The American work force: 1992–2005

Industry output and employment

Projections show services providing more than half of new job growth; in goods production, construction adds jobs, while manufacturing employment declines

James C. Franklin

Employment in the U.S. economy is projected to increase by 26.4 million over the 1992–2005 period, rising from 121.1 million to 147.5 million. The projected annual average growth rate of 1.5 percent is slightly faster than the 1.4-percent rate recorded for the preceding 13-year period, 1979 through 1992. Nonfarm wage and salary jobs are projected to rise from 107.9 million to almost 133 million, and to account for 25.1 million of the 26.4 million increase in total employment. The number of nonfarm self-employed and unpaid family workers is projected to increase from 8.8 million to 10.4 million. For the agricultural sector, the combined number of self-employed workers and wage and salary workers is projected to remain unchanged at 3.3 million workers. The number of private household workers is expected to continue to decline, falling from the 1992 level of 1.1 million to 0.8 million.

There are several macroeconomic factors that are expected to affect industry output and employment growth: demographic changes (aging of the population, slowing rate of growth of the labor supply), a projected decline in defense spending, expected continued growth of business investment in equipment, a strong increase in personal consumption expenditures, and a gradual decline in the exchange rate of the dollar concomitant with a gradually improving net export level.[1] All of these factors have general effects on industry output and employment, and some will have special effects on specific industries.

One sector of the U.S. economy, the service-producing sector, is expected to contribute 24 million of the 25.1 million projected increase in nonfarm wage and salary jobs. Within the service-producing sector, the services industry division is projected to add 13 million nonfarm wage and salary jobs, or more than one-half of the projected total increase in such jobs. More than one-quarter of the growth (7.1 million) in nonfarm wage and salary employment is projected to occur in two industry groups—health services and business services. Other divisions of the service-producing sector with large gains in jobs are retail trade (4.4 million), government (3.4 million), and finance, insurance, and real estate (1.4 million). However, even though the share of growth in the service-producing sector is very large, it still represents a projected slowing in the annual rate of increase (to 2 percent), as compared to the growth rate over the 1979–92 period (2.3 percent). The service-producing sector's share of nonfarm wage and salary employment in 1979 was 70.4 percent, and grew by 8.2 percentage points to 78.6 percent in 1992. The projected share of nonfarm wage and salary jobs for the service-producing sector is 82.2 per-

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cent—a gain of 3.6 percentage points, or less than half the increase over the 1979–92 period.

In the goods-producing sector, almost all of the projected job gains are in construction (1.2 million jobs). Manufacturing overall is expected to lose 517,000 wage and salary jobs, with employment falling from the 1992 level of 18 million to the 2005 projected level of 17.5 million. By comparison, manufacturing lost 3 million jobs between 1979 and 1992, as the effects of back-to-back recessions in the early 1980's took their toll. Mining is expected to have a slight decline in jobs, but not nearly as great as its losses over the 1979–92 period.

The Bureau of Labor Statistics prepared three alternative sets of projections to 2005, each incorporating a different set of economic and demographic assumptions. These alternative assumptions were designed to create three different growth scenarios: low growth, moderate growth, and high growth. This article focuses primarily on the moderate, or base case, scenario, with estimates from the alternatives discussed at the end of the article.

Goods-producing industries

Mining. Wage and salary jobs in the mining sector are projected to decline slightly from 631,000 in 1992 to 562,000 in 2005. The crude petroleum and oil and gas field services accounted for just over half of the total mining wage and salary jobs in 1992, and are expected to account for 50,000 of the decline over the 1992–2005 period as imports of foreign oil are assumed to continue to increase their share of domestic consumption. The coal mining industry also is expected to have a further employment decline of 36,000. Industry output[2] for coal mining is expected to show continued strong growth, with a 3.1-percent average annual rate of increase from 1992 through 2005, in part because of continued strong foreign demand for exported U.S. coal. However, increased productivity for the industry is likely to result in employment declines. The metal and nonmetallic minerals mining industries are expected to have a combined 17,000 increase in wage and salary employment, slightly offsetting the declines in the coal and oil industries. The output measures for the metal and nonmetallic minerals industries are expected to rise at annual average rates of 2.3 and 2.2 percent, respectively, largely as a result of increased demand arising from healthy manufacturing output growth.

Construction. The construction industry was severely affected by the 1990–91 recession. This was especially the case for the industry segment concentrating on the construction of commercial office space. Wage and salary employment for construction fell from 5.1 million in 1990 to 4.5 million in 1992. Although the projections call for an increase of 1.2 million construction jobs over the 1992–2005 period, one-half of that gain represents only a recovery of losses sustained during the 1990–91 recession. From 1992 through 2005, construction is projected to have annual growth rates of 1.8 percent for both real output and wage and salary employment. However, the annual growth rates from 1990 through 2005 are much lower. The projections assume that the absorption of excess office space will take most of the projection period. Demand for construction also is expected to benefit from interest in developing and maintaining the Nation's domestic infrastructure. Finally, residential construction is projected to maintain its share of gross domestic product by responding to an expected modest growth in the number of households, and thereby contribute to demand for construction output.

Manufacturing. Real output for manufacturing ***overall*** is projected to grow at an average annual rate of 2.4 percent over the projection period, while wage and salary employment is expected to decline from 18 million in 1992 to 17.5 million in 2005. Over the 1979–1992 timespan, real output for manufacturing grew 1.1 percent annually, while employment declined at a rate of 1.2 percent, resulting in a loss of 3 million jobs. In 1992, the share of total output attributable to manufacturing was 29.8 percent. The sector's projected share of total output for 2005 is 29.6 percent, roughly the same as the 1992 share. Manufacturing's share of total wage and salary employment, however, is expected to decline from 16.7 percent in 1992 to 13.2 percent in 2005. This is a continuation of the decline from the 1979 share of 23.5 percent.

In comparing the 1979–92 performance of manufacturing output and employment growth, it would appear that growth of manufacturing output is projected to accelerate, and that employment is projected to reverse its declining trend. A historical perspective is important, however, when making point-to-point comparisons of manufacturing growth between the 1979–92 period and the projected 1992–2005 span. The early 1980's were marked by back-to-back recessions—the one occurring in 1981–82 being particularly deep—and a runup in the exchange rate value of the dollar which led to high negative trade balances. The manufacturing sector, specifically durable manufacturing, is highly susceptible to these influences, as indicated in data for the 1979–92 period presented in table 1.

Between 1979 and 1980, manufacturing real output declined 5.5 percent, and durable manufac-

Table 1. **Manufacturing output and wage and salary employment, 1979–92**

Period	Manufacturing gross duplicated output (billions of 1987 dollars)			Wage and salary employment (in thousands)		
	Total	Durable	Nondurable	Total	Durable	Nondurable
1979	2,222.4	1,193.3	1,029.0	21,040	12,730	8,310
1980	2,101.3	1,102.9	998.4	20,285	12,159	8,127
1981	2,102.0	1,093.7	1,008.3	20,170	12,082	8,089
1982	2,003.5	998.4	1,005.1	18,780	11,014	7,766
1983	2,061.1	1,029.9	1,031.2	18,432	10,707	7,725
1984	2,233.4	1,166.7	1,066.7	19,372	11,476	7,896
1985	2,247.2	1,177.5	1,069.7	19,248	11,458	7,790
1986	2,276.9	1,188.4	1,088.5	18,947	11,195	7,752
1987	2,445.0	1,274.5	1,170.5	18,999	11,154	7,845
1988	2,545.8	1,348.8	1,197.0	19,314	11,363	7,951
1989	2,542.2	1,349.8	1,192.3	19,391	11,394	7,997
1990	2,548.4	1,342.2	1,206.1	19,076	11,109	7,968
1991	P2,497.4	P1,299.6	P1,197.8	18,406	10,569	7,837
1992	P2,577.3	P1,338.6	P1,238.8	18,040	10,237	7,804
Annual average growth rates:						
1979–80	–5.4	–7.6	–3.0	–3.6	–4.5	–2.2
1982–90	3.1	3.8	2.3	.8	1.0	.6

P = preliminary.

turing output fell 7.6 percent. Manufacturing output did not regain its 1979 level until 1984, and output of durables did not do so until 1987. The duration of the effects of the recessions of the early 1980's was prolonged by the increases in the dollar's exchange rate, which did not peak until 1985. The year 1982 was the recession's trough in output for all of manufacturing and for durables, while 1980 was the low point for nondurables. As can be seen from table 1, manufacturing output grew at a 3.1-percent annual rate from the 1982 low point to its 1990 level. Durables grew at a 3.8-percent rate over the same period, and output of nondurables increased by 2.3 percent annually. As a consequence of the 1990–91 recession, 1991 marks a low point for manufacturing. The output data for 1992 show that, while manufacturing output overall has just regained its 1990 level, the output for durable manufacturing has yet to do so.

Manufacturing wage and salary employment experienced significantly declining growth rates during the recessionary years of the early 1980's, just as did output. But, as can be seen from table 1, manufacturing output reached its low point in 1982, while the wage and salary series did not reach its nadir until 1983. Further, because of productivity gains, employment in manufacturing did not experience the same growth rates as output during the period between the low point of the 1980–82 recessionary years to the peak just before the 1990–91 downturn. Manufacturing wage and salary employment, from its trough in 1983 to its peak in 1989, grew at an annual rate of only 0.8 percent. Also, while manufacturing output posted steady upward growth between the recessions of 1980–82 and 1990–91, employment surged from 18.4 million in 1983 to 19.4 million in 1984, and then declined to 18.9 million in 1986 before rising to the 1989 level of 19.4 million. This oscillating growth path is more pronounced for durable manufacturing employment than for nondurable employment.

The recessions of the early 1980's and early 1990's are significant factors in the apparent slow growth for manufacturing output and the decline in manufacturing employment between 1979 and 1992. In contrast, both manufacturing output and employment grew faster during the recovery period 1982–90 than is projected to be the case over the 1992–2005 timespan. The early 1980's and the early 1990's are similar in that they both are marked by recession: they are dissimilar in that the depth and duration of the 1980's recessionary period were greater than those of the early 1990's. The period 1979–92 began with a peak year just before a severe recessionary period (1980–82) and ended with a mild recovery year just after a less severe recession (1990–91). The projections period begins with that mild recovery year and ends on the long-term trend growth path[3] and is therefore not strictly comparable with the 1979–92 period.

Aside from the cyclical considerations, there are several other factors directly bearing on the growth of manufacturing output and employment through the projection period. Three demand factors expected to directly benefit manufacturing output are: more favorable foreign trade conditions than those experienced during the early 1980's; strong growth in personal consumption expenditures, especially the projected annual 3.1-

percent growth for durable goods during 1992–2005; and lastly, increases in output of producers' durable equipment at a robust annual rate of 4.3 percent. Partially offsetting these factors is an assumed decline in defense spending.[4] For manufacturing employment growth, the major offsetting factor is the rate of productivity increase, which is expected to pace the rate of growth for output. As a consequence, the level of employment in the manufacturing sector is projected to remain essentially unchanged.

Within manufacturing, it is ***durables*** industries that have the greatest projected increase in real output from 1992 to 2005, with an annual average growth rate of 2.7 percent, as compared to the 1.9-percent projected for nondurables. Within durable manufacturing, the industry group with the fastest projected growth rate (4.6 percent annually) is the industrial machinery and equipment industry group, the principal stimulus being the expected continued strong growth for producers' durable equipment. This industry group includes the computer manufacturing industry, and much of the investment in producers' durable equipment will consist of purchases of computers. In terms of real output, the computer manufacturing industry is the fastest growing detailed industry, with a projected annual increase of 8.1 percent. In 1979, the computer manufacturing industry accounted for 0.3 percent of total manufacturing output, and 0.6 percent of durable output. By 1992, the industry had increased its shares to 3.2 percent of total manufacturing output, and 6.2 percent of durable output. Given the projected 8.1-percent annual rate of increase, the computer manufacturing industry is expected to account for 6.5 percent of all of manufacturing output, and 12 percent of durable output by 2005.[5] However, because of productivity increases, employment in the computer manufacturing industry is expected to decline to only 12.7 percent of wage and salary employment in the industrial machinery and equipment group, compared with 18.4 percent in 1992.

It is inherently difficult to make a projection for the computer manufacturing industry because of the rapid changes in technology, and because of the uncertainty associated with the implementation and effectiveness of new technologies. The 1980's were a decade of heavy investment in computing equipment throughout the economy, with the expectation of improved productivity. There has been some debate as to whether those productivity improvements have been realized. These projections are predicated on the assumptions that the investment in computers will have positive productivity effects, but that it will take a long time for the economy to fully assimilate the technology and reap the benefits, and that the pace of demand for computers will necessarily slow after the explosive growth of the 1980's. Even so, the computer manufacturing industry is the fastest growing in terms of real output in these projections. There is, however, a great deal of uncertainty built into projections for the computer industry and they should, therefore, be viewed as a general indicator that the industry will continue to be among the fastest growing, if not *the* fastest growing, in terms of real output.

The following are other industry groups within the durable manufacturing sector with expected strong growth rates: electronic and other electric equipment; transportation equipment; and instruments and related products. The growth in output of producers' durables also is expected to drive production for these other fast-growing industry groups within the durable manufacturing sector. Demographic changes, as manifested in the projected growth of personal consumption expenditures on durables, also will stimulate output production for these sectors.

The growth in output of instruments and related products will be driven mostly by investment purchases of and intermediate demand for output of the following industries: measuring and controlling devices; medical instruments and supplies; and x-ray and other electromedical apparatus. The ophthalmic goods industry also is in this sector, but most of its output is purchased directly by consumers. Changes in its output will be driven by the aging of the population and the resulting greater requirements for corrective lenses. The projected output growth rate for instruments and related products is 3.4 percent annually, compared to the 1979–92 growth rate of 4.0 percent. Because this industry group is highly productive, employment declines posted over the 1979–92 period are expected to continue through the 1992–2005 span, although at a more moderate pace.

The specific industries leading the output growth for the electronic and other electric equipment industry group are: household audio and video equipment; broadcasting and communications equipment; semiconductors and related devices; and miscellaneous electronic components. These industries all are linked to the electronic technological advances associated with computing technology, including the development of personal computers, of more advanced consumer electronics, and of potential consumer services made possible by electronic computer technology.

The semiconductor and related devices industry and the miscellaneous electronic components industry provide almost all their output as intermediate inputs for a wide variety of industries, including computers, motor vehicles, and the other industries in the electronic and other electric equipment industry group. As a consequence, both industries are projected to have strong output

growth—but especially the semiconductor industry. With a 5.6-percent annual growth rate, the semiconductor industry is among the fastest growing in terms of output. Employment in the semiconductor industry also is expected to increase slightly from 218,000 in 1990 to 224,000 in 2005.

Future developments for both household audio and video equipment, and for broadcasting and communications equipment will be directly affected by the realization of the possibilities for integrating the computer with the television. Market issues such as the regulation of cable television, air-wave broadcasting, and alternative methods of programming distribution—as well as the appropriate relationships among the broadcasters of all mediums and the suppliers of programming—are now being debated. The impact of high-definition television has yet to be seen; if this new technology is widely accepted, it will necessitate significant investment in capital equipment by broadcasters. A number of companies are either researching or planning for "interactive" consumer services such as shopping, game playing, and movies on demand, which will require purchases of new hardware by consumers. New spending on consumer electronics will occur if these new services prove to be successful.

Any discussion of the exact outcomes of the various influences on the electronic and other electric equipment industry group is necessarily highly subjective, especially that regarding new consumer products and services. Given the uncertainty of the evolution of this industry group, no attempt is made to define specific outcomes. Rather, these projections are predicated on the general assumption that, although there will be both successes and failures, new products and new services will drive both consumer and investment spending for electronic and other electric equipment.[6]

Over the 1979–92 period, output for the electronic and other electric equipment group grew at a 2.8-percent annual rate. With the expectation of increased consumer and investment spending for the products of this group, the projected annual growth rate is 3.3 percent. However, the earlier high productivity growth for electronic and other electric equipment is expected to continue at a moderated pace. As a result, the job declines of 1979–92 are expected to continue over 1992–2005, with employment falling from 1.5 million to 1.4 million.

The transportation equipment industry group has a projected real output growth rate of 2.3 percent over the 1992–2005 period. Most of this increase is in motor vehicles and equipment. There is expected strong growth in foreign trade of motor vehicles and equipment in terms of both imports and exports. Foreign manufacturers are expected to continue to have a strong domestic manufacturing presence in the U.S. market. The growth in foreign trade activity is expected as both U.S. and foreign manufacturers export and import subassemblies between the components of their globalized manufacturing operations. Because of productivity increases, employment in transportation equipment as a whole is expected to decline slightly by 57,000 jobs, remaining at approximately 1.8 million. Motor vehicles and equipment, which had an employment decline of 81,000 between 1979 and 1992, is projected to see a further decrease of 50,000 to a level of 759,000 in 2005.

The ***nondurable*** manufacturing sector is projected to grow at an annual rate (1.9 percent) that is less than that for the manufacturing sector as a whole (2.4 percent). The fastest growing industry groups in terms of real output within nondurables are: paper and allied products (2.5 percent); printing and publishing (2.9 percent); chemicals and allied products (2.3 percent); and rubber and miscellaneous plastics products (3.5 percent).

The paper and allied products industry group will be affected by the projected growth in printing and publishing and by the increase in manufacturing output and the associated demand for packaging. The paper industry group supplies the finished product for consumption by industry and consumers, and the raw pulp and paper to make the finished paper products. Environmental concerns also will continue to stimulate demand for paper packaging as an alternative to plastic containers, although it is expected that plastics manufacturers will continue research into plastics that are more biodegradable. It is expected that this industry group's past productivity gains will continue, so that employment growth will lag growth in output. Employment is expected to increase by only 0.4 percent per year, adding 42,000 jobs to reach 729,000 in 2005.

Real output for the printing and publishing group is projected to grow at a 2.9-percent rate, while employment is projected to grow by 1.2 percent per year. Employment is expected to increase by 247,000 jobs to a level of 1.8 million jobs. Over the 1979–1992 period, employment increased by a similar amount (269,000 jobs), but this represented a faster rate of growth (1.5 percent). Technological advances, including printing directly from digitized files instead of plates, are expected to increase productivity for the printing and publishing industry group. Demand for printed materials is expected to grow as consumer income and spending levels increase, boosting advertising revenues and direct consumer expenditures on books, periodicals, and newspapers.

The chemicals and allied products industry

group's high productivity growth rates of the past are expected to continue into to the future. As a consequence, although real output will grow at a 2.3-percent rate, employment will remain essentially flat at 1.1 million jobs over the 1992–2005 period. Historically, the United States has had a positive trade balance for this industry group, and is expected to continue to do so over the projection period. The Nation is highly competitive in this industry group, with a focus on research and technologically advanced products, especially for the pharmaceuticals industry and for the plastic materials and synthetics industry. From the demand side, the aging population will provide a growing market for pharmaceuticals, and the continuing search for substitute materials for metals is expected to help drive the output of plastics and synthetic materials.

The real output growth for the industry group of rubber and miscellaneous plastic products will come from the annual 4.2-percent real output increase of the industry manufacturing miscellaneous plastics products (not elsewhere classified). The output for miscellaneous plastics products is mostly consumed by intermediate demand and is driven by the growth in markets for such commodities as computers and consumer electronic goods. The projected high demand for these goods and a continued shift to using plastics as a substitute material for metal are expected to spur the demand for miscellaneous plastics products. Although a highly productive industry, employment is expected to grow at an annual rate of 2.4 percent because of the high pace of output growth. Jobs are projected to increase from a 1992 level of 619,000 to 843,000 in 2005.

Service-producing industries

Transportation. The transportation industries are projected to add 824,000 jobs. Projected trucking and warehousing job gains account for 413,000 of those jobs, air transportation for another 238,000, and passenger travel arrangement for 117,000. The railroad industry is expected to have a slight decline in employment, although expected productivity increases will allow an output growth rate of 2.4 percent annually though 2005. The projected output gains for railroads reflect continued efforts to regain market share lost to trucking, especially for the long-haul freight. However, trucking is expected to remain competitive, especially for the short-haul. The trucking and warehousing industry has a projected growth rate of 2.3 percent. Projected growth for air transportation output is 4 percent per year. Air transportation is expected to benefit from increased levels of business travel, and from more frequent leisure travel as consumers' incomes increase. Railroads, trucking, and air freighters are all expected to benefit from higher levels of foreign trade activity. As the volume of foreign trade increases, so do the requirements for shipping to and from seaports and airports by rail and truck. U.S. air carriers will benefit from increased demand for overseas freight service for transporting small, high-value products as the level of exports and imports rises.

Communications. Employment in communications, except the broadcasting industry, peaked in 1981 at just over 1.1 million jobs. Since then, with the divestiture of the American Telephone and Telegraph Co., the subsequent increase in competition for long-distance services, and the continuing pace of technological change and increases in productivity, employment has been declining steadily. By 1992, the number of wage and salary jobs in the industry stood at 912,000. Employment is expected to continue to decline, falling to 724,000 jobs by 2005. Output, however, is expected to grow at an annual rate of 3.1 percent. This increase is predicated on the assumption that telephone communications will play an important role in providing access to new consumer information services as the potential of computerized databases is realized.

Employment in the radio and television broadcasting industry is expected to grow by less than 1 percent during the projection period, increasing from 355,000 to 392,000 jobs. The expansion of the cable TV systems during the 1970's and 1980's contributed to the growth of employment from 135,000 in 1970 to the industry's peak in 1990 of 359,000 jobs. Less than 10 percent of all households subscribed to a cable service in 1970, compared with almost 60 percent in 1990. As a consequence, market saturation is expected to slow future growth.

Wholesale and retail trade. ***Wholesale trade*** is expected to add 1.1 million jobs through 2005, increasing total jobs in the industry from 6.1 million in 1992 to 7.2 million in 2005. Wholesale trade is sensitive to the foreign and domestic demand for U.S. and imported goods. The projected growth in foreign trade is therefore expected to contribute to the growth of this industry. Output for wholesale trade has a projected growth rate of 2.9 percent over the 1992–2005 period while the projected growth rate for jobs is only 1.3 percent. The difference reflects increased productivity achieved through computerized inventory control and ordering procedures.

Retail trade, excluding eating and drinking places, is expected to increase its number of jobs from the 1992 level of just over 12.7 million to 15 million in 2005, for a gain of almost 2.3 million jobs. Like wholesale trade, the retail output growth rate is much faster than the growth rate for jobs: 2.4 percent versus 1.3 percent. Also like wholesale

Table 2. **Employment by major industry division, 1979, 1992, and projected to 2005**

[Numbers in thousands]

Industry	Employment level					Change			
	1979	1992	2005			1979–92	1992–2005		
			Low	Moderate	High		Low	Moderate	High
Nonfarm wage and salary[1]	89,491	107,888	124,931	132,960	138,944	18,398	17,043	25,072	31,055
Goods producing	26,461	23,142	21,898	23,717	26,200	−3,319	−1,244	575	3,058
Mining	958	631	510	562	690	−327	−121	−69	59
Construction	4,463	4,471	5,407	5,632	6,643	8	936	1,161	2,172
Manufacturing	21,040	18,040	15,981	17,523	18,866	−3,000	−2,059	−517	826
Durable	12,730	10,237	8,738	9,673	10,788	−2,493	−1,499	−564	551
Nondurable	8,310	7,804	7,243	7,850	8,079	−506	−561	46	275
Service producing	63,030	84,746	103,034	109,243	112,744	21,717	18,287	24,497	27,512
Transportation, communications, utilities	5,136	5,709	5,909	6,497	6,763	573	200	788	1,054
Wholesale trade	5,221	6,045	6,641	7,191	7,761	824	596	1,146	1,716
Retail trade	14,972	19,346	22,254	23,777	24,336	4,374	2,908	4,431	4,990
Finance, insurance, and real estate	4,975	6,571	7,585	7,969	8,078	1,596	1,014	1,398	1,507
Services[1]	16,779	28,422	39,808	41,788	42,766	11,644	11,386	13,365	14,344
Government	15,947	18,653	20,836	22,021	23,041	2,706	2,183	3,368	4,388
Agriculture[2]	3,398	3,295	3,221	3,325	3,535	−103	−74	30	240
Private households	1,264	1,116	777	802	853	−148	−339	−314	−263
Nonagricultural self-employed and unpaid family workers[3]	7,210	8,794	10,078	10,396	11,098	1,584	1,284	1,602	2,304
Total[4]	101,363	121,093	139,007	147,483	154,430	19,731	17,924	26,390	33,336

	Percent distribution of wage and salary employment					Annual rate of change			
	1979	1992	2005			1979–92	1992–2005		
			Low	Moderate	High		Low	Moderate	High
Nonfarm wage and salary[1]	100.0	100.0	100.0	100.0	100.0	1.4	1.1	1.6	2.0
Goods producing	29.6	21.4	17.5	17.8	18.9	−1.0	−.4	.2	1.0
Mining	1.1	.6	.4	.4	.5	−3.2	−1.6	−.9	.7
Construction	5.0	4.1	4.3	4.2	4.8	0	1.5	1.8	3.1
Manufacturing	23.5	16.7	12.8	13.2	13.6	−1.2	−.9	−0.2	.3
Durable	14.2	9.5	7.0	7.3	7.8	−1.7	−1.2	−0.4	.4
Nondurable	9.3	7.2	5.8	5.9	5.8	−0.5	−.6	0	.3
Service producing	70.4	78.6	82.5	82.2	81.1	2.3	1.5	2.0	2.2
Transportation, communications, utilities	5.7	5.3	4.7	4.9	4.9	.8	.3	1.0	1.3
Wholesale trade	5.8	5.6	5.3	5.4	5.6	1.1	.7	1.3	1.9
Retail trade	16.7	17.9	17.8	17.5	17.6	2.0	1.1	1.6	1.8
Finance, insurance, and real estate	5.6	6.1	6.1	6.0	5.8	2.2	1.1	1.5	1.6
Services[1]	18.7	26.3	31.9	31.4	30.8	4.1	2.6	3.0	3.2
Government	17.8	17.3	16.7	16.6	16.6	1.2	.9	1.3	1.6
Agriculture[2]	—	—	—	—	—	−.2	−.2	.1	.5
Private households	—	—	—	—	—	−1.0	−2.7	−2.5	−2.0
Nonagricultural self-employed and unpaid family workers[3]	—	—	—	—	—	1.5	1.1	1.3	1.8
Total[4]	—	—	—	—	—	1.4	1.1	1.5	1.9

[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.

trade, the difference reflects increased productivity arising from implementation of and advances in computerizing inventory control and customer service.

Eating and drinking places are projected to add 2.2 million jobs during the projection period. In 1992, the number of jobs in such establishments was 6.6 million, and will rise under the assumptions used in these projections to a level of 8.8 million in 2005. Employment in eating and drinking places will grow at a rate of 2.2 percent, which is faster than the growth rate of 1.4 percent for output. This industry is inherently labor intensive, especially for full-service restaurants. And, although there are efforts to increase labor productivity within the industry—by using computerized equipment to dispense drinks, for example—significant labor productivity increases are not expected. Further, projected growth in personal income and the aging of the population are expected to result in increased demand for the more labor-intensive full-service and casual dining restaurants, rather than fast-food establishments.

Finance, insurance, and real estate. Depository institutions (banks, savings and loan, and credit unions) have a projected employment growth rate of 0.3 percent per year, and a projected output growth rate of 2.9 percent. Employment in depository institutions was 2.1 million in 1992, and the projected 2005 level is about 2.2 million, an increase of only 92,000 jobs. The high rate of productivity growth expected for this industry is predicated on the continuation of bank mergers and consolidations, closing of unprofitable branches and centralizing of operations, and increased use of automated tellers and other computer equipment to provide customer services without adding employees. Nondepository holding and investment offices—which include businesses that directly compete with banks, such as finance companies and mortgage brokers—have projected increases in employment and output that are much faster than average: output has a projected growth rate of 4.5 percent, and employment is projected to grow at a 3.4-percent annual rate, making this industry among the fastest growing in terms of employment. (See table 4.) Employment is expected to increase by 334,000 to 949,000 in 2005.

The security and commodity broker industry also has projected output and employment growth rates that are above average. Output is expected to grow at 4.0 percent annually and employment at a 2.0-percent annual rate. Nonetheless, the increases are much slower than the 1979–92 growth rates of 11.6 percent for output, and 6.1 percent for employment. The 1980's were a period during which the daily volume of stock transactions increased dramatically due to implementation of computer technologies, the offering of additional services such as stock market futures, increased corporate merger and leveraged buyout activity, and increased foreign investment. That level of growth in this industry is not expected to continue through the projection period. Employment is

Table 3. **Output by major industry division (gross duplicated output), 1979, 1992, and projected to 2005**

[Billions of 1987 dollars]

Industry	Gross duplicated output					Percent distribution					Annual rate of change			
	1979	1992	2005			1979	1992	2005			1979–92	1992–2005		
			Low	Moderate	High			Low	Moderate	High		Low	Moderate	High
Total	6,915.0	8,660.8	10,688.2	11,809.1	13,133.1	100.0	100.0	100.0	100.0	100.0	1.7	1.6	2.4	3.3
Goods producing	2,913.2	3,284.8	3,855.9	4,356.2	5,060.1	42.1	37.9	36.1	36.9	38.5	.9	1.2	2.2	3.4
Mining	168.8	147.5	134.2	155.6	190.1	2.4	1.7	1.3	1.3	1.4	−1.0	−.7	.4	2.0
Construction	522.1	559.9	657.0	708.0	879.3	7.6	6.5	6.1	6.0	6.7	.5	1.2	1.8	3.5
Manufacturing	2,222.4	2,577.3	3,064.8	3,492.7	3,990.7	32.1	29.8	28.7	29.6	30.4	1.1	1.3	2.4	3.4
Durable	1,193.3	1,338.6	1,639.2	1,903.3	2,263.3	17.3	15.5	15.3	16.1	17.2	.9	1.6	2.7	4.1
Nondurable	1,029.0	1,238.8	1,425.5	1,589.3	1,727.4	14.9	14.3	13.3	13.5	13.2	1.4	1.1	1.9	2.6
Service producing	3,816.6	5,162.7	6,593.0	7,195.0	7,798.1	55.2	59.6	61.7	60.9	59.4	2.4	1.9	2.6	3.2
Transportation, communications, utilities	613.3	712.5	846.3	956.6	1,050.0	8.9	8.2	7.9	8.1	8.0	1.2	1.3	2.3	3.0
Wholesale trade	337.5	428.5	554.6	621.3	706.1	4.9	4.9	5.2	5.3	5.4	1.9	2.0	2.9	3.9
Retail trade	531.8	782.2	931.1	1,031.9	1,115.7	7.7	9.0	8.7	8.7	8.5	3.0	1.3	2.2	2.8
Finance, insurance, and real estate	903.1	1,162.9	1,453.1	1,544.1	1,680.3	13.1	13.4	13.6	13.1	12.8	2.0	1.7	2.2	2.9
Services	923.3	1,446.8	2,085.3	2,272.0	2,438.4	13.4	16.7	19.5	19.2	18.6	3.5	2.9	3.5	4.1
Government	507.7	629.7	722.5	768.9	807.6	7.3	7.3	6.8	6.5	6.1	1.7	1.1	1.5	1.9
Agriculture	177.3	203.2	231.6	248.9	265.6	2.6	2.3	2.2	2.1	2.0	1.1	1.0	1.6	2.1
Private households	7.9	10.2	7.8	8.9	9.3	.1	.1	.1	.1	.1	2.0	−2.1	−1.0	−.7

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

Table 4. **Employment change in selected industries, 1992–2005**

[Numbers in thousands]

Standard Industrial Classification	Industry description	Wage and salary employment			
		Level		Change	Annual rate of change
		1992	2005	1992–2005	1992–2005
	Fastest growing				
836	Residential care	535	1,335	800	7.3
737	Computer and data processing services	831	1,626	795	5.3
807, 8, 9	Health services, n.e.c.	833	1,577	744	5.0
835	Child day care services	449	777	328	4.3
732; 7331, 8; 7383, 9	Business services, n.e.c.	903	1,543	640	4.2
874	Management and public relations	655	1,110	455	4.1
832,9	Individual and miscellaneous social services	703	1,162	459	3.9
472	Passenger transportation arrangement	183	300	117	3.9
735	Miscellaneous equipment rental and leasing	205	325	120	3.6
872,89	Accounting, auditing, and services, n.e.c.	553	876	323	3.6
736	Personnel supply services	1,649	2,581	933	3.5
61,7	Nondepository; holding and investment offices	615	949	334	3.4
833	Job training and related services	271	418	147	3.4
7334, 5, 6; 7384	Photocopying, commercial art, photofinishing	190	291	102	3.4
494, 5, 6, 7, pt. 493	Water and sanitation including combined services	197	299	102	3.3
801, 2, 3, 4	Offices of health practitioners	2,387	3,617	1,229	3.2
3728, 3769	Aircraft and missile parts and equipment, n.e.c.	170	255	85	3.2
805	Nursing and personal care facilities	1,543	2,306	763	3.1
752, 3, 4	Automobile parking, repair, and services	719	1071	352	3.1
823–9	Libraries, vocational, and other schools	208	310	102	3.1
	Most rapidly declining				
313, 4	Footwear, except rubber and plastic	69	39	–30	–4.4
3483, 3489	Ammunition and ordnance, except small arms	46	27	–19	–4.0
3731	Ship building and repairing	124	77	–46	–3.6
311, 5, 6, 7, 9	Luggage, handbags, and leather products, n.e.c.	51	32	–18	–3.4
386	Photographic equipment and supplies	95	62	–33	–3.2
3571, 2, 5, 7	Computer equipment	353	237	–117	–3.0
231–8	Apparel	807	556	–251	–2.8
341	Metal cans and shipping containers	45	31	–14	–2.8
3761	Guided missiles and space vehicles	105	73	–33	–2.8
3578, 9	Office and accounting machines	38	27	–12	–2.7
	Federal electric utilities	28	19	–8	–2.7
3466, 9	Stampings, except automotive	83	59	–24	–2.6
12	Coal mining	126	90	–36	–2.5
88	Private households	1,116	802	–314	–2.5
3661	Telephone and telegraph apparatus	108	81	–28	–2.3
362	Electrical industrial apparatus	158	119	–38	–2.1
3482, 3484	Small arms and small arms ammunition	20	15	–5	–2.1
21	Tobacco manufactures	49	37	–12	–2.1
365	Household audio and video equipment	82	63	–20	–2.1
291	Petroleum refining	120	92	–28	–2.0

n.e.c. = not elsewhere classified.

expected to increase from the 1992 level of 439,000 to 570,000 jobs in 2005.

Insurance carriers are projected to add 180,000 jobs by the year 2005, an increase from the 1992 level of about 1.5 million to just under 1.7 million. This represents job growth of 0.9 percent per year. Innovations in the use of computers and other automated office equipment to process claims and applications is expected to allow output to grow by 1.7 percent annually—or faster than employment. The insurance agents, brokers, and services industry is expected to add 319,000 jobs during the projection period to reach the projected level of 971,000 jobs in 2005. From the 1992 level of 652,000 jobs, the increase reflects a 3.1-percent growth rate which is almost as fast as the projected 3.3-percent rate of increase in output. The jobs of employees in this industry involve more direct contact with customers, and therefore are not expected to be as affected by automation.

Employment in real estate is expected to increase from 1.3 million to 1.6 million during the 1992–2005 projection period. The projected growth rate for employment is 1.8 percent, slightly faster than the rate of growth for overall wage and salary employment. Output is expected to grow at a 2.6-percent annual rate.

The services division. Of the economy's projected 25.1 million growth in nonfarm wage and

salary jobs, more than one-half (13.4 million) is projected to occur in the services division. Between 1979 and 1992, the share of nonfarm wage and salary jobs in the services division grew from 18.7 percent to 26.3 percent, and is projected to increase to 31.4 percent by the year 2005. During the 1979–92 period, the share of nonfarm wage and salary employment increased for three major industry divisions: services; retail trade; and finance, insurance, and real estate. Only the services division is expected to increase its share of nonfarm wage and salary jobs in this set of projections to the year 2005. Of the wide variety of industries within the services division, more than half of the increase in employment is in the business services and health services industry groups. With the addition of the two industry groups social services and engineering, management, and services not elsewhere classified, almost three-quarters of the share of employment growth in the services division is accounted for. The projected employment growth rate of 3.0 percent for the services division is, however, slower than its 4.1-percent rate of increase over the historical period 1979–92. The projected 1992–2005 output growth rate for the services division, on the other hand, is the same as the 1979–92 rate of 3.5 percent.

This apparent steady growth obscures the mix of growth patterns for the different industries within the services division. Most are expected to experience modest or slight slowdowns in the growth of real output. A few, however, are expected to see an increase in the rate of growth for real output. The most notable is the industry group hotels and other lodging places, which was dramatically affected by the recession of 1990–91. The projected growth rate of output of hotels and other lodging places from 1989 to 2005 is 1.2 percent, much more modest than the 1992–2005 growth rate of 4.1 percent. The following is a discussion of some of the major industry groups within the services division.

Employment for the ***health services*** industries increased at a rate almost 3 times as fast as that for total nonfarm wage and salary jobs, rising from 5 million to 8.5 million over the 1979–92 period. The projected growth rate, 3 percent, is a little less than twice as fast as the projected growth rate for total nonfarm wage and salary employment, but is slower than the 1979–92 growth rate of 4.2 percent for health services. Employment for health services is expected to increase by 4 million to the projected 2005 level of 12.5 million jobs. Health services increased its percentage share of nonfarm wage and salary employment from 5.6 percent in 1979 to 7.9 percent in 1992, and, with the expected growth in employment, will have a 9.4-percent share in 2005. Health services accounts for 16 percent of the projected 1992–2005 wage and salary employment growth.

Projecting the future growth of employment and output for the health services is a difficult task. This is so in part because of the complex of factors driving the demand for health care. But also, access, cost, and affordability have become national concerns and the form and effects of any legislative action likely to be taken as a result of the national debate are not yet known. This set of projections contains no explicit assumptions about the form of any future legislation regarding health care, but does have some generalized assumptions about the factors that have been driving the past rapid growth in demand for such care, and what the future effects might be as both the economic and political markets react during the projection period. The possible range of alternatives and the impact on employment by industry and occupation is explored by Norman Saunders on pages 11–30.

The rapid development and implementation of new medical technologies, and the prevalence of third-party payers are two factors that often are considered to be important in the past rapid growth in health care. New medical technologies give health care workers access to new and better tests, procedures, and drugs. But these new technologies often increase costs both directly and indirectly. New tests, procedures, and drugs often are more expensive when first introduced than existing medical tools. Pharmaceutical firms set prices to recoup research and development costs, and new procedures and tests require additional training for health care workers, and often new and expensive technological hardware. New medical technologies allow for diagnosis and treatment of medical conditions that were previously regarded as undiagnosable or untreatable. They tend to increase survival rates from life-threatening conditions, but may also prolong the period of costly medical intervention. Third-party payers of medical expenses—usually insurance companies and government programs—reduce the economic incentives for consumers and health care providers to limit use of health services. They also encourage new medical technological development by ensuring an expanding market.

The economic disincentive to limit consumption of health care arises because third-party payers redirect the cost of health care consumption away from the consumer by spreading the actual burden of cost across a large pool of individuals and businesses through either insurance premiums or taxes. Ultimately the effects of the increased costs of health care are felt as insurance premiums and taxes increase. As a result, insurance policies may become too costly for businesses to supply employee health plans and for individuals to purchase on their own, and taxpayers may begin to resist tax increases for ben-

efits that they do not see as directly benefiting themselves. These projections assume that new medical technological development will continue, but that market and political processes will at least slow the past pace of change. However, the health services industry group is still expected to grow much faster than the average in terms of both employment and output.

Increased life spans and the aging of the U.S. population have also been considered factors in the growth of health services, although the future effects of these demographic developments are likely to be more dramatic than the recent history. Medical technology has dramatically increased the average lifespan since the early 1900's. But the requirements for health care services increase with age, as evidenced by the following tabulation of hospital utilization.

	Hospital days per 1,000 population in—		
Age	*1989*	*1990*	*1991*
Under 15	234	212	218
15 to 44	481	466	462
45 to 64	904	898	859
65 to 74	2,116	2,026	2,131
75 and over	4,087	3,972	4,007

Source: U.S. National Center for Health Statistics, *Vital Health Statistics*, series 13.

With increased lifespans, the very old have gradually been increasing their share of the population. But it is the aging of the baby-boomer group through the year 2005 that will contribute most to the aging of the population. And as the baby-boomer generation ages, the demands for health care will increase. Individuals who are now between the ages of 32 and 51 years will fall in the 45- to 64-year-old group in 2005. In 1990, persons aged 45 to 64 were 18.6 percent of the population, but in 2005 they will account for 24.9 percent.[7]

The ***business services*** industry group was the fastest growing in terms of jobs during the 1979-92 period. Business services employment increased from 2.4 million to 5.3 million, or at an annual average rate of 6.3 percent. Most of that growth—1.7 million jobs—was concentrated in just two industries: computer and data processing services, and personnel supply services (which includes the temporary help industry). Computer and data processing services grew by 9.0 percent annually, to add 0.6 million jobs during the period 1979–92. Personnel supply services added 1.1 million jobs during the same period, a growth rate of 9.5 percent. The past rates of increase for both of these industries are not expected to continue in the future, and consequently, as they slow in employment growth, so will the increase for business services as a whole. Business services has a projected employment increase of 3.1 million jobs through 2005 for a growth rate of 3.6 percent. Of that increase, computer and data processing services is expected to account for 0.8 million (5.3-percent growth rate) and personnel supply services is expected to account for another 0.9 million (for a 3.5-percent growth rate). The 5.3-percent growth rate for computer and data processing services makes it the second fastest growing industry in terms of employment. (See table 4.)

Employment for *social services* increased at a 4.7, percent rate during the 1979–92 period. It is projected to grow slightly faster, at an annual rate of 5.0 percent, adding 1.7 million jobs through the year 2005. Almost half of the job gains (0.8 million) are projected to be in residential care institutions, which provide full-time assistance to older persons and others who have limited ability for self-care, but do not require full-time nursing assistance. The primary factor driving this growth is the aging of the population noted earlier. Other fast-growing industries within this group are individual and miscellaneous social services (which provides elderly day care and family social services) and child day care. Residential care is the fastest growing industry in terms of employment, at 7.3 percent. Both child day care, and individual and miscellaneous social services are also among the fastest growing in terms of employment. (See table 4.)

Government

Employment in the public sector, at 1.3 percent annually, is expected to grow more slowly than the average, rising from the 1992 level of 18.7 million to 22 million in 2005. The Federal sector is expected to decline slightly as deficit reduction measures are enacted through the projection period. Employment in State and local government is projected to increase at a 1.6-percent annual pace, the same as the average employment growth. This rate of growth results in an increase of 3.5 million from the 1992 level of 15.7 million to 19.2 million by 2005. Most of this growth, 2.8 million, will be in State and local education because of the growth in the school age population. As can be seen from the following tabulation, between 1990 and 2005, the elementary school population (aged 5 to 13) is expected to rise by 3.8 million, the secondary school population (aged 14 to 17) by 3.7 million, and the post-secondary school population (aged 18 to 24) by 1.3 million.[8]

	Population by age (millions)		
Year	*5–13*	*14–17*	*18–24*
1970	36.7	15.9	24.5
1975	33.9	17.1	28.0
1980	31.2	16.2	30.0
1985	30.0	14.9	28.9
1990	32.0	13.3	26.8
2005	35.8	17.0	28.1

Text continues on p. 57.

Table 5. **Employment by industry, 1979, 1992, and projected 2005**

Standard Industrial Classification	Industry description	Employment (in thousands)					Annual growth rate[1]	
		1979	1992	2005			Employment, 1992–2005 (moderate scenerio)	Output, 1992–2005
				Low	Moderate	High		
	Nonfarm wage and salary[2]	89,491	107,888	124,931	132,960	138,944	1.6	([3])
10–14	Mining	958	631	510	562	690	–.9	0.4
10	Metal mining	101	53	57	64	67	1.4	2.3
12	Coal mining	259	126	85	90	96	–2.5	3.1
131,132	Crude petroleum, natural gas, and gas liquids	198	187	138	164	197	–1.0	–1.3
138	Oil and gas field services	276	164	130	136	214	–1.4	–.7
14	Nonmetallic minerals, except fuels	124	102	101	107	118	.4	2.2
15,16,17	Construction	4,463	4,471	5,407	5,632	6,643	1.8	1.8
20–39	Manufacturing	21,040	18,040	15,981	17,523	18,866	–.2	2.4
24,25,32–39	Durable manufacturing	12,730	10,237	8,738	9,673	10,788	–.4	2.7
24	Lumber and wood products	782	674	699	690	832	.2	1.9
241	Logging	89	78	65	68	78	–1.0	1.5
242	Sawmills and planing mills	237	179	160	167	196	–.5	1.6
24,31,4,9	Millwork and structural wood members, n.e.c.	157	190	249	250	317	2.2	3.1
2435,6	Veneer and plywood	77	49	38	39	48	–1.7	1.7
244,9	Wood containers and miscellaneous wood products	140	123	107	115	127	–.5	2.1
2451	Mobile homes	58	40	32	33	44	–1.6	–1.1
2452	Prefabricated wood buildings	26	16	18	18	24	1.0	1.7
25	Furniture and fixtures	498	476	479	523	561	.7	1.9
251	Household furniture	329	270	265	283	294	.4	2.0
254	Partitions and fixtures	65	75	82	90	103	1.4	2.4
252,3,9	Office and miscellaneous furniture and fixtures	104	132	133	150	165	1.0	1.7
32	Stone, clay, and glass products	674	512	409	437	492	–1.2	1.1
321,2,3	Glass and glass products	199	152	114	124	129	–1.6	.9
324,327	Cement, concrete, gypsum, and plaster products	249	204	166	174	207	–1.2	1.3
325,6,8,9	Stone, clay, and miscellaneous mineral products[4]	226	156	129	140	156	–.8	1.1
33	Primary metal industries	1,254	693	556	618	680	–.9	1.2
331	Blast furnaces and basic steel products	571	250	201	224	247	–.9	1.4
332	Iron and steel foundries	241	120	88	97	108	–1.6	.1
333	Primary nonferrous metals	73	43	36	40	43	–.6	1.4
334,9	Miscellaneous primary and secondary metals	51	41	38	42	46	.2	3.2
335	Nonferrous rolling and drawing	220	162	120	133	148	–1.5	.5
336	Nonferrous foundries	100	77	74	81	89	.4	2.1
34	Fabricated metal products	1,713	1,322	1,101	1,196	1,327	–.8	1.2
341	Metal cans and shipping containers	80	45	30	31	32	–2.8	1.0
342	Cutlery, handtools, and hardware	184	123	98	106	116	–1.1	1.6
343	Plumbing and nonelectric heating equipment	77	56	49	50	59	–.9	.9
344	Fabricated structural metal products	516	390	311	331	383	–1.2	.7
345	Screw machine products, bolts, rivets, etc.	116	90	76	85	92	–.4	1.9
3462,3	Forgings	63	36	32	35	37	–.2	1.1
3465	Automotive stampings	118	98	103	113	120	1.1	1.7
3466,9	Stampings, except automotive	121	83	53	59	64	–2.6	.1
347	Metal services, n.e.c.	107	115	127	142	159	1.7	4.1
3482,3484	Small arms and small arms ammunition	29	20	14	15	15	–2.1	.1
3483,3489	Ammunition and ordnance, except small arms	35	46	26	27	27	–4.0	–1.0
349	Miscellaneous fabricated metal products	269	222	183	203	222	–.7	.7
35	Industrial machinery and equipment	2,508	1,922	1,638	1,868	2,160	–.2	4.6
351	Engines and turbines	145	87	61	69	76	–1.8	.7
352	Farm and garden machinery	182	93	81	91	103	–.2	2.5
3531	Construction machinery	161	73	63	71	81	–.2	3.2
3532,3	Mining and oil field machinery	120	55	52	59	62	.5	.6

See footnotes at end of table.

Table 5. **Continued—Employment by industry, 1979, 1992, and projected 2005**

Standard Industrial Classification	Industry description	Employment (in thousands)					Annual growth rate[1]	
		1979	1992	2005			Employment, 1992–2005 (moderate scenerio)	Output, 1992–2005
				Low	Moderate	High		
3534,5,6,7	Materials handling machinery and equipment[4]	101	75	75	84	97	.9	2.3
354	Metalworking machinery	395	302	290	332	377	.7	1.8
355	Special industry machinery	193	148	109	126	147	–1.2	2.0
356	General industrial machinery	304	236	208	238	273	.1	2.0
3571,2,5,7	Computer equipment[4]	318	353	195	237	312	–3.0	8.1
3578,9	Office and accounting machines[4]	68	38	21	27	36	–2.7	1.6
358	Refrigeration and service industry machinery	189	173	169	184	205	.5	3.0
359	Industrial machinery, n.e.c.	332	290	315	351	391	1.5	2.8
36	Electronic and other electric equipment	1,793	1,526	1,185	1,354	1,537	– .9	3.3
361	Electric distributing equipment	120	83	60	68	81	–1.5	.9
362	Electrical industrial apparatus	242	158	104	119	137	–2.1	1.3
363	Household appliances	177	116	89	94	97	–1.6	2.2
364	Electric lighting and wiring equipment	227	174	138	155	176	– .9	1.0
365	Household audio and video equipment	115	82	60	63	65	–2.1	3.2
3661	Telephone and telegraph apparatus[4]	171	108	68	81	93	–2.3	1.4
3663,9	Broadcasting and communications equipment[4,5]	128	128	104	116	130	– .8	4.4
3674	Semiconductors and related devices	201	218	188	224	264	.2	5.6
3671,2,5–9	Miscellaneous electronic components[4]	309	307	255	300	348	– .2	3.5
3691,4	Storage batteries and engine electrical parts	118	89	77	85	90	– .3	2.5
3692,5,9	Electrical equipment and supplies, n.e.c.[4,5]	77	62	43	49	56	–1.8	3.3
37	Transportation equipment	2,059	1,822	1,610	1,765	1,891	– .2	2.3
371	Motor vehicles and equipment	990	809	686	759	817	– .5	2.6
3711	Motor vehicles and car bodies	463	314	213	241	256	–2.0	2.6
3714	Motor vehicle parts and accessories	441	417	379	413	447	– .1	2.4
3713,5,6	Truck and bus bodies, trailers, and motor homes	86	77	94	105	114	2.4	4.8
3721	Aircraft	333	332	274	302	330	– .7	1.2
3724,3764	Aircraft and missile engines	163	149	133	146	156	– .2	3.0
3728,3769	Aircraft and missile parts and equipment, n.e.c.	120	170	236	255	275	3.2	4.2
3761	Guided missiles and space vehicles	81	105	69	73	74	–2.8	– .3
3731	Ship building and repairing	173	124	74	77	78	–3.6	–2.3
3732	Boat building and repairing	53	45	53	59	61	2.0	5.9
374	Railroad equipment	74	28	34	38	43	2.5	3.4
375,9	Miscellaneous transportation equipment	74	60	51	56	57	– .5	1.3
38	Instruments and related products	1,006	925	796	887	969	– .3	3.4
381	Search and navigation equipment[4]	227	228	161	177	198	–1.9	2.1
382,387	Measuring and controlling devices, watches[4]	431	300	226	255	282	–1.2	3.7
385	Ophthalmic goods	45	38	34	40	41	.4	3.3
3841–3	Medical instruments and supplies	144	216	269	295	317	2.4	6.1
3844–5	X-ray and other electromedical apparatus[4,5]	26	48	51	58	66	1.5	3.7
386	Photographic equipment and supplies	134	95	55	62	65	–3.2	1.3
39	Miscellaneous manufacturing industries	445	363	294	334	340	– .6	1.9
391	Jewelry, silverware, and plated ware	61	50	41	47	49	– .4	1.0
394	Toys and sporting goods	121	107	81	95	95	– .9	2.2
393,5,6,9	Manufactured products, n.e.c.[4]	263	207	172	192	195	– .6	1.9
20–23,26–31	Nondurable manufacturing	8,310	7,804	7,243	7,851	8,079	.0	1.9
20	Food and kindred products	1,733	1,655	1,589	1,648	1,660	.0	1.5
201	Meat products	358	434	475	496	500	1.0	1.3
202	Dairy products	180	152	127	134	135	–1.0	1.0
203	Preserved fruits and vegetables	250	246	252	261	263	.4	1.9
204,7	Grain mill products, fats and oils	189	156	133	139	141	– .9	2.6
205	Bakery products	237	207	183	192	193	– .6	1.0
206	Sugar and confectionery products	113	104	89	91	92	–1.0	.7
2082,3,4,5	Alcoholic beverages	86	66	52	53	54	–1.7	.7

See footnotes at end of table.

Table 5. **Continued—Employment by industry, 1979, 1992, and projected 2005**

Standard Industrial Classification	Industry description	Employment (in thousands)					Annual growth rate[1]	
		1979	1992	2005			Employment, 1992–2005 (moderate scenario)	Output, 1992–2005
				Low	Moderate	High		
2086,7	Soft drinks and flavorings	153	109	81	84	84	–2.0	1.3
209	Miscellaneous foods and kindred products	165	180	197	198	199	.7	1.3
21	Tobacco manufactures	70	49	35	37	39	–2.1	.7
22	Textile mill products	885	671	510	571	585	–1.2	1.2
221,2,3,4,6,8	Weaving, finishing, yarn, and thread mills	528	360	255	287	291	–1.7	.7
225	Knitting mills	231	202	152	173	173	–1.2	.4
227	Carpets and rugs	61	59	65	68	75	1.1	3.3
229	Miscellaneous textile goods	66	51	39	43	45	–1.4	2.2
23	Apparel and other textile products	1,304	1,005	651	760	765	–2.1	.7
231–8	Apparel	1,115	807	467	556	556	–2.8	.0
239	Miscellaneous fabricated textile products	189	198	184	205	210	.2	2.6
26	Paper and allied products	697	687	672	729	752	.4	2.5
261,2,3	Pulp, paper, and paperboard mills	262	239	204	224	227	– .5	2.5
265	Paperboard containers and boxes	214	211	215	231	241	.7	2.2
267	Converted paper products, except containers	221	238	253	274	285	1.1	2.8
27	Printing and publishing	1,235	1,504	1,621	1,751	1,810	1.2	2.9
271	Newspapers	420	451	477	513	532	1.0	1.9
272	Periodicals	82	123	135	146	152	1.3	3.2
273	Books	102	118	130	146	151	1.7	3.2
274	Miscellaneous publishing	46	80	108	117	121	3.0	3.9
275,6	Commercial printing and business forms	451	577	612	656	676	1.0	3.0
277	Greeting card publishing	24	26	27	30	31	1.0	3.3
278	Blankbooks and bookbinding	63	69	71	78	79	1.0	3.2
279	Printing trade services	47	59	61	65	68	.8	3.2
28	Chemicals and allied products	1,109	1,083	1,006	1,090	1,132	.1	2.3
281,6	Industrial chemicals	333	290	234	255	265	–1.0	1.7
282	Plastics materials and synthetics	212	173	144	158	167	– .7	2.5
283	Drugs	193	256	277	297	300	1.1	2.9
284	Soap, cleaners, and toilet goods	140	154	153	167	173	.7	2.3
285	Paints and allied products	69	58	52	56	62	– .4	2.4
287	Agricultural chemicals	70	58	42	45	45	–2.0	1.3
289	Miscellaneous chemical products	93	93	105	113	120	1.5	3.9
29	Petroleum and coal products	210	159	118	128	137	–1.6	.8
291	Petroleum refining	165	120	84	92	98	–2.0	.6
295,9	Miscellaneous petroleum and coal products	45	39	34	36	40	– .5	2.8
30	Rubber and miscellaneous plastics products	821	872	979	1,066	1,125	1.6	3.5
301	Tires and inner tubes	127	82	59	64	67	–1.8	.2
302,5,6	Rubber products, plastic hose and footwear	208	171	142	158	160	– .6	2.3
308	Miscellaneous plastics products, n.e.c.	486	619	778	843	898	2.4	4.2
31	Leather and leather products	246	119	63	71	73	–3.9	–2.2
313,4	Footwear except rubber and plastic	161	69	33	39	41	–4.4	–2.5
311,5,6,7,9	Luggage, handbags, and leather products, n.e.c.	85	51	30	33	33	–3.4	–2.1
40–42,44–49	Transportation, communications, utilities	5,136	5,709	5,909	6,497	6,763	1.0	2.3
40–42,44–47	Transportation	3,019	3,486	3,866	4,310	4,507	1.6	2.8
40	Railroad transportation	556	254	233	252	270	– .1	2.4
41	Local and interurban passenger transit	263	359	332	383	386	.5	1.7
42	Trucking and warehousing	1,339	1,606	1,866	2,019	2,130	1.8	2.3
44	Water transportation	214	173	132	154	171	– .9	1.9
45	Air transportation	438	729	835	967	996	2.2	4.0
46	Pipelines, except natural gas	20	19	17	18	19	– .2	1.2
47	Transportation services	189	346	452	516	535	3.1	3.5
472	Passenger transportation arrangement[4]	92	183	260	300	307	3.9	2.5
473,4,8	Miscellaneous transportation services[4]	96	163	192	216	229	2.2	4.2
48	Communications	1,309	1,268	1,030	1,116	1,142	–1.0	2.7
481,2,9	Communications, except broadcasting[4]	1,095	912	660	724	742	–1.8	3.1
483,4	Radio and television broadcasting, cable TV[4]	214	355	370	392	400	.8	1.4
49	Electric, gas, and sanitary services	807	955	1,013	1,072	1,115	.9	1.1
491,pt.493	Electric utilities including combined services	493	553	554	582	606	.4	1.5

See footnotes at end of table.

Table 5. **Continued—Employment by industry, 1979, 1992, and projected 2005**

Standard Industrial Classification	Industry description	Employment (in thousands)					Annual growth rate[1]	
		1979	1992	2005			Employment, 1992–2005 (moderate scenario)	Output, 1992–2005
				Low	Moderate	High		
492, pt.493	Gas utilities including combined services	220	205	184	190	205	−.6	−.9
494,5,6,7,pt.493	Water and sanitation including combined services	94	197	274	299	304	3.3	3.7
50,5	Wholesale trade	5,221	6,045	6,641	7,191	7,761	1.3	2.9
52–59	Retail trade	14,972	19,346	22,254	23,777	24,336	1.6	2.2
52–57,59	Retail trade, excluding eating and drinking places	10,459	12,744	13,926	14,999	15,511	1.3	2.4
58	Eating and drinking places	4,513	6,602	8,329	8,778	8,825	2.2	1.4
60–67	Finance, insurance, and real estate	4,975	6,571	7,585	7,969	8,078	1.5	2.2
60	Depository institutions[4]	1,890	2,103	2,107	2,195	2,201	.3	2.9
61,7	Nondepository; holding and investment offices[4]	276	615	921	949	957	3.4	4.5
62	Security and commodity brokers	204	439	528	570	575	2.0	4.0
63	Insurance carriers	1,200	1,480	1,549	1,660	1,661	.9	1.7
64	Insurance agents, brokers, and service	443	652	906	971	972	3.1	3.3
65	Real estate	963	1,282	1,574	1,624	1,712	1.8	2.6
70–87,89	Services[2]	16,779	28,422	39,808	41,788	42,766	3.0	3.5
70	Hotels and other lodging places	1,060	1,572	2,136	2,209	2,281	2.6	4.1
72	Personal services	821	1,111	1,352	1,382	1,388	1.7	2.0
721,5	Laundry, cleaning, and shoe repair[4]	367	418	458	475	476	1.0	1.7
722,9	Personal services, n.e.c.[4]	98	216	286	292	294	2.3	2.1
723,4	Beauty and barber shops	318	392	510	516	518	2.1	2.5
726	Funeral service and crematories	69	85	98	99	100	1.2	1.0
73	Business services	2,410	5,313	7,799	8,370	8,664	3.6	4.7
731	Advertising	146	226	268	288	299	1.9	2.4
734	Services to buildings	487	805	937	1,000	1,029	1.7	3.9
735	Miscellaneous equipment rental and leasing[4]	—	205	298	325	343	3.6	3.9
736	Personnel supply services	508	1,649	2,408	2,581	2,656	3.5	2.8
737	Computer and data processing services	271	831	1,507	1,626	1,697	5.3	5.9
7381,2	Detective, guard, and security services[4]	—	505	658	716	742	2.7	2.4
7334,5,6;7384	Photocopying, commercial art, photofinishing[4]	—	190	274	291	302	3.4	4.3
732;7331,8; 7383,9	Business services, n.e.c.[4]	—	903	1,450	1,543	1,597	4.2	5.5
75	Auto repair, services, and garages	575	878	1,229	1,293	1,401	3.0	2.3
751	Automotive rentals, without drivers[4]	118	159	206	222	236	2.6	4.1
752,3,4	Automobile parking, repair, and services	457	719	1,023	1,071	1,165	3.1	1.9
76	Miscellaneous repair shops	282	345	421	449	467	2.0	2.4
762	Electrical repair shops	84	108	131	140	143	2.0	2.4
763,4	Watch, clock, jewelry, and furniture repair	29	27	27	29	30	.7	.2
769	Miscellaneous repair shops and related services	169	210	262	280	295	2.2	2.6
78	Motion pictures	228	404	476	499	511	1.6	2.3
781–3	Motion pictures	228	279	374	392	401	2.6	2.8
784	Video tape rental	—	125	103	110	107	−1.2	−1.3
79	Amusement and recreation services	751	1,169	1,595	1,626	1,646	2.6	3.2
792	Producers, orchestras, and entertainers	84	143	194	201	208	2.6	2.0
793	Bowling centers	102	88	84	85	86	−.2	−.2
794	Commercial sports	70	113	133	135	138	1.4	.9
791,9	Amusement and recreation services, n.e.c.	494	826	1,184	1,205	1,215	3.0	4.1
80	Health services	4,993	8,523	11,998	12,539	12,632	3.0	3.3
801,2,3,4	Offices of health practitioners	1,200	2,387	3,468	3,617	3,667	3.2	2.9
805	Nursing and personal care facilities	951	1,543	2,215	2,306	2,330	3.1	3.4
806	Hospitals, private	2,608	3,760	4,801	5,039	5,048	2.3	3.4
807,8,9	Health services, n.e.c.	234	833	1,514	1,577	1,587	5.0	3.9
81	Legal services	460	915	1,280	1,355	1,380	3.1	3.4
82	Educational services	1,090	1,700	2,047	2,162	2,174	1.9	2.8
821	Elementary and secondary schools	259	467	616	616	618	2.2	3.0
822	Colleges and universities	717	1,025	1,124	1,236	1,245	1.5	2.7
823–9	Libraries, vocational, and other schools	114	208	307	310	312	3.1	2.9
83	Social services	1,081	1,958	3,584	3,691	3,715	5.0	5.1
832,9	Individual and miscellaneous social services	390	703	1,129	1,162	1,167	3.9	5.1

See footnotes at end of table.

Table 5. **Continued—Employment by industry, 1979, 1992, and projected 2005**

Standard Industrial Classification	Industry description	Employment (in thousands)					Annual growth rate[1]	
		1979	1992	2005			Employment, 1992–2005 (moderate scenerio)	Output, 1992–2005
				Low	Moderate	High		
833	Job training and related services	187	271	401	418	421	3.4	3.7
835	Child day care services	303	449	757	777	780	4.3	2.8
836	Residential care	201	535	1,297	1,335	1,348	7.3	7.8
84,86,8733	Museums, zoos, and membership organizations	1,652	2,164	2,601	2,674	2,703	1.6	4.1
84;865,9;8733	Museums and noncommercial organizations, n.e.c.	201	298	383	393	399	2.2	5.9
861,2	Business and professional associations	117	156	190	200	203	1.9	1.9
863,4	Labor, civic, and social organizations	453	559	648	661	669	1.3	1.4
866	Religious organizations[5]	882	1,151	1,380	1,420	1,432	1.6	4.8
87(less 8733), 89	Engineering, management, and services, n.e.c.	1,341	2,370	3,290	3,538	3,804	3.1	3.4
871	Engineering and architectural services	515	746	928	1,001	1,173	2.3	2.4
8731,2,4	Research and testing services	235	417	522	553	564	2.2	3.3
874	Management and public relations	273	655	1,026	1,110	1,153	4.1	5.5
872,89	Accounting, auditing, and services, n.e.c.	318	553	816	876	914	3.6	2.2
	Government	15,947	18,653	20,836	22,021	23,041	1.3	1.5
	Federal Government	2,773	2,969	2,628	2,815	2,950	−.4	.6
	Federal enterprises	876	985	826	915	984	−.6	2.7
	U.S. Postal Service	661	792	674	751	807	−.4	3.2
	Federal electric utilities	52	28	18	19	21	−2.7	.4
	Federal Government enterprises, n.e.c.	163	165	135	144	156	−1.0	1.8
	Federal general government	1,897	1,984	1,802	1,901	1,966	−.3	−.2
	State and local government	13,174	15,683	18,208	19,206	20,091	1.6	2.0
	State and local enterprises	733	938	1,007	1,137	1,223	1.5	1.9
	Local government passenger transit	130	204	214	254	271	1.7	1.1
	State and local electric utilities	63	81	81	88	96	.6	1.0
	State and local government enterprises, n.e.c.	540	653	712	795	856	1.5	2.2
	State and local general government	12,441	14,745	17,201	18,069	18,868	1.6	2.0
	State and local government hospitals	1,108	1,090	1,190	1,250	1,305	1.1	.7
	State government education	1,378	1,797	2,191	2,301	2,403	1.9	2.4
	Local government education	5,107	6,222	7,627	8,012	8,366	2.0	2.7
	State and local general government, n.e.c.	4,847	5,637	6,193	6,506	6,793	1.1	1.3
01,02,07,08,09	Agriculture[6]	3,398	3,295	3,221	3,325	3,535	.1	1.6
pt.01,pt.02	Livestock and livestock products	1,268	1,117	959	993	1,049	−.9	1.1
pt.01,pt.02	Other agricultural products	1,506	1,088	827	846	897	−1.9	1.8
7	Agricultural services	547	984	1,304	1,351	1,442	2.5	3.1
8	Forestry	21	38	49	52	61	2.4	2.5
9	Fishing, hunting, and trapping	57	69	81	83	86	1.4	.1
88	Private households	1,264	1,116	777	802	853	−2.5	−1.0
	Nonagricultural self-employed and unpaid family[7]	7,210	8,794	10,078	10,397	11,098	1.3	(3)
	Total[8]	101,363	121,093	139,007	147,483	154,430	1.5	2.4

[1] Rates are based on moderate 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 is not available.

[4] Current Employment Statistics (CES) figures are not available for 1979 for this industry (or for at least one component in a group of industries). 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 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 the Current Population Survey (household survey), which counts workers. These totals for 1979 and 1992, therefore, differ from the official employment estimates of the Bureau of Labor Statistics.

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.

Alternative projections

The alternative high- and low-growth projections are intended to give a range around which an evaluation of the effects of differing sets of macroeconomic assumptions can be made. The industry projections of employment and output are sensitive to assumptions about macroeconomic issues, including population growth, labor force participation, fiscal policy, monetary policy, and foreign trade. In general, the low-growth alternative presents a sluggish economy faced with slower population and labor force growth, a more restrictive monetary policy, and continuing Federal deficits despite deeper spending cuts for defense. The high-growth alternative presents a more dynamic economy with much faster population and labor force growth, a less restrictive monetary policy, and faster income growth rates that allow Federal revenues to increase at a faster pace than Federal spending, resulting in a surplus in the Federal budget.[9]

The low-growth scenario incorporates a gain in total nonfarm wage and salary jobs of 17.1 million, as compared to the moderate scenario's 25.1 million increase. In the goods-producing sector, wage and salary jobs decline by 1.2 million, with manufacturing losing 2.1 million jobs, mining suffering a 121,000 decline, and construction having a gain of 0.9 million. In the low-growth scenario, the service-producing sector has a job gain of 18.3 million. Of that gain, 11.4 million is accounted for by the services division, which represents a 67-percent share of the total nonfarm wage and salary increase, as compared to the service division's 53-percent share in the moderate-growth scenario.

In the high-growth scenario, nonfarm wage and salary employment increases by 31.1 million. The goods-producing sector enjoys healthy growth in employment with a gain of 3.1 million jobs. Manufacturing in the high-growth scenario has a 0.8 million increase, while construction sees a 2.2 million gain and mining experiences an increase of 59,000 wage and salary jobs. The service-producing sector has an increase of 30.0 million, of which 14.3 million are in the services division. □

Footnotes

[1] For further discussion of the macroeconomic influences, see Norman C. Saunders, "The U.S. economy: framework for BLS projections," pp. 11–30.

[2] This article discusses gross duplicated output, which includes not only gross domestic produce (GDP), 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] The macroeconomic projection contains an imposed business cycle. However, the target year (2005) should be considered to lie on the long-term growth path. See Saunders, "The U.S. economy," for a discussion of the imposed business cycle .

[4] For more detail on the behavior of the macroeconomy, see Saunders, "The U.S. economy."

[5] 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 deflators combined with very large price changes may lead to some overstatement of the share of computers in industrial machinery and overall GDP. For further discussion of this issue, see Allen H. Young, "Alternative Measures of Change in Real Output and Prices," pp. 32–48, and Jack E. Triplett, " Economic Theory and BEA's Alternative Quantity and Price Indexes," pp. 49–52, both in the April 1992 *Survey of Current Business*.

[6] See Ron Kutscher, "Historical trends, 1950–92, and current uncertainties," pp. 3–10, for a more extended discussion of uncertainties facing the U.S. domestic economy.

[7] For further discussion of the age distribution of the population see Howard N Fullerton, Jr., "Another look at the labor force," pp. 31–40.

[8] For 1970 and 1975, *Preliminary Estimates of the Population of the United States, by Age, Sex, and Race: 1970 to 1981, Current Population Reports*, Series P-25, No. 917 (Bureau of the Census, 1982). For 1980 and 1985, *U.S. Population Estimates, by Age, Sex, Race, and Hispanic Origin: 1980 to 1991, Current Population Reports*, Series P-25, No. 1095 (Bureau of the Census, 1992). For 1990 and projected 2005, *Population Projections of the United States, by Age, Sex, Race, and Hispanic Origin: 1993 to 2050, Current Population Reports*, Series P-25, No. 1104 (Bureau of the Census, 1993).

[9] See Saunders, "The U.S. economy," for a more complete discussion of the macroeconomic assumptions for the alternative projections.