Employment outlook: 1996–2006

The U.S. economy to 2006

Slowing GDP growth is tied to slowing labor force growth; exports and imports continue to be the fastest growing major components of GDP, with high-technology products leading the way

Thomas Boustead

At first glance, the BLS projection of the aggregate U.S. economy for the 1996–2006 period may appear placid, as moderating growth in the labor force constrains economic performance. Real gross domestic product (GDP) is projected to grow at the rate of 2.1 percent per year over the projection period and will reach approximately $8.5 trillion by 2006 in chained (1992) dollars.[1] (See table 1.) By comparison, GDP grew at an average annual rate of 2.3 percent during 1986–96.[2] Nevertheless, the temperate pace of overall economic growth belies activity occurring below the surface.

Over the next 10 years, certain sectors of the economy will undergo dramatic growth, while others will recede in importance. Reflecting increased globalization of the economy, the foreign trade sector will continue to be the fastest growing component of real GDP. Exports are projected to grow almost 3½ times faster than GDP, while imports are expected to rise at almost 3 times the rate of GDP. By 2006, the levels of exports and imports will each approach 20 percent of GDP.

Besides foreign trade, gross private domestic investment (or, simply, private investment) will also assume a more substantial position in the economy over the 1996–2006 period. Private investment is projected to increase at a rate 1½ times faster than the rate for GDP. Underlying the growth in foreign trade and private investment will be an expanding commerce in high technology and computer-related products. Accordingly, the BLS pro-

jection anticipates that new markets and new products will be important features of the economy over the next 10 years.

While some sectors of the economy are expected to advance, others will decline in relative importance over the projection period—most notably, the Federal Government. As it has in the recent past, real defense spending (consumption and gross investment) is projected to decline from 1996 to 2006.[3] However, the projection for Federal nondefense spending shows a reversal from recent trends. Unlike the growth rate of 2.0 percent per year posted for 1986–96, nondefense spending is expected to decline 0.8 percent per year from 1996 to 2006. In effect, Federal expenditures will be pressed by efforts to control the Federal deficit in the face of continued growth of transfer payments.

The discussion of the economic projection begins with an outline of key underlying assumptions. The article then examines more closely the projection for the economy over the 1996–2006 period by looking at each sector of GDP in further detail. Lastly, the sensitivity of the projection to changes in underlying assumptions is examined.

Underlying economic assumptions

To generate an economic projection, the Bureau employs a macroeconomic model with nearly 300 exogenous variables.[4] These variables constitute inputs into the model, rather than quantities determined by it. The value of an exogenous variable

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Table 1. Gross domestic product, by major demand category, 1986, 1996, and projected to 2006

Category	Billions of chained (1992) dollars			Percent distribution			Average annual rate of change	
	1986	1996	2006	1986	1996	2006	1986–96	1996–2006
Gross domestic product	5,489.9	6,911.0	8,539.1	100.0	100.0	100.0	2.3	2.1
Personal consumption expenditures	3,708.7	4,690.6	5,772.9	67.6	67.9	67.6	2.4	2.1
Gross private domestic investment	813.7	1,060.2	1,469.7	14.8	15.3	17.2	2.7	3.3
Exports	362.2	826.1	1,686.0	6.6	12.0	19.7	8.6	7.4
Imports	526.1	940.3	1,749.8	9.6	13.6	20.5	6.0	6.4
National defense consumption expenditures expenditures and gross investment	393.4	314.9	257.3	7.2	4.6	3.0	−2.2	−2.0
Federal nondefense consumption expenditures and gross investment	125.2	152.8	141.5	2.3	2.2	1.7	2.0	−.8
State and local consumption expenditures and gross investment	617.0	804.5	1,005.9	11.2	11.6	11.8	2.7	2.3
Residual[1]...	−4.1	2.1	−44.4	−.1	.0	−.5	...	...

[1] The residual is calculated as real GDP, plus imports, less other components.

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

generally depends upon a decision into which significant non-economic factors intrude; for example, security and foreign policy considerations substantially influence the level of defense expenditures. Given these noneconomic influences, many judgments about the level of an exogenous variable could be justified. Accordingly, the sensitivity analysis in this article considers how changes in exogenous variables would affect the economic projection.

Besides exogenous variables, the macroeconomic model contains in excess of 1,150 equations. These equations determine the values of the behavioral variables, as well as establish certain required relationships between variables (so-called identities). The behavioral variables include those of primary interest for aggregate demand and employment, such as real GDP, its components, and the unemployment rate. Additionally, several behavioral variables, such as interest rates and price indexes, play a role in assessing the reasonableness of any particular solution of the model. These are discussed as part of the sensitivity analysis.

For the most part, the more important economic assumptions that go into the model concern exogenous variables. Despite their large number, comparatively few exogenous variables influence markedly the long-term projection of major GDP components and employment. These are summarized in table 2. Several themes interweave the economic assumptions made about those variables, such as the role of the Federal budget deficit in restraining expenditures, the looming importance of transfer payments, and the changing demographic makeup of the U.S. population.

Fiscal policy. Real defense spending has fluctuated substantially in past decades. Following the Vietnam War was a defense drawdown, which led to a trough in real defense spending in 1976. Thereafter, real defense spending surged as successive defense budgets sought to modernize and expand the Armed Forces.

As the Cold War ebbed, the trend in defense spending reversed. Reductions occurred in the number of active-duty personnel, along with the number of active-duty Army divisions, Air Force fighter wings, and naval vessels. Between 1986 and 1996, declines in real defense spending were exemplified by the 2.8-percent annual rate of reduction for defense compensation and the 4.7-percent rate of reduction for defense gross investment. (See table 2.)

The projection supposes that the defense drawdown will persist, although its tempo will diminish. Defense compensation spending is expected to contract 0.9 percent per year between 1996 and 2006, while defense gross investment is projected to fall at an annual rate of 1.0 percent over this period. The fastest declines occur in the first half of the projection period; then, the reductions abate substantially as the need arises to replace or refurbish defense systems purchased in the 1980s.

Whereas the outlook for defense spending roughly tracks experience over the past decade, the same cannot be said for nondefense spending. Here, the impact of the Federal budget restraint appears more pronounced. Between 1996 and 2006, the projection anticipates that real nondefense compensation will fall 0.5 percent per year, while other nondefense consumption expenditures will decrease 2.3 percent per year. In contrast, real nondefense compensation grew 0.1 percent annually between 1986 and 1996, while other nondefense consumption grew 5.2 percent annually over that period.

Despite some deceleration, Federal transfer payments provide a major source of budgetary pressure on Federal defense and nondefense spending. Real medicare spending is projected to grow 3.8 percent per year from 1996 to 2006, compared with the 4.2-percent figure for the preceding 10 years. The projected decline in the medicare growth rate can be attributed, in part, to a temporary slowdown in the growth of the population older than 65.

Grants-in-aid to State and local governments for medicaid

have fluctuated significantly during recent decades. From 1976 to 1986, real medicaid grants increased 2.1 percent per year. However, in the early 1990s, certain practices with regard to obtaining Federal matching funds, as well as expanding enrollment, contributed to soaring growth in medicaid grants. The medicaid program posted annual growth rates exceeding 12 percent each year from 1990 to 1992. By 1996, however, the program's growth had subsided to an annual rate of 2.3 percent. The BLS projection assumes that the rate of real medicaid grants will increase 2.5 percent annually over the 1996–2006 period, slightly in excess of the 1996 rate.

Other real grants-in-aid to State and local governments have not gyrated to the same extent as have grants to medicaid. From 1976 to 1986, other grants decreased 1.7 percent per year. The trend reversed itself, however, over the next 10 years, as aid for such items as refurbishing the interstate highway system spurred Federal grants. The projection views these other grants as prone to budgetary constraints. While, nominally, other grants to State and local governments will increase, the amounts will fail to match inflation over the projection period. Accordingly, from 1996 to 2006, other real grants to State and local

governments will shrink 1.4 percent per year.

As regards revenues, the model utilized in the economic projection specifies several tax rates as exogenous variables. These can be either statutory rates, set by appropriate tax laws, or effective tax rates, determined as the quotient of applicable tax receipts and the corresponding taxable income. The projection does not anticipate any major changes in tax rates on corporations or in Social Security tax rates or other indirect taxes, although the trend towards higher State gasoline taxes continues. In the macroeconomic model, the effective Federal personal income tax rate is a behavioral variable. A slight decrease in this rate is expected to occur during the projection period. Together, the revenue and spending assumptions in the projection translate into a balanced Federal budget in the year 2006.[5]

Monetary policy. In a long-term projection, economic growth depends upon the expansion of both the labor force and capital stocks and upon technological progress. Together, these largely determine the size of the working population and the productivity of that population. The influence of monetary factors takes on secondary importance.

Table 2.	Major assumptions affecting aggregate projections, 1986, 1996, and projected to 2006				
Exogenous variables	Billions of chained (1992) dollars			Average annual rate of change	
	1986	1996	2006	1986–96	1996–2006
Energy related:					
Domestic share of crude-oil acquisitions (as percentage of total acquisitions)	67.4	49.7	36.4	−3.0	−3.1
Electric utility fuel use—coal share (as percentage of total fuel use)	55.7	55.8	56.1	.0	.1
Fuel efficiency, all autos (miles per gallon)	18.4	20.7	22.5	1.2	.8
Tax related:					
Statutory Federal corporate tax rate (as percentage of taxable income)	46.0	35.0	35.0	−2.7	.0
Effective social insurance tax rate[1]	16.8	17.0	17.0	.1	.0
Employer share of Social Security contributions (as percentage of total contributions)	59.7	55.4	54.9	−.7	−.1
Federal gasoline tax (cents per gallon)	10.0	19.2	19.4	6.8	.1
State and local gasoline tax (cents per gallon)	11.8	18.7	26.2	4.7	3.4
Effective State and local corporate tax rates[2]	13.1	7.2	7.4	−5.8	.3
Federal expenditures:					
Defense compensation	153.7	115.9	106.4	−2.8	−.9
Other defense consumption expenditures	131.7	109.6	79.4	−1.8	−3.2
Defense gross-investment expenditures	62.2	38.5	34.9	−4.7	−1.0
Nondefense compensation	60.5	61.2	58.2	.1	−.5
Other nondefense consumption expenditures	38.0	62.8	49.9	5.2	−2.3
Nondefense gross-investment expenditures	14.7	19.3	21.7	2.7	1.2
Grants and transfer payments:					
Federal housing subsidies (current dollars)	13.0	24.8	25.5	6.7	.3
Federal transfer payments, medicare	111.4	168.8	244.3	4.2	3.8
Federal grants-in-aid, medicaid	37.7	79.9	102.0	7.8	2.5
Federal grants-in-aid, other than medicaid	100.6	109.2	94.8	.8	−1.4
Other (in millions, unless otherwise noted):					
Population, including overseas Armed Forces	240.7	265.6	288.7	1.0	.8
Population aged 16 and older	185.3	204.1	225.5	1.0	1.0
Population aged 65 and older	29.0	33.9	36.6	1.6	.8
Nonborrowed reserves (in billions of current dollars)	37.0	49.8	79.9	3.0	4.8

[1] Calculated as the ratio of tax collections and wage and salary disbursements.

[2] Ratio of receipts to applicable tax base.

SOURCE: Historical data, Bureau of Economic Analysis, Bureau of the Census, Bureau of Mines, Energy Information Administration, Federal Highway Administration; projected data, Bureau of Labor Statistics.

The BLS economic projection assumes that monetary policy operates during the projection period in such manner as to stabilize the economy. Short-term interest rates remain within the ranges experienced since the trough of the last business cycle. For example, the Federal funds rate is expected to fluctuate between 4.25 percent and 5.25 percent during 1996–2006. Care, however, must be exercised in interpreting fluctuations in economic variables over the projection period. The macro-economic model utilized for the economic projection focuses upon long-term trends, so it generally smoothes the time paths of the behavioral variables. Accordingly, the actual path taken by short-term interest rates could easily be more volatile than is suggested by the projection.

Reflecting an expected improvement in the Federal deficit, long-term interest rates are generally projected to trend downwards from 1996 to 2006. For example, the yield on 10-year U.S. Treasury notes for 2006 is anticipated to decline almost 100 basis points from the 6.4-percent average rate experienced during 1996. Other long-term interest rates, such as the yield on 30-year Treasury bonds, are expected to follow a similar pattern.

Demographic assumptions. In a capital-rich country, the growth of the labor force has special significance for the long-term growth of real GDP. The BLS economic projection directly incorporates the Bureau's labor force projection.[6] In addition, the economic projection includes several population assumptions based upon the Census Bureau's middle-series, resident population projection, with adjustment for overseas Armed Forces personnel. While, obviously, these population assumptions have broad implications for the economy, they particularly affect the demand for housing, household furnishings, and automobiles, as well as the level of transfer payments and employment.

The growth rate of the total population is expected to moderate during the projection period, to an average annual rate of 0.8 percent.[7] This contrasts with the 1.0-percent-per-year growth that prevailed from 1976 to 1996. The details of population growth, however, tell a more complex story. Compared with the rate of the preceding 10 years, the growth rate of the population older than 16 shows little change over the projection period, increasing at the same 1.0-percent average rate during both periods. This leveling off of growth differs markedly from the 1.4-percent growth rate in that segment of the population for the period 1976–86.

By contrast, the growth of the population older than 65 is expected to diminish over the projection period, averaging 0.8 percent annually for 1996–2006. This figure falls significantly short of the group's 1.6-percent average annual growth from 1986 to 1996. The deceleration can be attributed to the relatively low birthrates experienced during the Great Depression. As noted earlier, the slower growth of the retirement age population aids in the restraint of transfer payments during the pro-

jection period. This trend is, however, short lived: the growth rate for the population older than 65 is expected to accelerate towards the end of the period.

General assumptions. The economic projection assumes that no major wars, natural disasters, or petroleum embargoes will occur during the projection period. Such assumptions are consistent with the projection's long-term focus.

Projected real GDP and its components

As previously mentioned, the BLS projection anticipates that real GDP will increase 2.1 percent per year from 1996 to 2006. Largely because of diminished labor force growth, this projected growth of GDP represents a modest deceleration from the 2.3-percent average growth rate that prevailed from 1986 to 1996. Even though the overall economy is expected to slow somewhat, certain sectors are anticipated to continue to perform strongly during the projection period.

As already noted, the international trade sector will expand substantially during the next 10 years. Private investment in equipment will also increase markedly. Spurring growth in both of these sectors—and, indeed, in all sectors of the private economy—will be strong expenditures on computers and technology-laden products. The following discussion details the projection for the various components of real GDP.

Personal consumption expenditures. Traditionally, personal consumption expenditures have made up the largest and most stable component of real GDP. During the 1970s and 1980s, as the so-called baby boomers began forming households, consumption expenditures rose as a share of real GDP, from approximately 64.9 percent in 1970, to 66.5 percent in 1976, and then to 67.6 percent in 1986 (see table 1). Rising disposable incomes during this period supplied the resources necessary to support the expansion in consumption, which was augmented by declines in the savings rate.

By 1986, the trend in consumption spending began to stabilize. From 1986 to 1996, real personal consumption increased its share of GDP by only 0.3 percentage point, to approximately 67.9 percent in 1996. In terms of growth rates, real consumption expenditures grew only 2.4 percent yearly from 1986 to 1996, following its 3.2-percent annual growth rate in the preceding 10-year period. This slowdown reflects slower growth in disposable income. For example, real disposable income, which increased at a 3.1-percent annual rate from 1976 to 1986, diminished to 2.2 percent annually for the period 1986–96.

The BLS projection envisions a leveling of growth in personal consumption expenditures from 1996 to 2006. Real personal consumption expenditures are expected to grow at an average annual rate of 2.1 percent over the period, matching the 2.1-percent annual growth rate of GDP. As a result, real consumption will amount to approximately 67.6 percent of

Table 3. Personal consumption expenditures, 1986, 1996, and projected to 2006

Category	Billions of chained (1992) dollars			Average annual rate of change	
	1986	1996	2006	1986–96	1996–2006
Personal consumption expenditures	3,708.7	4,690.6	5,772.9	2.4	2.1
Durable goods	448.4	611.5	867.3	3.2	3.6
New autos	114.7	73.5	68.0	−4.4	−.8
New light trucks	41.7	50.7	65.6	2.0	2.6
Other automotive	68.1	97.4	126.4	3.6	2.6
Computers	2.1	61.0	665.9	39.9	27.0
Furniture	142.3	231.1	329.9	5.0	3.6
Other durables	85.7	117.1	144.7	3.2	2.1
Nondurable goods	1,215.9	1,441.9	1,683.8	1.7	1.6
Food and beverages	614.0	704.5	794.4	1.4	1.2
Clothing and shoes	199.9	267.9	349.4	3.0	2.7
Gasoline and oil	102.5	113.7	131.6	1.0	1.5
Fuel oil and coal	13.4	10.3	8.6	−2.6	−1.9
Other nondurables	285.5	346.1	406.4	1.9	1.6
Services	2,041.4	2,638.2	3,239.8	2.6	2.1
Housing	565.5	693.1	787.5	2.1	1.3
Household operation	209.8	283.9	386.6	3.1	3.1
Electricity	68.3	85.0	102.1	2.2	1.8
Natural gas	26.7	31.0	31.4	1.5	.1
Other	114.7	167.8	250.8	3.9	4.1
Transportation	145.7	184.8	225.2	2.4	2.0
Medical services	510.3	697.9	874.7	3.2	2.3
Other services	608.5	778.9	968.9	2.5	2.2

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

GDP in 2006. The projection for consumption anticipates growth in real disposable income over the 1996–2006 period at a 1.9-percent annual rate, which is a decline from the rate for 1986–96.

Although real personal consumption spending proceeds leisurely according to the BLS projection, not all sectors of consumption will conform to this pace. Most notably, the projection contemplates rapid growth in real personal consumption expenditures on computers. (See table 3.) Spending on computers grew 39.9 percent annually from 1986 to 1996. From 1996 to 2006, expenditures on computers are projected to slacken to a 27.0-percent average annual growth rate. This reduced rate still allows real consumption spending on computers to expand from $61 billion in 1996 to $666 billion in 2006 in chained (1992) dollars.

In nominal terms, personal consumption expenditures on computers grew 15.7 percent annually, on average, between 1986 and 1996; by contrast, the projection anticipates an 8.3-percent average growth rate over the 1996–2006 period. As a result, nominal expenditures on computers are expected to reach $49.6 billion by 2006.[8] The large discrepancy between real and nominal expenditures on computers highlights their price behavior. In effect, technological progress and, to a lesser extent, foreign competition have caused, and presumably will continue to cause, a substantial reduction in computer prices.

Besides expenditures on computers, personal consumption expenditures on durable goods include spending on new au-

tos, new light trucks, other automotive products, furniture, and other durable goods. To a significant extent, demographics influence these categories. For example, the earlier mentioned decline in the growth rate of the population older than 16 over the 1986–96 period translated into a sharp drop in the growth rate of expenditures on new autos. During that period, real personal consumption of new autos diminished at an annual average rate of 4.4 percent. Besides the influence of population, a pronounced move by consumers to new light trucks in lieu of autos reinforced the drop in auto expenditures. Between 1986 and 1996, real expenditures on new light trucks grew at an average annual rate of 2.0 percent.

Paralleling the pattern for the population older than 16, the decline in consumer expenditures on new autos is expected to level off during 1996–2006, to a rate of reduction of about 0.8 percent per year. Strong growth, however, is projected to continue for new light trucks, at a rate of 2.6 percent yearly over the period.

Personal consumption expenditures on furniture include spending not merely on household furniture, but also on such furnishing items as china and glassware, as well as household audio and video products. These categories posted substantial real growth in 1986–96, with an annual growth rate of 5.0 percent. Because the growth in the number of households is expected to slacken from 1996 to 2006, and because some import penetration occurs, the BLS projection anticipates a reduction in the growth of personal expenditures on furni-

ture, to an average rate of 3.6 percent per year, over the period.

Real personal consumption expenditures on other consumer durables cover such miscellaneous durables as recreational vehicles, ophthalmic goods, and jewelry. This category of personal consumption grew 3.2 percent per year from 1986 to 1996. The projection contemplates reduced growth for these products, at the rate of 2.1 percent annually, for the period 1996–2006.

In recent decades, consumer spending on nondurable energy-related products has lagged behind expenditures on other consumer goods and services. Apparently, the high energy prices of the 1970s and early 1980s instilled in consumers a concern for conservation and an interest in energy-efficient purchases. For example, real consumption expenditures on gasoline and oil increased only 1.0 percent yearly between 1986 and 1996, a decrease from the 1.3-percent average annual growth rate for the 1976–86 period. The slower growth in the more recent period occurred despite substantially lower real prices for imported oil, compared to the earlier period.

Although the BLS projection assumes a gentle upward trend in real imported oil prices over the next 10 years, these prices remain far below earlier peaks. Accordingly, the projection anticipates a small increase in the growth rates of nondurable energy-related products. The rate of growth of personal consumption expenditures for gasoline and oil would accelerate to 1.5 percent, on average, annually for 1996–2006. Similarly, it is expected that there will be some arresting of the rate of reduction in consumer expenditures on fuel oil and coal, as the 2.6-percent average annual rate of reduction experienced between 1986 and 1996 moderates to a 1.9-percent annual rate of decline for the 1996–2006 period.

Besides energy-related purchases, consumer expenditures on nondurable goods revolve around a variety of subsistence goods such as food, cleaning products, and clothing. Obvi-

ously, demographics primarily drive these purchases, although increases in disposable income enhance the demand for higher quality products, particularly clothing. Expenditures on food and beverages are projected to increase 1.2 percent yearly from 1996 to 2006, somewhat slower than the 1.4-percent annual rate of increase for the period 1986–96. Similarly, real consumption expenditures on clothing and shoes are expected to increase 2.7 percent yearly from 1996 to 2006, down from the 3.0-percent average annual growth rate for the 1986–96 period and in line with the deceleration of total population growth. The projection anticipates analogous declines in the growth rate of spending on other nondurable goods during the 1996–2006 period.

Over the past 20 years, the growth of personal consumption spending on services has outpaced the growth of total personal consumption. For example, from 1976 to 1996, real consumption spending on services grew 0.2 percentage point faster than the annual growth rate of total personal consumption. This difference was maintained, even though the growth of personal consumption spending on services slowed from 3.4 percent yearly over the period 1976–86 to 2.6 percent annually during 1986–96.

The growth of personal consumption spending on services is anticipated to equal that of total personal consumption over the 1996–2006 period. Both will continue to slow, to a rate of 2.1 percent yearly over the projection period. What accounts for the slowing growth of services, compared with that of other components of personal consumption? As a partial answer to this question, the services sector has not faced the degree of import competition or undergone the amount of technological change experienced by the makers of durable consumer goods. Consequently, prices generally have advanced faster for services than for other categories of personal consumption, and this price pressure has facilitated the deceleration in

Table 4. Gross private domestic investment, 1986, 1996, and projected to 2006

Category	Billions of chained (1992) dollars			Average annual rate of change	
	1986	1996	2006	1986–96	1996–2006
Gross private domestic investment	813.7	1060.2	1469.7	2.7	3.3
Fixed nonresidential investment	548.5	766.2	1132.0	3.4	4.0
Producers' durable equipment	345.9	578.3	935.6	5.3	4.9
New autos	51.9	67.8	85.6	2.7	2.4
Net used autos	−16.5	−25.5	−32.8	4.5	2.6
Office equipment	24.7	140.9	612.0	19.0	15.8
Other equipment	292.6	411.0	557.9	3.5	3.1
Nonresidential structures	203.3	189.6	210.8	−.7	1.1
Public utilities	36.5	36.5	42.7	.0	1.6
Mining and exploration	15.8	12.8	12.5	−2.1	−.2
Buildings and other	150.8	140.3	155.2	−.7	1.0
Fixed residential investment	257.0	276.8	302.7	.7	.9
Residential structures	251.3	269.7	293.4	.7	.8
Landlord durables	5.8	7.1	9.6	2.1	3.0
Change in business inventories	10.9	17.6	41.5	4.9	9.0

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

the growth of services.

Demographics also affect the growth of services, most notably through their influence on housing services. In this regard, a deceleration in the growth rate of the number of households has occurred in recent decades. The rate fell from an average annual figure of 1.8 percent for the period 1976–86 to 1.3 percent for 1986–96. The BLS economic projection assumes that the number of households will grow 1.1 percent yearly from 1996 to 2006. As a result, the growth rate of real housing services is expected to decrease to a rate of 1.3 percent yearly over that period, compared with a 2.1-percent annual rate for 1986–96.

Related to housing services, household operations comprise expenditures on energy-related services to heat and cool homes, as well as spending on a broad class of other services associated with home maintenance. Among the latter expenditures are maintenance spending on water, sanitary, and domestic services, expenditures on telephone services, and spending on homeowners and related insurance. Expenditures on real household operations grew 3.1 percent per year from 1986 to 1996. The BLS projection anticipates no change in the growth of spending on household operations, with the 3.1-percent annual growth rate for this category continuing for the period 1996-2006. Increased spending growth on nonenergy services is expected to compensate for the slower growth in spending on energy services.

A major contributor to overall growth in personal consumption spending on services is the growth of expenditures on medical services. Real consumption spending on medical services increased 3.2 percent per year from 1986 to 1996. Because of an increased emphasis on the containment of medical costs, the growth rate of medical services can be expected to diminish. The BLS economic projection contemplates that real spending on medical services will expand at the rate of 2.3 percent annually over the 1996–2006 period.

Spending on other services also is expected to grow more rapidly than overall personal consumption. Other services include investment counseling and legal and other services. As larger segments of the population approach retirement, these services become increasingly attractive. Spending on other services is projected to grow at an average annual rate of 2.2 percent from 1996 to 2006.

In sum, consumer spending for the 1996–2006 period is projected to grow at the same rate as GDP and remain by far the largest single component thereof. Within the broad category of consumption expenditures, some reallocation of consumer purchases can be noticed. The fastest growth is expected for durable goods. Still, while the services sector is projected to grow somewhat more slowly than in the past, it remains the largest single component of personal consumption expenditures.

Gross private domestic investment. Expenditures by firms on private investment have increased as a percentage of real GDP in recent decades. From approximately 13.8 percent of GDP in 1976, private investment grew to 14.8 percent in 1986 and then to 15.3 percent in 1996. (See table 1.) Similarly, over this period, the annual growth of private investment has outpaced that of both GDP and personal consumption expenditures. Private investment spending increased 4.3 percent annually from 1976 to 1986 and 2.7 percent yearly from 1986 to 1996.

At a finer level of detail, certain trends in private investment become apparent. Most readily visible is the significant growth of equipment spending. Expenditures on producers' durable equipment grew at an average annual rate of 5.9 percent over the 1976–86 period and then moderated to a 5.3-percent average rate from 1986 to 1996, as shown in table 4.

By way of comparison, the growth rate of nonresidential construction has gyrated in recent decades. A period of over-building in the early 1980s led to unsustainable growth in nonresidential construction. As rental vacancy rates soared, the rental market for office space collapsed in many locales in the late 1980s. As a result, for the 1986–96 period, nonresidential construction shrank by 0.7 percent annually, on average. In contrast, the importance of demographic factors has tended to smooth the long-term path of residential construction.

The BLS projection envisions a continuation, with some moderation, of the relatively rapid growth of business spending on producers' durable equipment. To an extent, this spending feeds on itself, as equipment purchases generally have shorter useful lives than do purchases of fixed structures. This prompts more investment in equipment, in the form of replacement spending. Producers' durable equipment is projected to expand 4.9 percent annually from 1996 to 2006.

As with personal consumption, computers constitute the most rapidly growing component of producers' durable equipment. Real business spending on office equipment (primarily computers) increased 19.0 percent per year from 1986 to 1996. With plummeting prices, firms replaced existing computers with more and better models. The projection envisions continued strong investment in office equipment at the rate of 15.8 percent annually for the 1996–2006 period.

Real business spending on autos increased at the rate of 2.7 percent per year from 1986 to 1996. This growth rate is expected to slacken somewhat over the 1996–2006 period, to a 2.4-percent annual average rate of growth. The growth of net sales (the opposite of purchases, and thus represented by a minus sign) would also diminish to a 2.6-percent annual growth rate for the period, compared with the 4.5-percent rate that prevailed from 1986 to 1996. With the projected weakness in the private demand for autos, firms will have less incentive to turn over their auto fleets and supply used vehicles.

Other producers' durable equipment makes up the remainder of producers' durable equipment. A diverse category, it includes the traditional staples of manufacturing, such as machine tools, industrial apparatus, and communications equipment. Between 1986 and 1996, this category grew 3.5 percent

Table 5. Exports and imports of goods and services, 1986, 1996, and projected to 2006

Category	Billions of chained (1992) dollars			Average annual rate of change	
	1986	1996	2006	1986–96	1996–2006
Exports of goods and services	362.2	826.1	1,686.0	8.6	7.4
Merchandise	243.6	609.3	1,313.2	9.6	8.0
Foods, feeds, and beverages	27.5	44.6	57.5	4.9	2.6
Industrial supplies and materials	71.2	121.6	185.8	5.5	4.3
Capital goods, except autos	75.3	289.5	881.0	14.4	11.8
Computers	7.9	90.4	669.3	27.7	22.2
Civilian aircraft and parts	19.4	27.1	40.2	3.4	4.0
Other	50.4	185.7	514.9	13.9	10.7
Autos and parts	28.7	61.8	107.8	8.0	5.7
Consumer goods	20.3	67.4	136.7	12.7	7.3
Other merchandise exports	22.1	29.7	47.5	3.0	4.8
Services	120.3	218.0	389.7	6.1	6.0
Imports of goods and services	526.1	940.3	1,749.8	6.0	6.4
Merchandise	425.5	796.8	1,550.3	6.5	6.9
Foods, feeds, and beverages	26.3	32.0	36.3	2.0	1.3
Industrial supplies and materials	118.6	175.5	229.7	4.0	2.7
Petroleum and products	41.4	59.7	88.2	3.7	4.0
Other	76.8	114.1	138.7	4.0	2.0
Capital goods, except autos	66.8	267.6	940.1	14.9	13.4
Computers	5.9	112.2	951.0	34.3	23.8
Other	63.9	167.8	416.0	10.1	9.5
Autos and parts	95.6	120.3	144.8	2.3	1.9
Consumer goods	101.2	164.1	301.5	5.0	6.3
Other merchandise imports	23.8	43.0	79.6	6.1	6.4
Services	100.2	144.1	211.5	3.7	3.9

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

per year. The BLS projection contemplates decelerating growth in other producers' durable equipment, to an average annual rate of 3.1 percent for the period 1996–2006. While some areas of the category will falter, staunch growth in its high-tech components, such as communications equipment, can be expected.

As noted, nonresidential construction suffered greatly from a construction glut in the 1980s. Many markets have managed, however, to work off a significant portion of this construction overhang. Accordingly, the projection envisions a resumption in the growth of nonresidential construction at the rate of 1.1 percent per year for 1996–2006. The largest subcategory of nonresidential construction, buildings and other structures, would closely track the expected performance of the overall sector, with a projected 1.0-percent average annual growth rate for the 1996–2006 period. An acceleration from past growth rates is anticipated for the other subcategories of nonresidential construction. For example, public utility construction recorded no growth for the 1986–96 period. However, as purchasers and suppliers of electric power respond to an increasingly competitive environment brought about by deregulation, construction by public utilities is expected rise to 1.6 percent per year from 1996 to 2006.

Mining and exploration will still see negative growth under the projection for the 1996–2006 period. Still, owing to an expected, if mild, increase in oil prices over the period, the projected 0.2-percent-per-year decline in mining and exploration would represent an improvement over the 2.1-percent average annual rate of decline for the 1986–96 period.

Residential construction is projected to change only modestly from patterns established in the previous decade. While interest rates clearly influence the short-run timing of home purchases, demographics largely control the long-term demand for housing. As noted before, the demographics do not favor a return to the robust 3.0-percent growth rate for residential structures posted in the 1976–86 period. Instead, the decline witnessed over the period 1986–96 in the age groups traditionally thought of as first-time home buyers is expected to continue during the projection period. The projection envisions investment in residential structures increasing 0.8 percent per year from 1996 to 2006, a rate only slightly greater than that for 1986–96.

In sum, private investment is projected to be a bright spot in the economy over the next 10 years. Expenditures on equipment— in particular, purchases of computers—will shine. Nonresidential construction is expected to make something of a comeback, while residential construction continues to be constrained by the shrinking population of first-time home buyers.

Exports and imports. No other sector of the economy has evolved so dramatically in recent decades as the international trade sector. In 1976, neither exports nor imports exceeded 7.0 percent of real GDP. By 1996, exports rose to 12 percent of real GDP, while imports equaled 13.6 percent. (See table 1.) Rapid development in many parts of the globe, as well as con-

scious efforts at opening world markets, have fueled this growth. The BLS projection anticipates further integration of the United States into the world economy: by 2006, exports are likely to constitute about 19.7 percent of real GDP, and imports will amount to approximately 20.5 percent of GDP.

Not only has international trade accelerated in recent decades, but also, the composition of this trade has altered. High-technology products, such as computers and communications equipment, have assumed a more significant position in foreign trade, and trade in services has become more pronounced.

The international trade sector is a difficult sector of the U.S. economy to project. The problem is primarily, but not exclusively, in projecting the growth of exports. Generally, export growth depends upon the internal growth rates of foreign countries. For example, in recent years, exports to Europe have suffered from slow growth in several important countries. In the upcoming decade, European countries will confront the problems of labor market flexibility, as well as the need to adjust their economies to a monetary union (assuming that it occurs).

Growth rates in developing countries can also be difficult to project. In general, these countries have less diversified economies. With certain exceptions, the service sectors of their economies have lagged behind the manufacturing sectors. As a result, the performance of developing countries' economies can be adversely affected if overcapacity arises in their primary manufacturing industries.

With these cautionary notes in mind, the BLS projection envisions a continuation of the solid growth in U.S. exports of goods and services. Exports grew at the rate of 8.6 percent per year from 1986 to 1996. Exports of merchandise led the way, with a 9.6-percent average annual rate of growth for this period. (See table 5.) Exports are projected to grow at a 7.4-percent annual rate during 1996–2006, with merchandise exports advancing 8.0 percent annually over the period.

Exports of capital goods are expected to show the fastest growth, with the computer component in particular expanding at a 22.2-percent average annual rate from 1996 to 2006. Other capital exports, which include exports of such technology-intensive products as communications equipment, also are projected to grow rapidly in this period. Growth in exports of services is anticipated to decline slightly, from the 6.1-percent-per-year rate posted from 1986 to 1996 to a 6.0-percent annual rate for the 1996–2006 period.

Imports of goods and services are expected to accelerate from the 6.0-percent annual growth rate seen over the 1986–96 period. The BLS projection anticipates an increase in this growth rate to an average annual rate of 6.4 percent for 1996–2006. Historically, there is nothing unprecedented about this rate of growth for imports, which expanded 6.5 percent per year for the period 1976–86.

Imports of merchandise will account for the bulk of the increased growth in imports. The projection contemplates that imports of merchandise will grow 6.9 percent per year over the 1996–2006 period, compared with the 6.5-percent growth rate that prevailed from 1986 to 1996. As with exports, the strongest growth will be in capital goods, especially nonautomotive capital goods. This category includes not only computer imports,

Table 6.	Federal Government receipts and expenditures, 1986, 1996, and projected to 2006							
Category	Billions of dollars			Percent distribution			Average annual rate of change	
	1986	1996	2006	1986	1996	2006	1986–96	1996–2006
Receipts	850.1	1,576.3	2,431.9	100.0	100.0	100.0	6.4	4.4
Personal tax and nontax payments	358.3	673.1	1,023.3	42.1	42.7	42.1	6.5	4.3
Corporate profits tax	83.9	197.4	304.7	9.9	12.5	12.5	8.9	4.4
Contributions for social insurance	354.7	615.3	965.0	41.7	39.0	39.7	5.7	4.6
Indirect business tax	53.2	90.5	139.0	6.3	5.7	5.7	5.5	4.4
Expenditures	1,027.6	1,701.9	2,432.7	100.0	100.0	100.0	5.2	3.6
Defense consumption	272.7	304.7	348.2	26.5	17.9	14.3	1.1	1.3
Nondefense consumption	89.7	156.0	194.5	8.7	9.2	8.0	5.7	2.2
Transfer payments	399.2	764.5	1,334.4	38.8	44.9	54.9	6.7	5.7
To persons	386.2	748.0	1,307.4	37.6	43.9	53.7	6.8	5.7
Social Security	193.6	342.1	565.9	18.8	20.1	23.3	5.9	5.2
Medicare	75.6	197.2	441.2	7.4	11.6	18.1	10.1	8.4
Federal retirement	42.2	69.9	116.0	4.1	4.1	4.8	5.2	5.2
Other	20.5	26.4	36.7	2.0	1.6	1.5	2.5	3.3
To foreigners	12.9	16.5	27.0	1.3	1.0	1.1	2.5	5.0
Grants-in-aid	107.6	213.3	315.0	10.5	12.5	12.9	7.1	4.0
Medicaid	25.6	93.3	184.2	2.5	5.5	7.6	13.8	7.0
Other	82.0	120.0	130.8	8.0	7.0	5.4	3.9	.9
Net interest paid	130.5	233.5	208.0	12.7	13.7	8.6	6.0	−1.1
Net subsidies	28.0	30.1	32.7	2.7	1.8	1.3	.7	.8
Wage accruals less disbursements	.0	.0	.0	.0	.0	.0	...	...
Surplus or deficit	−177.5	−125.6	−.8	...	...	...	...	...

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

Table 7. State and local government receipts and expenditures, 1986, 1996, and projected to 2006

Category	Billions of dollars			Percent distribution			Average annual rate of change	
	1986	1996	2006	1986	1996	2006	1986–96	1996–2006
Receipts	570.6	1,044.8	1,659.3	100.0	100.0	100.0	6.2	4.7
Personal taxes	101.6	190.7	319.2	17.8	18.3	19.2	6.5	5.3
Corporate profits taxes	22.7	39.0	62.1	4.0	3.7	3.7	5.6	4.8
Social insurance contributions	47.3	74.5	115.8	8.3	7.1	7.0	4.6	4.5
Indirect business taxes	291.5	527.2	847.2	51.1	50.5	51.1	6.1	4.9
Grants-in-aid from Federal Government	107.6	213.3	315.0	18.9	20.4	19.0	7.1	4.0
Medicaid	25.6	93.3	184.2	4.5	8.9	11.1	13.8	7.0
Other grants	82.0	120.0	130.8	14.4	11.5	7.9	3.9	.9
Expenditures	475.7	951.3	1,554.7	100.0	100.0	100.0	7.2	5.0
Consumption	412.7	714.1	1,113.3	86.8	75.1	71.6	5.6	4.5
Transfer payments	111.8	309.2	538.6	23.5	32.5	34.6	10.7	5.7
Medical care	46.0	170.9	333.3	9.7	18.0	21.4	14.0	6.9
Social insurance	33.8	86.2	148.8	7.1	9.1	9.6	9.8	5.6
Other	31.9	52.1	56.5	6.7	5.5	3.6	5.0	.8
Net interest paid	–40.7	–44.9	–40.4	–8.6	–4.7	–2.6	1.0	–1.0
Subsidies less current surplus	–3.0	–13.4	–30.2	–.6	–1.4	–1.9	16.2	8.5
Less dividends received	5.1	13.7	26.7	1.1	1.4	1.7	10.3	6.9
State and local surplus	94.9	93.5	104.6	...	...	...	...	...

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

which are expected to expand 23.8 percent per year from 1996 to 2006, but also other capital goods, which are projected to grow 9.5 percent annually. Imports of services are anticipated to grow 3.9 percent per year during the 1996–2006 period, somewhat faster than they did in 1986–96.

Real exports are expected to grow at a faster rate than real imports. This implies that the trade position of the Nation will improve over the projection period, as measured by real net exports. In fact, the projection anticipates a deficit in net exports of $63.8 billion for 2006, in 1992 chain-weighted dollars. This compares with a deficit in net exports of $114.2 billion in 1996 and $163.9 billion in 1986 (both in 1992 chain-weighted dollars). In each instance, however, a large services surplus fails to offset an even larger merchandise deficit.

In sum, the international trade sector for the United States can be characterized by ever-increasing volume, revolving especially around high-technology products. Given the fast growth of exports, an improvement in the U.S. trade position in real terms can be expected over the next decade.

Government. In the recent past, the Federal budget deficit has garnered significant attention in most discussions of Federal expenditures. At times, this can distract from details, as budgetary discipline implies more than just revenue measures or spending reductions. Given certain categories of mandatory spending, budget restraint can result in a change in the composition of expenditures. In fact, over the next 10 years, the projection envisions budgetary restraint shifting both the level and makeup of Federal spending.

As noted earlier, the projection contemplates a balanced Federal budget in the year 2006. In effect, continued restraint of expenditures would more than offset a decline in the growth rate of receipts. Federal receipts are projected to grow 4.4

percent per year for the 1996–2006 period, compared with a rate of 6.4 percent from 1986 to 1996. (See table 6.) The reduced growth in receipts is seen to result, in part, from a slight reduction in effective personal income tax rates over the projection period and, in larger part, from reduced growth in the applicable tax base. Conversely, Federal expenditures are expected to increase 3.6 percent yearly from 1996 to 2006, as opposed to a 5.2-percent rate for the 1986–96 period. Decreases in the growth of nondefense spending would be a major contributor to this reduction.

The BLS projection anticipates shifts in the composition of Federal expenditures over the 1996–2006 period. Transfer payments are projected to rise to 54.9 percent of Federal expenditures by 2006. This continues a long-term trend, as transfer payments accounted for 38.8 percent of Federal expenditures in 1986 and 44.9 percent in 1996. The primary contributor underlying the growth of transfers is the combined effect of three programs: medicare, Social Security, and medicaid. These programs will make up increasingly larger proportions of Federal expenditures, despite some deceleration in the growth of each. The fastest growing component, medicare, would constitute 18.1 percent of Federal expenditures in 2006, up from its 11.6-percent share in 1996.

The projection envisions State and local governments accumulating significant surpluses over the 1996–2006 period. (See table 7.) In fact, the combined government sector—Federal and State and local—is expected to show a surplus of approximately $104 billion in 2006. Unlike expenditures in the Federal sector, real spending by State and local governments is expected to increase over the period 1996–2006. The reasons for this growth are diverse, but include such factors as expanding school-age and institutionalized populations, as well as the requirement to satisfy various safety and environmental mandates.

Real spending by State and local governments is projected

to increase 2.3 percent annually during 1996–2006. (See table 1.) This growth rate represents a decline from the 2.7-percent annual rate of growth posted for the 1986–96 period, but it still exceeds the 1.8-percent annual growth for the 1976–86 period. As a percentage of real GDP, State and local governments will maintain their position in the economy. In 1996, expenditures by State and local governments constituted approximately 11.6 percent of real GDP. This share is expected to grow slightly, to approximately 11.8 percent of GDP, by 2006.

To a lesser extent, the composition of spending by State and local governments reveals the same trend toward increased levels of transfer payments as exists for Federal spending. While consumption expenditures remain the bulk of State and local spending, consumption is projected to make up a smaller and smaller percentage of total nominal spending. Nominal consumption by State and local governments is expected to account for 71.6 percent of total nominal expenditures in 2006, down from 75.1 percent in 1996 and 86.8 percent in 1986.[9] (See table 7.) Conversely, transfer payments are anticipated to represent an increasing share of total nominal expenditures, reaching 34.6 percent of State and local nominal expenditures in 2006, up from 32.5 percent in 1996 and 23.5 percent in 1986.

In sum, as gauged by the deficit, both levels of government would be in improved positions in 2006. In fact, viewed together, the Federal Government and State and local governments would be contributing to the Nation's flow of savings. Past this point, the analogy becomes problematic. State and local governments provide substantially different services, afford different types of transfer payments, and face far different restraints on their ability to finance spending than does the Federal Government. This said, it is still the case that both the Federal Government and State and local governments would confront the issue of maintaining other programs in the face of the rising demand for transfer payments.

Income, employment, and productivity. In recent decades, direct payments to labor have accounted for an ever-diminishing portion of personal income. In 1986, wages and salaries constituted 58.0 percent of personal income. (See table 8.) By 1996, the share had dropped to 56.3 percent. The BLS projection anticipates that this trend will continue for the period from 1996 to 2006, with the percentage of personal income represented by wages and salaries decreasing to 54.9 percent of personal income.

Table 8.	Personal income, 1986, 1996, and projected to 2006							
Category	Billions of dollars			Percent distribution			Average annual rate of change	
	1986	1996	2006	1986	1996	2006	1986–96	1996–2006
Sources								
Personal income	3,647.5	6,452.8	10,339.6	100.0	100.0	100.0	5.9	4.8
Wages and salaries	2,116.6	3,630.1	5,671.6	58.0	56.3	54.9	5.5	4.6
Private	1,719.9	2,988.9	4,713.9	47.2	46.3	45.6	5.7	4.7
Government	396.6	641.1	957.6	10.9	9.9	9.3	4.9	4.1
Other labor income	216.0	436.2	768.8	5.9	6.8	7.4	7.3	5.8
Group health contributions	121.2	290.1	537.2	3.3	4.5	5.2	9.1	6.4
Other	94.8	146.1	231.6	2.6	2.3	2.2	4.4	4.7
Proprietors' income	267.8	518.1	801.8	7.3	8.0	7.8	6.8	4.5
Rental income	42.3	127.2	264.1	1.2	2.0	2.6	11.7	7.6
Personal dividend income	105.1	230.6	400.4	2.9	3.6	3.9	8.2	5.7
Personal interest income	543.3	738.0	1,046.9	14.9	11.4	10.1	3.1	3.6
Transfer payments	518.6	1,080.1	1,873.1	14.2	16.7	18.1	7.6	5.7
Less social insurance contributions	−162.1	−307.6	−487.1	−4.4	−4.8	−4.7	6.6	4.7
Uses								
Personal income	3,647.5	6,452.8	10,339.6	100.0	100.0	100.0	5.9	4.8
Tax and nontax payments	459.9	863.8	1,342.5	12.6	13.4	13.0	6.5	4.5
Personal consumption	2,892.7	5,152.0	8,439.4	79.3	79.8	81.6	5.9	5.1
Personal interest payments	90.4	146.3	261.3	2.5	2.3	2.5	4.9	6.0
Transfers to foreigners	8.1	16.2	21.4	.2	.3	.2	7.2	2.8
Personal savings	196.5	274.4	275.0	5.4	4.3	2.7	3.4	.0
Addenda								
Disposable income	3,187.6	5,588.9	8,997.1	...	...	...	5.8	4.9
Disposable income, in chained (1992) dollars	4,087.0	5,088.4	6,154.3	...	...	...	2.2	1.9
Per capita disposable income	13,245.6	21,046.1	31,165.2	...	...	...	4.7	4.0
Per capita disposable income, in chained (1992) dollars	16,983.0	19,161.1	21,317.9	...	...	...	1.2	1.1

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

Table 9. Labor supply and factors affecting productivity, 1986, 1996, and projected to 2006

Category	Levels			Average annual rate of change	
	1986	1996	2006	1986–96	1996–2006
Labor supply (in millions, unless otherwise noted):					
Total population	240.7	265.6	288.7	1.0	.8
Population aged 16 and older	185.3	204.1	225.5	1.0	1.0
Civilian labor force	117.8	133.9	148.8	1.3	1.1
Civilian household employment	109.6	126.7	140.9	1.5	1.1
Nonfarm establishment employment	99.3	119.5	137.3	1.9	1.4
Unemployment rate (percent)	7.0	5.4	5.4	–2.6	–.1
Wage and salary employment cost index (index)	.9	1.3	1.7	3.4	3.1
Productivity:					
Nonfarm labor productivity (index)	.9	1.0	1.1	.7	1.2
Gross domestic product per employee, in chained (1992) dollars	50,090.1	54,543.8	60,610.7	.9	1.1

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

Business-related income has also drifted downwards as a percentage of personal income in recent decades. Together, the components of business-related income—proprietors' income, personal dividends, interest income, and rental income—made up 26.3 percent of personal income in 1986, but only 25.0 percent in 1996. Business-related income is projected to fall to 24.3 percent of personal income in 2006.

As these traditional sources of income have declined in importance, transfer payments have become an increasingly substantial source of personal income. In 1986, transfer payments, net of personal Social Security contributions, composed 9.8 percent of personal income, a proportion that rose to 12.0 percent in 1996. According to the BLS economic projection, net transfer payments will amount to 13.4 percent of personal income in 2006.

The recipients of personal income are projected to employ it in much the same manner as in recent decades. In other words, they will spend it. The projection anticipates that personal consumption will rise to 81.6 percent of personal income in 2006, up from 79.8 percent in 1996 and 79.3 percent in 1986. As in recent years, savings would bear much of the brunt of increased consumption.

On a per capita basis, nominal disposable income is expected to rise 4.0 percent annually from 1996 to 2006 and reach approximately $31,000 by 2006. This compares with a 1996 figure of approximately $21,000. In real terms, per capita disposable income will grow 1.1 percent annually over the projection period. This projected growth rate is consistent with an expected rise in productivity. Accordingly, real standards of living would rise modestly over the projection period, at least as measured by disposable income.

As previously noted, the economic projection smoothes the business cycle, but does not impose a uniform growth rate over the projection period. The rate of unemployment fluctuates during the period, although the projected 5.4-percent unemployment rate for 2006 is not atypical. Overall, civilian household employment increases 1.1 percent per year from 1996 to 2006, as measured by the Current Population Survey. (See table 9.) Accordingly, the projection envisions an average gain in employment each year of about 1.4 million persons during 1996–2006, compared with an average gain of 1.7 million persons per year over the period 1986–96.

The labor force is projected to grow more slowly over the next 10 years. The civilian labor force grew 2.1 percent per year from 1976 to 1986 and 1.3 percent annually from 1986 to 1996. However, the population makeup is expected to shift toward age groups with lower labor force participation rates. Consequently, the labor force is anticipated to grow only 1.1 percent per year from 1996 to 2006.

As previously mentioned, the growth rate of real GDP is expected to decrease over the projection period. (See table 1.) The declining growth of the labor force explains much of this deceleration: the growth of the labor force accounts for 1.1 percent of the 2.1-percent average annual growth of the economy anticipated for 1996–2006. This leaves approximately 1.0 percent of the projected growth rate to be explained by other factors, such as changes in the quality of the labor force, changes in the quality and quantity of available capital, changes in utilization rates of labor and capital, and improvements in establishments' underlying technical efficiency, all of which can be roughly lumped together under the rubric of "productivity."

The prospects for productivity generally appear promising. The projection anticipates that real GDP per employee, a rough measure of productivity, will grow 1.1 percent per year over the 1996–2006 period. This represents an increase of 0.2 percentage point over the 0.9-percent average annual growth rate that prevailed from 1986 to 1996. More sophisticated measures of productivity, such as nonfarm labor productivity, show similar increases.

To an extent, then, the economy is expected to accommodate slowing growth of the labor force by becoming more productive. But what underlies the growth in productivity? A substantial factor must be the continued growth of capital stocks resulting from projected rates of investment, especially in the area of producers' durable equipment. In sum, the projection contemplates that a portion of the effect of a decelerating labor force growth rate will be offset by increased capital stocks.

Sensitivity analysis

Reviewing an economic projection requires circumspection. By lending an appearance of concreteness, the numbers can overinform. But, in actuality, more than a modicum of uncertainty surrounds the assumptions that underlie a projection. Judgment must be exercised concerning the anticipated levels of numerous economic variables, such as certain components of Federal expenditures, tax rates, transfer payments, population levels, oil prices, and other variables that, in one way or another, influence the outcome of the projection.

Needless to say, reasonable minds may differ on the proper levels of these variables. Such divergent viewpoints would naturally lead to different paths for the economy over the projection period. The crucial question is, of course, *"How different?"* The following discussion attempts to answer that question by examining the sensitivity of various projected variables to changes in underlying assumptions.

In general, two types of assumptions must be made as part of the projection process. First, values must be assigned to the exogenous variables—that is, those variables determined outside of the model. Once assigned, the value of an exogenous variable remains fixed throughout the projection. Second, the level or growth paths of certain so-called behavioral (or endogenous) variables must be examined because of the role they play when one assesses a particular projection.

In a long-term projection, the economy presumably should not be far from equilibrium. Accordingly, in assessing a particular projection, an important question is whether the projection portrays an economy at or near equilibrium. Because prices play a central role in equilibrating a market economy,

Table 10.	Percent change in projected values for 2006 resulting from a 10-percent increase in selected exogenous variables (except 1 percent where noted)						
	Percent changes in projected 2006 levels						
Variable	GDP, chained (1992) dollars	Disposable income, chained (1992) dollars	Employment (household survey)	Unemployment rate	Housing starts	Yield on 10-year U.S. Treasury notes	Exchange rate (index)
Energy related (changed 10 percent):							
Domestic share of U.S. crude-oil acquisitions .	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Electric utility fuel use, coal share	−.1	−.1	.0	−.1	.1	−.4	.1
Fuel efficiency, all autos	−.1	.0	.0	−.4	−.1	1.0	−.2
Tax related (changed 10 percent):							
Federal corporate tax rate	−.2	−.4	.0	.0	.7	−3.7	.5
Effective social insurance tax rate	.1	−1.2	.0	−1.5	2.8	−13.6	2.0
Employer share of Social Security							
contributions	−.2	.3	−.1	.9	−.4	5.2	−.9
Federal gasoline tax	.0	.0	.0	−.1	.1	−.4	.1
State and local gasoline tax	.0	.0	.0	−.1	.0	.1	.1
Effective State and local corporate tax rates	.0	.0	.0	.1	.0	.0	.1
Federal expenditures (changed 10 percent):							
Defense compensation	−.2	.1	−.1	.8	−1.1	5.8	−1.0
Other defense consumption expenditures	−.1	.0	−.1	.9	−.6	3.3	−.6
Defense gross-investment expenditures	.0	.0	.0	.1	−.2	.6	−.2
Nondefense compensation	−.1	.1	.0	.6	−.7	3.3	−.5
Other nondefense consumption expenditures	−.1	.0	.0	.5	−.4	2.1	−.4
Nondefense gross-investment expenditures ...	.0	.0	.0	.2	−.1	.7	−.1
Federal housing subsidies	.0	.0	.0	.1	−.1	.5	−.1
Grants and transfer payments (changed 10 percent):							
Federal transfer payments, medicare	−.1	.7	.0	.8	−1.6	9.1	−1.2
Federal grants-in-aid, medicaid	−.2	.3	−.1	1.2	−1.3	7.4	−1.4
Federal grants-in-aid, other than medicaid	−.1	.1	.0	.5	−.6	3.1	−.4
Other (changed 1 percent):							
Population, including overseas							
Armed Forces	.1	.1	.1	.3	.1	.0	.0
Population aged 16 and older	.8	.4	1.1	.2	2.5	−8.1	2.1
Population aged 65 and older	−.2	.0	−.2	.3	−.8	3.3	−.7
Nonborrowed reserves							
at Federal Reserve banks	.1	.0	.0	−.1	.0	−1.1	−.7

this question reduces to whether the path of projected prices appears reasonable in the aggregate.

Now, what constitutes "reasonable" can be debated. The sensitivity analysis of behavioral variables thus considers how the projection would change if such overall price measures as the GDP price index, the Employment Cost Index, certain interest rates, and the exchange rate were increased. The sensitivity analysis also examines how the projection responds to changes in other behavioral variables that either indicate labor market conditions, such as the unemployment rate and the labor force, or are otherwise of interest.

The exogenous variables are the most amenable to sensitivity analysis, so they receive the majority of attention. By contrast, certain limitations arise from manipulating behavioral variables. The difficulty concerns their relation to the model's structure. Behavioral variables have values determined by the model's equations, rather than being imposed from outside the model; hence, they will be subject to feedback ef-

fects.[10] A decision can be made to exclude the variable from the model's solution; but once excluded, a behavioral variable acts like an exogenous variable, and generally, important feedback effects are lost.

Sensitivity of exogenous variables. The macroeconomic model used in the BLS economic projection employs nearly 300 exogenous variables. A large number of these are dummy variables, discrepancy terms, or depreciation rates, which were excluded from the sensitivity analysis, leaving 194 exogenous variables as the subject of the analysis.

The sensitivity analysis consisted of an experiment. Suppose that, instead of the value assigned to an exogenous variable in the base economic projection for the period 1997 to 2006, a value 10 percent larger was assigned each year during that period. By what percentage would certain important target variables change? The sensitivity analysis involved carrying out this experiment 194 times; in each case, one exogenous vari-

Table 10. Continued—Percent change in projected values for 2006 resulting from a 10-percent increase in selected exogenous variables (except 1 percent where noted)

Variable	Personal consumption expenditures, chained (1992) dollars			Investment expenditures, chained (1992) dollars			International chained (1992) dollars		Government chained (1992) dollars	
				Nonresidential		Residential				State and Local
	Durables	Nondurables	Services	Equipment	Structures		Exports	Imports	Federal	
Energy related (changed 10 percent):										
Domestic share of U.S. crude-oil acquisitions .	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Electric utility fuel use, coal share	−.1	−.1	−.1	−.2	.0	.0	.0	.3	.0	−.1
Fuel efficiency, all autos	−.1	−.8	.0	.1	−.1	−.1	−.1	−.5	.0	.0
Tax related (changed 10 percent):										
Federal corporate tax rate	−.1	−.3	−.2	−.8	−1.3	.2	−.1	−.4	.0	−.1
Effective social insurance tax rate	.1	−.2	−.3	1.0	3.4	2.5	.1	.0	.0	−.2
Employer share of Social Security contributions	−.1	.0	−.1	−.6	−1.1	−.7	−.2	.0	.0	−.3
Federal gasoline tax	.0	.0	.0	.0	.1	.1	.0	.0	.0	.0
State and local gasoline tax	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Effective State and local corporate tax rates ...	.0	.0	.0	−.2	−.3	−.1	.0	−.1	.0	.0
Federal expenditures (changed 10 percent):										
Defense compensation	−.6	−.3	−.2	−.7	−1.4	−1.4	−.2	−.3	2.7	−.2
Other defense consumption expenditures ...	−.4	−.1	−.1	−.3	−.7	−.8	−.1	−.1	1.9	−.1
Defense gross-investment expenditures	−.1	.0	.0	.2	.5	−.2	.0	.1	.0	.0
Nondefense compensation	−.3	−.1	−.1	−.4	−.9	−.8	−.1	−.1	1.6	−.1
Other nondefense consumption expenditures	−.2	−.1	−.1	−.2	−.5	−.5	.0	−.1	1.2	−.1
Nondefense gross-investment expenditures	−.1	.0	.0	−.1	−.2	−.2	.0	.0	.6	.0
Federal housing subsidies	.0	.0	.0	−.1	−.1	−.1	.0	.0	.0	.0
Grants and transfer payments (changed 10 percent):										
Federal transfer payments, medicare	−.7	−.1	.3	−.6	−1.7	−1.5	−.2	−.1	.0	−.1
Federal grants-in-aid, medicaid	−.9	−.3	.3	−.5	−1.4	−1.6	−.1	−.2	.0	−.1
Federal grants-in-aid, other than medicaid	−.2	−.1	−.1	−.3	−.8	−.7	−.1	−.1	.0	.5
Other (changed 1 percent):										
Population, including overseas Armed Forces	.1	.1	.1	.0	.0	.1	.0	.1	.0	.0
Population aged 16 and older	1.8	.8	.7	1.0	2.0	3.0	.2	.7	.0	.6
Population aged 65 and older	−.4	−.2	−.1	−.3	−.7	−.9	−.1	−.1	.0	−.1
Nonborrowed reserves at Federal Reserve banks	.1	.0	.1	.4	1.1	.3	.2	.2	.0	.1

SOURCE: See table 2.

Table 11.	Selected behavioral variables, 1986, 1996, and projected to 2006					
Behavioral variable		Levels			Average annual rate of change	
		1986	1996	2006	1986–96	1996–2006
GDP price index		0.8	1.1	1.4	3.1	2.6
Employment Cost Index, wage and salary		.9	1.3	1.7	3.4	3.1
Nonfarm labor productivity (index)		.9	1.0	1.1	.7	1.2
Unemployment rate		7.0	5.4	5.4	–2.6	–.1
Federal funds rate		6.8	5.3	4.3	–2.5	–2.2
Yield on 10-year U.S. Treasury notes (percent)		7.7	6.4	5.5	–1.8	–1.6
Exchange rate (trade-weighted index)		1.2	1.0	.9	–2.2	–1.0
Industrial R&D expenditures, in chained (1992) dollars		75.8	95.3	136.2	2.3	3.6
Effective Federal personal income tax rate (percent)		11.6	12.8	12.3	1.0	–.4
Price of imported crude oil (dollars per barrel)		14.3	20.5	27.0	3.6	2.8
Labor force (in millions)		117.8	133.9	148.8	1.3	1.1

SOURCE: Historical data, Bureau of Economic Analysis, Bureau of the Census, Federal Reserve Board, Bureau of Labor Statistics, Energy Information Administration, National Science Foundation; projected data, Bureau of Labor Statistics.

able was increased and a new solution to the model generated. In certain cases (for example, total population), a 10-percent change appeared implausible, so a 1-percent change was employed.

Tables 2 and 10 show the values of those variables which generated the most significant results or were otherwise interesting. The values listed in table 10 are the percent changes in the projected level of selected target variables, such as real GDP or the unemployment rate, given the percent increases shown in the exogenous variables. For example, a 10-percent increase each year in defense compensation (an exogenous variable) resulted in a 0.2-percent decrease in real GDP. Now, from table 1, the base projection of real GDP for 2006 is $8,539.1 billion (in 1992 chain-weighted dollars). So a reduction in GDP of 0.2 percent would imply a level of real GDP of approximately $8,522 billion.[11] Similarly, the same 10-percent increase in defense compensation would cause a 0.8-percent increase in the unemployment rate, raising the rate for 2006 from 5.4 percent to 5.44 percent. (See table 9.)[12]

The higher level of defense compensation apparently results in somewhat less real GDP. The reason for this is that, through its effects on the Federal deficit, the increase in defense compensation results in an increase in interest rates. The increased interest rates then drive down real GDP by their effect on durable goods and investment.

The sensitivity analysis emphasizes the importance of demographic factors with respect to real GDP. In the model, the population older than 16 has the strongest influence upon real GDP: a 1.0-percent increase in this population results in a 0.8-percent rise in real GDP. Along with certain other variables, the population older than 16 is used to determine the labor force in the macroeconomic model employed in the BLS economic projection. In turn, the labor force constitutes the most important element in determining the economy's ability to supply output.

Besides affecting the supply of output, a 1.0-percent increase in the population older than 16 has a significant impact upon various components of aggregate demand. For example, an increase in this population would imply a larger home-buy-

ing population, the result of which would be more housing starts (a 2.5-percent increase), along with a greater demand for durable goods (a 1.8-percent rise) and residential structures (a 3.0-percent hike).

Even given these increases in demand, however, the 1.0-percent increase in the population older than 16 does not force up interest rates: according to the model, the yield on 10-year U.S. Treasury notes would *decline* by 8.1 percent. This result just reemphasizes the central role played by supply factors in long-term projections.

Exogenous variables unrelated to population tend to have far less influence upon GDP. In general, increases in taxes marginally reduce real GDP through lowered demand. The major exception concerns an increase in the effective social insurance tax rate;[13] the model projects that such a tax increase would sharply lower interest rates. Enough investment spending would thereby result to overcome the reduction in personal consumption expenditures.

In sum, increases in either exogenous Federal expenditures or transfer payments have a relatively minor effect on real GDP. Although increases in both categories would lead to higher disposable income, a countervailing effect on interest rates would occur. On net, the effect on interest rates would prove stronger by reducing the consumption of durable goods and investment in residential structures.

Despite some notable effects, the economic projection appears generally robust to changes in exogenous variables. This is especially the case with regard to employment; in fact, only an increase in the population older than 16 would significantly boost employment.

Sensitivity of selected behavioral variables. As an experiment, certain behavioral variables were increased by either 10 percent or 1 percent over the period 1997–2006. (See table 11 for a list of these variables.) In the case of the GDP price index, the Employment Cost Index, and nonfarm labor productivity, the analysis considered an increase in growth rates. To accomplish this, a multiplicative adjustment was made to the applicable underlying

index for the period 1997 to 2006, so as to increase the 1996–2006 average annual rate of growth by 10 percent.

The analysis shows that higher assumptions about inflation and employment costs are consistent with an economy with lower GDP; a 10-percent increase in the growth rate of either the GDP price index or the Employment Cost Index would yield, respectively, a 0.6-percent and 0.9-percent decrease in GDP. (See table 12.) In part, raising these assumptions results in higher interest rates and, therefore, less demand for durable goods and less investment spending. An additional factor would be the dampening effect of higher input costs on production. Conversely, higher assumptions about the labor force have a positive influence on GDP. (A 0.8-percent increase in GDP results from a 1-percent increase in the labor force.) By adding to the economy's overall capacity to supply goods and services, increasing the labor force does not result in higher interest rates, despite adding to GDP.

The analysis also reveals that consumption spending on durable goods responds more to changes in short-term interest rates, such as the Federal funds rate, while investment spending is more responsive to changes in longer term rates, such as the yield on 10-year Treasury notes. From the standpoint of employment, the projection remains robust to differing assumptions. Mirroring the conclusion reached in the analysis of exogenous variables, changes in the labor force have the most significant effect on employment. □

Table 12.	Percent change in projected values for 2006 resulting from a 10-percent increase in selected behavioral variables (except 1 percent where noted)						
	Percent changes in projected 2006 levels						
Variable	GDP, chained (1992) dollars	Disposable Income, chained (1992) dollars	Employment (household survey)	Unemployment rate	Housing starts	Yield on 10-year U.S. Treasury notes	Exchange rate (index)
Growth rate of GDP price index	–0.6	–0.2	–0.3	3.0	–0.2	4.2	–0.6
Growth rate, Employment Cost Index, wage and salary	–.9	–.2	–.4	4.0	–.7	11.8	–2.3
Growth rate of nonfarm labor productivity	.2	.2	.1	.1	–.5	–1.8	.5
Civilian unemployment rate	–.5	–.3	–.5	10.0	–1.7	4.4	–1.0
Federal funds rate	–.4	–.1	–.1	1.4	–.6	5.1	2.2
Yield on 10-year U.S. Treasury notes	–.7	–.5	–.2	1.8	–.6	10.0	3.8
Exchange rate (trade-weighted index)	.6	.1	.2	–3.0	3.5	–16.7	10.0
Industrial R&D expenditures, in chained (1992) dollars	.3	.2	.0	.0	.6	–2.1	.5
Effective Federal personal income tax rate	.4	–1.5	.2	–2.6	3.6	–20.1	3.2
Price of imported crude oil	–.1	–.2	.0	.0	.4	–1.2	1.0
Labor force (changed 1 percent)	.8	.4	1.0	.5	2.3	-6.9	1.7

Variable	Personal consumption expenditures, chained (1992) dollars			Investment expenditures, chained (1992) dollars			International chained (1992) dollars		Government chained (1992) dollars	
				Nonresidential		Residential				
	Durables	Nondurables	Services	Equipment	Structures		Exports	Imports	Federal	State and Local
Growth rate of GDP price index	–.6	–.2	–.3	–.7	–1.1	–1.2	–.4	.0	.0	–.4
Growth rate of Employment Cost Index, wage and salary	–1.2	–.5	–.7	–1.7	–2.1	–2.1	–.7	–.2	–.1	–.7
Growth rate of nonfarm labor productivity	.2	.1	.2	.3	.1	.1	.2	.0	.0	.1
Civilian unemployment rate	–1.2	–.5	–.4	–.4	–.8	–1.5	–.2	–.4	.0	–.4
Federal funds rate	–.6	–.2	–.2	–1.4	–3.3	–1.3	–.6	–.6	.0	–.3
Yield on 10-year U.S. Treasury notes	.3	–.3	–.4	–2.2	–5.6	–1.9	–1.0	–.6	.0	–.4
Exchange rate (trade-weighted index)	2.7	1.0	.9	2.1	3.7	4.7	–2.1	2.5	.1	.7
Industrial R&D expenditures, in chained (1992) dollars......	.6	.3	.3	.5	.9	1.3	.1	.3	.0	.2
Effective Federal personal income tax rate	.4	–.2	–.1	1.8	5.0	3.6	.3	.1	.0	.2
Price of imported crude oil	.2	–.1	–.1	.0	.6	.3	–.5	–.4	.0	–.1
Labor force (changed 1 percent)	1.7	.8	.7	.8	1.6	2.6	.2	.7	.0	.5

SOURCE: See table 11.

Footnotes

[1] Real GDP and its components are stated in 1992 chain-weighted dollars. Chain weighting replaces with an averaging technique the past practice of computing real GDP and its components by reference to fixed base-year prices. The averaging technique employs price weights from more than one year. As a result, for a particular year, the chain-weighted components of real GDP generally will not add up to the aggregate chain-weighted real GDP, and there will be a residual. For more details, see "Preview of the Comprehensive Revision of the National Income Accounts: BEA's New Featured Measures of Output and Prices," *Survey of Current Business*, July 1995, pp. 33–38.

[2] Data for 1996 are preliminary.

[3] The National Income and Product Accounts now recognize government expenditures on equipment and structures as investment. Accordingly, government purchases are now divided into consumption expenditures and gross investment. This treats government purchases of fixed assets in a manner more symmetric to the treatment of such assets acquired by private business firms. For more details, see "Preview of the Comprehensive Revision of the National Income Accounts: Recognition of Government Investment and Incorporation of a New Methodology for Calculating Depreciation," *Survey of Current Business*, September 1995, pp. 33–41.

[4] The economic projection was prepared using the Standard and Poor's DRI *U.S. Quarterly Model (US96B), TREND25YR0297 Forecast* (Lexington, MA, February 1997).

[5] The Congress and White House agreed to a budget plan while the BLS projections were being prepared. However, long-term detailed spending and revenue projections embodied in the budget plan were not yet available. Readers should consult this article's sensitivity analysis for indications as to how final spending or tax levels would influence the economic projection.

[6] See Howard N Fullerton, Jr., "Labor force projections to 2006," this issue, pages 23–38.

[7] Since the institutionalized population is neither employed nor seeking employment, the Bureau's labor force projections do not include this portion of the population. Nonetheless, the institutionalized population demands goods and services and so must be considered in the macroeconomic model. In addition, the Armed Forces demand services and so must be included. Accordingly, population figures noted in this article and in Fullerton's will not be directly comparable.

[8] The macroeconomic model employed by the Bureau projects real consumer spending on computers and then derives nominal spending by multiplying the real value by a chain-type price index. A similar procedure applies to most other components of nominal GDP.

[9] Note that, in summing the components of expenditures by State and local government, one construes dividends received as a reduction.

[10] For example, suppose a behavioral variable such as an interest rate is lowered by 10 percent. This would stimulate demand, which in turn would raise the interest rate. So despite the initial change, the interest rate would fall by less than 10 percent. Because the economy is a structure with numerous interrelated components, feedback effects are generally considered important. Accordingly, in the base economic projection, no behavioral variable was excluded from being a part of the model's final solution.

[11] $8{,}539 - 0.002\,(8{,}539) = 8{,}539 - 17.1 \approx 8{,}522$.

[12] $5.4 + 0.008\,(5.4) = 5.4 + 0.0432 \approx 5.44$.

[13] Essentially, the ratio of taxes collected to wage and salary disbursements.