

The economic outlook to 1995: new assumptions and projections

With a base year of 1984 instead of 1982, the real GNP annual growth rate remains at 2.9 percent in the middle scenario; productivity growth, however, is assumed to accelerate under the revised projections

BETTY W. SU

The Bureau of Labor Statistics has revised its projections of the U.S. economy to 1995.¹ The new projections, with 1984 as the base year, approximate or parallel the previous projections, which were based in 1982.

Once again, the focus is on the moderate-growth projection, characterized by strong productivity and investment growth, a declining unemployment rate, and a real annual rate of growth in gross national product (GNP) of 2.9 percent between 1984 and 1995. Two alternatives to the moderate-growth projection have also been developed: (1) higher productivity-lower unemployment (high-growth), and (2) lower productivity-higher unemployment (low-growth). (For presentation simplicity these are labeled, particularly in the tables, as high, moderate, and low.) The two alternatives, discussed later in the article, are designed to provide a range of economic responses to a given policy mix for those measures of economic performance which most affect the industrial and occupational employment projections. Projected GNP growth for 1984-95 ranges between 2.2 percent for the low-growth alternative to 3.8 percent for the high. Other alternatives, designed to examine the sensitivity of the projections to selected policy variations, are currently being explored.

Betty W. Su is an economist in the Office of Economic Growth and Employment Projections, Bureau of Labor Statistics. Norman C. Saunders, a senior economist in the same office, contributed the section on major assumptions.

By 1995, under the assumptions used by the Bureau of Labor Statistics, GNP is projected to range between \$3.0 and \$3.6 trillion (in 1977 dollars), with disposable personal income between \$2.0 and \$2.1 trillion, while civilian employment is projected to range between 116 and 126 million jobs. In all scenarios, annual rates of growth in GNP and employment slow in the latter half of the projection period. This reflects a slowdown in population and labor force growth after 1990.² The unemployment rate is assumed to drop for all three versions, from 7.5 percent in 1984 to 7.0 percent in 1995 for the low-growth alternative, to 6.0 percent for the moderate-growth version, and to 5.0 percent for the high. The following tabulation shows the rates of growth for selected key economic variables, historically and projected:³

	<i>Rate of change (in percent): actual</i>		
	<i>1968-73</i>	<i>1973-77</i>	<i>1977-84</i>
Real GNP	3.4	2.0	2.6
GNP deflator	5.1	7.3	6.9
Real disposable			
income	4.3	2.2	3.1
Real disposable			
income, per capita	3.2	1.2	2.1
Civilian labor force	2.6	2.6	2.0
Civilian employment	2.3	2.0	1.9
Real output per person			
(productivity), all			
industries	1.1	0.2	0.5

	Average levels: actual					
	1968	1973	1977	1984		
Unemployment rate	3.6	4.9	7.1	7.5		
	Rate of change (in percent): projected					
	1984-90			1990-95		
	High	Moderate	Low	High	Moderate	Low
Real GNP	4.0	3.0	2.2	3.5	2.8	2.2
GNP deflator	5.4	5.3	5.0	5.3	5.1	5.1
Real disposable income	2.7	2.5	2.1	2.1	2.3	2.2
Real disposable income, per capita	1.8	1.6	1.2	1.4	1.5	1.4
Civilian labor force	1.5	1.3	0.9	1.4	1.0	0.8
Civilian employment ..	1.8	1.5	0.9	1.5	1.1	0.9
Real output per person (productivity), all industries	2.4	1.7	1.5	1.9	1.7	1.3
	Average levels: projected					
	1990			1995		
	High	Moderate	Low	High	Moderate	Low
Unemployment rate	5.9	6.3	7.5	5.0	6.0	7.0

The first section of the article describes the major assumptions underlying BLS' demand projections. The second and third sections discuss the projected aggregate and industrial demand trends for the moderate-growth scenario. The fourth section describes the results of the high- and low-growth alternatives. Finally, the last section compares the current projections with the previous 1995 projections.

An overall statement of this methodology on this series of articles is presented on pages 58-59. A more detailed statement along with supplementary data, will be included in a forthcoming BLS bulletin.

Major assumptions

An important focus of the BLS projection program is the structure of industrial and occupational employment. Influencing that structure is the demand for the goods and services of individual industries. The Bureau uses two steps to project industrial demand: (1) projections of aggregate economic trends, and (2) the disaggregation of these aggregate trends into purchases from specific industries.

The aggregate economic projections—projections of GNP and its major components—are based on assumptions developed by BLS used in conjunction with the Wharton long-term macroeconomic model.⁴ Trends in GNP and its major components are determined in the model by the interaction of a range of factors: income elasticity, money supply, inflation, interest rates, Federal policies, and so forth.

In addition, numerous assumptions are required for fiscal and monetary policies, demographics, foreign economic ac-

tivity, and energy. Values for selected assumptions are shown in table 1. The assumptions for the moderate-growth scenario are briefly described here.

Fiscal policy. Real defense purchases of goods and services are assumed to increase at an annual rate of 5.3 percent between 1984 and 1990. After 1990, growth in defense expenditures is expected to taper sharply to the 1.0 to 1.5 percent annual real growth range.

Real nondefense purchases of goods and services are assumed to increase much less sharply during the rest of the 1980's—up at an average annual rate of 1.2 percent to 1990. After 1990, this category of expenditures is expected to increase at the modest rate of 0.9 percent each year.

A modest growth path for other Federal expenditure categories has generally been assumed. No real growth is assumed for food stamp benefits, military retirement and veterans' benefits, medicare payments, and Social Security payments during 1984-90. Growth in these categories is a combination of inflation adjustment and client population shifts. After 1990, some resumption of growth in all of the expenditure categories mentioned above is assumed—about 1 to 2 percent annually.

Federal grants-in-aid to State and local governments and Federal subsidy programs are assumed to decline in real terms over the entire projection horizon.

On the revenue side, effective personal tax rates are expected to remain virtually unchanged over the entire projection period at 10.7 percent of personal income. The recent trend toward lower effective tax rates on corporate profits is assumed to continue through 1995.

Social insurance contributions will continue to raise their effective share of income—from 12.2 percent in 1984 to 14 percent in 1995—as currently mandated wage base changes and rate increases take effect over the next decade.

The net effect of these assumptions is a level of Federal expenditures which drops from 24.4 percent of GNP in 1984 to 23 percent by 1995, and a level of receipts that increases from 19.4 percent of GNP in 1984 to 20.2 percent by 1995. The deficit remains high throughout the projection period, but it declines as a proportion of GNP, from 5 percent in 1984 to 3 percent in 1995.

Monetary policy. Monetary policy is best described as accommodative. Money supply growth has been set to parallel projected growth in nominal GNP. Thus, monetary policy does not interrupt growth by being too restrictive nor is it required to combat a resurgence of inflation.

The money supply which largely determines the level of interest rates, coupled with the decline in the Federal deficit as a percent of GNP, brings both short- and long-term interest rates down, dropping about 3 to 4 percentage points over the 10-year horizon of the projections.

Demographic changes. The population projections underlying the aggregate projections are the middle range pub-

lished by the U.S. Bureau of the Census in 1983. The labor force projections, middle scenario, described in the article by Howard N Fullerton in this issue of the *Review*, are also incorporated in the moderate-growth aggregate projections.

Foreign activity. Estimates of imports and exports are affected in the projections by both domestic and foreign economic activity. It is assumed that real economic growth for the major trading partners of the United States would more or less parallel real U.S. GNP growth. World gross domestic product (less that of the United States and centrally planned economies) is assumed to increase at an average annual rate of 3.5 percent between 1984 and 1990, and at a rate of 2.7 percent during 1990–95. The average gross domestic product deflator for the same economic grouping is assumed to increase at 5.6 percent annually during 1984–90 and 5.1 percent annually for 1990–95.

Since 1980, the weighted average exchange rate for the U.S. dollar has been declining at a very robust rate, dropping

from a high of 115.0 in 1980 to 71.5 in 1984. The decline is assumed to continue in 1985, but at a much lower rate. After 1985, the exchange rate is projected to turn around. This implies a smooth decrease in the value of the dollar vis-a-vis other currencies, back to approximately the 1980 level by 1995.

Energy. The barrel price (in 1984 dollars) of imported crude (freight on board) is assumed to decline from \$28 per barrel in 1984 to \$23 in 1995.

Unemployment. A target path for the civilian unemployment rate was also selected. A smooth decline is assumed, from 7.5 percent in 1984 to 6.3 percent in 1990 and 6.0 percent in 1995.

General assumptions. The further assumptions of smooth growth with no business cycle fluctuations, and lack of major economic upheavals, such as major wars and price shocks, are also included.

The sensitivity of projections to assumptions

Users of the Bureau of Labor Statistics projections should keep in mind that BLS (or others preparing similar projections) must make many judgments regarding the probable behavior of those factors which affect the future course of the U.S. economy. In addition, BLS must make judgments about the response of the various models to the primary assumptions. In short, while projections preparation and the use of models in preparing these projections may sound precise and scientific when described, developing economic projections is still very much an art filled with uncertainty.

The assumptions made by BLS cover a broad range, from those about which we may be reasonably certain, to those which are not at all predictable. The role of BLS in preparing these projections is to exercise judgment with regard to reasonable expectations for the assumptions, tempered by a knowledge of the sensitivity of the various models to those assumptions. That is, if a particular assumption is highly uncertain, yet has little impact on the outcome of the projections, it is important that the analyst be aware of this and also make that known to the users of the projections.

A few examples may help to clarify this point. The future course of the youth labor force can have major effects on various occupational categories. Those who will be in this segment of the labor force in 1995 have all already been born. Unless some major shifts in the factors underlying the decision to participate in the labor force take place or unless immigration for this age group swells, we can know with a great degree of certainty how large the youth labor force will be in 1995.

Another demographic example is the share of the population accounted for by those aged 85 and over. This

too can be predicted with a high degree of certainty. Unlike the prior example, however, even a substantial error in projecting this category of the population would have very little impact on the projection results because only a few of the group are in the labor force.

A third example would be the manner in which the monetary authority is assumed to respond to economic developments. The responses of the Federal Reserve Board to various situations are quite uncertain in the future, and the distribution of demand GNP is also sensitive to those responses through their impact on the level of interest rates in the economy.

A final example is the assumption regarding the statistical discrepancy in the National Income and Product Accounts. The measure of the difference between the income and product sides of the GNP accounts fluctuates widely from year to year and is subject to many near-term factors which are very difficult to predict or even to quantify. Nonetheless, a serious error in this assumption will have little noticeable impact on the projection results owing to the very small share of the GNP accounted for by this assumption.

The BLS has long been aware of these issues. It is one of the reasons alternative projections are prepared. However, we feel that further work is necessary. Currently, we are preparing several studies aimed at exploring further those assumptions to which the occupational employment projections are the most sensitive. The studies involve aggregate sensitivity analyses. In addition, several industry-level studies examining the sensitivity of occupational demand to alternative technological and institutional assumptions are under way. These studies are scheduled for completion and release by mid-1986.

The disaggregation of the aggregate trends into purchases from specific industries is based on final demand "bridge tables"—that is, a set of percentage distributions of aggregate final demand among industries. These tables transform demand estimates from the macro model to an input-output format. The projected changes in the bridge tables are based on reviews of studies of technological change, the relative output trends among industries, and the judgments of BLS analysts. (See pages 58–59 for a fuller discussion of final demand bridge tables.)

Aggregate demand

Gross national product consists of personal consumption expenditures (PCE), gross private domestic investment, foreign trade, and government purchases of goods and services. Since late 1982, when the recovery began, the growth of real GNP has accelerated to an annual rate of 5.2 percent in

the 1982–84 period, while real consumer spending, despite high real interest rates, has surged at a 4.9-percent annual pace and gross investment at a 23-percent annual rate, paced by growth in equipment outlays. Under the moderate-growth assumptions, real GNP is projected to increase at an average annual rate of 3.0 percent during 1984–90. The rate of growth is projected to moderate after 1990, averaging 2.8 percent per year between 1990 and 1995, primarily in response to slowing population and labor force growth. Total GNP and its various components are presented in table 2 in constant 1977 prices for selected years from 1973 to 1995.⁵

Consumption expenditures have traditionally accounted for the largest share of GNP and have shown the least variation among the four major final demand sectors over time. However, because of the projected impact of higher income, new technology, changes in relative prices, and shifting population mix, consumers' behavior is expected to show

Table 1. Values of selected aggregate economic assumptions, 1976, 1984, and assumed values for 1990 and 1995

	1976	1984	1990			1995		
			Low	Moderate	High	Low	Moderate	High
Federal (numbers in billions):								
Defense purchases, 1972 dollars	64.4	92.4	122.0	122.0	122.0	129.5	129.5	129.5
Nondefense purchases, 1972 dollars	32.4	31.1	35.4	35.4	35.4	37.1	37.1	37.1
Food stamp benefits, 1972 dollars	3.3	4.9	5.0	5.0	5.0	5.5	5.5	5.5
Military retirement, 1972 dollars	16.0	14.9	15.5	15.5	15.5	15.9	15.9	15.9
Medicare payments, 1972 dollars	13.8	26.6	31.8	31.8	31.8	38.1	38.1	38.1
Social Security benefits, 1972 dollars	56.6	79.1	88.0	88.0	88.0	93.7	93.7	93.7
Other transfers, 1972 dollars	18.5	23.4	25.2	25.2	25.2	27.9	27.9	27.9
Old-age and survivors insurance taxable income, current dollars	15,300	36,600	56,100	56,100	56,100	78,600	78,600	78,600
Old-age and survivors insurance combined tax rate	11.7	14.0	15.3	15.3	15.3	15.3	15.3	15.3
Grants-in-aid, current dollars	61.1	92.5	126.6	126.6	126.6	167.2	167.2	167.2
Subsidies, current dollars	5.8	24.2	20.4	20.4	20.4	27.1	27.1	27.1
Transfers to foreigners, current dollars	3.2	8.0	9.1	9.1	9.1	11.0	11.0	11.0
Interest paid to foreigners, current dollars	4.5	19.4	26.3	26.3	26.3	29.0	29.0	29.0
State and local (numbers in billions):								
Education purchases, 1972 dollars	71.3	71.4	78.1	80.6	82.3	84.1	88.3	90.0
Health and welfare purchases, 1972 dollars	28.2	33.1	36.6	39.0	40.9	39.7	43.9	46.1
Safety purchases, 1972 dollars	13.4	14.6	16.4	17.3	18.2	17.6	19.6	20.6
Other purchases, 1972 dollars	55.4	56.7	63.8	68.5	71.3	70.1	78.4	81.5
Transfers, 1972 dollars	20.9	24.1	29.2	29.2	29.2	32.9	32.9	32.9
Dividend income, current dollars	0.8	3.2	4.2	4.2	4.2	4.7	4.7	4.7
Net interest, current dollars	-3.6	-26.0	-71.1	-70.5	-78.5	-102.7	-99.5	-131.0
Monetary (numbers in billion of current dollars):								
Reserve requirement, demand deposits, (in percent)	10.2	17.5	17.5	17.5	17.5	17.5	17.5	17.5
Reserve requirement, time deposits, (in percent)	3.4	1.2	1.2	1.2	1.2	1.2	1.2	1.2
Free reserves	0.1	0.1	0.5	0.5	0.5	0.5	0.5	0.5
Money market mutual funds	3.0	184.2	271.0	271.0	271.0	417.4	417.4	417.4
Other checkable deposits	1.8	137.8	216.5	216.5	216.5	293.5	293.5	293.5
Overnight repurchase agreements	8.5	50.5	82.7	82.7	82.7	110.2	110.2	110.2
Term repurchase agreements, commercial banks	10.2	29.9	47.4	47.4	47.4	65.1	65.1	65.1
Term repurchase agreements, thrifts	1.4	26.3	47.2	47.2	47.2	66.5	66.5	66.5
Overnight Eurodollars	0.0	10.0	24.2	24.2	24.2	37.3	37.3	37.3
Traveler's checks	2.6	5.1	6.5	6.5	6.5	8.2	8.2	8.2
Demographic (numbers in millions):								
Male population, age 16 and over	76.846	85.940	91.926	91.926	91.926	95.478	95.478	95.478
Female population, age 16 and over	83.474	93.430	99.885	99.885	99.885	103.704	103.704	103.704
Number of families	56.827	61.996	68.183	68.183	68.183	72.250	72.250	72.250
Number of households	73.846	84.985	95.598	95.598	95.598	102.446	102.446	102.446
Number of unrelated individuals	20.543	31.905	34.287	34.287	34.287	36.747	36.747	36.747
Male labor force, age 16 and over	57.174	63.835	65.841	67.146	68.144	67.258	69.282	71.452
Female labor force, age 16 and over	38.983	49.709	54.259	55.507	56.156	57.842	59.886	61.448
Armed forces	2.141	2.239	2.322	2.322	2.322	2.322	2.322	2.322
Self-employed	5.783	7.785	7.974	8.191	8.363	8.175	8.632	8.921
Unpaid family workers	.464	.335	.310	.354	.374	.202	.235	.336
Conceptual difference	-.208	-.899	-.859	-1.081	-1.146	-.241	-.636	-.685
Foreign:								
World gross domestic product, billions of 1972 dollars	3,693.0	4,529.5	5,283.7	5,567.9	5,764.4	5,948.9	6,361.3	6,617.9
World gross domestic product deflator (1972 = 100)	153.3	297.1	433.5	412.0	391.4	610.9	528.3	480.8
Exchange rate (1972 = 100)	98.31	71.48	82.90	89.21	93.62	92.42	105.74	120.06

somewhat different patterns in the next 10 years. For example, consumer electronics products are projected to become increasingly popular and important. In 1977, PCE accounted for 63.1 percent of real GNP. During 1982–84, the PCE share was higher than usual because of the aftermath of the deep recessions and because of the relatively low prices of imported consumer goods, caused in part by the high value of the dollar. By 1995, the PCE share is estimated to decline because of the impact of a projected slowdown in population growth, as well as the larger share of GNP accounted for by investment expenditures. The decline in PCE's GNP share represents a return to the consumption patterns experienced during the 1970's, when PCE averaged about 63 to 64 percent of GNP.

Over the coming decade, consumption expenditures are projected to shift more toward durable goods and services and away from nondurable goods. The slow growth in consumer nondurables is in line with the slowdown in population growth. More important, because income elasticities for durables and services exceed those for nondurables, it is estimated that consumers will demand relatively more durable goods and services as real family incomes rise. As a result, the share of nondurable goods is projected to account for 34.2 percent of total PCE in 1995, down from 37.6 percent in 1984.

Since 1967, expenditures by consumers on services have exceeded expenditures on nondurables. Spending on services is projected to continue to increase relatively from a 46.8-percent share of total PCE in 1984 to 50.2 percent in 1995. Spending on financial, legal, and business services, is expected to expand rapidly. Health care and other related services are estimated to become the fastest-growing part of services consumption.

By 1995, the share of durables is projected to remain close to 15.6 percent of total PCE. As noted earlier, durable goods have a high income elasticity, which implies that higher real incomes have a favorable effect on purchases of high-priced durable goods. This is projected to foster durable consumption growth despite a projected slowdown in household growth. The steady demand for durables is also stimulated by a growing demand for household electronic goods. On net balance, however, the rate of growth of consumer durables in the projection period is slower than for past trends.

Gross private domestic investment consists of (1) purchases of producers' durable equipment; (2) investment in nonresidential structures; (3) purchases of residential structures; and (4) changes in inventories of business. Historically, gross domestic investment is one of the most volatile elements of final output. Accounting for 17.9 percent of GNP in 1972 and 18.8 percent in 1973, gross investment accounted for only 14.1 percent in 1982 and 15.5 percent in 1983, primarily because of the effects of high interest rates, high inflation, and the recessions of the 1970's and early 1980's on housing construction.

Since the end of the latest recession in late 1982, investment spending has climbed to its historically high levels. The strength of the recovery in spending on purchases of producers' durable equipment has been particularly dramatic, an increase of 33 percent on average from the fourth quarter of 1982—the recession trough—to the second quarter of 1984, which is almost twice as large as the increase in any comparable recovery period. A major contributor to this increase was the category of office machinery which includes computers. Investment in nonresidential structures, especially for commercial buildings, recovered so sharply during the last 2 years that it was well ahead of the average for the previous postwar recoveries. Investment in residential structures, that is, housing construction, also rebounded strongly. Private housing starts for 1984 were about 1.8 million units versus 1.06 million for 1982.

The extent to which changes in tax laws in 1981 and 1982 contributed to the current recovery of business investment is unclear.⁶ Nevertheless, the future mix of monetary and fiscal policies assumed by BLS in this set of projections, which determines the level of real interest rates, is estimated to be more favorable toward investment than in the recent past. Although Federal deficits in nominal terms are projected to remain high through 1995, as a percent of GNP they are projected, using the assumptions stated earlier, to decline from 5.0 percent of GNP in 1984 to 3.0 percent in 1995. As a result, interest rates (measured by the 3-month Treasury bill rate) are projected to fall from their 1984 level of 9.52 percent to 7.55 percent in 1995. This decline contributes to the projected increase in the share of GNP accounted for by investment expenditures, which attain a 19.0-percent level in 1995. Business investment is estimated to be a great contributor to real growth during the projection period.

Real exports and imports are projected to continue to account for a larger share of GNP. Exports are estimated to rise to 13.4 percent of GNP in 1995 and imports to a 13.8-percent share. For merchandise imports, the major growth area is expected in capital goods. For merchandise exports, the demand for "high-tech" goods is estimated to increase rapidly during the projection period.

In 1984, the Nation experienced a large trade deficit as net exports fell to an unprecedented $-\$64.2$ billion (in nominal terms), from $-\$8.3$ billion in 1983. The worsening of the trade deficit was largely in merchandise trade. Merchandise imports were up 26 percent from 1983 to 1984, while merchandise exports increased only 10 percent. The weakness in merchandise exports and the strength in merchandise imports continue to reflect the effects of cumulative dollar appreciation. The current account trade balance, under the assumptions used in the BLS projections, is expected to remain in deficit into the 1990's, but the net exports share of GNP is projected to decline over the study period.

Because of differential price results, the real trade balance under the same assumptions is assumed to show improve-

ments after 1985. Real net exports would still be negative by 1995, but with a relatively narrow gap, as a result of a stable rate of inflation and the assumption of a slow but steady increase in the exchange rate.

Government purchases of goods and services⁷ are assumed to rise at a slightly faster rate than GNP throughout the 1980's, then begin to slow after 1990, relative to overall GNP growth. This pattern reflects that defense spending, especially in the areas of computers and communication equipment, is anticipated to grow very strongly—by about 5.3 percent per year between 1984 and 1990—but then is assumed to slow sharply (to 1.2-percent growth per year) in the 1990-95 period. The real nondefense portion of Federal purchases is estimated to show only minimal growth in the next 10 years; an annual growth rate of 1.1 percent is projected for 1984-95.

State and local spending on goods and services is projected to increase more slowly than GNP in the 1990's, averaging 2.3 percent per year for both the 1984-90 and the 1990-95 periods. It should be noted that the projected growth rate of State and local purchases is somewhat faster than the recent trend. The slower growth during 1977-84 was the result of strict, recession-induced expenditure controls by State and local government. Between 1980 and 1983, total real State and local government purchases dropped about \$2 billion, although purchases began a turnaround in 1984.

Industry final demand

Each demand sector mentioned above accounts for purchases from a different set of industries. Households consume a different variety of industrial products than businesses. Clearly, the products of food-related industries, such as meat products or soft drinks, are heavily consumed by households, while the products of machinery-related industries, such as engines and office machines, are heavily consumed by business as investment goods. Industry demand is affected by shifts both in the relative importance among the various final demand sectors and in each sector's distribution of purchases from each of the producing industries in the economy.⁸

Consumption expenditures

Motor vehicles. After the dismal sales experienced by the automobile industry from 1980 to 1982, new car sales boomed to 10.4 million units in 1984 from a cyclical low of 8.0 million units in 1982. The increase in motor vehicle sales was mostly accounted for by domestic cars; sales of imported cars were constrained, at least somewhat, by "voluntary" import quotas during 1982-84. The recovery of the new car market reflects the improvement in economic conditions—higher personal income, stable gasoline prices, a reduced inflation rate, and improved consumer confidence.

Demand for motor vehicles probably will remain strong in the near future because of a backlog of demand. However,

a slowdown in long-term growth of automobile demand is anticipated, caused by the decline in the number of new auto registrants because of a long-term demographic swing. In addition, the continued rise in automobile costs may lead ultimately to lower replacement demand. Purchases of cars, vans, and light trucks as a whole, are estimated to rise at the moderate rate of 2.0 percent per year during 1984-95. This represents an increase in new car sales to 10.9 million units in 1995. Purchases of imported cars, because of the assumption that imports will continue to improve their competitive position in this country, are projected to account for a larger proportion of the industry's output—28.2 percent in 1995, compared with 13.5 percent in 1977 and 23.4 percent in 1984.

Demand for auto parts is expected to echo the slowing growth in demand for automobiles. Purchases of tires and inner tubes, accounting for about one-half of total sales of auto parts, are projected to show a very slow growth during the projection period, partly because of the increased use of smaller-size tires and the decreased replacement for longer-lasting tires.

Personal computers. Among the consumer-related industries, personal computers and computer peripheral equipment, such as disk drives and printers, are projected to be the most rapidly growing demand category. The substantial demand for personal computers that began in the late 1970's continued in 1984. The projections concerning the personal computer market in the longer term are still optimistic despite short-run problems, as rapid technological change is expected to sustain improvements in computer system capabilities, thus attracting new buyers, as well as repeat customers. In addition, improved software will likely propel demand for personal computers. Furthermore, the educational market is considered important. Many children are exposed to the use of computers at school, and for many it will become another standard appliance. Purchases of personal computers are projected to grow at a robust rate of 20.9 percent per year in 1984-95. This means that real spending on home computers should reach \$8.1 billion in 1995, eight times that of 1984.

Telephone equipment. The consumer market for telephone sets over the next 10 years is expected to be positive. Because of the AT&T divestiture and changes in regulation, more people are replacing leased telephones with their own. Moreover, telephone sets have become much more available to consumers; the new products, such as cordless telephones and telephone clock-radios, have also been widely introduced. Purchases of telephone equipment are expected to increase at a rapid rate of 20 percent annually between 1984 and 1995, following the strong growth of 11.5 percent annually between 1977 and 1984.

Consumer electronics. A great deal of technological innovation has brought many unique electronic products to

the market in the past 5 years. Demand for consumer electronic products, with no recent evidence of cyclicity, has been increasing dramatically in recent years. These products include television sets, video disc players, automobile radios, video cassette recorders, and audio tape recorders. The new popular interest in video entertainment, which is aroused by an increasing variety of cable TV programs and pre-recorded video cassettes, is stimulating the demand for modular color television sets. Also, televisions will likely be used more and more as monitor-receivers to serve as a display screen for home computers and video games. As a result, demand for radio and television receiving sets as a group is estimated to increase strongly; from the already high level of 1984, an annual rate of 3.9 percent is projected for the 1984-95 period, reaching \$22 billion in 1995.

Consumer nondurables. Expenditures for nondurables tend to be more closely tied to population growth than other categories of consumer expenditures. The projection of slow growth in population and household formation in the next decade is reflected in a moderate growth rate for all nondurables except for drugs and pharmaceutical products. For example, spending on dairy products is estimated to grow 2.4 percent per year between 1984 and 1995, while spending on apparel products is projected to grow even more slowly, 1.7 percent. Spending on gasoline is expected to decline below its 1977 level, as the stock of automobiles grows less rapidly and average fuel efficiency continues at a moderate rate of increase. Conversely, drugs are the only nondurable consumer product projected to show strong long-term growth: 7.4 percent per year for the 1984-95 period, as compared with 2.6 percent for 1977-84. The estimate for high growth is linked to the continuation of new product development, increases in prices of prescription drugs (such as cardiovascular drugs), further expansion in the use of generic drugs, and the rising number of elderly in the population who proportionately consume more drugs.

Banking and financial services. Personal banking and financial services have been expanding rapidly in recent years, as more persons enjoy banking and credit union services, such as the new and convenient automatic teller machine and the spread of investment counseling. Both banking and financial services are projected to expand even more in the future, with credit cards, debit cards, and in-home banking programs. However, because banking services are facing more intense competition from financial services, the latter are providing a wider array of financial products, such as retirement accounts, competitive deposit accounts, mutual funds, and insurance. Spending for personal banking services is projected to grow at a rate of 3.6 percent per year between 1984 and 1995, while spending for financial services is projected to increase at a rate of 5.6 percent.

Medical care services. Since the mid-1960's, medical care expenditures have grown rapidly. Reasons for the rapid

increase include relatively inelastic demand for health care services; a generally more rapid rate of increase in prices; a rising proportion of the elderly in the total population; costly surgical and in-hospital treatment; technological development which allows the use of sophisticated and expensive medical equipment; new and costly medical procedures; and government and private insurance systems.

It is estimated that medical care spending will continue its upward trend in the coming decade. By 1995, such spending is projected to account for 8 percent of total PCE, but spending patterns will change considerably over the next 10 years. Mirroring the projected growth in the aging population, nursing home services will increase. Moreover, the rapid expansion of health maintenance organizations, spurred by the provision of more affordable and comprehensive medical services, should attract members of other health plans. Also, the continuing Federal restriction on payments to hospitals will be a strong motivation to curb hospital care in favor of other kinds of health care services, which are usually less expensive. Expenditures for physicians' services are projected to grow at an annual rate of 3.9 percent in the 1984-95 period, accounting for 3.9 percent of total PCE in 1995 versus 3.4 percent in 1984. Expenditures for hospitals are estimated to show a much slower growth of 1.7 percent per year between 1984 and 1995, down from 3.6 percent during 1977-84; while expenditures for other medical services are projected to grow faster, at an annual rate of 5.7 percent between 1984 and 1995, up from 3.4 percent for 1977-84.

The following tabulation highlights those PCE-related industrial categories with the best projected performance:

The 10 largest PCE-related industrial categories in 1995:	<i>1977 dollars (in billions)</i>
Owner-occupied real estate	\$261.4
Real estate	100.8
Eating and drinking places	97.6
Doctors' and dentists' services	79.2
Motor vehicles	64.0
Hospitals	58.1
Communications services	56.6
Apparel	49.1
Banking services	48.1
Electric utilities	47.3

The 10 fastest growing PCE-related industrial categories during 1984-95:	<i>Annual percent growth rate</i>
Computers and computer-related equipment	20.9
Telephone and telegraph apparatus	20.0
Drugs	7.4
Electronic components and accessories	6.9
Professional services	5.8
Medical services	5.7
Communications services	5.7
Credit agencies and financial brokers	5.6
Real estate	4.7
Amusement and recreation services	4.5

Business investment

As mentioned earlier, business investment (nonresidential investment) is expected, under the assumptions used by BLS in this set of projections, to remain strong throughout the projection period, boosting the business investment share of GNP. From 1984 to 1995, investment in equipment, the largest portion of investment, is estimated to grow by 3.8 percent per year, outpacing growth in GNP. Equipment investment's GNP share is projected to rise to 10.3 percent by 1995, from 7.6 percent in 1977 and 9.4 percent in 1984.

During the 1970's, investment in equipment was directed more toward energy-efficient and environmentally safe equipment. Over the next decade, investment in equipment is likely to be highly concentrated in technologically advanced equipment, as businesses invest to increase productivity, cut costs, and respond to the availability and capabilities of new technologies. This equipment includes not only computers and advanced communication equipment, but manufacturing machinery incorporating programmable controls and robotics.

Computers. Investment spending on computers and computer-related equipment is projected to continue to boom through the 1990's. All major industries are projected to have made heavy commitments to computers during the next 10 years. In addition, intense competition and continued technological change are estimated to combine to sustain increases in capabilities and decreases in prices. Thus, business investment in computers is expected to show a sharp growth, averaging 8.5 percent per year between 1984 and 1995. This will bring spending on computers to 18.6 percent of total equipment spending, ranking it the largest item of total purchases of producers' durable equipment.

Metalworking machinery. The increase in demand for metalworking machinery in recent years reflects the interest in flexible manufacturing and automation, which incorporate robots and highly automated metal cutting tools, as well as lasers and fluid cutting techniques. Business spending for metalworking machinery is expected to continue its rapid advance through the next decade, reaching about \$14 billion by 1995, almost double that in 1977.

Communication equipment and services. Continued growth in the demand for industrial electronic equipment (ranging from radio and television broadcast equipment to mobile radio equipment and cable television equipment), as well as the introduction of new high-technology products and services (such as fiber-optic cable, cellular mobile radio telephone, and video-conferencing) promise to widen the applicability of communication technologies. Investment demand for communication equipment and services is projected, therefore, to increase two- to threefold over 1984-95.

Other fast-growing investment demand is projected for optical equipment, scientific and controlling instruments,

and medical instruments. These products are all characterized by rapid changes, partly because of changes in technology.

In contrast, equipment products for which investment demand is projected to grow slowly include farm and garden machinery, mining and oilfield machinery, and railroad equipment.

The following tabulation shows the highlights for those industrial categories related to purchases of producers' durable equipment (PDE) with the best expected performance:

The five largest PDE-related industrial categories in 1995:	1977 dollars (in billions)
Computers and computer-related equipment	\$62.4
Motor vehicles	41.8
Radio and communication equipment	21.6
Communication services	19.0
Telephone and telegraph apparatus	18.0

The five fastest growing PDE-related industrial categories during 1984-95:	Annual percent growth rate
Computers and computer-related equipment	8.5
Communication services	8.1
Medical and dental instruments	5.7
Telephone and telegraph apparatus	5.2
Radio and communication equipment	4.5

Business investment in nonresidential structures is a small but very cyclical part of GNP. During the 1983-84 recovery, nonresidential structures did not turn up until late 1983. After that, investment expenditures recovered sharply in the mature stages of the business cycle, increasing by 16 percent between 1983 and 1984. The largest percent increase was for commercial buildings.

Because more of future economic growth is projected to come from high-technology industries, which invest heavily in research and development but are not generally structure-intensive, investment in nonresidential structures is estimated to grow principally to modernize the existing capital stock: factories, offices, transmission lines, and other structures. As a consequence, an average growth rate of only 2.0 percent per year is projected for 1984-95.

Housing

From the end of the 1960's until the beginning of this decade, demand for new housing (residential investment) increased at a steady rate, although usually interrupted by business cycles. Similarly, housing construction was severely depressed in the 1980-82 recessions. New housing starts plummeted from a high of 2.0 million units in 1977 to 1.1 million units in 1982, while residential investment expenditures (in real terms) declined from \$99 billion in 1977 to \$60.4 billion in 1982. Even though the downswing reversed sharply during the 1983-84 recovery period, new housing starts have averaged only about 1.7 million units for the last 2 years. During each economic recovery in the

1970's, housing starts bounced back to more than 2 million units and stayed there for a few years. Record-high mortgage rates are among the key reasons that housing has not rebounded as fast as in the past, but the demographic factors also play an important role. In the 1970's, baby boomers formed households in record numbers and this was reflected in housing demand. Now this age group is growing out of the typical age for forming new households.

Long-term housing demand is mainly determined by demographic factors and geographic movements, although higher housing prices and higher real interest rates could retard demand. Primarily because of projected slowdowns in population growth and changes in the age structure of the population, the number of households is projected to show a slower growth of 1.7 percent per year between 1984 and 1995, below the rate of 1.9 percent during 1973-84. The decline in household formation is projected to reduce the number of housing starts to a level of 1.6 million units in 1995 in spite of the assumption of steadily improving real interest rates.

Between 1973 and 1983, the stock of multiple units grew more rapidly than the stock of single units, averaging 2.4 percent growth, compared with 2.0 percent for single units. This pattern is projected to continue over the next 10 years, but a narrowing of the differential is also likely. The improved picture in the future for single-family units relative to multiple units stems from the shift of population structure. The 25- to 44-year-old group, used as proxy for the home buying market, is projected to maintain a consistently high proportion of the adult population in 1995; individuals in this group have traditionally favored single-family homes.

The stock of mobile homes, which was at the level of 3.4 million units in 1984, is projected to stabilize at about 3.2 million units over the study period.

Foreign trade

The trade picture is expected to show improvements in the coming decade under the assumptions used in this set of projections. With gradual depreciation of the U.S. dollar assumed, along with the stronger world economic growth, the GNP share of real net exports is projected to recover from -2.2 percent in 1984 to -0.4 percent in 1995.

Real exports are expected to increase much faster than total GNP in the 1990's. An annual growth rate of 5.6 percent for exports is projected in the 1984-95 period, while a rate of 2.9 percent for GNP is projected. By 1995, merchandise exports are estimated to be even more highly concentrated in "high tech" goods, such as computers, electronic components, communication equipment, and drugs, because technology has risen to become a worldwide concern. The U.S. technological lead in computers is universally acknowledged. Thus, by 1995, the computer industry is projected to become the largest export industry, accounting for 7.4 percent of total exports. Also, exports of electronic components, the basic building blocks of all electronic

equipment, are expected to increase sharply because of strong demand from their end users. A rapid growth of 10 percent per year is projected between 1984 and 1995. It is important to note that the expansion of exports for electronic components, however, will be significantly tempered by the parallel expansion of imports.

Over the past 20 years, the U.S. trade balance always has benefited from strong exports of agricultural products. While agricultural surpluses are still expected to continue over the projection period, the share of the agricultural industry with respect to total exports is estimated to be smaller, 6.9 percent in 1995 versus 8.3 percent in 1984. Other traditional export industries, such as aircraft and motor vehicles, are projected to continue to exhibit their sizable share of total exports.

Among services exports, the most rapidly growing industry is communication services, averaging 10.5-percent growth per year in the 1984-95 period; a strong demand for U.S.-built communication equipment, as well as telephone and telegraph apparatus, implies a strong demand for communication services. The following tabulation highlights those industries with the best expected performance:

The five largest merchandise export industrial categories in 1995:	<i>1977 dollars (in billions)</i>
Computers	\$31.5
Electronic components	19.5
Motor vehicles	16.5
Food and feed grains	14.6
Aircraft	13.8

The five fastest growing export industrial categories during 1984-95:	<i>Annual percent growth rate</i>
Computers	10.5
Communication services	10.5
Radio and television receiving sets	10.1
Electronic components	10.1
Telephone and telegraph apparatus	9.1

It is assumed that as the U.S. dollar falls, import price increases will gradually reflect the drop in the dollar's value. In turn, the growth of real imports is expected to show a slower pace. Average growth of 4.0 percent per year for total imports is projected in the 1984-95 period, as compared with 6.5 percent for 1977-84 and 15.9 percent during 1982-84.

In 1980, nearly one-fourth of merchandise imports was accounted for by crude oil and petroleum products. However, in 1984, petroleum imports were less than 15 percent of total merchandise imports. The lagged impacts of the 1979-80 oil price increases are still inducing conservation and substitution away from oil and reducing the growth of oil demand: petroleum dropped to 3.4 million barrels per day in 1983 from a high level of 6.5 million barrels per day in 1979. Despite the recent fall in oil demand, in the long-term, demand for imports is projected to increase because of falling domestic production. Domestic oil production, is projected to continue to decline over the projection period, from 8.6 million barrels per day in 1984 to 7.9 million

barrels by 1990 and 7.6 million barrels by 1995. In contrast, petroleum imports are expected to increase steadily from 3.9 million barrels per day in 1984 to 5.7 million in 1990 and 6.9 million in 1995. With no real oil price increases assumed during the projection period, demand for petroleum imports is projected to increase at a rate of 2.6 percent per year during 1984–95.

Instead of imported oil, Americans are buying more foreign-made steel, textiles, apparel, automobiles, and business equipment. During the 1980–82 recessions, the market penetration of imported cars was record breaking. As a result of a recovery of the U.S. car market and a limit on Japanese imports, the import share declined from 28.8 percent in 1982 to 23.6 percent in 1984. But the restraint program ended on April 1, 1985. Despite a new set of self-imported restraints, Japanese automobiles are expected to expand their share of U.S. markets in the near future. As noted earlier, the long-term automobile import share is expected to resume its increase because of the assumption that imports will continue to improve their competitive position in this country. Auto imports are projected to grow at a rate of 4.0 percent per year between 1984 and 1995.

Capital goods are increasingly being bought from foreign producers. Imports of electronic components, which have made major inroads in recent years, are projected to exceed exports by 1995, capturing 23.8 percent of the industry's output. Imports of office machines have already dominated the U.S. market since the 1970's. Their projected values reach \$3.1 billion in 1995, representing 41.9 percent of the industry's output. Imports of machine tools accounted for about 40 percent of domestic machine tool sales in 1984. This industry is expected to become even more international by 1995.

Also, lured by lower prices, foreign steel took a record 26 percent of the domestic market in 1984, or an increase from a 20.5-percent of market share in 1983 and 18.5 percent in 1979. Even with import curbs for the next 5 years, foreign competition is anticipated to remain strong through 1995.

Imports of the products of some labor-intensive industries, such as apparel products and textiles, are also projected to continue to increase, as developing countries seek larger shares of the U.S. market. The traditional imported goods, such as motorcycles, jewelry, and watches, also continue to dominate the U.S. market for these products in the next decade in the BLS projections.⁹ The following tabulation highlights those industries with the best expected performance:

The five largest merchandise import industrial categories in 1995:	1977 dollars (in billions)
Motor vehicles	\$50.6
Computers	28.6
Crude petroleum and natural gas	27.9
Electronic components	26.6
Apparel products	23.5

The five highest import penetration industrial categories in 1995:	Imports outputs ratio
Watches and clocks	74.6
Leather products	60.2
Radio and television receiving sets	58.3
Motorcycles and bicycles	56.7
Jewelry and silverware	55.2

Government

Total real government purchases of goods and services are projected to grow more slowly than total GNP over the 1984–95 period, as reflected by the fact that government purchases, as a percent of GNP, fall from 18.8 percent in 1984 to 18.0 percent in 1995. However, when the various parts of government are viewed separately, a more complex picture emerges.

Federal Government defense spending is projected to increase to 5.7 percent of GNP by 1995, from a level of 5.4 percent held in 1984. This is a result of an average annual growth rate of 5.3 percent projected from 1984 to 1990, and 1.2 percent from 1990 to 1995. For the whole period, from 1984 to 1995, GNP is projected to grow 2.9 percent while defense grows 3.4 percent. However, the growth of Federal nondefense purchases is less than GNP over the whole period, resulting in a drop from 2.0 percent of GNP in 1984 to 1.7 percent in 1995. This pattern is duplicated by State and local government purchases of goods and services, which are projected to drop from 11.4 percent to 10.7 percent of GNP. All four of the major components of State and local government purchases—education, health and welfare, safety, and other purchases including highway construction—are assumed to have growth rates slower than GNP over the projection period. Spending on education, the largest State and local government component, is projected to increase at an average annual rate of 1.8 percent during 1984–95, reflecting that the population of 5- to 17-year-olds is projected to grow only at a rate of 0.8 percent per year. Spending per student is estimated to increase at a rate of 1.0 percent per year.

Government spending is further divided between compensation of employees and spending on purchases of goods and other services. In the defense sector, there is little expectation that the level of armed forces and civilian defense employment will increase dramatically over that of 1984, so the increases in spending will be for material. Compensation, as a percent of total real defense purchases, is projected to continue to drop from its 46-percent level in 1977 and 35 percent in 1984 to 26 percent in 1995. After compensation, the major recipient of defense spending is the manufacturing sector of the economy which is projected to hold its historical share of noncompensation purchases at 67 percent. Within the manufacturing sector, relatively more spending on computers and communication equipment causes the share of these industries to increase at the expense of such purchases as food and clothing which are devoted to

a stable armed force level. In the nonmanufacturing areas, communications, along with specialized professional services such as computer and data processing, will grow much faster than total defense purchases and thus take a larger share.

Slower projected growth for the remaining functions of government, than projected growth for total GNP, reflects the demographic landscape of the projection period. A maturing population will require relatively less real education expenditures but more health expenditures than were necessitated by the baby boom, while a completed highway program will call only for expenditures on upkeep.

Alternative growth paths

Two alternative projections of growth have been prepared with variations in those responses to economic policy which have the greatest impact on the industrial employment and occupational projections. It should be noted that the alternatives are not policy alternatives. In fact, both fiscal and monetary policies, with the exception of Federal spending programs which respond to economic stimuli, such as unemployment benefits, remain the same in all three scenarios. The purpose of the alternatives is to provide a reasonable range of outcomes around the probable responses of the economy to a given set of policy assumptions.

The assumptions underlying the high-growth alternative are that the civilian labor force is estimated to grow more rapidly, reaching almost 133 million by 1995, approximately 4 million more than in the BLS middle-growth labor force projection; and the unemployment rate is estimated to drop more rapidly over the projection horizon, reaching 5.9 percent in 1990 and 5.0 percent in 1995. Productivity growth is even higher than in the moderate-growth version. In contrast, the assumptions underlying the low-growth alternative are that the labor force will expand less rapidly and the unemployment rate will not improve very much over the projection period. In addition, a sluggish rate of productivity growth is also assumed. Each of the alternatives is summarized below and estimates from these scenarios are presented along with the moderate-growth projection in tables 1 and 2.

High growth. This alternative differs from the moderate-growth version primarily in the 1984–90 period. Real GNP is projected to increase at an average annual rate of 4.0 percent during 1984–90, a full percentage point higher than in the moderate-growth projection. Between 1990 and 1995, GNP is projected to grow at a rate of 3.5 percent annually. The GNP in 1995 is \$310 billion higher than in the moderate-growth case.

Within GNP, the component of demand most sensitive to the alternative assumptions is business investment, especially investment in equipment. With more GNP and lower interest rates in this version, higher real investment is ex-

pected. In addition, investment is estimated to be more robust because of a decline in the user cost of capital relative to labor. Investment equipment is projected to grow at an average rate of 4.9 percent in the 1984–95 period, 1.1 percentage point over the moderate-growth case.

The higher incomes growth in this alternative is particularly beneficial to spending on consumer durables because consumer durables are more responsive to income changes than some other categories. Auto sales increase rapidly in the high-growth version, exceeding 12 million units by 1995, compared with 10.9 million units in the moderate-growth projection.

Demand for U.S. exports increases as a result of the stronger world growth and stable rate of inflation. Demand for imports is also expected to rise as a result of higher economic growth. Real exports in the high-growth version are \$48 billion higher in 1995 than in the moderate-growth case, while real imports are only \$11 billion above the moderate-growth projection, resulting in a trade surplus of about \$25 billion in 1995, compared with a trade deficit of \$12 billion in the moderate-growth scenario.

Real Federal purchases of goods and services at the total level show no change in the high-growth projection, while State and local purchases of goods and services show a slight increase, higher by \$12 billion in 1995 than in the moderate alternative. Finally, higher income growth rates lead to higher Federal Government revenue collections, which in turn, lead to a projection of a balanced Federal budget in 1995.

Low growth. In this alternative, as noted above, a relatively more consumer-oriented growth path is assumed with less relative investment growth and much lower productivity growth.

Real GNP is \$234 billion lower in 1995 than in the moderate-growth case, and durable items are particularly affected by the slower growth. Lower levels of disposable income dampen purchases of automobiles, furniture, and other durable goods. Thus, consumption of durable goods is 6.5 percent below the moderate-growth projection by 1995, while total consumption spending is 6.1 percent below the moderate-growth version.

With lower economic growth, business investment in this scenario shows a relatively poorer performance. By 1995, total investment is 7.6 percent below the moderate-growth version, especially investment in producers' durable equipment which ends up about 10 percent below moderate growth. Dampened capital goods spending leads to lower productivity over the entire period.

The demand for imports is assumed to be reduced by lower economic activity. However, the lower economic growth is projected to hamper export growth even more. Real exports are lower by \$47 billion in 1995, compared with the moderate-growth levels, while real imports are off by only \$12 billion. As a result, real net exports are projected to reach a \$47 billion deficit by 1995 in the low-growth

Table 2. Gross National Product, 1973, 1977, 1984, and projected to 1990 and 1995

[Billions of 1977 dollars]

Item	1973	1977	1984	1990			1995				
				Low	Moderate	High	Low	Moderate	High		
Gross national product	\$1,825.3	\$1,976.6	\$2,367.3	\$2,691.4	\$2,821.4	\$2,986.7	\$3,006.4	\$3,240.5	\$3,550.9		
Personal consumption	1,111.9	1,246.5	1,522.2	1,744.3	1,808.4	1,930.4	1,929.2	2,053.5	2,257.9		
Durables	162.1	184.4	237.2	275.5	284.4	307.9	299.9	320.6	363.7		
Nondurables	455.1	490.5	572.2	617.9	641.7	680.6	659.7	702.5	763.0		
Services	494.8	571.6	712.8	851.0	882.4	942.0	969.6	1,030.4	1,131.2		
Gross private domestic investment	343.5	336.6	452.4	497.8	524.5	557.9	569.1	615.6	672.5		
Equipment	136.3	149.9	221.7	256.7	270.3	290.5	302.5	335.0	375.0		
Nonresidential structures	77.3	66.0	92.9	97.9	102.2	106.7	111.4	116.0	125.9		
Residential structures	101.8	99.0	97.3	111.5	112.3	112.6	120.4	122.5	120.7		
Inventory change	28.1	21.7	40.5	31.7	39.7	48.2	34.8	42.0	50.9		
Net exports	-2.6	-2.1	-52.3	-68.0	-44.7	-45.9	-47.1	-11.8	25.2		
Exports	161.4	185.3	238.2	314.2	340.2	355.3	388.6	435.6	483.4		
Imports	-164.0	-187.4	-290.4	-382.2	-384.9	-401.2	-435.7	-447.3	-458.2		
Government	372.5	395.6	445.0	517.3	533.2	544.2	555.2	583.2	595.3		
Federal	136.8	143.4	174.8	224.3	224.3	224.3	237.4	237.4	237.4		
Defense	97.0	92.8	127.2	173.1	173.1	173.1	183.8	183.8	183.8		
Nondefense	39.9	50.5	47.6	51.2	51.2	51.2	53.6	53.6	53.6		
State and local	235.7	252.2	270.2	293.0	308.9	319.9	317.8	345.9	357.9		
Percent distribution											
Gross national product	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0		
Personal consumption	60.9	63.1	64.3	64.8	64.1	64.6	64.2	63.4	63.6		
Durables	8.9	9.3	10.0	10.2	10.1	10.3	10.0	9.9	10.2		
Nondurables	24.9	24.8	24.2	23.0	22.7	22.8	21.9	21.7	21.5		
Services	27.1	28.9	30.1	31.6	31.3	31.5	32.3	31.8	31.9		
Gross private domestic investment	18.8	17.0	19.1	18.5	18.6	18.7	18.9	19.0	18.9		
Equipment	7.5	7.6	9.4	9.5	9.6	9.7	10.1	10.3	10.6		
Nonresidential structures	4.2	3.3	3.9	3.6	3.6	3.6	3.7	3.6	3.5		
Residential structures	5.6	5.0	4.1	4.1	4.0	3.8	4.0	3.8	3.4		
Investment change	1.5	1.1	1.7	1.2	1.4	1.6	1.2	1.3	1.4		
Net exports	-0.1	-0.1	-2.2	-2.5	-1.6	-1.5	-1.6	-0.4	0.7		
Exports	8.8	9.4	10.1	11.7	12.1	11.9	12.9	13.4	13.6		
Imports	-9.0	-9.5	-12.3	-14.2	-13.6	-13.4	-14.5	-13.8	-12.9		
Government	20.4	20.0	18.8	19.2	18.9	18.2	18.5	18.0	16.8		
Federal	7.5	7.3	7.4	8.3	8.0	7.5	7.9	7.3	6.7		
Defense	5.3	4.7	5.4	6.4	6.1	5.8	6.1	5.7	5.2		
Nondefense	2.2	2.6	2.0	1.9	1.8	1.7	1.8	1.7	1.5		
State and local	12.9	12.8	11.4	10.9	10.9	10.7	10.6	10.7	10.1		
Average annual rate of change											
Item	1973-77	1977-84	1984-90			1990-95			1984-95		
			Low	Moderate	High	Low	Moderate	High	Low	Moderate	High
Gross national product	2.0	2.6	2.2	3.0	4.0	2.2	2.8	3.5	2.2	2.9	3.8
Personal consumption	2.9	2.9	2.3	2.9	4.0	2.0	2.6	3.2	2.2	2.8	3.6
Durables	3.3	3.7	2.5	3.1	4.4	1.7	2.4	3.4	2.2	2.8	4.0
Nondurables	1.9	2.2	1.3	1.9	2.9	1.3	1.8	2.3	1.3	1.9	2.7
Services	3.7	3.2	3.0	3.6	4.8	2.6	3.1	3.7	2.8	3.4	4.3
Gross private domestic investment	-0.5	4.3	1.6	2.5	3.6	2.7	3.3	3.8	2.1	2.8	3.7
Equipment	2.4	5.8	2.5	3.4	4.6	3.3	4.4	5.2	2.9	3.8	4.9
Nonresidential structures	-3.9	5.0	0.9	1.6	2.3	2.6	2.6	3.4	1.7	2.0	2.8
Residential structures	-0.7	-0.2	2.3	2.4	2.5	1.6	1.8	1.4	2.0	2.1	2.0
Inventory change	-6.2	9.3	-4.0	-0.3	3.0	1.9	1.1	1.1	-1.4	0.3	2.1
Exports	3.5	3.7	4.7	6.1	6.9	4.3	5.1	6.4	4.6	5.6	6.7
Imports	3.4	6.5	4.6	4.8	5.5	2.7	3.1	2.7	3.8	4.0	4.2
Government	1.5	1.7	2.5	3.1	3.4	1.4	1.8	1.8	2.0	2.5	2.7
Federal	1.2	2.9	4.3	4.3	4.3	1.1	1.1	1.1	2.8	2.8	2.8
Defense	-1.1	4.6	5.3	5.3	5.3	1.2	1.2	1.2	3.4	3.4	3.4
Nondefense	6.1	-0.9	1.2	1.2	1.2	0.9	0.9	0.9	1.1	1.1	1.1
State and local	1.7	1.0	1.4	2.3	2.9	1.6	2.3	2.3	1.5	2.3	2.6

NOTE: Historical data in 1977 dollars were reestimated from the National Income and Product Accounts' estimates in 1972 dollars; projected data in 1977 dollars were reestimated

from the BLS macro model's estimates in 1972 dollars. These data reflect the benchmark revisions released in May 1984 by the Bureau of Economic Analysis.

alternative, which is significantly below the \$12 billion deficit of the moderate-growth case.

Real Federal Government spending on goods and services is assumed to follow the same path as in the moderate-growth projection. With lower receipts forthcoming from a sluggish economy, the Federal deficit, in nominal terms in this BLS alternative, is projected to reach nearly \$500 billion by 1995, versus \$267.9 billion in the moderate-growth case.

State and local spending is very sensitive to changes in the availability of receipts and hence to the poorer prospect for the economy. Total spending by State and local government in the low-growth alternative is thus below the moderate-growth projection by \$28 billion in 1995.

Comparisons with previous projections

In November 1983, BLS published its initial projections of the 1995 economy¹⁰ in the same format, including a moderate-growth scenario and a high- and a low-growth alternative. Starting from a cyclical low point in 1982, projected GNP growth to 1995 ranged from 2.8 percent for the low-growth alternative to 3.3 percent for the high. In the revised projections, GNP growth from 1984 to 1995 ranges from 2.2 percent to 3.8 percent per year.

By 1995, under the previous projections, civilian employment was projected to range between 122 million and 130 million jobs. By comparison, the current projected employment levels are lower for all three scenarios. The downward revision in projected employment results primarily from a lower growth in the labor force, in turn reflecting the slowdown in the rate of growth in female labor force participation that began in 1978 and continued into 1984.

Another major difference between this set of projections and the last projections is in productivity. As stated earlier, a strong rate of productivity growth is assumed and emphasized in the current moderate- and high-growth versions.

The projected 1995 unemployment rate is unchanged in the current moderate-growth projection from that previously assumed, while the differences in both the high- and low-growth alternatives are very modest. The following tabulation shows the projected annual growth rates, 1984–95, for selected economic variables for the two projections. It is important to note that the year of 1984 is the last historical

reference year in the current projections, while 1984 was a projected year in the previous projections:

	<i>Growth rate, 1984–95</i>		
	<i>Previous projections</i>		
	<i>High</i>	<i>Moderate</i>	<i>Low</i>
Real GNP.....	3.5	2.9	2.9
Civilian labor force	1.6	1.2	1.1
Civilian employment.....	1.6	1.2	1.1
Real output per person, all industries.....	1.4	1.3	1.3
Unemployment rate, 1995	5.2	6.0	6.8
	<i>Current projections</i>		
	<i>High</i>	<i>Moderate</i>	<i>Low</i>
Real GNP.....	3.8	2.9	2.2
Civilian labor force	1.5	1.2	0.9
Civilian employment.....	1.7	1.3	0.9
Real output per person, all industries.....	2.2	1.7	1.4
Unemployment rate, 1995	5.0	6.0	7.0

Because real GNP and its components are measured in constant 1977 prices for this set of projections, while constant 1972 prices were used for the past projections, final demand components can only be compared in terms of percentage distribution or growth rates. Expenditures for equipment investment and defense purchases of goods and services are now projected to grow much faster than the initial estimates; both the export and import shares of GNP are higher in the current projections. However, personal consumption expenditures are expected to claim a relatively smaller share of GNP than previously estimated.

Lastly, the previous projections of final demand by industry used a Bureau of Economic Analysis input-output table for 1972 and a BLS-estimated table for 1977. For the current projections, the Bureau of Economic Analysis' 1977 input-output table and a BLS' preliminary table for 1984 are used. The utilization of these tables in the current projections resulted in many historical data revisions and provided more current information on technological trends, and, presumably, contributed to many of the differences between the earlier and current projections, particularly at the industry level. □

FOOTNOTES

¹ For previous articles see Howard N Fullerton, Jr. and John Tschetter, "The 1995 labor force: a second look," *Monthly Labor Review*, November 1983, pp. 3–10; Arthur J. Andreassen, Norman C. Saunders, and Betty W. Su, "Economic outlook for the 1990's: three scenarios for economic growth," *Monthly Labor Review*, November 1983, pp. 11–23; Valerie A. Personick, "The job outlook through 1995: industry output and employment projections," *Monthly Labor Review*, November 1983, pp. 24–36; George T. Silvestri, John M. Lukasiewicz, and Marcus E. Einstein, "Occupational employment projections through 1995," *Monthly Labor Review*, November 1983, pp. 37–49; and Richard W. Riche, Daniel E. Hecker, and John U. Burgan, "High technology today and tomorrow: a small slice of the employment pie," *Monthly Labor Review*, November

1983, pp. 50–58; also *Employment Projections for 1995*, Bulletin 2197 (Bureau of Labor Statistics, 1984).

² See Howard N Fullerton, Jr., "The 1995 labor force: BLS' latest projections," *Monthly Labor Review*, November 1985, pp. 17–25.

³ In this tabulation, real output per person, as measured by real GNP/civilian employment, is derived from the Wharton macroeconomic model—a model which is selected by BLS to develop the Bureau's aggregate economic projection. (See footnote 4.) It is important to note that productivity measures presented in this article are not comparable to the published BLS data series, which are developed by the BLS Office of Productivity and Technology. For the definitions of labor productivity, multifactor produc-

tivity, and other related measures, and their historical data series, see the Current Labor Statistics section of the *Monthly Labor Review*.

⁴The BLS aggregate projections have been developed in the context of the long-term model of the U.S. economy provided by Wharton Econometric Forecasting Associates, Inc. The Wharton model was selected from the commercial models offered to the Bureau on the basis of a competitive procurement and should not be deemed either more or less suitable, on a theoretical basis, than the other models considered in the procurement action. A description of the Wharton model is included on pages 58–59.

⁵The Bureau of Economic Analysis' latest 1977 input-output tables were used in their present benchmark revision. However, during this projection, the revised estimates of the National Income and Product Accounts were only available for 1977. The rates of change between the revised final demand sectors underlying the National Income and Product Accounts and the previously published demand sectors for 1977 were weighted by each of the major category levels, and these weights were carried over in the projection period.

⁶See Barry P. Bosworth, "Taxes and the investment recovery," *Brookings Papers on Economic Activity* (Washington, DC, The Brookings Institution, 1985), pp. 1–38.

⁷Federal Government purchases of goods and services are a major part of total Federal Government expenditures, which also include transfer payments to persons and to foreigners, grants-in-aid, and net interest. On the demand side of the National Income and Product Accounts, the Federal sector is divided into defense and nondefense, and then each of these categories is further split into purchases of goods and services and com-

penensation of military and civilian employees. State and local government purchases of goods and services, are also a major part of total State and local government expenditures, which also include transfer payments to persons and net interest. State and local government purchases are separated by type of function. Major categories used are education, health and welfare, safety, and all other.

⁸Demand by industry is only part of the picture, because an industry's output is dependent not only on the final demand categories, such as personal consumption, but also upon intermediate use by other industries: for example, final demand by consumers for cars leads to intermediate demand by auto producers for steel, glass, plastic, computer and accounting services, and all of the other goods and services necessary for the production of motor vehicles. Total output by industry, the sum of final demand and intermediate demand, is derived by use of the input-output model. For a fuller description of the model, see pages 58–59. It should be noted that the input-output estimates of final demand for 1984 are estimated by BLS based on the Bureau of Economic Analysis' 1977 input-output tables and the demand estimates of the National Income and Product Accounts for 1984. These estimates are preliminary. Also, developments related to output, employment, and labor productivity are discussed by Valerie Personick elsewhere in this issue.

⁹Imports in the BLS projections are valued at domestic port value. Imports are assigned to the relevant or most nearly comparable domestic industry based on the nature of the product, except for those noncomparable imports, such as stamps and coins.

¹⁰See several articles listed in footnote 1.

An early start on postwar employment

The study of postwar labor problems was begun as early as 1941, when the House Appropriations Committee provided funds for research on the provision of jobs for workers displaced from war production. A division for research on postwar problems was established in the Bureau, which initially conducted studies of the impact of the war effort on employment in individual localities and industries. Subsequently, in the study of postwar full employment patterns, a major technical innovation—the "input-output" concept—was utilized. This involved the study of interindustry relationships throughout the economy in 1939, the last year before the expansion of munitions production. Funded by the Bureau, the work was conducted at Harvard University in 1942 and 1943 under Wassily Leontief and was then transferred to Washington. The input-output tables and techniques were utilized in developing both wartime attack targets and subsequent reparations policies for Germany; for estimates of postwar levels of output and employment in U.S. industries; and to forecast capital goods demand. The results of the program were published in 1947 as *Full Employment Patterns, 1950*. The study spread knowledge of the input-output concept within the government.

—JOSEPH P. GOLDBERG AND WILLIAM T. MOYE

*The First Hundred Years of the
Bureau of Labor Statistics,
Bulletin 2235 (Bureau of Labor
Statistics, 1985).*