has recovered more slowly and less completely than in the past—in large part because of the trade deficit, never before such a prominent feature in a recovery. For a discussion on recovery of manufacturing employment after recessions, see Lynn E. Brown, “Structural Change and Dislocated Workers,” *New England Economic Review*, January/February 1985, p. 20,

Table 4.1.—Growth in Employment, Nonagricultural Payrolls, 1970-84

Sector	Number of new jobs	
	(in thousands)	Percentage of new jobs
Total private . . . . .	23,276	100.0
Goods producing . . . . .	1,326	5.7
Mining . . . . .	375	1.6
Construction . . . . .	728	3.1
Manufacturing . . . . .	223	1.0
Service producing . . . . .	21,952	94.3
Transportation and public utilities . . . . .	655	2.8
Wholesale trade . . . . .	1,533	6.6
Retail trade . . . . .	5,214	22.4
Finance, insurance, and real estate . . . . .	2,020	
Services . . . . .	9,114	39.2
Government . . . . .	3,415	14.7

Note: Numbers do not add due to rounding.

SOURCE: U.S. Department of Labor, Bureau of Labor Statistics, *Employment and Earnings*, various issues.

per year in transportation services (the highest paying service sector) to 4.29 percent per year in “other services,” a BLS category that includes hotels and other lodging facilities, personal services, business services, auto repair and service, motion pictures, amusement and recreation services, health services, and miscellaneous services. In the last few years, service sectors have accounted for the fastest rates of growth in job creation (figure 4-8).

What kind of jobs are these new service jobs? Some service jobs are good jobs by almost any definition, but in general, poorly paid work is more prevalent in service industries than in manufacturing. Altogether, wages in nongovernmental service-producing industries, where the great job growth is taking place, are lower than in manufacturing. Of the 56.4 million employees in the private service-producing sector in July 1985, 45.4 million—80 percent—were in industries where production and nonsupervisory workers are paid less than the average for similar workers in all private jobs, and substantially less than the manufacturing wage. Average hourly earnings of nongovernmental production and nonsupervisory workers in services were \$7.73, while comparable earnings in manufacturing were \$9.53. The lowest hourly earnings in any major sector were in retail trade, in which 17.5 million production and nonsupervisory workers made an average of less than \$6.00 per hour.<sup>56</sup> As table 4-2 shows, employment in many service sectors is concentrated in generally low-paid occupations such as those of service, clerical, and sales workers. In 1983, the average weekly earnings of managerial and professional workers were \$440, compared to \$305 for sales workers and \$258 for clerical workers. Production workers, including precision production, craft, and repair as well as operators, fabricators, and

laborers, had average weekly earnings of \$320.<sup>57</sup> While employment in some service sectors is more heavily weighted toward higher paying managerial and professional jobs than manufacturing, almost all service sectors have greater concentrations of very low-paid people.

A frequently voiced concern is that many of the jobs in fast-growing industries pay poorly compared to jobs in declining industries. One study showed that the average weekly earnings of production workers in the 20 most rapidly declining industries was \$310, while the corresponding earnings of production workers in the 20 most rapidly growing industries was only \$210.<sup>58</sup> Of the 20 fastest growing sectors, 16 were service sectors. Only 6 of the most rapidly declining sectors were in services, while 10 were in manufacturing.

From the standpoint of the displaced worker, the salient feature about the distribution of the new U.S. jobs created in the last 15 years is that a great many are low paid and of low status. Without substantial re-education or retraining, blue-collar workers laid off from declining industries are unlikely to be able to get jobs that provide opportunities to recapture lost income and status. Moreover, the working environment of most of these jobs is completely different from that of a traditional factory environment. For workers used to the social culture, physical conditions, hubbub, and noise of a factory, the transition to working in an office, health care facility, or restaurant is abrupt. The last major transition, from agricultural to manufacturing work, may have been less jolting for many people.

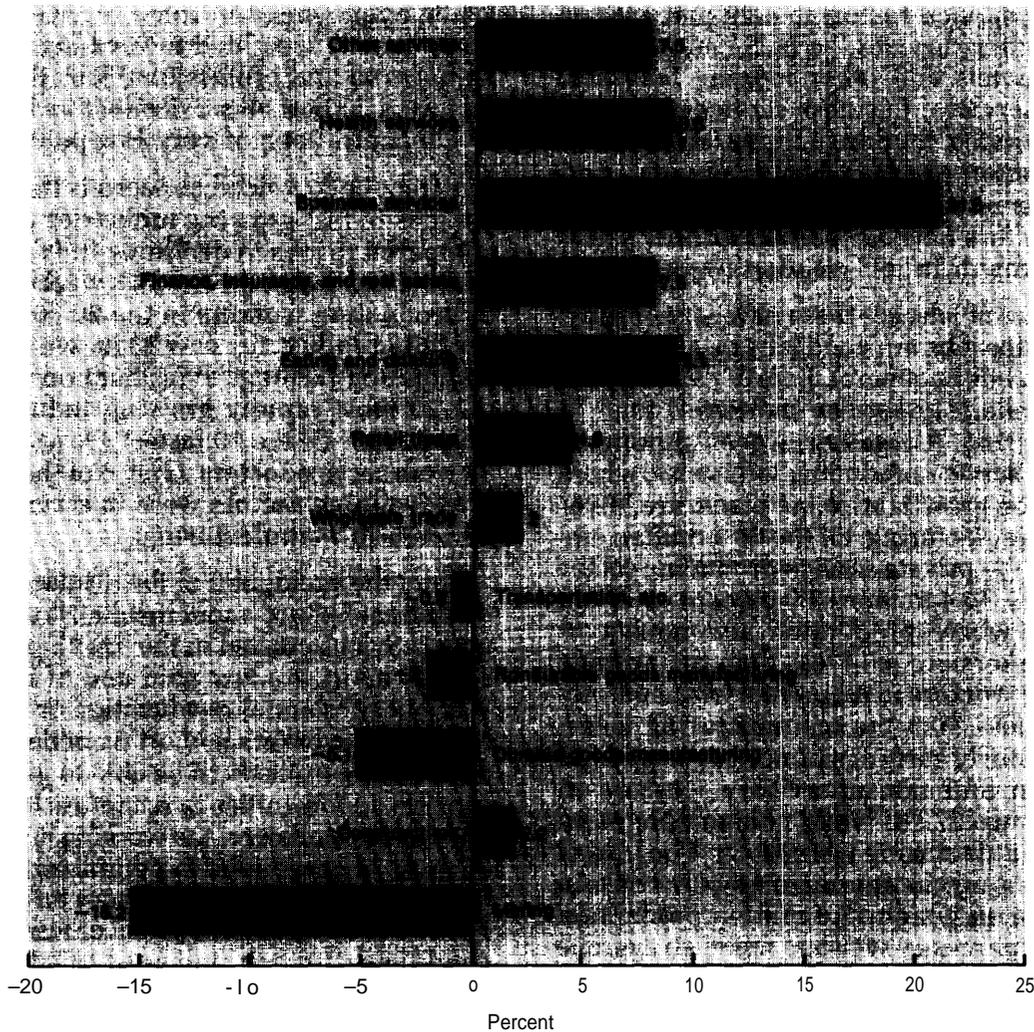
### Employment in Manufacturing

While manufacturing as a whole has not created jobs over the past decade and a half, some

<sup>56</sup>U. S. Department of Labor, Bureau of Labor Statistics, *Employment and Earnings*, August 1985, tables B-1 and C-1, OTA calculated the average hourly earnings of production and nonsupervisory workers in the nongovernmental service-producing sector as the weighted average of earnings of workers in five industry groups making up the sector: transportation and public utilities; wholesale trade; retail trade; finance, insurance, and real estate; and services.

<sup>57</sup>Earl F. Mellor, “Weekly Earnings in 1983: A Look at More Than 200 Occupations,” *Monthly Labor Review*, January 1985. OTA calculated the \$320 as the weighted average of the earnings of operators, fabricators, and laborers (\$276), and the earnings of workers in precision production, craft, and repair (\$379).

<sup>58</sup>Cited in Lucy Stetson Gorham, “U.S. Industry Employment Trends From 1969 to 1995 and the Implications for Economic Inequality,” master’s thesis, Department of City Planning, Massachusetts Institute of Technology, June 1984, pp. 20-22.

Figure 4-8.—Rate of Change in Private Nonagricultural Employment, July 1981 to May 1984<sup>a</sup>

<sup>a</sup>Based on seasonally adjusted data; includes only payroll employees.

SOURCE: U.S. Department of Labor, Bureau of Labor Statistics, establishment survey data.

manufacturing sectors have grown while others have declined. The so-called high-technology sectors are often identified as the job-creating sectors of the future, in contrast to mature industries like steel, automobiles, textiles, and apparel, which will probably continue to lose jobs gradually under the most favorable circumstances.

High-technology industry employment varies, depending on how high technology is defined, from 2.5 to 12.6 million (in 1980).<sup>59</sup> Not all high-

<sup>59</sup>The three definitions used by the BLS are:

1. industries that employ a proportion of technology-oriented

technology industries are in the manufacturing sector. Under the most liberal definition, only about 62 percent of the 12.6 million work-

workers greater than 1.5 times the average for all industries, or 5.1 percent of total employment;

2. industries whose ratios of R&D expenditures to sales are more than twice the average for all industries, or greater than 6.2 percent; and

3. industries that satisfy criteria concerning both the relative R&D expenditures and the proportion of technology-oriented workers.

For a fuller discussion of these definitions, see U.S. Congress, Office of Technology Assessment, *Technology, Innovation, and Regional Economic Development*, OTA-ST1-238 (Washington, DC: U.S. Government Printing Office, July 1984), pp. 17-20.

Table 4-2.—Occupational Distribution of Selected Industries

Industry	Percentages						
	Managers and officers	Professional workers	Technical workers	Service workers	Production and maintenance	Clerical workers	Sales workers
Manufacturing ...	6.6	6.9	2.9	1.8	68.1	11.5	2.2
Banks, credit	19.0	6.1	0.7	2.2	0.5	70.2	1.2
Securities and commodities brokers	17.2	14.2	1.5	2.4	1.3	44.3	19.0
Insurance, real estate	15.5	10.3	1.2	9.5	8.5	40.9	14.1
Hotels, etc.	6.8	2.0	0.2	65.4	8.0	16.4	1.2
Personal services	11.6	5.1	0.3	35.9	28.0	15.9	3.2
Business services	9.0	12.5	5.7	26.2	14.1	28.7	3.8
Auto repair	14.9	0.9	0.1	1.5	64.9	15.5	2.2
Miscellaneous repair	13.8	2.3	6.2	1.3	57.7	13.8	4.9
Health services	5.9	20.9	17.7	32.6	4.2	18.5	0.1
Legal services	6.7	38.0	0.3	1.5	—	53.5	—
Wholesale trade, durables	11.2	5.7	4.2	0.9	27.6	29.1	21.3
Wholesale trade, nondurable	10.2	3.6	0.7	2.0	35.1	28.0	20.5
General merchandise stores	9.2	2.5	0.2	5.8	11.1	24.6	46.5
Food stores	10.4	1.4	0.1	11.1	27.5	32.7	16.7
Eating and drinking	7.6	0.4	—	85.3	1.1	4.2	1.2

SOURCES: U.S. Department of Labor, Bureau of Labor Statistics, "Occupational Employment in Transportation, Communications, Utilities, and Trade," Bulletin 2220 (Washington, DC: U.S. Government Printing Office), December 1984, p. 6; U.S. Department of Labor, Bureau of Labor Statistics, "Occupational Employment in Mining, Construction, Finance, and Services," Bulletin 2186 (Washington, DC: U.S. Government Printing Office), February 1984, p. 5; U.S. Department of Labor, Bureau of Labor Statistics, "Occupational Employment in Manufacturing Industries," Bulletin 2133 (Washington, DC: U.S. Government Printing Office), September 1982, p. 4.

ers in these industries—some 7.7 million employees—worked in the manufacturing sector. Under the most restrictive definition, all 2.5 million high-technology employees worked in manufacturing. Whatever the definition, high-technology employment grew faster than total wage and salary employment between 1972 and 1982. Under the broader definition, employment grew by 20 percent; under the narrower, by nearly 40 percent.<sup>60</sup>

High-technology employment probably will not compensate for lost blue-collar jobs in other manufacturing sectors for two reasons. First, employment in some high-technology industries is increasingly skewed toward managerial and professional occupations, again affording the worker displaced from traditional manufacturing few options. For example, production jobs in the semiconductor industry have been going offshore,<sup>61</sup> leaving the industry in this country with a heavier concentration of managers and professionals. Moreover, high-technology industries account for only 3 to 13 percent of employment (depending on definition), and even rapid growth may not offset losses

in other parts of manufacturing, which account for far more jobs.

Second, high-technology manufacturing, like many traditional manufacturing sectors, has problems with foreign competition. In many electronics industries, Japanese and other manufacturers have made inroads into areas of former U.S. strength. In consumer electronics, for example, many U.S. firms succumbed over the last decade to pressure from Japanese, Korean, and Taiwanese manufacturers. Few radios or black-and-white televisions are made in the United States today, and color television manufacture is mostly an assembly operation. No video cassette recorders are made in the United States, and import penetration of home and auto radios and stereo systems was over 76 percent in 1982.<sup>62</sup>

Other electronics sectors, such as semiconductors and computers, are still strong, but have become much more vulnerable to foreign competition. The trade balance in semiconductors fell from a surplus in 1980 to a deficit

<sup>60</sup>Ibid., pp. 19-23.

<sup>61</sup>John A. Alic, Martha Caldwell Harris, and Robert R. Miller, "Electronics in the World Economy," mimeo, p. 17.

<sup>62</sup>U.S. Congress, Office of Technology Assessment, *International Competitiveness in Electronics*, OTA-ISC-200 (Washington, DC: U.S. Government Printing Office, November 1983), pp. 11-12.

of nearly \$3 million in 1984. The trade surplus in computing equipment fell roughly 15 percent during that time. Employment in both industries has been hurt; employment in computing equipment was down by nearly 32,000 between August of 1984 and August of 1985, with nearly all the losses in production employment. Total employment in the semiconductor industry fell by 7,200 between August 1984 and August 1985; production employment declined by 19,600 (more than offsetting a rise in non-production jobs). Other high-technology sectors are facing problems too. Aircraft manufacture, long a bastion of U.S. manufacturing strength, is facing strong competition from Airbus Industrie of Europe.<sup>63</sup>

High-technology manufacturers, and U.S. manufacturing in general, have been hurt by unfavorable currency exchange rates. Yet in some high-technology sectors, competitive problems have other causes. Many high-technology sectors still lead in innovation, production costs, and technology over even the most sophisticated foreign rivals. However, without serious attention to such things as quality control, investment in modern capital equipment, research and development, and the design of manufacturing systems that integrate people and machinery in cost-effective ways, the lead could erode.<sup>64</sup>

High-technology industries are certainly a bright spot in the U.S. economy. For instance, while employment in computers is modest compared to the job count in many other industries, it is quite clear that computer technology has created large numbers of jobs and new enterprises throughout the economy. The same is true of telecommunications. What is not clear, however, is whether rapidly changing technology will mean the United States can continue to create enough new jobs to avoid a crisis in the future. While many analysts have concluded from past experience

that “technology creates more jobs than it destroys,” this is too simplistic a view. Technology does create jobs, but never alone; other factors—e.g., general economic growth; government spending; and changes in world competition, demand, and population—are equally important in affecting employment. It is more accurate to say that technology creates jobs only through advances that can increase demand for existing products or create new demand for new products. Therefore, there is no evidence that technological advance alone will continue to stimulate employment. It is not safe to assume that high-technology sectors will rescue the workers displaced from traditional manufacturing sectors of the economy. Few workers displaced from traditional manufacturing, especially unskilled or semiskilled workers, can expect to make easy transitions to high-technology industries. Those who do will probably earn substantially less (if they originally worked in the steel or automobile industries) or little more (if they came from apparel or textile industries) than they made in traditional sectors.

### Business Size and Job Creation

It is generally thought that small businesses create more jobs than large ones. As a result, some analysts believe that fostering small business will stimulate job growth. In much of Europe, where problems in creating new jobs have recently been particularly acute, many governments have invested in programs to aid small business, or help individuals to start new businesses. These programs have had a small, but positive, impact on aggregate employment growth, although often not enough to makeup job losses from mass layoffs or closures of major employers.<sup>65</sup>

Do small businesses really create more jobs? Will investing in small business spur employment growth? The available information is equivocal, suggesting a need for caution. Evidence on job creation by size of business is thin, but all quantitative studies conclude that

<sup>63</sup>“Europe’s Airframe Makers Expand Penetration of Transport Market,” *Aviation Week and Space Technology*, vol. 122, No. 11, Mar. 18, 1985, pp. 204-212.

<sup>64</sup>See, for example, U.S. Congress, *International Competitiveness in Electronics*, op. cit.; and John W. Wilson, “America’s High-Tech Crisis,” *Business Week*, Mar. 11, 1985, pp. 56-67.

<sup>65</sup>Graham Todd, *Creating New Jobs in Europe: How Local Initiatives Work*, Special Report No. 165 (London: The Economist Intelligence Unit, April 1984), pp. 10-11.

small establishments are responsible for more than their share of net job creation, when “share” is measured by the proportion of employment in various sizes of establishments. Small establishments—those with fewer than 100 employees—were responsible for over 80 percent of net job creation between 1969 and 1976,<sup>68</sup> and 78 percent between 1978 and 1980.<sup>67</sup> Small establishments employ only about 49 to 54 percent<sup>68</sup> of the private sector labor force.

Establishment data, however, do not tell a complete story. Small businesses are not the same as small establishments. According to Armington and Odle, while “... .91 percent of businesses with employees have only a single location . . . the other 9 percent that are multi-location firms employ 62 percent of the private sector work force and consequently have a substantial impact on aggregate measures.” Looking at job creation data from the standpoint of firms rather than establishments, the findings change markedly. Small businesses—defined as establishments in *firms* with fewer than 100 employees—employed 36 percent of the labor force and generated 39 percent of net new jobs between 1978 and 1980.<sup>69</sup> Another study reaches a different conclusion: it shows that enterprises with 20 or fewer employees accounted for 38.5 percent of net job creation between 1976 and 1982, although they had only about 20.5 percent of total employees.<sup>70</sup> The

seeming contradictions of these studies have not been resolved; the Small Business Administration simply reports that “[t]he 1978-1980 period appears to be an aberration.” Whether this is true, or whether the percentage of new jobs created by small businesses varies for identifiable reasons, is unknown. The preponderance of evidence seems to support the view that small firms do indeed create more than their share of new jobs; however, the evidence is not very strong or consistent.

Job creation in the small-business sector is also related to activity in larger enterprises. Many larger businesses increasingly rely on temporary and contract personnel to supplement their own work forces during times of expansion.<sup>71</sup> In part, this is to avoid the costs of hiring (the “social overhead”) and firing (including severance pay and services to laid-off workers); the motive is also to maintain stable and good relationships with the permanent work force. As a result, at least some of the job creation of small businesses is dependent on growth in larger businesses. This kind of job growth probably would not be greatly affected by aid to small businesses.

There is some evidence that small establishments account for a disproportionate number of first jobs. By examining first regular civilian jobs of males less than 22 years old, Schiller concluded that small establishments account for 67 percent of initial job attachments, while employing 58 percent of the entire work force.<sup>72</sup> This study does not clearly distinguish between small firms and small establishments, and the kinds of workers studied are too restricted to allow general conclusion. However, it provides suggestive evidence that small establishments account for more hiring of new labor market entrants than large business.

Job growth in small businesses—establishments or firms—is also quite volatile. Birch concludes that:

<sup>71</sup>Carey W. English, “Behind Hiring of More Temporary Employees,” *U.S. News and World Report*, Feb. 25, 1985, p. 76.

<sup>72</sup>Bradley R. Schiller, “‘Corporate Kidnap’ of the Small-Business Employee,” *Public Interest*, summer 1983, pp. 72-87. Unfortunately, Schiller does not distinguish “firms” from “establishments.”

<sup>66</sup>David L. Birch, “Who Creates the Jobs?” *The Public Interest*, fall 1981.

<sup>67</sup>Catherine Armington and Marjorie Odle, “Small Business—How Many Jobs?” *The Brookings Review*, vol. 1, No. 2, winter 1982, pp. 14-17.

<sup>68</sup>There are three different databases that relate employment to establishment and business size: the Unemployment Insurance (UI) database, the Dun and Bradstreet Market Identified File (DMI), and County Business Patterns (CBP). CBP data show 54.5 percent of employment in small establishments [with less than 100 employees], UI data show 51 percent of employment in small establishments, and DMI shows 48.4 percent of employment in small establishments. Source: Bruce D. Phillips, Senior Economist, Office of Economic Research, Small Business Administration, “A Comparison of Three Establishment-Based Data Sources, the Dun and Bradstreet Market Identifier File (DMI), County Business Patterns (CBP), and Unemployment Insurance (U.I.) Data, 1977-1978,” mimeo draft.

<sup>69</sup>Arlington and Odle, op. cit., p. 15.

<sup>70</sup>U. S. Small Business Administration, *The State of Small Business: A Report of the President* (Washington, DC: U.S. Government Printing Office, May 1985), p. 22.

The road to future growth is a tortuous one indeed . . . Dynamic, job creating establishments appear to oscillate, or pulsate, constantly. Periods of expansion are the best predictors of future decline, and declining periods are the foundation upon which future business growth is based. Stable firms, those that have somehow isolated themselves from the ups and downs in the world around them, are the most likely to fail in the end . . . Just as failure appears essential to our system, so does instability.<sup>73</sup>

Other studies (Armington and Odle, and Tietz) agree; Tietz notes an even greater degree of volatility than Birch.<sup>74</sup> Moreover, Tietz finds

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<sup>73</sup> Birch, *op. cit.*, p. 8.

<sup>74</sup> Findings are cited in Richard Greene, "Tracking Job Growth in Private Industry," *Monthly Labor Review*, September 1982.

that the bulk of employment growth is concentrated in a small percentage of small establishments. Many small firms are born and die within a very short time; firms that "make it" often grow rapidly. At some point, small successful firms often turn into large ones, some through continued growth, and some by acquisition. Sometimes, successful small firms acquire others, or are acquired by others. In the latter case, some people may lose jobs. While this kind of flexibility appears to be good for the economy, it can be jolting for individuals, for a large number of small businesses fail. Flexibility in business creation, growth, contraction, and death may provide a degree of overall economic stability which is not matched at the individual level. Job security is not a feature of employment in the small-establishment or small-business sector.