The U.S. economy through 1990—an update

Revised BLS projections of growth indicate a shift
from government spending to private investment;
the three alternative projections assume a broad range
of values for productivity, inflation, and fiscal policy

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In what ways might the U.S. economy expand during the 1980's?

The Bureau of Labor Statistics has prepared three trend projections of growth for the 1980–90 period, updating the two prior scenarios published in 1978 and adding a projection of major change in Federal fiscal policies.[1] The low-trend projection is characterized by assumptions of continuing high inflation, low productivity growth, and moderate expansion in real production. Alternatively, the high-trend version-I projection assumes marked improvements in both inflation and productivity, greater labor force growth, and commensurately higher real production levels. Finally, the new high-trend, version-II alternative assumes labor force growth consistent with the low-trend, but greater productivity gains and less inflation than in the version-I high-trend. None of the alternatives represents an attempt to forecast possible cyclical fluctuations during the 1980's. The three projections are intended to provide a range within which economic growth will most likely occur; however, they should not be interpreted as being representative of all likelihoods. Hereafter, the three scenarios will be referred to as the low-trend, the high-I, and the high-II alternatives.

By 1990, real gross national product (GNP) is expected to range between $1.9 and $2.2 trillion, with civilian employment between 120 and 129 million jobs. In all three versions, annual rates of growth in employment begin to slow in the 1980's but are more than offset by assumed improvements in productivity. Following are projected growth rates for GNP, disposable income, and employment during 1980–85 and 1985–90:

	1980–85			1985–90		
	Low	High-I	High-II	Low	High-I	High-II
Gross national product . . .	2.2	3.8	3.7	2.8	4.0	4.1
Real disposable income . . .	1.9	3.8	3.7	2.5	4.3	4.6
Employment .	1.5	2.4	1.7	1.4	1.9	1.5

In terms of the real rate of growth, the low-trend projections are comparable to the 1973–80 period when real GNP increased at an average rate of 2.4 percent and real disposable income grew by 2.5 percent each year. Conversely, the two high-trend projections correspond more with the 1955–68 period, when GNP grew at an average annual rate of 3.7 percent, while real disposable income was up annually by 3.8 percent.

Major assumptions

Underlying the projections are five major groups of assumptions—fiscal, demographic, productivity, unemployment, and prices.[2] Other assumptions such as capital discard rates, short- and medium-term interest rates, and motor fuel usage are not discussed here. However, the impact of the latter is limited to relatively small segments of the projections. An exception is the energy area, but because of limitations in the current BLS model, neither energy prices nor the availability of imported oil play a direct role in the aggregate projections. At the industry level, the consumption of energy by type and source is generally consistent with the medium-price projections of the Department of Energy, which are discussed elsewhere in this issue.[3]

Fiscal. It is assumed that personal tax payments will be affected in 1981 by a Federal income tax cut ranging from $12 billion in the low-trend projection to $23 bil-

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lion in the high-I version. In addition, Federal taxes as a proportion of personal income are assumed to decline throughout the decade. During the 1973-80 period, personal taxes accounted for an average of 11.1 percent of personal income, reaching 12.0 percent in 1980. In 1990, the effective rate declines to 10.6 percent in the low-trend projection, and to 8.9 percent in the version I high-trend. After 1981, neither scenario anticipates tax cuts in specific years. Rather, tax revenues are affected smoothly over the entire period by assuming rate reductions in each year. In the high-II version, however, Federal personal effective tax rates are cut 5.0 percent in 1981, 10.0 percent each year in 1982 and 1983, and, finally, by 5.0 percent in 1984. This results in an effective rate of 8.8 percent in 1984. The rate is maintained at this level for the remainder of the decade.

The effective tax rate on corporate profits averaged approximately 35.0 percent during the 1970's. In the low-trend model, corporate tax policy has been set to lower this effective rate to 32.0 percent by 1990, with most of the decline occurring in the latter half of the decade. In contrast, both high-trend projections reach an effective rate of approximately 28.0 percent by 1990, with the largest declines occurring early in the decade. The declining share of profits allocated to taxes results from tax cuts as well as from an increase in investment tax credits and more rapid depreciation rates. The major difference between the high trends and the low trend lies more in the timing of the tax cuts than in the magnitude.

Indirect business taxes are maintained, in all three projections, at a relatively constant share of national income, moving primarily with the inflation rate.

Social insurance contributions are determined primarily by the taxable wage base and by the combined employer-employee tax rate. In the low-trend alternative, it is assumed that the provisions of the Social Security Act of 1977 will be maintained throughout the decade. This legislation increases the wage base for social security contributions from $21,900 in 1979 to $60,300 in 1990, accompanied by an increase in the OASDHI tax rate to 15.3 percent by 1990. Under these assumptions, social insurance contributions account for a constant proportion of national income throughout the decade.

Under the act, a 1.0-percentage-point increase in the combined employer-employee tax rate is mandated for 1990 over 1989. The resultant jump in social insurance contributions leads to a projected Federal Government surplus of $76 billion. Had the tax rate increase not been specified for 1990, the surplus would have been about $30 to $35 billion in the low-growth alternative.

In the high-I alternative, it is assumed that, after 1981, the Social Security Act will be amended. The wage base in this alternative is assumed to reach $56,100 in 1990, with a combined tax rate of 14.3 percent. This leads to social insurance contributions accounting for 10.6 percent of national income over the first years of the decade. Thereafter, contributions decline in share terms, accounting for 10.1 percent of national income by 1990.

In the high-II model, the wage base reaches $54,900 in 1990, with a combined tax rate of 13.4 percent (that is, no change in the rate is assumed over the entire decade). In this scenario, Federal social insurance contributions account for 9.4 percent of national income by 1990.

To summarize the tax assumptions, Federal receipts are expected to account for somewhat more than 21.0 percent of GNP during the first years of the 1980's in the low-trend projection and decline moderately to about 20.0 percent by 1990. The high-I alternative is characterized by revenues accounting for 19.5 percent of GNP in 1985 and 18.1 percent by 1990. Finally, in the high-II model, revenues drop to 18.5 and 17.9 percent of GNP in 1985 and 1990, respectively.

The assumed goal for Federal expenditures in the three alternatives is to lower expenditures as a proportion of GNP throughout the decade. In the low-trend version, Federal purchases of goods and services, excluding employee compensation, are assumed to grow at a real rate of 5.5 percent a year between 1980 and 1985 and at 2.5 percent between 1985 and 1990. In both high-trend versions, purchases less compensation increase at a real rate of approximately 5.0 percent in the first half of the decade, slowing to a 2.5-percent average growth during the 1985–90 period. In all alternatives, it has been assumed that real defense expenditures increase by 4.0 to 5.0 percent each year during 1980–85 and by 2.0 to 3.0 percent during 1985–90.

The three alternatives assume that military forces reach 2.129 million by 1985 and remain at that level for the remainder of the decade. This level is approximately 27,000 more than in 1980. (The implication is that all real increases in defense spending are aimed at providing more materiel, rather than more personnel.) Federal civilian employment is assumed to increase by approximately .7 percent, or 13,000 jobs, each year between 1980 and 1990 in the low-and high-I alternatives. In the high-II alternative, rather sharp cuts in Federal civilian employment are assumed for the early 1980's, leaving employment at 2.08 million employees in the 1985–90 period. This is a cut of approximately 100,000 jobs from 1980 levels.

Federal transfer payments are comprised of: (1) unemployment insurance benefits; (2) social security; (3) Federal civilian employee retirement; (4) military retirement; (5) hospital and supplementary medical insurance; (6) supplemental security income; and (7) all other Federal benefit programs. Projections for each category

are prepared using the expected rate of inflation, estimated changes in recipient population, and a discretionary change which represents real changes in offered benefits. Real average benefit payments decline by about −.3 percent during 1980–90 in the low-trend scenario. In contrast, the high-I projection assumes virtually no real growth in average transfer payments in the early half of the decade but a relatively strong real growth of about 1.5 percent a year during 1985–90. This is based on the assumption that the stronger growth in real incomes in this alternative will renew interest in expansion of social welfare programs. The high-II version is characterized by sharp cuts in real average benefits of about 4.0 percent a year during the 1981–84 period, with very little real growth in average benefits after 1984.

Real grants-in-aid to State and local governments are assumed to decline over the decade in all projections. This assumption reflects declining expenditures of the highway trust fund and a phasing out of general revenue-sharing programs. From 1980 to 1990, real grants are assumed to decline by 1.9 percent a year in the low-trend alternative and by 0.9 percent in the two high-trend alternatives. Net interest payments and subsidies to government enterprises are essentially unchanged in real terms throughout the projection period. The effects of these assumptions on the national income accounts measures of Federal receipts and expenditures are shown in table 1.

Demographic assumptions. The primary determinants of the demographic data are the level and the age and sex distribution of the population. Three projected population series were developed by the Bureau of the Census, differing primarily in the assumed fertility rate. The Series-II population projections were used in the economic projections, as were the associated Series-B household projections.[4] The BLS middle-growth labor force projection is used in the low-trend and high-II versions, and the high-growth labor force projection is used in the high-I projection.[5]

Unemployment and productivity. The unemployment rate is viewed as a policy objective. Projected unemploy-

ment rates represent possible recovery paths from the 1980 economic slowdown, and, then, long-run targets approaching full-employment. Following are the assumed unemployment rates, 1981–90:

	Low	High-I	High-II
1981	8.1	8.1	7.8
1982	7.7	7.6	7.2
1983	7.4	7.0	6.6
1984	7.2	6.3	6.4
1985	7.0	5.5	6.0
1986	6.8	5.1	5.6
1987	6.6	4.8	5.3
1988	6.4	4.5	5.0
1989	6.2	4.2	4.7
1990	6.0	4.0	4.5

Some of the post-1985 declines can be ascribed to the changing age structure of the labor force. However, continuing real declines are assumed for the entire 1981–90 period in the projections.

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 .7 percent during the 1973–80 period. The slowdown in productivity growth over the last years has been attributed to many factors, including the influx of new workers into the labor force; slowing in capital accumulation per worker; an emphasis on nonproductive types of investment, such as pollution control investment; and the remarkable increase in energy prices since 1973.

Quite different assumptions are made about possible paths of productivity growth in the alternatives. The low-trend projection assumes a continuation of slow growth in nonfarm productivity—.9 percent real growth each year between 1980 and 1985, and 1.8 percent between 1985 and 1990. In contrast, the high-I projection assumes productivity growth of 1.4 percent each year during 1980–85 and 2.5 percent for 1985–90. The most optimistic assumptions appear in the high-II version, with nonfarm output per hour increasing at a 2.2-percent rate each year between 1980–85 and at a 3.0-percent rate during the latter portion of the decade.

Some of the factors which contributed to the productivity slowdown in the 1970's are expected to improve in the coming decade. Members of the postwar baby boom will become more experienced and productive during the 1980's. The rapid rate of growth in expenditures for environmental and energy conservation equipment should slow somewhat during the first half of the decade, and a slower rate of growth in energy prices coupled with smaller increases in the demand for energy is expected to have an impact. Finally, policies which increase investment incentives should have an impact later in the decade. However, some argue that technological breakthrough cannot continue at the rate it did

Table 1. Federal Government receipts and expenditures, 1980, and projected to 1985, and 1990, on a National Income Accounts basis

[Current dollars in billions]

	Receipts	Percent of GNP	Expenditures	Percent of GNP	Surplus or deficit
1980	538.9	20.5	601.2	22.9	−62.3
1985 Low	978.8	21.1	982.7	21.2	−3.9
High-I	921.1	19.5	916.0	19.4	5.1
High-II	825.5	18.5	817.9	18.3	7.6
1990 Low	1,594.4	19.9	1,518.4	19.0	76.0
High-I	1,431.3	18.1	1,409.3	17.9	21.9
High-II	1,234.5	17.9	1,186.7	17.2	47.8

during the 1970's. Others argue that poor productivity performance will continue.[6] Because these factors are difficult to quantify in terms of their impact on future productivity changes, the range of possible productivity growth has purposefully been kept broad.

Prices. The final major assumption deals with the inflation rate. The key item is the implicit deflator for private GNP. Long-term movements of this deflator, compared with movements in the Consumer Price Index for Urban Wage Earners and Clerical Workers, are as follows:

	Private GNP deflator	CPI
1955–68	2.1	2.0
1968–73	4.6	5.0
1973–80	7.8	9.2

A relatively pessimistic view of inflation possibilities is taken in the low-trend alternative. The private GNP deflator is assumed to increase at a 9.2-percent growth rate in the 1980–85 period and at an 8.3-percent rate during 1985–90. The high-I version assumes that inflation will moderate over the longer run. The 1980–85 rate of inflation is set at 7.9 percent; it drops to 6.4 percent over the latter half of the projection period. The greatest improvement in inflation is assumed to occur in the high-II projection as the rate of growth of the private GNP deflator drops to 7.0 percent in the 1980–85 period, followed by a further decline to a 4.7-percent rate between 1985 and 1990.

Prices do not directly affect the determination of real GNP in the BLS model, but they do enter into the projections in several important ways. First, wages and interest rates are greatly influenced by inflation. These, in turn, affect consumption expenditures and residential investment. Second, prices have an impact on the Federal budget. They enter implicitly into the determination of various expenditure levels and, on the revenue side, they affect personal income taxes because of the progressive tax structure. The future movement of prices is quite uncertain. The price assumptions used in these projections are a judgment as to the relative strengths of the various factors which affect price determination, as well as an attempt (as with the productivity assumption) to define a relatively broad band around probable future price change. The linkage of higher productivity growth and lower rates of inflation is, to some extent, an arbitrary decision in that other combinations of assumptions could logically be justified as well.

Aggregate demand

Gross national product consists of personal consumption expenditures, gross private domestic investment, net foreign trade, and government purchases of goods

and services. Total GNP and its various components are presented in table 2 in constant 1972 prices for selected years from 1955 to 1990. Between 1980 and 1985, low-trend GNP is projected to increase at an average rate of 2.2 percent each year, roughly the same rate prevalent in the 1973–80 period, but below the long-term rate of 3.3 percent between 1955 and 1980. In the high-I and high-II versions, GNP is projected to increase by 3.8 and 3.7 percent, respectively, during 1980–85, well above the long-term rate.

After 1985, the growth potential continues to improve as better productivity performance more than offsets slower labor force growth. Low-trend GNP growth increases to a 2.8-percent average rate and the high-trend versions to approximately a 4.0-percent rate over the last years of the decade.

Although all components of GNP are projected to grow more rapidly in the high-trend versions, the major difference between these two alternatives and the low-trend version is in investment. The timing of business tax incentives for investment in the low-trend model is such that little impact is noticed on plant and equipment investment before the middle of the decade. In the high-trend versions, plant and equipment expenditures are projected to grow strongly over the entire projection horizon. The other components of demand are also projected to exceed long-term trend rates of growth in the high-trend versions and to lag behind these historical patterns in the low-trend model.

Consumption. Personal consumption expenditures have traditionally accounted for the largest share of final production. In 1955, personal consumption made up about 60.0 percent of real GNP and has steadily increased its share to over 63.0 percent in 1980. This trend is projected to end, at least temporarily, in the three projections as the greater emphasis on capital formation becomes apparent. By 1990, total personal consumption expenditures are expected to account for 61.3 percent of GNP in the low-trend projection, 62.0 percent in the high-I version, and 62.8 percent in high-II.

The long-term trend toward relatively more expenditures on durables and services and relatively fewer purchases of nondurable goods is projected to continue in all three alternatives. In 1955, 13.0 percent of real personal consumption expenditures was accounted for by durable goods purchases, which include autos and parts, furniture and appliances, and recreational items, such as radios, televisions, and sporting goods; by 1980, durables accounted for just under 14.5 percent. Purchases of durable goods are projected to increase 3.4 percent a year between 1980 and 1985 in the low-trend projection and by about 6.3 percent a year in both high-trend versions. After 1985, such purchases will accelerate to 3.7 percent each year in the low-trend ver-

sion, and will slow to 5.4 and 5.7 percent, respectively, in high-I and high-II versions. Durables purchases in all projections are expected to rebound sharply from the 1980 slowdown, increasing their share of total consumption to about 16.0 percent in 1990 in the low-trend version, and to just under 17.0 percent in the high-trend alternatives.

As with durables, consumers have allocated an increasing proportion of their incomes to purchases of services over the post-World War II period. In 1955, services accounted for 40.0 percent of consumption, but by 1980 had reached 47.2 percent. This trend is expected to continue, as services purchases attain be-

tween 48.0 and 49.0 percent of personal consumption expenditures in 1990 in the three alternatives.

As families' real incomes increase, expenditures for necessities such as food, basic clothing, and shelter tend to reach saturation levels. Further real income growth yields greater amounts of discretionary income for purchasing luxuries. This is one of the reasons for the increases in durable and service purchases relative to nondurable expenditures. Nondurable purchases accounted for 47.0 percent of consumer spending in 1955, dipping to 38.3 percent by 1980.

Investment. Gross private domestic investment consists

Table 2. Gross national product by major component, 1955, 1968, 1973, 1980, and projected to 1985 and 1990

[1972 dollars in billions]

Component	Actual				Projected					
	1955	1968	1973	1980	1985			1980		
					Low	High-I	High-II	Low	High-I	High-II
Gross national product	657.5	1,058.1	1,255.0	1,480.7	1,653.3	1,784.7	1,775.1	1,902.4	2,172.6	2,171.8
Personal consumption expenditures	394.1	634.4	768.5	935.1	1,001.0	1,094.5	1,091.3	1,166.5	1,346.0	1,364.0
Gross private domestic investment	103.8	161.6	217.5	203.7	263.6	310.1	309.7	315.8	420.2	422.6
Nonresidential structures	25.4	42.8	47.4	48.4	46.4	49.3	49.2	55.5	62.4	62.8
Producers' durable equipment	35.9	66.8	90.7	110.0	135.3	163.5	164.8	172.6	240.9	243.5
Residential investment	34.8	43.1	62.3	48.2	67.6	78.5	77.0	70.9	92.1	91.6
Change in business inventories	7.7	9.0	17.2	-3.0	14.3	18.8	18.7	16.8	24.8	24.7
Net exports	7.3	1.9	15.5	52.0	60.8	55.6	49.0	73.4	62.2	37.7
Exports	30.7	61.2	97.3	161.1	202.0	209.7	203.4	246.2	270.3	249.1
Imports	23.4	59.3	81.8	109.1	141.2	154.1	154.4	172.8	208.1	211.4
Government purchases	152.3	260.2	253.5	290.0	327.9	324.7	324.9	346.9	344.4	347.6
Federal	88.2	128.1	95.9	108.2	128.9	126.6	125.9	140.3	135.3	137.5
Defense	(¹)	(¹)	68.3	70.9	93.4	91.6	93.7	103.3	98.8	104.1
Nondefense	(¹)	(¹)	27.6	37.2	35.5	35.0	32.2	37.0	36.5	33.4
State and local	64.1	132.1	157.6	181.9	199.0	198.1	199.0	206.6	209.1	210.1
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 expenditures	59.9	60.0	61.2	63.2	60.5	61.3	61.5	61.3	62.0	62.8
Gross private domestic investment	15.8	15.3	17.3	13.8	15.9	17.4	17.4	16.6	19.3	19.5
Nonresidential structures	3.9	4.0	3.8	3.3	2.8	2.8	2.8	2.9	2.9	2.9
Producers' durable equipment	5.5	6.3	7.2	7.4	8.2	9.2	9.3	9.1	11.1	11.2
Residential investment	5.3	4.1	5.0	3.3	4.1	4.4	4.3	3.7	4.2	4.2
Change in business inventories	1.2	.9	1.4	-.2	.9	1.1	1.1	.9	1.1	1.1
Net exports	1.1	.2	1.2	3.5	3.7	3.1	2.8	3.9	2.9	1.7
Exports	4.7	5.8	7.8	10.9	12.2	11.7	11.5	12.9	12.4	11.5
Imports	-3.6	-5.6	-6.5	-7.4	-8.5	-8.6	-8.7	-9.1	-9.6	-9.7
Government purchases	23.2	24.6	20.2	19.6	19.8	18.2	18.3	18.2	15.9	16.0
Federal	13.4	12.1	7.6	7.3	7.8	7.1	7.1	7.4	6.2	6.3
Defense	(¹)	(¹)	5.4	4.8	5.6	5.1	5.3	5.4	4.5	4.8
Nondefense	(¹)	(¹)	2.2	2.5	2.1	2.0	1.8	1.9	1.7	1.5
State and local	9.7	12.5	12.6	12.3	12.0	11.1	11.2	10.9	9.6	9.7

	Average annual rate of change								
	1955–68	1968–73	1973–80	1980–85			1985–90		
Gross national product	3.7	3.5	2.4	2.2	3.8	3.7	2.8	4.0	4.1
Personal consumption expenditures	3.7	3.9	2.8	1.4	3.2	3.1	3.1	4.2	4.6
Gross private domestic investment	3.5	6.1	-.9	5.3	8.8	8.7	3.7	6.3	6.4
Nonresidential structures	4.1	2.1	.3	-.8	.4	.3	3.6	4.8	5.0
Producers' durable equipment	4.9	6.3	2.8	4.2	8.2	8.4	5.0	8.1	8.1
Residential investment	1.7	7.6	-3.6	7.0	10.2	9.8	1.0	3.2	3.5
Change in business inventories	1.2	13.8	(²)	(²)	(²)	(²)	3.3	5.7	5.7
Net exports	-9.8	52.2	18.9	3.2	1.3	-1.2	3.8	2.3	-5.1
Exports	5.5	9.7	7.5	4.6	5.4	4.8	4.0	5.2	4.1
Imports	7.4	6.6	4.2	5.3	7.2	7.2	4.1	6.2	6.5
Government purchases	4.2	-.5	1.9	2.5	2.3	2.3	1.1	1.2	1.4
Federal	2.9	-5.6	1.7	3.6	3.2	3.1	1.7	1.3	1.8
Defense	(¹)	(¹)	.5	5.7	5.3	5.7	2.0	1.5	2.1
Nondefense	(¹)	(¹)	4.4	-.9	-1.2	-2.8	.8	.8	.7
State and local	5.7	3.6	2.1	1.8	1.7	1.8	.8	1.1	1.1

¹ Not available.
² Not computable.

NOTE: Gross national product data reflect the benchmark revisions released in December 1980 by the U.S. Department of Commerce.

of (1) purchases of residential structures; (2) investment in nonresidential structures; (3) purchases of producers' durable equipment; and (4) changes in inventories of businesses. Historically, gross domestic investment has accounted for 15.0 to 16.0 percent of GNP. At the same time, on a year-over-year basis, it is one of the most volatile elements of final output. This is because investment, more than any other component of GNP, represents the anticipations of business for future profits and potential growth and, thus, tends to fluctuate rather sharply as those expectations change.

For example, in 1975, domestic investment fell to $155 billion in real terms (more than $60 billion below the 1973 level), a 12.5-percent share of GNP (down from more than 17.0 percent in 1973). But, by 1980, investment had recovered and accounted for about 15.0 percent of GNP. Because of its anticipatory role, investment is an important key in determining the long-run growth potential of the economy. In essence, it represents current commitments to future growth and is an important source of productivity gains. In the three alternatives, gross investment is expected to grow far more rapidly than during the 1970's. Between 1973 and 1980, gross investment declined at an average annual rate of .9 percent. The low-trend model projects an average growth rate of 5.3 percent during 1980–90, while the expectations in the high-trend versions are for 8.8-percent annual growth.

The housing sector of the economy is one of the more volatile segments of fixed investment expenditures. The demand for new housing has been expanding steadily throughout the postwar period. The number of households increased by more than 30 million during 1955–80, an average annual increase of 2.1 percent, or 1.3 million new households every year. The rate of new household formation has also accelerated, from 2.0 percent in 1955 to 2.7 percent in 1980, not only because of the baby-boom bulge, but also because of an increasing tendency toward single-person households.

At the same time, the ability of the housing sector to meet the demand for new housing is greatly dependent on financial considerations, especially the availability of credit. Because interest rates and credit availability are closely tied to the business cycle, swings in real output can have a substantial impact on housing. For example, during the 1975 recession, total private housing starts dropped more than 43.0 percent from the peak of 2.4 million in 1972. Real expenditures for residential investment fell by 34.0 percent during the same period.

When the supply and demand considerations are combined, it is reasonable to assume that the recessions of 1970, 1975, and 1980 have created much pent-up demand for new housing. However, demand for housing has been changing. Many families are giving up the "American dream" of a single-family home because of increasing costs and also because of greater interest in leisure-time pursuits. The shift toward more energy-efficient, less costly multifamily homes is expected to continue throughout the 1980's. The rate is difficult to predict, however, and is the major difference between the low- and high-trend versions.

A final demographic factor affecting the projection of residential investment is the prediction that new household formation will slow dramatically in coming years, declining from 2.7 percent in 1980 to 1.9 percent in 1985 and to 1.6 percent in 1990. Although the slowdown is apparent over the entire decade, the effects are not expected to be seen until the latter half because of the pent-up demand left over from the recessions of the 1970's.

In the low-trend projection, a moderate recovery from the 1980 slowdown is expected as real residential investment increases at a rate of 7.0 percent between 1980 and 1985, reaching $67.6 billion in 1985. In both high-trend alternatives, a sharp comeback from the 1980 recession is expected. In the high-I projection, the expected rate of growth is 10.2 percent, attaining a level of $78.5 billion. The high-II version attains a growth rate of 9.8 percent over the five-year period. In all three cases, housing starts are expected to rebound to the 2.0-million unit level by 1984 or 1985. The primary reason for less growth in the low-trend alternative is that continued high inflation is expected to hasten the shift from single-family to multifamily dwellings. Because multifamily units usually cost somewhat less than single-family homes, increases in total real expenditures will be lower. In all alternatives, real residential investment expenditures account for between 4.1 and 4.3 percent of GNP in 1985, approximately the share attained at the prior peak in the 1977–78 period.

After 1985, the demographic effects become apparent as growth in high-trend residential investment falls to an annual rate of 3.2 and 3.5 percent between 1985 and 1990 in versions high-I and high-II. In the low-trend model, virtually no growth is anticipated during the latter half of the decade. Annual housing starts are expected to decline from about 2.0 million units in 1985 to between 1.7 and 1.9 million units by 1990.

Between 1955 and 1968, business fixed investment grew by 4.6 percent a year. Between 1968 and 1973, growth remained virtually the same at 4.7 percent a year. During the remainder of the 1970's, however, growth of real business expenditures for plant and equipment slowed sharply to a rate of 2.0 percent growth in the 1973–80 period. In the low-trend version, 2.8-percent growth per year is projected for the 1980–85 period. In other words, the rate of change in business investment apparent in the 1970's will continue for the first half of the 1980's after an initial upsurge in 1981. After 1985, the more representative long-term growth

rates (4.7 percent) will return, as a result of the impact of corporate tax assumptions and increasing corporate revenues.

In the high-trend versions, quite different assumptions are made regarding both the timing and intensity of fiscal incentives for business investment. Investment in plant and equipment is expected to increase by 6.2 percent a year during 1980–85, then accelerate to 7.3 percent growth, topping $300 billion in 1990. This component accounts for 14.0 percent of GNP in 1990 in both high-trend projections, up from an average of about 11.0 percent in the 1970's. The tax assumptions and the resulting impact on business investment are based on the growing realization that long-term improvements in productivity growth will depend on new plant and equipment purchases. The impact of fixed business investment on the stock of private nonfarm capital[7] is shown in the following growth rates:

	Actual
1955–68	3.7
1968–73	4.4
1973–80	3.7

	Projected		
	Low	High-I	High-II
1980–85	3.4	4.1	4.1
1985–90	4.2	5.4	5.5

The slowing growth of the capital stock in the 1973–80 period will continue through 1985 in the low-trend version, before improving slightly during 1985–90. The assumptions underlying the high-trend versions lead to expectations of a strong recovery over the entire 1980 decade.

The ratio of capital to hours paid in the nonfarm sector is a general measure of how much plant and equipment is available to workers for producing output. The ratio is considered an important determinant of labor productivity growth. Between 1955 and 1975, this ratio expanded at an annual rate of 2.7 percent in real terms, increasing from $7,000 of capital available per worker-hour in 1955 to $12,000 in 1975. Between 1975 and 1980, however, the ratio rose by only .6 percent each year, to $12,400.

Only slight recoveries are projected for this ratio during the first half of the 1980's in the low- and high-I projections. In the low-trend version, this is a result of continuing slow growth in investment. In the high-I case, the much higher investment rates are offset by the higher assumed labor force growth rates (and consequent increases in total hours paid). In the high-II version, the high investment rates combined with lower employment levels lead to the fairly strong annual growth of 2.2 percent over the 1980–85 period. After 1985, all three projections attain strong growth in the capital-hours ratio, ranging from 2.9 percent in the low-

trend version to 4.0 percent average growth in the high-II case. The stock of business inventories is expected, in all projections, to expand slowly relative to GNP, reflecting historical trends.

Foreign trade. Both imports and exports have accounted for an increasing share of GNP, and this trend is expected to continue throughout the 1980–90 period. In current dollars, the balance on the current and long-term capital account is assumed to be a policy variable with the long-term value of zero. Such a policy would maintain the current-dollar balance on goods and services at a relatively low positive level. In the past, because import and export prices tended to move together in terms of both levels and rates, a zero current-dollar balance implied a zero constant-dollar balance. During the 1970's, average import prices grew at a much faster rate did average export prices. The disparity was primarily due to much higher petroleum prices, although world inflation generally was higher than in the United States. It is assumed that foreign prices will once again move at roughly the same pace as export prices during the projection period, but it is also expected that the difference in level will never be made up. Therefore, as the United States strives to maintain a current-dollar balance of trade, the impact on constant dollar trade will be a generally more rapid rate of growth in exports relative to imports, thereby improving the real balance of trade over time.

Government. The government portion of GNP comprises purchases of goods and services and compensation of employees. All other expenditures are excluded by definition. Real purchases by Federal, State, and local governments accounted for almost 25.0 percent of GNP in 1968; since then, the share of GNP accounted for by purchases of goods and services has declined, reaching the 19.6-percent level by 1980. This drop was due almost entirely to the cessation of U.S. military involvement in Vietnam.

Real Federal purchases fell at an average rate of 1.4 percent during the 1968–80 period because of large declines in defense spending. Federal purchases as a share of GNP fell sharply, from 12.1 percent in 1968 to 7.3 percent in 1980. State and local government purchases also declined as a proportion of GNP during 1968–70.

The trend toward a smaller share of production accounted for by government purchases is expected to continue throughout the 1980's in the two high-trend versions. In all projections, Federal defense purchases grow sharply in real terms during the early 1980's, and slow slightly after 1985. Defense purchases are projected to stabilize at about 5.0 percent of GNP over the latter half of the decade. As noted earlier, virtually no change in military force levels is assumed during the 1980's. Therefore, the increases in real defense expendi-

tures are expected to be replacing obsolete materiel and performing research and development for more sophisticated weapons systems.

Nondefense purchases, in contrast, are expected to decline at a 1.0 to 3.0 percent annual rate between 1980 and 1985, and to grow by less than 1.0 percent each year after 1985 in all projections. This reflects the assumption that many programs will experience relatively slower growth or be scaled back in the 1980's, while the primary emphasis shifts to defense preparedness. The net effect is to drop Federal purchases of goods and services from 7.3 percent of GNP in 1980 to about 6.5 percent by 1990 in the high-trend versions. In the low-trend projection, Federal purchases will continue to account for roughly the same proportion of GNP throughout the decade.

In the State and local sector, the largest change from prior trends is expected in the education sector. As the baby-boom generation matures, the number of school enrollees should decline smoothly over the entire decade. A sharp slowdown in the growth of educational purchases is projected to 1985, with absolute declines subsequently. The children of the baby-boom generation are expected to increase educational demand beginning around 1985, but the effect will be mild and relatively short-lived.

Purchases of goods less compensation for public safety are projected to decline sharply in the early 1980's as the rapidly increasing cost of fuel affects the purchases of new equipment for police and firefighters. The remaining categories of State and local purchases are expected to grow much less rapidly over the coming decade. The net effect of these considerations is to lower State and local purchases from 12.3 percent of GNP in 1980 to the 10.0- to 11.0-percent range in 1990.

It should be emphasized that government's declining share of GNP during the 1980's does not mean that government purchases are expected to decline in absolute terms. Rather, the expected growth rate—1.8 percent between 1980 and 1990—is somewhat lower than the overall GNP growth rate.

In summary, three scenarios have been set for economic growth in the 1980's: the first reflecting moderate increases and the others showing a return to the strong growth of the 1950's and 1960's. With the assumptions underlying the projections, the most notable occurrence in the 1980's is the shift in spending from the public sector to the private sector, especially for investment. However, the change depends on the fiscal assumptions discussed earlier; with other assumptions, the results could be different.

Employment and hours

The number of jobs, the average number of hours paid per job, and the level of real output per hour are key determinants of potential output in the economy.

These factors are detailed in table 3. During the 25 years between 1955 and 1980, the number of jobs increased from 68.7 million to 105.6 million, or about 1.5 million jobs a year. During this period, many important shifts occurred. Military force levels declined from 3 million in 1955 to 2.1 million in 1980. Agricultural employment also declined, from 6.4 million to 2.8 million jobs, because of increases in farm productivity. Civilian government employment, in contrast, grew from 9.4 percent of total employment in 1955 to 14.6 percent in 1980, an increase of 8.9 million. Most of this growth— 8.3 million jobs—occurred in State and local government. Private nonfarm employment increased by 33 million jobs, a growth of more than 1.3 million each year, increasing its share of employment from 76.8 percent in 1955 to 80.8 percent in 1980.

Several major changes in employment are expected to occur in the alternatives. Total employment is expected to increase at an average rate of 1.6 percent each year between 1980 and 1985 in the low-growth and high-II versions. This amounts to 2.2 million jobs a year, a more rapid increase than that projected for the total labor force—1.7 percent each year, or 1.9 million new labor force entrants. The higher employment growth reflects the relatively rapid decline in the unemployment rate following the 1980 slowdown. In the high-I version, a higher labor force projection, combined with an even more rapid decline in the unemployment rate, yields total annual employment growth of 2.4 percent between 1980 and 1985, or slightly fewer than 2.7 million jobs a year.

In all alternatives, the rate of employment growth begins to slow in the latter half of the decade, to 1.4, 1.9, and 1.5 percent, respectively, for the low-, high-I, and high-II models. This reflects the projected slowdown in labor force growth after 1985.

The share of jobs between the public and private sectors is an important determinant of the level of real supply GNP, because productivity in the public sector is assumed to be nearly constant.[8] Therefore, if public employment accounted for larger shares of total employment, the associated growth in real GNP would be reduced. Federal employment is expected to expand during the 1980–90 period, but the rate of growth (.1 percent annually) is considerably less than the total employment growth expected in all three alternatives. The military force level is projected to virtually stabilize at the current level of 2.1 million persons for all alternatives. State and local government employment is also expected to grow less rapidly than total employment. In the latter half of the 1950's and during all of the 1960's, the growth in State and local employment was due, in large part, to very rapid growth in public education. School enrollment, however, moderated during the latter 1970's. The echo effect from the baby-boom generation will begin to be seen around 1985, but will be

Table 3. Labor force, employment, productivity, and gross national product, 1955, 1968, 1973, and 1980, and projected to 1985 and 1990

[Employment data in thousands]

Category	Actual				Projected					
	1955	1968	1973	1980	1985			1990		
					Low	High–I	High–II	Low	High–I	High–II
Total labor force (including military)	68,072	82,272	91,040	106,821	117,114	120,381	117,114	124,504	130,252	124,504
Unemployed	2,853	2,817	4,305	7,448	8,049	6,504	6,899	7,342	5,125	5,507
Employed (persons concept)	65,219	79,455	86,735	99,373	109,065	113,877	110,215	117,162	125,127	118,997
Adjustment factor (persons to jobs)	3,438	4,409	4,557	6,188	4,697	5,090	4,705	4,796	5,524	4,947
Employment (jobs concept)	68,657	83,864	91,292	105,561	113,762	118,967	114,920	121,958	130,651	123,944
General government	9,520	14,521	15,185	17,481	17,587	17,587	17,441	18,106	18,106	17,886
Federal	4,779	5,670	4,354	4,402	4,355	4,355	4,209	4,429	4,429	4,209
Military	3,049	3,535	2,326	2,102	2,129	2,129	2,129	2,129	2,129	2,129
Civilian	1,730	2,135	2,028	2,300	2,226	2,226	2,080	2,300	2,300	2,080
State and local	4,741	8,851	10,831	13,079	13,232	13,232	13,232	13,677	13,677	13,677
Private	59,137	69,343	76,107	88,080	96,175	101,380	97,479	103,852	112,545	106,058
Agriculture	6,424	3,663	3,206	2,823	2,622	2,922	2,922	2,334	2,634	2,634
Nonagriculture	52,713	65,680	72,901	85,257	93,553	98,458	94,557	101,518	109,911	103,424
Private average annual hours per job	2,126	2,001	1,961	1,884	1,856	1,865	1,862	1,819	1,825	1,824
Agriculture	2,473	2,354	2,290	2,311	2,301	2,301	2,301	2,246	2,246	2,246
Nonagriculture	2,083	1,981	1,943	1,870	1,844	1,852	1,848	1,809	1,815	1,814
Private GNP per hour (1972 dollars)	4.56	6.67	7.48	7.99	8.35	8.58	8.89	9.17	9.75	10.36
Agriculture	1.84	3.36	4.30	6.21	6.05	6.25	6.26	7.18	7.95	8.00
Nonagriculture	4.95	6.89	7.65	8.06	8.43	8.66	8.99	9.23	9.80	10.43
Total GNP (billions of 1972 dollars)	657.5	1,058.1	1,255.0	1,480.7	1,653.3	1,784.7	1,775.1	1,902.4	2,172.6	2,171.8
General government	84.6	132.4	139.1	155.2	163.0	163.0	161.4	169.7	169.7	167.1
Private	572.9	925.7	1,115.9	1,325.5	1,490.3	1,621.7	1,613.7	1,732.7	2,002.9	2,004.7
Agriculture	29.3	29.0	31.6	40.5	36.5	42.0	42.1	37.6	47.0	47.3
Nonagriculture	543.6	896.7	1,084.3	1,285.0	1,453.8	1,579.7	1,571.6	1,695.1	1,955.9	1,957.4

Category	Average annual rate of change								
	1955–68	1968–73	1973–80	1980–85			1985–90		
Total labor force (including military)	1.5	2.0	2.3	1.9	2.4	1.9	1.2	1.6	1.2
Unemployed	-.1	8.9	8.1	1.6	-2.7	-1.5	-1.8	-4.7	-4.4
Employed (persons concept)	1.5	1.8	2.0	1.9	2.8	2.1	1.4	1.9	1.5
Adjustment factor (persons to jobs)	1.9	.7	4.5	-5.4	-3.8	-5.3	.4	1.6	1.0
Employment (jobs concept)	1.5	1.7	2.1	1.5	2.4	1.7	1.4	1.9	1.5
General government	3.3	.9	2.0	.1	.1	(1)	.6	.6	.5
Federal	1.3	-5.1	.2	-.2	-.2	-.9	.3	.3	(1)
Military	1.1	-8.0	-1.4	.3	.3	.3	(1)	.(1)	(1)
Civilian	1.6	-1.0	1.8	-.7	-.7	-2.0	.7	.7	(1)
State and local	4.9	4.1	2.7	.2	.2	.2	.7	.7	.7
Private	1.2	1.9	2.1	1.8	2.9	2.0	1.5	2.1	1.7
Agriculture	-4.2	-2.6	-1.8	-1.5	.7	.7	-2.3	-2.1	-2.1
Nonagriculture	1.7	2.1	2.3	1.9	2.9	2.1	1.6	2.2	1.8
Private average annual hours per job	-.5	-.4	-.6	-.3	-.2	-.2	-.4	-.4	-.4
Agriculture	-.4	-.6	.1	-.1	-.1	-.1	-.5	-.5	-.5
Nonagriculture	-.4	-.4	-.5	-.3	-.2	-.2	-.4	-.4	-.4
Private GNP per hour (1972 dollars)	3.0	2.3	.9	.9	1.4	2.2	1.9	2.6	3.1
Agriculture	4.7	5.1	5.4	-.5	.1	.2	3.5	4.9	5.0
Nonagriculture	2.6	2.1	.7	.9	1.4	2.2	1.8	2.5	3.0
Total GNP (billions of 1972 dollars)	3.7	3.5	2.4	2.2	3.8	3.7	2.8	4.0	4.1
General government	3.5	1.0	1.6	1.0	1.0	.8	.8	.8	.7
Private	3.8	3.8	2.5	2.4	4.1	4.0	3.1	4.3	4.4
Agriculture	-.1	1.7	3.6	-2.1	.7	.8	.6	2.3	2.4
Nonagriculture	3.9	3.9	2.5	2.5	4.2	4.1	3.1	4.4	4.5

¹ Less than 0.05 percent

relatively insignificant until after 1990. The result is an annual growth in the number of education-related employees of .3 percent during the 1980–85 period, and annual declines of .5 percent during 1985–90. The declines, however, will be somewhat offset by continued growth in other programs and the administrative employment associated with these programs, although at a less rapid rate than in the past. As a result, private employment is expected to expand more rapidly than total employment over the entire projection period in all alternatives. Following are the proportion of private and government employment for 1980, 1985, and 1990:

	1980	1985			1990		
		Low	High-I	High-II	Low	High-I	High-II
Private	83.4	84.5	85.2	84.8	85.2	86.1	85.6
Farm	2.7	2.3	2.5	2.5	1.9	2.0	2.1
Nonfarm	80.8	82.2	82.8	82.3	83.2	84.1	83.4
Government	16.6	15.5	14.8	15.2	14.8	13.9	14.4
Federal	4.2	3.8	3.7	3.7	3.6	3.4	3.4
State and local	12.4	11.6	11.1	11.5	11.2	10.5	11.0
Education	6.5	5.9	5.6	5.8	5.3	5.0	5.2
Other	5.9	5.8	5.5	5.8	5.9	5.5	5.8

The declining share of government employment reflects the impact of demographic shifts, as well as the apparent public preference for a smaller government role in the civilian sector of the economy.

Hours. Average weekly hours paid are projected to continue to decline at approximately the long-term historical rate. In the private nonfarm sector, the long-term decrease in weekly hours has been influenced by the trend toward more service employees, which lowers average hours because many work short weeks or on a part-time basis, and by the increase in female labor force participation, which began in the mid-1960's. Many of these women took part-time positions. This contributed to the service sector effect which is projected to continue and will cut averge weekly hours. Female labor force participation rates are also projected to grow at a rather strong pace during the 1980's. However, it is assumed that the disparity between part-time jobholding rates of men and women will diminish during the 1980's; thus, the growth of female labor force participation will no longer have an appreciable impact

on the average workweek. Women are expected to be increasingly employed in all sectors of the economy.

THE ALTERNATIVE PATHS of growth encompass reasonable possibilities for expansion of the economy during the 1980's. The low-trend projection examines the implications of a moderately expanding labor force, continued low growth in productivity, and high inflation. The high-trend projections study the effects of a more rapidly expanding labor force (high-I) coupled with more optimistic assumptions regarding both productivity and inflation. The projected range of real GNP growth averages between 2.5 and 3.9 percent annually over the 1980–90 period, yielding a difference among the alternative scenarios of $270 billion by 1990. The projections hinge on the underlying assumptions and could be significantly affected by even small changes in the latter. These are medium-term projections of the U.S. economy, and no attempt has been made to forecast cyclical fluctuations. The projections should not be construed as a forecast of a likely growth path but as the probable range of economic growth during the 1980's. □

----- FOOTNOTES -----

[1] The projections are part of a BLS program of studies aimed at analyzing long-run economic growth. The primary objective is to develop projections of employment and occupational requirements under alternative assumptions. Other articles in the series discuss industry projections of output and employment and future trends in occupational demand. As part of a continuing program to assess the validity of BLS projections, future articles will evaluate the projections of the U.S. economy for 1980. For previous articles, see Norman C. Saunders, "The U.S. economy to 1990: two projections for growth," *Monthly Labor Review,* December 1978, pp. 36–46; Arthur Andreassen, "Changing patterns of demand: BLS projections to 1990," *Monthly Labor Review,* December 1978, pp. 47–55; Valerie A. Personick, "Industry output and employment: BLS projections to 1990," *Monthly Labor Review,* April 1979, pp. 3–14; Thomas Nardone, "The Job Outlook in Brief, Based on the Occupational Outlook Handbook, 1980–81 Edition," *Occupational Outlook Quarterly,* Spring 1980, pp. 2–21; Paul T. Christy and Karen J. Horowitz, "Evaluation of BLS projections of 1975 output and employment," *Monthly Labor Review,* August 1979, pp. 8–19; and Max L. Carey, "Evaluating the 1975 occupational employment projections," *Monthly Labor Review,* June 1980, pp. 10–21.

[2] See Lester C. Thurow, "A Fiscal Policy Model of the United States," *Survey of Current Business,* June 1969, pp. 45–64. The BLS economic growth model is a software system comprised of a modified version of the Thurow macroeconomic model, several demand submodels, and an input-output and industry level employment model. A detailed methodological description of the current model is being prepared for publication, as is a description of the operating system.

[3] The Department of Energy projections are taken from the energy forecasts developed for the Energy Information Agency's *Annual Report to Congress,* 1979 (June 1980), a medium international oil price version. They assume an average landed crude oil price of $37 per barrel by 1990, in 1979 dollars.

[4] *Projections of the Population of the United States: 1977 to 2050,* Current Population Reports (Bureau of the Census, Series P-25, No. 704, 1977) and Projections of the Number of Households in the United States: 1979 to 2000, *Current Population Reports* (Bureau of the Census, Series P-25, No. 805, 1979).

[5] Howard N Fullerton, Jr., "The 1995 labor force: a first look," *Monthly Labor Review,* December 1980, pp. 11–21.

[6] A tremendous amount of material has been written on the reasons behind the slowdown in productivity growth. Major studies include R. Kutscher, G. Mark, and J. R. Norsworthy, "The productivity slowdown and the outlook to 1985," *Monthly Labor Review,* May 1977, pp. 3–8; J. R. Norsworthy, M. Harper, and J. Kunze, "The Slowdown in Productivity Growth: an Analysis of Some Contributing Factors," *Brookings Papers on Economic Activity,* Vol. 2, 1979; P. Clark, "Capital Formation and the Recent Productivity Slowdown," *Journal of Finance,* June 1978, pp. 967–75; D. Hudson and E. Jorgenson, "Energy Prices and the U.S. Economy, 1972–1976," *Data Resources Review,* September 1976, pp. 1.24–1.37; J. Beebe, "A Note on Intersectoral Shifts and Aggregate Productivity Change," *Annals of Economic and Social Measurement,* Summer 1975, pp. 389–95; and E. Denison, *Accounting for Slower Economic Growth* (Washington, D.C. Brookings Institution, 1979).

[7] The estimates of capital stock developed in the projections are consistent with the gross stocks series presented in *Fixed Nonresidential Business and Residential Capital in the United States, 1925–75* (U.S. Department of Commerce, Bureau of Economic Analysis, 1976).

[8] By national income accounting conventions, there is no change over time in government productivity. Rather, it is assumed that real output for a government employee is equal to that person's compensation in the dollar base year (1972 in this case). Apparent changes in average real compensation reflect shifts in the grade structure of government employees over time.