

Economic outlook for the 1990's: three scenarios for economic growth

Alternative monetary and fiscal assumptions suggest quite different trends in GNP and employment through 1995; in all versions, growth tapers after 1988, reflecting slower rates of population and labor force increase

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The Bureau of Labor Statistics has prepared trend projections of growth in aggregate and industry demand for the 1982–95 period, updating prior projections to 1990 and extending the analysis to 1995.¹ The projections are part of a Bureau program of studies aimed at analyzing medium-term economic growth and the implications for the structure of employment by industry and occupation. The new estimates consist of a moderate-growth case, and high-growth and low-growth alternatives, which examine the effects of alternate policies on U.S. economic growth, distribution of demand, and employment.

It should be noted that none of the three projections should be favored as the most likely. The intent in preparing them was not to forecast future economic performance but, rather, to examine the implications of a reasonable range of demand growth over the projection period. The projections represent only three of many possible responses of the economy to differing fiscal and monetary stimulæ. A different perspective on the inner workings of the U.S. aggregate economy could easily lead one to arrive at completely different results. For this reason, the high-growth and low-growth alternatives should not be viewed as the “good” forecast and the “bad” forecast, but rather as vehicles for generating a reasonable

spread in gross national product (GNP) and employment growth to 1995.

By 1995, real GNP is projected to range between \$2.1 and \$2.3 trillion, with total employment between 123.6 and 134.1 million jobs. In all three versions, job and production growth tapers during the latter part of the period, primarily in response to slower projected rates of growth of the population and labor force.² Following are historical and projected rates of growth for real GNP, real disposable income, and employment:

	<i>GNP</i>	<i>Disposable income</i>	<i>Employment</i>
Historical:			
1955–68	3.7	3.9	1.5
1968–73	3.5	4.3	1.7
1973–77	2.2	2.2	1.6
1977–82	1.6	2.4	1.6
Low growth:			
1982–90	2.8	2.4	1.4
1990–95	2.7	2.7	1.6
Moderate growth:			
1982–90	3.2	2.8	1.8
1990–95	2.5	2.6	1.5
High growth:			
1982–90	3.8	3.2	2.3
1990–95	2.5	2.7	1.7

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In terms of the real rate of growth, the low-trend projections are comparable to the 1973–82 experience, and the high-trend projection corresponds more to that of the 1960's.

Following is a detailed discussion of the assumptions and results of the moderate-growth alternative, both in terms of aggregate economic activity and industry demand patterns. A summary of the low-trend and high-trend results is included. Other articles in this issue examine the BLS projections of labor force, industry output and employment, and occupational demand.

Moderate growth assumptions

To develop the moderate-growth projections, assumptions were made concerning demographics, fiscal and monetary policy, foreign economic conditions, energy, and miscellaneous items.³ Those variables having the largest impact on the projections are discussed below. (Refer to the

box on pages 12–13 for a discussion of the model used to develop the aggregate projections.)

Demographic. The middle-growth projections of U.S. population, developed by the Census Bureau, were chosen for the moderate-growth scenario. The population age 16 and over is projected to increase by 21.6 million between 1982 and 1995, an average annual rate of growth of 0.9 percent. As in prior projections, the population rate of growth slows over the projection horizon, dropping from 1.1 percent annually between 1982 and 1988 to 0.8 percent each year between 1988 and 1995.

The civilian labor force grows somewhat more rapidly during the projection period, reflecting generally increasing participation rates and the shift of persons into age categories with traditionally higher labor force participation. The ci-

BLS projections procedures

The Bureau of Labor Statistics prepares projections on a 2-year cycle, using the Economic Growth Model System. This system is composed of a group of separate but not unrelated processes. Projections are produced in the following areas: (1) labor force; (2) aggregate economic performance; (3) industry final demand and total industry production; (4) industry employment levels; and (5) occupational employment by industry. Each block of the projections depends upon inputs from an earlier stage and feeds logically into the next.

The *labor force projections* use Bureau of the Census population projections by age, sex, and race, based on trends in birth rates, death rates, and net migration. With the population projections in hand, BLS projects labor force participation rates—the percent of each group in the population who will be working or seeking work—for 64 age, sex, and race groups. The labor force participation rate projection for each group is developed by: (a) analyzing past rates of growth over the 1962–81 period or for selected subperiods; (b) selecting the rate for a period deemed most appropriate for each group; and (c) modifying that rate if past trends are judged not likely to continue throughout the entire projection period. The levels of anticipated labor force are then calculated by applying the projected participation rates to the Bureau of the Census population projections.

The *aggregate economic projections or gross national product*, in total and by major demand and income category, use the BLS labor force and Census population projections as inputs. Consistent economic scenarios are developed to provide aggregate controls for the various categories of demand and employment. These scenarios are selected to encompass a band around likely growth of the economy in the future. Later stages of the projection process develop industry-level projections consistent with these aggregate data.

The Bureau's aggregate economic projections have, in the past, been prepared with a modified version of the Thurow econometric model of the U.S. economy. Following the last round of projections, it was determined that the BLS macro model was inadequate for further projections studies without major respec-

cification and expansion. After studying the problem, the decision was made to look to the private sector for a macro model that would satisfy the needs of Bureau economists and that would, at the same time, remove the burden of periodic data base maintenance and model reestimation from the Bureau staff. A model of the size and complexity deemed necessary for an effective evaluation of U.S. economic growth potential had required that a significant proportion of staff time be allocated to such routine maintenance. For this reason and because of staff and other resource limitations, a competitive procurement process was initiated in January 1982 and a contract was awarded to Chase Econometrics Associates, Inc., in October 1982. Under the terms of this agreement, the Bureau now uses the Chase macro model to develop its projections.

The Chase model is a quarterly model of the U.S. economy, and is composed of 312 behavioral equations and 275 identities, thus determining 587 endogenous variables. In addition, the model contains 110 exogenous variables. The model can be conveniently decomposed into 13 sectors: (1) consumption, (2) business fixed investment, (3) residential investment, (4) change in business inventories, (5) foreign trade, (6) Federal government, (7) State and local government, (8) employment and hours, (9) financial, (10) income, (11) wages and prices, (12) industrial production, and (13) energy.

Assumptions are specified for the 110 exogenous variables. The model is simulated and the results are analyzed for consistency and reasonableness. Modifications to the exogenous variables and to the behavioral relationships are incorporated into the model until a reasonable set of results has been obtained.

For the *industry output projections*, the U.S. economy is disaggregated to 156 producing sectors, an exhaustive grouping which combines both the public and private sectors. The framework for this procedure is an input-output model that is prepared for a base period by the Bureau of Economic Analysis of the U.S. Department of Commerce. The first step at the industry level is to disaggregate the GNP estimate from the aggregate projections to a set of demands by industry. This projected in-

vilian labor force is projected to attain a level of 131.4 million by 1995, an increase of just under 20 million from 1982. This represents average annual growth of 1.6 percent, 1982–88, and 1.0 percent between 1988 and 1995. The moderate-growth alternative uses the medium-growth projection of the civilian labor force discussed on pages 3–10 of this issue. The labor force projections in the low-trend and high-trend versions were generated by the macro model described on page 9.

Federal receipts and expenditures. General fiscal restraint throughout the remainder of this decade is the basic characteristic of the moderate-growth government expenditure and tax policies. Federal defense purchases of goods and services are assumed to increase at a real rate of 4.1 percent each year between 1982 and 1986. Thereafter, growth is assumed to drop to the 0.5- to 1.0-percent range to 1995.

dustry demand, in conjunction with a projected input-output table, is used to calculate total industrial production. The projected changes in input-output coefficients in the input-output model capture—among other factors—expected changes in technology. Finally, the employments necessary to produce those levels of output are estimated through use of projected industry productivity.

Aggregate demand projections are available from the macro model for 15 categories of consumption, 8 types of investment, 15 end-use categories of foreign trade, and 3 categories of government spending. Where possible, a further disaggregation of the control values is undertaken: Purchases of producers' durable equipment is divided into 23 types of capital equipment. Government spending is grouped into 12 categories.

To allow for shifts in the composition of aggregate demand and in the industrial makeup of a given demand category, "bridge tables" are projected. The bridge table is a set of percent distributions for each given demand category, such as one of the consumption groups or investment, among each of the 156 industries in the BLS input-output model.

The projection of the input-output table accounts for the changes in the input pattern for each industry. In general, two types of changes are made: (a) those made to the inputs of a specific industry after an industry study (as for the changes in inputs in the aluminum industry); and, (b) those made to the inputs of all industries for a specific commodity (as for increased use of business services across a wide spectrum of industries). Output requirements by industry are the result of multiplying the projected input-output table by projected changes in level and distribution of final demand.

The projected changes in industry output are important factors determining the *projections of industry employment*. However, converting output projections into employment estimates requires productivity-by-industry projections and measures of changes in average hours by industry. This is accomplished using a regression model with an equation for each industry that estimates worker-hours as a function of the following variables: (1) the industry's output, (2) capacity utilization, (3) the relative price of labor, and (4) a technology variable as approximated by the output/capital ratio. Worker-hours are then converted into jobs by dividing by average annual hours, which are projected using

Nondefense purchases of goods and services in real terms are expected to decline in the 1983–87 period, reaching \$35.8 billion in 1987, \$1.8 billion below the 1982 level. This reflects some employment declines, as well as general cutbacks in operating funds for many programs. Nondefense purchases are then assumed to grow, in real terms, by about 0.5 to 1.0 percent each year to 1990, and to accelerate somewhat to the 2.5- to 3.0-percent range during the first half of the next decade.

Social security benefit payments are expected to grow in nominal terms at an annual rate of 7.2 percent in the 1982–88 period, and by 7.1 percent each year between 1988 and 1995. No real benefit increases are assumed through 1988. The growth in social security payments is generated by inflation and by expanding client population only. After 1988, some resumption of real benefit growth is assumed, on the order of 0.5 percent to 1 percent annually.

time trends. The sum of employment by industry is controlled to total employment as estimated in the macro model. Several iterations are usually necessary for a reasonable balance to be achieved.

Projections of employment for the 156 sectors in the Economic Growth Model are disaggregated to 372 industries corresponding to the 3-digit Standard Industrial Classification (SIC). This is done to match the industry mix of the industry-occupation matrix described later. The disaggregation is accomplished via a time-series regression model. The disaggregated 3-digit SIC industry employment projections are reviewed in light of a broad range of economic information. When the industry projections are considered final, they are used as inputs to the process of projecting occupational employment.

One of the main resources in making *occupational employment projections* is the industry-occupation matrix. This matrix is produced from data collected by State employment agencies and brought together by the Bureau of Labor Statistics to produce national estimates. The data are collected from employers on a 3-year cycle—manufacturing one year, nonmanufacturing the next year, and the balance of nonmanufacturing (trade, transportation, communications, and utilities) the final year. The data from the 3-year cycle are put on the same employment basis to form annual average estimates for occupational employment in each of the 3-digit SIC industries. The matrix contains over 1,500 detailed occupations, although most industries do not have employment in many of these occupations.

The major occupational cells of the industry-occupation matrix for the base year are reviewed and adjustments are made to the cells in the projected matrix to account for changes expected to take place in the industries because of technological change, product mix shifts, and other factors. The changes introduced into the input-output model for expected technological change may also change the staffing patterns in industries using the new technology. (For example, one would expect greater general employment of computer specialists as computer technology spreads across industries.) The projected industry employment data are applied to the projected industry occupational employment patterns and the new cell employment is aggregated across all industries to yield total occupational employment for the projected year.

Medicare payments, on the other hand, are expected to grow at a 10.1-percent nominal rate over the 1982–88 period, reflecting client population growth, higher-than-average medical care cost inflation, and some real benefit increases, on the order of about 1 percent annually. After 1988, the medicare rate of growth drops to 8 percent annually as inflation continues to moderate.

Unemployment insurance benefits decline sharply through 1990 as the economy recovers from the 1982 recession and the number of unemployed drops. Some slight growth is apparent after 1990 as the unemployment rate stabilizes. Other transfer payments, including Federal retirement programs and veterans' benefits, are expected to increase at a nominal rate of 8.5 percent annually between 1982 and 1988, and at 7.9 percent during the 1988–95 period. Finally, grants to State and local governments are assumed to grow only with inflation during the entire period.

On the revenue side of the Federal government books, projected personal tax rates reflect currently mandated tax cuts and the indexation of personal taxes for the remainder of the period. Corporate profits taxes are assumed to stabilize at about 26 percent of profits for the entire projection period. Indirect business taxes are expected to increase annually by about 5.8 percent, while social insurance contributions are governed by the currently mandated tax rates and income base determination methods.

The net effect of these policies is a Federal budget deficit (NIPA basis) that declines steadily from \$180 billion in 1983 to about \$70 billion by 1990, and then remains at roughly that level for the remainder of the projection period.

Monetary policy. In the financial sector, 10 interest rates are derived, with the Federal funds rate providing the key to the overall term structure of rates. The major assumption affecting the determination of the Federal funds rate is the rate of growth of the nonborrowed monetary base, excluding currency. It is assumed that this variable will grow at a rate close to 10 percent during 1983, dropping to about 7 percent during the 1984–87 period, and then to the 5.5- to 6-percent range for the remainder of the projection period. This reflects an assumed willingness on the part of the Federal Reserve Board to loosen up somewhat on monetary controls as the economy recovers from the 1982 recession.

Also affecting the financial sector is the assumption concerning the rate of growth of money-market related mutual funds. This variable affects the distribution of the money stock between the aggregate money supply measures M1 and M2. Money-market funds are expected to increase at a strong pace during the mid-1980's (about 12 to 15 percent annually), but this will taper in the late 1980's and early 1990's to about a 10-percent average rate of growth.

Foreign economic conditions. Exports of domestically produced goods and services are influenced primarily by international financial markets and by the economic condition

of our major trading partners. The following table summarizes the assumed annual percentage rates of growth of the variables in the macro model that reflect these considerations:

	<i>Industrial production, world</i>	<i>Wholesale price index, rest-of-world</i>	<i>Average value of the U.S. dollar^A</i>
Historical:			
1968–73	—	—	–3.0
1973–77	0.9	11.8	2.4
1977–82	0.7	10.0	3.3
Low growth:			
1982–90	3.0	8.8	1.6
1990–95	2.9	7.9	0.0
Moderate growth:			
1982–90	3.2	8.3	2.1
1990–95	3.1	6.9	1.3
High growth:			
1982–90	3.3	8.5	2.2
1990–95	3.4	7.3	1.5

The assumed growth rates for industrial production appear high from a historical perspective. The table is deceptive, however, because the selected historical years are representative of peak-to-peak periods in this country. The world economy tends to lag the U.S. business cycle and, as a result, the historical growth rates presented above are not truly representative of long-term trend growth patterns. Generally, world industrial production has tended to increase at a 2.5- to 3.5-percent rate during trend growth periods.

Energy. Domestic oil production, currently running at about 10 million barrels per day (MBPD), is assumed to decline to 9.5 MBPD by 1987 and to remain at that level thereafter. Petroleum imports, on the other hand, are expected to increase steadily from 5.1 MBPD in 1982 to 7.8 MBPD in 1990 and 8 MBPD in 1995. The price of imported oil is assumed to rise from the 1983 price of \$28 per barrel to \$41 in 1990 and to \$52 by 1995. This rise is consistent with overall inflation but does not reflect any real increase in the barrel price of imported crude oil.

Affecting transportation-related demand for petroleum are assumptions concerning the average miles-per-gallon of new domestically produced autos, and the ratio of imports to domestic autos. Mileage figures are assumed to improve from the 1982 level of 26.7 mpg to 37.8 by 1990 and 41.7 by 1995. After declining to a more normal share of 24 percent in 1983, imported autos are expected to capture more of the U.S. auto market, accounting for 30 percent of domestic sales by 1990. The share is assumed to stabilize through 1995 at that level.

Implications of moderate growth

Real GNP is projected to increase at an average annual rate of 3.2 percent over the 1982–90 period, reflecting re-

covery from the 1982 recession. After 1990, GNP growth moderates somewhat to an annual rate of 2.5 percent between 1990 and 1995 (table 1). This assumes a return to the long-term trend growth path following the recovery and the continuing slowdown in the rate of growth of the civilian labor force. Following is a summary of the projection results for each major sector of the economy.

Prices. Projections for price change are truly optimistic in the moderate-growth scenario—at least compared to the more recent experience:

	Annual change, in percent		
	GNP deflator	Personal consumption expenditures deflator	Gross private domestic investment deflator
<i>Historical:</i>			
1955–68	2.4	2.1	1.7
1968–73	5.1	4.6	5.1
1973–77	7.3	7.1	9.4
1977–82	8.1	8.1	7.1
<i>Moderate growth:</i>			
1982–90	5.4	5.2	5.8
1990–95	3.3	3.6	2.7

The moderation in inflation expectations is based on the relatively modest rate of recovery projected from the 1982 recession. Demand growth accelerates at a pace readily matched by production capacity, thus averting much of the demand pressure on prices apparent during recoveries from the 1969–70 and 1973–75 recessions. The 1981–82 recession also significantly dampened wage rate growth, a major impetus to renewed inflation during earlier recoveries.

Employment and productivity. Civilian household employment is projected to increase by just over 24 million jobs between 1982 and 1995, as the unemployment rate declines from 9.7 percent in 1982 to 6.3 percent in 1990 and to 6.0 percent in 1995. (See table 2.) This represents average annual growth in employment of 2 percent between 1982 and 1990 and of 1.1 percent between 1990 and 1995. There are 6.5 million new jobs in the goods-producing sector, and 17.3 million in the private service-producing industries.

For the private nonfarm sector, the long-term average annual rate of productivity growth was 2.6 percent between 1955 and 1968. Between 1968 and 1973, this rate dropped to 2.1 percent annually and even further, to 0.2 percent, during the 1973–82 period. The slowdown in productivity growth over the past decade has been attributed to many factors, including the influx of new workers into the labor force; slowing in capital accumulation per worker; emphasis on nonproductive types of investment, such as pollution control investment; and the remarkable increase in energy prices since 1973.

Over the coming decade, many of the factors that contributed to the productivity slowdown are expected to improve. As a result, the projections for productivity are quite optimistic when compared to more recent experience. Productivity in the private nonfarm sector is expected to increase at a rate of 1.7 percent annually between 1982 and 1990 and by 1.4 percent each year during the 1990–95 period. Increases in manufacturing labor productivity are expected to average 2.2 percent annually over the entire period.

Developments related to employment and labor productivity are discussed by Valerie Personick elsewhere in this issue.

Personal consumption. Consumer spending is the largest component of GNP. In 1968, personal consumption expenditures (PCE) accounted for 60.0 percent of real GNP. The share increased to 63.2 percent in 1981 and to 65.3 percent in 1982. It should be noted that personal consumption expenditures accounted for a large proportion of GNP in 1982 because of the rapid relative increase in the purchase of services during a recessionary period. After returning to a more normal share of GNP after 1983, consumer expenditures are still expected to show a long-term upward trend, reaching 65.2 percent of GNP in 1995. The increase is due primarily to relatively higher disposable income and a slightly lower savings rate, as well as to the smaller share of GNP accounted for by government expenditures. Table 3 details the projections of 15 major categories of consumer spending.

Because of price effects, new technology, the shifting population mix, and new household formation, consumers' behavior will exhibit some changes over the next decade. Purchases of consumer durables are projected to grow very strongly over the period—5.1-percent average annual growth from 1982 to 1990 and 2.9 percent each year, 1990–95. All categories of durables are expected to increase strongly in the early period of the projections, but the largest growth is attributable to motor vehicles and to household appliances. Generally speaking, durables purchases react quite sharply to increasing inflation and to swings in the business cycle because such purchases are easily put off until "better times." Two major reasons for the strong durables growth over the projection period are the greatly improved inflation situation and the lack of business-cycle swings built into the projection methods.

Purchases of motor vehicles and parts dropped dramatically during the 1982 recession. Sales of new motor vehicles were down 18 percent to 11.4 million units in 1980 and dipped to 10.4 million units in 1982, the worst slump in 20 years. The drop in new-car sales was largely accounted for by domestic autos, as imports continued to increase their share of the market during the 1982 recession.

With cut-rate financing luring buyers, sales rebounded sharply in the final months of 1982. Demand for motor

Item	1968	1973	1977	1982	1990			1995		
					High	Moderate	Low	High	Moderate	Low
Gross national product	\$1,058.1	\$1,255.0	\$1,369.7	\$1,485.4	\$2,004.2	\$1,915.5	\$1,857.9	\$2,264.6	\$2,166.9	\$2,126.7
Personal consumption	634.4	768.5	864.3	970.2	1,296.0	1,240.2	1,196.8	1,491.4	1,412.4	1,349.1
Durables	88.3	121.3	138.0	139.8	236.0	208.8	190.1	277.4	240.4	223.8
Nondurables	270.5	308.0	333.4	364.2	447.2	436.2	423.7	481.2	468.0	438.4
Services	275.6	339.2	393.0	466.2	612.8	595.2	583.0	732.9	704.0	686.9
Gross private investment	161.6	217.5	214.2	194.5	342.1	305.7	250.1	405.0	337.2	285.7
Equipment	66.8	90.7	99.9	112.7	166.2	149.1	132.4	202.8	177.2	159.6
Structures	42.8	47.4	40.4	53.4	62.8	61.5	45.0	76.9	70.1	44.6
Residential	43.1	62.3	60.7	37.8	97.8	80.5	63.6	113.1	78.1	69.6
Inventory change	9.0	17.2	13.3	-9.4	15.3	14.6	9.0	12.2	11.9	11.9
Net exports	1.9	15.5	22.0	28.9	34.1	48.8	83.0	22.8	85.9	148.4
Exports	61.2	97.3	112.9	147.3	206.7	202.3	206.5	261.7	260.0	267.9
Imports	59.3	81.8	90.9	118.4	172.6	153.5	123.5	238.9	174.1	119.4
Government	260.2	253.5	269.2	291.8	332.0	320.9	327.9	345.4	331.4	343.5
Federal	128.2	95.9	100.5	116.6	136.8	132.4	144.3	144.6	139.2	157.0
State and local	132.0	157.6	168.8	175.2	195.2	188.5	183.6	200.7	192.2	186.5
Percent distribution										
Gross national product	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Personal consumption	60.0	61.2	63.1	65.3	64.7	64.7	64.4	65.9	65.2	63.4
Durables	8.3	9.7	10.1	9.4	11.8	10.9	10.2	12.2	11.1	10.5
Nondurables	25.6	24.5	24.3	24.5	22.3	22.8	22.8	21.2	21.6	20.6
Services	26.0	27.0	28.7	31.4	30.6	31.1	31.4	32.4	32.5	32.3
Gross private investment	15.3	17.3	15.6	13.1	17.1	16.0	13.5	17.9	15.6	13.4
Equipment	6.3	7.2	7.3	7.6	8.3	7.8	7.1	9.0	8.2	7.5
Structures	4.0	3.8	2.9	3.6	3.1	3.2	2.4	3.3	3.2	2.1
Residential	4.1	5.0	4.4	2.5	4.9	4.2	3.4	5.0	3.6	3.3
Inventory change	0.9	1.4	1.0	-0.6	.8	.8	.5	.5	.5	.6
Net exports	.2	1.2	1.6	1.9	1.7	2.5	4.5	1.0	4.0	7.0
Exports	5.8	7.8	8.2	9.9	10.3	10.6	11.1	11.6	12.0	12.6
Imports	5.6	6.5	6.6	8.0	8.6	8.0	6.6	10.5	8.0	5.6
Government	24.6	20.2	19.7	19.6	16.6	16.8	17.6	15.3	15.3	16.2
Federal	12.1	7.6	7.3	7.8	6.8	6.9	7.8	6.4	6.4	7.4
State and local	12.5	12.6	12.3	11.8	9.7	9.8	9.9	8.9	8.9	8.8
Average annual rate of change (in percent)										
	1968-73	1973-77	1977-82	High		Moderate		Low		
				1982-90	1990-95	1982-90	1990-95	1982-95	1982-90	1990-95
Gross national product	3.5	2.2	1.6	3.8	2.5	3.2	2.5	3.0	2.8	2.7
Personal consumption	3.9	3.0	2.3	3.7	2.8	3.1	2.6	2.9	2.7	2.4
Durables	6.5	3.3	0.3	6.8	3.3	5.1	2.9	4.3	3.9	3.3
Nondurables	2.6	2.1	1.8	2.6	1.5	2.3	1.4	1.9	1.9	0.7
Services	4.2	3.7	3.5	3.5	3.6	3.1	3.4	3.2	2.8	3.3
Gross private investment	6.1	-0.4	-1.9	7.3	3.4	5.8	2.0	4.3	3.2	2.7
Equipment	6.3	2.4	2.4	5.0	4.1	3.6	3.5	3.5	2.0	3.8
Structures	2.1	-3.9	5.7	2.1	4.1	1.8	2.7	2.1	-2.1	-0.2
Residential	7.6	-0.6	-9.0	12.6	2.9	9.9	-0.6	5.7	7.4	1.8
Exports	9.7	3.8	5.5	4.3	4.8	4.1	5.2	4.5	4.3	5.3
Imports	6.6	2.7	5.4	4.8	6.7	3.3	2.6	3.0	0.5	-0.7
Government	-0.5	1.5	1.6	1.6	0.8	1.2	0.7	1.0	1.5	0.9
Federal	-5.6	1.2	3.0	2.0	1.1	1.6	1.0	1.4	2.7	1.7
State and local	3.6	1.7	0.8	1.4	0.6	0.9	0.4	0.7	0.6	0.3

SOURCE: Historical data, Bureau of Economic Analysis; projected data, Bureau of Labor Statistics.

vehicles and parts is expected to increase at a robust rate, averaging 5.8-percent growth between 1982 and 1990. This represents an increase in new domestic car sales to 8.6 million units by 1990. Although low by the standards of the 1960's and 1970's, this is still well above the average sales rate of 5.7 million domestic cars in 1982. The slow-

down from the long-term trends is caused by continuing relative price increases, a projected decline in the entry of new drivers into the marketplace, and the assumption that imports will continue to improve their competitive position in this country. The following table summarizes purchase data for motor vehicles, historically and projected.

	1968	1973	1977	1982	1990	1995
Vehicles and parts as a percent of PCE (1972 dollars)	6.3	7.4	7.3	5.9	7.3	7.0
New-vehicles sales (millions of units) ...	—	13.6	14.6	10.4	16.6	16.1
New-car sales	9.6	11.4	11.1	8.0	12.4	12.0
Domestic	8.6	9.6	9.0	5.7	8.6	8.4
Imported	1.0	1.8	2.1	2.3	3.7	3.6
New-light-truck sales	—	2.3	3.5	2.4	4.2	4.1
Percent import share, new cars	10.7	15.5	18.7	28.3	30.0	30.0

Like the case for motor vehicles, the projected surge in purchases of furniture and household appliances is attributable to recovery. With the expected upturn in construction of new homes, demand for housing-linked items is expected to increase rapidly, at a rate of 4.6 percent per year, between 1982 and 1990.

In addition to the housing-related demand growth, a new boom in household appliances and furnishings, largely paralleling the 1950's television experience, will feature consumer electronics and a new wave of replacement demand. Purchases of home computers and supplemental equipment, such as printers and software, have exploded in the U.S. marketplace; demand for such popular new products is foreseen to grow strongly in the next decade. Other new electronic products, such as compact audiodiscs, video cassette recorders, and sophisticated electronic telephone systems,

are also expected to become increasingly important. Thus, considerable growth of 4.2 percent annually in the 1982-95 period is projected, much higher than the growth rate of 2.9 percent for total consumption during the same period.

Consumer purchases of nondurables are expected to account for progressively smaller shares of GNP throughout the projection period. Nondurables accounted for 25.6 percent of GNP in 1968. The share dropped to 24.5 percent in 1982 and is projected to decline further to 22.8 percent and 21.6 percent of GNP in 1990 and 1995, as nondurables grow more in line with population than they did during the 1970's.

Food consumption has been declining as a proportion of total PCE over time, and it is expected to continue to do so through 1995. As a family's real income increases, the percentage spent on food decreases. In 1982, purchases of food accounted for 19.0 percent of PCE, while by 1995, they are expected to decline to 15.8 percent. Particularly, demand for restaurant meals is projected to grow more slowly in the period than in recent years. During the last decade, a rapid increase in the number of working wives helped to boost restaurant sales. Female labor force participation is projected to continue to rise over the projection period but at a slower pace than during the last 10 years. Consequently, purchased restaurant meals are projected to grow only at a rate of 1.1 percent per year in the 1982-95 period, compared with 2.8 percent between 1973 and 1979.

Average growth of 2.3 percent annually is projected for purchases of clothing and shoes between 1982 and 1995, compared with rates of 3.9 percent per year in the 1968-

Table 2. Selected macroeconomic variables, 1968, 1973, 1977, 1982 and projected to 1990 and 1995

Item	1968	1973	1977	1982	1990			1995			
					High	Moderate	Low	High	Moderate	Low	
					1968-73	1973-77	1977-82	High		Moderate	
				1982-90	1990-95	1982-90	1990-95	1982-95	1982-90	1990-95	
GNP deflator (1972 = 100)	82.5	105.7	140.0	206.9	341.1	315.9	303.5	483.7	372.1	341.8	
Private nonfarm productivity	86.6	95.2	100.1	100.0	116.1	114.6	114.0	125.3	122.7	120.9	
Unemployment rate	3.6	4.9	7.1	9.7	5.4	6.3	6.5	5.2	6.0	6.8	
Total employment (in millions)	83,549	91,735	97,539	105,555	121,869	120,830	119,735	132,843	130,260	128,250	
Government	14,092	15,506	16,783	17,471	17,891	17,658	17,993	18,482	18,203	18,532	
Private	69,457	76,229	80,756	88,084	106,978	103,172	101,742	114,361	112,057	109,718	
Farm	3,662	6,220	2,950	2,815	2,672	2,652	2,630	2,595	2,550	2,500	
Manufacturing	20,065	20,438	20,017	19,223	22,635	22,236	21,686	24,132	23,491	22,963	
Service-producing	37,363	43,567	48,796	56,721	67,828	67,533	66,559	75,596	74,157	72,673	
Other	8,367	9,004	8,993	9,325	10,843	10,751	10,867	12,038	11,859	11,582	
Average annual rate of change (in percent)											
					High		Moderate		Low		
					1982-90	1990-95	1982-90	1990-95	1982-95	1982-90	1990-95
GNP deflator (1972 = 100)	5.1	7.3	8.1	6.5	7.2	5.4	3.3	4.6	4.9	3.4	
Private nonfarm productivity	1.9	1.3	0.0	1.9	1.5	1.7	1.4	1.6	1.7	1.2	
Total employment	1.9	1.5	1.6	1.8	1.7	1.7	1.5	1.4	1.6	1.4	
Government	1.9	2.0	0.8	0.3	0.7	0.1	0.6	0.3	0.4	0.6	
Private	1.9	1.2	1.8	2.1	1.9	2.0	1.7	1.6	1.8	1.5	
Farm	-2.5	-2.2	-0.9	-0.6	-0.6	-0.7	-0.8	-0.7	-0.8	-1.0	
Manufacturing	0.4	-0.5	-0.8	2.1	1.3	1.8	1.1	1.3	1.5	1.2	
Service-producing	3.1	2.9	3.1	2.3	2.2	2.2	1.9	1.8	2.0	1.8	
Other	1.5	-0.0	0.7	1.9	2.1	1.8	2.0	1.6	1.9	1.3	

Source: Historical and projected employment data and projected price deflator, Bureau of Labor Statistics; historical price deflator, Bureau of Economic Analysis.

Table 3. Personal consumption expenditures by major categories, 1968, 1973, 1977, 1982, and projected to 1990 and 1995

(Billions of 1972 dollars)

Category	1968	1973	1977	1982	1990			1995		
					High	Moderate	Low	High	Moderate	Low
Total	\$634.4	\$768.5	\$864.3	\$970.2	\$1,296.0	\$1,240.2	\$1,196.8	\$1,491.4	\$1,412.4	\$1,349.1
Motor vehicles and parts	40.3	56.5	63.5	57.4	107.0	90.3	80.7	118.1	98.2	87.1
Household appliances	14.2	21.2	26.3	33.0	52.5	48.3	43.8	64.6	57.4	55.1
Household furnishings	20.5	25.1	26.6	26.7	41.5	37.5	34.6	51.2	45.1	43.8
Other durable goods	13.4	18.5	21.5	22.7	35.0	32.7	31.0	43.5	39.7	37.8
Total durables	88.3	121.3	138.0	139.8	236.0	208.8	190.1	277.4	240.4	223.8
Food and beverages	142.4	153.6	170.6	184.0	216.6	213.2	207.1	228.7	223.8	208.9
Clothing and shoes	49.0	59.3	67.5	84.4	106.9	103.9	100.8	117.0	113.7	105.3
Gasoline and oil	19.9	26.2	27.7	25.6	29.7	28.8	27.9	30.5	28.9	26.8
Fuel oil and coal	5.3	5.4	4.4	3.5	3.7	3.7	3.6	4.4	4.4	4.1
Other nondurable goods	53.9	63.5	63.2	66.6	90.3	86.6	84.3	100.6	97.2	93.3
Total nondurables	270.5	308.0	333.4	364.2	447.2	436.2	423.7	481.2	468.0	438.4
Housing services	93.5	118.2	141.3	171.3	215.2	212.7	209.8	249.3	247.7	245.1
Household electricity	9.6	13.0	16.0	18.3	25.5	24.6	24.1	30.0	28.4	27.2
Household natural gas	5.9	6.4	6.5	6.6	5.3	5.1	5.0	5.2	4.7	4.5
Other household operations	23.4	28.0	32.6	38.6	55.0	52.9	51.4	68.9	64.0	61.3
Transportation services	23.4	28.5	32.7	31.7	45.0	42.4	41.0	55.1	50.1	47.9
Other services	119.7	145.1	163.9	199.6	266.7	257.5	251.8	324.3	309.1	300.9
Total services	275.6	339.2	393.0	466.2	612.7	595.2	583.1	732.8	704.0	686.9
Percent distribution										
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Motor vehicles and parts	6.4	7.4	7.3	5.9	8.3	7.3	6.7	7.9	7.0	6.5
Household appliances	2.2	2.8	3.0	3.4	4.1	3.9	3.7	4.3	4.1	4.1
Household furnishings	3.2	3.3	3.1	2.8	3.2	3.0	2.9	3.4	3.2	3.2
Other durable goods	2.1	2.4	2.5	2.3	2.7	2.6	2.6	2.9	2.8	2.8
Total durables	13.9	15.8	16.0	14.4	18.2	16.8	15.9	18.6	17.0	16.6
Food and beverages	22.4	20.0	19.7	19.0	16.7	17.2	17.3	15.3	15.8	15.5
Clothing and shoes	7.7	7.7	7.8	8.7	8.2	8.4	8.4	7.8	8.1	7.8
Gasoline and oil	3.1	3.4	3.2	2.6	2.3	2.3	2.3	2.0	2.0	2.0
Fuel oil and coal	0.8	0.7	0.5	0.4	0.3	0.3	0.3	0.3	0.3	0.3
Other nondurable goods	8.5	8.3	7.3	6.9	7.0	7.0	7.0	6.7	6.9	6.9
Total nondurables	42.6	40.1	38.6	37.5	34.5	35.2	35.4	32.3	33.1	32.5
Housing services	14.7	15.4	16.3	17.7	16.6	17.2	17.5	16.7	17.5	18.2
Household electricity	1.5	1.7	1.9	1.9	2.0	2.0	2.0	2.0	2.0	2.0
Household natural gas	0.9	0.8	0.8	0.7	0.4	0.4	0.4	0.3	0.3	0.3
Other household operations	3.7	3.6	3.8	4.0	4.2	4.3	4.3	4.6	4.5	4.5
Transportation services	3.7	3.7	3.8	3.3	3.5	3.4	3.4	3.7	3.5	3.6
Other services	18.9	18.9	19.0	20.6	20.6	20.8	21.0	21.7	21.9	22.3
Total services	43.4	44.1	45.5	48.0	47.3	48.0	48.7	49.1	49.8	50.9
Average annual rate of change (in percent)										
	1968-73	1973-77	1977-82	High		Moderate			Low	
				1982-90	1990-95	1982-90	1990-95	1982-95	1982-90	1990-95
Total	3.9	3.0	2.3	3.7	2.8	3.1	2.6	2.9	2.7	2.4
Motor vehicles and parts	7.0	3.0	-2.0	8.1	2.0	5.8	1.7	4.2	4.3	1.5
Household appliances	8.4	5.5	4.6	6.0	4.2	4.9	3.5	4.4	3.6	4.7
Household furnishings	4.1	1.5	0.1	5.6	4.3	4.3	3.8	4.1	3.3	4.8
Other durable goods	6.7	3.8	1.1	5.6	4.4	4.7	4.0	4.4	4.0	4.0
Total durables	6.6	3.3	0.3	6.8	3.3	5.1	2.9	4.3	3.9	3.3
Food and beverages	1.5	2.7	1.5	2.1	1.1	1.9	1.0	1.5	1.5	0.2
Clothing and shoes	3.9	3.3	4.6	3.0	1.8	2.6	1.8	2.3	2.3	0.9
Gasoline and oil	5.7	1.4	-1.5	1.9	0.5	1.5	0.1	0.9	1.1	-0.8
Fuel oil and coal	0.4	-5.0	-4.5	0.6	3.5	0.6	3.5	1.7	0.2	2.6
Other nondurable goods	3.3	-0.1	1.1	3.9	2.2	3.3	2.3	2.9	3.0	2.0
Total nondurables	2.6	2.0	1.8	2.6	1.5	2.3	1.4	1.9	1.9	0.7
Housing services	4.8	4.6	3.9	2.9	3.0	2.7	3.1	2.9	2.6	3.2
Household electricity	6.3	5.3	2.8	4.2	3.3	3.7	2.9	3.4	3.5	2.5
Household natural gas	1.6	0.4	0.1	-2.7	-0.4	-3.1	-1.6	-2.5	-3.4	-2.1
Other household operations	3.7	3.9	3.5	4.5	4.6	4.0	3.9	4.0	3.6	3.6
Transportation services	4.0	3.5	-0.6	4.5	4.1	3.7	3.4	3.6	3.3	3.2
Other services	3.9	3.1	4.0	3.7	4.0	3.2	3.7	3.4	2.9	3.6
Total services	4.2	3.8	3.5	3.5	3.6	3.1	3.4	3.2	2.8	3.3

SOURCE: Historical data are from table 2.5 of the National Income and Product Accounts Tables, Bureau of Economic Analysis.

73 period and 4.0 percent in the 1973–82 span. This represents real spending of \$438 per person for clothing and shoes in 1995, compared with \$280 in 1973 and \$363 in 1982. The baby boom of the fifties powered much of the demand for clothing purchases of the sixties and seventies. The baby bust of the sixties will mean, for the nineties, a smaller proportion of the population in the 16- to 44-year-old group, accounting for 43 percent in 1995 versus 46 percent in 1982; individuals in this age group are major purchasers of clothing and shoes.

Due to continuing conservation, the downsizing of cars, and expected increases in relative energy prices, energy consumption stays at low levels through 1995. In 1982, the average miles-per-gallon for new domestic cars was 26.7, while by 1995, this figure is expected to jump to 41.7. Thus, only slight growth of 0.9 percent per year is projected for gasoline and oil purchases in the 1982–95 period. Since the energy crisis of the 1970's, consumption of fuel oil and coal for household heating and cooling has dropped substantially in response to relative price increases. Although the downward trend is expected to reverse in 1984, consumption will probably not return to its previous levels, at least not in the projection period. Average annual growth of 1.7 percent is projected for fuel oil and coal during the 1982–95 period.

Drugs and medical sundries is the only category of non-durables expected to show rapid growth during the projection period. Because of continued demand growth and the introduction of new kinds of products, a strong increase of 6.0 percent per year is projected between 1977 and 1995.

Consumer purchases of services have been becoming a more important budget item historically, and this trend is expected to continue to 1995. The growth of services purchases is broadly based; with the exception of natural gas purchases, all categories of services are expected to increase by at least 2.9 percent per year between 1982 and 1995.

Consumer expenditures for housing, which include rent paid by tenants and an imputed rental value of owner-occupied housing, have been an increasing share of total PCE over time, rising from 14.7 percent in 1968 to 16.3 percent in 1977, and to 17.7 percent in 1982. By 1995, housing expenditures are expected to exceed food expenditures and become the largest consumption category. The increase in housing demand is in response to changes in household formation rates—a trend toward single-person households, and a decrease in family size from 3.0 persons in 1973 to 2.6 in 1982, and to 2.4 in 1995. Stable growth of 2.9 percent per year in housing expenditures is projected for the 1982–95 period.

Since the early 1970's, demand for electric power has increased, consistently outpacing growth in GNP. In con-

trast, demand for natural gas has continued to decrease. This shift reflects diminished natural gas supplies and price hikes that have caused electricity to become the principal alternative energy source. During the past 2 years, retail natural gas prices rose by 40 percent (in nominal terms) in some parts of the Nation, and industry experts predict a sharp rise of 16 percent for the 1984 winter heating season. These trends of increased availability of electricity and decreased use of natural gas are expected to continue through 1995. Demand for electricity will grow 3.4 percent per year in the 1982–95 period, while demand for natural gas will fall at a rate of –2.5 percent.

Purchases of telephone and telegraph services by consumers are expected to grow substantially over the projection span. This reflects the increased use of modern communication systems, such as call-waiting and call-forwarding services, long-distance calling and related telecommunication systems, and the computerized telephone. In addition, cable television services have been expanding rapidly during recent years; spending on cable television services in 1982 was more than triple that in 1977. This trend is expected to continue in the next decade. Also contributing to increasing relative expenditures for communications services is the divestiture proceeding currently underway for the major supplier of these services. Communications services are projected to grow at an annual rate of 5.2 percent between 1982 and 1995.

The large increases projected in medical care services are affected by continued growth in the percentage of the population over age 65, who need more health care than the general population, and by the increasing availability of new, sophisticated, and expensive medical treatment equipment. In addition, demand for medical services seems to be relatively immune to the effects of price increases. Medical spending is projected to grow to 8.3 percent of PCE in 1995, compared to 7.0 percent in 1977.

Investment. Gross investment is expected to continue to exhibit its traditional volatility during the projection period. Accounting for 17.3 percent of GNP in 1973, gross private domestic investment (GPDI) accounted for only 13.1 percent by 1982, primarily because of the disastrous effects of high inflation and the recessions of the 1970's and early 1980's on housing construction. By 1990, investment accounts for 16.0 percent of GNP, reflecting growing expenditures for equipment and the projected housing recovery. The share declines slightly to 15.6 percent of GNP by 1995 as housing construction hits a plateau.

Equipment purchases are expected to grow at a 3.5-percent rate between 1982 and 1995, well above the 2.4-percent rate of the 1973–82 period. Although still well below the

rate of growth of producers' durable equipment (PDE) purchases during the 1960's, this has important implications for productivity.

In terms of industries, computers and peripheral equipment are projected to rise from 8 percent of producers' durable equipment expenditures in 1977 to 20 percent in 1995. Despite the rapid growth by the computer industry during the 1970's, more is still expected, brought on by advances in microchip technology. These developments should continue to bring down the price of computers, making them available to even the smallest businesses. Large computers with speeds many times faster than the fastest now available will find expanded uses, and will also be purchased by large companies to replace existing equipment.

Investment spending on motor vehicles and aircraft is projected to grow less rapidly than total outlays for producer's durables as companies do little more than replace equipment that wears out. Moderate growth in the agricultural sector translates into moderate investment in farm machinery. Developments such as laser systems, data communications, and electronic mail will result in rapid growth in investment in radio and telephone equipment.

The nonresidential construction market suffered its setback in the mid-1970's and has, to some extent, already anticipated the recovery foreseen for the residential market. Growth in nonresidential construction is expected to average 2.1 percent each year between 1982 and 1995. Growth of expenditures for industrial structures is expected to exceed 5.0 percent annually over the entire period, more than offsetting the very slow growth expected for commercial office buildings.

Housing. The residential construction market is projected to recover strongly from its depressed condition of the last several years. Private housing starts are expected to rise from the 1982 level of 1.06 million units to a peak of 2.16 million in 1988. Thereafter, growth moderates and housing starts stabilize at about 1.9 million units annually to 1995.

Hardest hit during the last several years have been single-family housing starts. In 1982 and 1983, government subsidy programs encouraged multifamily construction projects and, as a result, multifamily starts constituted almost 37 percent of total starts in 1982. Projected stronger growth in the single-family construction area means that one-unit houses will account for 66.5 percent of starts, with multifamily units dropping to 33.8 percent, by 1988. By 1995, single-family starts are 65.8 percent of total starts. Mobile homes are projected to grow at a rate of 5.9 percent annually, 1982-90, and at a 2.5-percent rate between 1990 and 1995.

Exports and imports. The assumption that our major trading partners will recover strongly from the current worldwide recession underlies the strong growth projected for U.S. exports of goods and services—4.1 percent annually be-

tween 1982 and 1990, accelerating to 5.2 percent each year, 1990-95. By end-use categories, the expected growth is broadly based, as depicted in table 4.

Merchandise exports are expected to grow at an annual rate of 5.3 percent over the projection period, led by consumer goods with average growth of 6.9 percent. In dollar values, capital goods are expected to show the largest increase—\$24.2 billion, or nearly one-third of the total increase. Growth in exports of consumer goods and capital goods reflects the expectation that U.S. trade will move toward developing countries in the long run because those countries tend to require goods with higher technological inputs, such as electronic computers and parts, aircraft and parts, telephonic and other electrical apparatus, and medicinal and pharmaceutical preparations. By 1995, computers are expected to be the leading export industry, reaching 5.3 percent of total exports with a growth rate of 8.4 percent per year from 1977 to 1995. Exports of telephone and telegraph apparatus show the highest annual rate of increase—10.9 percent—over the 1977-95 period. The category of food, feeds, and beverages will continue to account for a sizable share of U.S. exports in coming years, but it will grow at a slower rate. The following table highlights those industries with the best expected export performance:

	<i>Percent of total exports</i>
The five largest export industries, 1995:	
Computers	5.3
Food and feed grains	4.2
Aircraft	3.6
Electronic components	3.4
Motor vehicles	3.3
The five fastest growing export industries, 1977-95:	<i>Annual percent growth rate</i>
Telephone and telegraph apparatus.	10.9
Communications	10.3
Floor covering mills	8.9
Furniture and fixtures	8.5
Computers	8.4

Imports are projected to grow at an average rate of 3.0 percent annually between 1982 and 1995. Merchandise imports will exhibit more rapid growth of 3.8 percent. Over the 1980-82 period, petroleum imports dropped by \$1.8 billion, or 14 percent, as a result of both the U.S. recession and continuing efforts to conserve energy. Increasing imports of petroleum during the projection period result from falling domestic production and some increase in demand. Domestic oil production is expected to continue to decline somewhat, dropping from 9.9 million barrels per day in 1982, and stabilizing at 9.5 million by 1990. In real terms, the barrel price of oil is assumed to reach \$52 by 1995, a price rise which is accounted for by general inflationary expectations. Thus, overall demand for petroleum tends to increase without the price constraints evident during the

Table 4. Foreign trade by end-use categories, 1968, 1973, 1977, 1982, and projected to 1990 and 1995

[Billions of 1972 dollars]

Category	1968	1973	1977	1982	1990			1995		
					High	Moderate	Low	High	Moderate	Low
Net exports	\$ 1.9	\$15.5	\$ 22.0	\$ 28.9	\$ 34.1	\$ 48.8	\$ 83.0	\$ 22.8	\$ 85.9	\$148.4
Net merchandise	-1.9	1.5	0.9	1.7	-8.2	7.7	35.8	-21.5	28.9	72.9
Net services	3.8	14.0	21.1	27.2	42.3	41.1	47.2	44.3	57.0	75.6
Total exports	61.2	97.3	112.9	147.3	206.7	202.3	206.5	261.7	260.0	267.9
Merchandise	39.0	61.2	68.0	81.4	118.7	119.8	125.7	146.5	158.7	171.9
Foods, feeds, and beverages	5.5	9.7	10.5	14.5	21.1	20.1	20.1	30.1	28.3	28.4
Industrial supplies and materials	12.3	17.1	16.8	21.7	33.8	34.6	35.3	41.3	45.1	45.9
Capital goods, excluding autos	13.3	21.3	24.1	28.4	39.6	40.9	43.6	45.4	52.6	59.5
Automobiles	4.1	6.4	7.9	5.4	7.3	7.9	9.7	7.2	10.5	13.9
Consumer goods	2.7	4.4	6.1	7.4	12.9	12.5	13.1	17.5	17.6	19.6
Other goods	1.0	2.3	2.6	4.0	4.0	3.9	3.9	4.9	4.6	4.6
Services	22.3	36.1	44.9	65.9	88.0	82.5	80.9	115.2	101.3	96.0
Total imports	59.3	81.8	90.9	118.4	172.6	153.5	123.5	238.9	174.1	119.4
Merchandise	40.9	59.7	67.1	79.7	126.9	112.1	89.9	168.0	129.8	99.0
Foods, feeds, and beverages	6.5	7.4	6.9	7.2	12.5	11.5	10.3	14.7	13.2	10.7
Industrial supplies, excluding petroleum	14.0	16.5	17.8	16.3	25.8	22.8	20.4	29.0	23.3	20.7
Petroleum and petroleum products	2.8	6.6	9.0	5.1	9.5	8.9	8.4	13.3	12.7	12.5
Capital goods, excluding autos	3.9	7.2	9.0	18.9	28.3	24.9	16.9	44.1	29.6	19.2
Automobiles and parts	5.4	8.9	10.6	11.5	17.0	14.9	12.5	20.1	17.1	16.1
Consumer goods	6.8	11.4	12.5	17.9	30.1	25.4	17.8	42.6	29.7	15.6
Other goods	1.4	1.7	1.5	2.9	3.7	3.7	3.7	4.2	4.2	4.2
Services	18.5	22.1	23.8	38.7	45.7	41.4	33.6	70.9	44.3	20.4
Percent distribution										
Total exports	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Merchandise	63.7	62.9	60.2	55.3	57.4	59.2	60.9	56.0	61.0	64.2
Foods, feeds, and beverages	9.0	10.0	9.3	9.8	10.2	9.9	9.7	11.5	10.9	10.6
Industrial supplies and materials	20.1	17.6	14.9	14.7	16.4	17.1	17.1	15.8	17.3	17.1
Capital goods, excluding autos	21.7	21.9	21.3	19.3	19.2	20.2	21.1	17.3	20.2	22.2
Automobiles	6.7	6.6	7.0	3.7	3.5	3.9	4.7	2.8	4.0	5.2
Consumer goods	4.4	4.5	5.4	5.0	6.2	6.2	6.3	6.7	6.8	7.3
Other goods	1.6	2.4	2.3	2.7	1.9	1.9	1.9	1.9	1.8	1.7
Services	36.4	37.1	39.8	44.7	42.6	40.8	39.2	44.0	39.0	35.8
Total imports	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Merchandise	69.0	73.0	73.8	67.3	73.5	73.0	72.8	70.3	74.6	82.9
Foods, feeds, and beverages	11.0	9.0	7.6	6.1	7.2	7.5	8.3	6.2	7.6	9.0
Industrial supplies, excluding petroleum	23.6	20.2	19.6	13.8	14.9	14.9	16.5	12.1	13.4	17.3
Petroleum and petroleum products	4.7	8.1	9.9	4.3	5.5	5.8	6.8	5.6	7.3	10.5
Capital goods, excluding autos	6.6	8.8	9.9	16.0	16.4	16.2	13.7	18.4	17.0	16.1
Automobiles and parts	9.1	10.9	11.7	9.7	9.8	9.7	10.1	8.4	9.8	13.5
Consumer goods	11.5	13.9	13.8	15.1	17.4	16.5	14.4	17.8	17.1	13.1
Other goods	2.4	2.1	1.7	2.4	2.1	2.4	3.0	1.8	2.4	3.5
Services	31.2	27.0	26.2	32.7	26.5	27.0	27.2	29.7	25.4	17.1

SOURCE: Historical data are from tables 4.2 and 4.4 of the National Income and Product Accounts Tables, Bureau of Economic Analysis.

1970's. Petroleum imports are projected to grow at a rate of 7.3 percent per year between 1982 and 1995.

Imported cars held their own during the 1981-82 recession. Sales of imports were at 2.3 million units in 1982, accounting for 28 percent of all new-car sales. By 1995, annual automobile imports are projected to reach 3.6 million units, or 30 percent of all domestic sales. Average growth of 3.1 percent per year is expected over the 1982-95 period.

Two other categories of imports—capital goods, except autos, and consumer goods—are expected to grow at rates of 3.5 percent and 4.0 percent respectively from 1982 to 1995. In capital goods, electronic equipment and components and business equipment will contribute most of the increase; in consumer goods, nondurable goods imports such as apparel will strengthen total growth. Imported apparel is expected to reach 22 percent of total output (domestic output plus imports) in 1995 versus 11 percent in 1977. Industrial supplies, however, are expected to grow more slowly, achieving a yearly rate of 2.8 percent in the 1982-95 period.

The net result of these projections is a steady increase in real net exports over the period, from \$29 billion in 1982

to \$86 billion in 1995, boosting the GNP share of net exports from 1.9 percent to 4.0 percent between those years.

Government. More than half of government purchases are from the service industries, as indicated in the following distribution of 1977 government purchases less sales, by industry:

Source industry	Federal government		State and local government	
	Defense	Nondefense	Education	Other
Total	100.0	100.0	100.0	100.0
Agriculture, mining, and maintenance				
construction	1.5	-1.7	4.2	5.2
Manufacturing	34.1	27.2	11.2	13.5
Transportation, communications, and public utilities	4.0	3.6	3.5	5.6
Trade	0.9	2.3	-2.7	2.3
Other services	59.5	68.6	83.7	73.4

Federal employment in both the defense and nondefense areas is assumed to show little growth through 1995. With a steady level of armed forces, compensation falls from one half of defense purchases in 1977 to little more than one-third in 1995. The remainder of defense purchases are mainly from manufacturing industries, and it is in this area that healthy growth is expected. Computers and peripheral equipment purchases will more than triple, while those for radio and communications equipment (which includes lasers) are projected to more than double. Other defense-related industries such as ordnance, missiles, aircraft, ships, and electronic components will account for much of the rest of the purchases.

Only moderate growth is expected in State and local government purchases between 1977 and 1995 as a result of the completion of the highway construction program; the slowdown in Federal grants-in-aid, outside of health; slower growth in the school-age population compared to the increase through the early 1970's; and diminished citizen expectations from government. Because most State and local purchases are for compensation, the expected moderate growth has only minor impacts on other industries. In general, State and local government purchases are expected to mirror the rest of the economy in the industries affected.

Alternatives to moderate growth

The high-growth and low-growth versions of the projections vary the assumptions regarding fiscal and monetary policy. By 1995, real GNP ranges between a low of \$2,127 billion and a high of \$2,265 billion, accompanied by unemployment rates of 6.8 percent and 5.2 percent for the low and high, respectively. Each of the alternatives is summarized below and estimates from these scenarios are presented with the moderate-growth projections in tables 1 and 2.

High growth. The major assumption in the high scenario is that the Federal Reserve Board pursues a less restrictive monetary policy than in the moderate growth projections. The assumption is that the Board of Governors allows more rapid monetary growth in order to bolster recovery from the 1981-82 recession and to sustain a higher trend growth over the long run.

This less-restrictive monetary policy, coupled with stronger demand growth, leads to somewhat different inflation expectations. The implicit GNP deflator increases at an annual rate of 6.5 percent between 1982 and 1990, 1.1 percent faster than in the moderate-growth version. However, instead of decelerating after 1990, implicit deflator growth begins to pick up, running at 7.2 percent annually to 1995. This is comparable with the rate of inflation during the 1973-77 period.

No real differences were assumed for fiscal policy in the high-growth projection. The higher inflation rates do, however, result in government expenditures growing more rapidly throughout the period. Federal expenditures rise at a

rate of 7.8 percent each year between 1982 and 1995 as compared to the moderate-growth expenditures increase of 6.7 percent.

Real GNP grows at an average annual rate of 3.9 percent during 1982-85, a 0.6-percent higher rate than in the moderate version. Between 1990 and 1995, GNP rises at the same rate in both the moderate- and high-growth alternatives—2.5 percent annually. This is due primarily to the much higher rate of import growth in the high-trend version which tends to mask greater increases in the other categories of GNP. The GNP in 1995 is about \$98 billion higher than in the moderate-growth case.

Major demand differences are in purchases of consumer durables (\$37 billion higher), producers' durable equipment (\$25 billion higher), and in residential investment (\$35 billion higher). As noted above, greater income growth in this version leads to higher levels of imports, while exports are virtually unchanged. Net exports are therefore lower by \$63 billion than in the moderate-growth projection. Finally, higher rates of income growth mean greater government revenues, which lead to a balanced Federal budget in 1990.

In the high-trend alternative, the distribution of demand as compared to the moderate version shows no change in the share going to government. Personal consumption expenditures at the total level show little difference, masking the fact that durables increase at the expense of nondurables and services. This follows from the assumption of easier money and lower interest rates, which are major inducements to purchase durables. Lower interest rates also lead to a larger share of GNP going to equipment investment and construction. Increased purchases from manufacturing as a result of higher government, durable goods, equipment, and construction purchases are more than cancelled by the large increase assumed for imports. The drop in the export share of GNP is partially reflected in a slight decline in the agricultural industries share.

Low growth. This alternative simulation assumes higher levels of government spending, especially in defense, but also in transfers and grants. Federal expenditures grow at a rate of 9.4 percent each year between 1982 and 1990 and at 7 percent during the 1990-95 period. This compares to 7.5-percent and 6.1-percent growth over the same periods in the moderate-growth scenario. Defense growth is about 1.5 percent higher each year between 1982 and 1988, reflecting somewhat higher staff levels and greater expenditures on goods. Transfer payments are higher in every category, with the major increase in social security and medicare. As a result of the more aggressive (or less controlled) fiscal policy, the Federal Government runs deficits of about \$200 billion for the remainder of the decade, with only modest tapering after 1990 to about \$160 billion by 1995.

In addition, the monetary authorities are assumed to be generally more restrictive in order to hold down inflation.

Both M1 and M2 grow at about 0.6-percent-lower rates than in the moderate-growth projections. As a result, both short- and long-term interest rates are pushed higher, remaining in the double-digit range over the entire forecast period.

The high interest rates and severe competition for funds in the credit markets limits the growth of demand, especially for durable items. Real GNP is \$40 billion lower in 1995 than in the moderate-growth case. Personal consumption expenditures are lower by \$63 billion and gross private investment is off by \$52 billion from the 1995 moderate-growth levels. In a situation analogous to that in the high-growth case, the slower growth in income lowers imports by \$55 billion, thus masking, to some extent, the full impact on the domestic economy. Reduced income growth only exacerbates the Federal deficit situation, despite assumed

personal tax hikes during the mid- and late-1980's. Dampened capital goods spending leads to lower productivity and job growth over the entire period.

Different assumptions in the low-growth case cause minor variations in the level of GNP, but large internal shifts, as compared to the base case. Tight monetary policy leads to higher interest rates with the expected retarding effect on consumers' and producers' durable goods and on construction—sectors that purchase heavily from manufacturing. However, because imports are assumed to grow at a much slower rate, and defense spending at a faster rate, than GNP, the adverse impact of low demand on manufacturing is alleviated. And lower consumer expenditures and investment do cause trade to represent a larger share of GNP. □

—FOOTNOTES—

¹ As part of a continuing program to assess the validity of BLS projections, a future article will evaluate the projections of the U.S. economy for 1980. For previous articles see Howard N Fullerton, Jr., "The 1995 labor force: a first look," *Monthly Labor Review*, December 1980, pp. 11–21; Norman C. Saunders, "The U.S. economy through 1990—an update," *Monthly Labor Review*, August 1981, pp. 18–27; Valerie A. Personick, "The outlook for industry output and employment through 1990," *Monthly Labor Review*, August 1981, pp. 28–41; Max L. Carey, "Occupational employment growth through 1990," *Monthly Labor Review*, August 1981, pp. 42–55; and Howard N Fullerton, Jr., "How accurate were the 1980

labor force projections?," *Monthly Labor Review*, July 1982, pp. 15–21.

² *Projections of the Population of the United States: 1982 to 2050, Current Population Reports, Series P-25, No. 922* (U.S. Bureau of the Census, 1982).

³ Tables detailing the major assumptions underlying the aggregate projections will be included with reprints of this article.

⁴ Trade-weighted average value of the dollar vis-à-vis the currencies of major U.S. trading partners.