Outlook: 1990–2005

New BLS projections: findings and implications

Alternative projections show a considerable range of change for the labor force, gross national product, and in employment and unemployment; under all assumptions, job opportunities vary by industry and occupation

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Every other year, the Bureau of Labor Statistics develops three alternative projections of the U.S. economy. This issue of the *Monthly Labor Review* presents the latest set, covering the 1990–2005 period. BLS projects the labor force by age, sex, and race and Hispanic origin; growth in real gross national product (GNP) and by major demand category; changes in employment and output by industry; and changes in employment by occupation. Each topic is discussed in separate articles in this issue of the *Review*. To prepare a detailed set of projections requires making a number of assumptions, also described in each article.

This article summarizes the major findings from each topic and highlights some important implications flowing from the projections, including (1) education and training needed for the projected jobs, (2) variation in job opportunities for those with different levels of education, (3) the range of the three alternatives prepared by BLS and their employment and other implications, and (4) the changing race, age, and sex mix of the labor force.

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Gross national product

Moderate scenario. The projected growth in real gross national product (GNP) from 1990 to 2005 is 2.3 percent a year (in 1982 dollars) in the moderate scenario. This compares with the 1975–90 annual real GNP growth rate of 2.9 percent. Thus, these projections suggest a pronounced slowing in the rate of GNP growth. Almost all of the slowdown is a result of slower labor force growth—projected at 1.3 percent per year during 1990–2005, compared with 1.9 percent annual growth over the 1975–90 period. Another important factor affecting GNP growth is productivity, which is not projected to change appreciably from its 1975–90 rate of growth. Further, part of the projected slowdown simply reflects that 1975 was a cyclical low, so the two periods 1975–90 and 1990–2005 are in many ways difficult to compare directly.[1]

Inasmuch as real GNP is projected to grow at about three-quarters of the rate of growth of the prior 15-year period, it is to be expected that many of the GNP demand categories will reflect a similar slowdown. A review of the demand components of GNP reveals that this is true for personal consumption expenditures, exports, and producers' durable equipment. (See table 1.) An even sharper slowdown is expected for imports and for residential and nonresidential construction. Further, a significant change in direction is projected for Federal defense expenditures—from substantial growth over the 1975–90 pe-

riod to a projected moderate decline during the 1990–2005 period. Very modest increases in growth rates are expected for State and local government and for Federal nondefense expenditures.

The categories of demand that are projected to vary from the general slowdown trend are projected to do so for varying reasons. For example, national defense expenditures clearly have been affected by changes in world events which are widely viewed as lowering U.S. defense needs in the 1990's. Consequently, while real defense purchases increased 3.2 percent annually over the 1975–90 period, they are projected to decline 1.2 percent a year from 1990–2005. For imports, the projected moderate alternative is more consistent with the latter part of the 1980's, when improvements were beginning to take place in the U.S trade position, rather than with the longer term 1975–90 period. The import and export components used in the moderate growth alternative assumes that the more recent improvement pattern in the U.S. trade position will continue. For the construction categories—residential and nonresidential—the slowdown in the projected period reflects extensive overbuilding of many types of construction in the latter 1980's and the need to absorb that overbuilding, at least in the early part of the projection period. Coupled with this is the projected slowing in household formations and its impact on growth in residential construction. For State and local government, the slightly faster growth reflects a strong demand, particularly for education, and also to improve the country's infrastructure including highways, bridges, and airports. Clearly, from a demand perspective, State and local spending could grow even more rapidly than BLS has projected were it not for the constraints on State and local government revenues. Increases in Federal nondefense purchases reflect an easing of the pressures on overall Federal spending, a result of the declines expected in defense expenditures as well as a growing client population for Social Security, Medicaid, and similar programs. However, this category of demand is still projected to grow more slowly than GNP.

High-growth and low-growth scenarios. The low-growth alternative assumption yield a 1.5-percent annual growth in real GNP over the 1990–2005 period, while the high-growth alternative projects a 2.9-percent annual growth. This range in GNP growth yields an expected increase in real disposable income per capita of 1.1 percent annually in the low-growth alternative, 1.5 percent in the moderate-growth alternative, and 2.3 percent in the high-growth alternative. In comparison, real disposable income per capita increased 1.7 percent annually over the 1975–90 period. Both the low and the moderate alternatives imply a slower rate of increase than occurred over the 1975–90 period in this measure, sometimes used as a gauge of change in the standard of living in the U.S. economy.

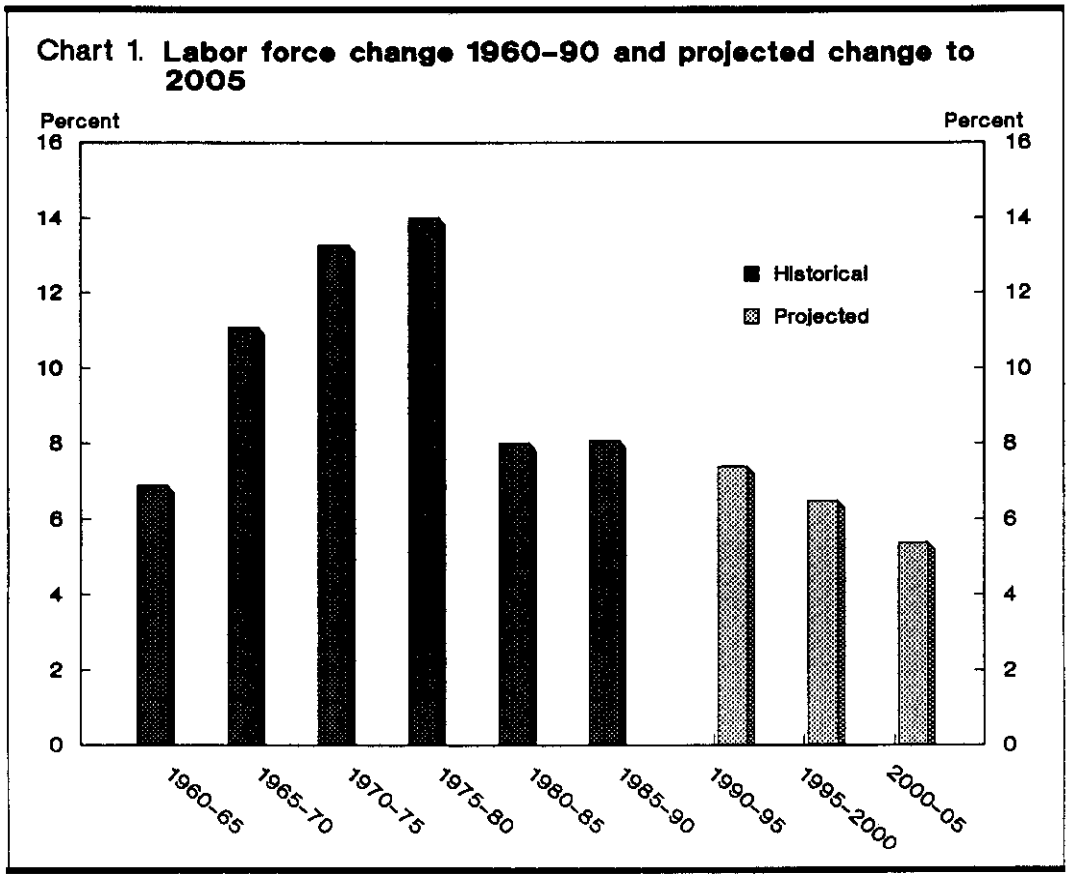
Labor force

The labor force projections prepared for the 1990–2005 period show a slower rate of increase than the rate which prevailed over the 1975–90 period—1.3 percent, compared with 1.9 percent growth for the previous 15-year period.

As noted earlier, the slowdown in real GNP is a function of the expected slower growth in the labor force. Population growth is also projected to slow, from the 1.0-percent annual growth over

Table 1. **Annual rates of change in gross national product, and influencing factors and demand components, 1975–90 and projected 1990–2005**

Item	1975–90	Projected, 1990–2005		
		Low	Moderate	High
Factors influencing GNP:				
Civilian labor force (thousands)	1.9	0.9	1.3	1.5
GNP per employee (1982 dollars)	.8	.9	1.0	1.2
GNP (1982 dollars)	2.9	1.5	2.3	2.9
Real GNP demand category:				
Personal consumption expenditures	3.0	1.7	2.3	2.9
Investment	4.0	1.7	2.7	3.5
Exports	6.1	3.8	4.5	5.2
Imports	7.0	3.7	3.7	4.8
National defense	3.2	−1.8	−1.2	−1.0
Federal nondefense	1.8	1.4	1.9	2.4
State and local government	2.0	1.7	2.3	2.8
Real disposable income per capita	**1.7**	**1.1**	**1.5**	**2.3**



the 1975–90 period to the projected rate of 0.8 percent during the period 1990–2005. Because the slowdown in population growth is much less than the slowdown in the labor force, the projections illustrate that, over this period, a more pronounced slowing is expected in the working-age population than in the nonworking-age population.[2] This is in part the effect of more rapid growth of the older population, and in part the expected continued slowing in the projected rate of increase of the labor force participation rate, particularly for younger women.

The rate of growth of the labor force increased from the 1960's until the 1980's, as the baby-boomers entered the labor force. (See chart 1.) In contrast, the 1980's was a period of slower rates of labor force growth because a significant portion of the baby-boomers were already in the labor force and the new labor force entrants were being drawn from the smaller cohort born between 1965 and 1979— the so-called "baby-bust" group. The projections show a slowdown in labor force growth, with the projected 1990–2005 growth slower than in any comparable period of the last 30 years, except 1960–65; both the 1995–2000 and the 2000–2005 periods show a projected rate even lower than that in the 1960–65 period.

The percent changes over 5-year periods in chart 1 dramatize the rates of change in labor force growth over the 1960–2005 period. However, even the absolute changes show the build-up in the past and then a slowdown in the 1980's, a slowing that is expected to continue if the entire 1990–2005 period is considered. For example, the labor force grew by 12 million over the 1960–70 decade, by more than 24 million over the 1970–80 period, and by more than 18 million in the 1980–90 period. The projected change is for an increase of about 18.0 million in the labor force over the 1990–2000 period and then a slowing to under an 8 million increase for the 5-year period 2000–2005. This important point will be discussed in more detail later—namely, the growth in the labor force in the 1990's in absolute terms is projected to be similar to the growth of the 1980's. Of course, we are starting from the higher base in 1990 than in 1980, resulting in a slower rate of change.

The overall slowing of labor force growth is only one aspect of labor force changes projected for the 1990–2005 period. Another important change that has been widely discussed is 16– to 24-year-old youths in the labor force. The following tabluation shows annual rates of change in the labor force, by selected characteristics:

	Actual, 1975–90	*Projected, 1990–2005*
Total, civilian labor force	1.9	1.3
Men	1.3	1.0
Women	2.8	1.6
16 to 24 year olds	–.4	.8
25 to 54 year olds	3.0	1.1
55 years and older	.5	2.4
White	1.7	1.1
Black	2.5	1.9
Asian and other*	6.2	3.8
Hispanic**	***5.9	3.8

* Includes Asians, Pacific Islanders, American Indians, and Alaskan natives.
** Hispanics may be either black or white.
*** 1976–90.

The very pronounced decline in the youth labor force, however, is behind us. While declines in the number of youth in the labor force will continue for a few more years, about 1996, this group will begin to increase gradually, and by 2005, is projected to be 2.8 million larger than in 1990. Consequently, the worry about lack of entry level workers, which was of concern in the late 1980's and early 1990's, should ease considerably, if not disappear entirely, as we progress through this decade.

The labor force participation rate of younger women increased dramatically during the 1970's and early 1980's. As an example, the labor force participation rate of 25- to 29-year-old white women was 43 percent in 1970; by 1985, it had reached 71 percent. However, in the latter part of the 1980's, there was a very pronounced slowing in their rate of increase. Various reasons have been given for this phenomenon—increases in the number of births among women in this age group, women approaching their long-term equilibrium rate, or the downturn of a business cycle. It is difficult to sort out the individual contributions of each of these reasons, but BLS projects a slower rate of growth in labor force participation for women under age 40. However, for many of the groups of young women, this reflects a continuation of a slowing that had begun even before 1985. It is important to emphasize that a slower rate of increase does not imply a decrease in the number of young women in the labor force, but only that their labor force participation rate will increase more slowly than it had in the past. Still, an important result of this slowing is that in terms of projected absolute change in the labor force over the 1990–2005 period, compared with the change during the 1975–90 period, young white women are projected to account for a significant share of the expected decline in the number of labor force entrants.

Another important element in the age component of the labor force is workers 55 years and older. For men in these age groups there has been a pronounced decline in labor force participation rates over the past several decades. This long-range trend slowed considerably, however, or even halted for particular age groups in the latter part of the 1980's. When examined separately for each detailed age group, the projections show little or no change in the labor force participation rate of men in the 55 and older age groups.[3]

Of course, the 55 and older population is expected to expand, as those born in the 1940's (the beginning of the baby boom) reach this age. The number of men in the labor force aged 55 and over, therefore, even with no significant change in their labor force participation rate, is projected to grow by 3.2 million. It is important to note that much of this increase will take place in the latter part of the projection period.

Women aged 55 and over are expected to increase by 3.5 million between 1990 and 2005, because of population growth and because of projected higher labor force participation rates. Women who are moving into the 55 and older age groups have higher labor force participation than earlier cohorts. To illustrate the effect on the labor force of this cohort, women 55–64 years of age are projected to increase their labor force participation rate from 45.3 percent in 1990 to 54.3 percent in 2005, as women reaching these ages are expected to bring with them their pattern of higher labor force participation. Even at this much higher level of labor force participation, in 2005, women in this age group still are expected to have a participation rate nearly 14 percentage points lower than that for their male counterparts.

The growing share of minorities in the labor force has been an important development of the past several decades, and BLS projects a continuation of this trend. Of course, white non-Hispanics, who accounted for 78.6 percent of the labor force in 1990, are still projected to be the largest group in 2005, but their share is expected to decline to 73.0 percent. Nevertheless, white non-Hispanics will increase by nearly 12 million over the 1990–2005 period. The proportion of white non-Hispanics in the labor force declines because all of the other labor force groups—blacks, Hispanics, and Asian and other—are projected to increase at a faster rate and to represent a larger share of the labor force in 2005. For blacks, this is an expansion from a 10.7-percent share of the labor force in 1990 to 11.6 percent by 2005. For Hispanics, an even faster rise is projected, from a 7.7-percent share in 1990 to 11.1 by 2005. The number of Hispanics in the 2005 labor force is projected to be

Table 2. **Employment, total and by major division, 1975 and 1990 and projected to 2005**

(Numbers in millions)

Major division	Actual		Projected moderate alternative	Annual rate of change (percent)	
	1975	1990	2005	1975–90	Projected, 1990–2005
Total	87.7	122.6	147.2	2.3	1.2
Nonfarm wage and salary	76.7	109.3	132.6	2.4	1.3
Goods-producing	22.6	25.0	25.2	.7	.1
Construction	3.5	5.1	6.1	2.5	1.1
Manufacturing	18.3	19.1	18.5	.3	–.2
Service-producing	54.1	84.4	107.4	3.0	1.6
Retail trade	12.6	19.7	24.8	3.0	1.6
Services	13.6	27.6	39.1	4.8	2.3
Government	14.7	18.3	21.5	1.5	1.1
Agriculture	3.5	3.3	3.1	–.4	–.4
Private households	1.4	1.0	.7	–1.9	–2.4
Nonfarm self-employed	6.2	9.0	10.8	2.5	1.2

approaching that of blacks. An important factor in their rapid increase is that a very significant share of immigrants to the United States are projected to be of Hispanic origin. The Asian and other group is projected to increase its share of the labor force from 3.1 percent to 4.3 percent.

As noted earlier, the labor force is projected to increase from 124.8 million in 1990 to 150.7 million in 2005, a net increase of slightly less than 26.0 million. However, that net growth results from an expected 55.8 million new entrants and nearly 30.0 million who are projected to leave the labor force some time over the 1990–2005 period. Another dimension of this dynamic change in the labor force is that the composition of the entrants and leavers are expected to be very different than in past years. Entrants will more likely be women, blacks, Hispanics, and Asians. Thus, Hispanics, while currently 7.7 percent of the labor force, are projected to represent 15.7 percent of labor force entrants over the 1990–2005 period. Leavers from the labor force, on the other hand, are more likely to be male, and almost one-half of the leavers are projected to be white non-Hispanics. The composition of entrants and leavers explains the changes expected in the composition of the labor force between 1990 and 2005.

Industry employment

The projected rate of employment growth is 1.2 percent annually from 1990 to 2005 in the moderate alternative, compared with 2.3 percent annual growth over the 1975–90 period. (See table 2.) From an employment growth perspective, this slowdown is much sharper than that projected for labor force growth (1.3 percent projected, compared with 1.9 percent for the period 1975–90). Two factors are important in the more rapid employment growth over the 1975–90 period. First, in 1975, the civilian unemployment rate was 8.5 percent, while in 1990 it was 5.5 percent. The moderate alternative projects the unemployment rate at 5.5 percent in 2005. Thus, an important component of the growth of employment over the 1975–90 period was in lowering the unemployment rate, while from 1990 to 2005 in the moderate alternative, that is not a contributing factor. Second, was the rapid expansion of jobs, compared with expansion of the labor force—largely because of dual jobholding. The projections assume that dual jobholding will increase, but only at the same rate as employment and the labor force and, thus, will not contribute to the rate of employment growth.

The projected 2005 employment of 147.2 million is more than 24 million higher than in 1990. The previous 15 years had shown a 34.9 million expansion, with a particularly strong growth over the 1975–80 period, as the economy expanded employment by nearly 17 percent over that 5-year period.

Service-producing industries, as in the past, are expected to account for a sizable share of the projected employment growth. For example, nonfarm wage and salary jobs are projected to increase by 23.3 million during the 1990–2005 period, but the goods-producing industries will account for only 0.3 million of the total growth, inasmuch as an increase of 0.9 million jobs in construction is offset by a decline of 0.6 million jobs in manufacturing and a small decline in mining.

Given that employment is projected to grow over the 1990–2005 period at a rate approximately one-half that experienced in 1975–90, the major sectors that diverge considerably from that pattern are worthy of note. Construction is one sector in which the rate of employment growth is expected to be less than one-half its rate of growth over the previous 15 years. This sharp slowdown reflects the current overbuilding in some construction components and the expectation that these components will grow slower, at least in the early 1990's, as this overbuilding is absorbed. Finance, insurance, and real estate is another sector that is expected to show a growth rate for employment of less than one-half that of the last 15 years, as adjustments in financial institutions affect employment in this industry and as office automation slows insurance companies' employment growth. Government, on the other hand, is not projected to slow quite as much relative to the past. This reflects heavy demands on State and local government for education and infrastructure needs.

Still, in analyzing projected industrial job growth, it is difficult not to concentrate on the service-producing sector, especially the services industry division, which is expected to contribute 11.5 million, or nearly 50 percent, of the 23.3 million wage and salary jobs. For comparison, this sector contributed 14.0 million jobs over the 1975–90 period, or 42.9 percent of nonfarm wage and salary job growth. Health services, which was 5.4 percent of nonfarm wage and salary jobs in 1975, had increased to 7.8 million and a 7.2-percent share by 1990. This sector is projected to increase by an additional 3.7 million, and will account for 11.5 million jobs by 2005, an 8.7-percent share of total employment.

Business services is another rapidly expanding industry within the service industry division. In 1990, this industry employed 5.2 million, or 4.8 percent of employment, up from 1.7 million, or 2.2 percent of employment, in 1975. This industry is projected to reach 7.6 million jobs in 2005 and represent 5.7 percent of nonfarm wage and salary jobs. Several other service-producing industries are also expected to show notable employment growth: hotel and lodging places, amusement and recreation services, legal services, education services, social services, engineering services, and management and public relations.

Government, particularly State and local government, is projected to contribute to job growth. An important factor is the increases expected in the school-age population. Over the 1975–89 period, 5- to 13-year-olds (roughly elementary school age population) declined 6 percent, while from 1989–2005, this age group is projected to increase 14 percent. The 14- to 17-year-old population (secondary school age) declined 21 percent from 1975 to 1989, but is projected to increase 22 percent from 1989–2005. The college-age population is also expected to begin increasing after 1995.

Manufacturing, which is projected to show an employment decline of about 600,000 jobs over the 1990–2005 period, presents several contrasts. Despite the overall employment decline in manufacturing, some sectors within this industry are projected to experience employment growth—especially printing and publishing, medical instruments, plastic products, and furniture. Further, there are some manufacturing industries in which slight increases are projected after many years (in some cases several decades) of decline. Most of them produce machinery that have recently become important exports, but are not closely linked to defense production. Still, the overall downward direction of employment change in manufacturing continues. At the most detailed industry level used by BLS in developing the projections, of the 20 industries projected to have the fastest rate of employment growth, only one—miscellaneous publishing—is a manufacturing industry. Conversely, of the 20 industries projected to have the sharpest rate of employment decline, 18 are manufacturing industries. It is important to note that this does not mean manufacturing is disappearing, inasmuch as 10 of the 20 fastest-growing industries, from an output perspective, are manufacturing industries.

Occupational employment

At the overall employment level, the change in employment by industry is identical to employment change by occupation. Given that, overall, the projected employment change over the 1990–2005 period is 20 percent (or 1.2 percent per year), which occupational groups are projected to grow significantly faster or slower than average?[4]

The following occupational groups are projected to grow the fastest:

	Projected percent change, 1990–2005
Mathematical and computer scientists	73
Personal service occupations	44
Health assessment and treating occupations	44
Health service occupations	43
Health technologist and technicians	41
Lawyers and judges	34
Protective service occupations	32

These occupational groups are projected to grow much slower than average or decline:

	Projected percent change, 1990–2005
Private household workers	–29
Machine operators assemblers and inspectors	–9
Financial records processing occupations	–4
Farming, forestry, and fishing occupations	5
Handling, equipment cleaners, helpers, and laborers	8
Computer equipment operators	13
Mail and message distributing occupations	15

The occupational groups on the fastest growing list are more likely to have current workers with higher educational attainment. Only two occupational groups, health service and personal service, for example, had less than one-half of their workers in 1990 with educational attainment at high school or less. Protective service workers are about evenly divided with one-half of its workers having more than a high school education and one-half with high school or less.

In contrast, the occupational groups projected to decline or to be among the slowest growing are currently more likely to be dominated by workers who do not have education beyond high school. All of these occupational groups have at least one-half of their work force made up of workers with a high school education or less, and some have a much higher percentage.

To what extent are women, blacks, and Hispanics represented in the fastest and slowest growing occupations?

In 1990, women represented 45 percent of the work force. They had at least a 45-percent share of the jobs in these fastest growing occupational groups: health assessing and treating; health technologist; health service; and personal service. However, women were underrepresented in these fastest growing jobs: mathematical and computer scientists, lawyers and judges, and protective service. Women were overrepresented in these slowest growing or declining occupations: private households; financial records processing; secretaries, stenographers and typists; and computer equipment operators. The data, consequently, show a somewhat mixed picture for women in terms of their employment in occupations projected to have good job prospects.

For blacks and Hispanics, the analysis yields a less optimistic picture. Blacks were more than 10 percent and Hispanics were nearly 8 percent of the labor force in 1990. Among the fastest growing occupational groups, blacks had a 10-percent or greater share of jobs in health service, protective service, health technologist and technicians, and personal service. Hispanics did not have an 8-percent share of any of the occupational groups projected to grow rapidly. Blacks and Hispanics are overrepresented in all of the slow growing or declining occupations, except financial records processing; farming, forestry and fishing (blacks only); secretaries, stenographers and typists; mail and message distribution (Hispanics only); and computer equipment operators (Hispanics only).

Important issues

The three alternative projections depict a range for the U.S. economy in 2005 with significantly different results. The growth rate in real GNP ranges from 1.5 percent to 2.9 percent annually, which amounts to a difference of $1,142 billion (in 1982 dollars), or a 22-percent difference. The unemployment rate ranges from 4.0 percent to 7.0 percent in the alternatives, which translates into a 3.7 million difference in the absolute level of unemployment. The labor force range is more than 14 million, from 141.8 to 156.2. For employment, the range is 17 million, from 125.3 million to 142.3 million. Other measures such as budget deficits, foreign trade surplus or deficit, and real disposable income per capita all show a vast difference among the three alternatives. The projections are not designed to explore how to achieve the better of these alternatives. They do, however, illustrate some important differences which these alternative paths of growth imply, particularly the important employment implications by industry and occupation. To illustrate, in the high-growth alternative, manufacturing is projected to increase a modest 77,000 from 1990 to 2005; in the low-growth alternative, manufacturing employment declines by nearly 2.4 million persons.

Labor force diversity. While the alternatives developed in these projections show vastly differing U.S. economies in 2005, some issues, to a considerable extent, transcend the alternatives. One issue is the increasing diversity of the U.S. labor force. The composition of the labor force over the 1990-2005 period is expected to continue to shift toward a somewhat higher percent of women (from 45.3 percent in 1990 to 47.4 percent in 2005). Women's growing share of the labor force occurs even though the data show women to be slightly less than one-half of the

projected labor force entrants. Women's growing share of the labor force comes about, therefore, because they are expected to constitute less than 43 percent of labor force leavers over the 1990–2005 period—largely reflecting that women have yet to have the long-term work history and concomitant retirement benefits which men more often have.

Another important continuing change in labor force diversity is among minority groups. Blacks, who represented 10.7 percent of the labor force in 1990, are projected to account for 13.0 percent of labor force entrants over the 1990–2005 period. Hispanics, who represented 7.7 percent of the labor force in 1990, are projected to account for 15.7 percent of labor force entrants from 1990 to 2005. Also, the Asian and other category, which was 3.1 percent of the labor force in 1990, is expected to account for nearly 6.0 percent of the entrants over the 15-year projection period. Of course, the offsetting trend is that while white non-Hispanics were 78.6 percent of 1990's labor force, they are projected to represent 65.3 percent of entrants, but nearly 82 percent of the labor force leavers over this period. Consequently, the U.S. labor force is expected to be much more diversified in 2005 than it was in 1990 with regard to sex, race, and ethnicity. This will raise issues of formal education, training, and employment opportunity across the range of industries and occupations, because the labor force groups that are projected to grow the fastest show significant differences with respect to their industry and occupational employment patterns, compared with white male non-Hispanics.

Table 3. **Employment of 25- to 34-year-old full-time workers, by years of schooling, selected occupations, 1990**

Occupation	Completed fewer than 12 years of school	Completed 12 years of school
Total, all occupations		
Number (thousands)	3,054	12,140
Percent	100.0	100.0
Executive, administrative, and managerial occupations	3.2	7.8
Professional specialty occupations	1.0	2.2
Technicians and related support occupations	.7	2.9
Sales occupations	5.0	9.5
Administrative support occupations including clerical	5.1	18.0
Service occupations	17.8	12.6
Food preparation and service occupations	7.5	3.5
Cleaning and building service, private households	5.4	2.5
Agriculture, forestry, and fishing occupations	6.6	2.9
Precision production, craft, and repair occupations	23.5	19.8
Mechanics and repairers	6.9	6.5
Construction trades	11.4	7.8
Operators, fabricators, and laborers	37.2	24.3

SOURCE: Current Population Survey.

An important aspect of the changing composition of the labor force is in the number of 16- to 19-year-olds. In the late 1980's, a low unemployment rate in the U.S. economy and declining numbers in this age group led to discussions about a shortage of entry level workers. As the tabulation below shows, that problem, to the extent that it existed, is expected to diminish, and should very soon begin improving. Further, by the end of the projection period, the number of 16- to 19-year-olds should have returned to a level nearer that of the early 1980's.

	16- to 19-year-old labor force (thousands)
Actual	
1979	9,638
1980	9,378
1985	7,901
1986	7,926
1987	7,988
1988	8,031
1989	7,954
1990	7,410
Projected (moderate alternative)	
1995	7,576
2000	8,474
2005	8,793

Educational preparation and employment. The projections show a continuation in the occupational restructuring of employment in the U.S. economy.[5] This restructuring has several important dimensions. One is that restructuring has been ongoing for decades. Further, this restructuring is gradual. It generally emphasizes the increasing importance of post-secondary education and training because the restructuring is toward occupations that are more likely to experience faster growth. Another dimension is that, on balance, those jobs growing the fastest currently are filled by workers with higher levels of education.[6] This clearly does not mean that everyone must have a 4-year college degree to find a job. But, it does point out that an increasingly

important opportunity difference is emerging along the lines of educational preparation. In the past (at least up to 1979), when manufacturing was an increasing source of employment growth, job opportunities offered the possibilities of access to higher paying jobs for those with less than a high school education. Manufacturing employment, which had peaked at 21.0 million in 1979, declined to 18.4 by 1983; it later recovered 1.0 million of the earlier decline, but declined again in 1990, ending at a level nearly 2.0 million below the 1979 peak. Also, global competition, technology, and other forces were restructuring occupational patterns within manufacturing toward jobs that were more likely to require postsecondary education, such as professional or technical occupations. From the horizon of the early 1990's then, the job market prospects for those with less than a high school education clearly has changed from what it was even a decade earlier. This does not mean jobs are not expected to be available for high school dropouts, because the list of occupations projected to have extensive job growth show many for which they could qualify. Further, many openings are projected in numerous occupations to replace workers who leave the labor force or transfer to another occupation. It does mean, however, the risk of unemployment for high school dropouts is higher, as only one example of their labor market jeopardy. This is illustrated in the following tabulation of unemployment rates for 25- to 34-year-olds by educational level in 1990 (data are from the Current Population Survey):

Years of school completed	*1990 unemployment rate*
Total	5.0
Fewer than 12 years	12.0
High school only	6.3
1–3 years college	4.2
4 or more years college	2.5

As shown, there is a remarkable difference in unemployment rates by educational level for 25- to 34-year-olds, a group that should be reasonably well established in the labor force. The sharpest difference however, is between the 12.0-percent unemployment rate for high school dropouts and the 6.3-percent rate for those with only a high school degree.

Just as important, this group's employment/population ratio (the portion of a population group that is employed) shows a similar difference. The following tabulation shows the employment/population ratio of 25- to 34-year-olds in 1990 (data are from the Current Population Survey):

Years of school completed	*Employment/ population ratio*	
	Men	*Women*
Total	89.0	69.5
Fewer than 12 years of school	78.3	43.0
High school only	89.2	67.8
1–3 years college	91.1	74.7
4 or more years college	93.5	82.2

Of the 25- to 34-year-old population, 89 percent of the men are employed, as are nearly 70 percent of the women. However, among men, there is a 10-percentage point difference in the ratio between high school dropouts and those with a high school degree; among women the difference is much larger—25 percentage points. Again, note that the sharpest difference is between those with fewer than 12 years of schooling and those with only a high school degree.

A further complicating factor for high school dropouts is that those employed are more likely to be in jobs that are low paying, offer little advancement potential, and are projected to decline or grow very slowly over the 1990–2005 period. An important dimension of this difference is that the occupational employment structure of employed 25- to 34-year-olds in 1990 differs significantly between high school dropouts and those with only a high school degree. (See table 3.) Note that high school dropouts had a much higher proportion of operators, fabricators, and laborers jobs; food preparation and service jobs; and cleaning and building service jobs and a much lower proportion of professional specialty jobs; technicians and related occupations; and executive, administrative, and managerial jobs. The difference in access to administrative support, including clerical, jobs also is striking. In other words, high school dropouts are overrepresented in the occupations projected to grow slowly or decline and which traditionally have lower-than-average earnings. Further, high school dropouts were underrepresented in the occupations which are expected to grow faster than average and have higher earnings.

Another significant element of this occupational restructuring is the differing implications among various demographic groups. Attainment of a high school education is significantly lower for Hispanics—the fastest growing component of the labor force. It is somewhat lower also for blacks, whose share of the labor force also is projected to grow. Both of these groups are also more likely to be currently employed in occupations for which growth is projected to be significantly slower and for which earnings are lower.[7]

Therefore, the challenge is to emphasize the need for more education for Hispanics and blacks so that these groups can compete in the likely labor market of the next 15 years.

A very important dimension of education and jobs is the extent that schools are preparing young people for the jobs of tomorrow. This dimension has many aspects which touch on a number of elements of the very broad ongoing educational reform debate. For illustrative purposes, one dimension can be seen by looking at one subject—mathematics. Recently, the Department of Education's National Center for Educational Statistics released the latest mathematics testing results from their National Assessment of Educational Progress. The following shows the overall mathematics proficiency of this country's twelfth-graders in 1990:

Level	*Description of level of proficiency*	*Percent of students at or above proficiency*
200	Simple additive reasoning and problem-solving with whole numbers	100
250	Simple multiplicative reasoning and two-step problem-solving	91
300	Reasoning and problem-solving involving fractions, decimals, percents, elementary geometry, and simple algebra	46
350	Reasoning and problem-solving involving geometry, algebra, and beginning statistics and probability	5

These data show that at the 12th grade level, only a very small percent of students are operating at the highest level of proficiency (350). Yet many occupations require individuals with mathematics and science proficiencies: scientists and engineers; mathematics and science teachers in high schools and colleges; many professional jobs in health care—doctors and nurses as well as many allied health jobs; and also some highly skilled blue-collar jobs such as tool and die maker. Thus, according to the data, a very small pool of young people today appear educationally prepared for many of the occupations projected to grow most rapidly in the 1990–2005 period. □

Footnotes

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

[2] See Howard N Fullerton, Jr., "Labor force projections: the baby-boom moves on," pp. 31–44.

[3] See Howard N Fullerton, Jr., "Labor force projections."

[4] See George Silvestri and John Lukasiewicz, "Occupational employment projections," pp. 64–94.

[5] See George Silvestri and John Lukasiewicz, "Occupational employment projections."

[6] A 1990 analysis show a surplus of college educated workers over the 1988–2000 period. See John Sargent and Janet Pfleeger, "The Job Outlook for College Graduates to the Year 2000: A 1990 Update," *Occupational Outlook Quarterly*, Summer 1990, pp. 2–9.

[7] See George Silvestri and John Lukasiewicz, "Occupational employment projections."