Industry output and job growth continues slow into next century

*Most projected job growth is in services;
increases in manufacturing output
are expected to be offset
by greater labor productivity*

Max L. Carey
and
James C. Franklin

Max L. Carey and James
C. Franklin are economists
in the Office of Economic
Projections, Bureau of
Labor Statistics.

Employment in the U.S. economy is projected to increase by almost 25 million over the 15 years from 1990 and 2005, rising from 122.6 million to 147.2 million. This projected average growth rate of 1.2 percent annually is about one-half that during the preceding 15-year period, averaging 2.3 percent annually from 1975 to 1990. Slower growth of the labor force is the primary reason for the projected reduction in the pace of future job expansion.

The number of nonfarm wage and salary jobs is projected to rise from 109.3 million to 132.6 million between 1990 and 2005, accounting for 23.3 million of the 24.6 million net increase in employment. Also projected to increase, from 9 million to 10.8 million, is the number of nonfarm self-employed and unpaid family workers, a gain of 1.8 million over the same period. In agriculture, the combined number of self-employed workers and wage and salary jobs is projected to decrease from about 3.3 million to 3.1 million. The long-term decline in private household workers also is expected to continue, with the number projected to fall from 1 million to 700,000. (See table 1.)

Almost all of the 23.3 million increase in nonfarm wage and salary jobs is projected to occur in the service-producing sector of the economy. Within the service-producing sector, the services division is expected to add the most jobs—almost 11.5 million, or nearly one-half of

the total growth. The two largest industries in this division, health services and business services, together account for 6.1 million of the projected increase in jobs, or about one-fourth of the total. Large numbers of additional jobs also are projected for retail trade (5.1 million), government (3.2 million), and finance, insurance, and real estate (1.4 million). However, the projected 1.6-percent average annual employment growth for all industries in the service-producing sector is only about one-half the 1975–90 pace, and the sector does not match its previous gain in share of total employment. Between 1975 and 1990, the service-producing sector's share of total nonfarm wage and salary jobs increased from 70.5 percent to 77.2 percent, a gain of almost 7 percentage points, but the projected rise to 81 percent by 2005 would be a gain of less than 4 percentage points over the same number of years.[1]

In the goods-producing sector, job increases in the construction industry are largely offset by job declines in manufacturing and mining. In response to expanding domestic and export markets for American goods, real output of U.S. manufacturing is projected to grow 2.3 percent a year during 1990–2005, a bit faster than output growth for the economy as a whole. The projections assume that the impact of cutbacks in defense spending will be more than offset by increased output of civilian goods for domestic and export markets—at least in the aggregate,

although not for all industries. Further improvements in output per worker, however, are expected to result in a smaller work force making more goods. Manufacturing wage and salary employment in the moderate scenario case of the Bureau's three alternative projections is projected to decline from 19.1 million to 18.5 million between 1990 and 2005, a loss of more than one-half million jobs.

Construction is the only goods-producing sector with job growth. An addition of almost 1 million wage and salary jobs is projected in the construction industry, boosting its employment level to 6.1 million in 2005, primarily because of spending for additions and improvements to roads, bridges, and other infrastructure.

Table 1. Employment by major industry division, 1975, 1990, and projected to 2005

[Numbers in thousands]

Industry	1975	1990	2005 Low	2005 Moderate	2005 High	Change, 1975–90	Change, 1990–2005 Low	Change, 1990–2005 Moderate	Change, 1990–2005 High
Nonfarm wage and salary[1]	76,680	109,319	122,775	132,647	139,531	32,639	13,456	23,328	30,212
Goods-producing	22,600	24,958	22,877	25,242	26,362	2,358	−2,081	284	1,404
Mining	752	711	598	668	690	−41	−113	−43	−22
Construction	3,525	5,136	5,552	6,059	6,484	1,611	416	923	1,348
Manufacturing	18,323	19,111	16,727	18,514	19,189	788	−2,384	−597	78
Durable manufacturing	10,662	11,115	9,467	10,517	10,915	453	−1,648	−599	−200
Nondurable manufacturing	7,661	7,995	7,260	7,998	8,274	334	−735	3	279
Service-producing	54,080	84,363	99,898	107,405	113,168	30,283	15,535	23,042	28,805
Transportation, communications, utilities	4,542	5,826	6,203	6,689	7,019	1,284	377	863	1,193
Wholesale trade	4,430	6,205	6,669	7,210	7,585	1,775	464	1,005	1,380
Retail trade	12,630	19,683	23,306	24,804	25,856	7,053	3,623	5,121	6,173
Finance, insurance, and real estate	4,165	6,739	7,599	8,129	8,525	2,574	860	1,390	1,786
Services[1]	13,627	27,588	36,223	39,058	41,109	13,961	8,634	11,470	13,521
Government	14,686	18,322	19,899	21,515	23,074	3,636	1,577	3,193	4,752
Agriculture[2]	3,459	3,276	2,969	3,080	3,181	−183	−307	−196	−95
Private households	1,362	1,014	648	700	736	−348	−366	−314	−278
Nonagricultural self-employed and unpaid family workers[3]	6,165	8,961	10,415	10,763	11,095	2,796	1,454	1,802	2,134
Total[4]	87,666	122,570	136,807	147,190	154,543	34,904	14,237	24,620	31,973

Industry	Percent distribution of wage and salary employment 1975	1990	2005 Low	2005 Moderate	2005 High	Annual rate of change 1975–90	1990–2005 Low	1990–2005 Moderate	1990–2005 High
Nonfarm wage and salary[1]	100.0	100.0	100.0	100.0	100.0	2.4	0.8	1.3	1.6
Goods-producing	29.5	22.8	18.6	19.0	18.9	.7	−.6	.1	.4
Mining	1.0	.7	.5	.5	.5	−.4	−1.2	−.4	−2
Construction	4.6	4.7	4.5	4.6	4.6	2.5	.5	1.1	1.6
Manufacturing	23.9	17.5	13.6	14.0	13.8	.3	−.9	−.2	.0
Durable manufacturing	13.9	10.2	7.7	7.9	7.8	.3	−1.1	−.4	−.1
Nondurable manufacturing	10.0	7.3	5.9	6.0	5.9	.3	−.6	.0	.2
Service-producing	70.5	77.2	81.4	81.0	81.1	3.0	1.1	1.6	2.0
Transportation, communications, utilities	5.9	5.3	5.1	5.0	5.0	1.7	.4	.9	1.2
Wholesale trade	5.8	5.7	5.4	5.4	5.4	2.3	.5	1.0	1.3
Retail trade	16.5	18.0	19.0	18.7	18.5	3.0	1.1	1.6	1.8
Finance, insurance, and real estate	5.4	6.2	6.2	6.1	6.1	3.3	.8	1.3	1.6
Services[1]	17.8	25.2	29.5	29.4	29.5	4.8	1.8	2.3	2.7
Government	19.2	16.8	16.2	16.2	16.5	1.5	.6	1.1	1.5
Agriculture[2]	—	—	—	—	—	−.4	−.7	−.4	−.2
Private households	—	—	—	—	—	−1.9	−2.9	−2.4	−2.1
Nonagricultural self-employed and unpaid family workers[3]	—	—	—	—	—	2.5	1.0	1.2	1.4
Total[4]	—	—	—	—	—	2.3	.7	1.2	1.6

[1] Excludes SIC 074,5,8 (agricultural services) and 99 (nonclassifiable establishments), and is therefore not exactly comparable with data published in *Employment and Earnings*.

[2] Excludes government wage and salary workers, and includes private sector SIC 08,09 (forestry and fisheries).

[3] Excludes SIC 08,09 (forestry and fisheries).

[4] Wage and salary data are from the BLS Current Employment Statistics (payroll) survey, which counts jobs, whereas self-employed, unpaid family worker, agricultural, and private household data are from the Current Population Survey (household survey), which counts workers.

NOTE: Dash indicates data not available.

Table 2. Output by major industry division (gross duplicated output), 1975, 1990, and projected to 2005

[Billions of 1982 dollars]

Industry	1975	1990	2005			Percent distribution					Annual rate of change			
			Low	Moderate	High	1975	1990	2005 Low	2005 Moderate	2005 High	1975–90	1990–2005 Low	1990–2005 Moderate	1990–2005 High
Total	$5,049.1	$7,624.1	$9,459.9	$10,571.1	$11,545.0	100.0	100.0	100.0	100.0	100.0	2.8	1.4	2.2	2.8
Goods- producing	2,278.9	3,310.8	3,917.3	4,508.7	4,905.6	45.1	43.4	41.4	42.7	42.5	2.5	1.1	2.1	2.7
Mining	222.5	220.5	190.9	217.9	228.7	4.4	2.9	2.0	2.1	2.0	-.1	-1.0	-.1	.2
Construction .	333.8	505.4	586.6	656.2	737.6	6.6	6.6	6.2	6.2	6.4	2.8	1.0	1.8	2.6
Manufacturing	1,722.7	2,584.9	3,139.8	3,634.6	3,939.2	34.1	33.9	33.2	34.4	34.1	2.7	1.3	2.3	2.8
Durable	854.8	1,355.1	1,731.3	2,072.8	2,251.4	16.9	17.8	18.3	19.6	19.5	3.1	1.6	2.9	3.4
Nondurable .	867.9	1,229.8	1,408.4	1,561.8	1,561.8	17.2	16.1	14.9	14.8	13.5	2.4	.9	1.6	1.6
Service- producing	2,604.0	4,118.4	5,306.8	5,810.4	6,365.2	51.6	54.0	56.1	55.0	55.1	3.1	1.7	2.3	2.9
Transportation, commun- ications, and utilities .	446.1	615.2	779.1	857.3	944.2	8.8	8.1	8.2	8.1	8.2	2.2	1.6	2.2	2.9
Wholesale trade	266.0	406.5	506.4	561.2	620.2	5.3	5.3	5.4	5.3	5.4	2.9	1.5	2.2	2.9
Retail trade ..	380.8	634.4	838.4	918.5	1,007.9	7.5	8.3	8.9	8.7	8.7	3.5	1.9	2.5	3.1
Finance, insurance, and real estate	571.9	878.3	1,105.1	1,191.6	1,288.7	11.3	11.5	11.7	11.3	11.2	2.9	1.5	2.1	2.6
Services	563.0	1,102.7	1,522.8	1,685.6	1,864.6	11.2	14.5	16.1	15.9	16.2	4.6	2.2	2.9	3.6
Government .	376.1	481.3	555.0	596.2	639.5	7.4	6.3	5.9	5.6	5.5	1.7	1.0	1.4	1.9
Agriculture	157.4	185.7	227.4	242.5	263.8	3.1	2.4	2.4	2.3	2.3	1.1	1.4	1.8	2.4
Private households	8.7	9.2	8.5	9.3	10.4	.2	.1	.1	.1	.1	.3	-.5	.1	.9

SOURCE: Historical data are from the Bureau of Economic Analysis, U.S. Department of Commerce.

Assumptions about the overall level of economic activity, which underlie the industry output and employment projections, are discussed on pp. 13–30. Real GNP increased at an average annual rate of 2.9 percent between 1975 and 1990, and is projected to slow to a 2.3-percent pace between 1990 and 2005. The growth rate of the civilian labor force is projected to slow from 1.9 percent to 1.3 percent over the same years.

The 1975–90 timespan provides a 15-year historical period to compare with the 15-year projection period and is used for this purpose in tabular presentations. However, the text of this article sometimes refers to different historical subperiods when discussing particular industries, because no single period well describes all economic phenomena occuring during the past 15 years. The projected slowdowns generally are not as pronounced as comparisons of the average annual growth rates for 1975–90 and 1990–2005 would seem to indicate. Business conditions were better in 1990 than in 1975, a recessionary year during which employment and output levels were depressed. Consequently, the 1975–90 average growth rates reflect the rapid increases experienced during the recovery oc-

curring in the latter part of the 1970's, particularly in the goods-producing industries, and are greater than they would have been had employment and output levels not been relatively low in 1975. For more information on drawbacks to using the 1975–90 period for comparison purposes, see the box on page 14.

Three alternative scenarios were projected for 2005: low growth, moderate growth, and high growth. This article focuses on the moderate, or base case, scenario, with a section at the end describing the low and high alternatives.

In all three senarios, the aggregate growth projections are translated into projections of industry output and employment through the same three-step process. First, the final demand components of GNP are distributed among 228 commodity producing sectors; then, using an input-output model, the commodity distribution of final demand is converted into industry outputs. Finally, employment is derived for each industry based on trend analysis of industry employment, hours, and the ratio of output to hours, and then is controlled back to the aggregate employment level as determined by the aggregate projections.

GOODS-PRODUCING INDUSTRIES

Mining

Almost three-fourths of mining output[2] and more than one-half of mining wage and salary jobs in 1990 were in the crude petroleum and oil field services industries. The numbers of jobs in these industries increased very rapidly in the late 1970's and early 1980's, as the soaring price of crude oil stimulated exploration and production, and then declined as the subsequent worldwide oil glut pushed the price down and imported oil increased its domestic market share. It is assumed that foreign oil will account for 40 percent of domestic consumption by 2005, up from 24 percent in 1990. Employment and constant-dollar output in the crude petroleum industry are each projected to decrease by almost 1 percent annually from 1990 to 2005. During the same period, rising oil prices are expected to rekindle interest in domestic exploration, and employment in the oil field services industry is projected to increase slightly. However, the combined number of jobs in the crude petroleum and oil field services industries is projected to decline from 394,000 to 377,000 during 1990–2005. (See table 5 for detailed projections of industry employment and output.)

Foreign demand for coal is expected to continue contributing to real output growth from U.S. mines, but labor saving machinery should further reduce employment requirements. The number of jobs in the industry is projected to decline from 148,000 to 113,000 during 1990–2005. Little change in the number of metal mining jobs is projected. Exports of raw ores are expected to rise, but slow growth in domestic primary metals industries, especially basic steel and iron and steel foundries, is expected to limit increases in demand.

Construction

The construction industry is projected to experience average annual growth of 1.8 percent in real output and of 1.1 percent in wage and salary jobs over the 1990–2005 period, rates somewhat slower than the projected annual increases of 2.2 percent in the economy's overall real output and 1.3 percent in total nonfarm wage and salary employment. The slowing of population growth and household formation will dampen demand for new housing units, and eliminating the excess stock of office and commercial space may take much of the 1990–2005 period. However, increased spending for construction and repair of roads, bridges, and other infrastructure components is assumed, as well as increased spending on educational facilities to accommodate the

children of the baby-boomers as they come of school age. The net effect on wage and salary employment in the construction industry is a projected increase from 5.1 million in 1990 to almost 6.1 million in 2005, some 923,000 new jobs.

The projected growth rates are much slower than the average annual increases of 2.8 percent in output and 2.5 percent in wage and salary employment experienced by the construction industry between 1975 and 1990. However, the growth rates for this historical period are inflated by construction's rebound from the enormous decline it suffered during the 1973–75 recession, when the number of jobs in the industry fell from 4.1 million in 1973 to 3.5 million in 1975. A better period for comparison with the projection is 1973–90, during which the employment growth rate was 1.3 percent, only slightly faster than the projected 1.1 percent.

Manufacturing

Real output of the manufacturing sector is projected to grow at an annual rate of 2.3 percent over the 1990–2005 period. However, wage and salary employment in manufacturing is projected to decline at an annual rate of around 0.2 percent a year, dropping about 600,000 from the 1990 level of 19.1 million jobs to a 2005 level of 18.5 million jobs. These opposite movements in real output and employment reflect the expected continued productivity increases in the manufacturing sector as a whole. As a consequence of these productivity increases, manufacturing output as a share of total real output is projected to maintain its 1990 share of about 34 percent, while the sector's wage and salary employment as a share of total nonfarm wage and salary employment will continue its historical decline. During the 1975–1990 period, manufacturing wage and salary employment as a share of total nonfarm wage and salary employment fell from 23.9 percent to 17.5 percent. This decline is projected to continue, yielding a 14-percent share by the year 2005.

In addition to the increases in manufacturing productivity, several other major factors are expected to affect the growth of manufacturing industry output and employment: demographic changes (aging of the population, slowing rate of growth for the supply of labor), a projected decline in defense spending, continued growth in business investment, and finally, the favorable assumptions in these projections underlying the projected state of U.S. foreign trade.

The major influence on the demand for exports of manufactured goods will be the assumed continued downward drift in the exchange rate

of the U.S. dollar. After peaking in 1985, the dollar's exchange rate declined, leading to a resurgence of employment, beginning in 1987, for a number of the Nation's manufacturing industries as the result of increased manufacturing exports. Wage and salary employment in manufacturing reached 19.4 million in 1989 having risen from 19.0 million in 1986. A BLS study concluded that export-related manufacturing industries accounted for almost half of the manufacturing employment gains over the period 1987–88.[3]

Exports of both goods and services, in real terms, are projected to grow at an annual rate of 4.5 percent over the period 1990–2005. In comparison, the projected annual growth rate for imports of goods and services is 3.7 percent, and the projected GNP growth rate is 2.3 percent. The more rapid growth of exports than of imports results in a positive level of net exports overall, but almost all of it is in the service-producing sectors—most manufacturing industries still are projected to have negative trade balances. The major groups in durable manufacturing that are projected to be exceptions to this are industrial machinery and equipment, and instruments and related products. In the nondurable manufacturing sector, those major groups with projected positive net export levels are food and kindred products, tobacco products, printing and publishing, and chemicals and allied products.

Industrial machinery and equipment industry group. Output for this group has a projected real annual growth rate of 5.2 percent over the 1990–2005 period. It should be noted that the computer equipment manufacturing industry contributes heavily to both the growth of exports and the level of domestic output for the industrial machinery and equipment industry group, and indeed for total manufacturing output. The domestic real output of manufactured computer equipment, as an industry, is projected to grow at an annual rate of 7.6 percent, much lower than the 31.8-percent rate posted over the 1975–90 period. If the 1975–90 growth rate of 31.8 percent were extrapolated from 1990 to 2005, the projected output for computers would total $10,738 billion—more than the output projected for the entire economy in the moderate scenario. The moderate-case projected growth rate of 7.6 percent results in a projected computer output of $513 billion—almost 3 times the 1990 level. In 1975, computer output was just under 2 percent of the real output of the major industry group "industrial machinery and equipment." In 1990, computers accounted for just over 50 percent of the real industrial machinery and equipment output, but only 19 percent of the group's em-

ployment. With the 7.6-percent annual growth rate assumed over the 1990–2005 period, computers are projected to account for 72 percent of the output of industrial machinery and equipment in 2005.[4] However, employment in the computer manufacturing industry is expected to decline slightly and account for only 18 percent of employment in the industrial machinery and equipment group by 2005.

Because of the problems inherent in projecting the output for computers, these projections are predicated on moderate assumptions about technological change and its impact. Even so, computer manufacturing is the fastest growing industry in terms of real output, with a projected rate of increase a full 2 percentage points above that of the second fastest growing industry, semiconductors and related devices, which has a 5.6-percent projected annual growth rate. The caveat attached to these projections of the computer manufacturing and related industries is that there is a great deal of uncertainty built into them. Therefore, they should be viewed as a general indicator that these industries will continue to be among the fastest growing industries in terms of output, with both exports and imports growing quickly as well.

Growth industries with positive net exports. The major industry groups that are projected to have both a positive level of net exports and a domestic output growth rate that is above the annual growth rate of 2.3 percent for manufacturing as a whole are instruments and related products, and printing and publishing. The major industry group of chemicals and allied products is projected to have a strong net export growth, but a domestic output growth rate of 2 percent, just under the 2.3-percent pace for all of manufacturing.

The major industry group of instruments and related products has a projected annual output growth rate of 3.1 percent over 1990–2005—faster than that for manufacturing as a whole, but slower than its 5.8-percent growth rate over the historical period 1975–90. The strong growth results largely from high projected demand for medical equipment and ophthalmic goods.

The specific industries in the chemicals group with the strongest domestic output growth rates are drugs and pharmaceutical products, with a projected growth rate of 3.2 percent over 1990–2005, and plastic materials and synthetics, with a projected growth rate of 2.7 percent. Manufacturers of drugs and pharmaceutical products can expect increases in demand for health care products as the U.S. population ages. The search for substitute materials has been, and is expected to continue to be, a driving factor in the output

growth of plastic materials and synthetics. In both of these industries, U.S. manufacturers have used technological advantages in research and production to develop and market specialty products over the 1980's, resulting in both strong domestic output gains and improved competitive positions in foreign markets. Especially in the plastics and synthetics industry, U.S. manufacturers have been moving away from low-cost, high-volume commodity plastics and toward the production of high-value specialty plastics.[5] The value of these specialty plastics and of the pharmaceutical products lies in the intellectual contribution of research and development that brings these products to market. In particular, the drugs and pharmaceutical products industry must contend with the absence of international legal protection of intellectual property rights, which results in patent violations by overseas competitors and lost revenues.[6] The ability of U.S. chemical companies to continue to compete in the world market may well depend on the protection of the intellectual value embodied in their specialty commercial products, but for the purposes of these projections no change is assumed in the ability of U.S. manufacturers to protect their proprietary knowledge from overseas interests.

Growing industries with negative net export balances. Electronic and other electric equipment, and rubber and miscellaneous plastics products are two major industry groups whose domestic output is projected to grow faster than that of manufacturing as a whole, but which will maintain a negative net export balance. The major industry group "transportation equipment," with a projected annual growth rate in output of 1.9 percent, is not expected to do as well as manufacturing as a whole. However, motor vehicles and equipment, a component of transportation equipment, is projected to grow faster than manufacturing as a whole, while also maintaining a negative net export balance.

The international markets for electronic equipment and motor vehicles are highly competitive. It is expected, however, that foreign firms will engage even more actively in the manufacture in the United States of products destined for both the domestic and export markets, especially in the case of the automobile industry. This expectation is premised on two factors. The first derives from the assumption that manufacturing plants will be increasingly automated, reducing the importance of labor as a cost factor. The second relates to BLS international comparisons of manufacturing labor costs, which have shown that the long-term trend of U.S. unit labor costs relative to those of a number of foreign trading

partners have been declining since 1973.[7] In 1975, the trade-weighted index of hourly compensation costs for the 27 foreign economies for which BLS collects data stood at 62 (U.S. level = 100). In 1989, the composite index was 88. For Japan alone, the index value in 1989 was 88, having risen from 48 since 1975.[8] The BLS study also shows a strong spike in U.S. labor costs during the 1979–85 period, when the exchange rate of the dollar increased. However, the assumption of a declining U.S. exchange rate in the BLS projections reinforces the long-term trend of declining U.S. labor costs relative to foreign labor costs.

The increased foreign investment in manufacturing within the United States will have several effects. A study by Robert Z. Lawrence examines the effects of foreign investment in the U.S. auto industry and concludes that the net effects are beneficial.[9] In general, he argues, the net effects are increased competition, as well as greater levels of both exports and imports and a reduction in the trade deficit. In any case, the motor vehicles and equipment and electronic and electric equipment industries have had negative net export balances since the late 1970's. These negative trade balances are expected to continue.

Output of the motor vehicles and equipment industry group is projected to have an annual growth rate of 2.5 percent over the 1990–2005 period. This obscures the fact that unit sales are projected to increase much more modestly. As is noted in the article on the outlook for the aggregate economy elsewhere in this issue, the population projection implies a slowdown in new entrants to the driving-age population, but the increasing share of older, more affluent persons in the population is expected to result in a tendency to purchase higher-value autos, driving up the average real value and resulting in a higher dollar volume of output for the given number of cars produced. The number of wage and salary jobs in the motor vehicles and equipment industry is expected to decline slightly over the 1990–2005 period, by about 65,000 jobs, or at an annual rate of less than 1 percent.

The projected growth rate of 3.1 percent for the electronic and other electric equipment industry group over the period 1990–2005 is a consequence of projected strong consumer demand, business investment, and high intermediate demand. Output for the household audio and video equipment industry, with a projected annual growth rate of 2.9 percent, is driven by expected strong consumer demand. However, because domestic production is not expected to completely meet the projected demand, imports of household audio and video equipment

also are projected to have robust growth. The assumed strong business investment over the projections period is expected to stimulate output of both the telephone and telegraph apparatus industry and the broadcasting and communications equipment industry. The output for the remaining industries within the electronic and other electric equipment industry group is consumed primarily by intermediate demand for use in further production processes. The semiconductors and related devices industry is one whose output is used primarily as an intermediate input for such products as computers, broadcasting and communications equipment, telephone and telegraph apparatus, and a myriad of other manufactured products. Many of the industries producing these final products are projected to have high annual growth rates for output—especially computers—and consequently strongly influence the projected demand for the output of semiconductors and related devices. As a result, the output for semiconductors and related devices has the highest projected annual growth rate for the electronic and other electric equipment industry group, and is second overall only to the computers industry in projected output growth. Electronic and other electric equipment as a whole is expected to have a decline in wage and salary jobs of 106,000.

The industry group comprising rubber and miscellaneous plastics manufacturing benefits from productivity gains in the industries producing tires and inner tubes and miscellaneous plastics (not elsewhere classified). The tires and inner tubes industry is expected to enjoy strong export gains, with its trade deficit narrowing as a partial consequence of foreign direct investment in U.S. plants and of the assumed favorable exchange rate of the dollar. The output of miscellaneous plastics is consumed primarily by intermediate demand. This demand is expected to grow, as U.S. manufacturers of miscellaneous plastics incorporate specialty plastics resins in an expanding variety of products. The intermediate demand for miscellaneous plastics will remain high as a consequence of projected high demand for the output of industries such as computers and electronic equipment, and a general continued shift toward plastics as a substitute material in a wide variety of industries.

Developments in other major groups. The major industry groups of tobacco and food and kindred products are projected to grow slowly in terms of domestic sales, but are projected to do better in foreign trade. For food and kindred products, continued improvements in productivity through automation make U.S. products competitive in most markets.

As a group, the manufacturing industries experience a decline in the level of wage and salary jobs over the 1990–2005 period. As can be seen in table 3, of the 20 most rapidly declining industries, 18 are in the manufacturing sector. The major exception is the printing and publishing group, which is projected to gain 326,000 jobs, or almost 1.5 percent of the total gain in wage and salary employment. But this industry group also has had lower productivity gains in the past than those for manufacturing in general, and this is expected to continue. The industry group's output is expected to grow at an annual rate of 2.4 percent, just above the rate for all of manufacturing and somewhat slower than its annual pace of 3.8 percent over the 1975–90 period. The rapid growth of printing and publishing, especially during the 1980's, can be attributed to expanded volumes of printed materials such as catalogs, specialty magazines and business forms, and to the low barriers to entry by small businesses afforded by investment in desktop publishing hardware and software.

Demand for the products of the apparel industry is expected to increase faster than the growth of the population, but more of that demand is projected to be met through imports. However, continued improvements in productivity and the favorable foreign trade environment are expected to contribute to robust growth in exports. Despite the strong export growth, the trade deficit for apparel is projected to continue to worsen. Employment in the apparel and other textile products industries is projected to decline by 195,000, from just over 1 million to 848,000.

The projected decline in defense expenditures significantly reduces the defense share of domestic output for those industries that historically have had large defense-related components. Among these industries are broadcasting and communications equipment, aircraft and the related aircraft and missile engines, and guided missiles and space vehicles. The broadcasting and communications equipment industry, however, will benefit from the assumed strong business investment demand through the year 2005. As a consequence, that industry's output has a projected annual growth rate of 2.6 percent over 1990–2005. The aircraft- and space vehicles-related industries are projected to be more severely affected.

In summary, over the projections period 1990–2005, the manufacturing sector is projected to have increasing output, but its employment decreases as a consequence of productivity gains. The aging population and the consequent changes in the structure of demand will influence the output of the consumer industries, boosting demand for higher-value autos and apparel. The

Table 3. **Employment change in selected industries, 1990–2005**

[Numbers in thousands]

Standard industrial Classification	Industry description	Employment			Annual percent growth rate, 1990–2005
		Levels		Change, 1990–2005	
		1990	2005		
	Fastest growing				
836	Residential care	469	911	442	4.5
737	Computer and data processing services	784	1,494	710	4.4
807–809	Health services, n.e.c	697	1,262	565	4.0
874	Management and public relations	622	1,097	475	3.9
494–497, pt. 493	Water and sanitation, including combined services	184	299	115	3.3
823–829	Libraries, vocational and other schools	207	335	128	3.3
801–804	Offices of health practitioners	2,180	3,470	1,290	3.1
472	Passenger transportation arrangement	192	299	107	3.0
832,839	Individual and miscellaneous social services	638	991	353	3.0
81	Legal services	919	1,427	508	3.0
805	Nursing and personal care facilities . .	1,420	2,182	762	2.9
735	Miscellaneous equipment rental and leasing	211	324	113	2.9
872,89	Accounting, auditing, and services, n.e.c	575	871	296	2.8
821	Elementary and secondary schools . . .	457	689	232	2.8
751	Automotive rentals, without drivers . . .	180	271	91	2.8
8731,2,4	Research and testing services	407	609	202	2.7
274	Miscellaneous publishing	82	123	41	2.7
732;7331,8;7383,9	Business services, n.e.c	937	1,397	460	2.7
7334–7336,7384	Photocopying, commercial art, photofinishing	200	293	93	2.6
61,67	Nondepository; holding and investment offices	596	871	275	2.6
	Most rapidly declining				
313,314	Footwear, except rubber and plastic . .	80	41	–39	–4.3
3483,3489	Ammunition and ordnance, except small arms	52	30	–22	–3.8
311,315–317,319	Luggage, handbags, and leather . . . . . products, n.e.c	52	31	–21	–3.5
21	Tobacco manufactures	49	34	–15	–2.5
287	Agricultural chemicals	56	38	–18	–2.5
88	Private households	1,014	700	–314	–2.4
3466,3469	Stampings, except automotive	84	59	–25	–2.3
341	Metal cans and shipping containers	50	35	–15	–2.3
3462,3463	Forgings	40	29	–11	–2.3
291	Petroleum refining	118	85	–33	–2.2
3482,3484	Small arms and small arms ammunition	23	17	–6	–2.1
3761	Guided missiles and space vehicles . .	134	98	–36	–2.0
363	Household appliances	125	94	–31	–1.9
3711	Motor vehicles and car bodies	328	246	–82	–1.9
3578,3579	Office and accounting machines	43	33	–10	–1.9
2086,2087	Soft drinks and flavorings	121	92	–29	–1.8
386	Photographic equipment and supplies	100	76	–24	–1.8
301	Tires and inner tubes	86	65	–21	–1.8
231–238	Apparel	839	638	–201	–1.8
481,482,489	Communications, except broadcasting	947	724	–223	–1.8

n.e.c. = not elsewhere classified.

NOTE: Historical data for SIC 88 are from the Current Population Survey; all other data are from the Current Employment Statistics program.

assumed slowdown in defense is expected to have significant impacts on those industries most dependent on defense purchases, but some of those effects are mitigated by strong business investment demand and a favorable foreign trade environment for many U.S. manufacturers.

SERVICE-PRODUCING INDUSTRIES

Transportation

Trucking is projected to add 410,000 jobs and air transportation, 276,000 jobs, together accounting for 4 of 5 additional jobs in transportation industries. The value of output of the trucking industry is projected to increase 3 percent a year, faster than the growth rate of the economy, as the freight transportation market continues to shift from rails to roads. Air transportation output is projected to grow somewhat faster than the economy, as business travel expands and rising personal income levels allow consumers to spend relatively more on travel and vacations.

Trucking and air transportation also are expected to benefit from the growth in foreign trade that is based on the assumption of further declines in the value of the dollar. Exports and imports increase the number of truck shipments required to move goods to and from U.S seaports, and add to the volume of freight flown overseas by U.S. carriers. Airline passenger revenues from transporting foreign nationals have increased rapidly since the exchange value of the dollar began decreasing in the mid-1980's, and relieved some excess capacity that had resulted from overexpansion as more firms entered the industry following deregulation in the late 1970's.

Communications

Employment in communications, except broadcasting, began declining in the mid-1980's with the layoffs that followed the divestiture and reorganization of the American Telephone and Telegraph Co., and continued as competition in the industry and changes in technology forced further job cuts. After several years of little change, employment in the industry fell from just over 1 million in 1984 to 925,000 by 1989, and then recovered some of the loss with an increase to 947,000 in 1990. New technology and more intense competition are expected to further reduce the number of communications-related jobs. Employment is projected to decline 1.8 percent annually to 724,000 in 2005, a loss of 223,000 jobs. Growth in the value of industry output slows from a 4-percent annual average for 1975–90 to a projected 2.8 percent for 1990–2005, which is about in line with the slowdown in the economy's growth.

Over the past two decades, expansion of cable TV systems boosted employment in the radio and television broadcasting industry—more than one-half of all U.S. households with television subscribed to cable service in 1990, compared to fewer than one-tenth in 1970—but market saturation is expected to limit future growth. The 0.9-percent annual employment growth rate projected for the industry is sharply lower than the 5.6-percent rate experienced during 1975–90.

Wholesale trade

This industry is projected to add 1 million jobs, bringing total employment to 7.2 million in 2005, an increase almost as fast as the average rate for all industries. The wholesale trade industry is sensitive not only to domestic demand for U.S. goods, but also to foreign demand, because many of the Nation's products are exported through wholesalers. Employment growth in the industry stalled in the mid-1980's, when the strong dollar reduced foreign demand for U.S. exports, and subsequently picked up as the falling dollar contributed to a boost in demand. The projected increase in exports is expected to stimulate job growth in wholesale trade.

Retail trade

The fastest projected job growth in this industry group is in apparel and accessory stores and eating and drinking establishments, as higher levels of personal income and continued increases in the labor force participation of women stimulate purchases of clothing and restaurant meals. The same factors help explain why food markets and general merchandise stores, including department stores, are among the slower growing employers in retail trade. Obviously, dining out shifts some spending from food markets to restaurants. As incomes rise, consumers also spend relatively more on expensive items such as personal computers and video camcorders, which they are more likely to buy from specialty stores than from general merchandisers. The differences in growth rates, however, are not enough to cause major shifts in the distribution of jobs among these retail trade industries. Eating and drinking places are by far the largest source of the projected 5.1 million increase in jobs in retail trade, and are expected to account for 42 percent of the sector total by 2005. Food stores are projected to be the second largest source of additional jobs in retailing, with 13 percent of the total, followed by automotive dealers and service stations (9 percent), and apparel stores and general merchandise stores (about 8 percent each).

The projections assume no change in the 1990 average workweek of 28.8 hours in retail

trade. The weekly average dropped sharply from 38 hours in 1960 to 30.2 hours in 1980, reflecting a surge in employment of youth and women, the workers most likely to take part-time jobs, as the baby-boom generation reached working age and more women joined the labor force. In addition, employers sought part-time workers to reduce labor costs and permit more flexible staffing.[10] The supply of potential part-time help tightened in the 1980's, as the youth labor force (aged 16 to 24) declined in absolute numbers, and consequently there was little further decrease in average weekly hours of work in retail trade. Another increase in the supply of young workers is expected when the somewhat larger cohorts of the children of baby-boom parents begin to reach working age. The labor force of 16- to 24-year-olds, which shrank by almost 1.4 million during 1975–90, is projected to expand by 2.8 million during 1990–2005, most of the increase coming in the latter part of that period. However, projected slower increases in the population and in the labor force participation of women are expected to result in about 4.2 million fewer women entering the work force during 1990–2005 than the 19.1 million who entered over the preceding 15 years, and tomorrow's entrants may be more likely than their predecessors to seek full-time jobs. Consequently, declines in average hours in this sector are not expected.

Finance, insurance, and real estate

Employment in depository institutions (banks, savings and loan institutions, and credit unions) is projected to increase about 0.6 percent annually, or one-half as fast as the average for all industries. Although the value of banking services output is projected to increase 1.7 percent annually, bank mergers and consolidations, the closing of unprofitable branches, and the installation of more automated teller machines are expected to limit demand for additional workers. However, increases in employment and output are projected to be more rapid than average in nondepository holding and investment offices, which include businesses that compete with banks, such as finance companies and mortgage brokers. Projected increases in the numbers of jobs over the 1990–2005 period are 275,000 in nondepository holding and investment offices and 232,000 in depository institutions.

Annual increases of 1.6 percent in employment and 3.7 percent in services output are projected for the security and commodity brokers industry, both much slower than the rates posted during 1975–90, a period characterized by large volumes of stock market transactions generated by corporate mergers and leveraged

buyouts, and an influx of foreign investment. Nevertheless, the industry is projected to add about 114,000 jobs between 1990 and 2005.

An additional 240,000 jobs are projected for insurance carriers, bringing total employment in the industry to almost 1.7 million by 2005, although the greater use of computers and other automated office equipment in processing applications and claims is expected to keep employment from increasing as fast as output. Almost as many additional jobs (221,000) are projected in the insurance agents, brokers, and services industry, which currently has fewer than one-half as many workers as insurance carriers but a work force less likely to be affected by automation because their jobs involve more direct contact with customers. The employment increase for this industry is almost as fast as the projected 2.1-percent yearly growth in its output.

Real estate employment is projected to rise from 1.3 million to 1.6 million between 1990 and 2005, about the same as the rate of increase for total employment in all industries. Although the number of people aged 25 to 34—which includes the majority of first-time homebuyers—is expected to decline almost 20 percent over this period, a more than 30-percent increase is expected in the number of people aged 35 to 54, who have more income to buy homes than those in the younger age group.

The services division

The wide variety of industries making up this division account for almost one-half of the projected growth in the economy's nonfarm wage and salary jobs. Within the services division are 16 of the 20 fastest growing industries and 12 of the 20 industries adding the most jobs. Most of these industries are in business, health, social, legal, and engineering and management services. The projected 2.3-percent-a-year employment growth for the services division is almost twice as fast as the projected average increase in total nonfarm wage and salary jobs, but does not match the division's performance during 1975–90, when its employment grew 4.8 percent annually. This performance is not possible to repeat, given the projected slowdowns in population and labor force expansion. (Continued 4.8-percent annual employment growth over the next 15 years would mean the addition of 28.2 million jobs in the services division, which is 5 million more than the total number of new nonfarm wage and salary jobs projected for the entire economy!) Projected rates of job growth are slower than historical rates for most industries that make up this sector, but the slowdowns generally are most pronounced in those indus-

tries that experienced the most rapid increases in the past, such as personnel supply services (temporary help) and computer and data processing services. The value of services sector output is expected to rise faster than its employment, instead of lagging behind as it did during 1975–90. However, the projected 2.9-percent annual increase in output is slower than the 1975–90 rate of 4.6 percent. Following is a discussion of projected employment in some of the major industries within the services division.

Health services.   This will continue to be one of the fastest growing industries in the economy. Employment in private health services increased almost twice as fast as total nonfarm wage and salary employment over the 1975–90 period, rising from 4.1 million to 7.8 million, and it is projected to increase twice as fast, reaching 11.5 million by 2005.[11] The industry's projected share of nonfarm wage and salary employment is 8.7 percent in 2005, compared with 7.2 percent in 1990 and 5.6 percent in 1975. However, because of the expected overall slower growth of the population, the industry's projected annual job growth rate (2.6 percent) is slower than the 1975–90 rate (4.4 percent).

Past growth can be attributed to a number of factors, primarily the implementation of new medical technologies and the prevalence of third-party systems of payment for care. New technologies permit health care workers to do more tests, perform more procedures, and prescribe new drugs. They also permit intervention for conditions previously undiagnosable or regarded as untreatable and increase survival rates for those with life-threatening conditions, but patients benefitting from the new technologies often need extensive care and rehabilitation. Payment of medical expenses by third parties— governments and private health insurance providers—reduces incentives for consumers and health care providers to limit consumption of health services, and encourages the development of technologies by ensuring an expanding market. In the future, the development of new technologies is expected to continue, and two additional factors should stimulate growth of the health care industry. Legislative efforts may well be undertaken to provide health insurance coverage—and therefore more services—for an estimated 32 million people who did not have medical coverage in 1990. In addition, the U.S. population will be getting older, and health care needs rise sharply with age. As the following tabulation shows, people aged 75 and over spend 8 times as many days in hospitals and visit a physician more than twice as often as do 15- to 44-year-olds:[12]

Age	Hospital days per 1,000 population, 1988	Office visits to physicians, 1985
Under 15	245	2.3
15 to 44	493	2.3
45 to 64	955	3.1
65 to 74	2,214	4.5
75 and over	4,054	5.4

Although the oldest citizens have the greatest health care needs on an individual basis, much of the increased demand for health services will result from the aging of the large baby-boom generation. People aged 45 and older will represent almost 38 percent of the total population by 2005, compared to about 31 percent in 1990. Most of this increase results from the aging of baby-boomers—people who were between the ages of 26 and 41 in 1990. As can be seen in the following tabulation, the 45- to 64-year-old group is expected to grow from 18.6 percent to 24.9 percent of the population over the projection period. The fact that a relatively small number of people were born during the Great Depression results in a slight decline in the proportion of people aged 65 to 74. The number of people aged 75 and older is expected to increase from 5.2 percent to 6.2 percent of the population.

Table 4.   **Profile of private health industries, 1990–2005**

[Numbers in thousands]

Standard Industrial Classification	Industry	Employment			Annual rate of change
		1990	2005	Change, 1990–2005	
80	Total health services....	7,844	11,519	3,675	2.6
801–804	Offices of health practitioners	2,180	3,470	1,290	3.1
801,803	Offices and clinics of physicians	1,389	2,310	921	3.4
802	Offices and clinics of dentists........	514	660	146	1.7
804	Offices and clinics of others	277	500	223	4.0
805	Nursing and personal care facilities	1,420	2,182	762	2.9
806	Hospitals, private.....	3,547	4,605	1,058	1.8
807–809	Other health services	697	1,262	565	4.0
807	Medical and dental labs	171	277	106	3.3
808	Home health care services	289	598	309	5.0
809	Services, n.e.c	238	388	150	3.3

n.e.c. = not elsewhere classified.

Age	U.S. population, percent distribution—	
	1990	2005
Total (millions)	251.7	288.5
Percent distribution:		
Total	100.0	100.0
Under 15 years	21.7	20.9
15 to 44 years	47.1	41.5
45 to 64 years	18.6	24.9
65 to 74 years	7.3	6.4
75 to 84 years	3.9	4.4
85 years and over	1.3	1.8

The rapidly rising cost of health care is a growing national concern and has implications for the projections for this industry. Numerous proposals for controlling costs have been made, but it still is not clear at this time what form cost containment may take. The projections assume that cost controls will be sufficiently effective to keep health employment costs from growing at an even faster rate than total employment, as one otherwise might expect, given an aging population and considerable discussion of broader health insurance coverage.

Some health care industries have grown faster than others and are expected to continue to do so. (See table 4.) The differences in employment growth rates among the industries reflect a shift from inpatient care to outpatient and home care and the contracting of services by hospitals. The number of inpatient days in hospitals dropped sharply between 1982 and 1986, and has remained relatively unchanged since, while the number of hospital outpatient visits has grown rapidly, as have visits to offices of health practitioners. This shift to outpatient and home health care came about because of efforts to control costs, and because improvements in technology have led to less intrusive procedures, which eliminate the need for in-hospital recovery, and to the development of portable equipment and new procedures that permit more extensive care at home.

Employment in home health care services is projected to more than double. Nursing home employment is expected to increase very rapidly, due largely to the increasing number of very old people. Employment in offices and clinics of practitioners (including outpatient care facilities) also is projected to grow rapidly. However, moderate employment growth is expected in offices of dentists. Jobs in medical and dental laboratories are expected to increase rapidly as hospitals contract out more of their lab work.

Hospitals, still the largest health services industry in terms of employment, are projected to continue growing more slowly than other health industries. Most hospital workers care for inpa-

tients, whose numbers are not expected to increase much. However, during the 1980's, hospitals aggressively moved into outpatient care, as well as home health, nursing home, and other health services, and are expected to add about 1.1 million jobs during 1990–2005.

Business services. This industry grew faster than any other service industry between 1975 and 1990. Employment soared from 1.7 million to 5.2 million during this period, a 7.8-percent gain per year, as more private firms and government agencies found it efficient to contract out for specialized services instead of performing them in-house. The growth is projected to slow to 2.5 percent a year, putting employment at 7.6 million in 2005. The slowdown largely reflects the maturation of two relatively young industries that experienced double-digit rates of job growth during 1975–90: computer and data processing services and personnel supply services. Because of the worldwide trend toward automation of offices and factories and the rapid advances in technology, computer and data processing services is expected to remain among the fastest growing industries: its projected 4.4-percent annual employment increase results in more than 700,000 additional jobs over the 1990–2005 period.

The fastest growing industry over the last 15 years, from a jobs perspective, was personnel supply services, which consists primarily of establishments in the temporary help business. With more firms finding convenience and savings in contracting for temporary workers instead of hiring them, the number of employees on the payrolls of the personnel supply services industry swelled from 242,000 in 1975 to almost 1.6 million in 1990—an average increase of 13.2 percent a year, despite a loss of momentum at the end of the 1980's when the economy slowed. If the growth rate were to continue at that pace, the industry would account for more than one-third of the total increase in jobs projected over the 1990–2005 period, but its future expansion is expected to be limited by constraints on both supply and demand. Compared with workers in other industries, employees of temporary help firms are much more likely to be women and to work in administrative support occupations, including clerical. As indicated earlier, about 4.2 million fewer women are projected to enter the labor force during 1990–2005 than during the preceding 15 years, and more of them are expected to be seeking permanent jobs, eroding the potential supply of new labor for temporary jobs. On the demand side, total employment in administrative support occupations in all industries is projected to increase only two-fifths as

fast as during 1975–90, moderating growth in the demand for temporary help. The market for temporary workers eventually should become saturated—there are practical limits on the number of such workers employers can use relative to the size of their regular work forces—and the personnel supply services industry probably will then adopt about the same employment growth path as the economy. Between 1990 and 2005, however, employment in the industry is projected to increase 1.9 percent annually or almost 1.5 times as fast as the average for nonfarm wage and salary employment, resulting in a gain of more than 500,000 jobs over the 15-year period.

Social services.   Employment in this industry is projected to rise 3.1 percent annually to 2.9 million in 2005, an increase of almost 1.1 million over the 1990 level. Most of the additional jobs will result from growth of the elderly population. The number of workers in residential care institutions, which provide around-the-clock assistance to older persons and others who have limited ability for self-care, is projected to increase 4.5 percent, the fastest employment growth for any industry in the U.S. economy. Employment in individual and miscellaneous social services—which includes elderly day care and family social services—is projected to increase 3 percent a year. Another rapidly growing social services industry is child day care centers, although the projected 2.4-percent job gain is well under one-half the rate for 1975–90, reflecting a slower growth in the population of women in their childbearing years.

Legal services.   Wage and salary employment in legal services is projected to rise 3 percent annually to 1.4 million in 2005, an increase of about one-half million over the 1990 level, as demand for lawyers and paralegals continues to be spurred by growth in population and business activity. Other factors expected to add to demand include the greater use of legal services by middle-income groups through prepaid legal services plans, which are similar to health insurance plans, and increases in legal activities related to international trade.

Engineering and architectural services. Wage and salary jobs in this industry are projected to rise much faster than average and reach almost 1.1 million by 2005, an addition of about 290,000 jobs. The industry is expected to be stimulated by government spending for roads, bridges and other infrastructure components, and by business spending for plant and equipment. Construction companies are expected to seek more advice from consulting engineers and other pro-

fessional specialists as regulations concerning land development and its environmental impact become more complex. In addition, manufacturing firms are expected to restrain increases in payroll costs by contracting for some of their engineering needs rather than hiring additional engineers. However, the industry's projected annual employment growth of 2.1 percent is only two-fifths as fast as the 1975–90 pace. The overbuilding that occurred in the office and commercial sectors in recent years is likely to dampen construction activity in the early part of the projections period, thus limiting increases in engineering and architectural services employment.

Educational services (private schools). Wage and salary employment in the educational services industry is projected to increase from almost 1.7 million to more than 2.3 million, a gain of about 675,000 jobs over the 1990–2005 period. Private colleges and universities are expected to account for most of the growth, but large job increases also are expected in private elementary and secondary schools. Demand will be spurred by growth in the school-age population, which is discussed under public education in the following section on government.

Government

Employment in State and local government is projected to increase about as fast as the average for total nonfarm wage and salary employment, rising from 15.2 million to 18.3 million between 1990 and 2005. More than one-half (53 percent) of these 3.1 million new jobs are expected to be in public education. Federal Government employment is projected to grow much more slowly than the average, only increasing from 3.1 million to 3.2 million.

School enrollments are tied to population growth. The number of births declined gradually through most of the 1960's and into the following decade, but began rising again in 1977, as couples from the large baby-boom cohort started families. After slipping from 4.3 million in 1961 to a low of about 3.1 million in 1973, numbers of births had climbed back to almost 4.2 million by 1990. As can be seen in the following tabulation, the elementary school population (aged 5 to 13) is expected to rise by 4.5 million between 1989 and 2005, the secondary school population (aged 14 to 17) by 3 million, and the post-secondary school population (aged 18 to 24) by 1.5 million. The increases in enrollments are expected to push employment in State and local education from 7.8 million to 9.4 million between 1990 and 2005.

Table 5. **Employment by industry, 1975, 1990, and projected to 2005**

[Numbers in thousands]

Standard Industrial Classification	Industry	Employment					Annual growth rate[1]	
		1975	1990	2005			Employ-ment, 1990–2005	Output, 1990–2005
				Low	Moderate	High		
	Nonfarm wage and salary[2]	76,680	109,319	127,775	132,647	139,531	1.3	([3])
10–14	Mining	752	711	598	668	690	–.4	–0.1
10	Metal mining	94	59	57	64	68	.6	.6
12	Coal mining	213	148	108	113	119	–1.8	1.4
131,132	Crude petroleum, natural gas, and gas liquids ..	155	196	153	172	174	.9	–.9
138	Oil and gas field services	174	198	176	205	208	.2	.4
14	Nonmetallic minerals, except fuels	117	111	105	114	120	.2	1.5
15,16,17	Construction	3,525	5,136	5,552	6,059	6,484	1.1	1.8
20–39	Manufacturing	18,323	19,111	16,727	18,514	19,189	–.2	2.3
24,25,32–39	Durable manufacturing	10,662	11,115	9,467	10,517	10,915	–.4	2.9
24	Lumber and wood products	627	741	690	722	777	–.2	1.9
241	Logging	74	85	79	82	88	–.3	1.4
242	Sawmills and planing mills	202	200	167	175	189	–.9	1.7
2431,4,9	Millwork and structural wood members, n.e.c.	109	208	233	239	259	.9	2.6
2435,6	Veneer and plywood	62	57	44	46	50	–1.3	1.7
244,9	Wood containers and miscellaneous wood products	117	13	112	122	128	–.5	2.1
2451	Mobile homes	44	42	35	35	39	–1.1	.7
2452	Prefabricated wood buildings	20	19	21	22	24	.9	1.4
25	Furniture and fixtures	417	510	554	618	636	1.3	2.8
251	Household furniture	284	291	291	328	332	.8	1.9
254	Partitions and fixtures	51	80	99	108	115	2.1	1.9
252,3,9	Office and miscellaneous furniture and fixtures	82	139	164	182	190	1.8	4.0
32	Stone, clay, and glass products	598	557	480	516	545	–.5	1.3
321,2,3	Glass and glass products	180	160	119	128	132	–1.5	1.1
324,327	Cement, concrete, gypsum, and plaster products	222	226	218	230	247	.1	1.7
325,6,8,9	Stone, clay, and miscellaneous mineral products	196	172	142	158	166	–.6	.8
33	Primary metal industries	1,139	756	581	643	671	–1.1	.6
331	Blast furnaces and basic steel products	548	275	198	222	232	–1.4	.2
332	Iron and steel foundries	230	132	109	120	125	–.6	.2
333	Primary nonferrous metals	66	46	35	39	41	–1.0	.1
334,9	Miscellaneous primary and secondary metals	38	46	36	40	42	–.8	1.6
335	Nonferrous rolling and drawing	181	172	129	141	148	–1.3	1.0
336	Nonferrous foundries	76	84	73	81	84	–.3	2.2
34	Fabricated metal products	1,453	1,423	1,138	1,238	1,298	–.9	1.0
341	Metal cans and shipping containers	79	50	35	35	36	–2.3	–.6
342	Cutlery, handtools, and hardware	153	131	98	106	110	–1.4	1.2
343	Plumbing and nonelectric heating equipment	61	60	54	56	60	–.4	1.2
344	Fabricated structural metal products	449	427	338	365	389	–1.0	1.1
345	Screw machine products, bolts, rivets, etc ..	93	96	79	89	92	–.5	.7
3462,3	Forgings	58	40	26	29	29	–2.3	.0
3465	Automotive stampings	82	101	81	90	94	–.8	2.5
3466,9	Stampings, except automotive	106	84	54	59	61	–2.3	.4
347	Metal services, n.e.c.	84	121	129	143	148	1.1	2.6
3482,3484	Small arms and small arms ammunition	29	23	16	17	17	–2.1	1.2
3483,3489	Ammunition and ordnance, except small arms	38	52	28	30	30	–3.8	–2.0
349	Miscellaneous fabricated metal products ...	222	237	202	221	231	–.5	.8
35	Industrial machinery and equipment	2,076	2,095	1,728	1,941	2,009	–.5	5.2
351	Engines and turbines.....................	120	89	65	72	74	–1.4	.9
352	Farm and garden machinery..............	161	106	101	113	118	.4	1.0
3531	Construction machinery	162	86	61	69	72	–1.5	2.2
3532,3	Mining and oil field machinery	94	60	50	54	57	–.7	2.6
3534,5,6,7	Materials handling machinery and equipment	86	82	79	89	93	.5	2.0
354	Metalworking machinery	329	330	282	316	327	–.3	.5
355	Special industry machinery	173	159	128	145	149	–.6	1.7
356	General industrial machinery	268	248	183	212	217	–1.1	1.0
3571,2,5,7	Computer equipment.....................	([4])	396	297	345	353	–.9	7.6
3578,9	Office and accounting machines	([4])	43	28	33	33	–1.9	.1
358	Refrigeration and service industry machinery	144	177	183	200	209	.8	1.4

See footnotes at end of table.

Table 5. Continued—Employment by industry, 1975, 1990, and projected to 2005

[Numbers in thousands]

Standard Industrial Classification	Industry	Employment					Annual growth rate[1]	
		1975	1990	2005			Employ-ment, 1990–2005	Output, 1990–2005
				Low	Moderate	High		
359	Industrial machinery nec..................	263	317	271	295	307	-0.5	1.4
36	Electronic and other electric equipment	1,442	1,673	1,345	1,567	1,603	-.4	3.1
361	Electric distributing equipment	109	97	76	84	88	-1.0	.8
362	Electrical industrial apparatus	203	169	125	141	145	-1.2	1.3
363	Household appliances	160	125	85	94	95	-1.9	2.0
364	Electric lighting and wiring equipment	182	189	174	191	199	.1	1.8
365	Household audio and video equipment	112	83	39	74	75	-.8	2.9
3661	Telephone and telegraph apparatus	(4)	128	96	110	114	-1.0	2.5
3663,9	Broadcasting and communications equipment...........................	(4)	135	101	115	117	-1.1	2.6
3674	Semiconductors and related devices.......	122	238	201	235	236	-.1	5.6
3671,2,5-9	Miscellaneous electronic components	(4)	343	302	363	366	.4	3.7
3691,4	Storage batteries and engine electrical parts	87	100	89	98	102	-.1	2.8
3692,5,9	Electrical equipment and supplies, n.e.c.	(4)	67	56	62	65	-.5	3.7
37	Transportation equipment..................	1,700	1,980	1,719	1,889	1,950	-.3	1.8
371	Motor vehicles and equipment	792	809	668	744	771	-.6	2.5
3711	Motor vehicles and car bodies	375	328	220	246	258	-1.9	2.7
3714	Motor vehicle parts and accessories	353	397	359	400	409	.0	2.0
3713,5,6	Truck and bus bodies, trailers, and motor homes	65	84	89	98	105	1.0	3.4
3721	Aircraft	293	377	331	360	373	-.3	.4
3724,3764	Aircraft and missile engines	134	180	171	190	193	.4	1.4
3728,3769	Aircraft and missile parts and equipment, n.e.c......................	90	202	212	230	238	.9	1.2
3761	Guided missiles and space vehicles	79	134	91	98	100	-2.0	-.4
3731	Ship building and repairing	154	129	98	104	106	-1.4	-1.7
3732	Boat building and repairing...............	40	58	70	76	80	1.8	2.5
374	Railroad equipment	57	33	31	34	35	.1	.3
375,9	Miscellaneous transportation equipment	65	58	47	52	55	-.7	1.7
38	Instruments and related products	804	1,004	923	1,018	1,054	.1	3.1
381	Search and navigation equipment	(4)	284	268	295	303	.3	3.6
382,387	Measuring and controlling devices, watches	(4)	334	240	271	279	-1.4	1.8
385	Ophthalmic goods	36	42	38	45	46	.5	3.7
3841-3	Medical instruments and supplies	109	206	264	282	296	2.1	4.6
3844-5	X-ray and other electromedical apparatus ..	(4)	39	44	49	51	1.6	4.0
386	Photographic equipment and supplies......	121	100	69	76	79	-1.8	2.3
39	Miscellaneous manufacturing industries	407	377	312	364	372	-.2	1.1
391	Jewelry,silverware,and plated ware	52	53	35	50	51	-.3	.8
394	Toys and sporting goods..................	116	104	76	94	95	-.7	1.1
393,5,6,9	Manufactured products, n.e.c.	239	220	201	221	226	.0	1.1
20-23,26-31	Nondurable manufacturing	7,661	7,995	7,260	7,998	8,274	.0	1.6
20	Food and kindred products.................	1,658	1,668	1,515	1,560	1,598	-.4	1.2
201	Meat products	336	426	430	443	454	.3	.9
202	Dairy products	194	155	120	123	126	-1.5	1.0
203	Preserved fruits and vegetables...........	232	247	243	250	255	.1	2.2
204,7	Grain mill products, fats and oils	179	158	125	130	135	-1.3	1.4
205	Bakery products.......................	236	212	176	180	184	-1.1	.3
206	Sugar and confectionery products	110	101	98	100	103	-.1	.2
2082,3,4,5	Alcoholic beverages	87	65	51	52	53	-1.4	1.0
2086,7	Soft drinks and flavorings	135	121	89	92	94	-1.8	1.3
209	Miscellaneous foods and kindred products ..	146	183	184	190	195	.3	1.7
21	Tobacco manufactures	76	49	32	34	35	-2.5	-.2
22	Textile mill products	868	691	499	596	613	-1.0	1.9
221,2,3,4,6,8	Weaving, finishing, yarn, and thread mills ..	521	372	239	286	293	-1.7	1.7
225	Knitting mills.........................	228	206	156	195	198	-.4	1.6
227	Carpets and rugs......................	55	62	67	75	80	1.3	2.6
229	Miscellaneous textile goods	64	51	36	40	42	-1.6	2.5
23	Apparel and other textile products...........	1,243	1,043	667	848	863	-1.4	2.1
231-8	Apparel...............................	1,087	839	479	638	649	-1.8	1.8
239	Miscellaneous fabricated textile products ...	157	205	188	210	214	.2	3.1
26	Paper and allied products.................	633	699	674	727	757	.3	2.1
261,2,3	Pulp, paper, and paperboard mills	249	245	213	229	242	-.4	2.3
265	Paperboard containers and boxes	194	210	199	216	223	.2	1.2
267	Converted paper products except containers	191	244	262	282	292	1.0	2.4

See footnotes at end of table.

Table 5.　**Continued—Employment by industry, 1975, 1990, and projected to 2005**

[Numbers in thousands]

Standard industrial Classification	Industry	Employment					Annual growth rate[1]	
		1975	1990	2005			Employ-ment, 1990–2005	Output, 1990–2005
				Low	Moderate	High		
27	Printing and publishing	1,083	1,574	1,767	1,900	1,976	1.3	2.4
271	Newspapers	377	476	488	519	538	.6	1.2
272	Periodicals	68	129	169	180	187	2.2	2.1
273	Books	98	122	130	143	149	1.1	2.0
274	Miscellaneous publishing	39	82	114	123	128	2.7	4.3
275,6	Commercial printing and business forms	384	603	679	733	764	1.3	2.9
277	Greeting card publishing	22	25	29	30	30	1.1	1.7
278	Blankbooks and bookbinding	55	72	81	89	92	1.4	1.8
279	Printing trade services	41	64	78	84	87	1.8	1.8
28	Chemicals and allied products	1,015	1,093	1,022	1,098	1,146	.0	2.0
281,6	Industrial chemicals	298	297	229	246	261	-1.2	1.1
282	Plastics materials and synthetics	218	181	159	175	185	-.2	2.7
283	Drugs	167	238	275	293	301	1.4	3.2
284	Soap, cleaners, and toilet goods	122	160	172	179	184	.8	1.5
285	Paints and allied products	62	62	52	56	59	-.6	2.2
287	Agricultural chemicals	65	56	37	38	41	-2.5	1.6
289	Miscellaneous chemical products	82	100	100	109	115	.6	2.6
29	Petroleum and coal products	194	158	114	122	126	-1.7	.3
291	Petroleum refining	153	118	79	85	86	-2.2	.2
295,9	Miscellaneous petroleum and coal products	42	40	35	37	39	-.4	1.9
30	Rubber and miscellaneous plastics products	643	889	933	1,043	1,085	1.1	3.4
301	Tires and inner tubes	124	86	57	65	68	-1.8	1.0
302,5,6	Rubber products, plastic hose and footwear	185	176	138	158	164	-.7	1.2
308	Miscellaneous plastics products, n.e.c.	334	627	738	820	852	1.8	4.3
31	Leather and leather products	248	132	36	72	75	-4.0	-1.4
313,4	Footwear except rubber and plastic	167	80	18	41	44	-4.3	-2.5
311,5,6,7,9	Luggage, handbags, and leather products, n.e.c.	81	52	18	31	31	-3.5	-.6
40–42,44–49	Transportation, communications, utilities	4,542	5,826	6,203	6,689	7,019	.9	2.2
40–42,44–47	Transportation	2,634	3,554	4,092	4,427	4,651	1.5	2.3
40	Railroad transportation	548	280	212	227	240	-1.4	.7
41	Local and interurban passenger transit	270	343	392	424	446	1.4	.5
42	Trucking and warehousing	1,108	1,638	1,895	2,048	2,144	1.5	3.0
44	Water transportation	194	174	144	153	166	-.9	.8
45	Air transportation	363	751	942	1,027	1,079	2.1	2.6
46	Pipelines, except natural gas	18	19	18	19	19	.1	.3
47	Transportation services	134	350	490	530	557	2.8	3.8
472	Passenger transportation arrangement	—	192	277	299	315	3.0	3.5
473,4,8	Miscellaneous transportation services	—	158	213	230	243	2.5	4.0
48	Communications	1,176	1,311	1,058	1,143	1,200	-.9	2.9
481,2,9	Communications, except broadcasting	1,015	947	669	724	762	-1.8	2.8
483,4	Radio and television broadcasting, cable TV	160	364	389	419	439	.9	3.1
49	Electric, gas, and sanitary services	733	961	1,053	1,119	1,167	1.0	1.8
491,pt.493	Electric utilities including combined services	434	571	571	604	629	.4	2.1
492,pt.493	Gas utilities, including combined services	218	206	204	216	224	.3	.8
494,5,6,7,pt.493	Water and sanitation, including combined services	81	184	278	299	314	3.3	3.5
50,51	Wholesale trade	4,430	6,205	6,669	7,210	7,585	1.0	2.2
52–59	Retail trade	12,630	19,683	23,306	24,804	25,856	1.6	2.5
52–57,59	Retail trade, except eating and drinking places	9,251	13,118	14,888	16,092	16,903	1.4	2.8
58	Eating and drinking places	3,380	6,565	8,418	8,712	8,953	1.9	1.8
60–67	Finance, insurance, and real estate	4,165	6,739	7,599	8,129	8,525	1.3	2.1
60	Depository institutions	(4)	2,278	2,339	2,510	2,642	.6	1.7
61,7	Nondepository; holding and investment offices	(4)	596	819	871	911	2.6	2.7
62	Security and commodity brokers	170	427	502	541	568	1.6	3.7
63	Insurance carriers	1,085	1,453	1,574	1,693	1,791	1.0	1.4
64	Insurance agents, brokers, and service	357	665	824	886	937	1.9	2.1
65	Real estate	760	1,319	1,542	1,626	1,676	1.4	1.8

Table 5. Continued—Employment by industry, 1975, 1990, and projected to 2005

[Numbers in thousands]

Standard industrial Classification	Industry	Employment					Annual growth rate[1]	
		1975	1990	2005			Employ-ment, 1990–2005	Output, 1990–2005
				Low	Moderate	High		
70–87,89	Services[2]	13,627	27,588	36,223	39,058	41,109	2.3	2.9
70	Hotels and other lodging places	898	1,649	2,062	2,174	2,232	1.9	1.8
72	Personal services	782	1,113	1,244	1,338	1,416	1.2	2.0
721,5	Laundry, cleaning, and shoe repair	(4)	440	464	499	526	.8	.5
722,9	Personal services, n.e.c.	(4)	199	256	275	292	2.2	3.6
723,4	Beauty and barber shops	292	391	434	468	496	1.2	1.8
726	Funeral service and crematories	70	83	90	97	102	1.0	.7
73	Business services	1,697	5,241	7,029	7,623	7,964	2.5	3.5
731	Advertising	122	238	320	345	359	2.5	2.2
734	Services to buildings	391	809	930	995	1,035	1.4	2.5
735	Miscellaneous equipment rental and leasing ..	—	211	298	324	339	2.9	1.2
736	Personnel supply services	242	1,559	1,901	2,068	2,165	1.9	3.2
737	Computer and data processing services	143	784	1,368	1,494	1,556	4.4	4.5
7381,2	Detective, guard, and security services	—	503	648	706	739	2.3	3.4
7334,5,6;7384	Photocopying, commercial art, photofinishing .	—	200	270	293	308	2.6	3.1
732;7331,8; 7383,9	Business services, n.e.c.	—	937	1,295	1,397	1,463	2.7	4.4
75	Auto repair, services, and garages	439	928	1,152	1,245	1,315	2.0	2.0
751	Automotive rentals, without drivers	81	180	249	271	284	2.8	2.5
752,3,4	Automobile parking, repair, and services	358	748	903	975	1,031	1.8	1.8
76	Miscellaneous repair shops	218	390	441	480	504	1.4	1.2
762	Electrical repair shops	66	116	141	153	161	1.8	1.2
763,4	Watch, clock, jewelry, and furniture repair	26	31	26	28	29	-.7	1.2
769	Miscellaneous repair shops and related services	125	243	275	300	314	1.4	1.1
78	Motion pictures	(4)	408	444	476	497	1.0	3.2
784	Video tape rental...........................	—	132	139	150	157	.8	1.7
79	Amusement and recreation services	(4)	1,089	1,331	1,428	1,511	1.8	3.2
792	Producers,orchestras,and entertainers	58	146	188	201	211	2.1	3.3
793	Bowling centers	(4)	93	79	85	90	-.6	.4
794	Commercial sports	67	99	111	119	126	1.2	1.3
791,9	Amusement and recreation services, n.e.c. ...	(4)	751	953	1,024	1,084	2.1	3.6
80	Health services	4,134	7,844	10,727	11,519	12,212	2.6	3.3
801,2,3,4	Offices of health practitioners	(4)	2,180	3,231	3,470	3,688	3.1	3.2
805	Nursing and personal care facilities	759	1,420	2,031	2,182	2,311	2.9	3.5
806	Hospitals, private.........................	2,274	3,547	4,289	4,605	4,871	1.8	3.0
807,8,9	Health services, n.e.c.	(4)	697	1,177	1,262	1,342	4.0	4.8
81	Legal services	341	919	1,327	1,427	1,500	3.0	2.7
82	Educational services	1,001	1,652	2,151	2,326	2,458	2.3	2.1
821	Elementary and secondary schools	233	457	641	689	735	2.8	1.8
822	Colleges and universities	673	988	1,200	1,302	1,368	1.9	1.9
823–9	Libraries, vocational and other schools.......	(4)	207	311	335	355	3.3	2.8
83	Social services	690	1,811	2,673	2,874	3,031	3.1	3.7
832,9	Individual and miscellaneous social services ..	(4)	638	923	991	1,046	3.0	3.4
833	Job training and related services	94	247	295	320	335	1.7	3.3
835	Child day care services	199	457	607	652	689	2.4	3.3
836	Residential care..........................	146	469	848	911	961	4.5	5.0
84,86,8733	Museums, zoos, and membership organizations .	(4)	2,149	2,315	2,488	2,628	1.0	1.9
84;865,9;8733	Museums and noncommercial organizations, n.e.c.	(4)	314	391	421	445	2.0	2.5
861,2	Business and professional associations	103	158	178	192	202	1.3	2.1
863,4	Labor, civic, and social organizations	435	559	581	624	662	.7	.7
866	Religious organizations[5]	856	1,117	1,165	1,250	1,319	.8	2.0
87(less 8733), 89	Engineering, management, and services n.e.c...	—	2,396	3,326	3,660	3,843	2.9	2.6
871	Engineering and architectural services	382	793	964	1,083	1,163	2.1	2.1

See footnotes at end of table.

Year	Population (millions)		
	Ages 5–13	Ages 14–17	Ages 18–24
1975	33.9	17.1	27.7
1980	31.1	16.1	30.1
1985	30.1	14.9	28.5
1989	31.8	13.5	26.3
1995	34.8	14.6	24.7
2000	36.1	15.6	25.8
2005	36.3	16.5	27.8

ALTERNATIVE PROJECTIONS

The high- and low-growth alternative projection scenarios were designed to illustrate the effects of differing sets of assumptions. The low scenario assumes more serious economic problems, including supply constraints, steadily worsening inflation, a much higher valued dollar in the foreign exchange markets, and below-trend growth in labor force, population, and productivity. The high scenario is, predictably, much more optimistic with low unemployment, a major shift to investment goods, a lower exchange rate for the dollar, and a moderation of inflation.[13]

The most noticeable effect of the assumptions in the low scenario is the projected decline of nearly 2.1 million in wage and salary employment in the goods-producing sector. The manufacturing sector alone has a projected decline of

Table 5. Continued—Employment by industry, 1975, 1990, and projected to 2005

[Numbers in thousands]

Standard Industrial Classification	Industry	Employment		2005			Annual growth rate[1]	
		1975	1990	Low	Moderate	High	Employment, 1990–2005	Output, 1990–2005
8731,2,4	Research and testing services	—	407	551	609	625	2.7	2.5
874	Management and public relations	—	622	1,006	1,097	1,146	3.9	4.1
872,89	Accounting, auditing, and services, n.e.c.	(4)	575	805	871	910	2.8	.9
	Government	14,686	18,322	19,899	21,515	23,074	1.1	1.4
	Federal Government	2,748	3,085	3,089	3,184	3,266	.2	.6
	Federal enterprises	882	1,040	1,089	1,174	1,236	.8	2.4
	U.S. Postal Service	697	819	874	948	1,001	1.0	3.1
	Federal electric utilities	32	39	31	33	34	-1.2	-1.0
	Federal Government enterprises, n.e.c.	153	182	184	193	201	.4	.4
	Federal General Government	1,866	2,045	2,000	2,010	2,030	-.1	.0
	State and local government	11,937	15,237	16,810	18,331	19,808	1.2	1.8
	State and local enterprises	674	928	1,104	1,185	1,244	1.6	2.2
	Local government passenger transit	112	205	254	275	289	2.0	.7
	State and local electric utilities	60	83	93	98	102	1.1	-.6
	State and local government enterprises, n.e.c.	502	640	757	812	853	1.6	3.0
	State and local general government	11,263	14,309	15,706	17,146	18,563	1.2	1.8
	State and local government hospitals	992	1,084	1,188	1,298	1,405	1.2	.9
	State government education	1,323	1,724	1,875	2,047	2,216	1.1	1.6
	Local government education	4,834	6,064	6,761	7,383	7,991	1.3	1.9
	State and local general government, n.e.c.	4,115	5,438	5,882	6,419	6,952	1.1	1.9
01,02,07,08,09	Agriculture[6]	3,459	3,276	2,969	3,080	3,181	-.4	1.8
pt.01,pt.02	Livestock and livestock products	1,410	1,096	843	864	885	-1.6	.8
pt.01,pt.02	Other agricultural products	1,552	1,097	757	781	807	-2.2	2.7
07	Agricultural services	428	975	1,245	1,304	1,353	2.0	2.2
08	Forestry	15	35	41	42	45	1.2	1.6
09	Fishing, hunting, and trapping	35	73	83	89	91	1.3	2.8
88	Private households	1,362	1,014	648	700	736	-2.4	.1
	Nonagricultural self-employed and unpaid family[7]	6,165	8,961	10,415	10,763	11,095	1.2	(3)
	Total[8]	87,666	122,570	136,807	147,190	154,543	1.2	2.2

[1] Rates based on moderate case scenario.

[2] Excludes SIC 074,5,8 (agricultural services) and 99 (nonclassifiable establishments). The data therefore are not exactly comparable with data published in *Employment and Earnings*.

[3] Comparable estimate of output growth not available.

[4] Current Employment Statistics figures not available. Estimates were produced by the Bureau's Office of Employment Projections for the purpose of these projections.

[5] Does not meet usual publication criteria of SIC Current Employment Statistics program.

[6] Excludes government wage and salary workers, and includes private SIC 08,09 (forestry and fisheries).

[7] Excludes SIC 08,09 (forestry and fisheries).

[8] Wage and salary data are from the Current Employment Statistics (payroll) survey, which counts jobs, whereas self-employed, unpaid family worker, agricultural, and private household data are from Current Population Survey (household survey), which counts workers.

NOTE: Dash indicates data not available.

SOURCE: Historical output data are from the Bureau of Economic Analysis, U.S. Department of Commerce.

n. e. c. = not elsewhere classified.

2.4 million in employment. The service-producing sector has a projected gain in employment of 15.5 million, for a net gain in total nonfarm wage and salary employment of 13.5 million, as compared with the moderate scenario gain of 23.3 million.

The goods-producing sector in the high scenario has a projected gain in wage and salary employment of 1.4 million, nearly 5 times the projected gain in the moderate scenario. Almost all of this gain is in the construction industry, but the manufacturing sector does have a small projected gain of 78,000. The service-producing sector has a gain of 28.8 million in wage and salary employment in the high scenario. Thus, the total net gain for nonfarm wage and salary jobs in the high scenario is 30.2 million, almost 7 million above that in the moderate scenario and more than twice that in the low scenario. □

Footnotes

[1] For a discussion of the shift of jobs from the service-producing sector to the goods-producing sector, see Lois M. Plunkert, "The 1980's: a decade of job growth and industry shifts," *Monthly Labor Review*, September 1990, pp. 3–16.

[2] This article discusses gross duplicated output, which includes not only GNP, or all final demand purchases of new goods and services, but also all new goods and services produced as intermediate goods for use in further production.

[3] Christopher Singleton, "The 1987–88 surge in exports and the rise in factory jobs," *Monthly Labor Review*, May 1990, pp. 42–48.

[4] The growth in share accounted for by computers is in part a consequence of the deflation methodology used to capture and exclude the price effects related to rapid changes in technology. Base-weighted (1982) deflators combined with very large price changes may lead to some overstatement of the share of computers in industrial machinery and overall GNP. For further discussion of this issue, see David Cartwright, "Improved deflation of purchases of computers," *Survey of Current Business*, March 1986, pp. 7–9; "Deflators and Price Indexes for Computers, 1987–90," *Survey of Current Business*, July 1990, p. 126; and James Sinclair and Brian Catron, "New price index for the computer industry," *Monthly Labor Review*, October 1990, pp. 16–24.

[5] James Thomas, Jill Walker, and Rebecca Westra, "Chemical trade prospers in the 1980's," *Monthly Labor Review*, June 1991, pp. 3–11.

[6] *Ibid.*

[7] "International Comparisons of Manufacturing Productivity and Labor Cost Trends, 1989," USDL 90–383 (Bureau of Labor Statistics, July 27, 1990).

[8] "International Comparisons of Hourly Compensation Costs for Production Workers in Manufacturing, 1975–89," Report 794 (Bureau of Labor Statistics, October 1990).

[9] Robert Z. Lawrence, *Foreign-Affiliated Automakers in the United States* (Washington, The Brookings Institution, March 1990).

[10] See Chris Tilly, "Reasons for continuing growth of part-time employment," *Monthly Labor Review*, March 1991, pp. 10–17.

[11] In addition to the employment in private health services, employment in State and local government hospitals rose from 992,000 in 1975 to almost 1.1 million in 1990 (0.6-percent annual growth), and is projected to increase to almost 1.3 million during 1990–2005 (1.2-percent annual growth).

[12] *Health, United States, 1989* (U.S. Department of Health and Human Services, 1989), tables 66 and 67.

[13] See Norman Saunders, "The U.S. economy into the 21st century," pp. 13–30.