October 1999

National Economic Trends

THE FEDERAL RESERVE BANK of ST. LOUIS

Forecasting CPI Inflation

Consumer price indexes that exclude the volatile food and energy sectors are commonly reported in the financial press as core inflation. Food and energy sectors are particularly susceptible to large supply shocks that sometimes cause the overall price index to reflect the transitory effects of supply shocks, rather than the underlying monetary inflation rate. Of course, supply shocks can affect other sectors as well. Bryan and Cecchetti (1994) have generalized the process of removing large—possibly transitory—price shocks by calculating the core inflation rate as the median CPI inflation rate.[1] As one might expect, the volatile food and energy sectors are rarely found to be the median, while the large and relatively stable housing component often is.

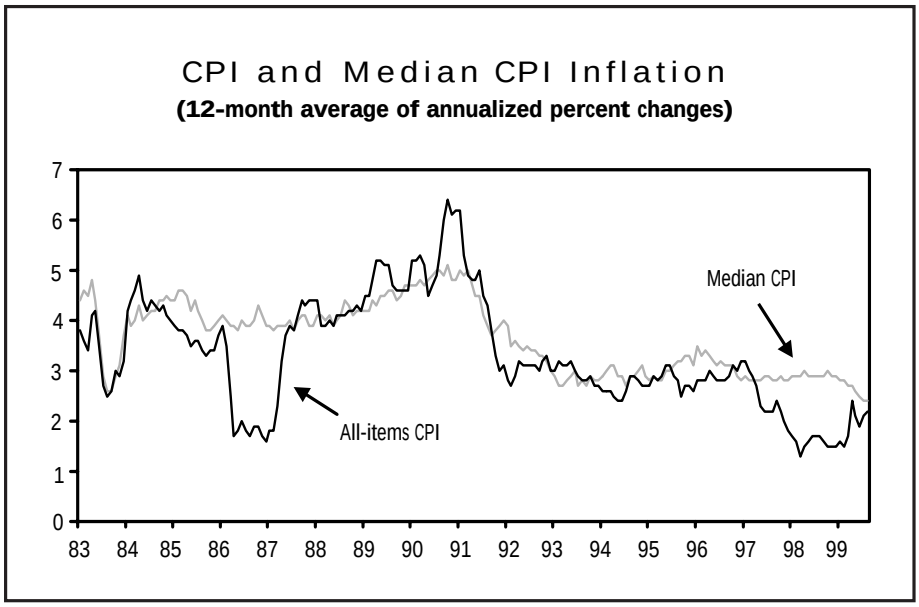
Bryan and Cecchetti used statistical models to show that the median CPI has been a relatively good predictor of future CPI inflation, especially in periods when the trend rate of inflation was changing slowly, if at all. Forecasters should be wary of median CPI as a predictor, however, in periods when monetary policy is likely to bring about a change in the trend rate of inflation. To demonstrate this, consider median CPI and the subsequent trend behavior of inflation in two episodes, 1986 and 1997-98.

In 1986, oil prices fell sharply, and the all-items CPI increased at an annual rate of only 1.2 percent. During this period, the Federal Reserve and other government officials frequently reminded people that this low inflation was a temporary effect of the oil price decline. In particular, Federal Reserve policymakers did not suggest that monetary policy actions would sustain the lower rate of inflation. The accompanying chart shows that median CPI was a good predictor of future inflation in this episode.

In 1997 and 1998, median CPI also exceeded the all-items CPI inflation. The all-items CPI inflation rate fell to around 1.5 percent each year, while the median CPI inflation rate hovered at 3 percent. Once again, falling oil prices contributed to the decline in the all-items CPI inflation. This time, however, monetary policymakers indicated their determination to bring about a reduction in the trend rate of inflation, as seen in their statements in favor of price stability and their own forecasts of 2 to 2.25 percent inflation. Consequently, the initial 3 percent median CPI inflation rate proved to be an overstatement of the subsequent inflation rate of the all-items CPI, as shown in the chart. The lesson is that forecasters need to pay attention to the intentions and actions of policymakers, as well as to measures of the prevailing trend rate of inflation.

—William T. Gavin

[1] Bryan, Michael F., and Stephen G. Cecchetti. "Measuring Core Inflation," in *Monetary Policy*, Mankiw, Gregory, ed. University of Chicago Press (1994), pp. 195-215.



Views expressed do not necessarily reflect official positions of the Federal Reserve System

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Conventions used in this publication:

1. Shaded areas indicate recessions, as determined by the National Bureau of Economic Research.

2. *Percent change* refers to simple percent changes. *Percent change from year ago* refers to the percent change from the same month or quarter in the previous year. The *percent change at annual rate* shows what the growth rate would be over an entire year if the same simple percent change continued for four quarters or twelve months. The percent change at annual rate of X between the previous quarter $t-1$ and the current quarter t is:

$$100 \times \left[\left(\frac{X_t}{X_{t-1}} \right)^4 - 1 \right]$$

   For monthly data replace 4 with 12.

3. All data with significant seasonal patterns are seasonally adjusted, unless labeled NSA.

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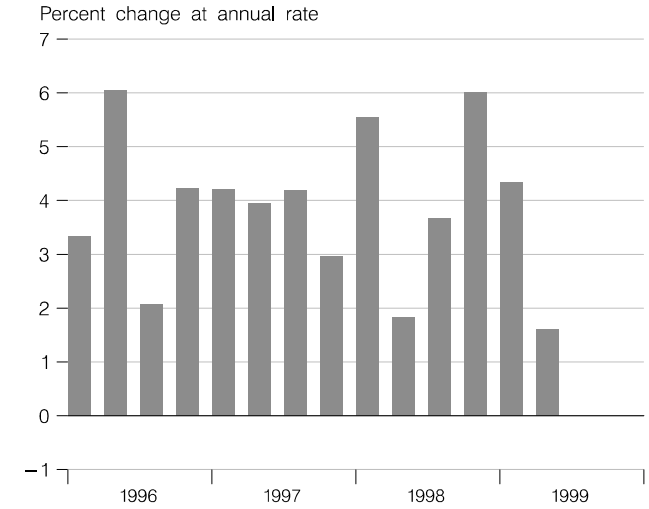
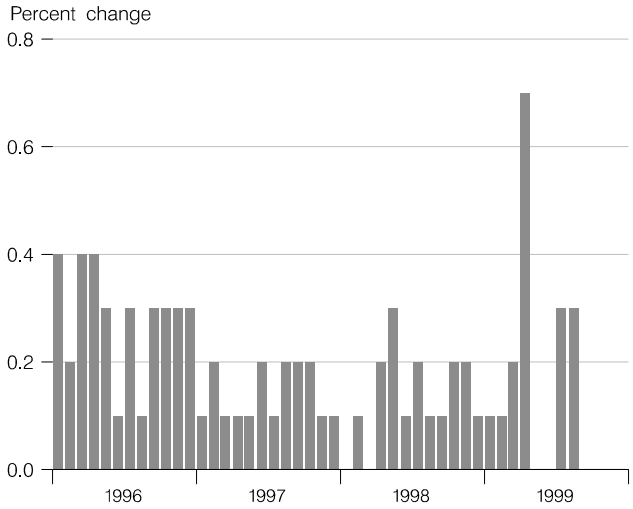
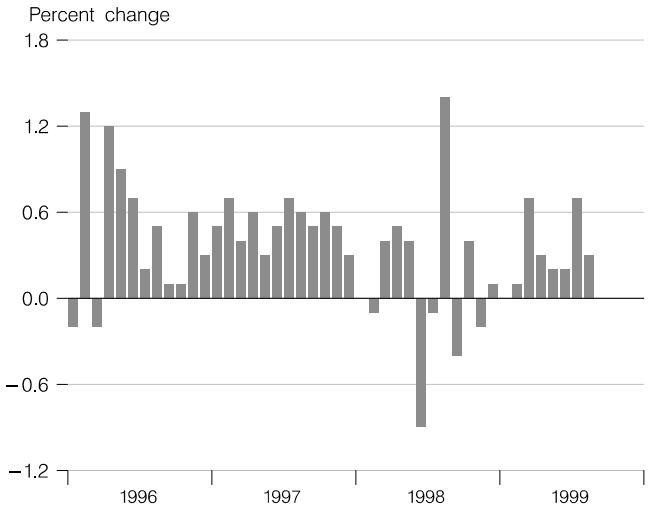
Real GDP Growth



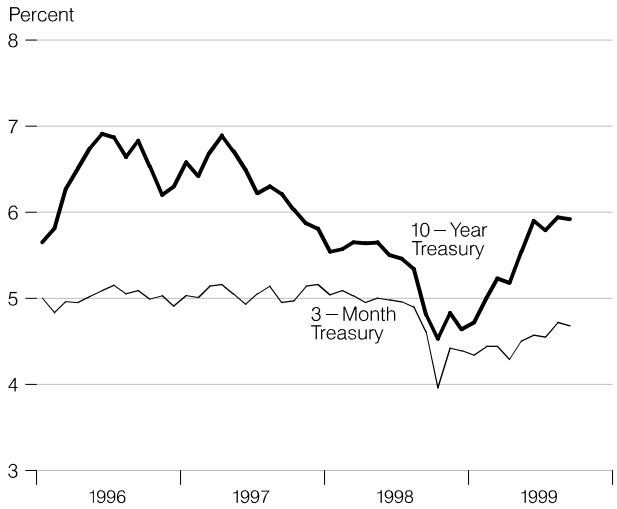
Consumer Price Index



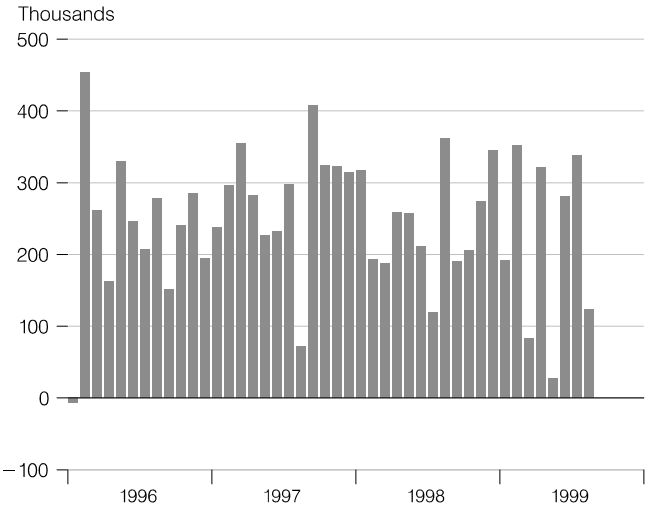
Industrial Production



Interest Rates

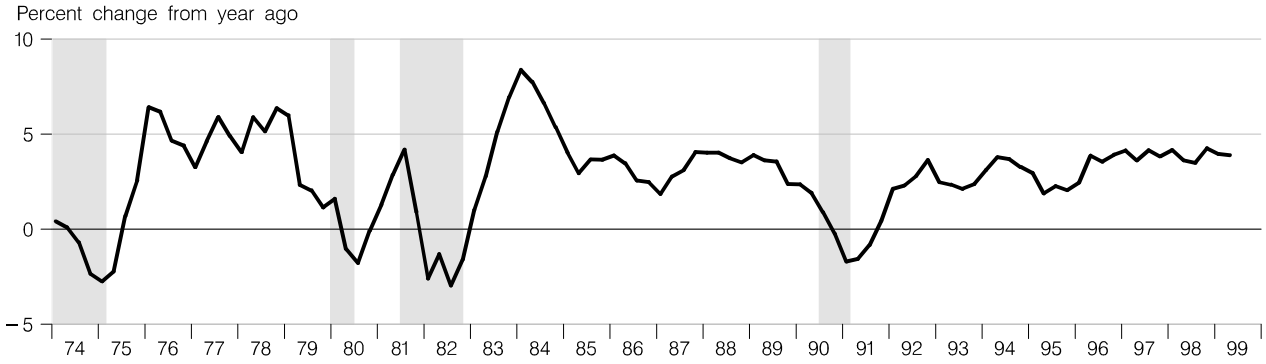


Change in Nonfarm Payrolls

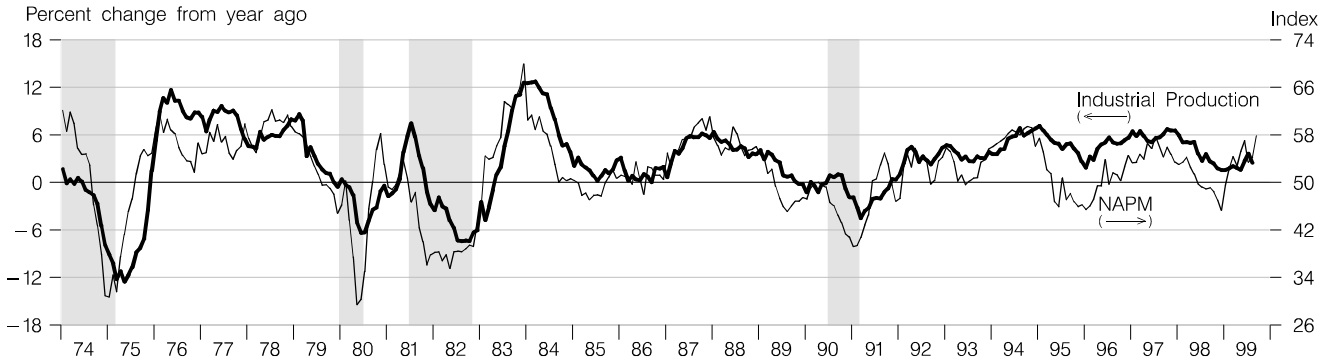


Unemployment Rate

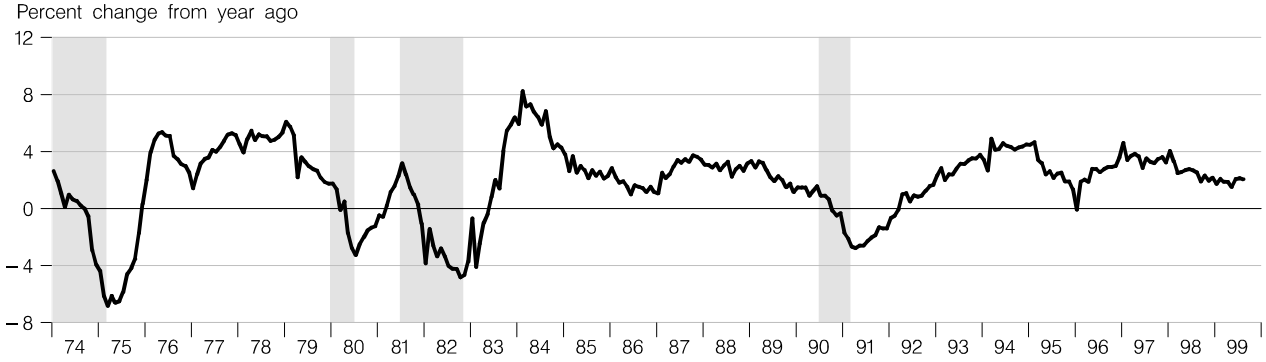
Real Gross Domestic Product



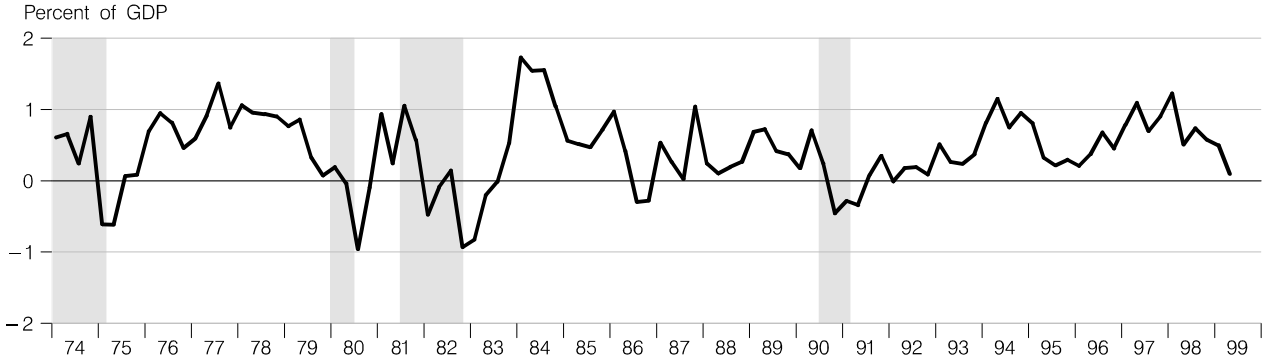
Industrial Production and Purchasing Managers' (NAPM) Indexes



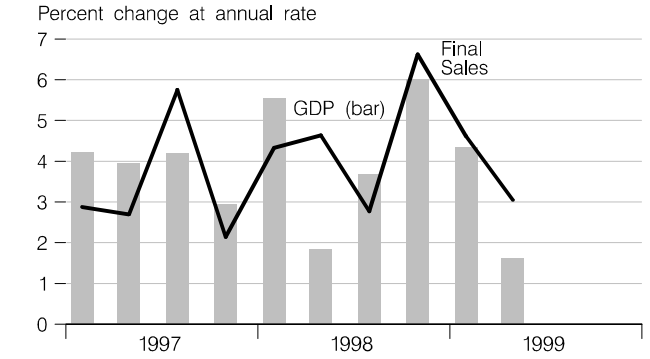
Aggregate Private Nonfarm Hours



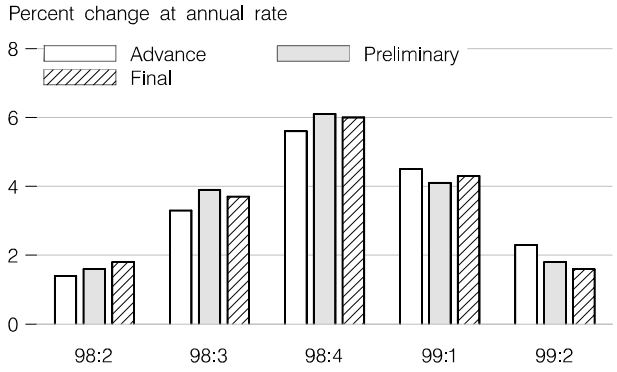
Real Change in Business Inventories



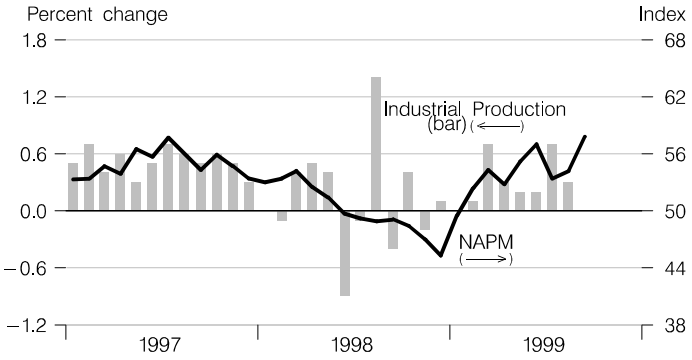
Real Final Sales and GDP



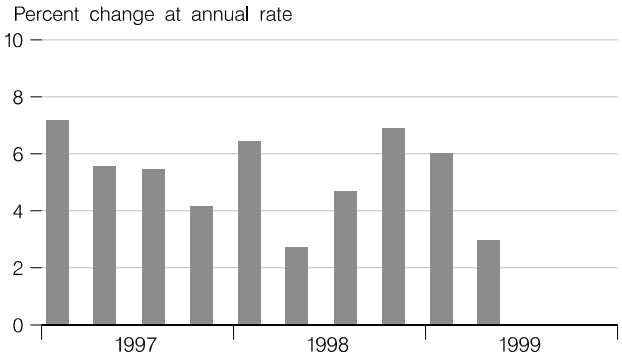
Real GDP Revisions



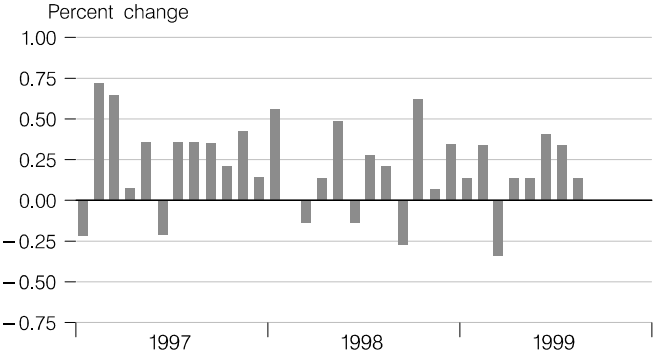
Industrial Production and NAPM Index



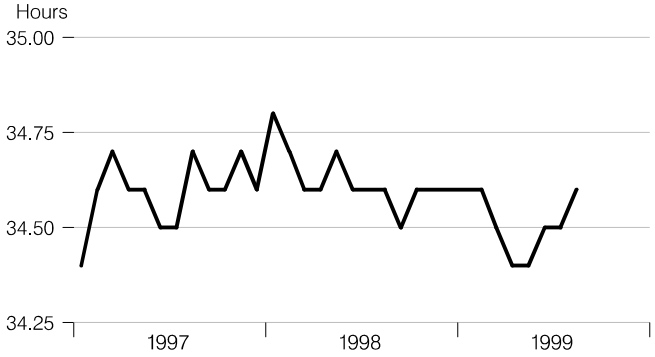
Nominal Gross Domestic Product



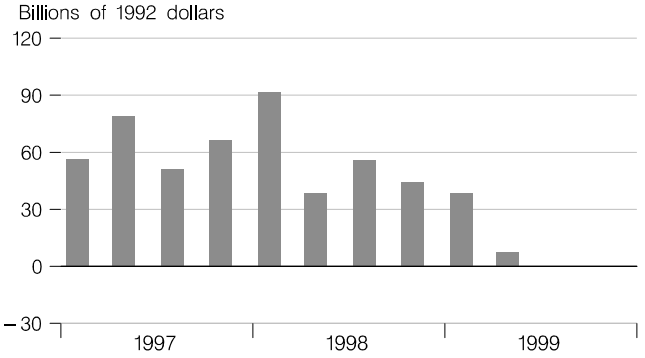
Aggregate Private Nonfarm Hours



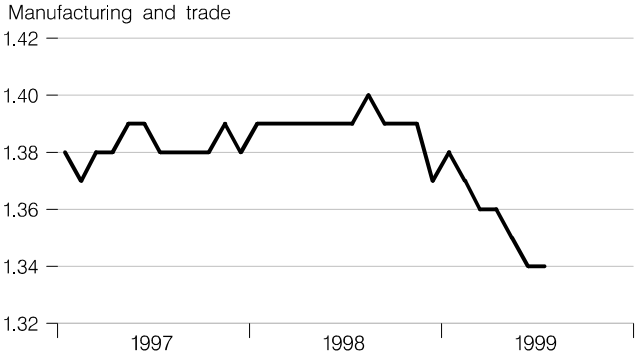
Average Weekly Private Nonfarm Hours



Real Change in Business Inventories

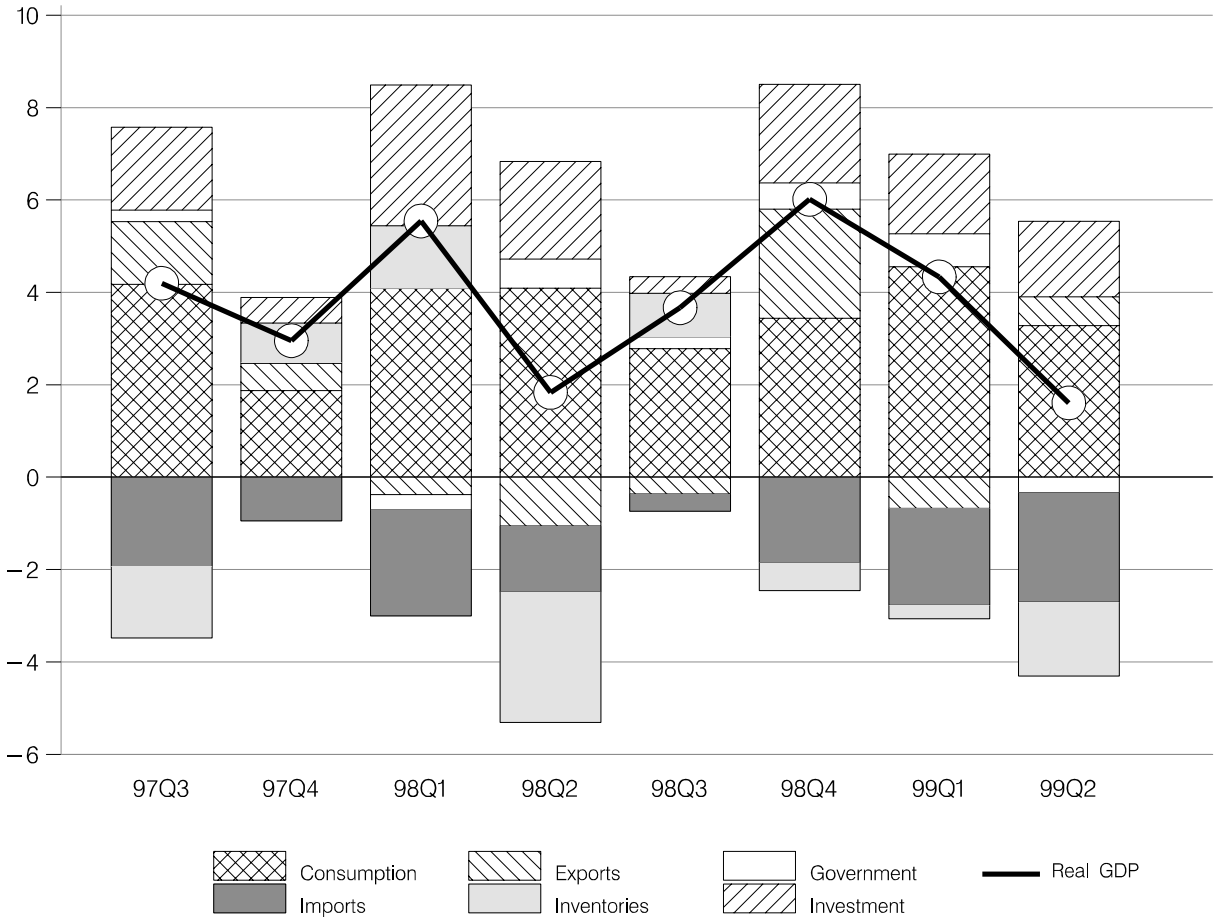


Inventory-Sales Ratio



Contribution of Components to Real GDP Growth

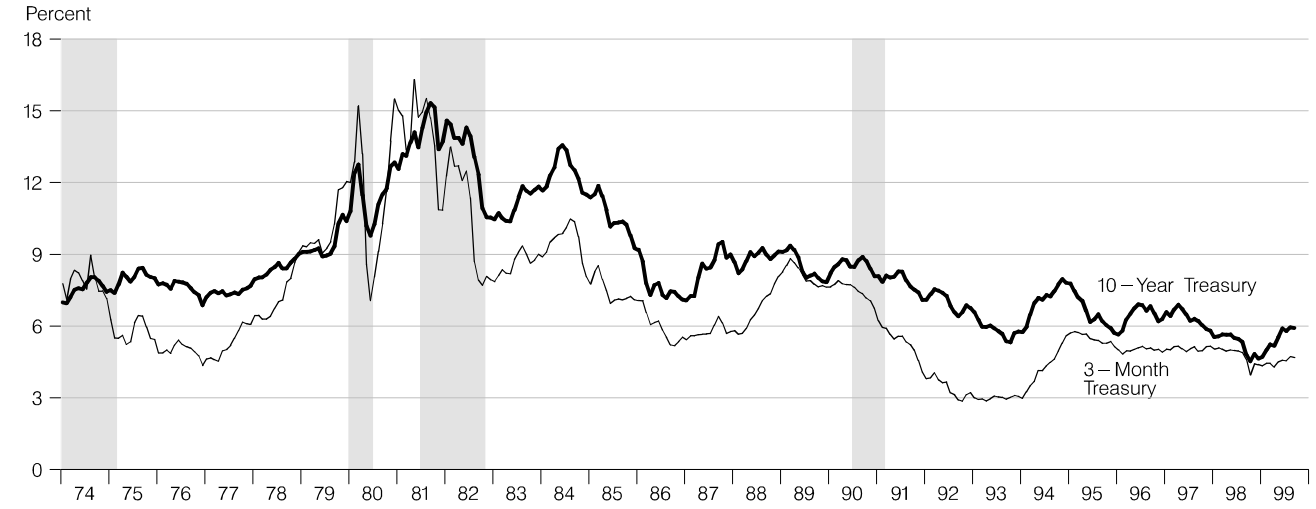
Percent change at annual rate



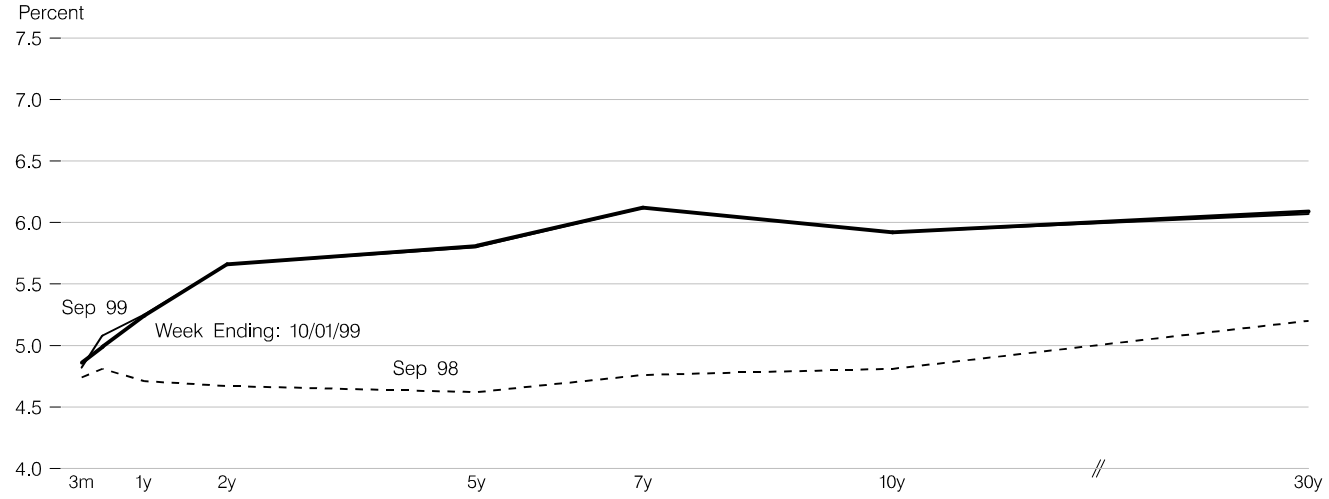
Contributions to Real GDP Growth Rate

	1997		1998				1999	
	3rd	4th	1st	2nd	3rd	4th	1st	2nd
Real GDP	4.20	2.95	5.55	1.83	3.67	6.01	4.33	1.61
Final Sales	5.69	2.13	4.28	4.58	2.76	6.57	4.58	3.03
Change in Inventory	−1.54	0.85	1.36	−2.82	0.94	−0.60	−0.29	−1.60
Consumption	4.17	1.87	4.08	4.09	2.78	3.44	4.55	3.28
Fixed Investment	1.80	0.56	3.05	2.12	0.36	2.14	1.73	1.63
Nonresidential	1.89	0.22	2.50	1.54	−0.09	1.77	1.06	1.36
Residential	−0.02	0.31	0.58	0.57	0.39	0.40	0.62	0.30
Government	0.25	0.02	−0.33	0.63	0.26	0.57	0.71	−0.33
Federal	−0.08	−0.13	−0.56	0.43	−0.08	0.43	−0.12	−0.21
State and Local	0.33	0.15	0.23	0.20	0.35	0.14	0.83	−0.12
Net Exports	−0.60	−0.36	−2.66	−2.48	−0.74	0.48	−2.76	−1.76
Exports	1.36	0.59	−0.38	−1.05	−0.36	2.36	−0.68	0.62
Imports	−1.94	−0.94	−2.29	−1.43	−0.37	−1.85	−2.09	−2.37
Residual	0.06	0.02	0.03	0.42	0.11	−0.10	0.48	0.42

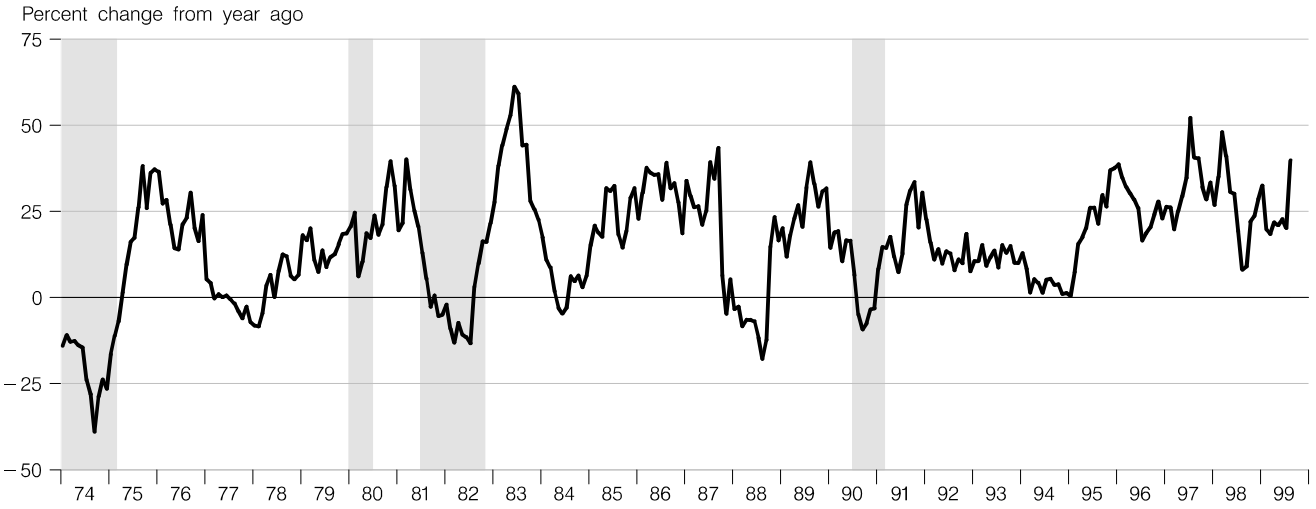
Interest Rates



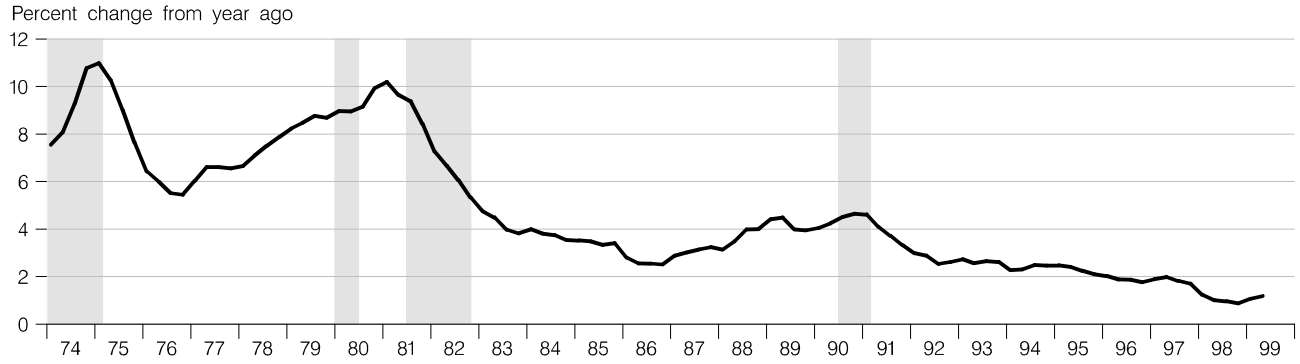
Treasury Yield Curve



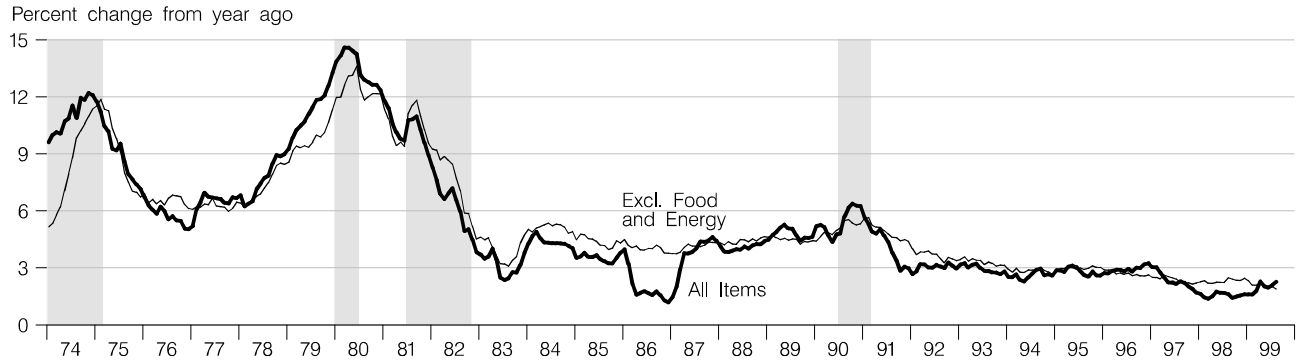
Standard and Poor's 500 Index with Reinvested Dividends



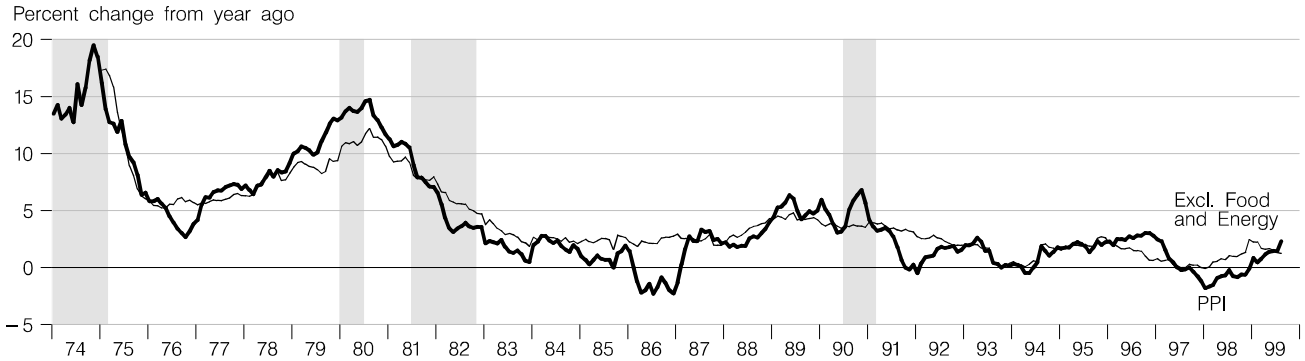
GDP Chain Price Index



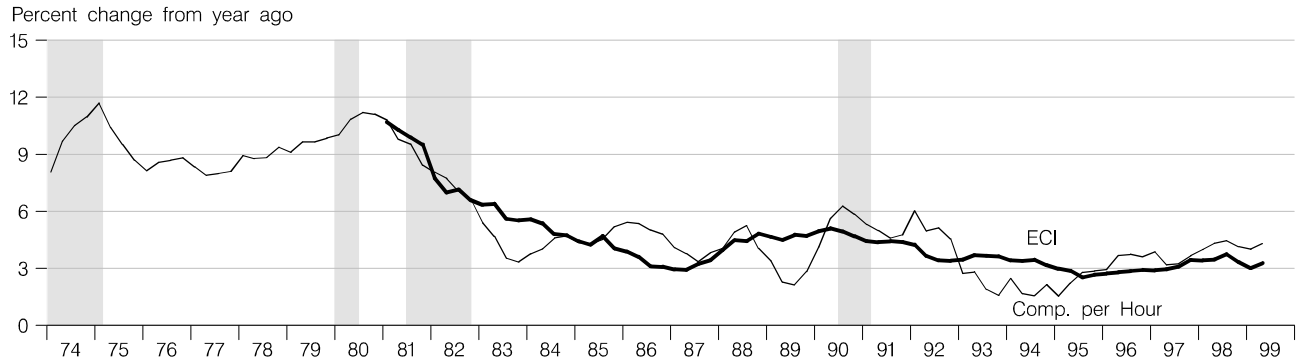
Consumer Price Index



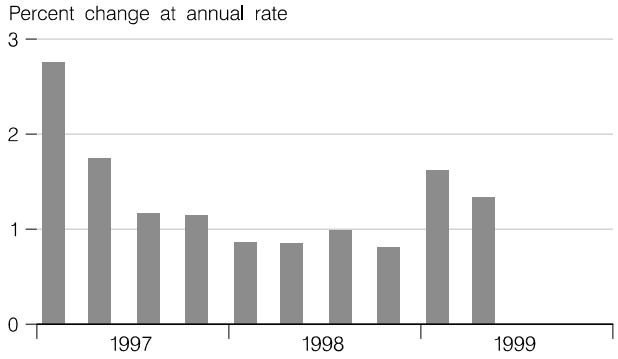
Producer Price Index, Finished Goods



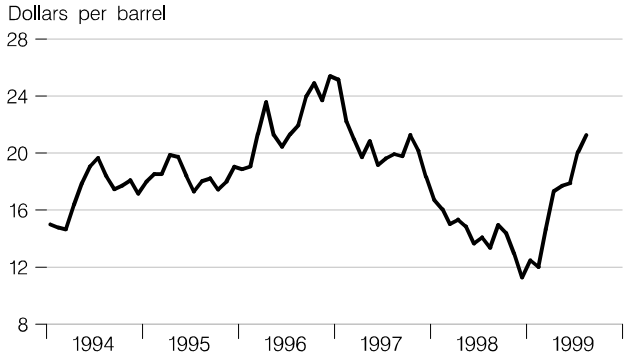
Employment Cost Index and Compensation per Hour



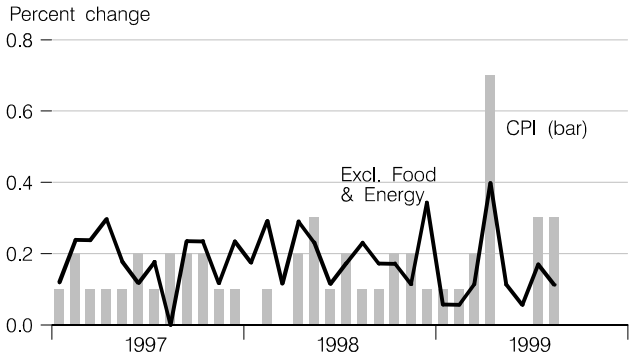
GDP Chain Price Index



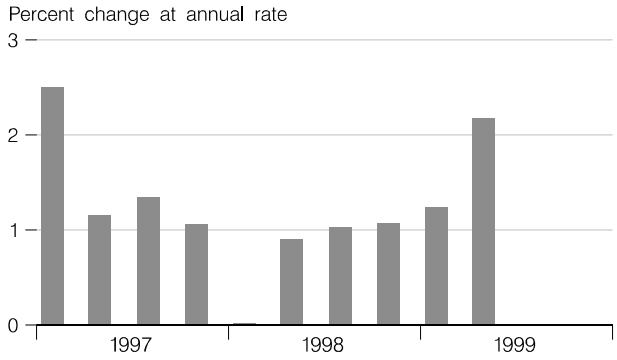
Crude Oil Price



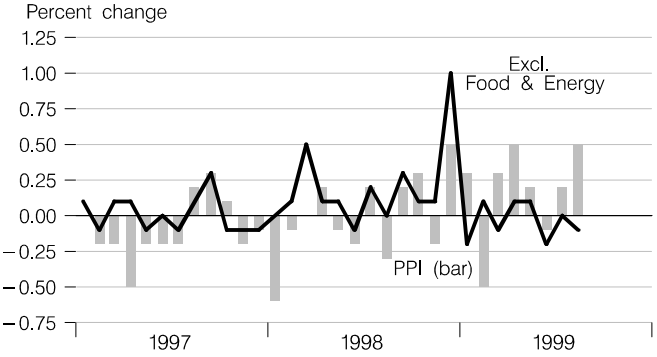
Consumer Price Index



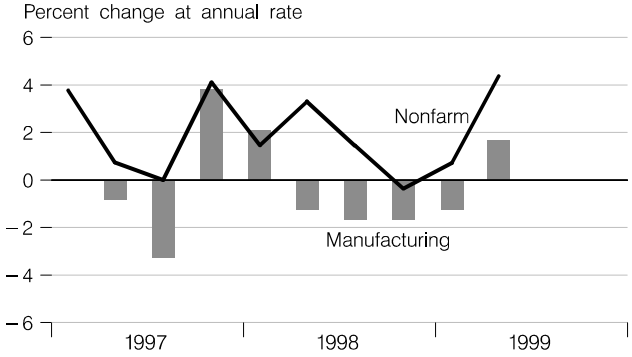
Consumption Chain Price Index



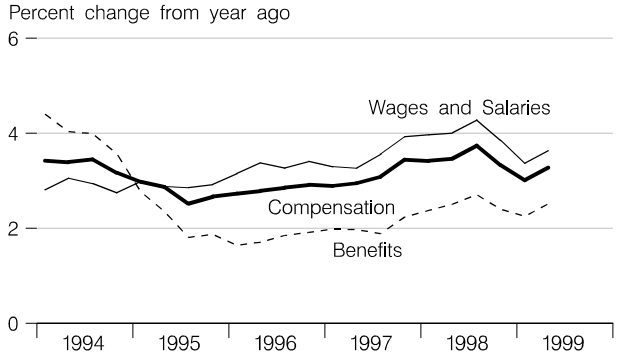
Producer Price Index, Finished Goods



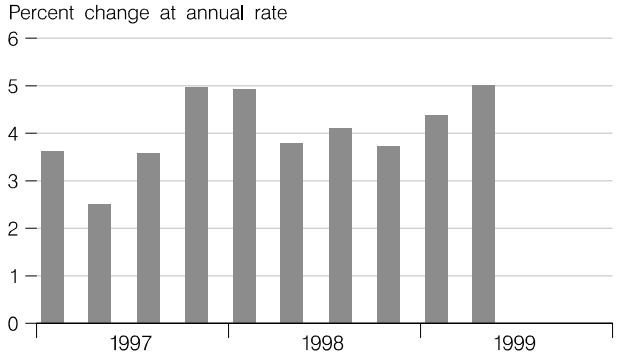
Unit Labor Cost



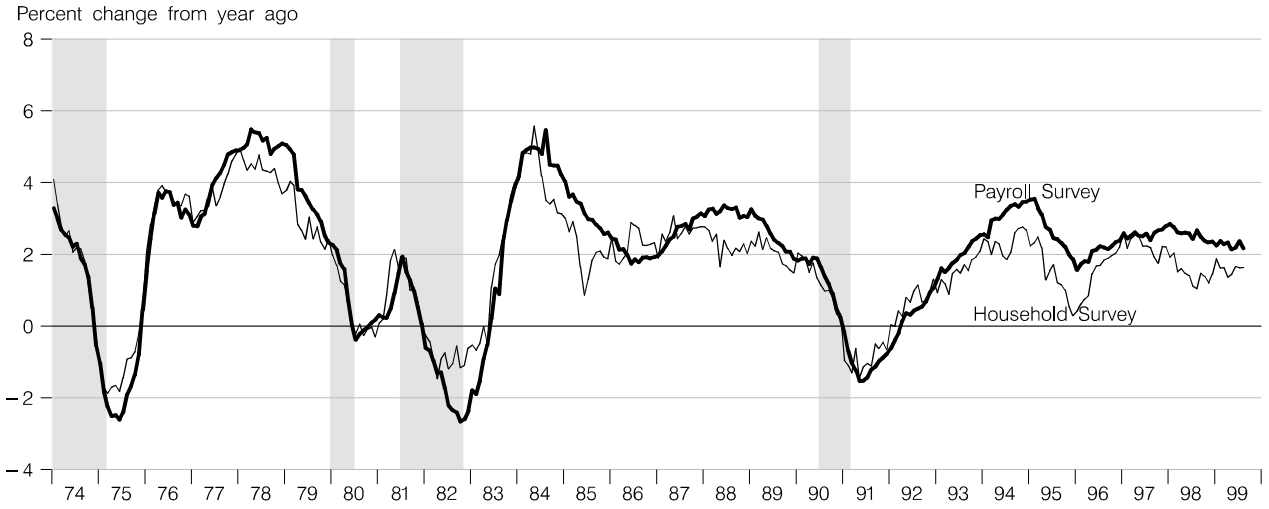
Employment Cost Index



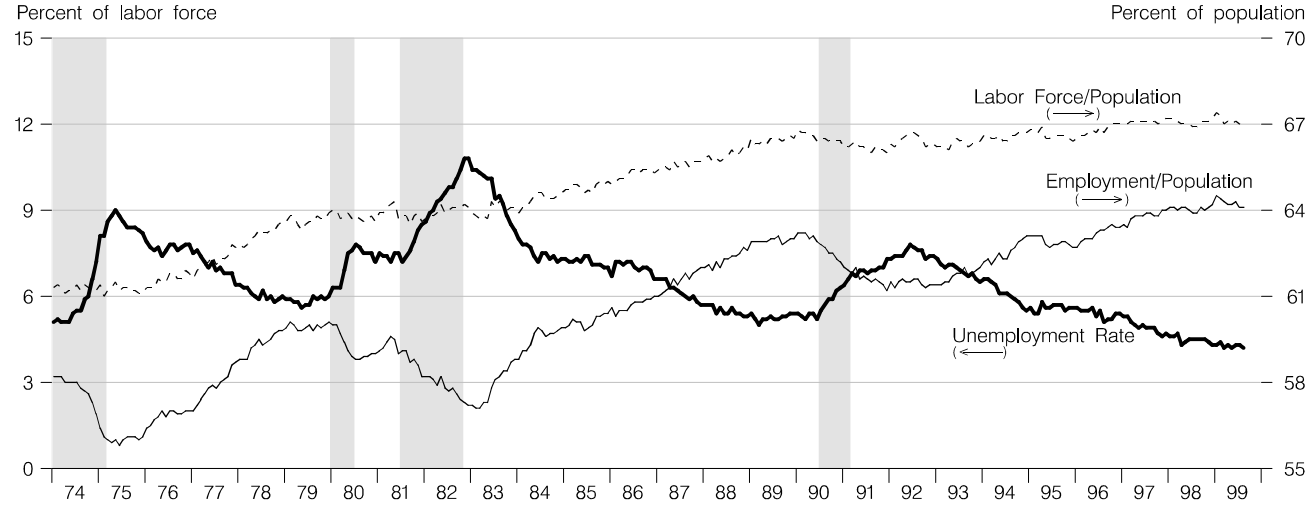
Compensation per Hour



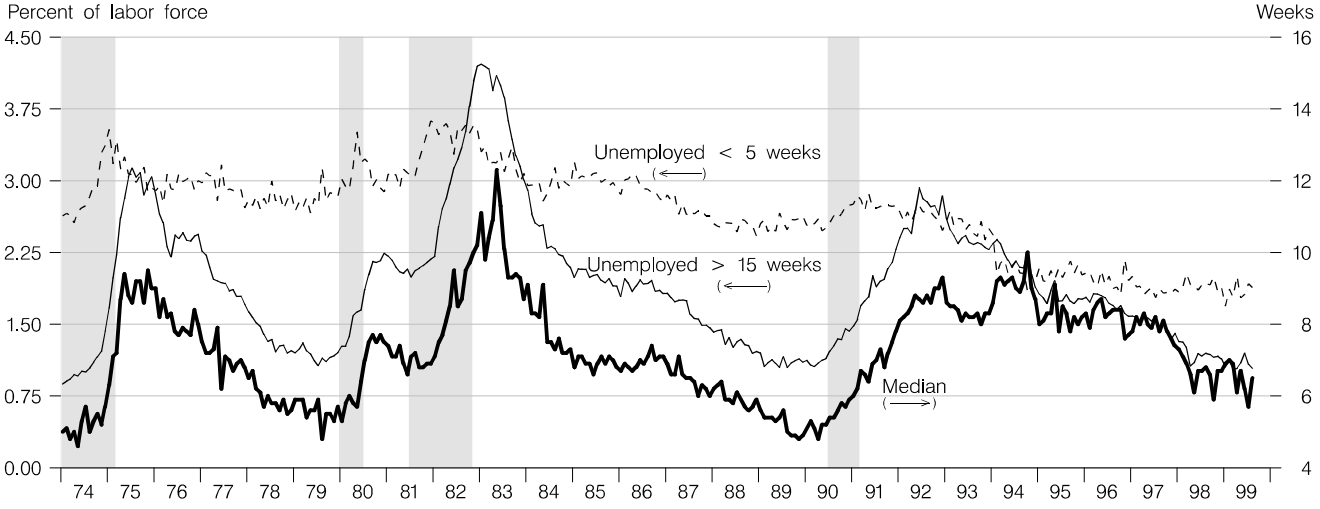
Employment



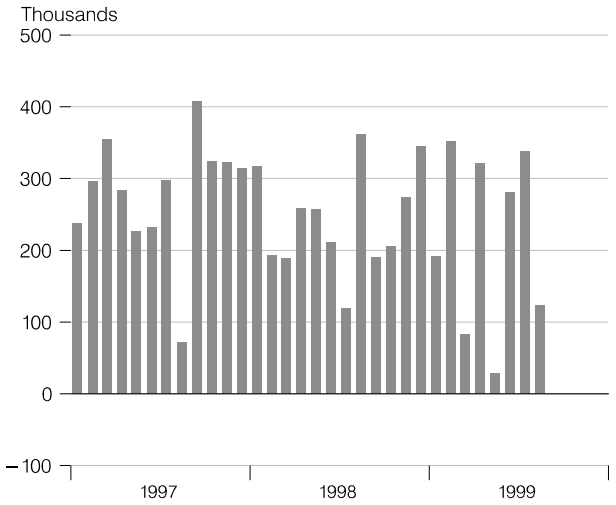
Unemployment, Labor Force Participation and Employment Rates



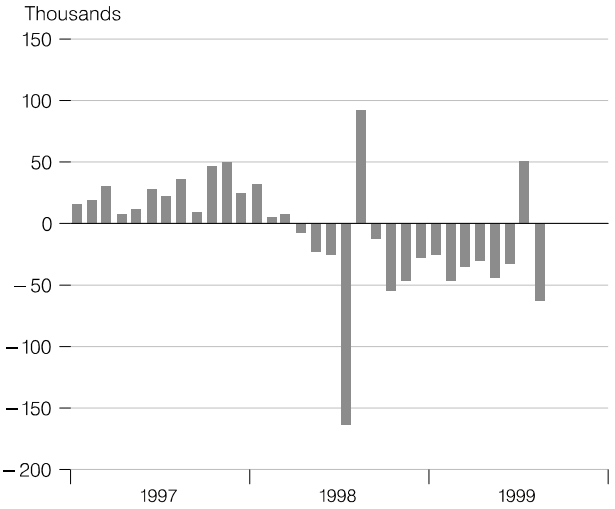
Duration of Unemployment



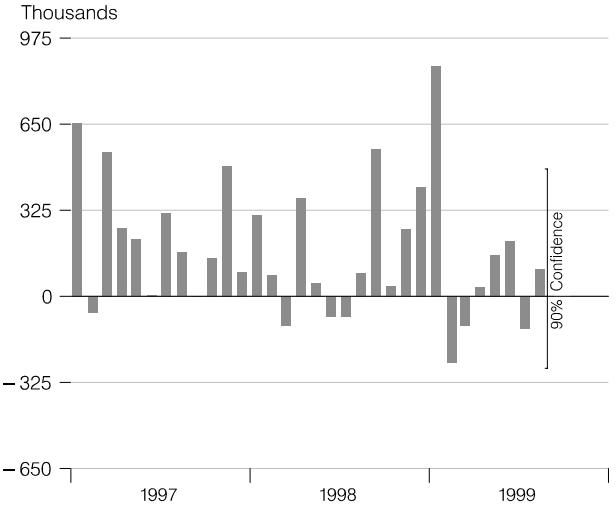
Change in Nonfarm Payrolls



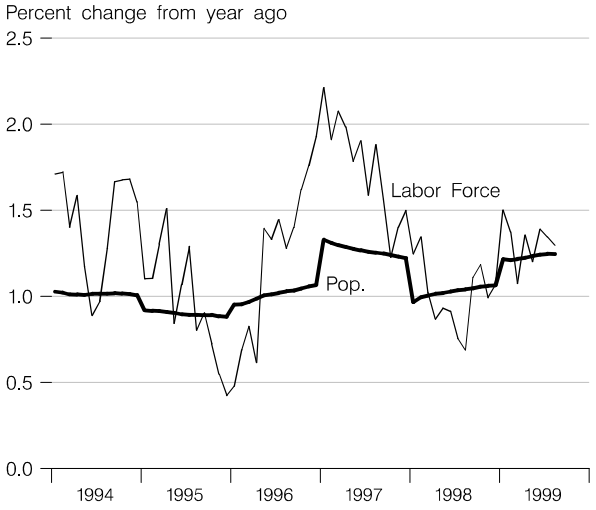
Change in Manufacturing Payrolls



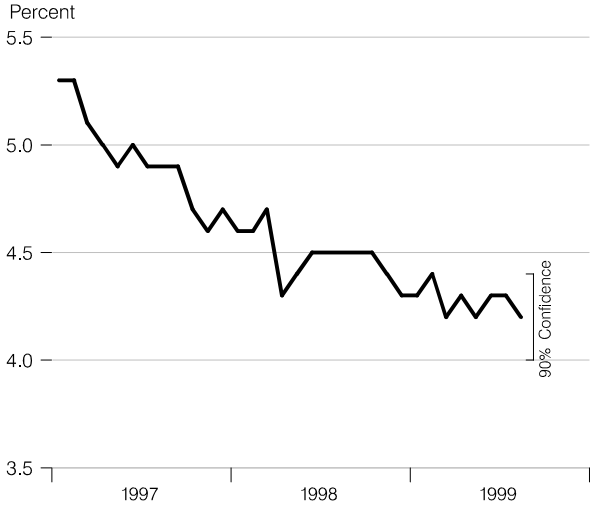
Change in Household Employment



Labor Force and Population



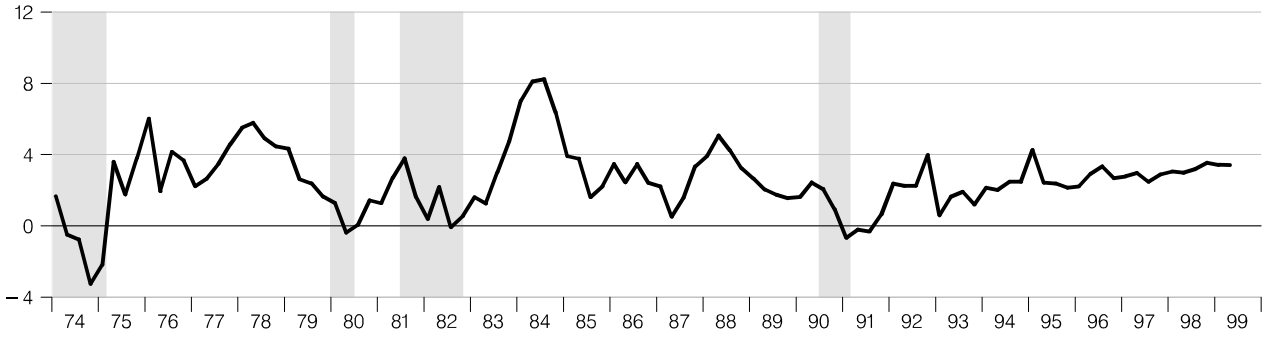
Unemployment Rate



Help-Wanted Advertising

Real Disposable Income

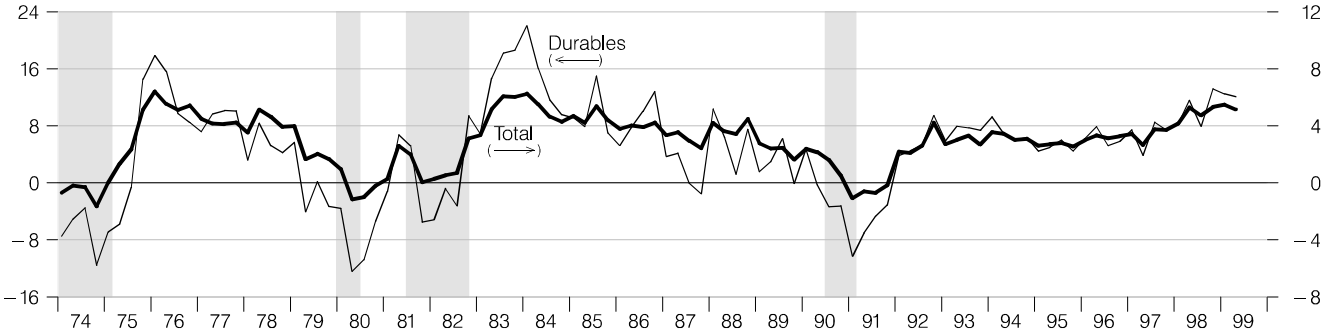
Percent change from year ago, quarterly data



Real Consumption

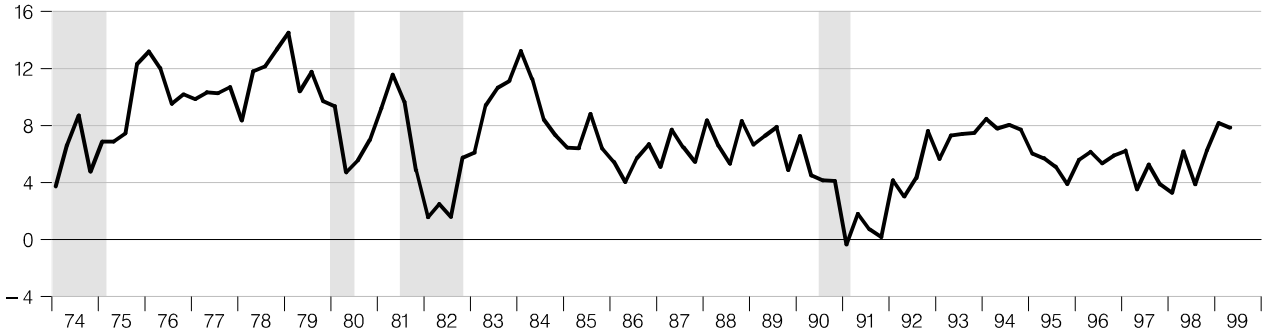
Percent change from year ago

Percent change from year ago



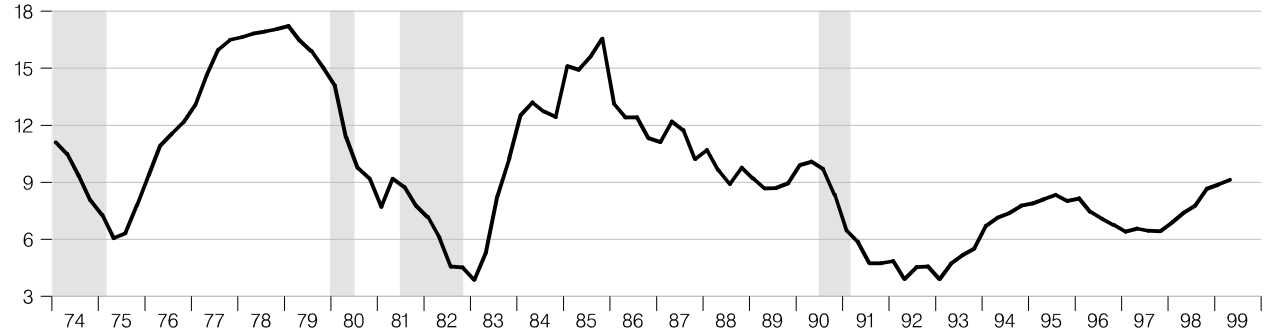
Retail Sales

Percent change from year ago of quarterly average

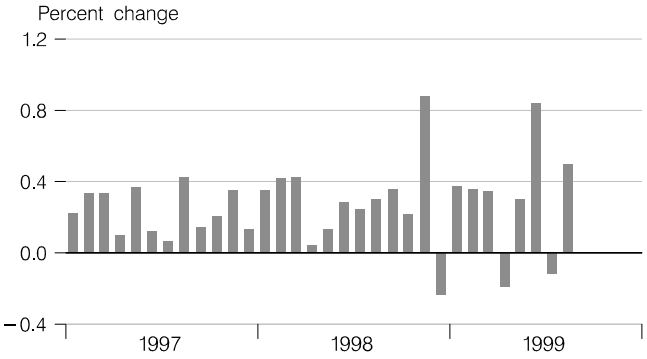


Household Debt Outstanding

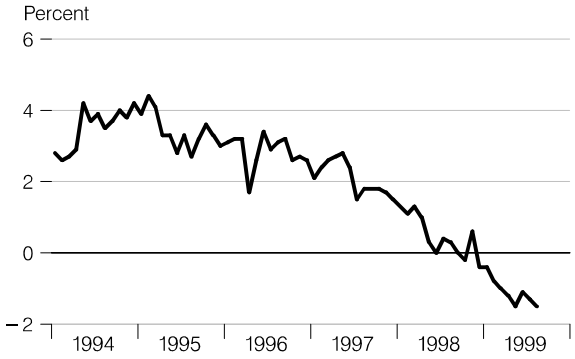
Percent change from year ago



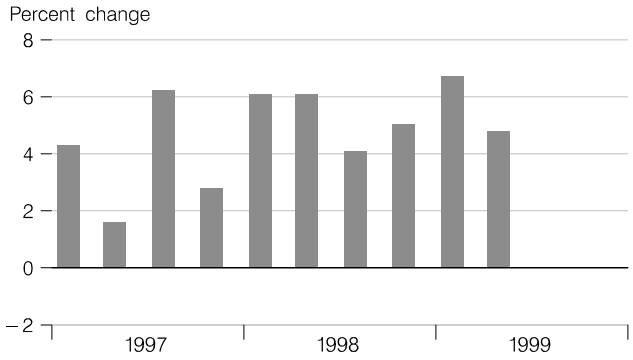
Real Disposable Income



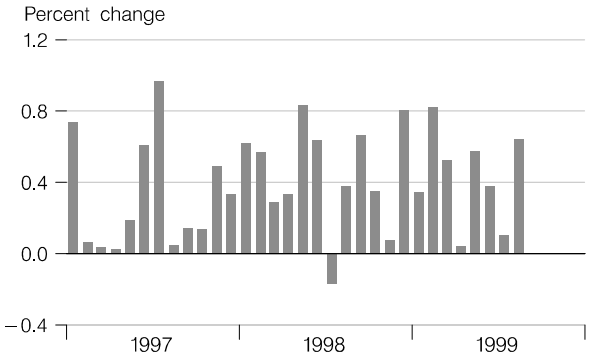
Personal Saving Rate



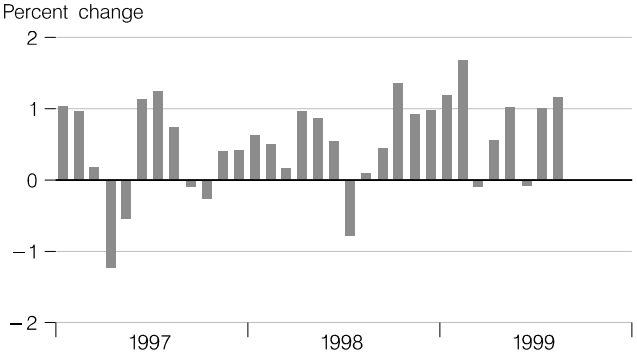
Real Consumption



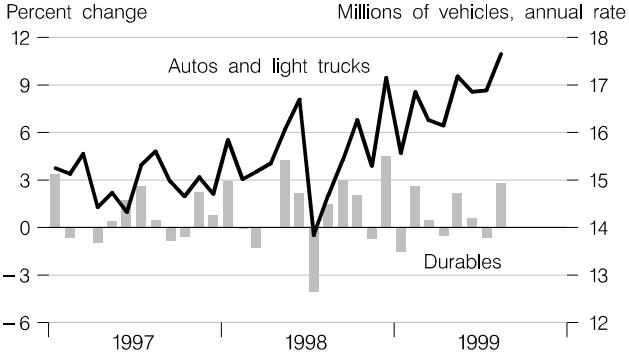
Real Consumption



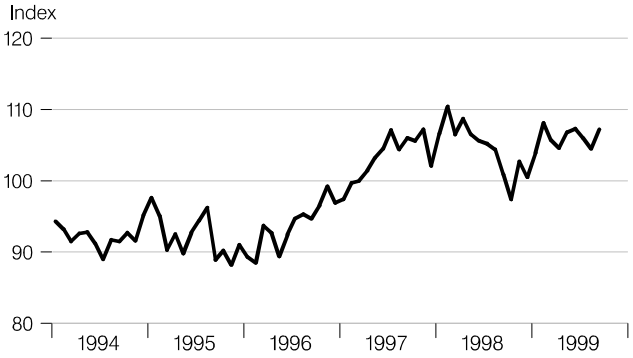
Retail Sales



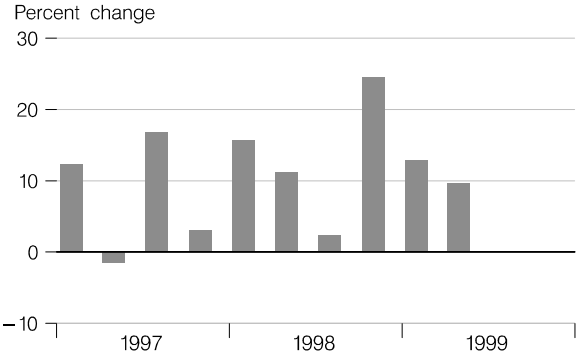
Real Durables Consumption and Vehicle Sales



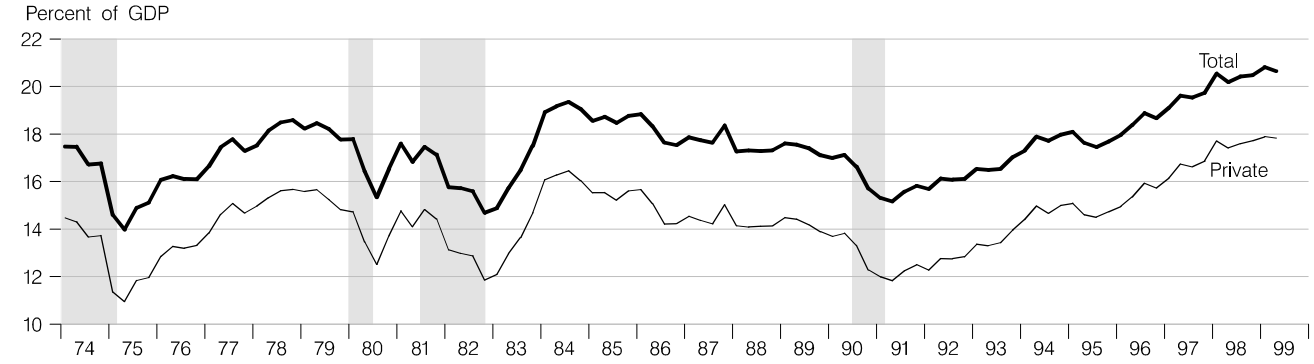
Consumer Sentiment (U. of Michigan)



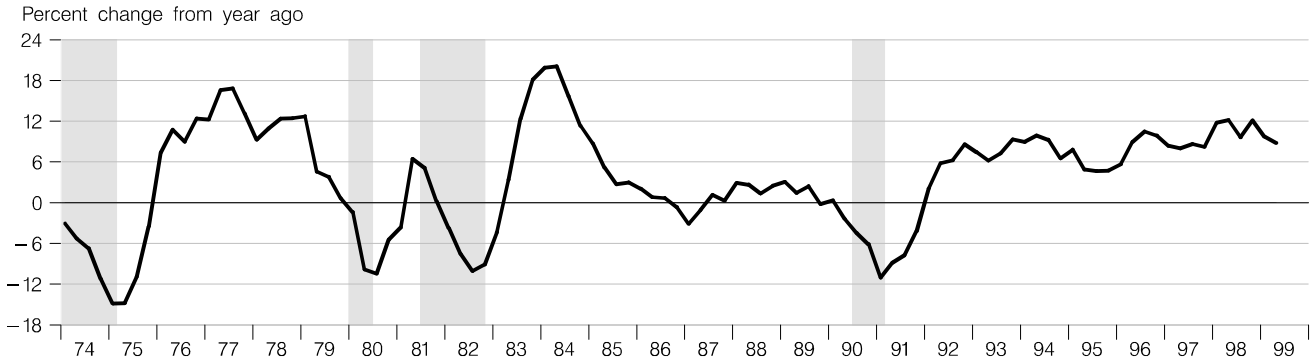
Real Durables Consumption



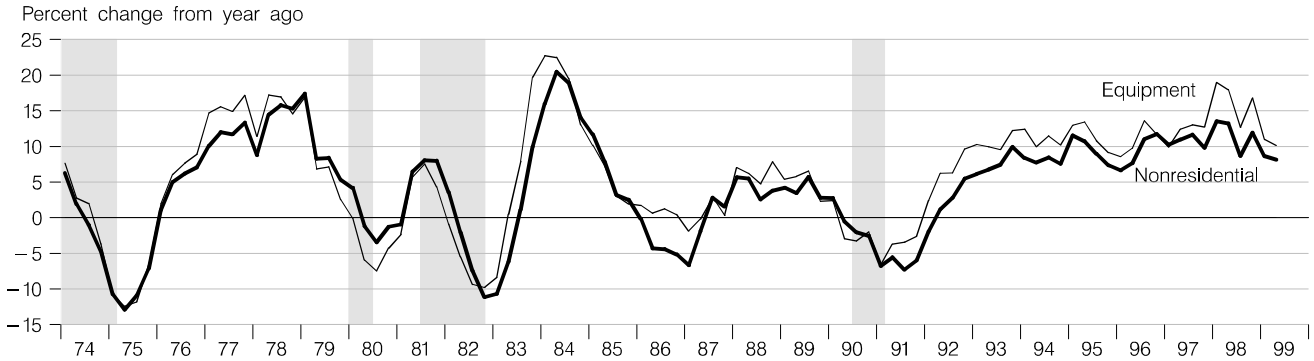
Real Investment



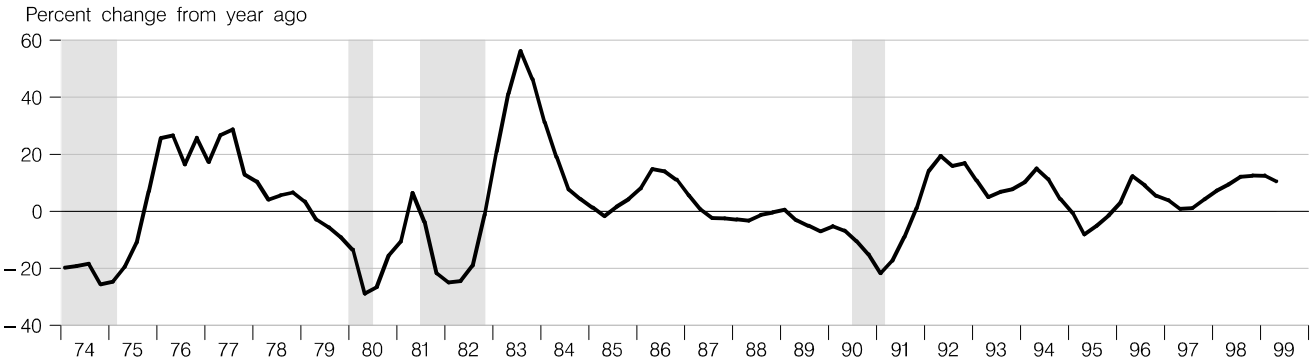
Real Private Fixed Investment



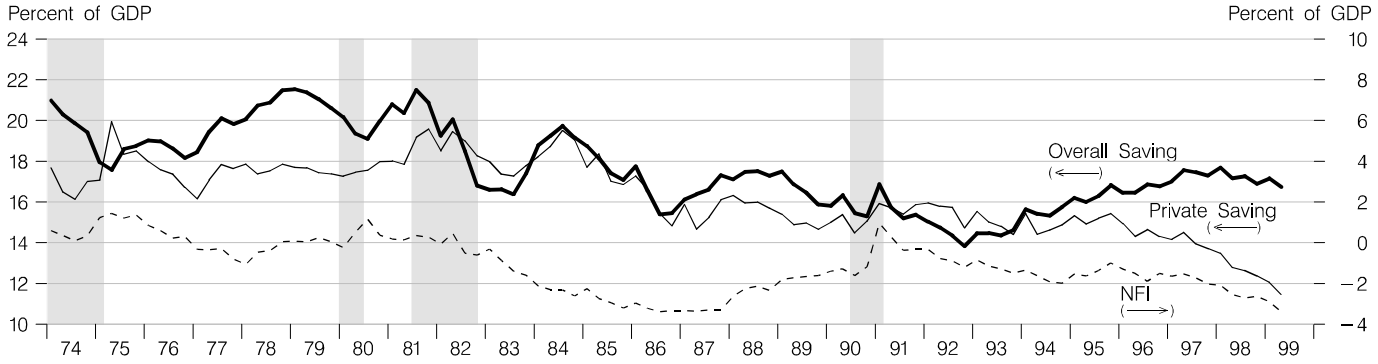
Real Nonresidential and Producers Durable Equipment Investment



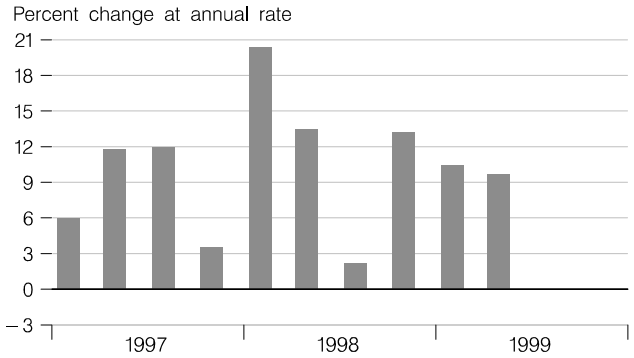
Real Residential Investment



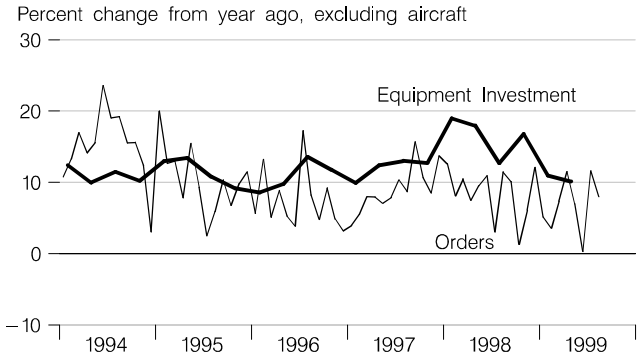
Gross Saving Rates and Net Foreign Investment



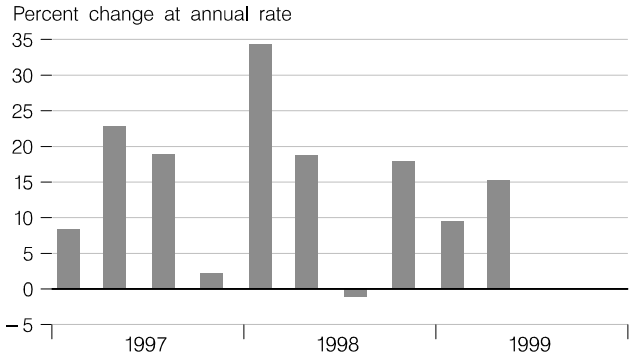
Real Private Fixed Investment



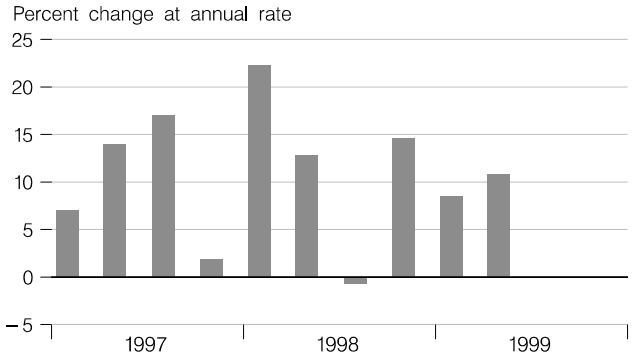
Nondefense Capital Goods Orders



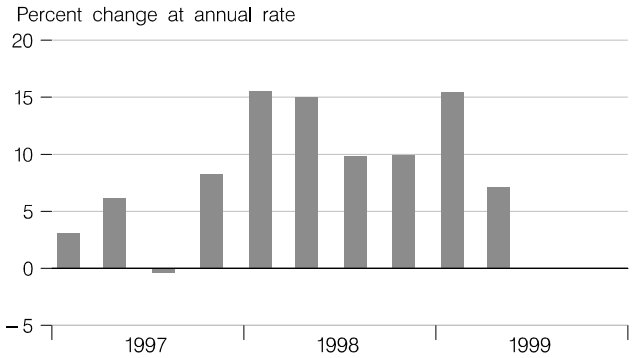
Real Equipment Investment



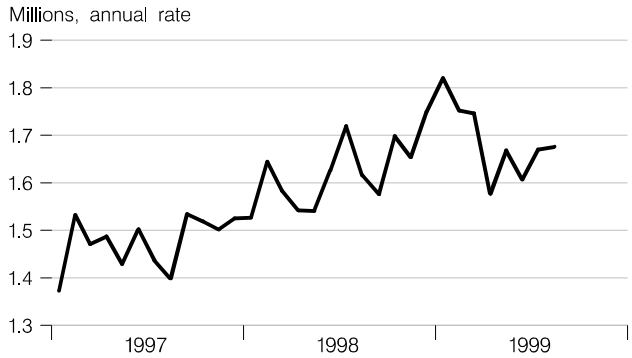
Real Nonresidential Investment



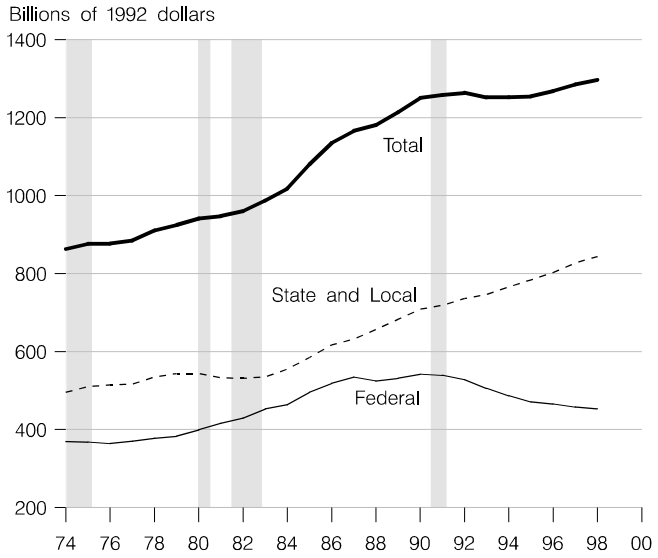
Real Residential Investment



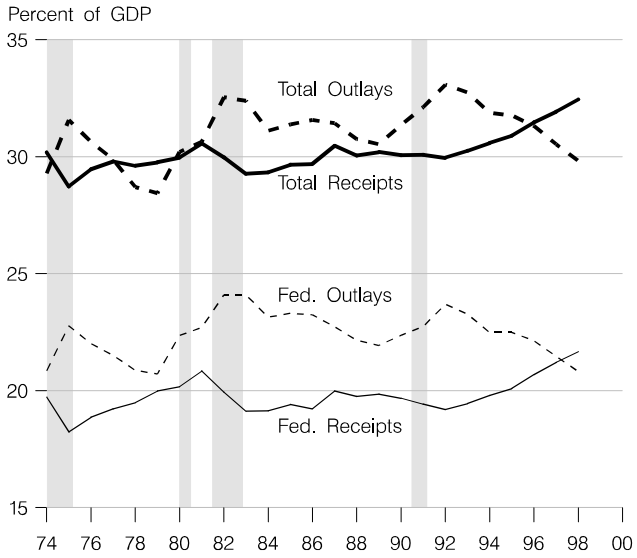
Housing Starts



Govt. Consumption and Investment



Government Receipts and Outlays

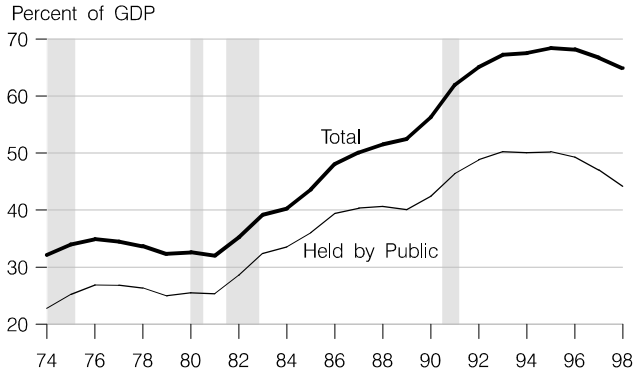


Government Budgets

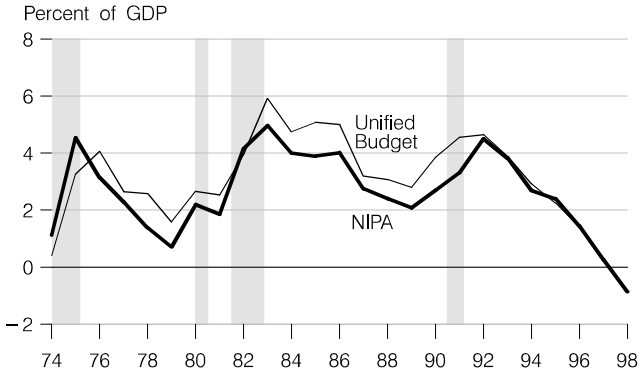
Billions of dollars

	National Income Accounts, Calendar Years						Unified Budget, Fiscal Years		
	State and Local			Federal			Federal		
	Receipts	Expenditures	Surplus or Deficit(-)	Receipts	Expenditures	Surplus or Deficit(-)	Receipts	Outlays	Surplus or Deficit(-)
1975	225.6	198.0	27.6	297.4	371.3	−73.9	279.1	332.3	−53.2
1976	253.9	217.9	36.0	343.1	400.3	−57.2	298.1	371.8	−73.7
1977	281.9	237.1	44.8	389.6	435.9	−46.3	355.6	409.2	−53.7
1978	309.3	256.7	52.6	446.5	478.1	−31.6	399.6	458.7	−59.2
1979	330.6	278.3	52.3	511.1	529.5	−18.4	463.3	504.0	−40.7
1980	361.4	307.0	54.4	561.5	622.5	−61.0	517.1	590.9	−73.8
1981	390.8	335.4	55.4	649.3	707.1	−57.8	599.3	678.2	−79.0
1982	409.0	357.7	51.3	646.4	781.0	−134.6	617.8	745.8	−128.0
1983	443.6	378.8	64.8	671.9	846.3	−174.4	600.6	808.4	−207.8
1984	492.0	405.1	86.9	746.9	902.9	−156.0	666.5	851.9	−185.4
1985	528.7	437.8	90.9	811.3	974.2	−162.9	734.1	946.4	−212.3
1986	570.6	475.7	94.9	850.1	1027.6	−177.5	769.2	990.5	−221.2
1987	594.9	511.1	83.8	937.4	1066.3	−128.9	854.4	1004.1	−149.8
1988	631.4	545.5	85.9	997.2	1118.5	−121.3	909.3	1064.5	−155.2
1989	681.0	585.9	95.1	1079.3	1192.7	−113.4	991.2	1143.7	−152.5
1990	728.9	648.8	80.1	1129.8	1284.5	−154.7	1032.0	1253.2	−221.2
1991	784.2	708.4	75.8	1149.0	1345.0	−196.0	1055.0	1324.4	−269.4
1992	844.3	758.0	86.3	1198.5	1479.4	−280.9	1091.3	1381.7	−290.4
1993	894.4	807.0	87.4	1275.1	1525.7	−250.6	1154.4	1409.4	−255.0
1994	949.2	852.3	96.9	1374.8	1561.4	−186.6	1258.6	1461.7	−203.1
1995	997.7	886.0	111.7	1460.3	1634.7	−174.4	1351.8	1515.7	−163.9
1996	1045.2	922.6	122.6	1584.7	1695.0	−110.3	1453.1	1560.5	−107.5
1997	1094.3	960.1	134.2	1719.9	1741.0	−21.1	1579.3	1601.2	−21.9
1998	1148.1	997.9	150.2	1844.2	1771.4	72.8	1721.8	1652.6	69.2

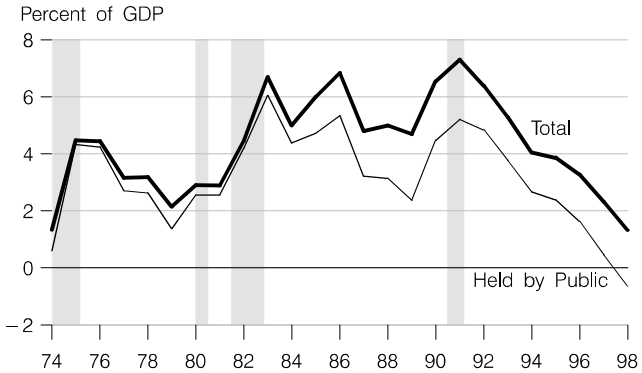
Federal Debt



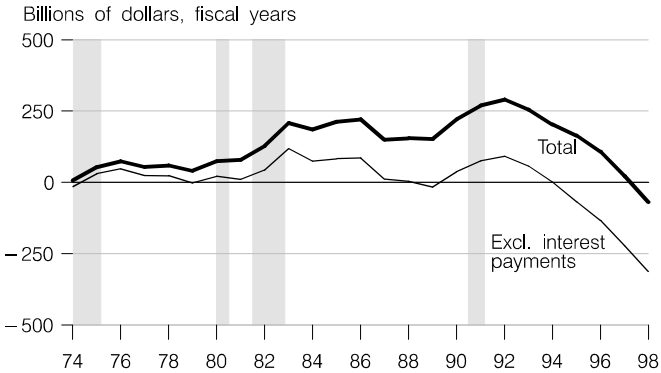
Federal Deficit



Change in Federal Debt



Federal Deficit, Unified Basis

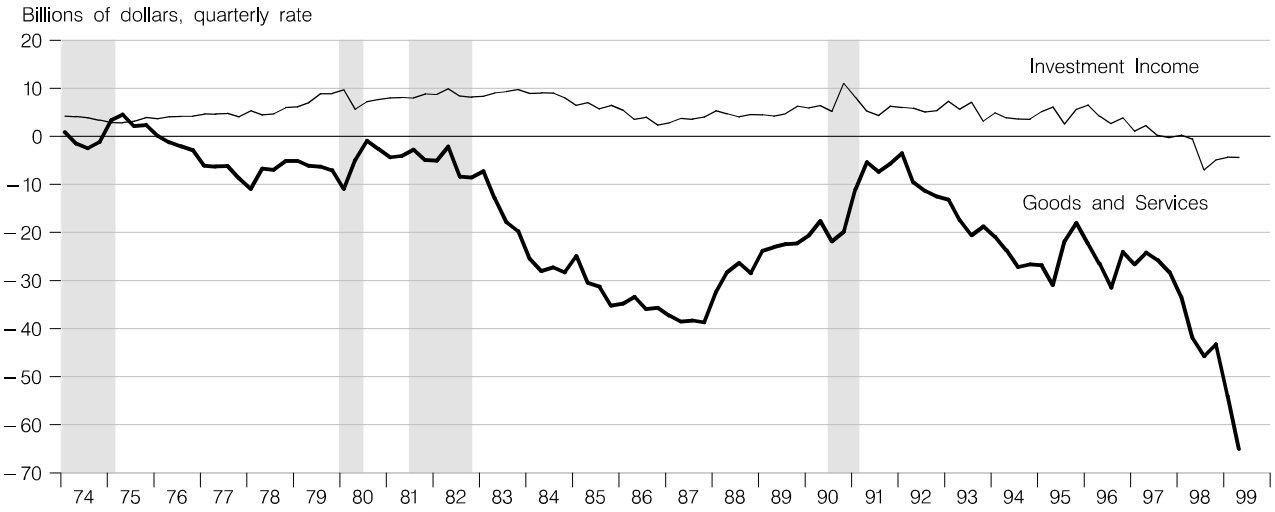


Federal Government Debt

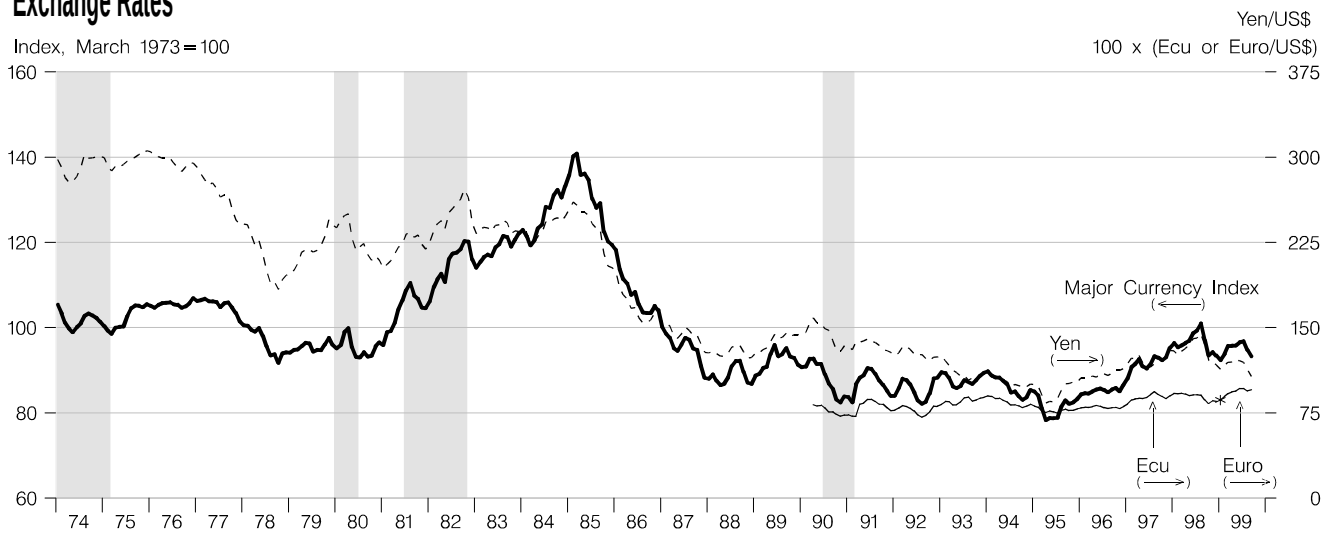
Billions of dollars, end of month or fiscal year, excluding agency–issued debt

		Total Public Debt	Held by Agencies and Trusts	Held by Public: Total	Held by Public: Federal Reserve Banks	Held by Private Investors: Total	Held by Private Investors: Foreign and International
1996		5224.8	1447.0	3777.8	390.9	3393.2	993.4
1997		5413.1	1598.5	3814.7	436.5	3401.6	1230.5
1998		5526.2	1765.6	3760.6	458.1	3313.2	1224.2
1996	March	5117.8	1353.8	3764.0	381.0	3386.7	908.1
	June	5161.1	1422.4	3738.6	391.0	3354.4	929.7
	September	5224.8	1447.0	3777.8	390.9	3393.2	993.4
	December	5323.2	1497.2	3826.0	410.9	3431.2	1102.1
1997	March	5380.9	1506.8	3874.1	405.6	3452.2	1157.6
	June	5376.2	1571.6	3804.6	426.4	3377.3	1182.7
	September	5413.1	1598.5	3814.7	436.5	3401.6	1230.5
	December	5502.4	1655.7	3846.7	451.9	3414.6	1241.6
1998	March	5542.4	1670.4	3872.1	400.0	3437.5	1250.5
	June	5547.9	1757.6	3790.4	458.4	3349.3	1256.0
	September	5526.2	1765.6	3760.6	458.1	3313.2	1224.2
	December	5614.2	1826.8	3787.4	471.7	3334.0	1278.7
1999	March	5651.6	1857.1	3794.5	464.5	3327.6	1270.8
	June	5638.8	1953.6	3685.2	493.8	3199.3	1257.3

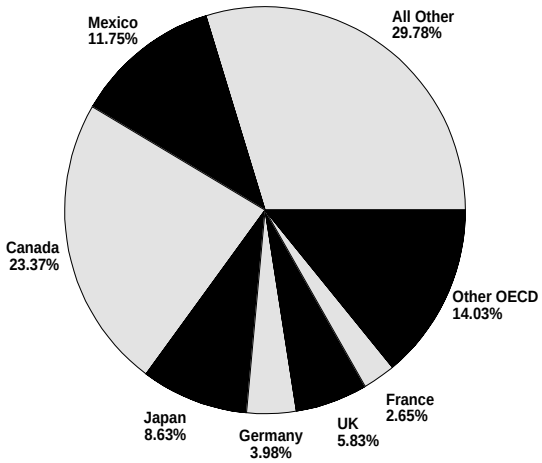
Trade and Investment Income Balances



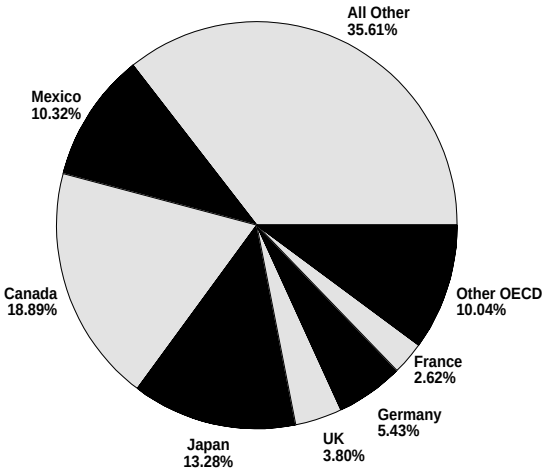
Exchange Rates



Goods Export Shares, 1998

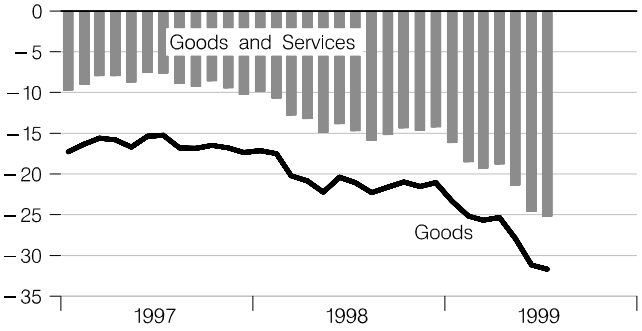


Goods Import Shares, 1998



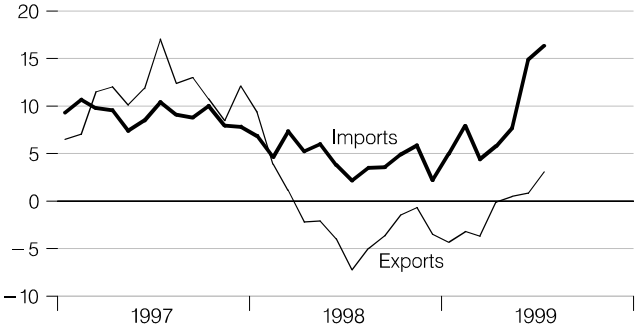
Trade Balance

Billions of dollars



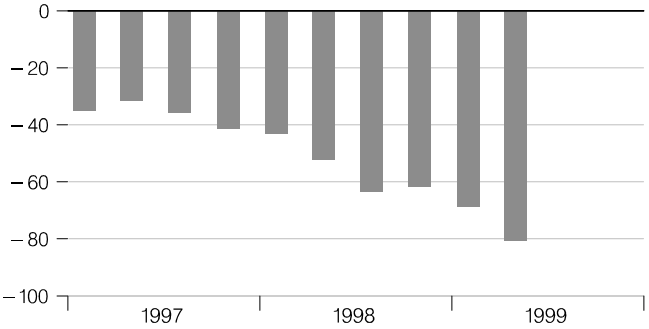
Goods Trade

Percent change from year ago



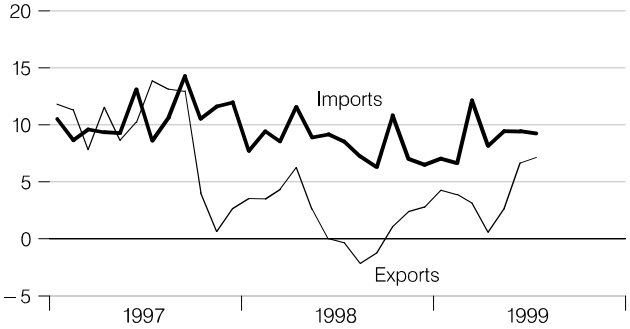
Current Account Balance

Billions of dollars



Services Trade

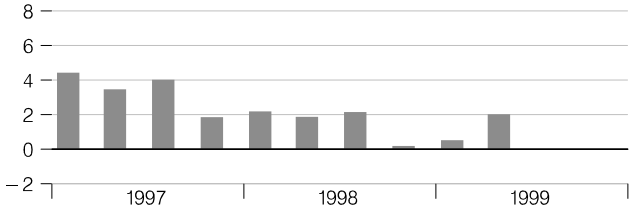
Percent change from year ago



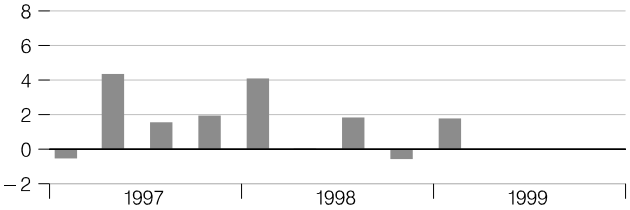
Real GDP Growth of Major Trading Partners

Percent change at annual rate

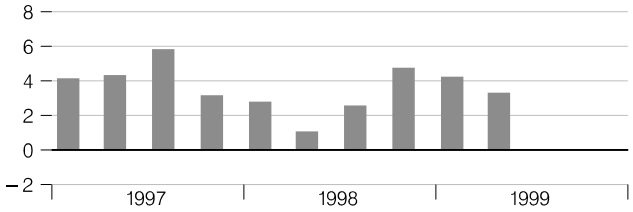
United Kingdom



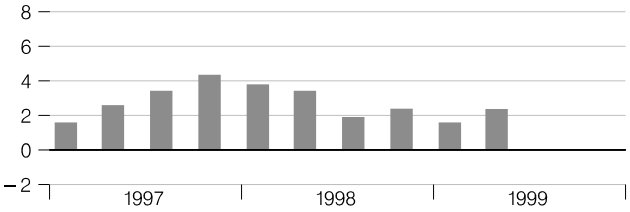
Germany



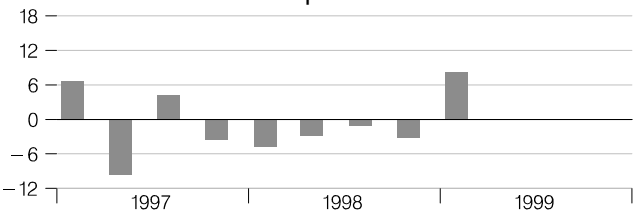
Canada



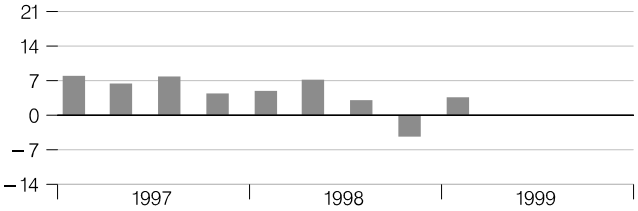
France



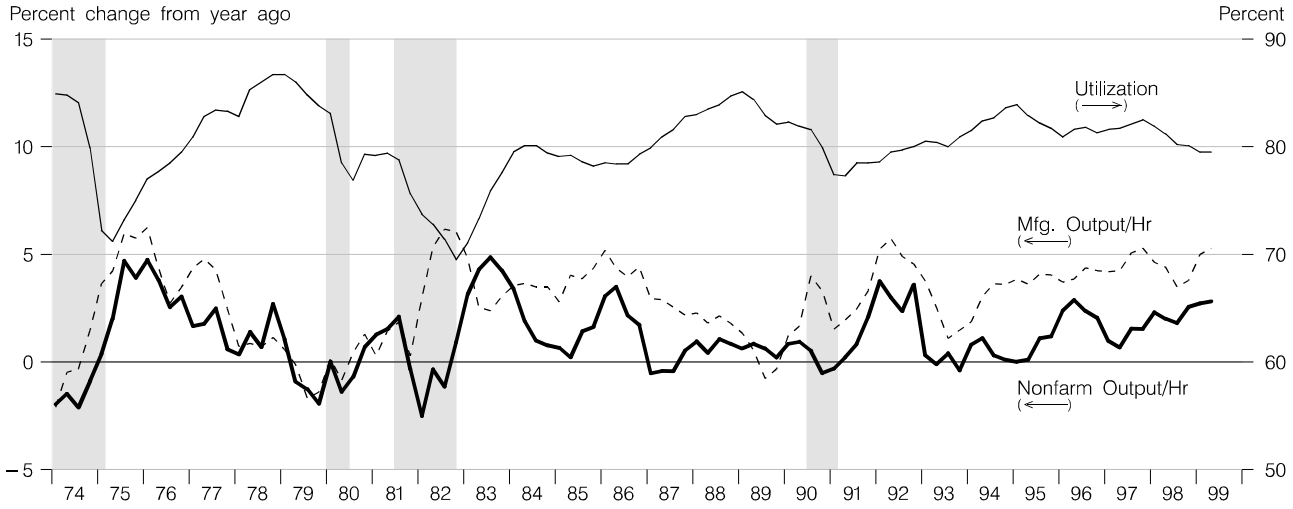
Japan



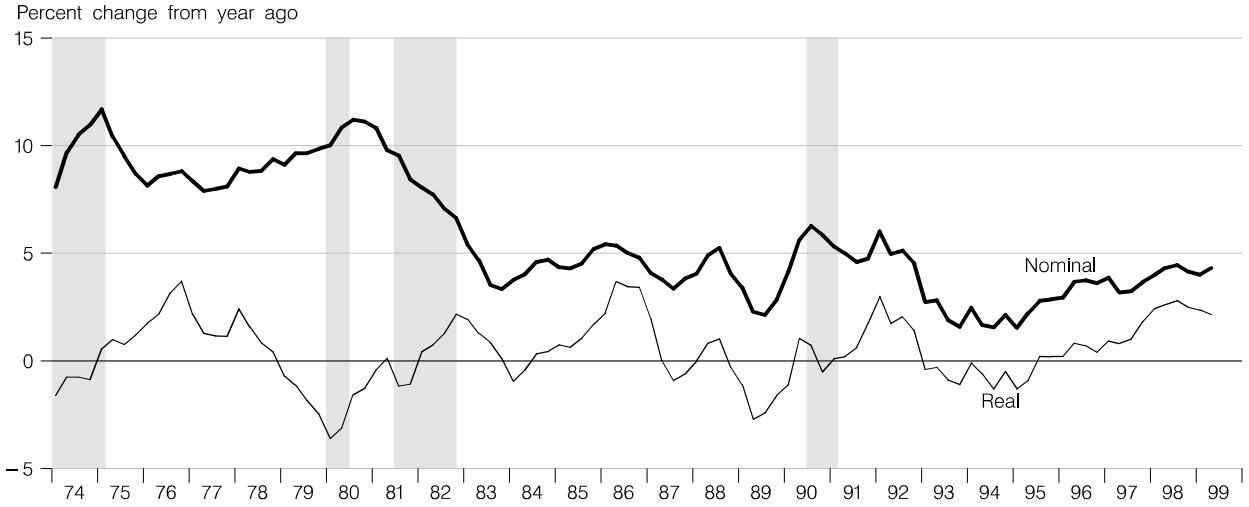
Mexico



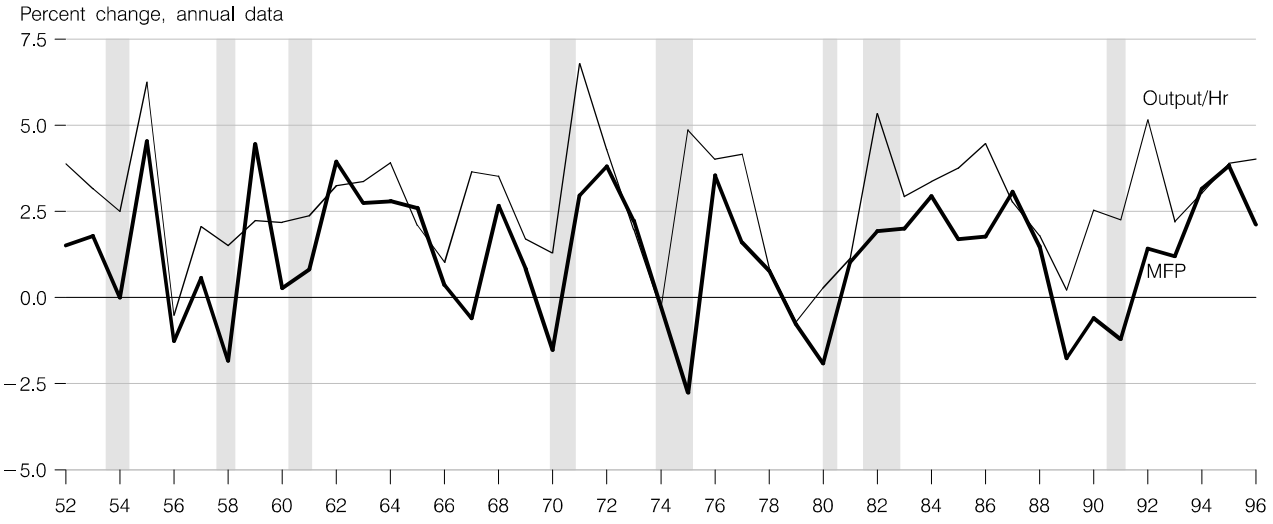
Output per Hour and Manufacturing Capacity Utilization



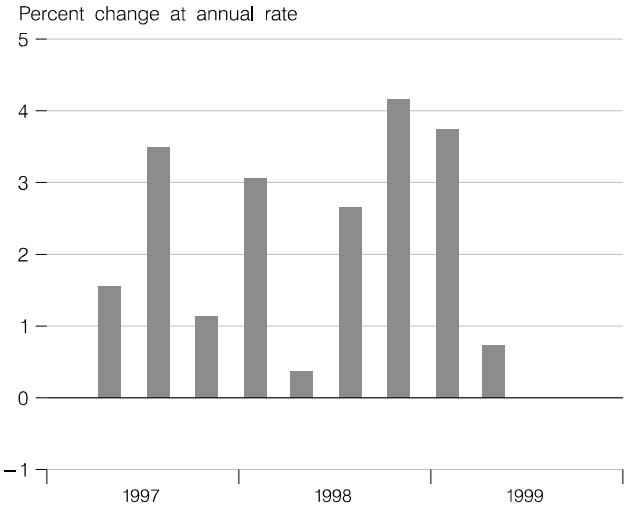
Nonfarm Compensation per Hour



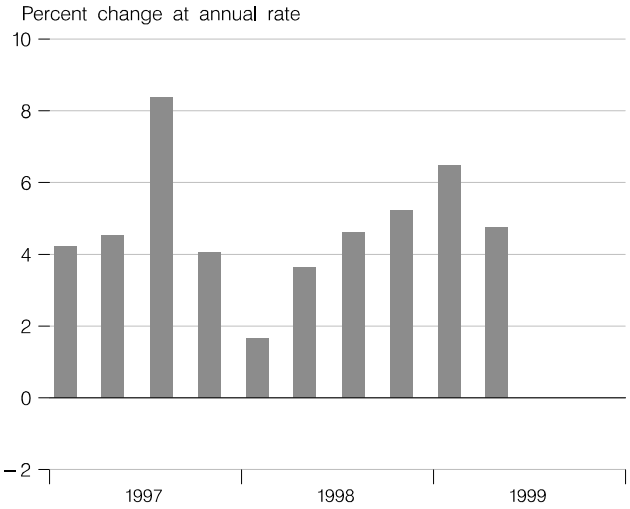
Output per Hour and Multifactor Productivity, Manufacturing



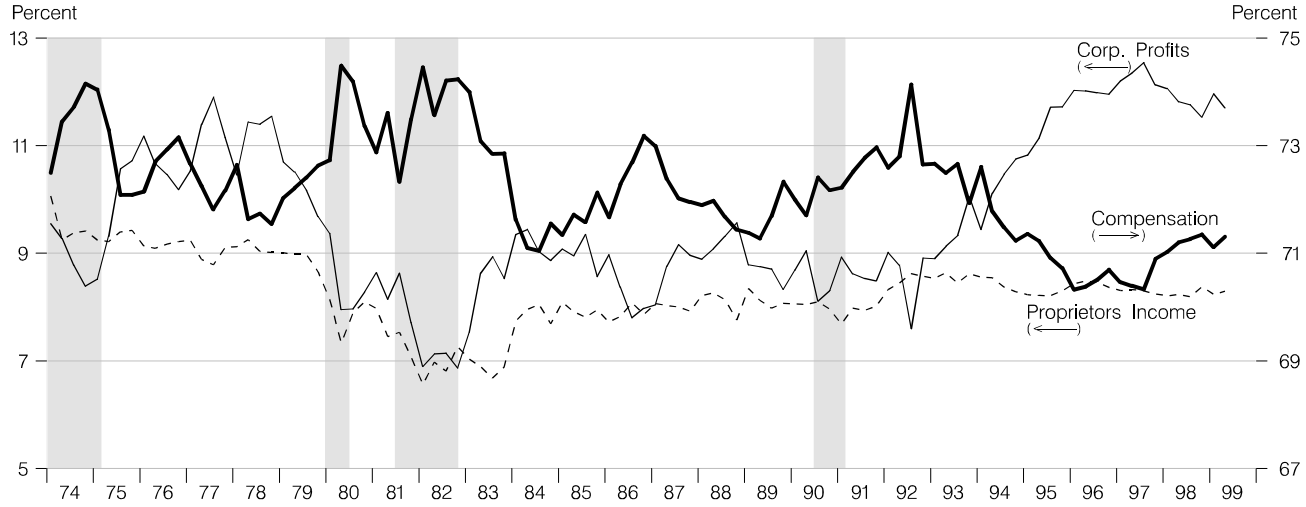
Nonfarm Output per Hour



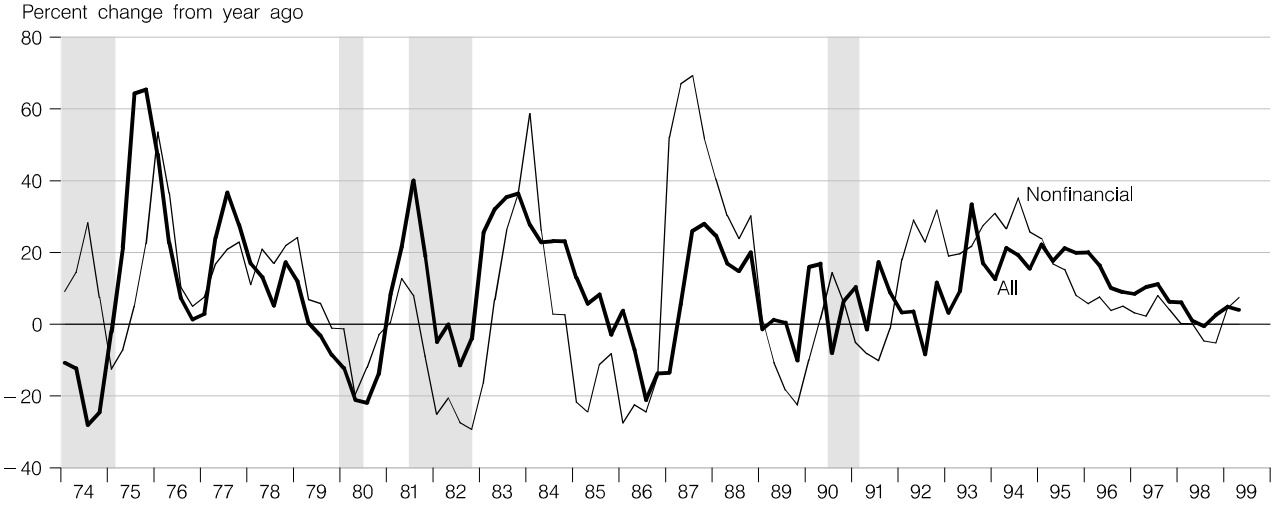
Manufacturing Output per Hour



Selected Component Shares of National Income



Corporate Profits after Tax (with IVA and CCAdj)



	Nominal GDP			Real GDP			Final Sales			Change in Business Inventories	
		Percent change			Percent change			Percent change		Billions of 1992 $	
	Billions of $	Annual rate	Year ago	Billions of 1992 $	Annual rate	Year ago	Billions of 1992 $	Annual rate	Year ago	Last qtr	Year/Year ago
1995	7269.6		4.6	6761.732		2.3	6731.696		2.8		27.678
1996	7661.6		5.4	6994.774		3.4	6961.608		3.4		30.024
1997	8110.9		5.9	7269.779		3.9	7203.683		3.5		63.210
1998	8511.0		4.9	7551.872		3.9	7491.338		4.0		57.372
1996 1	7495.3	5.7	4.5	6882.000	3.3	2.4	6863.618	3.6	3.0	14.385	17.705
2	7629.2	7.3	5.8	6983.909	6.1	3.9	6954.684	5.4	3.8	26.064	18.804
3	7703.4	3.9	5.5	7020.002	2.1	3.5	6970.278	0.9	3.1	47.507	27.004
4	7818.4	6.1	5.8	7093.124	4.2	3.9	7057.852	5.1	3.7	32.142	30.025
1997 1	7955.0	7.2	6.1	7166.684	4.2	4.1	7108.063	2.9	3.6	56.310	40.506
2	8063.4	5.6	5.7	7236.497	4.0	3.6	7155.530	2.7	2.9	79.048	53.752
3	8170.8	5.4	6.1	7311.242	4.2	4.1	7256.265	5.8	4.1	50.988	54.622
4	8254.5	4.2	5.6	7364.632	3.0	3.8	7294.812	2.1	3.4	66.496	63.211
1998 1	8384.2	6.4	5.4	7464.668	5.5	4.2	7372.468	4.3	3.7	91.401	71.983
2	8440.6	2.7	4.7	7498.638	1.8	3.6	7456.424	4.6	4.2	38.168	61.763
3	8537.9	4.7	4.5	7566.453	3.7	3.5	7507.571	2.8	3.5	55.675	62.935
4	8681.2	6.9	5.2	7677.729	6.0	4.3	7628.889	6.6	4.6	44.245	57.372
1999 1	8808.7	6.0	5.1	7759.593	4.3	4.0	7715.403	4.6	4.7	38.667	44.189
2	8873.4	3.0	5.1	7790.566	1.6	3.9	7773.598	3.1	4.3	7.430	36.504

	Consumption			Durables Consumption			Private Fixed Investment			Nonresidential Investment		
		Percent change			Percent change			Percent change			Percent change	
	Billions of 1992 $	Annual rate	Year ago	Billions of 1992 $	Annual rate	Year ago	Billions of 1992 $	Annual rate	Year ago	Billions of 1992 $	Annual rate	Year ago
1995	4605.570		2.7	589.094		5.0	965.965		5.5	710.636		9.6
1996	4752.376		3.2	626.120		6.3	1050.583		8.8	776.587		9.3
1997	4913.530		3.4	668.602		6.8	1137.951		8.3	859.364		10.7
1998	5153.257		4.9	737.062		10.2	1267.765		11.4	960.689		11.8
1996 1	4692.076	3.7	3.0	610.970	5.8	6.2	1011.365	12.0	5.7	744.777	13.1	6.6
2	4746.553	4.7	3.3	629.505	12.7	7.9	1043.517	13.3	8.9	764.403	11.0	7.6
3	4768.285	1.8	3.1	626.486	−1.9	5.2	1067.067	9.3	10.5	790.138	14.2	11.0
4	4802.550	2.9	3.3	637.507	7.2	5.8	1080.385	5.1	9.9	807.036	8.8	11.7
1997 1	4853.398	4.3	3.4	656.277	12.3	7.4	1096.046	5.9	8.4	820.860	7.0	10.2
2	4872.683	1.6	2.7	653.766	−1.5	3.9	1126.991	11.8	8.0	848.184	14.0	11.0
3	4946.993	6.2	3.7	679.619	16.8	8.5	1159.292	12.0	8.6	882.181	17.0	11.6
4	4981.005	2.8	3.7	684.753	3.1	7.4	1169.492	3.6	8.2	886.231	1.8	9.8
1998 1	5055.062	6.1	4.2	710.259	15.8	8.2	1224.943	20.4	11.8	931.864	22.2	13.5
2	5130.217	6.1	5.3	729.351	11.2	11.6	1264.130	13.4	12.2	960.377	12.8	13.2
3	5181.783	4.1	4.7	733.655	2.4	8.0	1270.938	2.2	9.6	958.659	−0.7	8.7
4	5245.966	5.0	5.3	774.984	24.5	13.2	1311.049	13.2	12.1	991.858	14.6	11.9
1999 1	5331.923	6.7	5.5	798.878	12.9	12.5	1344.040	10.5	9.7	1012.203	8.5	8.6
2	5394.840	4.8	5.2	817.496	9.7	12.1	1375.557	9.7	8.8	1038.518	10.8	8.1

	GDP Chain Price Index			Employment Cost Index			ECI: Wages			ECI: Benefits		
		Percent change			Percent change			Percent change			Percent change	
	Index	Annual rate	Year ago	Index	Annual rate	Year ago	Index	Annual rate	Year ago	Index	Annual rate	Year ago
1995	107.513		2.3	125.8		2.8	121.9		2.9	135.0		2.2
1996	109.541		1.9	129.3		2.8	126.0		3.3	137.4		1.8
1997	111.569		1.9	133.3		3.1	130.4		3.5	140.2		2.0
1998	112.707		1.0	138.0		3.5	135.6		4.0	143.7		2.5
1996 1	108.900	2.2	2.0	127.9	2.9	2.7	124.4	4.0	3.2	136.2	0.6	1.6
2	109.277	1.4	1.9	128.9	3.2	2.8	125.6	3.9	3.4	137.0	2.4	1.7
3	109.772	1.8	1.9	129.7	2.5	2.9	126.4	2.6	3.3	137.7	2.1	1.8
4	110.214	1.6	1.8	130.7	3.1	2.9	127.4	3.2	3.4	138.6	2.6	1.9
1997 1	110.966	2.8	1.9	131.6	2.8	2.9	128.5	3.5	3.3	138.9	0.9	2.0
2	111.447	1.7	2.0	132.7	3.4	2.9	129.7	3.8	3.3	139.7	2.3	2.0
3	111.772	1.2	1.8	133.7	3.0	3.1	130.9	3.8	3.6	140.3	1.7	1.9
4	112.091	1.1	1.7	135.2	4.6	3.4	132.4	4.7	3.9	141.7	4.1	2.2
1998 1	112.332	0.9	1.2	136.1	2.7	3.4	133.6	3.7	4.0	142.2	1.4	2.4
2	112.571	0.9	1.0	137.3	3.6	3.5	134.9	3.9	4.0	143.2	2.8	2.5
3	112.847	1.0	1.0	138.7	4.1	3.7	136.5	4.8	4.3	144.1	2.5	2.7
4	113.075	0.8	0.9	139.7	2.9	3.3	137.5	3.0	3.9	145.1	2.8	2.4
1999 1	113.531	1.6	1.1	140.2	1.4	3.0	138.1	1.8	3.4	145.4	0.8	2.3
2	113.909	1.3	1.2	141.8	4.6	3.3	139.8	5.0	3.6	146.8	3.9	2.5

	Exports			Imports			Nonfarm Output per Hour			Nonfarm Compensation/Hr		
		Percent change			Percent change			Percent change			Percent change	
	Billions of 1992 $	Annual rate	Year ago	Billions of 1992 $	Annual rate	Year ago	Index	Annual rate	Year ago	Index	Annual rate	Year ago
1995	792.575		11.3	889.040		8.8	101.2		0.6	106.7		2.4
1996	860.008		8.5	971.248		9.2	103.7		2.5	110.4		3.5
1997	969.988		12.8	1106.124		13.9	104.9		1.2	114.3		3.5
1998	984.717		1.5	1222.916		10.6	107.2		2.2	119.1		4.2
1996 1	833.607	3.7	9.1	929.064	13.1	6.4	103.1	4.4	2.4	108.7	2.6	2.9
2	845.474	5.8	9.2	958.939	13.5	7.9	103.8	2.7	2.9	110.1	5.3	3.7
3	849.893	2.1	5.4	990.012	13.6	10.8	103.8	0.0	2.4	111.0	3.3	3.7
4	911.053	32.0	10.3	1006.971	7.0	11.8	104.1	1.2	2.1	111.9	3.3	3.6
1997 1	929.410	8.3	11.5	1050.935	18.6	13.1	104.1	0.0	1.0	112.9	3.6	3.9
2	963.594	15.5	14.0	1095.206	17.9	14.2	104.5	1.5	0.7	113.6	2.5	3.2
3	988.109	10.6	16.3	1130.521	13.5	14.2	105.4	3.5	1.5	114.6	3.6	3.2
4	998.838	4.4	9.6	1147.840	6.3	14.0	105.7	1.1	1.5	116.0	5.0	3.7
1998 1	991.875	−2.8	6.7	1190.406	15.7	13.3	106.5	3.1	2.3	117.4	4.9	4.0
2	972.130	−7.7	0.9	1217.298	9.3	11.1	106.6	0.4	2.0	118.5	3.8	4.3
3	965.282	−2.8	−2.3	1224.329	2.3	8.3	107.3	2.7	1.8	119.7	4.1	4.5
4	1009.580	19.7	1.1	1259.630	12.0	9.7	108.4	4.2	2.6	120.8	3.7	4.1
1999 1	996.517	−5.1	0.5	1300.135	13.5	9.2	109.4	3.7	2.7	122.1	4.4	4.0
2	1008.519	4.9	3.7	1346.568	15.1	10.6	109.6	0.7	2.8	123.6	5.0	4.3

	Household Survey Employment				Nonfarm Payroll Employment				Nonfarm Aggregate Hours			
			Percent change				Percent change			Percent change		
	Thousands	Change	Annual rate	Year ago	Thousands	Change	Annual rate	Year ago	Index	Monthly rate	Annual rate	Year ago
1994	123071	2813		2.3	114135	3443		3.1	129.8			4.2
1995	124906	1834		1.5	117189	3054		2.7	133.4			2.7
1996	126710	1805		1.4	119594	2405		2.1	136.6			2.4
1997	129559	2848		2.2	122673	3079		2.6	141.4			3.5
1998	131458	1899		1.5	125803	3130		2.6	145.1			2.6
1997 1	128612	829	2.6	2.4	121447	779	2.6	2.5	139.7	0.9	3.7	3.9
2	129355	743	2.3	2.4	122294	847	2.8	2.5	140.9	0.9	3.7	3.4
3	129855	500	1.6	2.1	123006	712	2.4	2.5	141.9	0.7	2.8	3.3
4	130413	558	1.7	2.1	123946	940	3.1	2.7	143.2	0.9	3.6	3.4
1998 1	130957	544	1.7	1.8	124771	825	2.7	2.7	144.2	0.7	3.0	3.3
2	131288	330	1.0	1.5	125462	691	2.2	2.6	144.7	0.3	1.3	2.7
3	131419	132	0.4	1.2	126113	651	2.1	2.5	145.3	0.4	1.6	2.4
4	132166	746	2.3	1.3	126865	752	2.4	2.4	146.2	0.7	2.7	2.1
1999 1	133191	1025	3.1	1.7	127640	776	2.5	2.3	147.0	0.5	2.0	1.9
2	133242	51	0.2	1.5	128246	606	1.9	2.2	147.3	0.2	1.0	1.8
1997 Aug	129910	165	1.5	2.2	122894	72	0.7	2.4	141.9	0.4	4.3	3.3
Sep	129911	1	0.0	1.9	123302	408	4.1	2.6	142.4	0.4	4.3	3.2
Oct	130055	144	1.3	1.8	123626	324	3.2	2.7	142.7	0.2	2.6	3.5
Nov	130546	491	4.6	2.2	123949	323	3.2	2.7	143.3	0.4	5.2	3.6
Dec	130638	92	0.8	2.2	124263	314	3.1	2.8	143.5	0.1	1.7	3.2
1998 Jan	130943	305	2.8	1.9	124580	317	3.1	2.8	144.3	0.6	6.9	4.0
Feb	131021	78	0.7	2.0	124773	193	1.9	2.8	144.3	0.0	0.0	3.3
Mar	130908	−113	−1.0	1.5	124961	188	1.8	2.6	144.1	−0.1	−1.7	2.5
Apr	131280	372	3.5	1.6	125220	259	2.5	2.6	144.3	0.1	1.7	2.6
May	131330	50	0.5	1.5	125478	258	2.5	2.6	145.0	0.5	6.0	2.7
Jun	131253	−77	−0.7	1.4	125689	211	2.0	2.6	144.8	−0.1	−1.6	2.8
Jul	131176	−77	−0.7	1.1	125808	119	1.1	2.4	145.2	0.3	3.4	2.7
Aug	131264	88	0.8	1.0	126170	362	3.5	2.7	145.5	0.2	2.5	2.5
Sep	131818	554	5.2	1.5	126361	191	1.8	2.5	145.1	−0.3	−3.2	1.9
Oct	131858	40	0.4	1.4	126567	206	2.0	2.4	146.0	0.6	7.7	2.3
Nov	132113	255	2.3	1.2	126841	274	2.6	2.3	146.1	0.1	0.8	2.0
Dec	132526	413	3.8	1.4	127186	345	3.3	2.4	146.6	0.3	4.2	2.2
1999 Jan	133396	870	8.2	1.9	127378	192	1.8	2.2	146.8	0.1	1.6	1.7
Feb	133144	−252	−2.2	1.6	127730	352	3.4	2.4	147.3	0.3	4.2	2.1
Mar	133033	−111	−1.0	1.6	127813	83	0.8	2.3	146.8	−0.3	−4.0	1.9
Apr	133069	36	0.3	1.4	128134	321	3.1	2.3	147.0	0.1	1.6	1.9
May	133224	155	1.4	1.4	128162	28	0.3	2.1	147.2	0.1	1.6	1.5
Jun	133432	208	1.9	1.7	128443	281	2.7	2.2	147.8	0.4	5.0	2.1
Jul	133307	−125	−1.1	1.6	128781	338	3.2	2.4	148.3	0.3	4.1	2.1
Aug	133411	104	0.9	1.6	128905	124	1.2	2.2	148.5	0.1	1.6	2.1

	Unempl. Rate	Retail Sales: Billions of dollars	Retail Sales: Percent change: Monthly/ quarterly	Retail Sales: Percent change: Annual rate	Retail Sales: Percent change: Year ago	Industrial Production: Index	Industrial Production: Percent change: Monthly/ quarterly	Industrial Production: Percent change: Annual rate	Industrial Production: Percent change: Year ago	Treasury Yields: 3-mo	Treasury Yields: 10-yr
1994	6.1	2247.847			8.0	109.062			5.4	4.25	7.08
1995	5.6	2364.120			5.2	114.441			4.9	5.49	6.58
1996	5.4	2500.076			5.8	119.548			4.5	5.01	6.44
1997	4.9	2617.854			4.7	126.731			6.0	5.06	6.35
1998	4.5	2746.168			4.9	131.378			3.7	4.78	5.26
1997 1	5.2	650.319	2.0	8.2	6.2	123.746	1.6	6.6	6.3	5.06	6.56
2	5.0	645.245	−0.8	−3.1	3.5	125.564	1.5	6.0	5.4	5.05	6.70
3	4.9	660.049	2.3	9.5	5.3	127.773	1.8	7.2	5.8	5.05	6.24
4	4.7	662.241	0.3	1.3	3.9	129.840	1.6	6.6	6.6	5.09	5.90
1998 1	4.6	671.704	1.4	5.8	3.3	130.368	0.4	1.6	5.4	5.05	5.59
2	4.4	685.168	2.0	8.3	6.2	131.278	0.7	2.8	4.6	4.98	5.60
3	4.5	685.627	0.1	0.3	3.9	131.569	0.2	0.9	3.0	4.82	5.20
4	4.4	703.669	2.6	10.9	6.3	132.295	0.6	2.2	1.9	4.26	4.67
1999 1	4.3	726.609	3.3	13.7	8.2	132.709	0.3	1.3	1.8	4.41	4.98
2	4.3	739.004	1.7	7.0	7.9	133.952	0.9	3.8	2.0	4.45	5.54
1997 Sep	4.9	220.430	−0.1	−1.1	4.7	128.468	0.5	6.3	6.1	4.95	6.21
Oct	4.7	219.841	−0.3	−3.2	3.5	129.296	0.6	8.0	6.7	4.97	6.03
Nov	4.6	220.740	0.4	5.0	4.0	129.899	0.5	5.7	6.6	5.14	5.87
Dec	4.7	221.660	0.4	5.1	4.0	130.325	0.3	4.0	6.5	5.16	5.81
1998 Jan	4.6	223.038	0.6	7.7	3.6	130.270	−0.0	−0.5	5.9	5.04	5.54
Feb	4.6	224.158	0.5	6.2	3.1	130.150	−0.1	−1.1	5.0	5.09	5.57
Mar	4.7	224.508	0.2	1.9	3.1	130.684	0.4	5.0	5.1	5.03	5.65
Apr	4.3	226.659	1.0	12.1	5.4	131.331	0.5	6.1	5.0	4.95	5.64
May	4.4	228.631	0.9	11.0	6.9	131.861	0.4	5.0	5.1	5.00	5.65
Jun	4.5	229.878	0.5	6.7	6.3	130.642	−0.9	−10.5	3.6	4.98	5.50
Jul	4.5	228.067	−0.8	−9.1	4.1	130.479	−0.1	−1.5	2.7	4.96	5.46
Aug	4.5	228.277	0.1	1.1	3.5	132.367	1.4	18.8	3.6	4.90	5.34
Sep	4.5	229.283	0.4	5.4	4.0	131.860	−0.4	−4.5	2.6	4.61	4.81
Oct	4.5	232.379	1.4	17.5	5.7	132.370	0.4	4.7	2.4	3.96	4.53
Nov	4.4	234.504	0.9	11.5	6.2	132.166	−0.2	−1.8	1.7	4.42	4.83
Dec	4.3	236.786	1.0	12.3	6.8	132.350	0.1	1.7	1.6	4.39	4.64
1999 Jan	4.3	239.595	1.2	15.2	7.4	132.295	−0.0	−0.5	1.6	4.34	4.72
Feb	4.4	243.619	1.7	22.1	8.7	132.483	0.1	1.7	1.8	4.44	5.00
Mar	4.2	243.395	−0.1	−1.1	8.4	133.348	0.7	8.1	2.0	4.44	5.23
Apr	4.3	244.748	0.6	6.9	8.0	133.700	0.3	3.2	1.8	4.29	5.18
May	4.2	247.228	1.0	12.9	8.1	133.959	0.2	2.3	1.6	4.50	5.54
Jun	4.3	247.028	−0.1	−1.0	7.5	134.198	0.2	2.2	2.7	4.57	5.90
Jul	4.3	249.498	1.0	12.7	9.4	135.203	0.7	9.4	3.6	4.55	5.79
Aug	4.2	252.390	1.2	14.8	10.6	135.630	0.3	3.9	2.5	4.72	5.94
Sep										4.68	5.92

	Consumer Price Index					Consumer Price Index less Food and Energy					Producer Price Index Finished Goods			
		Percent change					Percent change					Percent change		
	Index	Monthly/ quarterly	Annual rate	Year ago	Year to date	Index	Monthly/ quarterly	Annual rate	Year ago	Year to date	Index	Monthly/ quarterly	Annual rate	Year ago
1994	148.3			2.6		156.7			2.8		125.5			0.6
1995	152.5			2.8		161.4			3.0		127.9			1.9
1996	157.0			2.9		165.8			2.7		131.3			2.6
1997	160.6			2.3		169.7			2.4		131.8			0.4
1998	163.1			1.6		173.7			2.3		130.7			−0.9
1997 1	159.7	0.6	2.5	2.9	2.5	168.3	0.5	2.2	2.5	2.2	132.7	0.1	0.4	2.1
2	160.2	0.3	1.2	2.3	1.9	169.5	0.7	2.8	2.5	2.5	131.6	−0.9	−3.4	0.4
3	160.9	0.5	1.9	2.2	1.9	170.1	0.4	1.6	2.3	2.2	131.3	−0.2	−0.8	−0.1
4	161.7	0.5	1.8	1.9	1.9	171.1	0.5	2.2	2.2	2.2	131.6	0.2	0.7	−0.8
1998 1	162.1	0.2	1.0	1.5	1.0	172.1	0.6	2.4	2.3	2.4	130.5	−0.8	−3.1	−1.7
2	162.8	0.5	1.8	1.6	1.4	173.2	0.7	2.7	2.2	2.5	130.6	0.0	0.1	−0.8
3	163.5	0.4	1.6	1.6	1.5	174.2	0.5	2.2	2.4	2.4	130.5	−0.0	−0.1	−0.6
4	164.2	0.4	1.7	1.5	1.5	175.1	0.6	2.2	2.4	2.4	131.0	0.4	1.4	−0.4
1999 1	164.8	0.4	1.5	1.7	1.5	175.8	0.4	1.6	2.2	1.6	131.4	0.3	1.3	0.7
2	166.2	0.9	3.5	2.1	2.5	176.9	0.6	2.4	2.1	2.0	132.3	0.7	2.7	1.3
1997 Aug	160.9	0.2	2.3	2.3	1.7	170.0	0.0	0.0	2.3	2.1	131.3	0.2	2.8	−0.2
Sep	161.3	0.2	3.0	2.2	1.8	170.4	0.2	2.9	2.2	2.2	131.7	0.3	3.7	0.0
Oct	161.5	0.1	1.5	2.0	1.8	170.8	0.2	2.9	2.2	2.2	131.8	0.1	0.9	−0.4
Nov	161.7	0.1	1.5	1.9	1.8	171.0	0.1	1.4	2.2	2.1	131.5	−0.2	−2.7	−0.8
Dec	161.8	0.1	0.7	1.7	1.7	171.4	0.2	2.8	2.2	2.2	131.4	−0.1	−0.9	−1.2
1998 Jan	162.0	0.1	1.5	1.6	1.5	171.7	0.2	2.1	2.3	2.1	130.6	−0.6	−7.1	−1.8
Feb	162.1	0.1	0.7	1.4	1.1	172.2	0.3	3.6	2.3	2.8	130.5	−0.1	−0.9	−1.7
Mar	162.1	0.0	0.0	1.4	0.7	172.4	0.1	1.4	2.2	2.4	130.5	0.0	0.0	−1.5
Apr	162.5	0.2	3.0	1.5	1.3	172.9	0.3	3.5	2.2	2.6	130.7	0.2	1.9	−0.9
May	162.9	0.2	3.0	1.7	1.6	173.3	0.2	2.8	2.2	2.7	130.6	−0.1	−0.9	−0.8
Jun	163.0	0.1	0.7	1.7	1.5	173.5	0.1	1.4	2.2	2.5	130.4	−0.2	−1.8	−0.7
Jul	163.3	0.2	2.2	1.7	1.6	173.8	0.2	2.1	2.2	2.4	130.7	0.2	2.8	−0.2
Aug	163.5	0.1	1.5	1.6	1.6	174.2	0.2	2.8	2.5	2.5	130.3	−0.3	−3.6	−0.8
Sep	163.6	0.1	0.7	1.4	1.5	174.5	0.2	2.1	2.4	2.4	130.6	0.2	2.8	−0.8
Oct	163.9	0.2	2.2	1.5	1.6	174.8	0.2	2.1	2.3	2.4	131.0	0.3	3.7	−0.6
Nov	164.2	0.2	2.2	1.5	1.6	175.0	0.1	1.4	2.3	2.3	130.7	−0.2	−2.7	−0.6
Dec	164.4	0.1	1.5	1.6	1.6	175.6	0.3	4.2	2.5	2.5	131.3	0.5	5.7	−0.1
1999 Jan	164.6	0.1	1.5	1.6	1.5	175.7	0.1	0.7	2.3	0.7	131.7	0.3	3.7	0.8
Feb	164.7	0.1	0.7	1.6	1.1	175.8	0.1	0.7	2.1	0.7	131.1	−0.5	−5.3	0.5
Mar	165.0	0.2	2.2	1.8	1.5	176.0	0.1	1.4	2.1	0.9	131.5	0.3	3.7	0.8
Apr	166.2	0.7	9.1	2.3	3.3	176.7	0.4	4.9	2.2	1.9	132.2	0.5	6.6	1.1
May	166.2	0.0	0.0	2.0	2.6	176.9	0.1	1.4	2.1	1.8	132.4	0.2	1.8	1.4
Jun	166.2	0.0	0.0	2.0	2.2	177.0	0.1	0.7	2.0	1.6	132.3	−0.1	−0.9	1.5
Jul	166.7	0.3	3.7	2.1	2.4	177.3	0.2	2.1	2.0	1.7	132.6	0.2	2.8	1.5
Aug	167.2	0.3	3.7	2.3	2.6	177.5	0.1	1.4	1.9	1.6	133.3	0.5	6.5	2.3

Notes

Pages 4, 5: **Final sales** is gross domestic product (GDP) minus change in business inventories. **Advance, preliminary, and final GDP growth rates** are released during the first, second, and third months of the following quarter. Changes result from incorporation of more complete information. The **Purchasing Managers' Index** is a weighted average of diffusion indexes for new orders, production, supplier deliveries, inventories, and employment. The National Association of Purchasing Management (NAPM) surveys over 300 firms in 20 manufacturing industries, weighting responses by industry share of GDP. **Aggregate and average weekly hours** are paid hours of production and nonsupervisory employees. The inventory-sales ratio uses nominal (current-dollar) inventory and sales data.

Page 6: The **contribution** of a component X_t to the overall GDP growth rate in quarter t is $100 \times [(1 + (X_t - X_{t-1})/GDP_{t-1})^4 - 1]$. The sign is changed for **imports**. This calculation forces components to add up to the GDP growth rate before compounding and does not exactly match *Survey of Current Business*, Table 8.2. The **residual** line is calculated using the finest level of detail in the table.

Page 7: Ten-year **Treasury yields** are adjusted to constant maturity. Three-month yields are secondary market averages, but all rates used in the yield curves are adjusted to constant maturity. **Standard and Poor's 500 Index with Reinvested Dividends** shows the total return: capital gains plus dividends.

Pages 8,9: **Oil prices** are monthly averages of daily spot prices for West Texas intermediate crude (*Wall Street Journal)*. **Consumer price index** is for all urban consumers. The **consumption chain price index** is the index associated with the personal consumption expenditures component of GDP. The **Employment Cost Index (ECI)** covers private nonfarm employers. **ECI compensation** refers to a fixed sample of jobs, while **compensation per hour** covers all workers in the nonfarm business sector in a given quarter. In both cases, **compensation** is wages and salaries plus benefits.

Pages 10,11: **Nonfarm payroll employment** is counted in a survey of about 390,000 establishments (Current Employment Survey). It excludes self-employed individuals and workers in private households, but double-counts individuals with more than one job. The **household survey** (Current Population Survey) of about 50,000 households provides estimates of civilian employment, unemployment rate, labor force participation rate, and employment-population ratio. **Population** is civilian, noninstitutional, 16 years and over. New population controls introduced in January 1997 affect levels and growth rates of household survey employment, labor force and population. The unemployment rate and other ratios are minimally affected. 90 percent confidence intervals for the unemployment rate (± 0.2 percentage points) and change in household survey employment (± 376,000) measure uncertainty due to sample size. The household survey was changed in January 1994, so care should be exercised in making short-term comparisons around this date, particularly with the duration data shown on page 10. Other changes in the survey are detailed in Bureau of Labor Statistics, *Employment and Earnings*, Appendix A.

Pages 13: The **Michigan consumer sentiment index** shows changes in a summary measure of consumers' answers to five questions about their current and expected financial situation, expectations about future economic conditions, and attitudes about making large purchases. The survey is based on a representative sample of U.S. households.

Pages 14, 15: Overall **gross saving** includes government saving, which is the sum of the government surplus and capital consumption (see notes for pages 16 and 17). **Net foreign investment (NFI)** is U.S. investment abroad minus foreign investment in the U.S. Aside from a statistical discrepancy, NFI also equals the difference between gross domestic investment and saving.

Pages 16, 17: **Government consumption and investment** is current expenditures on goods and services, including capital consumption (depreciation) and gross investment, as reported in the National Income and Product Accounts (NIPA). The **unified federal budget deficit** differs from **NIPA basis** in four main ways: (1) NIPA excludes transactions involving existing assets; (2) NIPA outlays exclude government investment and include consumption of government capital, while unified budget outlays do the reverse; (3) NIPA accounts exclude Puerto Rico and U.S. territories; and (4) various timing issues are handled differently. **Outlays and receipts** are from the NIPAs, except as noted. Since 1977, the federal **fiscal year** starts on October 1. Excluded agency debt was 0.6 percent of federal debt at the end of fiscal 1997. **Federal debt held by the public** includes holdings of the Federal Reserve System and excludes holdings of the social security and other federal trust funds. Federal grants in aid to state and local governments appear in both state and local receipts and federal outlays.

Pages 18, 19: The **trade balance** (shown on a balance of payments basis) is the difference between exports and imports of goods (merchandise) and services. It is nearly identical in concept to the **net exports** component of GDP, but differs slightly in accounting details. The **investment income balance** equals income received from U.S.-owned assets in other countries minus income paid on foreign-owned assets in the U.S. The investment income balance is nearly identical in concept to the difference between gross national product and gross domestic product, but differs in accounting details. The **current account balance** is the trade balance plus the balance on investment income plus net unilateral transfers to the U.S. from other countries.

Pages 20, 21: **Output per hour** (Y/H), **unit labor cost** (C/Y), and **compensation per hour** (C/H) are indexes which approximately obey the following relationship: %(Y/H) + %(C/Y) = %(C/H) with %() meaning percent changes. Unit labor cost is shown on page 9. **Real compensation per hour** uses the CPI to adjust for the effects of inflation. **Multifactor productivity** estimates changes in output that do not correspond to changes in quantities of labor, capital, or intermediate inputs. **Inventory valuation adjustments (IVA)** remove the effect of changes in the value of existing inventories from corporate profits and proprietors' income. (This change in value does not correspond to current production and therefore is not part of GDP). **Capital consumption adjustments (CCAdj)** increase profits and proprietors' income by the difference between estimates of economic depreciation and depreciation allowed by the tax code. Components of national income not shown are rental income of persons and net interest.

Sources

Bureau of Economic Analysis (BEA), U.S. Dept. of Commerce
National income and product accounts, international trade and investment data (except by country), auto and light truck sales

Census Bureau, U.S. Dept. of Commerce
Inventory-sales ratios, retail sales, capital goods orders, housing starts, exports and imports by country

Bureau of Labor Statistics (BLS), U.S. Dept. of Labor
All employment-related data, employment cost index, consumer and producer price indexes, unit labor cost, output per hour, compensation per hour, multifactor productivity

United States Department of Treasury
Unified budget receipts, outlays, deficit, debt

Federal Reserve Board
Index of industrial production, treasury yields, exchange rates, capacity utilization, household debt

The Survey Research Center, The University of Michigan
Consumer sentiment index

The Conference Board
Help-wanted advertising index

Organization for Economic Cooperation and Development (OECD)
GDP for major trading partners (not available on FRED)