

## Projections 2000

# Economic projections to the year 2000

*Real gross national product growth averages 2.4 percent a year, according to moderate projections, reflecting a slowly improving foreign trade deficit, higher productivity, and a continued shift to a more service-oriented economy*

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The Bureau of Labor Statistics has prepared projections of the U.S. economy to the year 2000, our first look at the remainder of this century. The new projections, with 1986 as the base historical year, update and extend the previously published projections.<sup>1</sup> As with earlier projections, three alternatives—termed moderate growth, low growth, and high growth—were estimated. The alternatives are designed to provide a range of estimates with variations in those assumptions to which the aggregate model is the most sensitive.

The moderate-growth alternative is characterized by a gross national product (GNP) influenced by greater productivity increase and slowing labor force growth, a moderately tapering unemployment rate, and a slowly improving foreign trade situation. In comparison, the high-growth model has stronger overall demand, higher inflation, and lower unemployment, but less favorable foreign trade balances; while the low-growth version has deeper recessions, slower productivity growth, declining government spending, and a higher unemployment rate. Projected real GNP growth for the 1986–2000 period ranges between 1.6 percent for the low-growth alternative and 3.0 percent for the high-growth scenario, providing a spread of \$1 trillion in the real GNP estimates for 2000.

By 2000, under the assumptions used by the Bureau in developing these projections, GNP is expected to range between \$4.6 trillion and \$5.6 trillion (in 1982 dollars), with disposable personal income between \$3.2 trillion and \$3.9 trillion. The annual employment increase ranges between

1 million persons in the low-growth scenario and 1.6 million persons in the high-growth scenario. The unemployment rate ranges between 4.5 percent in the high projection and 7.7 percent in the low. The following tabulation shows the levels and percent growth rates for selected key economic variables, 1982–86 and projected to 2000:<sup>2</sup>

	1972	1986	Projected, 2000		
			Low	Moderate	High
Civilian unemployment rate . . . . .	5.6	7.0	7.7	6.0	4.5
Federal deficit (billions of current dollars) . .	-16.8	-204.0	-289.1	-89.3	-44.1
Net exports (billions of 1982 dollars) . .	-48.8	-149.7	-39.1	-98.6	-150.2

	1972–86	Annual growth rate Projected, 2000		
		Low	Moderate	High
Real GNP . . . . .	2.5	1.6	2.4	3.0
GNP implicit deflator . . . . .	6.6	2.3	3.4	4.9
Civilian labor force . . . . .	2.2	1.0	1.2	1.3
Employment (from household survey) . . . . .	2.1	.9	1.2	1.5
Real disposable personal income . . . . .	2.7	1.5	2.4	3.0
Real disposable per capita income . . . . .	1.7	.7	1.6	1.9

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## Projections framework

The aggregate economic projections are prepared using the Wharton Long-Term Model of the U.S. Economy as a starting point.<sup>3</sup> Many exogenously specified variables must be provided to the model, but analysis has shown that a relatively small number of these assumptions significantly affect long-term projections.<sup>4</sup> These variables are summarized in table 1 and are discussed below.

In addition, the projections are generally approached with certain results in mind, such as the level of the unemployment rate, the rate of growth of labor productivity, inflation, the presence or absence of a business cycle, and the sectoral distribution of employment.

In a change from prior BLS projections, a business cycle was assumed for the 1986–2000 projection period. Reviews of past projection efforts have indicated that by assuming steady uninterrupted growth in the economy, growth is overestimated in the more volatile and cyclically sensitive GNP components, in particular, consumer durables, producers' durable equipment, and construction.<sup>5</sup> Two recessions are assumed to occur between 1986 and 2000. This should not be read as a prediction of a recession in any specific year; instead, it is a bow to the inevitability of business cycle fluctuations and the effect the cycle has on long-term demand growth and on the distribution of demand.

Second, the unemployment rate in 2000 is assumed to be slightly below current levels. In spite of temporary increases in unemployment induced by the assumed business cycle fluctuations, the moderate scenario has the unemployment rate declining to 6 percent in 2000, down a percentage point from the 1986 rate of 7.0 percent.

A third important modification to the model is to impose the industry distribution of production and employment on the aggregate projections at a major sector level to reflect the more detailed analysis carried out at the industry level. The aggregate projections thus provide control values to the industry projections but are, in turn, affected by those projections.

### Underlying assumptions—moderate scenario

Many assumptions must be spelled out in very specific terms to generate an estimate of future growth. The following discussion focuses on the more important assumptions underlying the moderate-growth projections.

*Fiscal policy.* Plans for new defense programs are expected to be gradually curtailed in the coming decade. Projects for which appropriations have already been made or planned are expected to keep real defense spending growing through the end of this decade, when it is projected to peak at \$268 billion. Thereafter, smooth declines are assumed over the remainder of the projection period, as defense spending drops to \$251 billion in 2000, roughly the same level as in 1986.

Real nondefense purchases of goods and services are assumed to drop to \$78.8 billion by 1990, approximately the 1981–82 level of spending. After 1990, growth returns as these purchases increase at a relatively smooth average annual rate of 2.8 percent over the decade of the 1990's.

The realities of recent large Federal deficits bring a sense of general fiscal conservatism to the assumptions affecting other Federal expenditure categories. No real growth is assumed during the 1986–95 period for food stamp benefits, military retirement and veterans' benefits, medicare payments, and Social Security benefits. Growth in these categories is a combination of inflation adjustment and client population shifts only. After 1995, some resumption of growth in all of these benefits categories is expected—but still only a modest 1 to 2 percent annually.

Federal subsidies are assumed to be flat in real terms throughout the period, as are Federal grants-in-aid to State and local governments.

On the revenue side, the Tax Simplification Act of 1986 has the initial impact of increasing effective personal tax rates from 10.4 percent in 1986 to 11.2 percent in 1987. Thereafter, as taxpayers make shifts in their tax strategies, the effective rate declines steadily over the entire projection period, reaching 8.9 percent in 2000.

The effective corporate tax rate has increased steadily from 27 percent in the late 1970's to its current level of 37 percent. The rate is assumed to remain at this level through 1990, followed by gradual declines to 26 percent by 2000. The Social Security wage base and combined tax rates are as mandated by the Social Security Act of 1978.

State and local government spending increased at an annual 1.5-percent real rate between 1979 and 1986, less than the 2-percent rate during the 1972–79 period. Slower growth from 1979 to 1986 than from 1972 to 1979 resulted from declining school enrollments and a general trend toward slower growth in government provided services. This pattern is expected to reverse over the next 14 years in response to several factors.

First, the baby-boom generation has been having children. These children, the so-called "echo," are now beginning to affect school enrollments, which are already climbing in the early grades. Elementary school enrollments are expected to peak in 1996 and secondary attendance, around 2000. Over the decade of the 1990's, demand for educational services will increase as a result. However, the echo will not affect postsecondary education until after 2000.

Further, it is expected that cutbacks or slower growth in many State-provided services will be tempered in the coming years. The net effect of these assumptions is to pull real State and local spending up to a 2-percent annual rate of growth, comparable with the 1972–79 period and 0.5 percentage points higher than the growth during the 1979–86 period.

*Monetary policy.* Monetary policy in the moderate-growth projection is best described as accommodative.

Growth of M2, the broadly defined money supply, has been set to parallel projected growth in nominal GNP so that monetary policy will not choke growth by being too restrictive, nor re-initiate the inflationary spiral of the 1970's by being too loose. The velocity of M2 remains roughly constant, in the 1.60 to 1.65 range, throughout the projection period.

Both short- and long-term interest rates remain flat in real terms, rising about 1 percentage point over the 14-year horizon of the projections in response to the expected rate of increase in prices.

*Demographic.* The population estimates underlying the aggregate projections are the middle-growth series developed by the Bureau of Census.<sup>6</sup> These new population projections have been developed with higher immigration and slightly lower birth rates than in earlier Census Bureau efforts. The middle-level civilian labor force projections, developed by BLS to be consistent with the new Census Bureau population estimates, are incorporated in the moderate-growth aggregate projections.<sup>7</sup>

Other demographic assumptions, such as the number of households, the number of families, and the number of unrelated individuals, have all been derived from earlier Census Bureau projections, modified by BLS to reflect the new population projections.

*Foreign economic activity.* World gross domestic product, less that of the United States and centrally-planned economies, is assumed to grow at a real annual rate of 2.6 percent over the 1986–2000 period, paralleling the performance of this measure during the 1972–86 period. Some slowdowns are assumed for interim years in response to recessions in the U.S. economy, but the drop in growth is relatively small and easily recovered in the following years.

The projections encompass an assumed annual inflation rate of 5 percent for the same world area, slightly less than the 5.7-percent inflation rate during the 1979–86 period and well below the disastrously high 15.3-percent annual inflation during the 1972–79 period, which was caused primarily by rapid increases in oil prices.

In 1981, the exchange value of the dollar began a sharp and steady increase, culminating in 1985 with the U.S. dollar valued almost 64 percent higher than in 1980. As a result, imports became less expensive and flooded the United States while the Nation's exports, now more expensive, were choked out of many of their traditional foreign markets. The dollar's exchange value dropped 22 percent in 1986. It has been assumed that the exchange rate will stabilize at its 1982 level and remain steady at that level for the remainder of the decade.

**Table 1. Major assumptions affecting aggregate economic projections, 1972, 1979, 1986, and projected to 2000**

[In billions, unless noted otherwise]

Item	1972	1979	1986	Projected, 2000			Item	1972	1979	1986	Projected, 2000		
				Low	Moderate	High					Low	Moderate	High
Federal Government:													
Defense purchases, 1982 dollars	185.3	164.3	251.0	222.5	251.0	263.0	Safety, 1982 dollars	26.2	31.4	40.5	45.4	54.2	56.8
Nondense purchases, 1982 dollars	60.7	71.9	82.4	97.3	103.4	108.2	Other purchases, 1982 dollars	109.9	108.8	121.6	140.8	163.3	171.1
Food stamps, 1982 dollars	6.5	7.7	9.6	10.4	12.2	14.9	Transfer payments, 1982 dollars	59.1	73.2	93.4	110.3	117.3	121.5
Military retirement, 1982 dollars	29.4	30.2	28.1	28.4	30.1	32.1	Dividends, current dollars	.3	2.0	6.6	7.3	7.3	7.3
Medicare, 1982 dollars	18.5	37.8	57.9	75.2	83.0	94.1	Net interest, current dollars	-1.5	-11.8	-26.0	-45.2	-49.6	-57.6
Social Security, 1982 dollars	116.3	131.3	169.7	209.0	243.4	293.9	Demographic (in millions):						
Other transfers, 1982 dollars	39.6	43.6	53.5	55.5	58.6	61.3	Number of families	52.1	59.3	63.2	73.1	73.1	74.8
Old Age, Survivors, and Disability Insurance taxable income, current dollars	10,800	22,900	41,500	89,700	89,700	89,700	Number of households	69.0	78.8	88.6	109.0	109.0	111.5
Old Age, Survivors, and Disability Insurance tax rate	9.0	12.3	14.3	15.5	15.5	15.5	Number of unrelated individuals	21.4	24.4	32.2	40.4	40.4	40.8
Grants-in-aid, current dollars	37.5	80.5	104.0	143.0	192.1	235.1	Civilian labor force	86.6	104.9	117.9	134.5	138.8	141.1
Subsidies, current dollars	7.9	9.2	25.6	20.2	26.1	29.4	Armed Forces	2.6	2.1	2.2	2.3	2.3	2.3
Transfers to foreigners, current dollars	2.9	5.2	13.7	14.8	15.2	17.3	Self-employed persons	5.4	6.8	7.9	8.9	9.7	10.2
Interest to foreigners, current dollars	2.7	11.1	23.0	49.2	48.7	46.3	Unpaid family workers	.5	.5	.3	.1	.2	.2
State and local government:							Adjustment factor	-9	-1.6	-1.9	-1.7	-1.9	-2.1
Education, 1982 dollars	146.8	165.0	178.7	195.3	223.1	232.5	Foreign:						
Health and welfare, 1982 dollars	41.8	67.9	73.7	86.3	103.4	108.2	World gross domestic product, 1982 dollars	5,571.9	6,946.4	7,930.1	9,082.2	11,314.2	12,836.4
							World gross domestic product, deflator (1982 = 100)	29.5	80.0	117.6	203.6	232.6	266.0
							Exchange rate of the U.S. dollar	132.4	131.9	103.5	97.3	97.3	97.3
							Crude oil imports, million barrels per day	3.1	6.5	4.8	6.3	7.6	8.5
							Import oil price, dollars per barrel	5.74	21.67	15.88	43.71	48.40	53.10

SOURCE: Historical data are from the Bureau of the Census and the Bureau of Economic Analysis, U.S. Department of Commerce; Wharton Econometric Forecasting Associates, Inc.; U.S.

Department of Energy; and the Bureau of Labor Statistics. Projected data are from the Bureau of Labor Statistics and the Bureau of Census.

*Energy.* Assumptions regarding oil prices, import levels of crude petroleum and natural gas, and domestic production levels of crude petroleum, natural gas, and coal have been set in accordance with projections prepared by the U.S. Department of Energy.<sup>8</sup> These projections assume a nominal crude oil import price of \$48.40 per barrel in 2000. In constant 1986 prices, this translates to a barrel price of \$30.90 in 2000, roughly a doubling of real imported oil prices in the next 14 years.

*General assumptions.* It was assumed that there would be no major wars, oil embargoes, other major price shocks, or serious natural catastrophes during the projection period.

### Moderate growth results

Real GNP is projected to increase 2.4 percent a year between 1986 and 2000, for a 40-percent increase over the period. This compares to the 2.5-percent growth rate over the 1972–86 period and the 2-percent rate over the 1979–86 period. A summary of demand growth is shown in table 2.

A change from historical behavior is reflected in the fact that half of the projected growth in real GNP is attributable to growth in labor productivity and half to growth in employment. During the 1972–86 period, only 28 percent of the change in real GNP was contributed by productivity increase.

*Personal consumption.* As in the past, the personal consumption expenditures (PCE) component is projected to grow slightly more rapidly than overall GNP, increasing its share of GNP from 65.8 percent in 1986 to 66.4 percent by 2000. This results largely from cuts in personal taxes over the 1987–90 period, spurring further increases in consumption.

Spending for durable goods is projected to account for a fixed share of the consumer budget over the next decade, as purchases of consumer electronics and the specialized furniture necessary to house the new equipment grow rapidly, offsetting expected slowdowns in auto sales.

Consumer spending for autos and parts is projected to grow 0.9 percent a year between 1986 and 2000, down considerably from the 4.6-percent pace over the 1979–86 period. The sluggish expansion is attributed to a slowdown in the growth of the “new driver” population and to the two assumed recessions over the projection horizon. Durable consumption as a whole continues to account for just more than 15 percent of total consumer spending, unchanged from 1986. (See table 3.)

Nondurable consumption continues to account for a smaller share of aggregate PCE over time. Many nondurable items, such as clothing and food, represent basic necessities of living and, as such, are relatively income inelastic. As family incomes rise beyond certain basic subsistence levels, the increases tend to be spent more on luxury items than on the basic necessities.

Nondurables accounted for 38.2 percent of real consumption in 1979, dropped to a 36.1-percent share by 1986, and

**Table 2. Gross national product by major demand categories, 1972, 1979, 1986, and projected to 2000**  
[Billions of 1982 dollars]

Item	1972	1979	1986	Projected, 2000		
				Low	Moderate	High
Gross national product	2,608.5	3,192.4	3,678.5	4,617.5	5,161.4	5,552.4
Personal consumption	1,621.9	2,004.4	2,418.7	3,101.2	3,429.4	3,659.7
Durables	200.4	266.5	368.9	472.9	527.2	589.0
Nondurables	665.5	766.6	872.4	1,038.3	1,116.4	1,204.6
Services	756.0	971.2	1,177.4	1,590.0	1,785.9	1,866.1
Gross private domestic investment	465.4	575.2	659.7	767.8	932.1	1,103.2
Equipment	167.5	258.8	320.3	424.8	504.2	560.8
Structures	109.5	130.6	134.7	146.5	198.8	224.6
Residential	166.6	170.8	193.9	190.9	202.1	279.6
Inventory change	21.8	15.0	10.8	5.6	27.0	38.2
Exports	195.2	356.8	371.3	516.8	634.5	712.0
Imports	244.6	353.2	521.0	555.9	733.0	862.2
Federal Government	246.0	236.2	333.4	319.8	354.4	371.2
Defense	185.3	164.3	251.0	222.5	251.0	263.0
Nondefense	60.7	71.9	82.4	97.3	103.4	108.2
State and local government	324.7	373.0	414.5	467.8	544.0	568.6
<b>Percent distribution</b>						
Gross national product	100.0	100.0	100.0	100.0	100.0	100.0
Personal consumption	62.2	62.8	65.8	67.2	66.4	65.9
Durables	7.7	8.3	10.0	10.2	10.2	10.6
Nondurables	25.5	24.0	23.7	22.5	21.6	21.7
Services	29.0	30.4	32.0	34.4	34.6	33.6
Gross private domestic investment	17.8	18.0	17.9	16.6	18.1	19.9
Equipment	6.4	8.1	8.7	9.2	9.8	10.1
Structures	4.2	4.1	3.7	3.2	3.9	4.0
Residential	6.2	5.4	5.3	4.1	3.9	5.0
Inventory change	.8	.5	.3	.1	.5	.7
Exports	7.5	11.2	10.1	11.2	12.3	12.8
Imports	9.4	11.1	14.2	12.0	14.2	15.5
Federal Government	9.4	7.4	9.6	6.9	6.9	6.7
Defense	7.1	5.2	6.8	4.8	4.9	4.7
Nondefense	2.3	2.3	2.2	2.1	2.0	1.9
State and local government	12.4	11.7	11.3	10.1	10.5	10.2
<b>Average annual rate of growth (in percent)</b>						
	1972-79	1979-86	1972-86	1986-2000		
				Low	Moderate	High
Gross national product	2.9	2.0	2.5	1.6	2.4	3.0
Personal consumption	3.1	2.7	2.9	1.8	2.5	3.0
Durables	4.2	4.8	4.5	1.8	2.6	3.4
Nondurables	2.0	1.9	2.0	1.2	1.8	2.3
Services	3.6	2.8	3.2	2.2	3.0	3.3
Gross private domestic investment	3.1	2.0	2.5	1.1	2.5	3.7
Equipment	6.4	3.1	4.7	2.0	3.3	4.1
Structures	2.5	.4	1.5	.6	2.8	3.7
Residential	.8	1.8	1.3	-.1	.4	2.6
Inventory change	-5.2	-4.6	-4.9	-5.1	5.0	9.3
Exports	9.0	.6	4.7	2.4	3.9	4.8
Imports	5.4	5.7	5.5	5	2.5	3.7
Federal Government	-.6	5.0	2.2	-.3	.4	.8
Defense	-1.7	6.2	2.2	-.9	0	.3
Nondefense	2.4	2.0	2.2	1.2	1.6	2.0
State and local government	2.0	1.5	1.8	.9	2.0	2.3

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

are projected to account for just 32.6 percent by 2000. All of the major nondurable subcategories decline in share terms except for other nondurables, which include purchases of cleaning products and toiletry articles, drug preparations, paper products, and a long list of other nondurable household items. Strong growth in the purchases of cleaning items and drug preparations raise the other nondurables category to a 7.1-percent share of total PCE in 2000, up from a 6.3-

percent share in 1986, and reversing a slowing trend apparent over the 1970's and early 1980's. (See table 3.)

Because of slowing growth in auto sales, more efficient engines, and the general energy conservation awareness of the 1980's, real spending on gasoline and oil is expected to remain virtually unchanged in real terms over the projection horizon.

Purchases of consumer services are projected to grow quite strongly over the 1986–2000 period, increasing from 48.7 percent of total consumption in 1986 to 52.1 percent in 2000. Spending for housing, household operation, and transportation will remain a virtually fixed share of consumption during this period. All of the share growth occurs in health and other consumer services, which covers a range of recreational, social, educational, personal, and professional activities.

Health services are projected to grow at a real rate of 3.5 percent a year, increasing their share of overall consumption to 10.8 percent in 2000 from 9.5 percent in 1986. This is attributable to both the generally aging population and the expected continued development of new, but increasingly more expensive, medical procedures. Very sharp increases are expected in spending for a variety of consumer entertainment—legitimate theater, commercial sporting events, and health clubs and spas, to name a few. Also expected to grow faster than average is personal spending on all types of financial services, as the level of sophistication with which consumers approach money management continues to increase.

*Investment.* Although PCE still accounts for the lion's share of GNP, the moderate projections are also characterized by strong, sustained growth in business fixed investment. Purchases of producers' durable equipment are expected to increase at an annual real rate of 2.5 percent over the projection period, or about \$19 billion each year.

Although off sharply during both of the assumed recessionary periods, purchases of producers' durable equipment are expected to recover strongly from both downturns and to grow more rapidly than overall GNP during the recovery years. Producers' durable equipment will continue the trend evident in the late 1970's and early 1980's in which it accounted for an increasing share of real GNP. This upward shift principally reflects slowing growth in the sector-level user cost of capital. Declining corporate tax rates, lower inflation, and lower long-term interest rates all serve to make the expected stream of services from current investment relatively less expensive than during the 1970's and 1980's, thus leading to more rapid growth in capital accumulation over the projection period. Equipment purchases accounted for 8.7 percent of GNP in 1986 and are expected to account for more than 10 percent by 2000.

By major consuming sector, the most rapid growth in spending for equipment is projected for durable manufacturing and communications, both expected to spend at a real rate of 4.5 percent between 1986 and 2000. The slowest growth sectors are transportation (0.8-percent annual

**Table 3. Durable, nondurable, and services consumption in 1972, 1979, 1986, and projected to 2000**

Item	Level (billions of 1982 dollars)				Percent distribution			
	1972	1979	1986	Projected, 2000	1972	1979	1986	Projected, 2000
Durable consumption . . . . .	\$200.4	\$266.5	\$368.9	\$527.2	100.0	100.0	100.0	100.0
Autos and parts . . . . .	98.3	119.4	164.0	187.0	49.1	44.8	44.6	35.5
Household furniture . . . . .	70.2	97.1	140.3	226.3	35.0	36.4	38.0	42.9
Other durables . . . . .	31.8	50.1	64.5	113.9	15.9	18.8	17.4	21.6
Nondurable consumption . . . . .	665.5	766.3	872.4	1,116.4	100.0	100.0	100.0	100.0
Food and beverages . . . . .	344.2	387.5	440.7	541.6	51.7	50.6	50.5	48.5
Clothing and shoes . . . . .	80.3	112.1	155.5	201.3	12.1	14.6	17.8	18.0
Gasoline and oil . . . . .	87.0	97.1	105.2	105.8	13.1	12.7	12.1	9.5
Fuel oil and coal . . . . .	28.6	26.2	18.7	24.4	4.3	3.4	2.1	2.2
Other nondurables . . . . .	125.3	143.7	152.3	243.2	18.8	18.8	17.5	21.8
Services consumption . . . . .	756.0	971.2	1,177.4	1,785.9	100.0	100.0	100.0	100.0
Housing . . . . .	235.5	304.1	351.4	510.9	31.2	31.3	29.8	28.6
Household operation . . . . .	108.6	138.3	150.7	218.4	14.4	14.2	12.8	12.2
Transportation . . . . .	66.0	82.9	85.0	118.4	8.7	8.5	7.2	6.6
Health . . . . .	136.0	192.2	229.8	371.7	18.0	19.8	19.5	20.8
Other services . . . . .	210.0	253.7	360.5	566.5	27.8	26.1	30.6	31.7

growth) and agriculture and public utilities (both exhibiting 2.5-percent annual growth). Nondurable manufacturing industries are expected to buy new equipment at a 3.5-percent rate of increase, not as fast as the growth of equipment purchases by durable goods producers, but still above the overall average growth rate for this component of demand.

Almost one-fifth of the total expenditures for producers' durable equipment is expected to be for computers, the largest single item of all the equipment commodities. Heavy investment in factory automation and robotics also leads to large purchases of certain types of industrial machinery, particularly metalworking machinery and material moving equipment, and of scientific and controlling devices. Communications equipment is projected to be the most rapidly growing, and the third largest producers' durable equipment purchase, as the demand for telecommunications services leads to high levels of spending on satellites and other communications equipment. Investment demand for motor vehicles, including trucks, is projected to grow more slowly than total equipment spending, but will still rank second in terms of overall levels.

Overall capital accumulation accelerates throughout the projection period in most sectors of the economy, leading to strong growth in labor productivity, especially in the manufacturing industries.

A recovery from the commercial building glut of the late 1970's and early 1980's is also projected, as investment in nonresidential structures increases 2.8 percent each year between 1986 and 2000, up sharply from the 0.4-percent annual growth in the 1979–86 period.

Residential construction is expected to slow over the next 14 years, growing at an average real rate of 0.4 percent between 1986 and 2000. As with autos, the slowdown is determined by both cyclical and demographic factors, as the formation of new households is projected to slow dramatically during the 1990's, pulling down the level of housing

starts over the projection period. The aging of the population, particularly among those of retirement age, is expected to increase demand for multi-unit starts relative to single-unit starts.

*Foreign trade.* The sharp reduction in the exchange value of the dollar seen in 1986 is assumed to continue until 1990, but at a much slower rate. This drop in the value of the dollar, accompanied by relatively robust assumptions regarding foreign economic growth, leads to almost 4-percent annual real growth projected for exports of goods and services between 1986 and 2000. Although substantially better than export performance in the early 1980's, the dramatic improvement in exports expected by many economic analysts in response to declining dollar values fails to materialize in the projections because of changes in foreign markets and in U.S. industries during the period of reduced export trade.

Many of the countries which, during the 1960's and 1970's, maintained large agricultural import balances with the United States have now not only developed the capability to feed their own populations from within but are, quite often, becoming net agricultural exporters. It is unlikely, therefore, that the United States has any chance of replicating the past booms in agricultural exports.

Many export markets in less-developed countries were also lost during the early 1980's. However, now that U.S. exports are again becoming price-competitive, many of these countries are facing serious debt problems, effectively locking them out of foreign markets.

Most significantly, however, a large number of already vulnerable industries, such as farm and garden equipment, engines, turbines, and generators, and other nonelectrical machinery producers, were hit hard by the strong dollar of the early 1980's, forcing them to shrink at an accelerated pace and making it highly unlikely at this point that they will be able to respond as strongly as in past periods to increasing foreign demand. (See table 4 for exports by major end-use categories.)

Imports, in contrast, are expected to grow much less rapidly, as the value of the dollar is assumed to decline. The slowdown in import growth due to financial considerations is, however, at least partially offset as softening oil prices are assumed to lead to major reductions in domestic exploration for and production of crude petroleum and natural gas. As the demand for primary and secondary energy products continues to expand over the 1990's, it is assumed that the shortfall in domestic production is made up entirely from imports.

As a result, the grave trade imbalances of the mid-1980's improve substantially over the projection period, but are not fully resolved. The real net export balance is expected to decline slowly to \$99 billion in 2000. (See table 4 for imports by major end-use categories.) The drop in auto imports reflects the assumption that the dollar's decline will result in less competitive prices for foreign cars and in more foreign automakers setting up factories in the United States.

**Table 4. Exports and imports by major end-use categories, 1972, 1986, and projected to 2000**  
(In billions of 1982 dollars)

Item	1972	1986	Projected, 2000	Annual growth rate (in percent)	
				1972-86	Projected, 1986-2000
Total exports .....	\$195.2	\$371.3	\$634.5	4.7	3.9
Merchandise .....	131.3	237.5	416.4	4.3	4.1
Food, feed, and beverages .....	16.3	25.7	51.6	3.3	5.1
Consumer goods .....	7.5	13.9	22.8	4.5	3.6
Industrial supplies .....	39.5	62.1	96.8	3.3	3.2
Capital goods .....	39.7	90.1	167.3	6.0	4.5
Autos and parts .....	17.0	21.1	26.0	1.6	1.6
Other merchandise .....	11.3	24.7	51.8	5.7	5.3
Services .....	64.0	133.8	218.1	5.4	3.6
Factor income .....	33.9	76.9	134.3	6.0	4.1
Military sales .....	3.1	8.1	5.4	7.1	-2.9
Other services .....	27.0	46.1	78.3	3.9	3.9
Total imports .....	244.6	521.0	733.0	5.5	2.5
Merchandise .....	190.7	420.4	563.8	5.8	2.1
Food, feed, and beverages .....	17.4	23.1	30.0	2.0	1.9
Consumer goods .....	25.4	73.6	111.2	7.9	3.0
Industrial supplies .....	46.9	73.9	86.5	3.3	1.1
Petroleum products .....	56.0	75.9	122.1	2.2	3.5
Capital goods .....	10.9	90.9	111.7	16.4	1.5
Autos and parts .....	26.6	66.7	56.5	6.8	-1.2
Other merchandise .....	7.7	16.2	45.8	5.5	7.7
Services .....	53.9	100.7	169.2	4.6	3.8
Factor income .....	11.1	44.2	80.1	11.1	4.3
Defense purchases .....	4.8	10.6	16.2	4.8	3.1
Other services .....	38.9	44.5	72.9	1.0	3.6

*Government.* As a whole, government purchases of goods and services are expected to account for a smaller share of GNP over time, dropping from almost 21 percent of GNP in 1986 to 17.4 percent by 2000. Most of the declining share is accounted for by Federal Government spending slow-downs. Defense spending is expected to account for 4.8 percent of GNP in 2000, down from a share of almost 7 percent in 1986, while nondefense spending drops off slightly in importance, from 2.2 percent of GNP in 1986 to 1.9 percent in 2000.

Other Federal expenditure categories are also projected to account for a declining share of GNP during the next 14 years, as shown in the following tabulation:

	Percent of nominal GNP		
	1972	1986	Projected, 2000
Total Federal expenditures ..	20.5	24.5	20.5
Goods and services .....	8.7	8.7	6.7
Transfer payments .....	6.9	9.1	8.9
Net interest .....	1.2	3.2	2.5
Other spending .....	3.7	3.1	2.3
Total Federal receipts .....	19.1	19.6	19.6
Personal taxes .....	8.9	8.6	7.3
Corporate taxes .....	3.0	2.0	2.1
Indirect business taxes .....	1.6	1.2	1.4
Social insurance contributions .....	1.6	7.8	8.7
Federal deficit .....	1.4	4.9	1.0

Federal receipts are expected to account for a fixed share of GNP, just under 20 percent. The burden is expected to shift, however, as personal, corporate, and indirect business taxes together account for 55.4 percent of total Federal revenues in 2000, down from the 60.2 percent accounted for by these three tax categories in 1986. The burden is shifted to social insurance contributions, which are expected to account for almost 45 percent of Federal tax collections in 2000 (up from 39.8 percent in 1986), and by the early 1990's are expected to become a more important source of Federal revenues than personal income taxes.

The net effect of these changes is that, in the BLS projections, a gradually shrinking deficit results, declining from \$204 billion in 1986 (4.9 percent of GNP) to \$85.6 billion in 2000 (0.9 percent of GNP).

As the following tabulation shows, State and local spending is up slightly in share terms, as increasing demand for educational services in the mid- to late 1990's temporarily expands government educational shares, which are offsetting slower growth elsewhere:

	Percent of nominal GNP		
	1972	1986	Projected, 2000
Total State and local expenditures . . . . .	13.7	13.3	14.4
Goods and services . . . . .	11.9	11.8	12.9
Other spending . . . . .	1.8	1.5	1.5
Total State and local receipts . . . . .	14.8	14.7	15.0
Personal taxes . . . . .	2.8	3.6	3.7
Corporate taxes . . . . .	.4	.5	.5
Indirect business taxes . . . . .	7.5	7.0	7.3
Social insurance contributions . . . . .	.9	1.1	1.4
Grants-in-aid . . . . .	3.1	2.5	2.0

**Inflation.** The rate of growth of prices, as reflected by the implicit GNP deflator, is projected to moderate from the 1972-86 pace of 6.6 percent to a 3.5-percent rate over the 1986-2000 period. As noted earlier, monetary policy has been assumed that will be stimulative to growth without providing enough pressure to re-ignite the inflationary spiral of the 1970's.

**Labor productivity.** Productivity, represented in the model and in these projections by real GNP per employee, increased at a dismal rate of 0.3 percent each year between 1972 and 1979. During the next 7 years, productivity fared only slightly better, growing at an average rate of 0.5 percent between 1979 and 1986. Sustained growth in investment and the movement of much of the labor force into prime working-age years is expected to cause a modest recovery in labor productivity. GNP per employee is projected to increase at an average annual rate of 1.2 percent between 1986 and 2000.<sup>9</sup>

Productivity growth in the manufacturing sector is projected to be much more robust than for the economy as a whole, continuing a historical trend that has been especially pronounced in recent years. Capital investment in factory automation, continued energy substitution, contracting out, restructuring of inefficient operations, and other factors noted over the 1986 to 2000 period are expected to continue to contribute to high growth in manufacturing productivity.

**Employment.** Between 1979 and 1986, civilian household employment expanded at an annual average rate of 1.5 percent, or about 1.5 million persons. This was just slightly lower than the rate of increase in the civilian labor force over the same period. Employment is projected to increase by just under 21 million persons between 1986 and 2000, an annual average increase of almost 1.5 million employed persons. The civilian unemployment rate, at 7 percent in 1986, is expected to reach 6 percent in the year 2000. (See table 5.)

**Income.** No particular surprises are projected for income distributions over the decade of the 1990's. Personal income accounts for virtually the same share of GNP in the year 2000 as in 1986. Disposable personal income, in contrast, accounts for a slightly greater share of GNP in 2000 than in 1986, because of the declines in effective personal tax rates as a result of tax changes enacted in 1986.

Real per capita disposable income is expected to reach \$13,421 by 2000, reflecting a continuation of the rate of increase noted over the 1972-86 period, but a resurgence from the slower growth this measure experienced between 1979 and 1986. The personal savings rate is projected to

Item	1972	1979	1986	Projected, 2000		
				Low	Moderate	High
Civilian labor force . . . . .	87.0	104.9	117.8	134.5	138.8	141.1
Civilian employment (from household survey) . . . . .	82.2	98.8	109.6	124.1	130.4	134.8
Unemployed . . . . .	4.9	6.1	8.2	10.4	8.3	6.4
Unemployment rate (percent) . . . . .	5.6	5.8	7.0	7.7	6.0	4.5
Nonagricultural establishment employment . . . . .	73.7	89.8	100.2	114.1	119.7	123.6
GNP per employee (thousands of 1982 dollars) . . . . .	30.25	32.30	33.55	37.20	39.57	41.20
<b>Average annual rate of growth (in percent)</b>						
	1972-79	1979-86	1972-86	1986-2000		
				Low	Moderate	High
Civilian labor force . . . . .	2.7	1.7	2.2	1.0	1.2	1.3
Civilian employment (from household survey) . . . . .	2.7	1.5	2.1	.9	1.2	1.5
Nonagricultural establishment employment . . . . .	2.9	1.6	2.2	.9	1.3	1.5
GNP per employee (thousands of 1982 dollars) . . . . .	.9	.5	.7	.7	1.2	1.5

**Table 6. Gross national product as income, 1972, 1979, 1986, and projected to 2000**

[Billions of current dollars, except where noted]

Item	1972	1979	1986	2000		
				Low	Moderate	High
Gross national product	1,212.8	2,508.2	4,208.5	7,312.4	9,455.0	12,637.5
Net national product	1,104.8	2,242.2	3,753.4	6,722.7	8,710.7	11,587.9
National income	994.1	2,047.3	3,387.4	5,993.3	7,852.8	10,482.5
Compensation	726.2	1,491.2	2,498.3	4,661.9	5,676.0	7,530.3
Proprietors' income	98.3	191.9	278.9	407.5	602.5	833.3
Rental income	17.9	5.6	15.6	59.0	61.7	36.9
Corporate profits	100.7	200.1	299.7	579.3	791.4	1,097.2
Net interest income	51.0	158.3	294.9	708.3	721.2	984.7
Personal income	981.6	2,034.0	3,487.0	5,961.2	7,752.1	10,433.3
Disposable personal income	839.6	1,729.3	2,973.7	5,178.9	6,705.6	8,908.2
Billions of 1982 dollars	1,794.4	2,212.6	2,603.7	3,218.8	3,626.1	3,938.1
Per capita, current dollars	4,000.0	7,628.0	12,312.0	19,168.0	24,819.0	31,782.0
Per capita, 1982 dollars	8,562.0	9,829.0	10,780.0	11,914.0	13,421.0	14,050.0
Percent distribution						
Gross national product	100.0	100.0	100.0	100.0	100.0	100.0
Net national product	91.1	89.4	89.2	91.9	92.1	91.7
National income	82.0	81.6	80.5	82.0	83.1	82.9
Compensation	59.9	59.5	59.4	63.8	60.0	59.6
Proprietors' income	8.1	7.7	6.6	5.6	6.4	6.6
Rental income	1.5	.2	.4	.8	.7	.3
Corporate profits	8.3	7.8	7.1	7.9	8.4	8.7
Net interest income	4.2	6.3	7.0	9.7	7.6	7.8
Personal income	80.9	81.1	82.9	81.5	82.0	82.6
Disposable personal income	69.2	68.9	70.7	70.8	70.9	70.5
Average annual rate of change (in percent)						
	1972-79	1979-86	1972-86	1986-2000		
				Low	Moderate	High
Gross national product	10.9	7.7	9.3	4.0	6.0	8.2
Net national product	10.6	7.6	9.1	4.3	6.2	8.4
National income	10.9	7.5	9.2	4.2	6.2	8.4
Compensation	10.8	7.6	9.2	4.6	6.0	8.2
Proprietors' income	10.0	5.5	7.7	2.7	5.7	8.1
Rental income	-15.3	15.8	-1.0	10.0	10.3	6.3
Corporate profits	10.3	5.9	8.1	4.8	7.2	9.7
Net interest income	17.6	9.3	13.4	6.5	6.6	9.0
Personal income	11.0	8.0	9.5	3.9	5.9	8.1
Disposable personal income	10.9	8.1	9.5	4.0	6.0	8.2
Billions of 1982 dollars	3.0	2.4	2.7	1.5	2.4	3.0
Per capita, current dollars	9.8	7.0	8.4	3.2	5.1	7.0
Per capita, 1982 dollars	2.0	1.3	1.7	.7	1.6	1.9

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

range between 3.7 percent and 6.0 percent over the 1986-2000 period, generally higher than the 1986 rate of 3.9 percent.

IN SUMMARY, the moderate-growth scenario describes a growing economy characterized by a slowly improving Federal deficit, a return to higher productivity growth, and a continuation of the shift to a more service-oriented economy. The most pervasive problem facing the U.S. economy over the next decade will be our chronic trade deficit. Reductions in the value of the dollar are seen as only the first step necessary to forge a recovery from the current wide trade gap.

## High and low scenarios

A high- and a low-growth scenario, providing bounds around the moderate-growth aggregate projection, have been estimated based on differing sets of assumptions outlined in table 1.

The low-growth projection was designed primarily to provide a scenario over the decade of the 1990's in which many current problems persist without much improvement. Labor productivity is assumed to grow at the same rate as it did during the 1972-86 period—0.7 percent annually. Combined with an assumption of deeper recessions and relatively sluggish recoveries, this leads to a real GNP almost \$550 billion lower in 2000 than in the moderate projection, with employment lower by 6.3 million.

The high-growth projection, on the contrary, assumes labor productivity growth of 1.5 percent each year between 1986 and 2000, only minor slowdowns in GNP increase, and strong, sustained recoveries in other years, resulting in a GNP of \$5.6 trillion in 2000, almost \$500 billion higher than in the moderate projection. The sustained growth leads to an unemployment rate of 4.5 percent in 2000, implying 4.1 million more employed persons that year than in the moderate projection.

The two alternatives encompass a \$935 billion spread in real GNP, a 6.3 million difference in the civilian labor force, and a 10.4 million range in the number of employed persons. Major results of the alternatives, compared with the moderate-growth projection, are as follows:

	2000		
	Low	Moderate	High
Civilian unemployment rate	7.7	6.0	4.5
Federal deficit, billions of current dollars	-289.1	-89.3	44.1
Net exports, billions of 1982 dollars	-39.1	-98.6	-150.2

### Annual rate of growth, 1986-2000

	Low	Moderate	High
Real GNP	1.6	2.4	3.0
GNP implicit deflator	3.3	3.5	5.0
Civilian labor force	1.0	1.2	1.3
Employment (from household survey)	.9	1.2	1.5
GNP per employee	.7	1.2	1.5

Major demand category summaries are provided in table 2, employment summaries in table 5, and income comparisons in table 6.

*Underlying assumptions.* Federal Government expenditures are higher in the high-trend and lower in the low-trend alternatives than in the base projections. Conversely, spending as a share of nominal GNP shows the opposite relationship: high-trend government spending accounts for a smaller



proportion of GNP and low-growth government spending a higher proportion of GNP than in the base projection. The following tabulation shows projected Federal spending in 2000, total and as a share of GNP:

	Billions of current dollars		Share of GNP (in percent)	
	Low	High	Low	High
Federal spending . . .	\$1,588.0	\$2,549.8	21.8	20.3
Goods . . . . .	491.3	827.8	6.8	6.6
Transfers . . . .	651.3	1179.4	9.0	9.4
Other . . . . .	445.4	542.6	6.0	4.3

In other words, faster or slower GNP growth in the alternatives is attributed, not to fiscal stimulus, but to other causes, primarily the wide range of productivity growth assumptions.

Higher rates of inflation, combined through the tax system with higher private incomes, yield much higher Federal revenues in the high-trend projection, resulting in a balanced Federal budget in 2000. The opposite effect is apparent in the low-trend projection, resulting in a Federal deficit of \$289 billion in the year 2000.

In the low-growth projection, the same population levels are assumed as in the moderate-growth scenario, but an

assumption of a lower labor force participation rate results in slower labor force growth. Alternatively, the high-growth scenario assumes a participation rate identical to the moderate-growth projection, but assumes a larger population, resulting from a more rapid than expected influx of immigrants, both documented and undocumented.

A projected unemployment rate of 7.7 percent in 2000 for the low-growth alternative leads to employment levels 6.3 million lower than in the moderate-growth projection. Conversely, in the high-growth scenario, an unemployment rate of 4.5 percent, combined with the larger labor force, yields employment higher by 4.1 million in 2000. Thus, the projections allow for a range of possible employment levels in the year 2000 of 10.4 million.

Sluggish foreign economic growth combined with lower world inflation serves to dampen exports somewhat in the low-growth alternative. However, imports drop off even more sharply in this alternative in response to lower GNP growth in the United States, leading to a much improved foreign trade balance.

Faster GNP growth in the high alternative elicits far greater import levels. Correspondingly higher rates of foreign economic growth have a much smaller effect on exports, leading to a steadily deteriorating trade balance in the high-growth projection. □

—FOOTNOTES—

<sup>1</sup> For previous projection articles, see the November 1985 issue of the *Monthly Labor Review*.

<sup>2</sup> In this tabulation, and elsewhere in the article, labor productivity is represented by real gross national product per employee. It is important to note that this measure of productivity is not comparable with those developed within the Office of Productivity and Technology, Bureau of Labor Statistics. For the definitions of labor productivity, multifactor productivity, and other related measures, and their historical data series, see the Current Labor Statistics sections of the *Review*.

<sup>3</sup> 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 detailed description of the Wharton model is provided in *Long-Term Model Structure and Specification* (Philadelphia, Wharton Econometric Forecasting Associates, 1982). A concise statement of BLS' overall projection methodology is contained in *Employment Projections for 1995: Data and Methods*, Bulletin 2253 (Bureau of Labor Statistics, 1986).

<sup>4</sup> For a detailed description of the analysis and results of this study, see Norman C. Saunders, "Sensitivity of BLS economic projections to exogenous variables," *Monthly Labor Review*, December 1986, pp. 23-29.

<sup>5</sup> As part of an ongoing effort to improve the projection methods and results, the BLS has evaluated the accuracy of earlier projection estimates. See the following *Monthly Labor Review* articles: John Tschetter, "An evaluation of BLS' projections of 1980 industry employment," August 1984, pp. 12-22; Howard N Fullerton, Jr., "How accurate were the 1980 labor force projections?" July 1982, pp. 15-21; and Max Carey and Kevin

Kasunic, "Evaluating the 1980 projections of occupational employment," July 1982, pp. 22-30. Analyses of the various projections for 1985 published by BLS are being prepared.

<sup>6</sup> See *Projections of the Population of the United States, 1987 to 2080, Current Population Reports, Series P-25, No. 1018* (Bureau of Census, forthcoming).

<sup>7</sup> See Howard N Fullerton, Jr., "Labor force projections: 1986 to 2000," *Monthly Labor Review*, September 1987, pp. 19-29.

<sup>8</sup> See *Annual Energy Outlook 1986* (U.S. Department of Energy, 1987). The Energy Department publishes each year a range of alternative energy scenarios. Scenarios consistent with the BLS estimates of GNP and inflation were chosen to fill in the energy assumptions.

<sup>9</sup> Based on historical relationships between GNP and the private business sector, the Office of Productivity and Technology, Bureau of Labor Statistics, has adjusted the projected 1986-2000 "GNP per employee" growth rate of 1.2 percent to "business sector output per employee" and "output per hour" estimates. The adjusted rates of growth, placed in a historical perspective, are as follow:

	Business sector output	
	Per hour	Per employee
1948-73 . . . . .	2.9	2.5
1973-86 . . . . .	.9	.4
1973-79 . . . . .	.6	.1
1979-86 . . . . .	1.0	.7
1986-2000 . . . . .	1.6	1.2 to 1.3