

The Less Volatile U.S. Economy

Observers of the economy have clearly documented that U.S. aggregate output has become much less volatile since the early 1980s. The accompanying chart plots the annualized standard deviation of quarterly growth of real gross domestic product (GDP) using a 60-quarter rolling window. The value corresponding to 1962:Q2 is the standard deviation of GDP growth between 1947:Q3 and 1962:Q2, for example. The downward movement in output volatility is particularly pronounced after 1984: The standard deviation of economic growth declined sharply from over 4 percent to about 2 percent in recent years.

Economists have put forth three explanations why output growth may have become more stable in the past 20 years. One focuses on the conduct of monetary policy and the accompanying decline in inflation. Prior to the early 1980s, the Federal Reserve relied at times on recessions to rein in inflation. Since then, the Federal Reserve has been proactive in keeping inflation contained. Another explanation is that the U.S. economy simply has enjoyed good fortune in that there have been, for example, fewer tumultuous oil price shocks, which can cause volatility in economic activity. The third explanation suggests that improvements in inventory management are important for understanding the reduction in volatility. That is, while the durable goods sector has experienced a dramatic decline in output volatility in the past two decades, final sales of durable goods have seen only a moderate decline in volatility. Therefore, durable goods inventories—the difference between production and final sales—account for a substantial reduction in output variability in the durable goods sector and in the aggregate economy.

Stock and Watson (2002) conduct a comprehensive analysis on this issue and provide some insights on the relative importance of the three hypotheses in

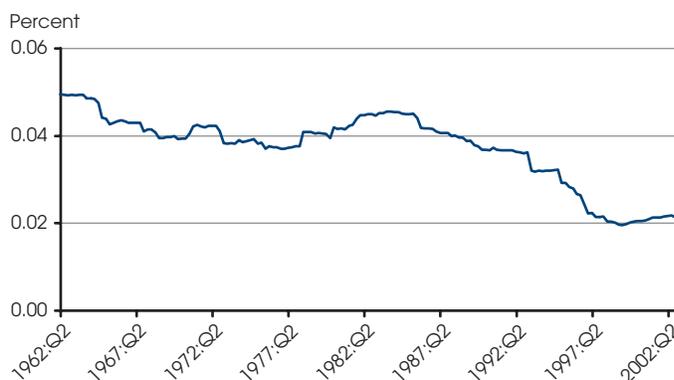
explaining the decline in output volatility.¹ Their results indicate that improved monetary policy could account for 20 to 30 percent of the volatility reduction and that smaller shocks probably account for most of the rest. However, they acknowledge that their conclusions are tentative and are open to further investigation.

The fact that U.S. output growth is more stable now than it was two decades ago has important implications in interpreting economic data. For example, in the 1970s, changes in annualized GDP growth that seem large by today's standards were, back then, within one standard deviation of the mean and thus policymakers could consider them noise. In contrast, a shock to output growth of a similar magnitude today would be cause for believing that the economy might be near a business cycle turning point and would be more likely to elicit a prompt response from monetary policymakers. Perhaps for this reason, Federal Reserve policymakers began cutting the federal funds rate aggressively in January 2001, based on a slowing economy that would not actually enter a recession until March 2001.

—Hui Guo

¹Stock, James and Watson, Mark. "Has the Business Cycle Changed and Why?" in Mark Gertler and Kenneth Rogoff, eds., *NBER Macroeconomics Annual*, 2002. Cambridge, MA: MIT Press, pp. 159-218.

**Rolling Standard Deviation of GDP Growth:
1962:Q2 to 2003:Q2**



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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 during the previous year. *Compounded annual rate of change* 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 compounded annual rate of change of x between the previous quarter $t-1$ and the current quarter t is: $[(x_t/x_{t-1})^4 - 1] \times 100$. For monthly data replace 4 with 12.
3. All data with significant seasonal patterns are adjusted accordingly, unless labeled NSA.

We welcome your comments addressed to:

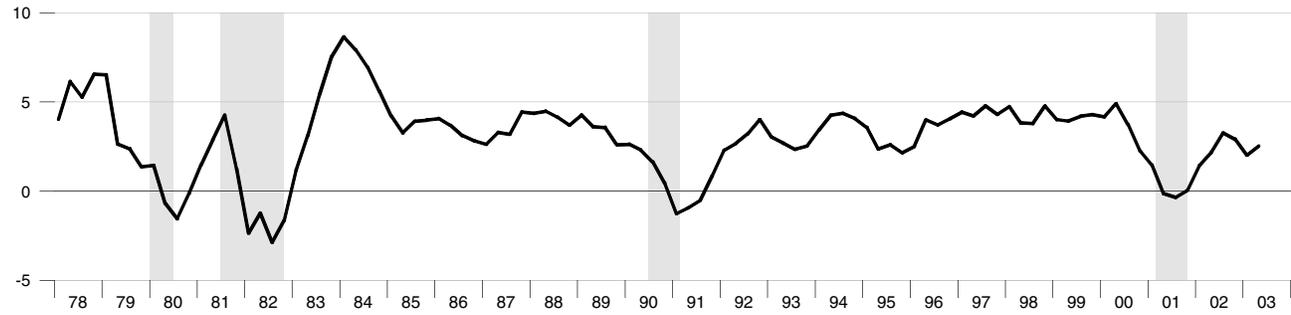
Editor, *National Economic Trends*
Research Division
Federal Reserve Bank of St. Louis
P.O. Box 442
St. Louis, MO 63166-0442

or to:

stlsFRED@stls.frb.org

Real Gross Domestic Product

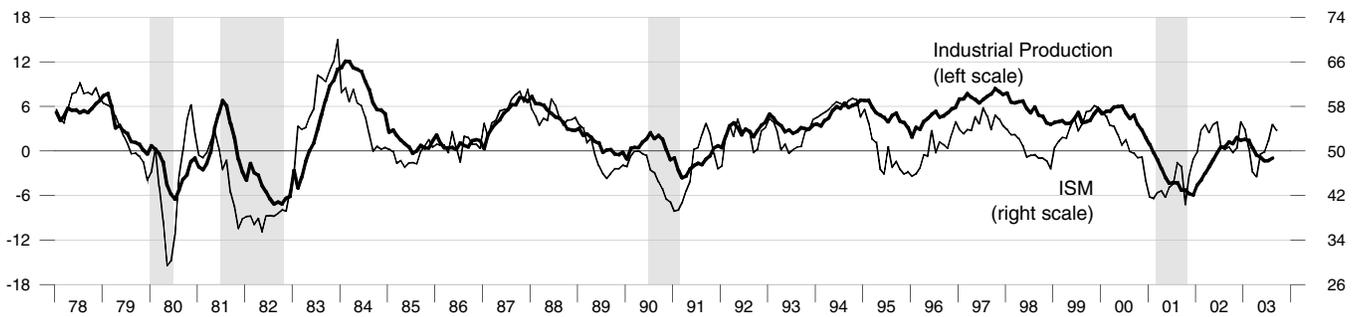
Percent change from year ago



Industrial Production and Institute for Supply Management (ISM) Indexes

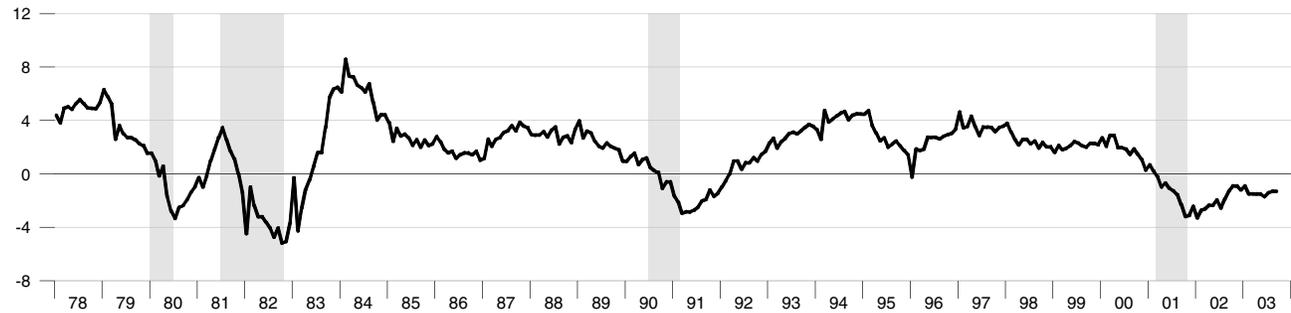
Percent change from year ago

Index



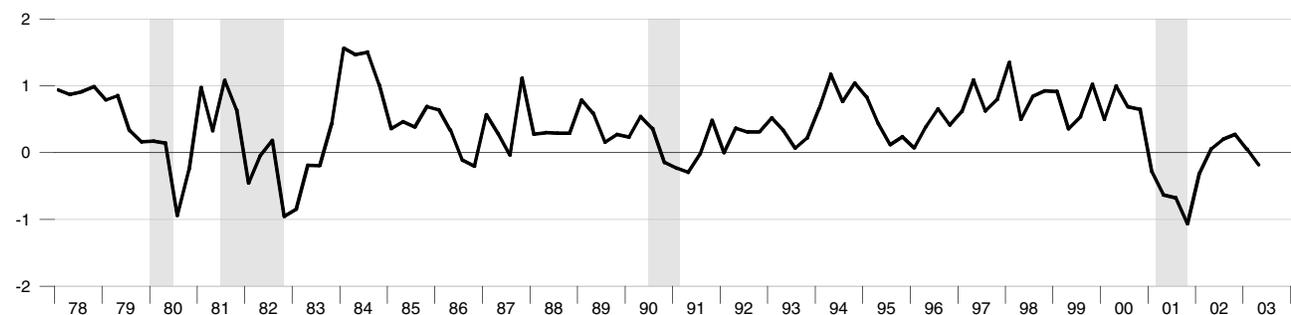
Aggregate Private Nonfarm Hours

Percent change from year ago

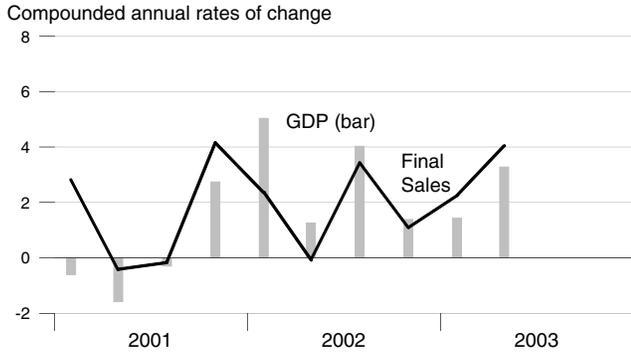


Real Change in Private Inventories

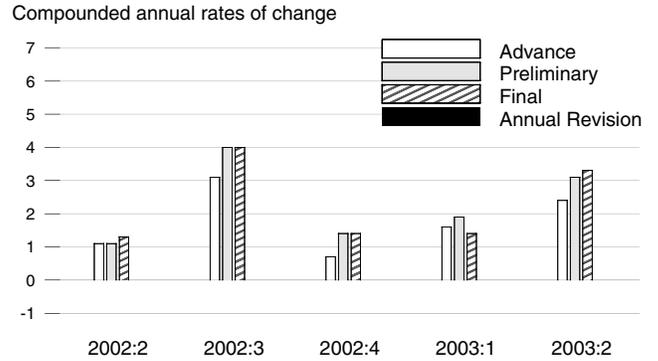
Percent of GDP



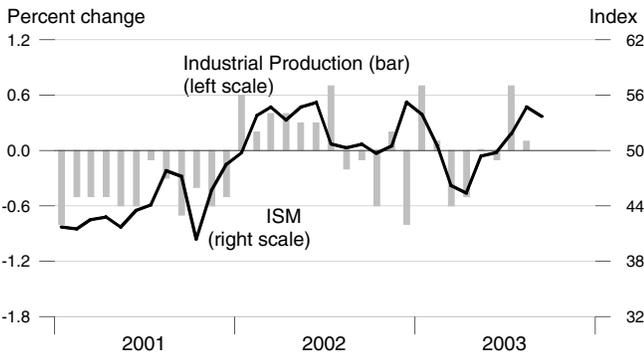
Real Final Sales and GDP



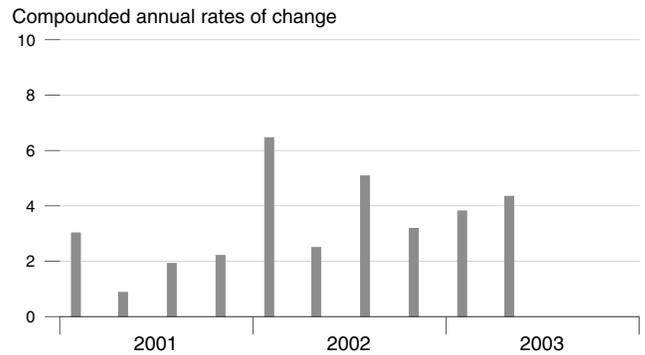
Real GDP Revisions



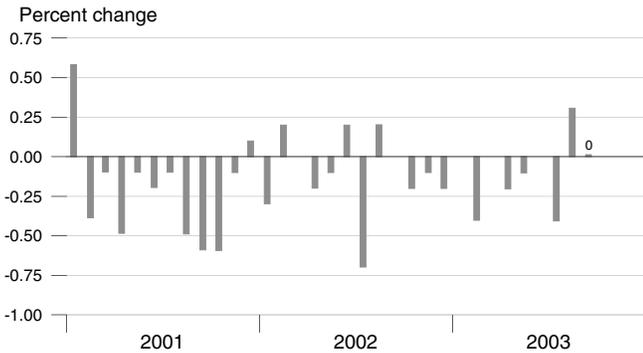
Industrial Production and ISM Index



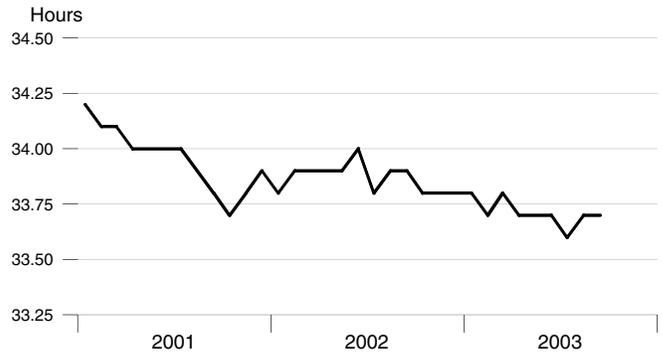
Nominal Gross Domestic Product



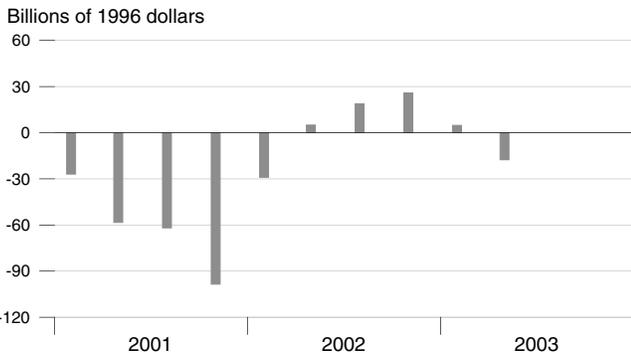
Aggregate Private Nonfarm Hours



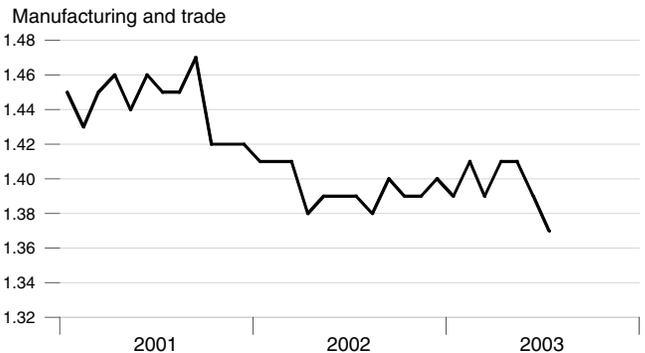
Average Weekly Private Nonfarm Hours



Real Change in Private Inventories

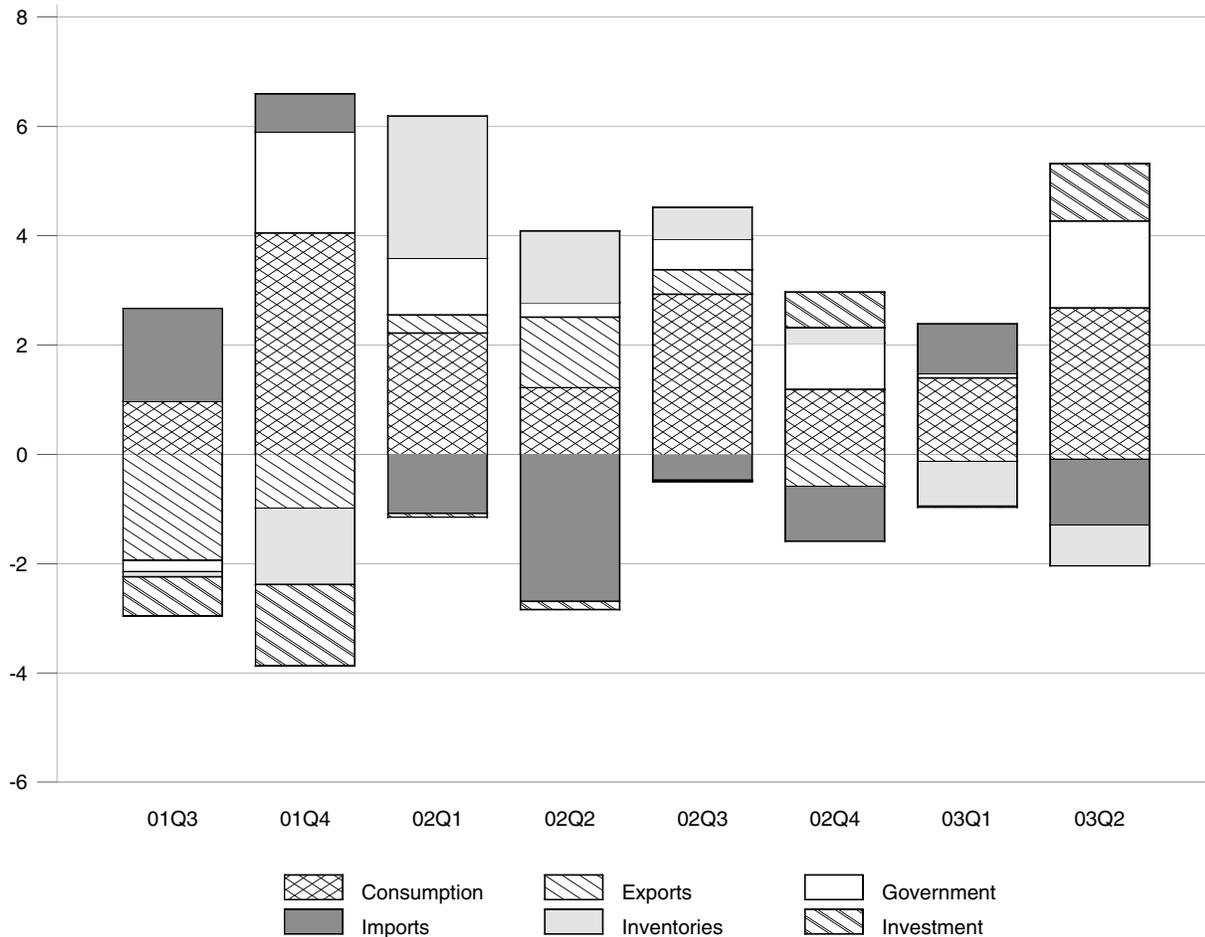


Inventory-Sales Ratio



Contribution of Components to Real GDP Growth

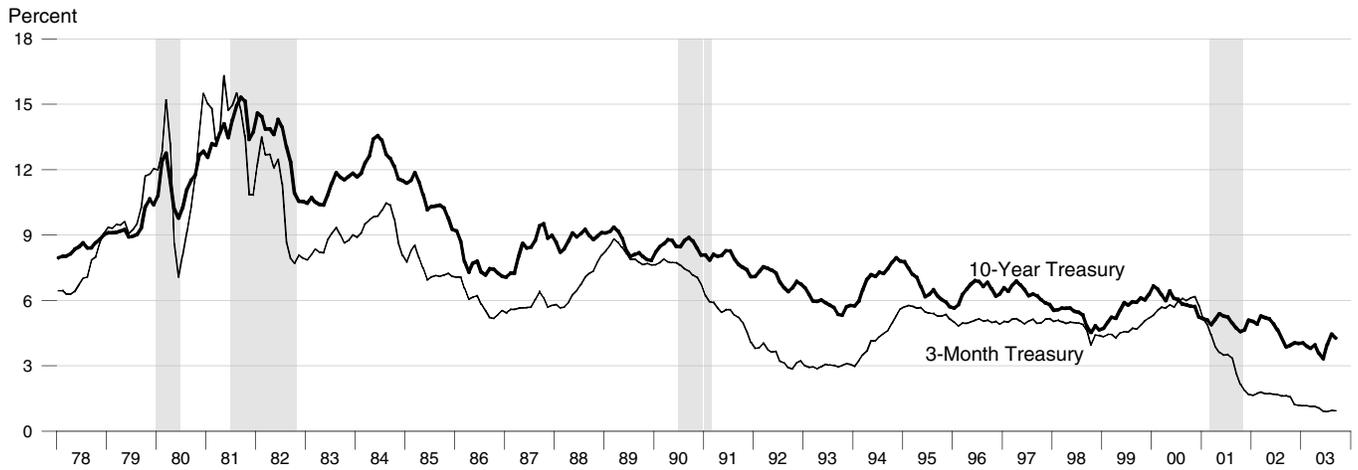
Percentage points at compounded annual rates



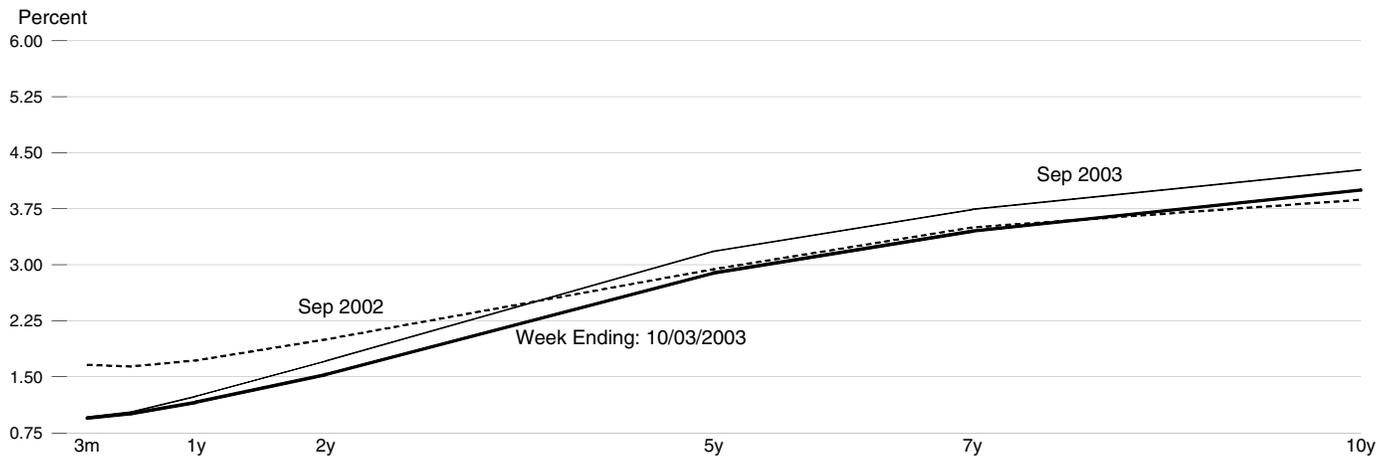
Contributions to Real GDP Growth Rate

	2001		2002				2003	
	3rd	4th	1st	2nd	3rd	4th	1st	2nd
Final Sales	-0.20	4.13	2.44	-0.06	3.45	1.10	2.25	4.02
Change in Inventory	-0.09	-1.39	2.60	1.31	0.58	0.28	-0.82	-0.74
Consumption	0.97	4.05	2.22	1.22	2.93	1.19	1.40	2.68
Fixed Investment	-0.72	-1.49	-0.07	-0.15	-0.03	0.65	-0.02	1.05
Nonresidential	-0.73	-1.33	-0.66	-0.27	-0.08	0.24	-0.47	0.74
Residential	0.02	-0.16	0.60	0.12	0.05	0.41	0.45	0.31
Government	-0.21	1.85	1.04	0.27	0.56	0.85	0.08	1.59
Federal	0.07	0.80	0.47	0.47	0.29	0.70	0.05	1.61
State and Local	-0.28	1.05	0.56	-0.21	0.27	0.15	0.03	-0.02
Net Exports	-0.24	-0.28	-0.75	-1.40	-0.01	-1.59	0.78	-1.29
Exports	-1.94	-0.99	0.33	1.29	0.45	-0.59	-0.13	-0.09
Imports	1.70	0.70	-1.08	-2.69	-0.47	-1.00	0.91	-1.21
Residual	0.07	0.42	-0.05	0.27	0.06	0.28	0.08	0.37
Real GDP Growth	-0.29	2.74	5.04	1.25	4.03	1.38	1.43	3.28

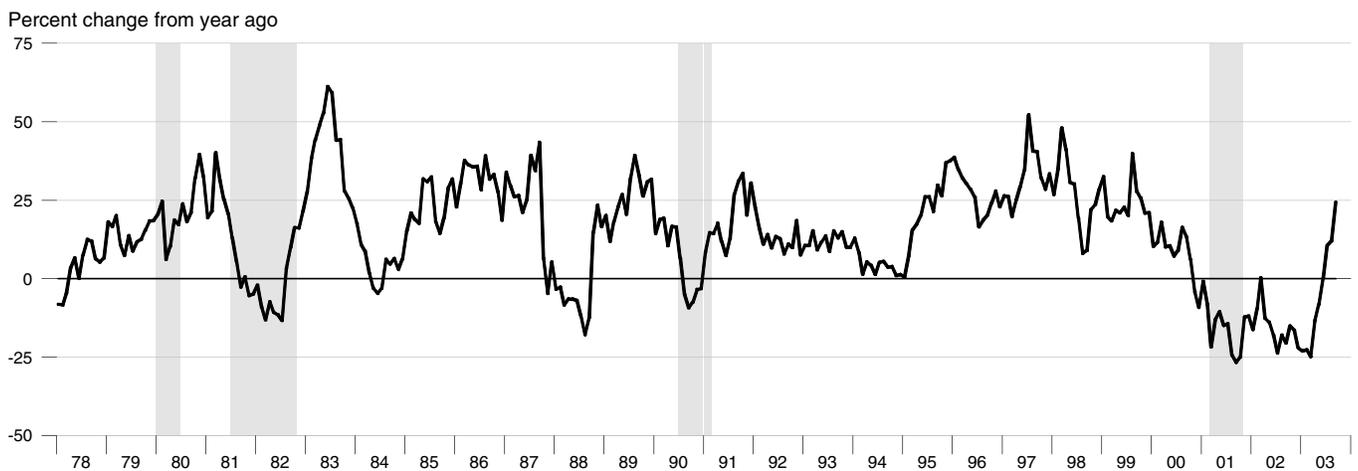
Interest Rates



Treasury Yield Curve

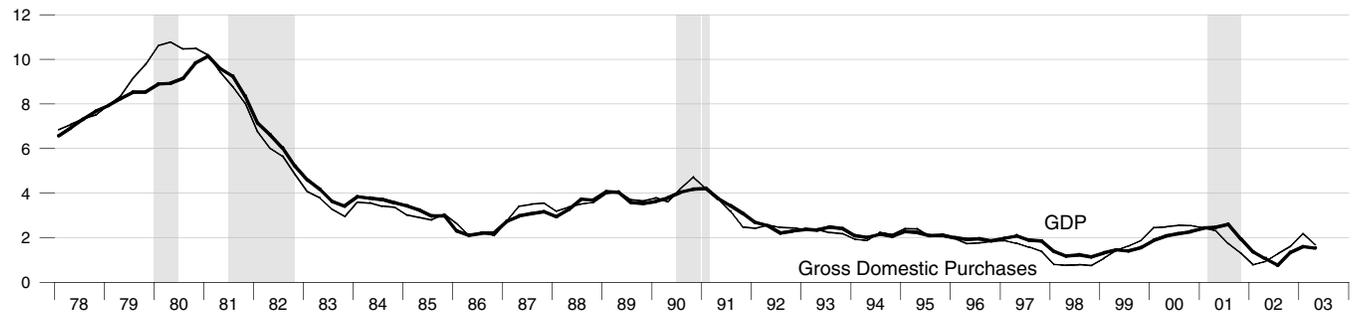


Standard and Poor's 500 Index with Reinvested Dividends



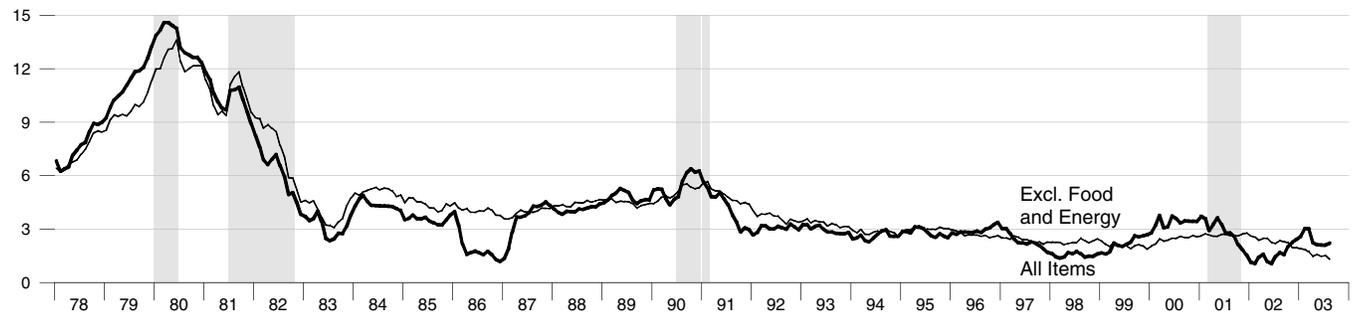
NIPA Chain Price Indexes

Percent change from year ago



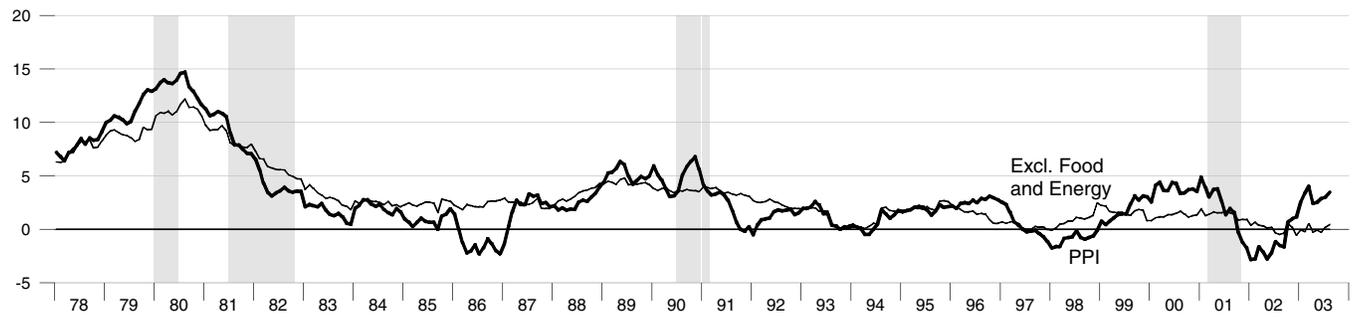
Consumer Price Index

Percent change from year ago



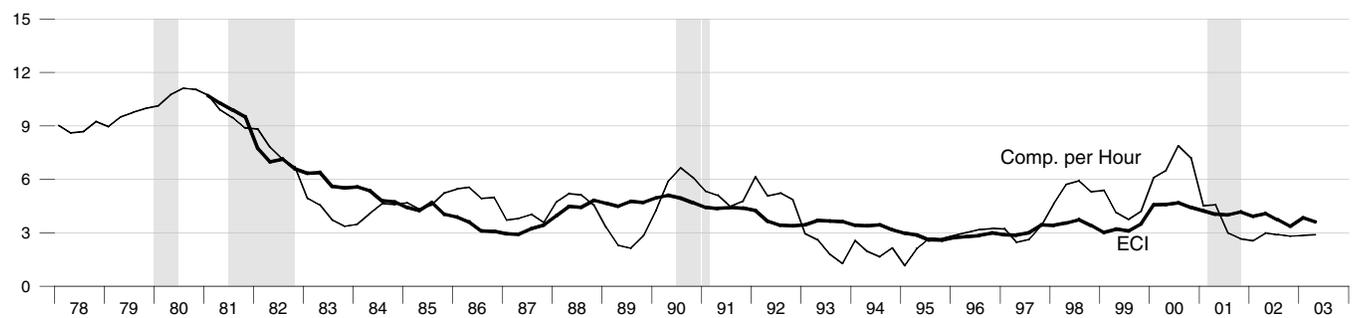
Producer Price Index, Finished Goods

Percent change from year ago

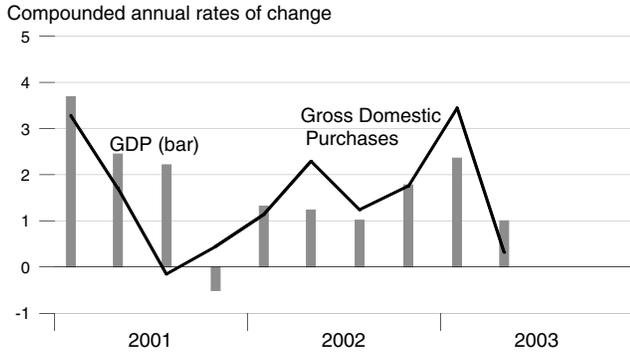


Employment Cost Index and Compensation per Hour

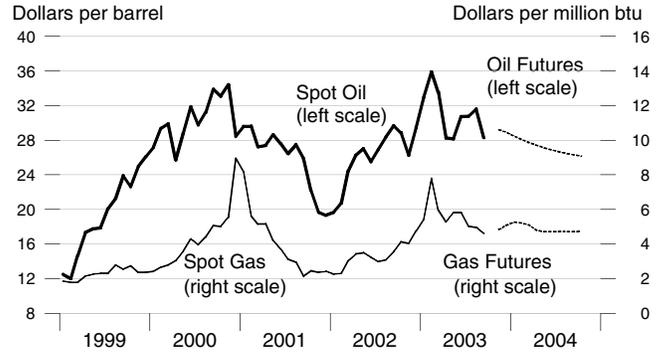
Percent change from year ago



NIPA Chain Price Indexes

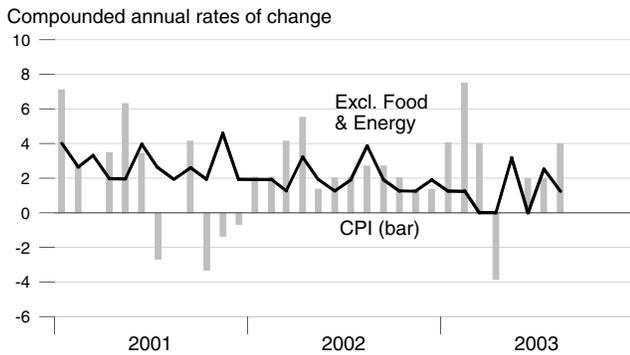


Oil & Natural Gas Prices: Spot & Futures

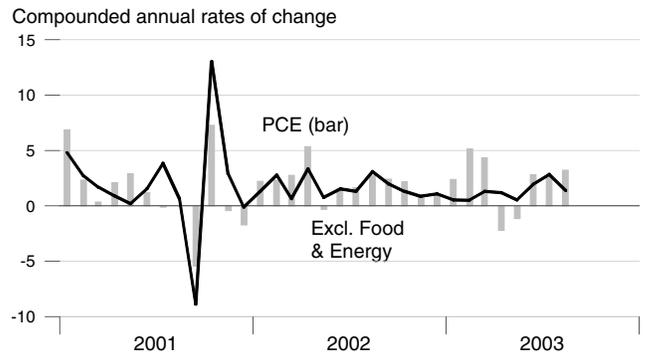


Note: Futures prices as of 09/30/2003.

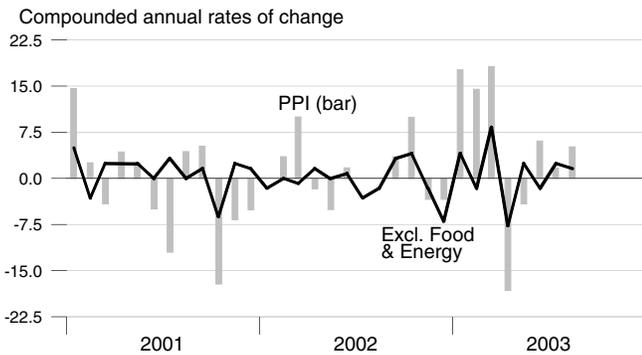
Consumer Price Index



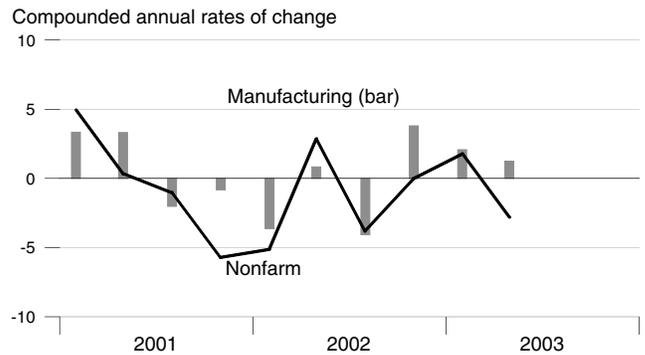
Consumption Chain Price Index



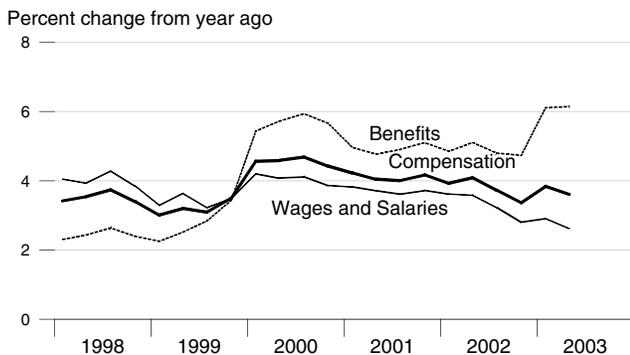
Producer Price Index, Finished Goods



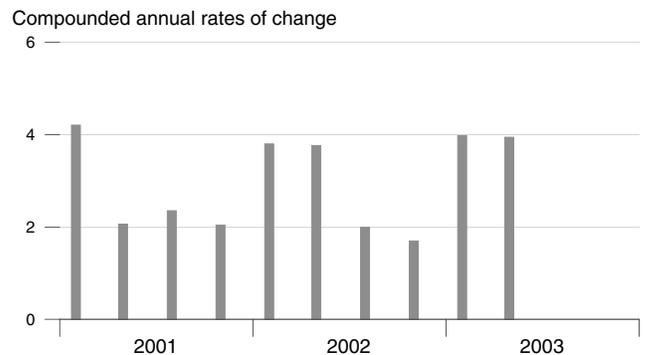
Unit Labor Cost



Employment Cost Index

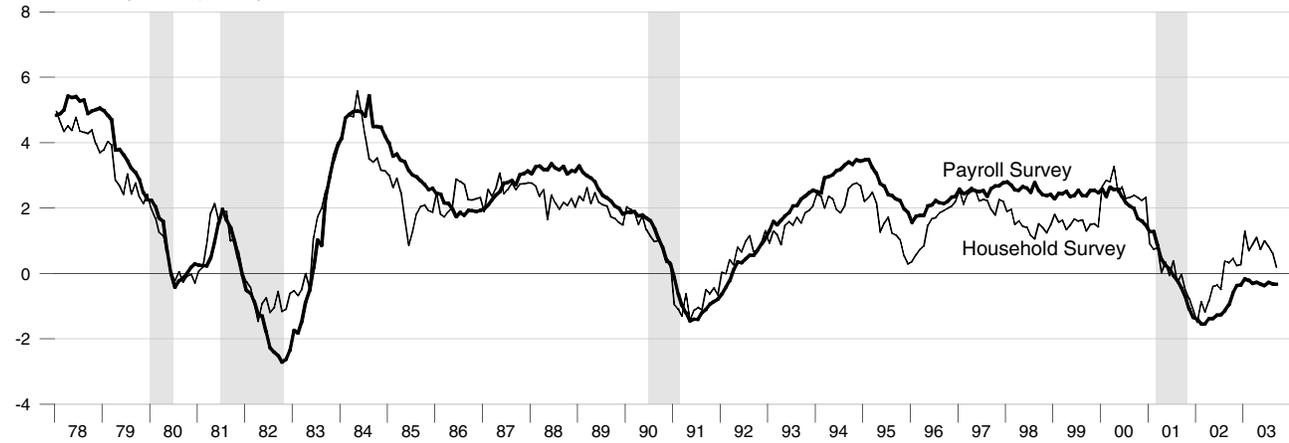


Compensation per Hour



Employment

Percent change from year ago

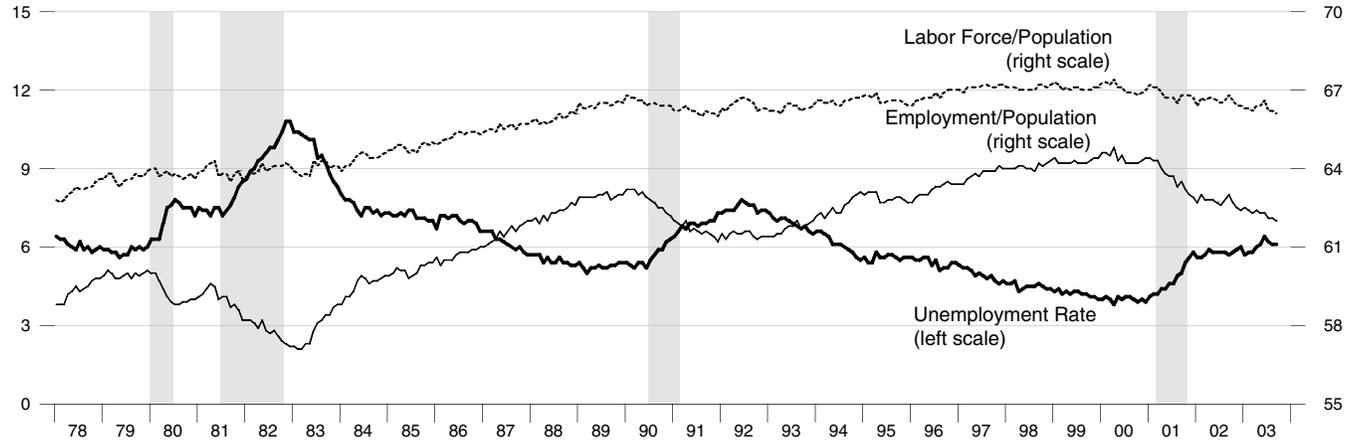


See the Notes section at the end of this publication for the Feb. 7, 2003, revisions to the Household Survey, and the June 6, 2003, revisions to the Establishment Survey.

Unemployment, Labor Force Participation, and Employment Rates

Percent of labor force

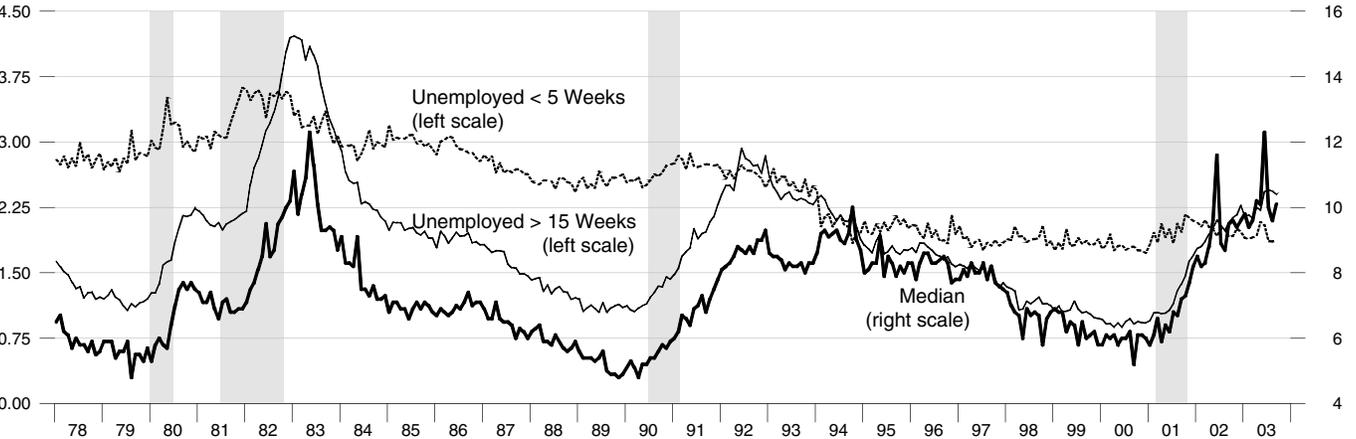
Percent of population



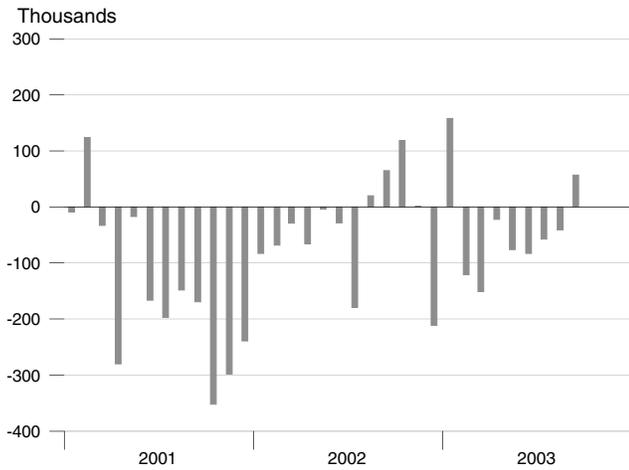
Duration of Unemployment

Percent of labor force

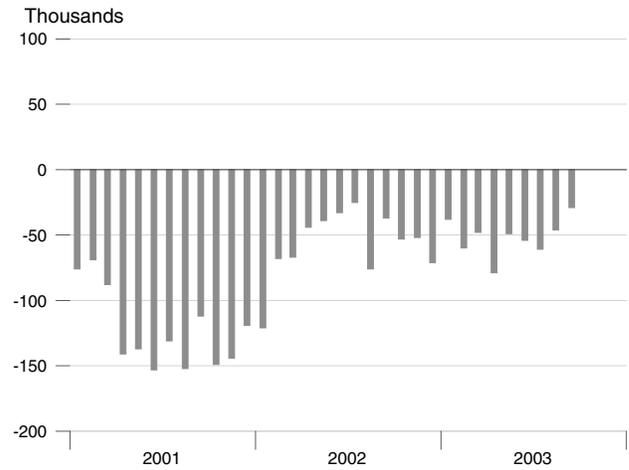
Weeks



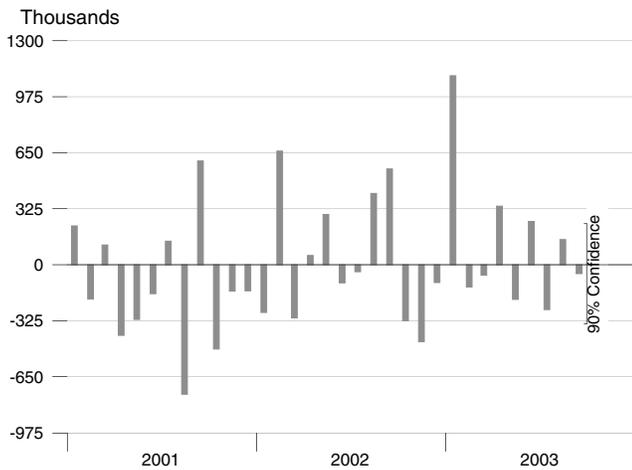
Change in Nonfarm Payrolls



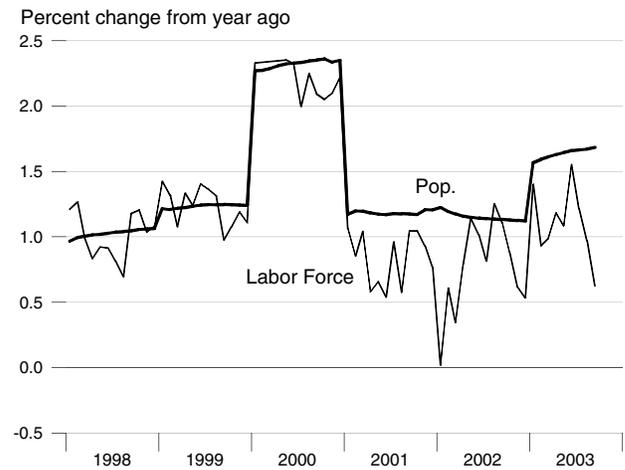
Change in Manufacturing Payrolls



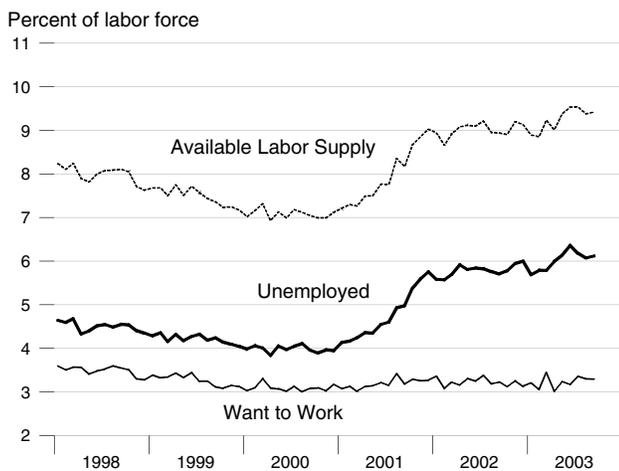
Change in Household Employment



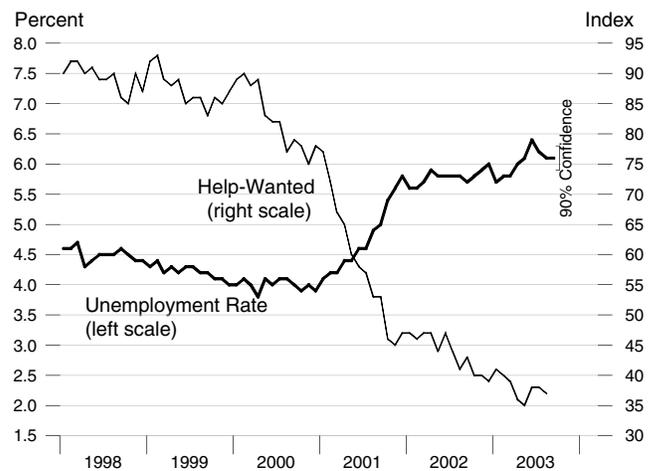
Labor Force and Population



Available Labor Supply and Components

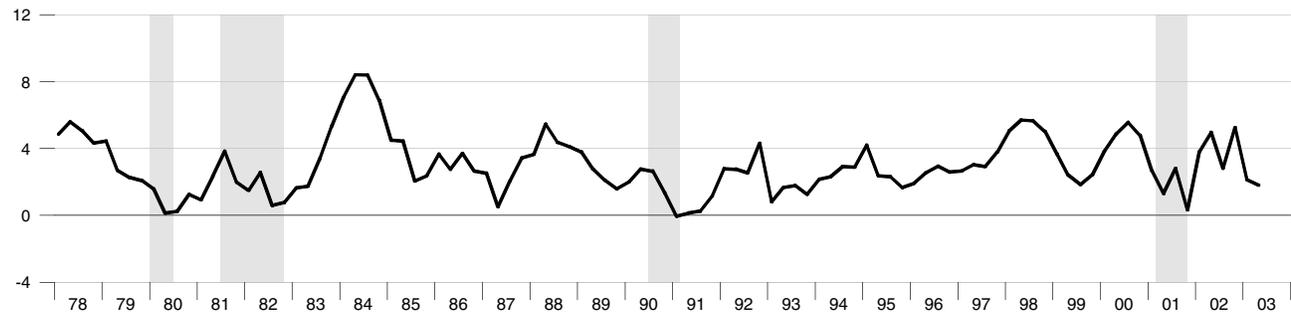


Unemployment Rate & Help-Wanted Index



Real Disposable Personal Income

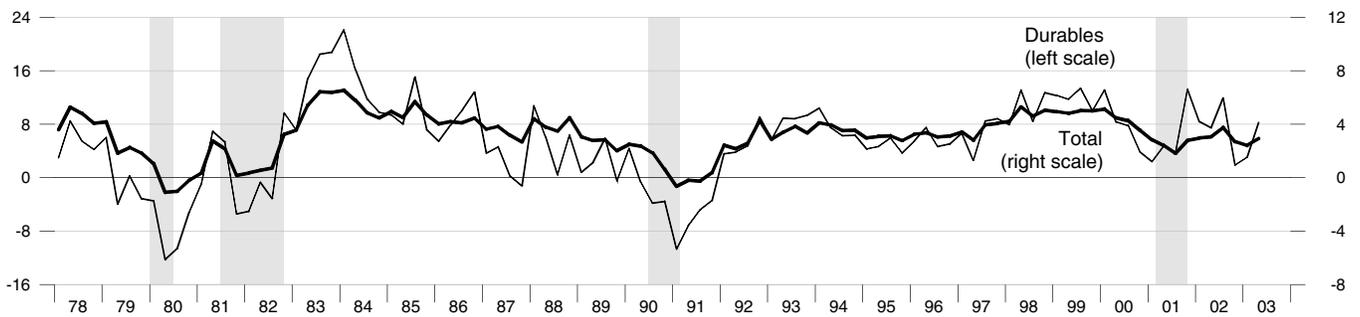
Percent change from year ago, quarterly data



Real Consumption

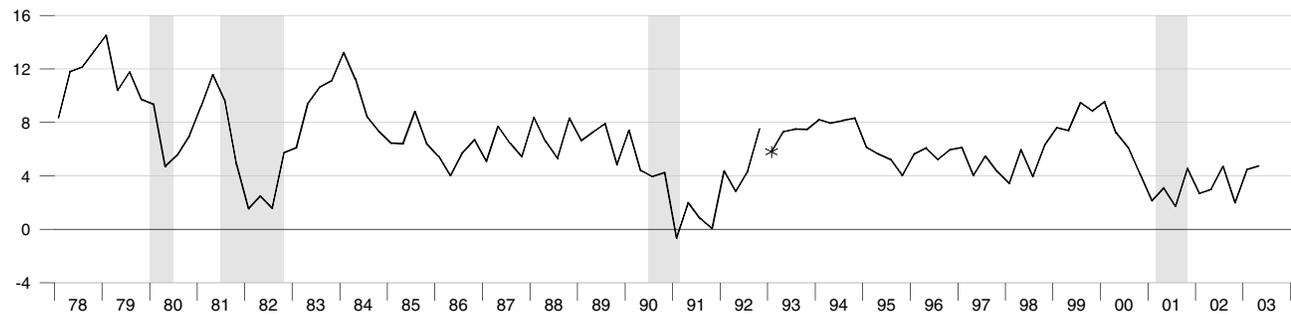
Percent change from year ago, quarterly data

Percent change from year ago, quarterly data



Retail and Food Services Sales

Percent change from year ago, quarterly average

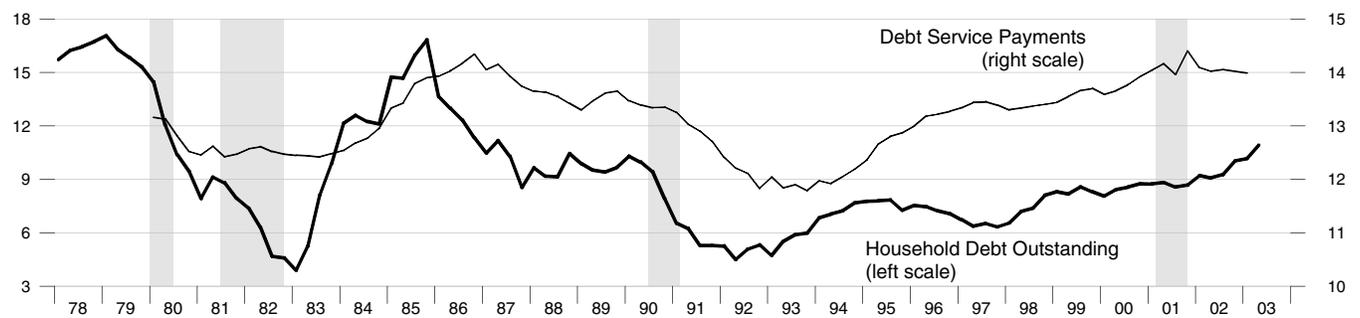


*Data before January 1992 are not strictly comparable (see End Notes).

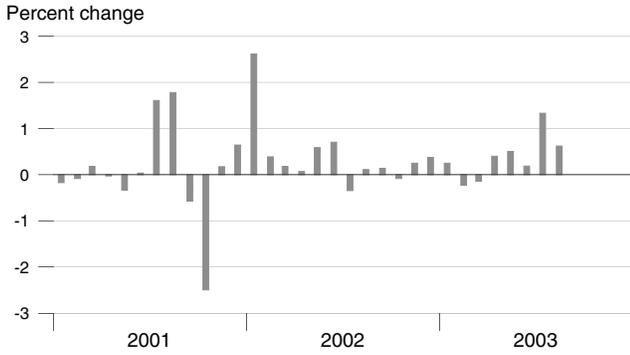
Debt Service Payments and Household Debt Outstanding

Percent change from year ago, quarterly data

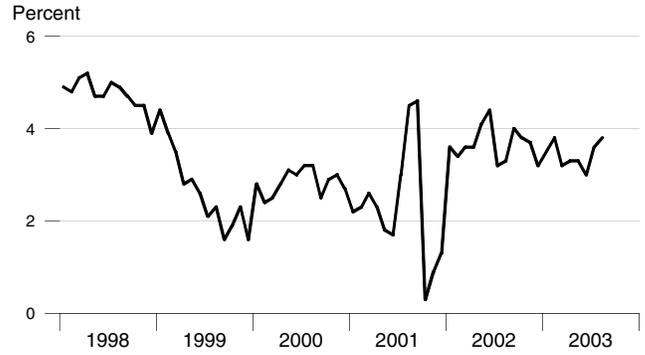
Percent of disposable personal income



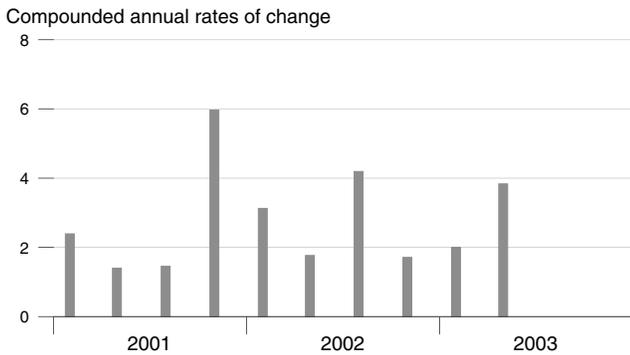
Real Disposable Personal Income



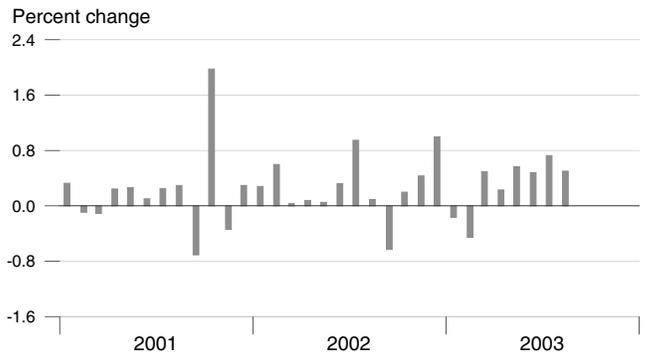
Personal Saving Rate



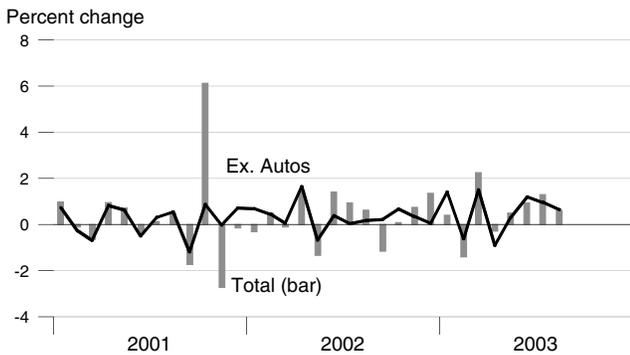
Real Consumption



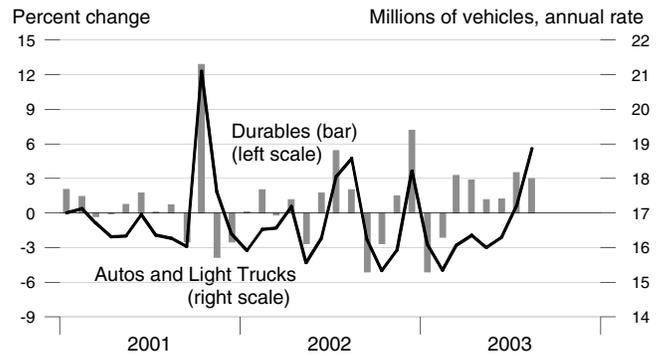
Real Consumption



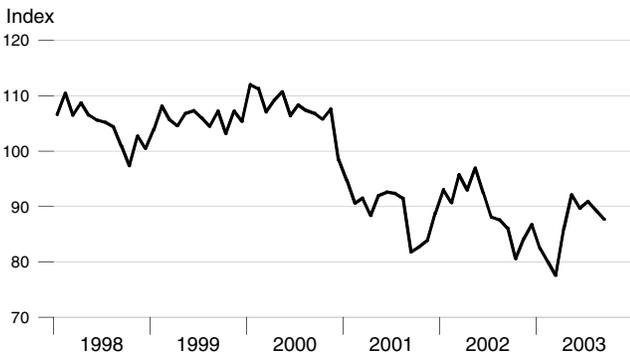
Retail & Food Services



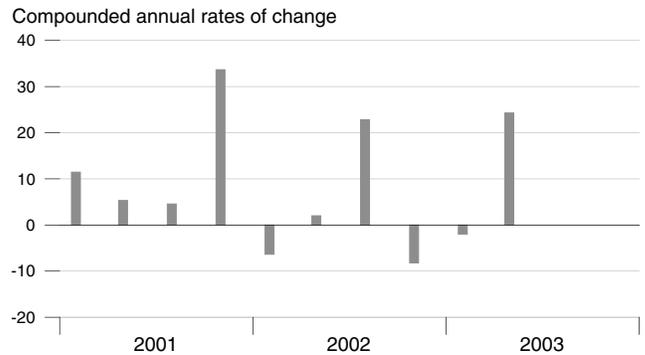
Real Durables Consumption & Vehicle Sales



Consumer Sentiment (U. of Michigan)

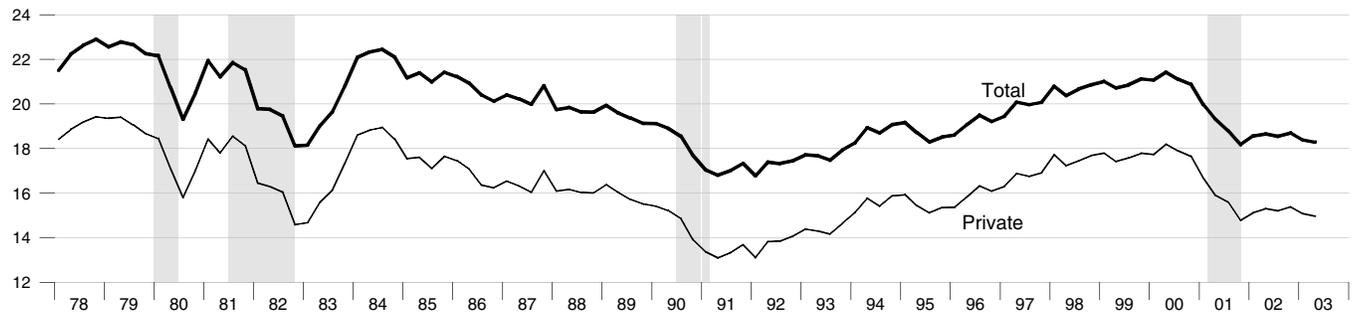


Real Durables Consumption



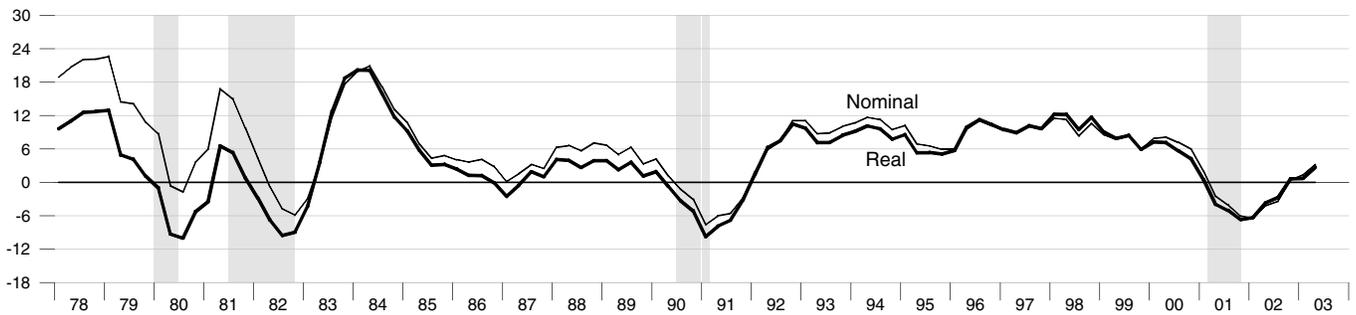
Investment

Percent of nominal GDP



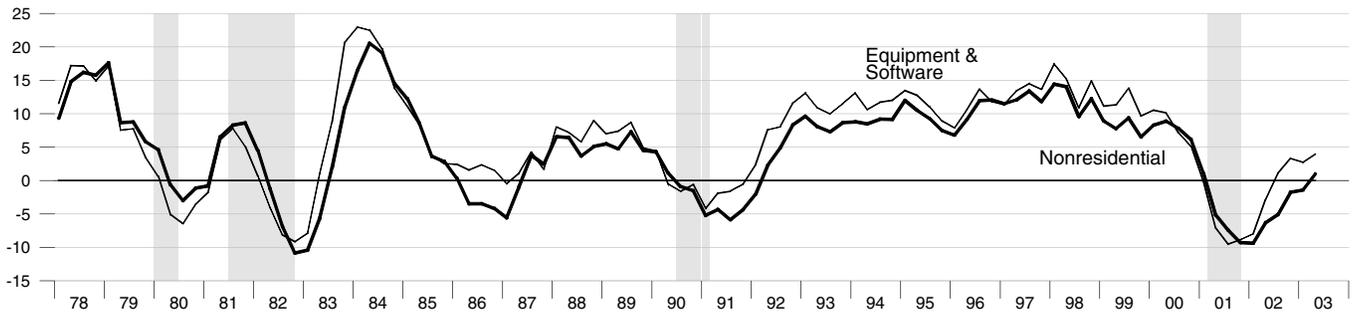
Private Fixed Investment

Percent change from year ago



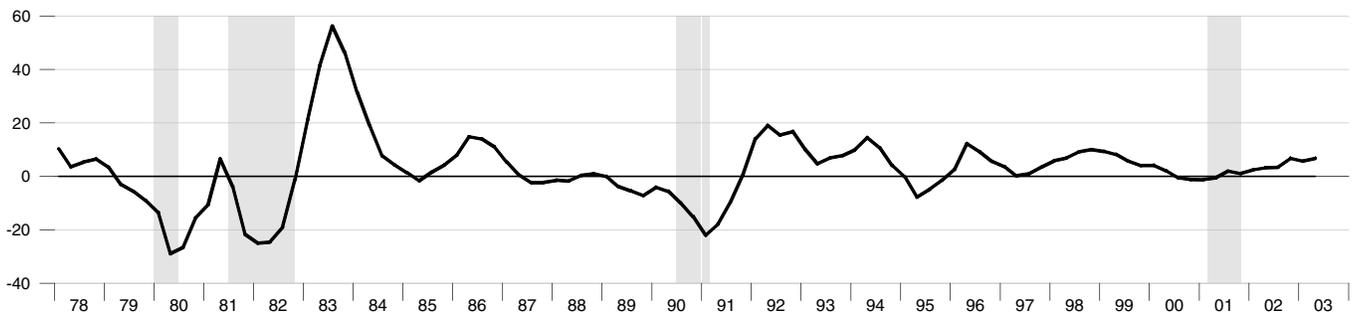
Real Nonresidential Fixed and Equipment & Software Investment

Percent change from year ago

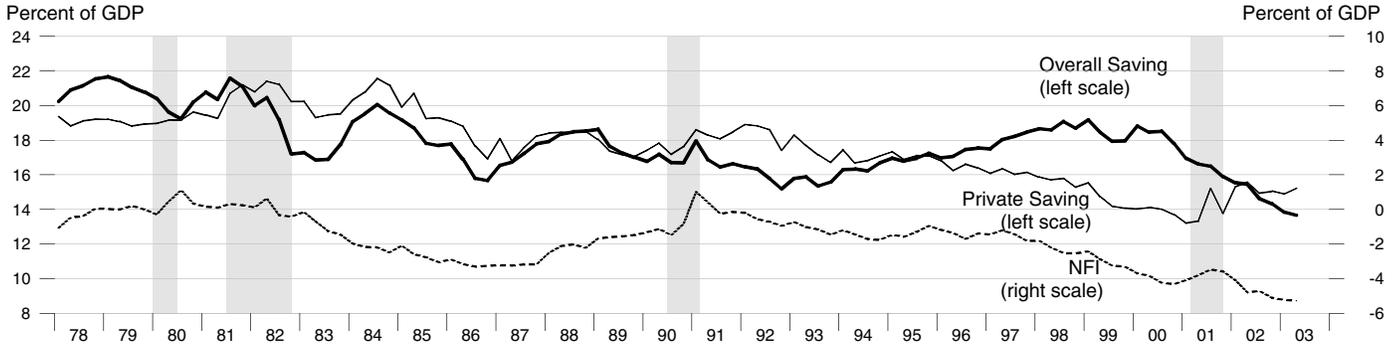


Real Residential Fixed Investment

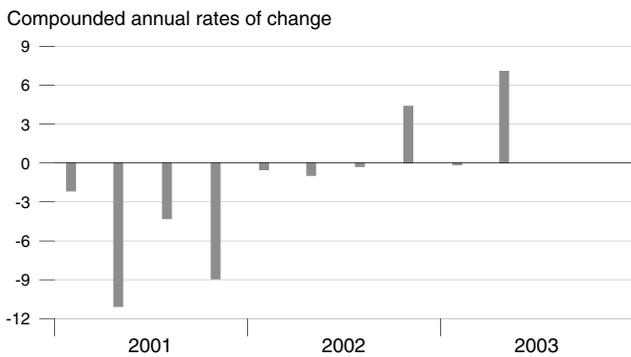
Percent change from year ago



Gross Saving Rates and Net Foreign Investment



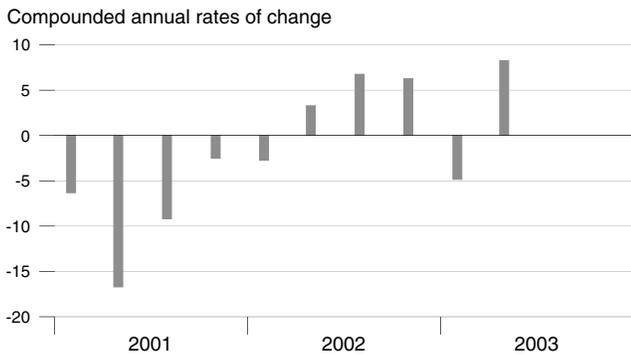
Real Private Fixed Investment



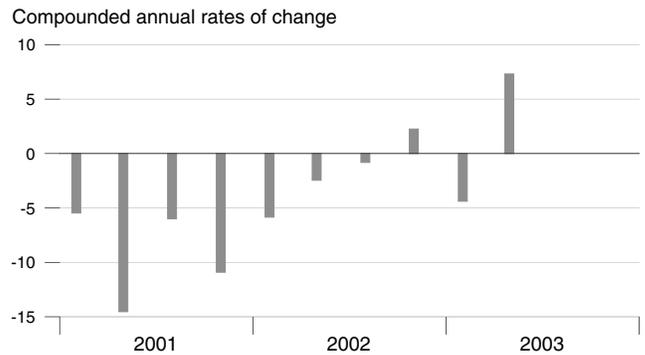
Nondefense Capital Goods Orders



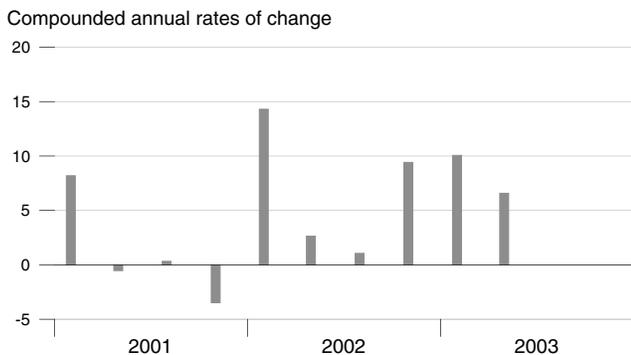
Real Equipment & Software Investment



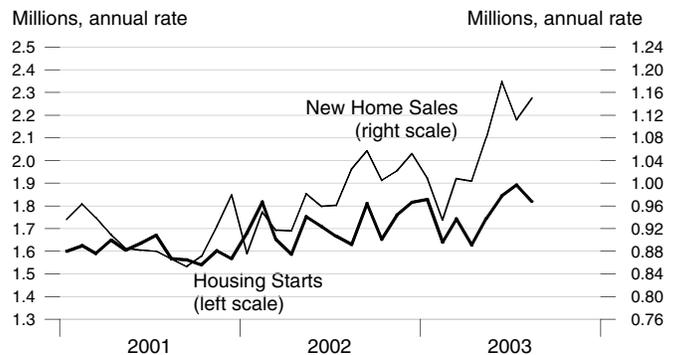
Real Nonresidential Fixed Investment



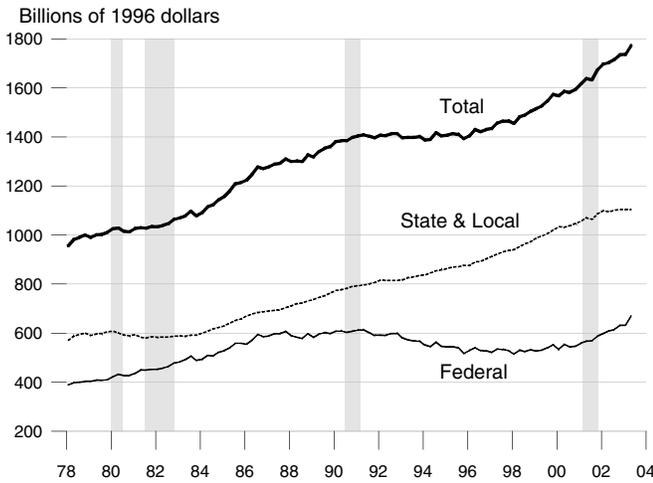
Real Residential Fixed Investment



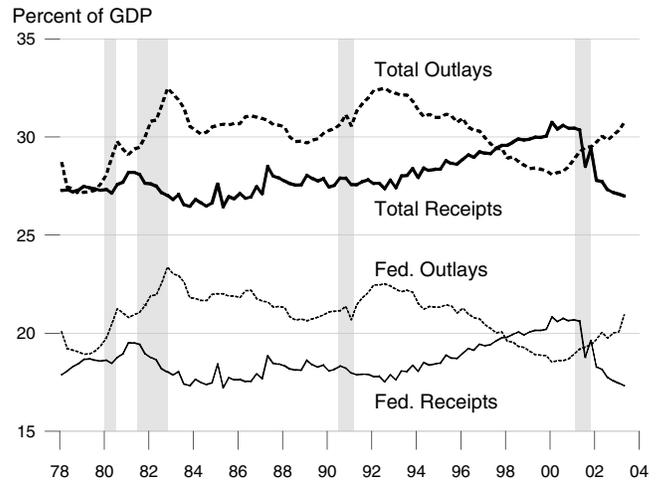
Housing Starts and New Home Sales



Govt. Consumption and Investment



Government Receipts and Outlays



Government Budgets

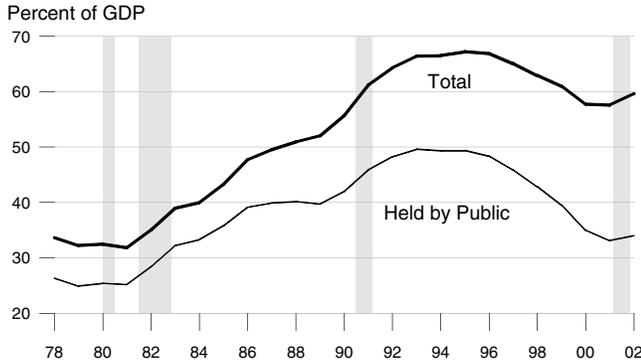
Billions of dollars

National Income Accounts
Calendar Years

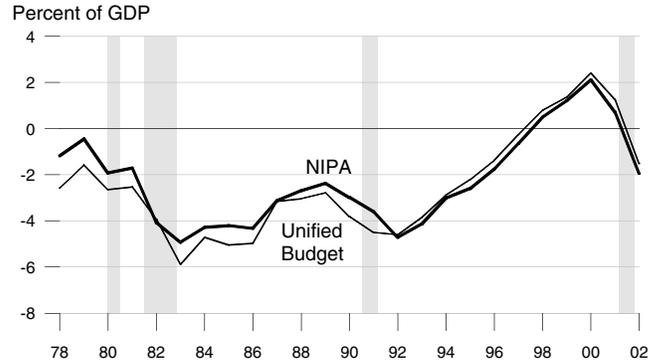
Unified Budget
Fiscal Years

	State and Local			Federal			Federal		
	Receipts	Expenditures	Surplus or Deficit (-)	Receipts	Expenditures	Surplus or Deficit (-)	Receipts	Outlays	Surplus or Deficit (-)
1991	716.0	723.8	-7.8	1072.3	1287.6	-215.3	1055.0	1324.4	-269.4
1992	772.2	777.2	-5.0	1121.3	1418.9	-297.6	1091.3	1381.7	-290.4
1993	823.2	821.7	1.5	1197.3	1471.5	-274.2	1154.4	1409.5	-255.1
1994	873.8	865.2	8.6	1293.7	1506.0	-212.3	1258.6	1461.9	-203.3
1995	917.9	902.5	15.4	1383.7	1575.7	-192.0	1351.8	1515.8	-164.0
1996	960.4	939.0	21.4	1499.1	1635.9	-136.8	1453.1	1560.6	-107.5
1997	1011.3	980.3	31.0	1625.5	1678.8	-53.3	1579.3	1601.3	-22.0
1998	1074.4	1033.7	40.7	1749.7	1705.9	43.8	1721.8	1652.6	69.2
1999	1144.1	1105.8	38.3	1867.2	1755.3	111.9	1827.5	1701.9	125.5
2000	1214.2	1196.2	18.0	2033.9	1827.1	206.8	2025.2	1788.8	236.4
2001	1261.3	1292.6	-31.3	2008.4	1936.4	72.0	1991.0	1863.9	127.1
2002	1304.5	1356.4	-51.9	1873.3	2075.5	-202.2	1853.2	2011.0	-157.8
2000Q3	1225.4	1206.2	19.2	2049.1	1835.9	213.2	491.7	431.3	60.4
2000Q4	1230.8	1231.0	-0.2	2054.1	1860.3	193.8	462.0	464.3	-2.3
2001Q1	1247.3	1263.8	-16.5	2072.9	1899.1	173.8	459.8	482.2	-22.5
2001Q2	1261.1	1293.4	-32.3	2072.3	1927.8	144.5	660.3	466.5	193.7
2001Q3	1253.6	1299.8	-46.2	1896.0	1947.7	-51.7	409.0	450.7	-41.7
2001Q4	1283.2	1313.3	-30.1	1992.3	1971.0	21.3	466.3	501.7	-35.4
2002Q1	1273.3	1329.1	-55.8	1884.7	2030.5	-145.8	412.6	509.2	-96.6
2002Q2	1302.5	1347.6	-45.1	1883.7	2079.3	-195.6	522.6	506.9	15.6
2002Q3	1310.3	1365.0	-54.7	1864.1	2074.6	-210.5	451.7	493.2	-41.5
2002Q4	1331.6	1384.0	-52.4	1860.8	2117.4	-256.6	427.4	535.6	-108.2
2003Q1	1343.1	1410.9	-67.8	1865.0	2145.1	-280.1	397.8	542.7	-144.9
2003Q2	1396.4	1411.3	-14.9	1871.3	2261.5	-390.2	527.7	544.3	-16.6

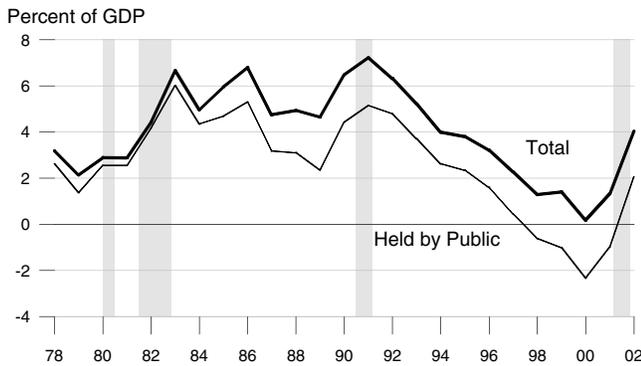
Federal Debt



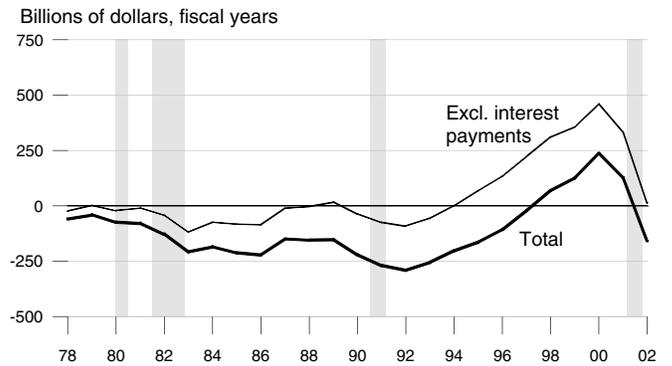
Federal Surplus (+) / Deficit (-)



Change in Federal Debt



Federal Surplus (+) / Deficit (-), Unified Basis

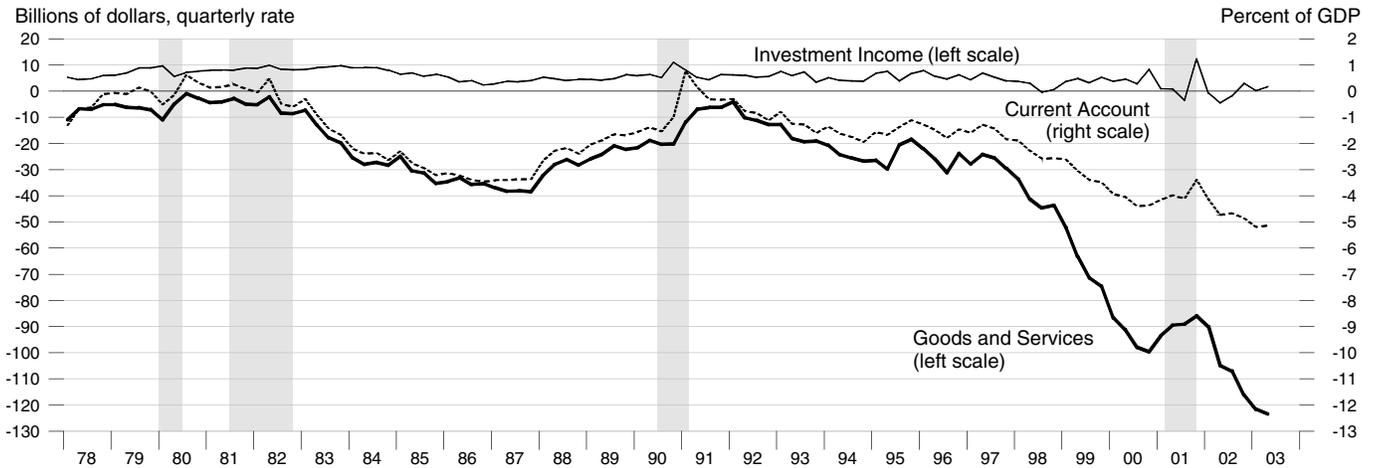


Federal Government Debt

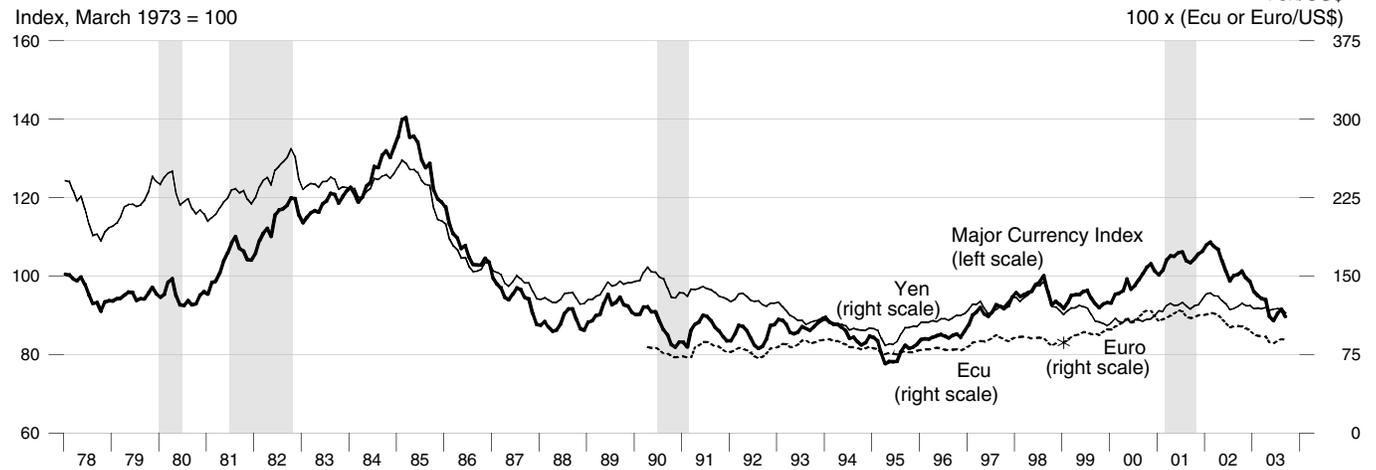
Billions of dollars, end of month or fiscal year
Excludes Agency-issued debt

		Total Public Debt	Held by Agencies and Trusts	Held by Public		Held by Private Investors	
				Total	Federal Reserve Banks	Total	Foreign and International
2000		5674.2	2235.7	3438.5	511.4	2936.3	1057.9
2001		5807.5	2468.8	3338.7	534.1	2779.7	1005.5
2002		6228.2	2675.7	3552.6	604.2	2924.8	1167.3
2000	March	5773.4	2085.4	3688.0	501.7	3182.8	1106.9
	June	5685.9	2190.2	3495.7	505.0	2987.3	1082.0
	September	5674.2	2235.7	3438.5	511.4	2936.3	1057.9
	December	5662.2	2248.7	3527.4	511.7	2880.4	1034.2
2001	March	5773.7	2339.4	3434.4	523.9	2892.8	1029.9
	June	5726.8	2452.6	3274.2	535.1	2722.6	1000.5
	September	5807.5	2468.8	3338.7	534.1	2779.7	1005.5
	December	5943.4	2549.7	3393.8	551.7	2819.5	1051.2
2002	March	6006.0	2562.4	3443.7	575.4	2849.2	1067.1
	June	6126.5	2662.9	3463.5	590.7	2849.8	1102.1
	September	6228.2	2675.7	3552.6	604.2	2924.8	1167.3
	December	6405.7	2758.3	3647.4	629.4	3018.5	1211.9
2003	March	6460.8	2750.0	3710.8	641.5	3056.0	1254.6
	June	6670.1	2853.8	3816.3	652.1	3164.7	1355.3

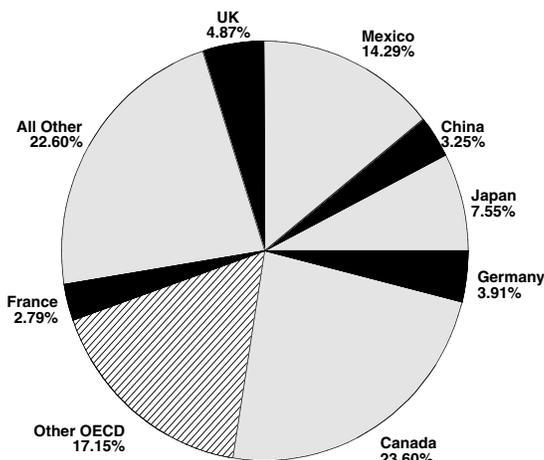
Current Account, Trade and Investment Income Balances



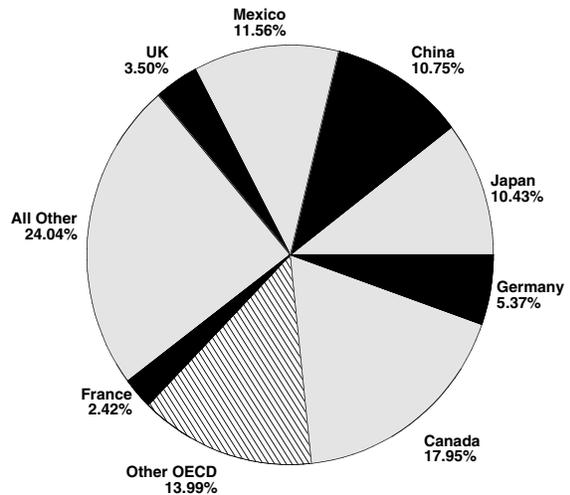
Exchange Rates



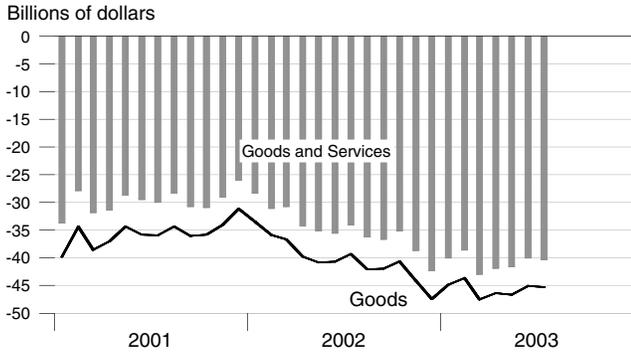
Goods Export Shares, 2002



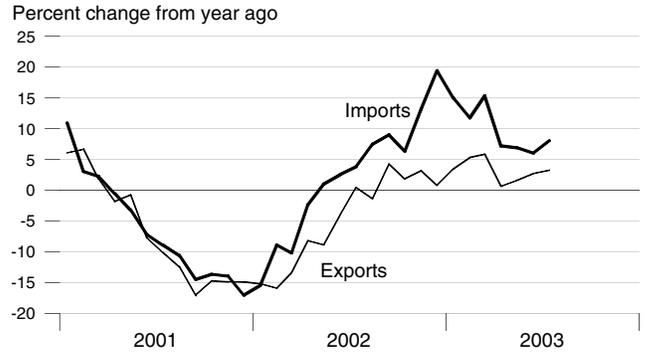
Goods Import Shares, 2002



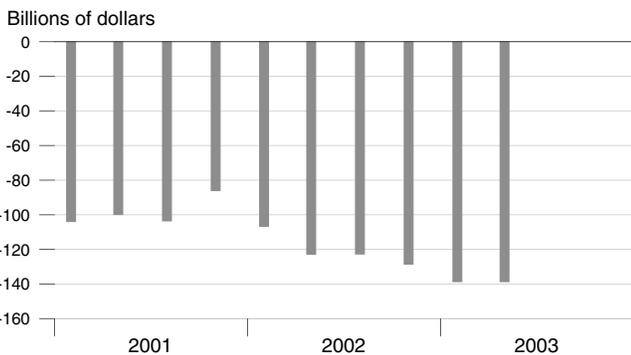
Trade Balance



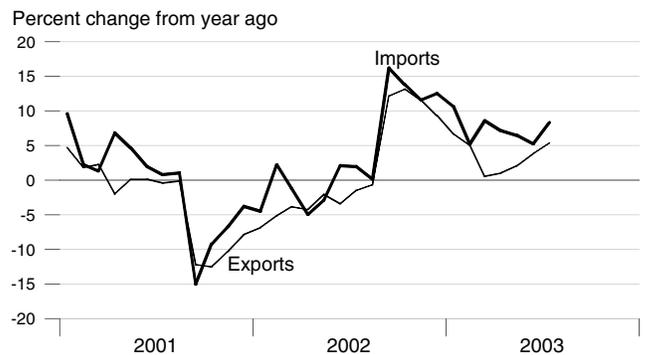
Goods Trade



Current Account Balance



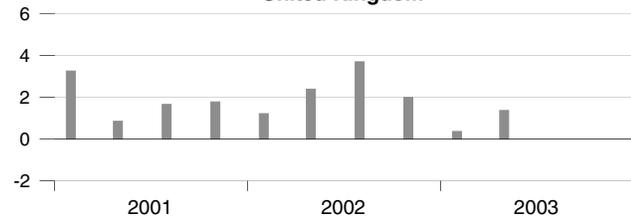
Services Trade



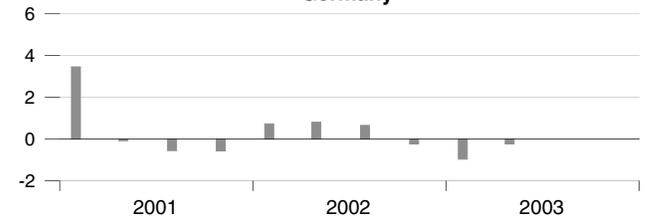
Real GDP Growth of Major Trading Partners

Compounded annual rates of change

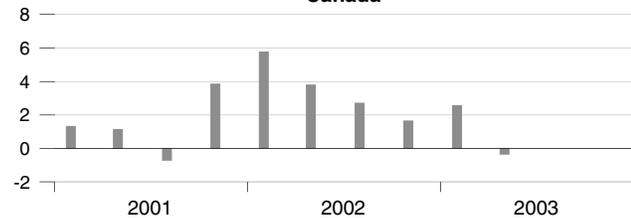
United Kingdom



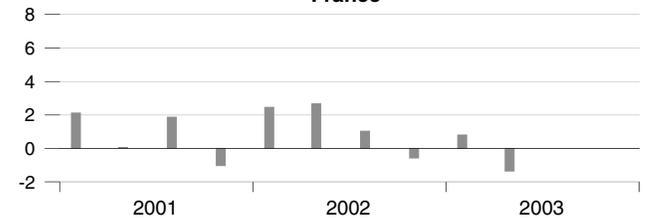
Germany



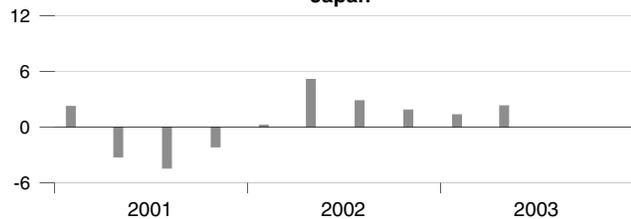
Canada



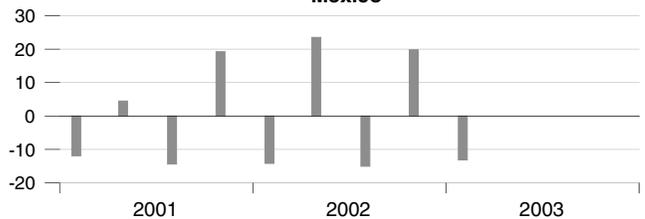
France



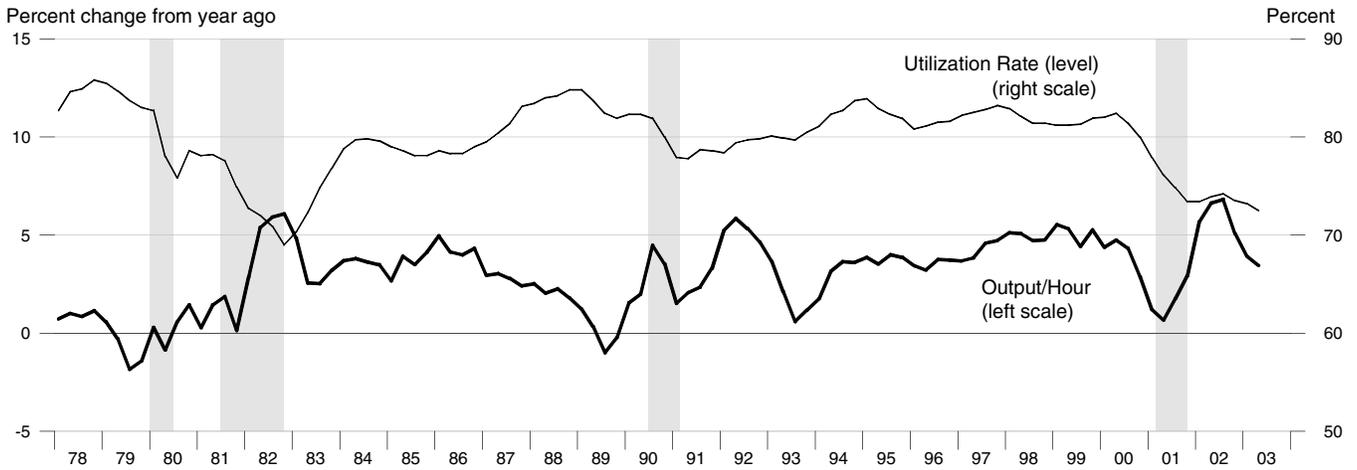
Japan



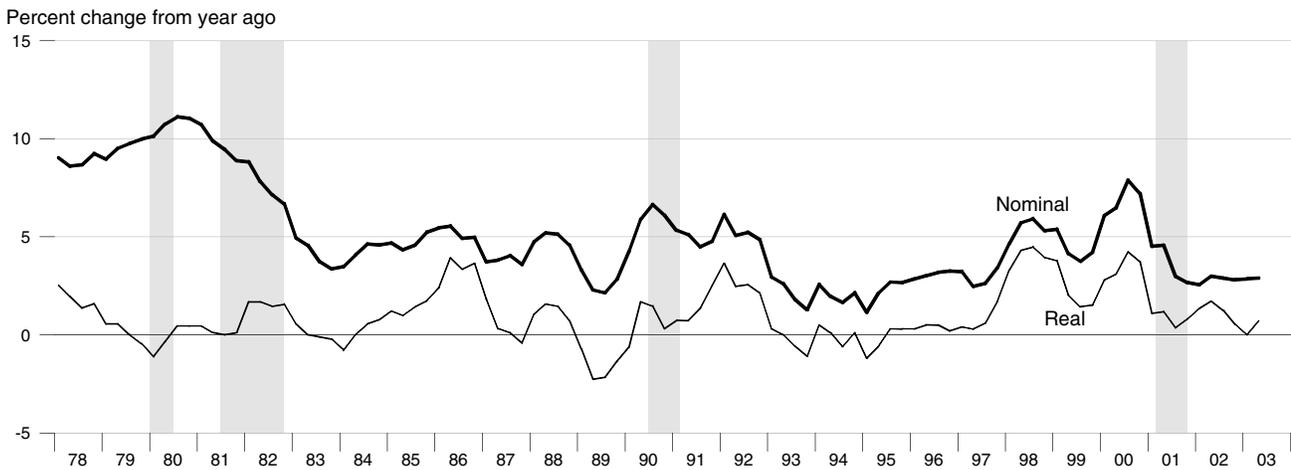
Mexico



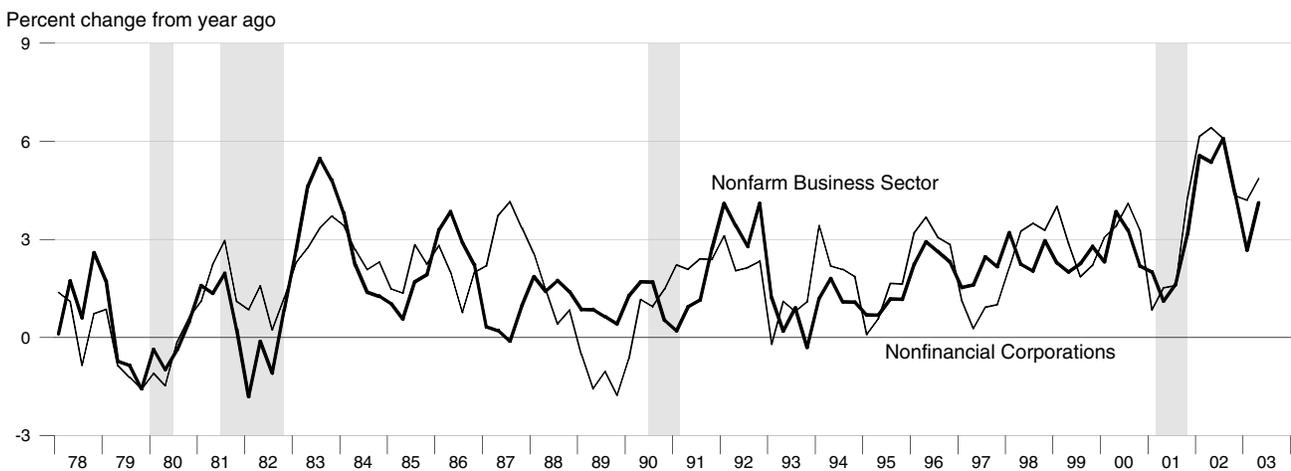
Output per Hour and Capacity Utilization, Manufacturing



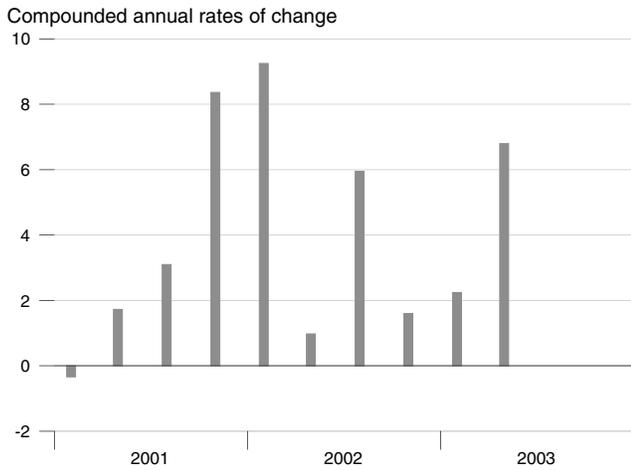
Nonfarm Compensation per Hour



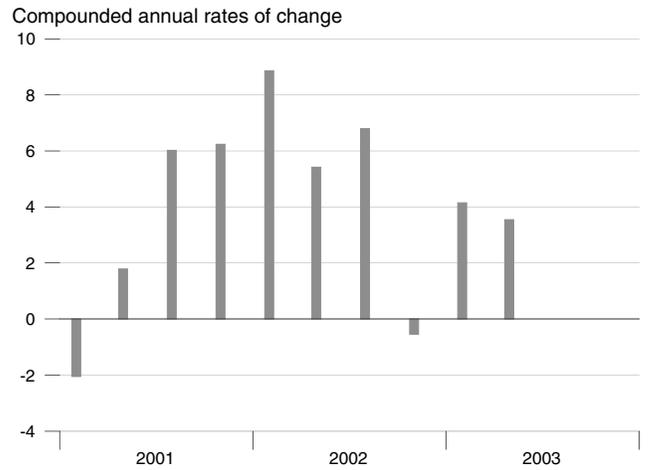
Output per Hour, Nonfarm Business and Nonfinancial Corporations



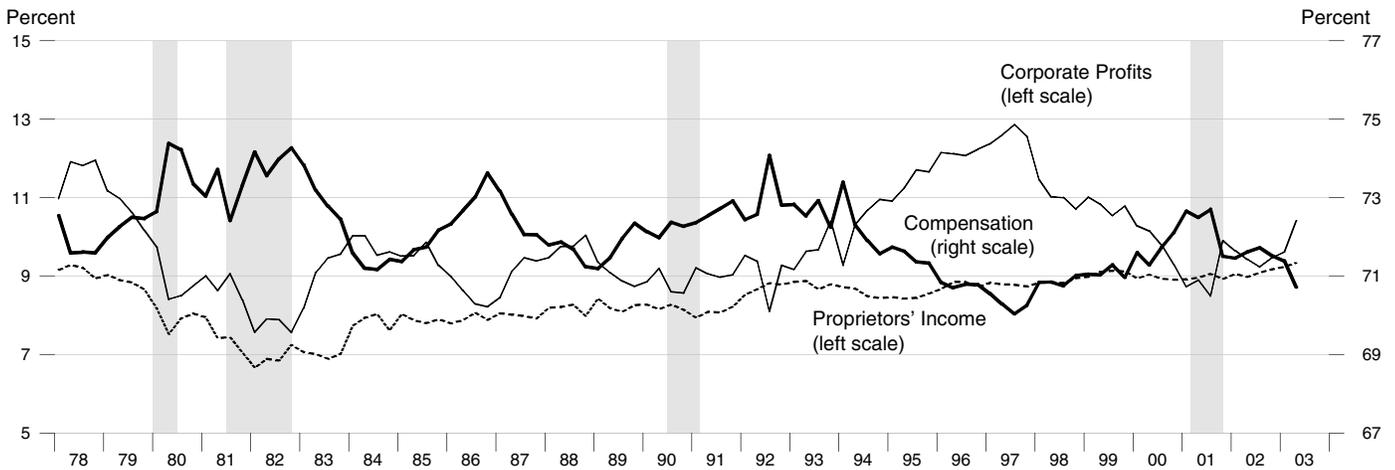
Nonfarm Output per Hour



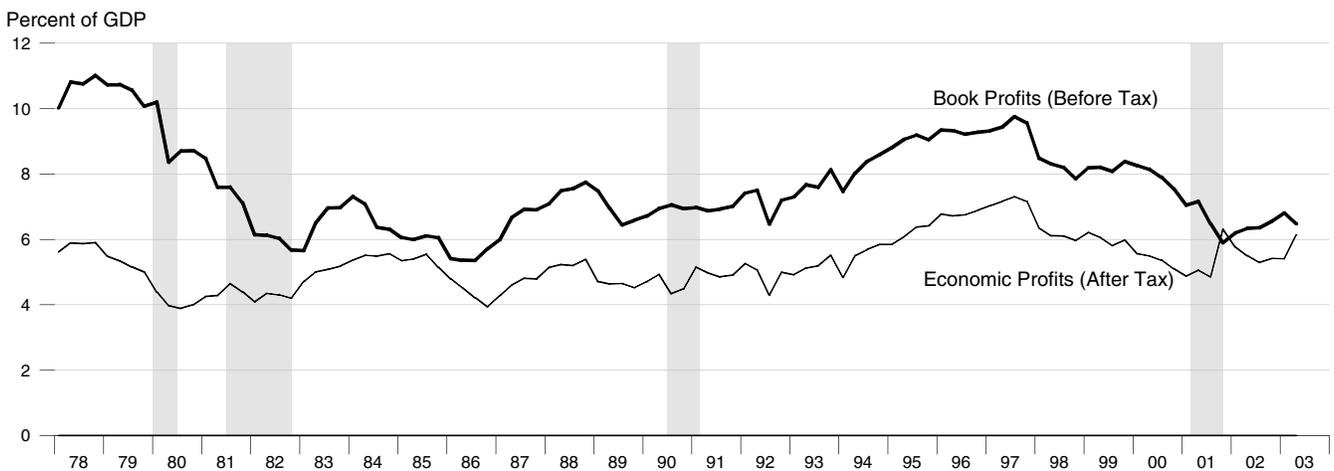
Manufacturing Output per Hour



Selected Component Shares of National Income



Corporate Profits



Note: Economic Profits include IVA and CCAAdj; Book Profits exclude them (see Notes).

	GDP Chain Price Index			Employment Cost Index			ECI: Wages			ECI: Benefits			
	Index	Percent change		Index	Percent change		Index	Percent change		Index	Percent change		
		Annual rate	Year ago		Annual rate	Year ago		Annual rate	Year ago		Annual rate	Year ago	
1999	104.690		1.4	142.4		3.2	140.3		3.4	147.6		2.8	
2000	106.890		2.1	148.9		4.6	146.0		4.1	156.0		5.7	
2001	109.420		2.4	155.0		4.1	151.4		3.7	163.7		4.9	
2002	110.660		1.1	160.9		3.8	156.4		3.3	171.7		4.9	
2000 1	106.080	3.1	1.9	146.6	5.4	4.6	143.9	4.3	4.2	153.2	8.2	5.4	
2	106.690	2.3	2.1	148.2	4.4	4.6	145.4	4.2	4.1	155.1	5.1	5.7	
3	107.130	1.7	2.2	149.7	4.1	4.7	146.7	3.6	4.1	157.0	5.0	5.9	
4	107.680	2.1	2.3	151.1	3.8	4.4	147.9	3.3	3.9	158.7	4.4	5.7	
2001 1	108.660	3.7	2.4	152.8	4.6	4.2	149.4	4.1	3.8	160.8	5.4	5.0	
2	109.320	2.5	2.5	154.2	3.7	4.0	150.8	3.8	3.7	162.5	4.3	4.8	
3	109.920	2.2	2.6	155.7	3.9	4.0	152.0	3.2	3.6	164.7	5.5	4.9	
4	109.780	-0.5	2.0	157.4	4.4	4.2	153.4	3.7	3.7	166.8	5.2	5.1	
2002 1	110.140	1.3	1.4	158.8	3.6	3.9	154.8	3.7	3.6	168.6	4.4	4.9	
2	110.480	1.2	1.1	160.5	4.4	4.1	156.2	3.7	3.6	170.8	5.3	5.1	
3	110.760	1.0	0.8	161.5	2.5	3.7	156.9	1.8	3.2	172.6	4.3	4.8	
4	111.250	1.8	1.3	162.7	3.0	3.4	157.7	2.1	2.8	174.7	5.0	4.7	
2003 1	111.900	2.4	1.6	164.9	5.5	3.8	159.3	4.1	2.9	178.9	10.0	6.1	
2	112.180	1.0	1.5	166.3	3.4	3.6	160.3	2.5	2.6	181.3	5.5	6.1	
		Exports			Imports			Nonfarm Output per Hour				Nonfarm Compensation per Hour	
	Billions of 1996 \$	Percent change		Billions of 1996 \$	Percent change		Index	Percent change		Index	Percent change		
		Annual rate	Year ago		Annual rate	Year ago		Annual rate	Year ago		Annual rate	Year ago	
1999	1036.329		3.4	1356.816		10.9	112.8		2.4	124.3		4.4	
2000	1137.199		9.7	1535.958		13.2	116.1		2.9	133.0		7.0	
2001	1076.121		-5.4	1492.010		-2.9	118.3		1.9	137.8		3.6	
2002	1058.832		-1.6	1547.373		3.7	124.7		5.4	141.7		2.8	
2000 1	1095.781	7.7	8.8	1464.619	14.7	13.5	114.6	0.3	2.3	130.8	15.4	6.1	
2	1133.877	14.6	11.4	1528.465	18.6	14.3	116.1	5.3	3.8	131.4	1.8	6.5	
3	1165.469	11.6	11.6	1578.615	13.8	14.1	116.4	1.0	3.3	134.2	8.8	7.9	
4	1153.668	-4.0	7.3	1572.152	-1.6	11.1	117.0	2.1	2.2	135.3	3.3	7.2	
2001 1	1135.809	-6.0	3.7	1540.311	-7.9	5.2	116.9	-0.3	2.0	136.7	4.2	4.5	
2	1098.832	-12.4	-3.1	1513.594	-6.8	-1.0	117.4	1.7	1.1	137.4	2.1	4.6	
3	1048.017	-17.3	-10.1	1466.988	-11.8	-7.1	118.3	3.1	1.6	138.2	2.3	3.0	
4	1021.827	-9.6	-11.4	1447.158	-5.3	-8.0	120.7	8.4	3.2	138.9	2.0	2.7	
2002 1	1030.560	3.5	-9.3	1477.140	8.5	-4.1	123.4	9.3	5.6	140.2	3.8	2.6	
2	1065.526	14.3	-3.0	1552.919	22.2	2.6	123.7	1.0	5.4	141.5	3.8	3.0	
3	1077.659	4.6	2.8	1565.680	3.3	6.7	125.5	5.9	6.1	142.2	2.0	2.9	
4	1061.584	-5.8	3.9	1593.755	7.4	10.1	126.0	1.6	4.4	142.8	1.7	2.8	
2003 1	1058.069	-1.3	2.7	1568.377	-6.2	6.2	126.7	2.2	2.7	144.2	4.0	2.9	
2	1055.543	-1.0	-0.9	1601.691	8.8	3.1	128.8	6.8	4.1	145.6	3.9	2.9	

		Household Survey Employment				Nonfarm Payroll Employment				Nonfarm Aggregate Hours			
		Thousands	Change	Percent change		Thousands	Change	Percent change		Index	Percent change		
				Annual rate	Year ago			Annual rate	Year ago		Monthly rate	Annual rate	Year ago
	1998	131476	1904		1.5	125924	3157		2.6	99.5			2.5
	1999	133498	2022		1.5	128994	3070		2.4	101.5			2.1
	2000	136899	3401		2.5	131790	2796		2.2	103.4			1.9
	2001	136941	42		0.0	131830	40		0.0	102.1			-1.3
	2002	136486	-455		-0.3	130376	-1454		-1.1	100.0			-2.0
2001	1	137752	424	1.2	0.8	132508	199	0.6	1.1	103.4	-0.2	-0.6	0.2
	2	137086	-666	-1.9	0.1	132180	-327	-1.0	0.3	102.6	-0.8	-3.2	-0.9
	3	136707	-379	-1.1	0.0	131712	-468	-1.4	-0.2	101.8	-0.8	-3.1	-1.7
	4	136218	-488	-1.4	-0.8	130920	-792	-2.4	-1.1	100.6	-1.2	-4.6	-2.9
2002	1	136128	-90	-0.3	-1.2	130523	-397	-1.2	-1.5	100.4	-0.1	-0.5	-2.9
	2	136355	227	0.7	-0.5	130403	-120	-0.4	-1.3	100.3	-0.1	-0.5	-2.2
	3	136804	449	1.3	0.1	130239	-164	-0.5	-1.1	99.8	-0.5	-1.8	-1.9
	4	136656	-148	-0.4	0.3	130338	99	0.3	-0.4	99.6	-0.3	-1.1	-1.0
2003	1	137431	774	2.3	1.0	130225	-113	-0.3	-0.2	99.1	-0.4	-1.7	-1.3
	2	137637	207	0.6	0.9	129984	-241	-0.7	-0.3	98.7	-0.4	-1.6	-1.6
	3	137559	-79	-0.2	0.6	129838	-146	-0.4	-0.3	98.5	-0.2	-0.9	-1.3
2001	Sep	136858	602	5.4	-0.0	131550	-169	-1.5	-0.4	101.2	-0.6	-6.8	-2.3
	Oct	136370	-488	-4.2	-0.5	131198	-352	-3.2	-0.7	100.6	-0.6	-6.9	-3.2
	Nov	136218	-152	-1.3	-0.8	130900	-298	-2.7	-1.1	100.5	-0.1	-1.2	-3.1
	Dec	136067	-151	-1.3	-1.1	130661	-239	-2.2	-1.3	100.6	0.1	1.2	-2.4
2002	Jan	135791	-276	-2.4	-1.5	130578	-83	-0.8	-1.4	100.3	-0.3	-3.5	-3.3
	Feb	136450	659	6.0	-0.9	130510	-68	-0.6	-1.5	100.5	0.2	2.4	-2.7
	Mar	136143	-307	-2.7	-1.2	130481	-29	-0.3	-1.5	100.5	0.0	0.0	-2.6
	Apr	136196	53	0.5	-0.8	130415	-66	-0.6	-1.4	100.3	-0.2	-2.4	-2.3
	May	136487	291	2.6	-0.4	130411	-4	-0.0	-1.4	100.2	-0.1	-1.2	-2.3
	Jun	136383	-104	-0.9	-0.4	130383	-28	-0.3	-1.3	100.4	0.2	2.4	-2.0
	Jul	136343	-40	-0.4	-0.5	130204	-179	-1.6	-1.3	99.7	-0.7	-8.1	-2.5
	Aug	136757	414	3.7	0.4	130224	20	0.2	-1.1	99.9	0.2	2.4	-1.9
	Sep	137312	555	5.0	0.3	130289	65	0.6	-1.0	99.9	0.0	0.0	-1.3
	Oct	136988	-324	-2.8	0.5	130408	119	1.1	-0.6	99.7	-0.2	-2.4	-0.9
	Nov	136542	-446	-3.8	0.2	130409	1	0.0	-0.4	99.6	-0.1	-1.2	-0.9
	Dec	136439	-103	-0.9	0.3	130198	-211	-1.9	-0.4	99.4	-0.2	-2.4	-1.2
2003	Jan	137536	1097	10.1	1.3	130356	158	1.5	-0.2	99.4	0.0	0.0	-0.9
	Feb	137408	-128	-1.1	0.7	130235	-121	-1.1	-0.2	99.0	-0.4	-4.7	-1.5
	Mar	137348	-60	-0.5	0.9	130084	-151	-1.4	-0.3	99.0	0.0	0.0	-1.5
	Apr	137687	339	3.0	1.1	130062	-22	-0.2	-0.3	98.8	-0.2	-2.4	-1.5
	May	137487	-200	-1.7	0.7	129986	-76	-0.7	-0.3	98.7	-0.1	-1.2	-1.5
	Jun	137738	251	2.2	1.0	129903	-83	-0.8	-0.4	98.7	0.0	0.0	-1.7
	Jul	137478	-260	-2.2	0.8	129846	-57	-0.5	-0.3	98.3	-0.4	-4.8	-1.4
	Aug	137625	147	1.3	0.6	129805	-41	-0.4	-0.3	98.6	0.3	3.7	-1.3
	Sep	137573	-52	-0.5	0.2	129862	57	0.5	-0.3	98.6	0.0	0.0	-1.3

		Unempl. Rate	Retail and Food Services Sales				Industrial Production				Treasury Yields		
			Billions of dollars	Percent change			Index	Percent change			(Percent)		
				Monthly/ quarterly	Annual rate	Year ago		Monthly/ quarterly	Annual rate	Year ago	3-mo	10-yr	
		1998	4.5	2918.226			4.9	105.622			5.6	4.78	5.26
		1999	4.2	3161.948			8.4	110.131			4.3	4.64	5.64
		2000	4.0	3374.243			6.7	115.252			4.7	5.82	6.03
		2001	4.8	3471.756			2.9	111.229			-3.5	3.39	5.02
		2002	5.8	3579.316			3.1	110.381			-0.8	1.60	4.61
		<hr/>											
	2001	1	4.2	856.706	0.8	3.0	2.2	113.631	-1.6	-6.1	-0.2	4.82	5.05
		2	4.5	863.764	0.8	3.3	3.1	111.847	-1.6	-6.1	-3.4	3.66	5.27
		3	4.8	862.246	-0.2	-0.7	1.7	110.542	-1.2	-4.6	-4.6	3.17	4.98
		4	5.6	889.040	3.1	13.0	4.6	108.895	-1.5	-5.8	-5.7	1.91	4.77
	2002	1	5.6	879.850	-1.0	-4.1	2.7	109.268	0.3	1.4	-3.8	1.72	5.08
		2	5.8	889.723	1.1	4.6	3.0	110.459	1.1	4.4	-1.2	1.72	5.10
		3	5.8	902.762	1.5	6.0	4.7	111.375	0.8	3.4	0.8	1.64	4.26
		4	5.9	906.981	0.5	1.9	2.0	110.422	-0.9	-3.4	1.4	1.33	4.01
	2003	1	5.8	919.353	1.4	5.6	4.5	110.496	0.1	0.3	1.1	1.16	3.92
		2	6.2	932.031	1.4	5.6	4.8	109.436	-1.0	-3.8	-0.9	1.04	3.62
		3	6.1									0.93	4.23
		<hr/>											
	2001	Sep	5.0	284.550	-1.7	-18.9	-0.2	109.933	-0.7	-8.0	-5.3	2.64	4.73
		Oct	5.4	301.990	6.1	104.2	6.4	109.512	-0.4	-4.5	-5.3	2.16	4.57
		Nov	5.6	293.741	-2.7	-28.3	3.8	108.845	-0.6	-7.1	-5.8	1.87	4.65
		Dec	5.8	293.309	-0.1	-1.8	3.4	108.327	-0.5	-5.6	-5.9	1.69	5.09
	2002	Jan	5.6	292.393	-0.3	-3.7	2.1	108.967	0.6	7.3	-4.6	1.65	5.04
		Feb	5.6	293.878	0.5	6.3	2.7	109.197	0.2	2.6	-3.9	1.73	4.91
		Mar	5.7	293.579	-0.1	-1.2	3.3	109.641	0.4	5.0	-3.0	1.79	5.28
		Apr	5.9	297.827	1.4	18.8	3.8	110.113	0.4	5.3	-2.2	1.72	5.21
		May	5.8	293.870	-1.3	-14.8	1.7	110.447	0.3	3.7	-1.3	1.73	5.16
		Jun	5.8	298.026	1.4	18.4	3.6	110.818	0.3	4.1	-0.3	1.70	4.93
		Jul	5.8	300.842	0.9	11.9	4.4	111.577	0.7	8.5	0.5	1.68	4.65
		Aug	5.8	302.706	0.6	7.7	4.5	111.305	-0.2	-2.9	0.6	1.62	4.26
		Sep	5.7	299.214	-1.2	-13.0	5.2	111.242	-0.1	-0.7	1.2	1.63	3.87
		Oct	5.8	299.458	0.1	1.0	-0.8	110.580	-0.6	-6.9	1.0	1.58	3.94
		Nov	5.9	301.707	0.8	9.4	2.7	110.797	0.2	2.4	1.8	1.23	4.05
		Dec	6.0	305.816	1.4	17.6	4.3	109.889	-0.8	-9.4	1.4	1.19	4.03
	2003	Jan	5.7	307.045	0.4	4.9	5.0	110.670	0.7	8.9	1.6	1.17	4.05
		Feb	5.8	302.741	-1.4	-15.6	3.0	110.735	0.1	0.7	1.4	1.17	3.90
		Mar	5.8	309.567	2.3	30.7	5.4	110.082	-0.6	-6.9	0.4	1.13	3.81
		Apr	6.0	308.675	-0.3	-3.4	3.6	109.479	-0.5	-6.4	-0.6	1.13	3.96
		May	6.1	310.214	0.5	6.1	5.6	109.487	0.0	0.1	-0.9	1.07	3.57
		Jun	6.4	313.142	0.9	11.9	5.1	109.342	-0.1	-1.6	-1.3	0.92	3.33
		Jul	6.2	317.232	1.3	16.8	5.4	110.135	0.7	9.1	-1.3	0.90	3.98
		Aug	6.1	319.192	0.6	7.7	5.4	110.213	0.1	0.9	-1.0	0.95	4.45
		Sep	6.1									0.94	4.27

		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
1998		163.0			1.5		173.4			2.3		130.7			-0.9
1999		166.6			2.2		177.0			2.1		133.0			1.8
2000		172.2			3.4		181.3			2.4		138.0			3.7
2001		177.1			2.8		186.1			2.7		140.7			2.0
2002		179.9			1.6		190.4			2.3		138.9			-1.3
2001	1	175.9	0.9	3.8	3.4	3.8	184.3	0.7	2.9	2.7	2.9	141.7	1.3	5.4	4.0
	2	177.3	0.8	3.2	3.4	3.5	185.5	0.6	2.6	2.6	2.8	142.0	0.2	0.8	3.4
	3	177.7	0.2	1.0	2.7	2.7	186.7	0.7	2.7	2.7	2.7	140.7	-0.9	-3.5	1.6
	4	177.4	-0.2	-0.6	1.8	1.8	188.0	0.7	2.7	2.7	2.7	138.4	-1.7	-6.6	-1.1
2002	1	178.0	0.3	1.3	1.2	1.3	189.0	0.5	2.1	2.5	2.1	138.3	-0.0	-0.1	-2.4
	2	179.5	0.9	3.5	1.3	2.4	190.0	0.5	2.1	2.4	2.1	138.7	0.2	1.0	-2.3
	3	180.5	0.5	2.2	1.6	2.3	191.0	0.5	2.2	2.3	2.2	138.7	0.0	0.2	-1.4
	4	181.4	0.5	2.0	2.2	2.2	191.8	0.4	1.8	2.1	2.1	139.7	0.7	2.8	1.0
2003	1	183.1	1.0	3.9	2.9	3.9	192.4	0.3	1.3	1.8	1.3	142.9	2.3	9.6	3.3
	2	183.4	0.1	0.6	2.2	2.2	192.8	0.2	0.8	1.5	1.0	142.3	-0.4	-1.8	2.6
2001	Aug	177.5	0.0	0.0	2.8	2.5	186.7	0.2	1.9	2.6	2.8	140.7	0.4	4.4	2.0
	Sep	178.1	0.3	4.1	2.6	2.7	187.1	0.2	2.6	2.6	2.8	141.3	0.4	5.2	1.6
	Oct	177.6	-0.3	-3.3	2.1	2.1	187.4	0.2	1.9	2.6	2.7	139.1	-1.6	-17.2	-0.3
	Nov	177.4	-0.1	-1.3	1.8	1.8	188.1	0.4	4.6	2.7	2.9	138.3	-0.6	-6.7	-1.2
	Dec	177.3	-0.1	-0.7	1.5	1.5	188.4	0.2	1.9	2.8	2.8	137.7	-0.4	-5.1	-1.7
2002	Jan	177.6	0.2	2.0	1.1	2.0	188.7	0.2	1.9	2.6	1.9	137.7	0.0	0.0	-2.8
	Feb	177.9	0.2	2.0	1.1	2.0	189.0	0.2	1.9	2.6	1.9	138.1	0.3	3.5	-2.7
	Mar	178.5	0.3	4.1	1.4	2.7	189.2	0.1	1.3	2.4	1.7	139.2	0.8	10.0	-1.6
	Apr	179.3	0.4	5.5	1.6	3.4	189.7	0.3	3.2	2.5	2.1	139.0	-0.1	-1.7	-2.1
	May	179.5	0.1	1.3	1.2	3.0	190.0	0.2	1.9	2.5	2.1	138.4	-0.4	-5.1	-2.7
	Jun	179.8	0.2	2.0	1.1	2.8	190.2	0.1	1.3	2.3	1.9	138.6	0.1	1.7	-2.2
	Jul	180.1	0.2	2.0	1.5	2.7	190.5	0.2	1.9	2.2	1.9	138.6	0.0	0.0	-1.1
	Aug	180.5	0.2	2.7	1.7	2.7	191.1	0.3	3.8	2.4	2.2	138.6	0.0	0.0	-1.5
	Sep	180.9	0.2	2.7	1.6	2.7	191.4	0.2	1.9	2.3	2.1	139.0	0.3	3.5	-1.6
	Oct	181.2	0.2	2.0	2.0	2.6	191.6	0.1	1.3	2.2	2.0	140.1	0.8	9.9	0.7
	Nov	181.4	0.1	1.3	2.3	2.5	191.8	0.1	1.3	2.0	2.0	139.7	-0.3	-3.4	1.0
	Dec	181.6	0.1	1.3	2.4	2.4	192.1	0.2	1.9	2.0	2.0	139.3	-0.3	-3.4	1.2
2003	Jan	182.2	0.3	4.0	2.6	4.0	192.3	0.1	1.3	1.9	1.3	141.2	1.4	17.7	2.5
	Feb	183.3	0.6	7.5	3.0	5.7	192.5	0.1	1.3	1.9	1.3	142.8	1.1	14.5	3.4
	Mar	183.9	0.3	4.0	3.0	5.2	192.5	0.0	0.0	1.7	0.8	144.8	1.4	18.2	4.0
	Apr	183.3	-0.3	-3.8	2.2	2.8	192.5	0.0	0.0	1.5	0.6	142.4	-1.7	-18.2	2.4
	May	183.3	0.0	0.0	2.1	2.3	193.0	0.3	3.2	1.6	1.1	141.9	-0.4	-4.1	2.5
	Jun	183.6	0.2	2.0	2.1	2.2	193.0	0.0	0.0	1.5	0.9	142.6	0.5	6.1	2.9
	Jul	183.9	0.2	2.0	2.1	2.2	193.4	0.2	2.5	1.5	1.2	142.8	0.1	1.7	3.0
	Aug	184.5	0.3	4.0	2.2	2.4	193.6	0.1	1.2	1.3	1.2	143.4	0.4	5.2	3.5

Notes

Pages 4, 5: **Final Sales** is gross domestic product (GDP) minus change in private 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. Real GDP is measured in 1996 dollars. The **ISM** (formerly Purchasing Managers') **Index** is a weighted average of diffusion indexes for new orders, production, supplier deliveries, inventories, and employment. **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: For information on how to calculate the **Contribution** of a component to the overall GDP growth rate, see the October 1999 issue of the Survey of Current Business, p. 16. The sign is changed for **Imports**.

Page 7: Ten-year **Treasury Yields** are adjusted to constant maturity; three-month yields are secondary market averages. All rates used in the yield curves are adjusted to constant maturity. The 30-year constant maturity series was discontinued by the Treasury Department as of Feb. 18, 2002. **Standard and Poor's 500 Index with Reinvested Dividends** shows the total return: capital gains plus dividends.

Pages 8, 9: **Oil** (West Texas intermediate) and **Natural Gas** (Henry Hub) spot and futures **prices** are listed in the *Wall Street Journal*. Spot prices are monthly averages of daily prices; futures prices are usually taken from the last trading day of the month. **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: Effective with the May 2003 **Employment Situation**, the establishment survey data for employment, hours, and earnings have been converted from the 1987 SIC system to the 2002 NAICS system. All published NAICS-based labor series have been revised back to at least 1990. For more information see <http://www.bls.gov/ces/>. **Nonfarm Payroll Employment** is counted in a survey of about 400,000 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 60,000 households provides estimates of civilian employment, unemployment rate, labor force participation rate, and employment-population ratio. **Population** is civilian, noninstitutional, 16 years and over. The 90 percent confidence intervals for the unemployment rate (± 0.2 percentage points) and change in household survey employment ($\pm 290,000$) measure uncertainty due to sample size. Because the household survey was changed in January 1994, data prior to this date are not strictly comparable. The Bureau of Labor Statistics announced several revisions to the Household Survey on Feb. 7, 2003, with the release of the January 2003 data. For more information, see www.bls.gov/cps/.

Page 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 pp. 16-17). **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. The comprehensive revision introduced the **Equipment & Software** component of business investment.

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 NIPAs. The **Unified Federal Budget Surplus/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. Nonfarm business accounted for about 76 percent of the value of GDP in 1996, while nonfinancial corporations accounted for about 54 percent. **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.

NOTE: Several measures of economic activity are now based on the 2002 North American Industry Classification System (NAICS), which replaces the 1987 Standard Industry Classification (SIC) system. These include establishment survey data for employment, earnings, and hours; retail sales; manufacturers' orders, shipments, and inventories, and the business inventory-to-sales ratio.

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).