



Predicting Consumption: A Lesson in Real-Time Data

Continuing crises in U.S. housing and financial markets have increased concerns about an impending recession, which typically involves two quarters of negative GDP growth. All recessions since the early 1950s, except the one in 2001, included a contraction in personal consumption expenditures (PCE). Because roughly 70 percent of the country's GDP can be attributed to PCE on goods and services, any contraction in consumption expenditures weighs heavily on economic growth.

The Bureau of Economic Analysis (BEA) measures GDP and, two months after the end of each quarter, releases its GDP estimates for that quarter.¹ In addition to releasing data on total output, the BEA releases data on each component of GDP: PCE, investment, government expenditures, and net exports. Unlike the other components, PCE estimates are also released monthly as part of the BEA's "Personal Income and Outlays" report. Quarterly PCE is the average of monthly PCE over the three months in the quarter, and both monthly and quarterly data are subsequently revised multiple times.

These monthly PCE releases have been spotlighted recently: As it turns out, the PCE measure for the second month of a given quarter is close to the measure for the entire quarter. For example, the PCE for February 2008 (reported March 28) was \$8,365.5 billion; the advance release of 2008:Q1 PCE (reported May 1) was \$8,369.1 billion. The rationale for using the second month as a proxy for a quarter's average is simple: It is available sooner—one month before the advance release of the quarterly figure. It is also quite reliable: On average, the economy tends to grow; if the growth rate of consumption from month to month within a quarter is constant, the PCE for the second month is close to that quarter's average.

The chart plots the approximated (second-month) and actual growth rates of PCE since 1991 using real-time data: That is, the growth rates at each point on the chart are computed using only the data that would have been available

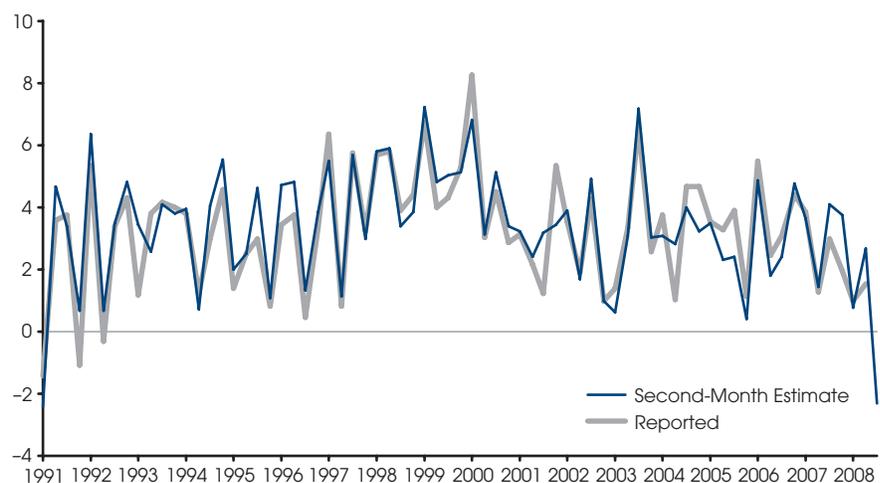
to a researcher at the time of the estimate. The approximated measure for 2008:Q3 is -2.3 percent, suggesting the first decline in PCE since the fourth quarter of 1991. On average, the second-month PCE is close to the reported quarterly data; however, it under predicts the advance release by an average of 0.15 percentage points over the sample. The correlation between the two series in the chart is 0.90.

Most of the difference between the two series disappears when data are revised. In fact, the actual quarterly PCE growth rate and the approximation using second-month data is almost perfect, differing by only 0.03 percentage points when both growth rates are computed using current data. In summary, this simple calculation can provide a quite accurate picture of the quarterly consumption growth rate a month ahead of the BEA's first official release. In addition, the use of real-time (or unrevised) data is essential for evaluating the performance of this or any calculation.

—Riccardo DiCecio and Charles S. Gascon

¹ Both the GDP and the "Personal Income and Outlays" releases are available at <http://www.bea.gov/national/index.htm>. The current release schedule for the National Economic Accounts is available at http://www.bea.gov/newsreleases/news_release_sort_national.htm.

Annualized Growth Rate of Real Personal Consumption Expenditures



NOTE: At time of publication, the actual 2008:Q3 data had not been reported by the BEA; only the second-month estimate is reported in the chart.

SOURCE: Authors' calculations with real-time ALFRED data; <http://alfred.stlouisfed.org/>.

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 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:

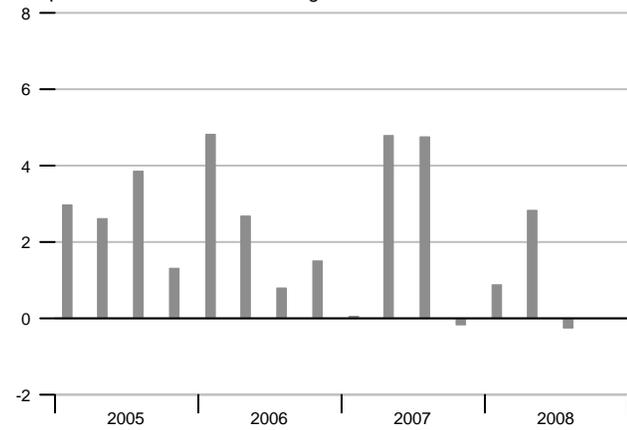
Editor, *National Economic Trends*
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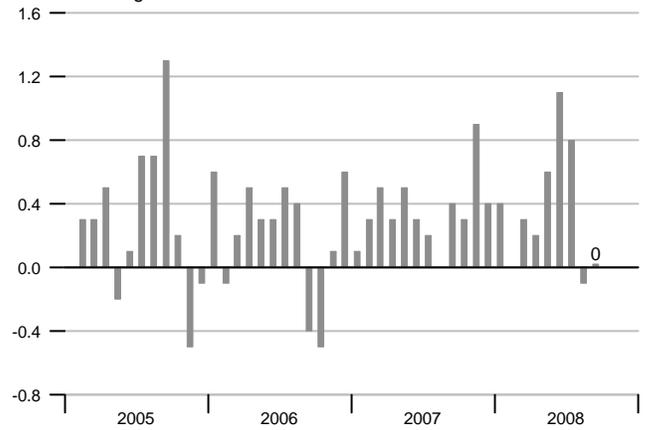
Real GDP Growth

Compounded annual rates of change



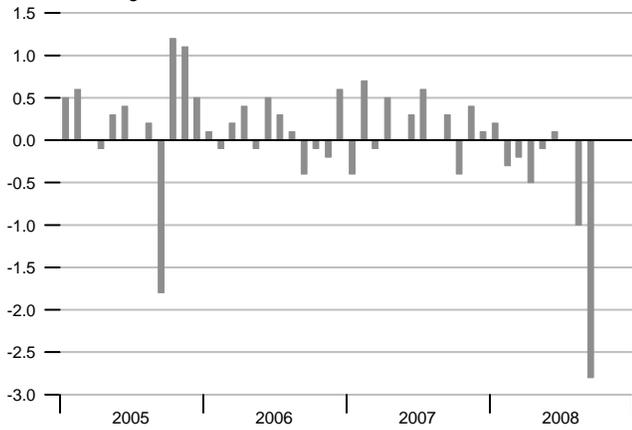
Consumer Price Index

Percent change



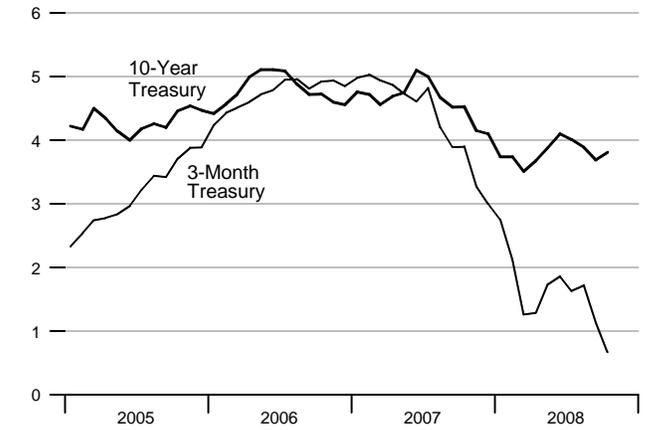
Industrial Production

Percent change



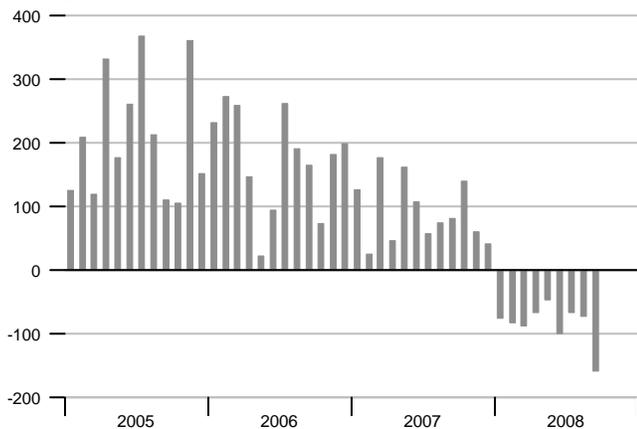
Interest Rates

Percent



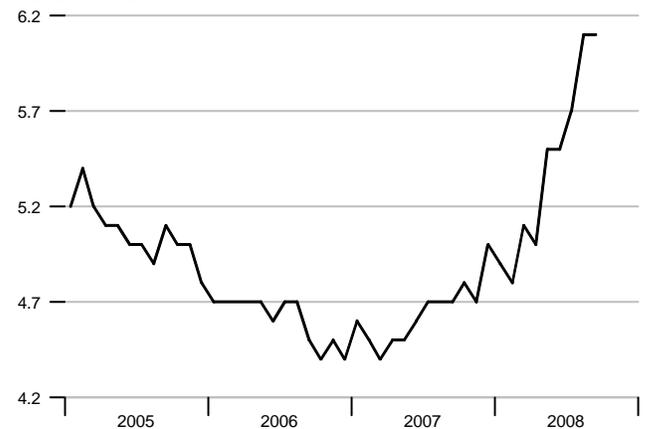
Change in Nonfarm Payrolls

Thousands



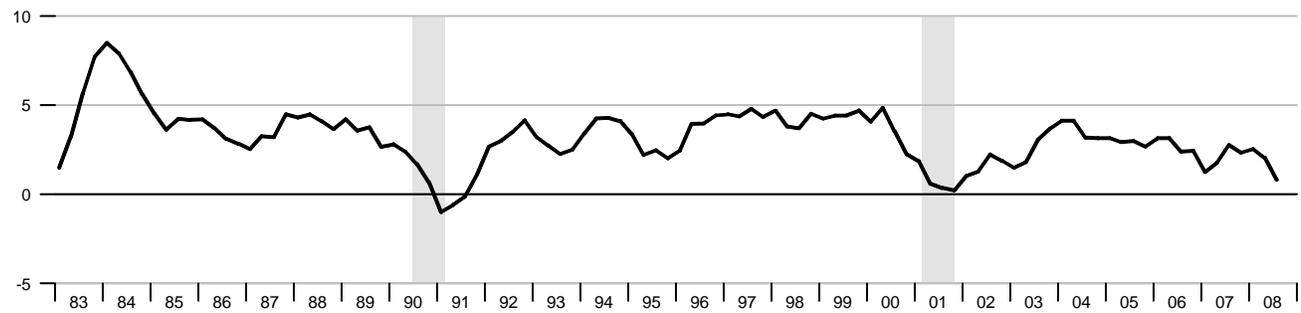
Unemployment Rate

Percent of labor force



Real Gross Domestic Product

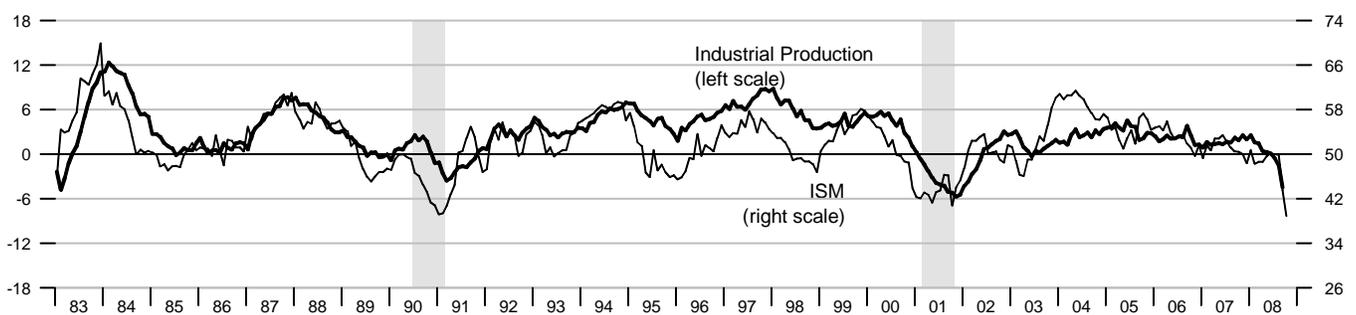
Percent change from year ago



Industrial Production and Institute for Supply Management (ISM) Indexes

Percent change from year ago

Index



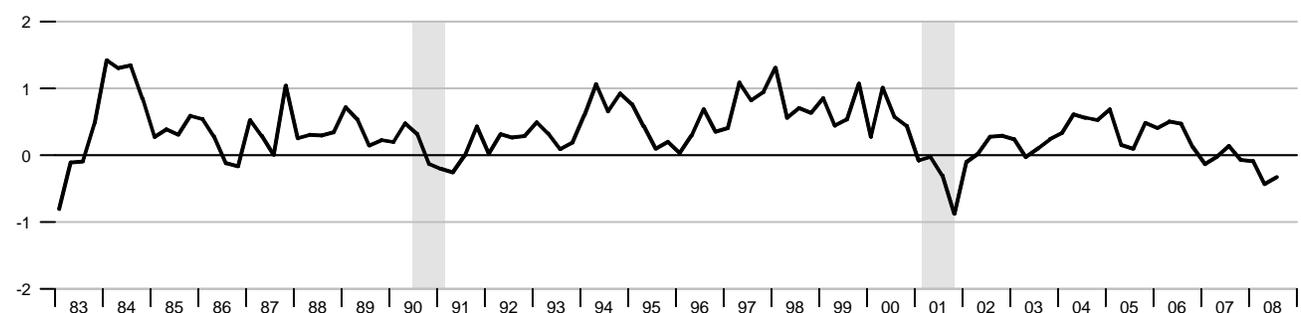
Aggregate Private Nonfarm Hours

Percent change from year ago

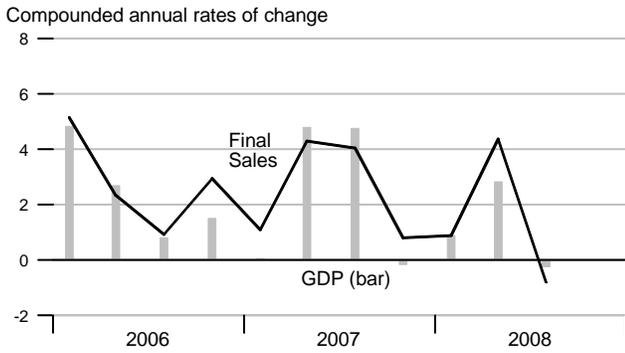


Real Change in Private Inventories

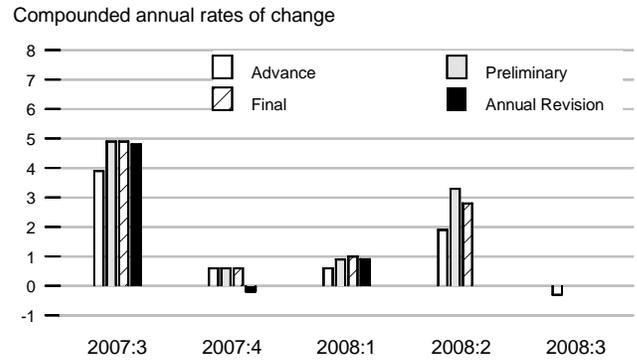
Percent of GDP



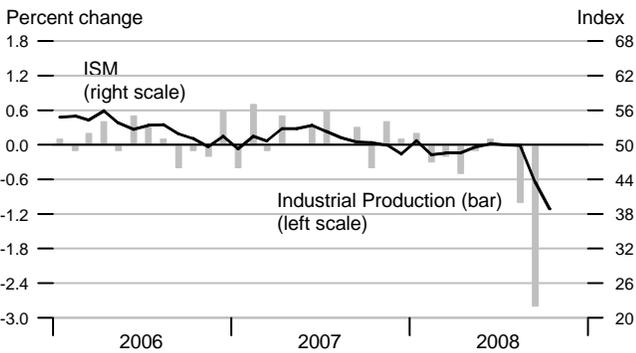
Real Final Sales and GDP



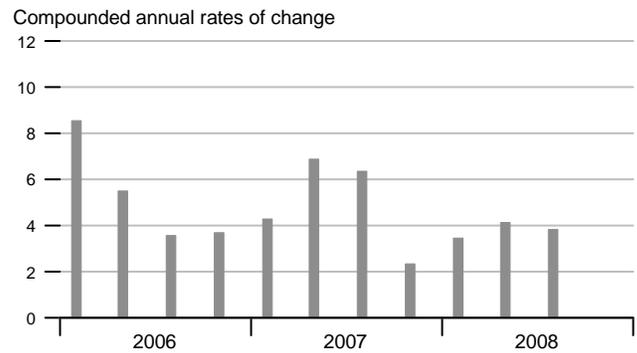
Real GDP Revisions



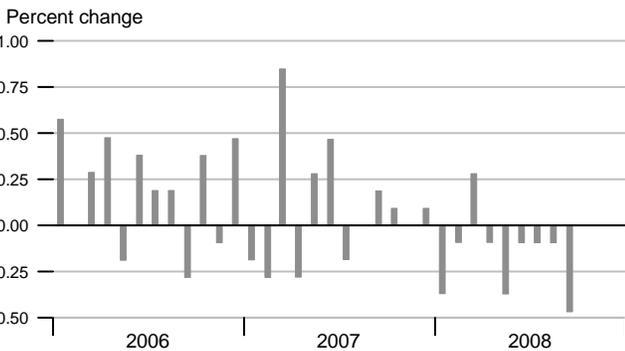
Industrial Production and ISM Index



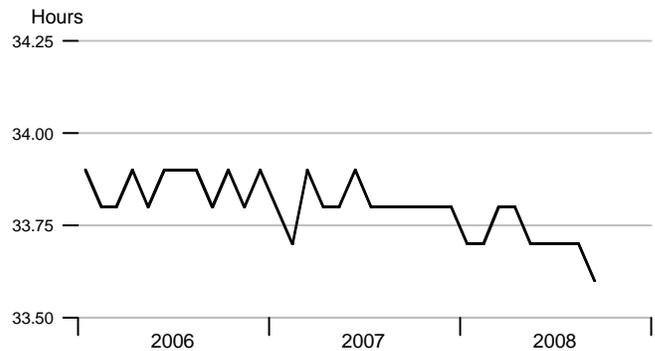
Nominal Gross Domestic Product



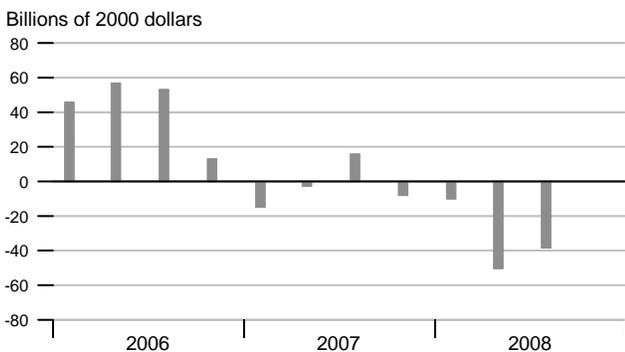
Aggregate Private Nonfarm Hours



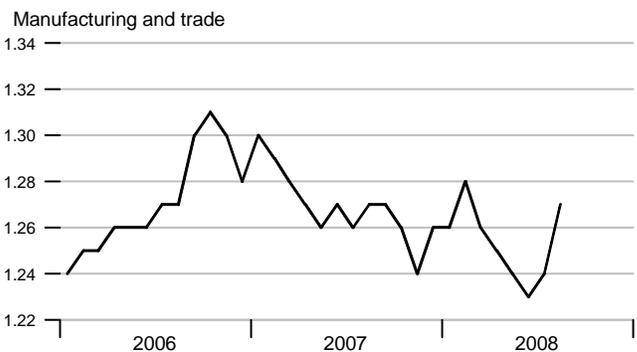
Average Weekly Private Nonfarm Hours



Real Change in Private Inventories

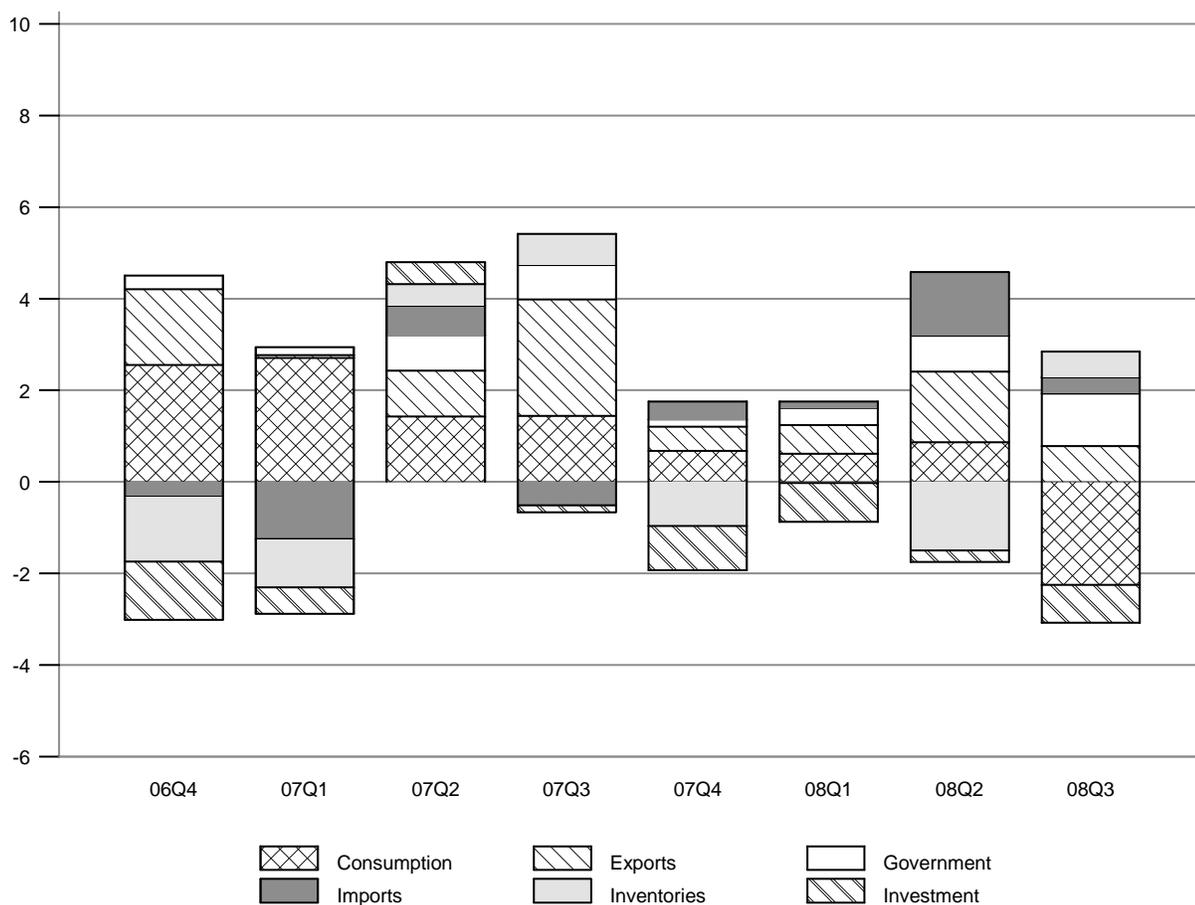


Inventory-Sales Ratio



Contribution of Components to Real GDP Growth

Percentage points at compounded annual rates



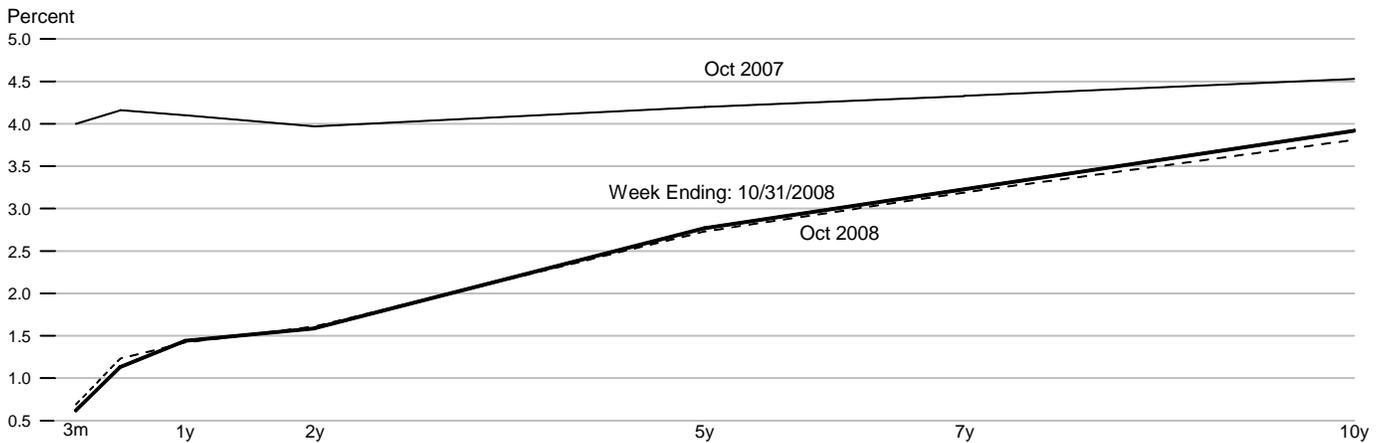
Contributions to Real GDP Growth Rate

	2006	2007				2008		
	4th	1st	2nd	3rd	4th	1st	2nd	3rd
Final Sales	2.91	1.11	4.32	4.07	0.79	0.89	4.33	-0.81
Consumption	2.55	2.71	1.42	1.44	0.67	0.61	0.87	-2.25
Fixed Investment	-1.27	-0.57	0.47	-0.15	-0.97	-0.86	-0.25	-0.83
Nonresidential	-0.09	0.33	1.07	0.91	0.36	0.26	0.27	-0.11
Residential	-1.18	-0.91	-0.60	-1.06	-1.33	-1.12	-0.52	-0.72
Government	0.30	0.17	0.77	0.75	0.16	0.38	0.78	1.15
Federal	0.12	-0.26	0.47	0.51	-0.04	0.41	0.47	0.97
State and Local	0.18	0.43	0.30	0.24	0.19	-0.03	0.31	0.18
Net Exports	1.33	-1.20	1.66	2.03	0.94	0.77	2.93	1.13
Exports	1.66	0.06	1.01	2.54	0.53	0.63	1.54	0.78
Imports	-0.33	-1.25	0.65	-0.51	0.40	0.14	1.39	0.35
Change in Inventory	-1.41	-1.06	0.47	0.69	-0.96	-0.02	-1.50	0.56
Residual	-0.22	-0.24	-0.15	-0.24	-0.34	-0.10	0.02	0.26
Real GDP Growth	1.50	0.05	4.79	4.76	-0.17	0.87	2.83	-0.25

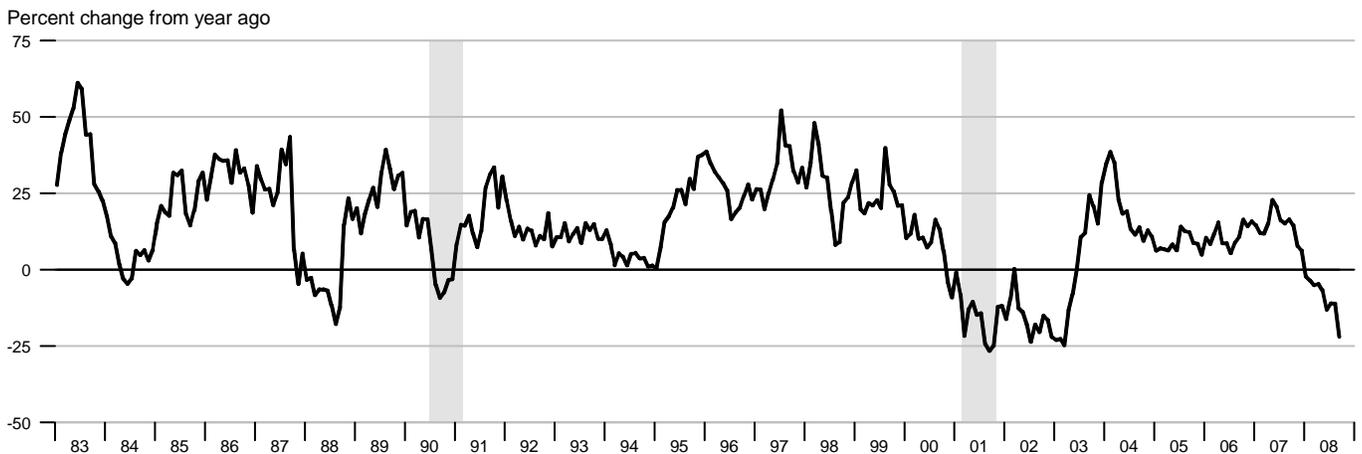
Interest Rates



Treasury Yield Curve

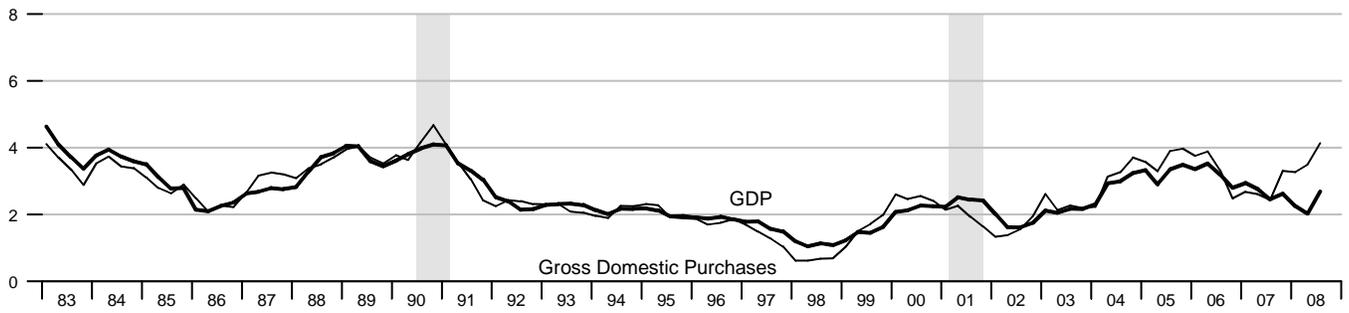


Standard and Poor's 500 Index with Reinvested Dividends



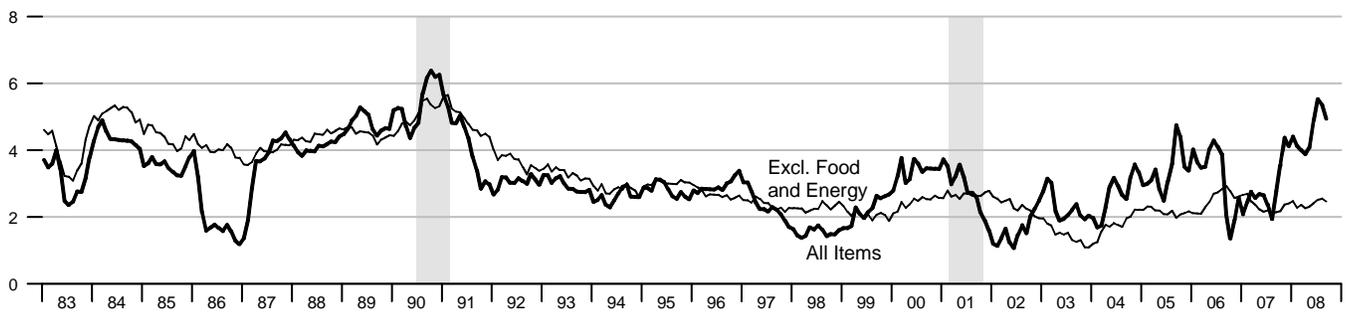
NIPA Chain Price Indexes

Percent change from year ago



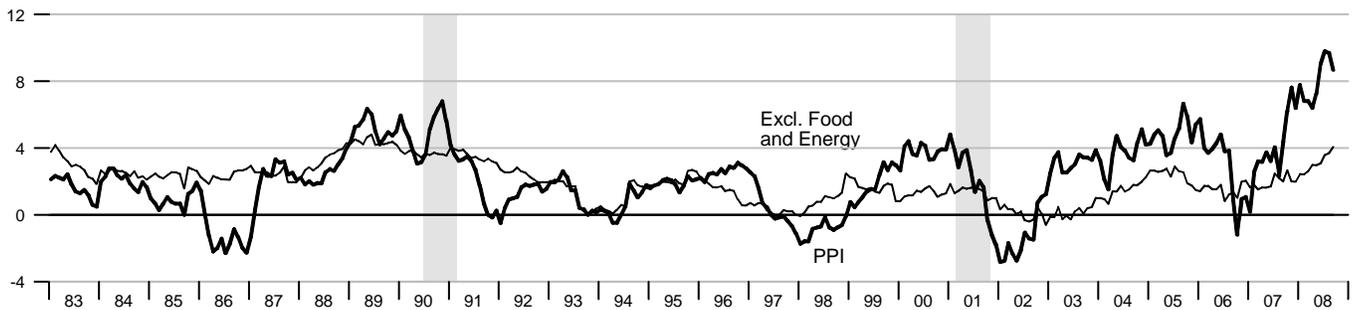
Consumer Price Index

Percent change from year ago



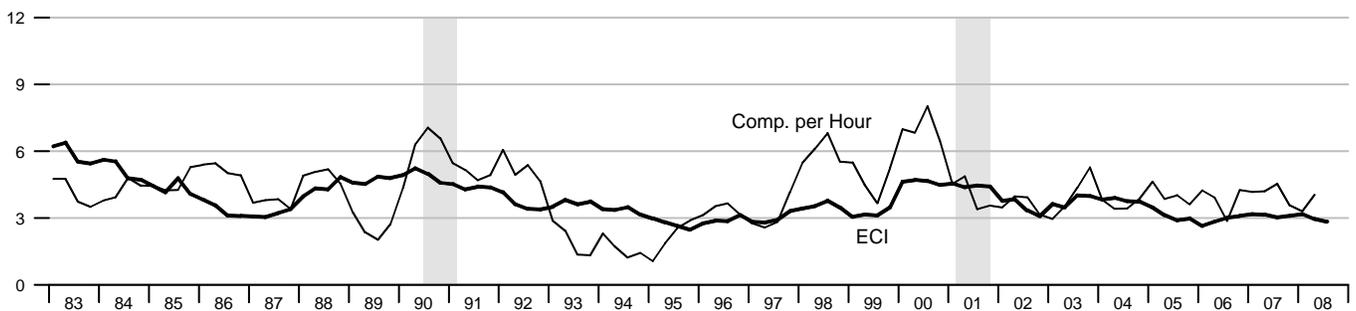
Producer Price Index, Finished Goods

Percent change from year ago

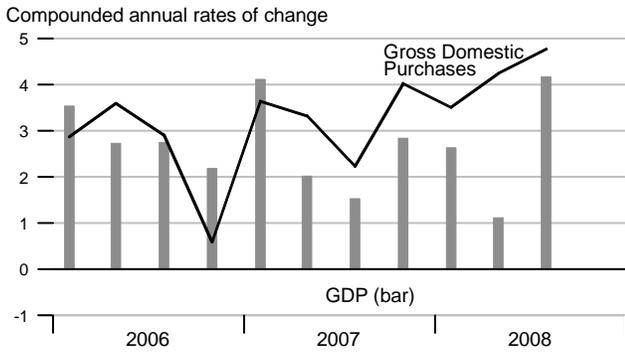


Employment Cost Index and Compensation per Hour

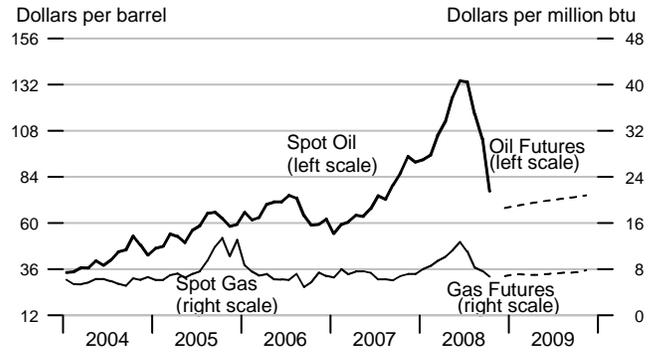
Percent change from year ago



NIPA Chain Price Indexes

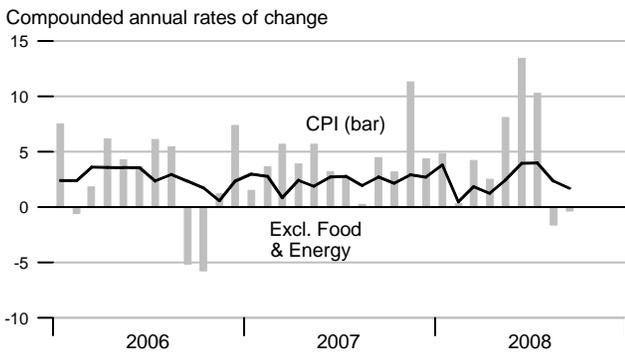


Oil & Natural Gas Prices: Spot & Futures

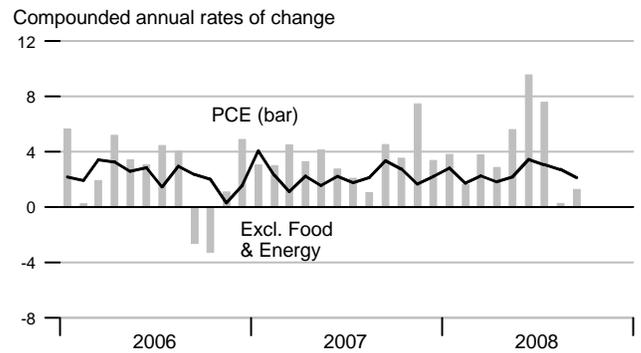


Note: Futures prices as of 10/31/2008.

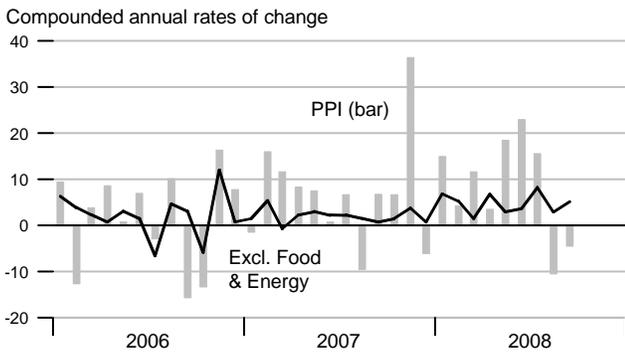
Consumer Price Index



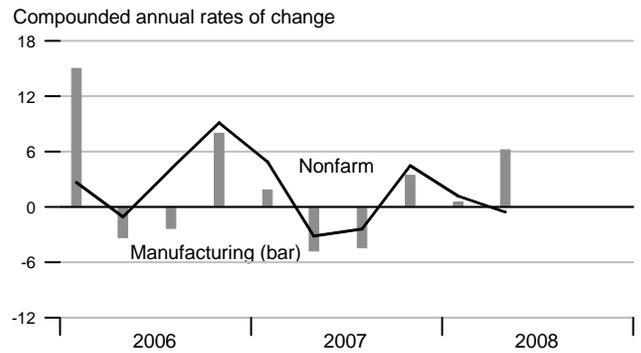
Consumption Chain Price Index



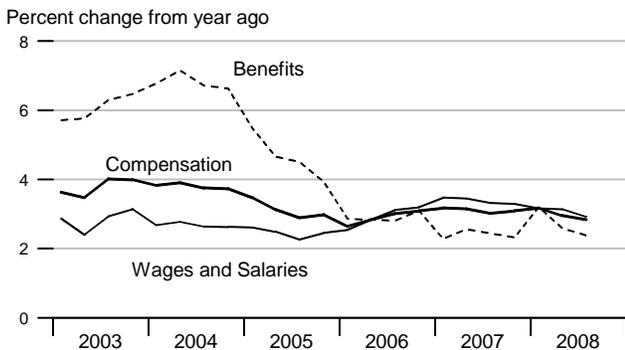
Producer Price Index, Finished Goods



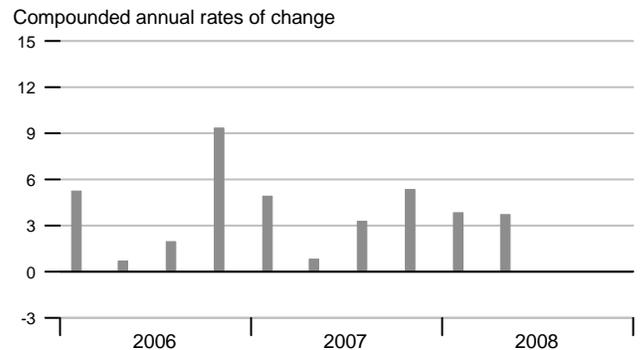
Unit Labor Cost



Employment Cost Index

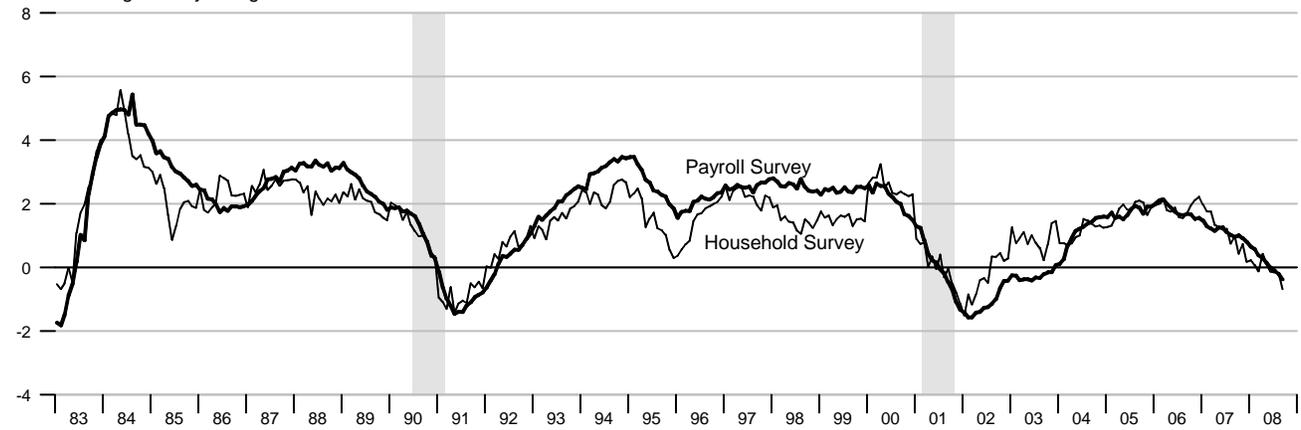


Compensation per Hour



Employment

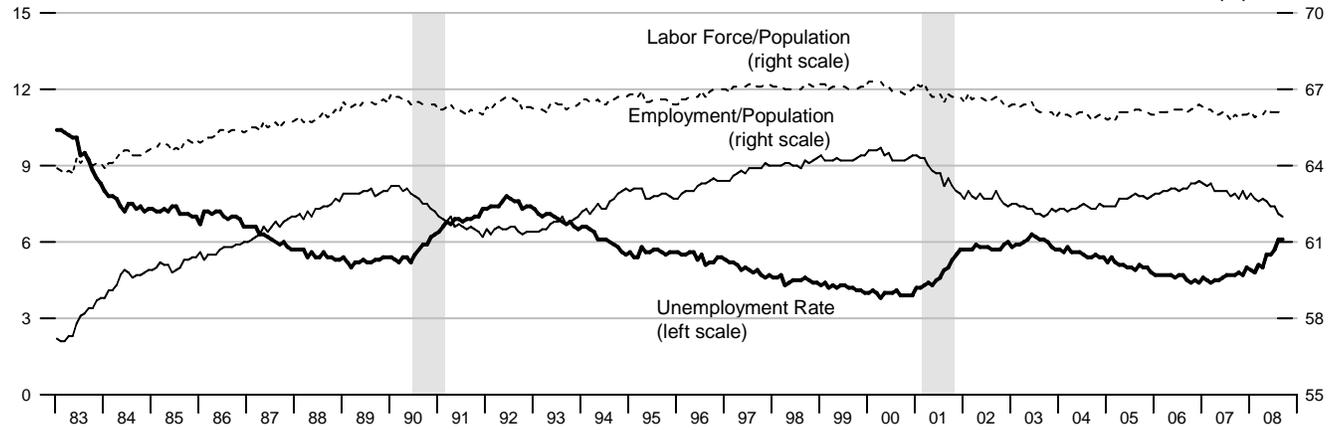
Percent change from year ago



Unemployment, Labor Force Participation, and Employment Rates

Percent of labor force

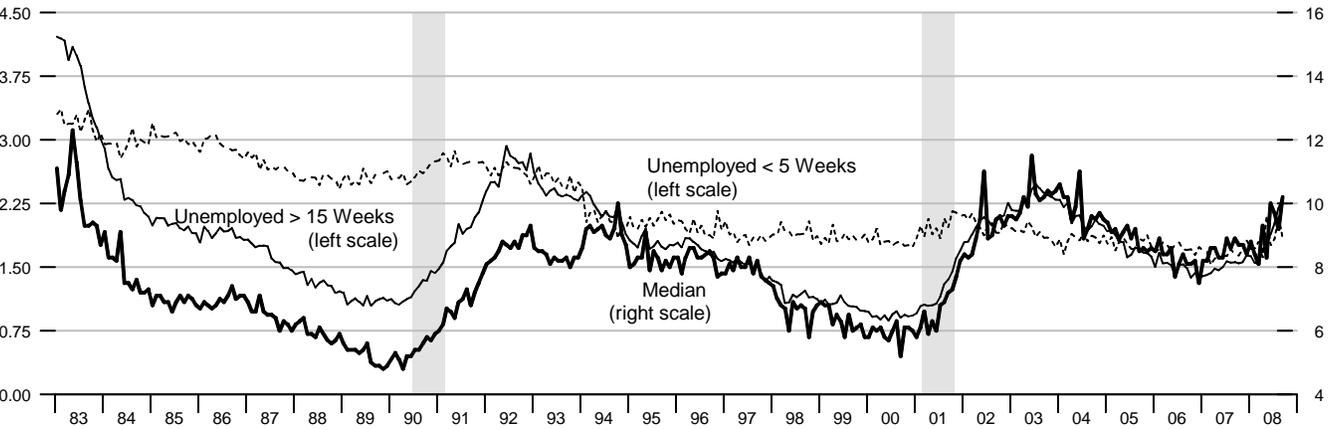
Percent of population



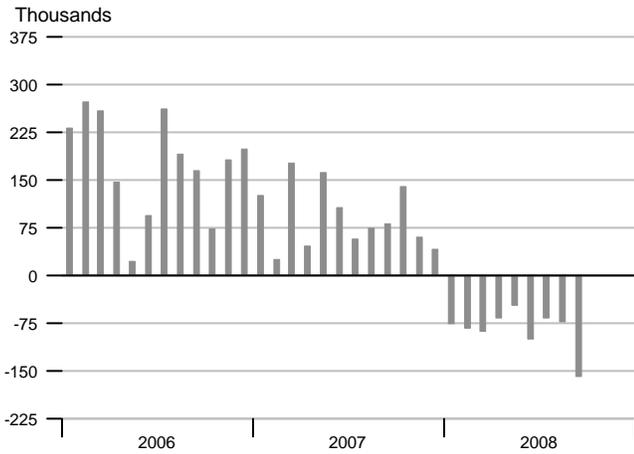
Duration of Unemployment

Percent of labor force

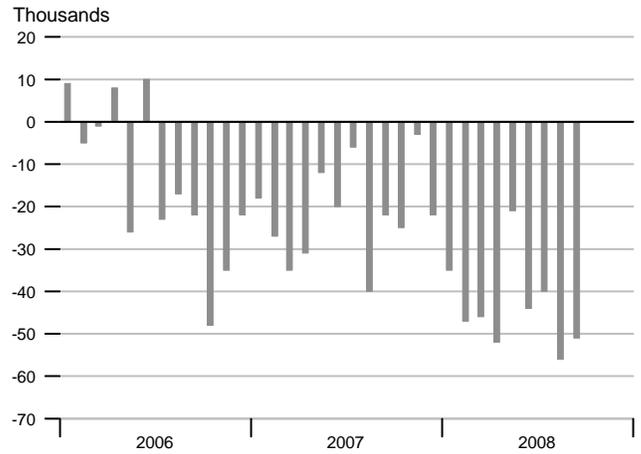
Weeks



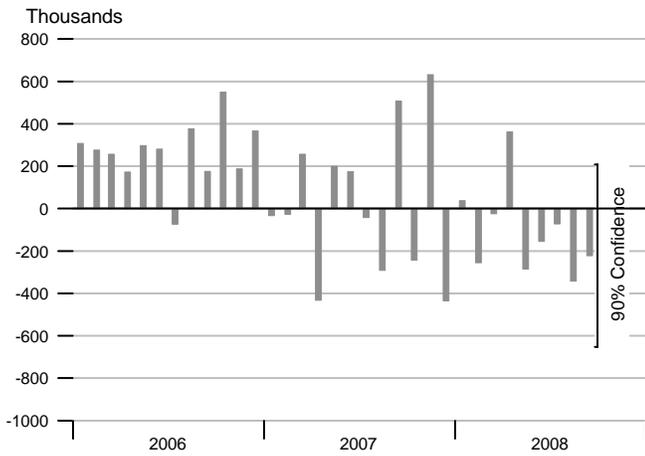
Change in Nonfarm Payrolls



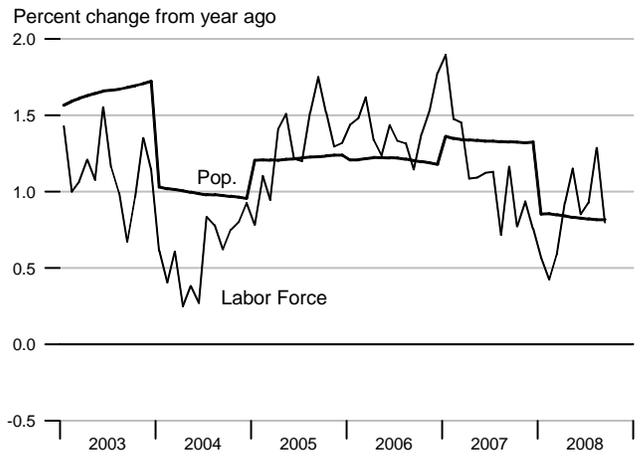
Change in Manufacturing Payrolls



Change in Household Employment



Labor Force and Population



Available Labor Supply and Components

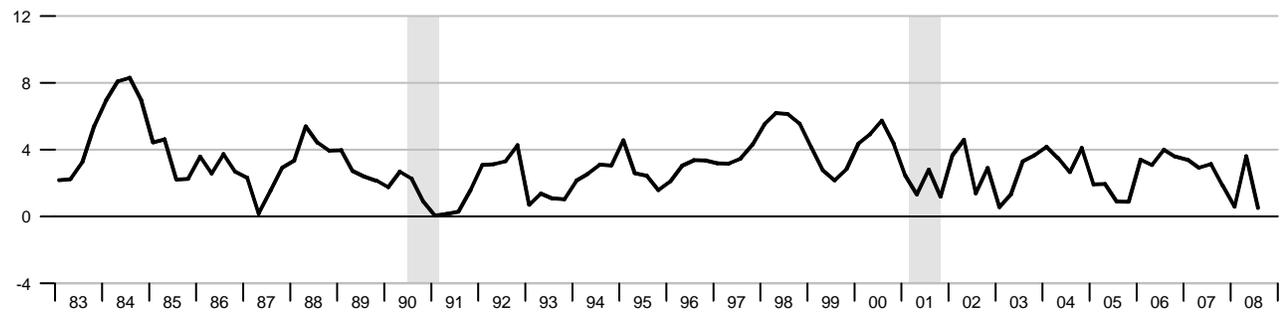


Unemployment Rate & Job Openings Rate



Real Disposable Personal Income

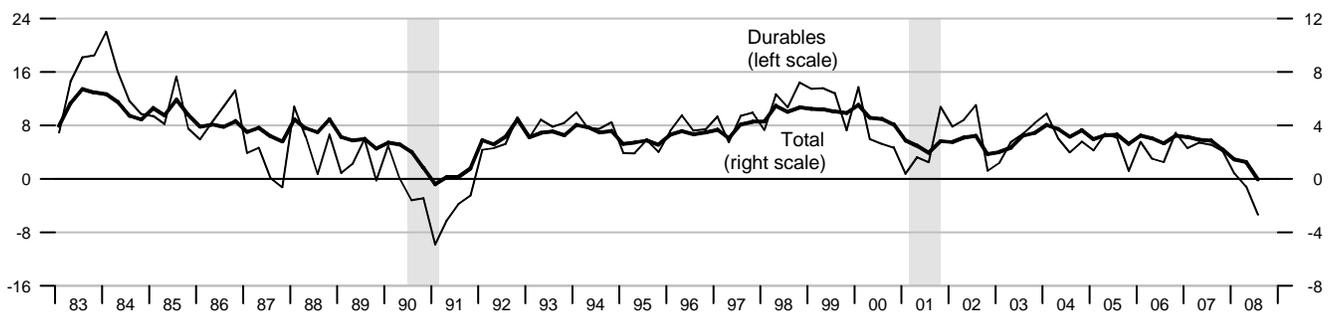
Percent change from year ago, quarterly data



Real Consumption

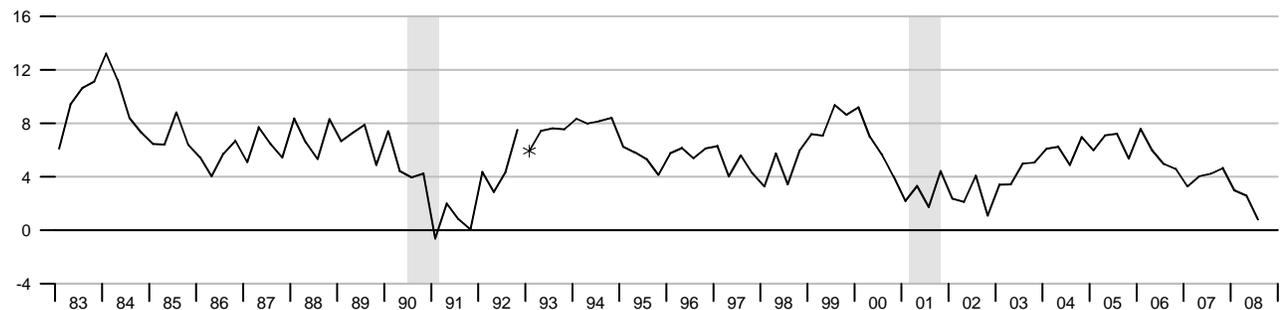
Percent change from year ago, quarterly data

Percent change from year ago, quarterly data



Retail and Food Services Sales

Percent change from year ago, quarterly average

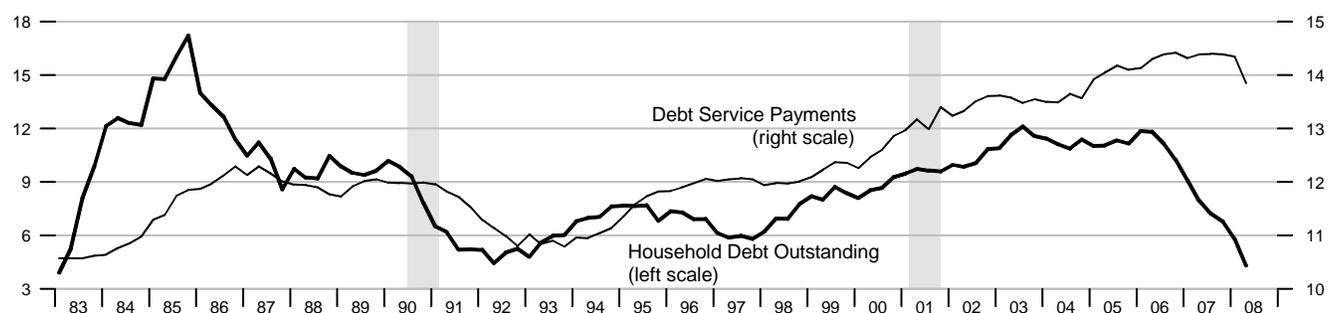


*Data from Jan. 1992 to the present are on a NAICS basis; data prior to Jan. 1992 are on an SIC basis and are not strictly comparable (see End Note).

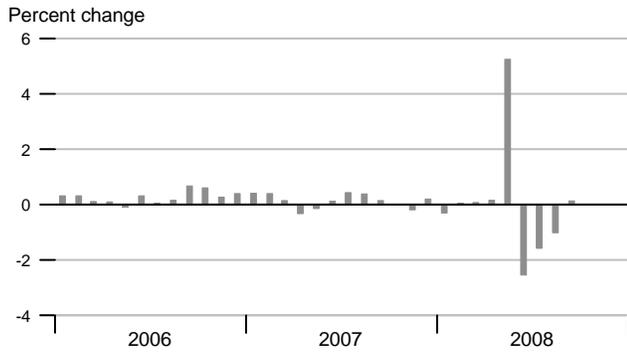
Debt Service Payments and Household Debt Outstanding

Percent change from year ago, quarterly data

Percent of disposable personal income



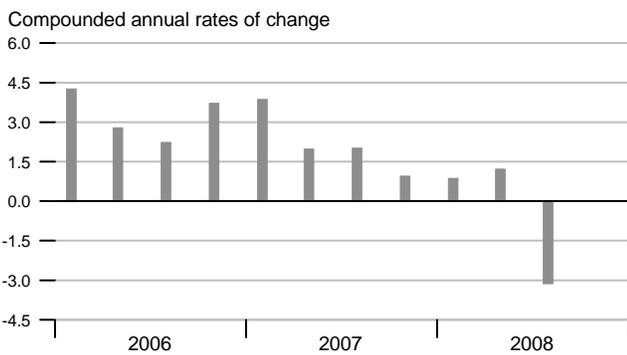
Real Disposable Personal Income



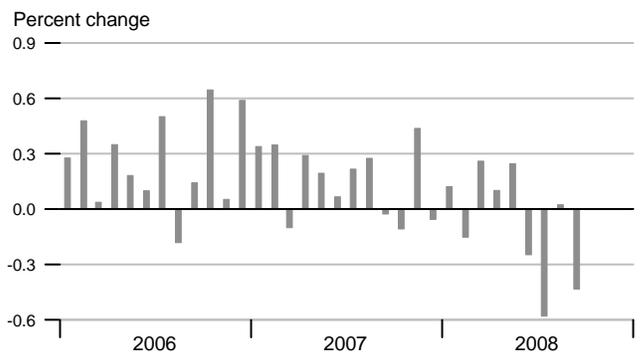
Personal Saving Rate



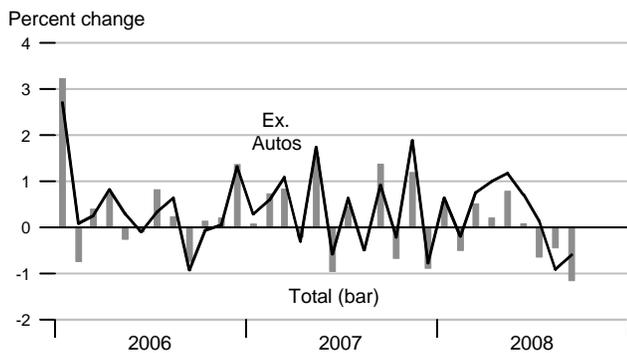
Real Consumption



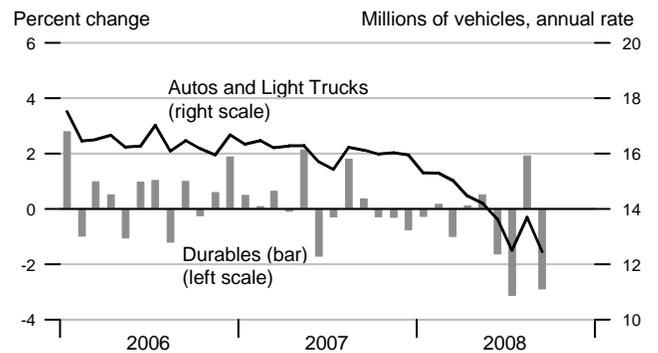
Real Consumption



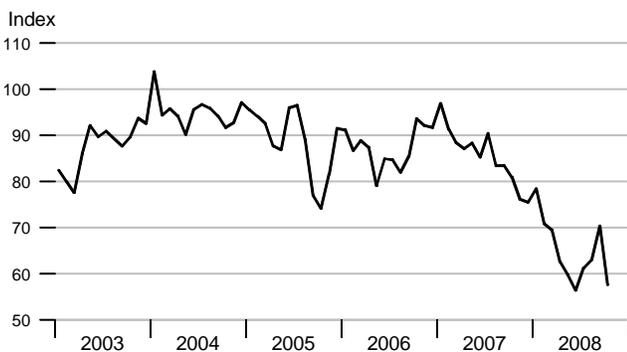
Retail & Food Services



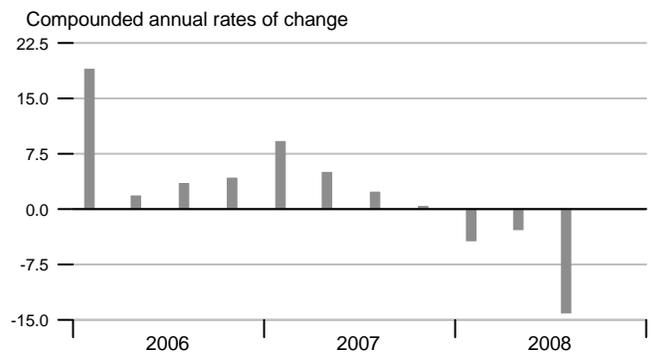
Real Durables Consumption & Vehicle Sales



Consumer Sentiment (U. of Michigan)

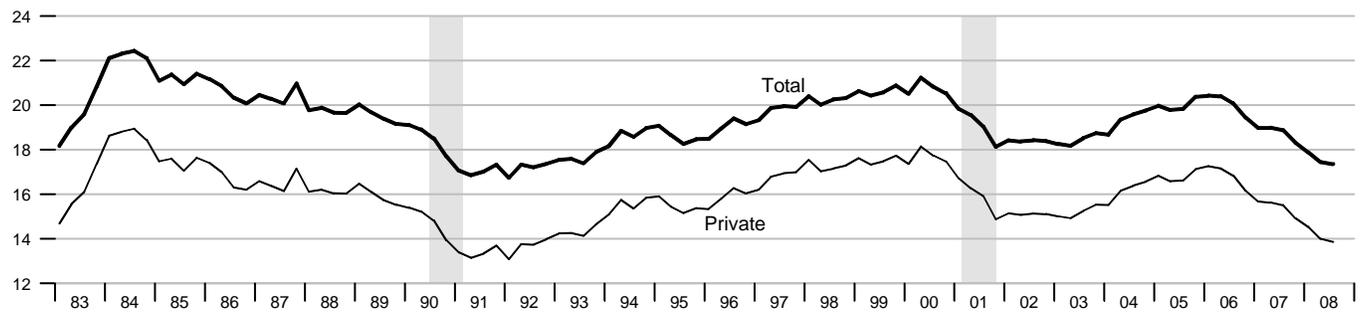


Real Durables Consumption



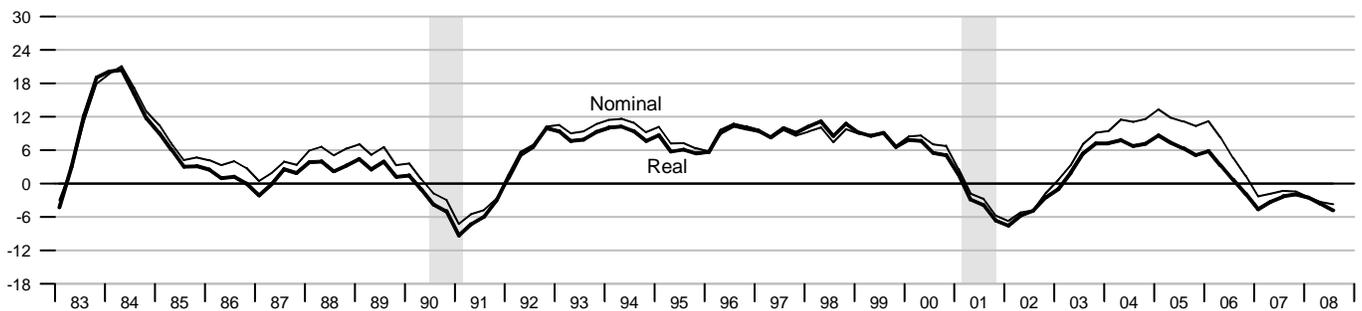
Investment

Percent of nominal GDP



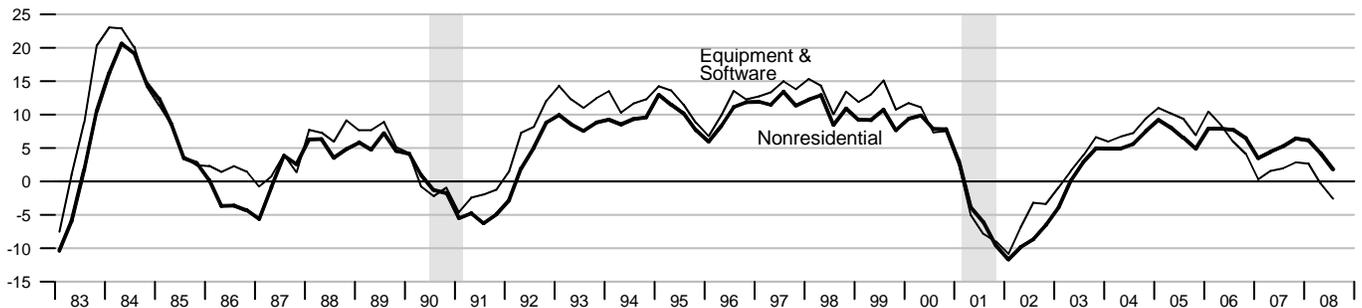
Private Fixed Investment

Percent change from year ago



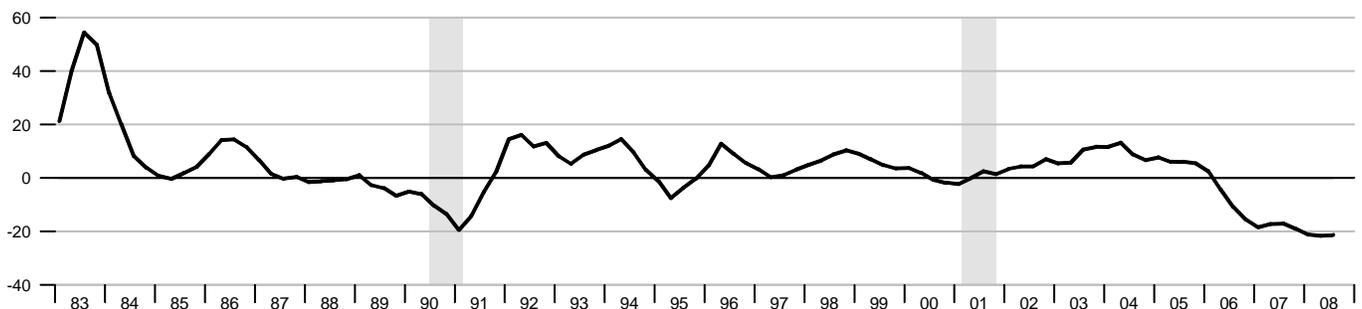
Real Nonresidential Fixed and Equipment & Software Investment

Percent change from year ago

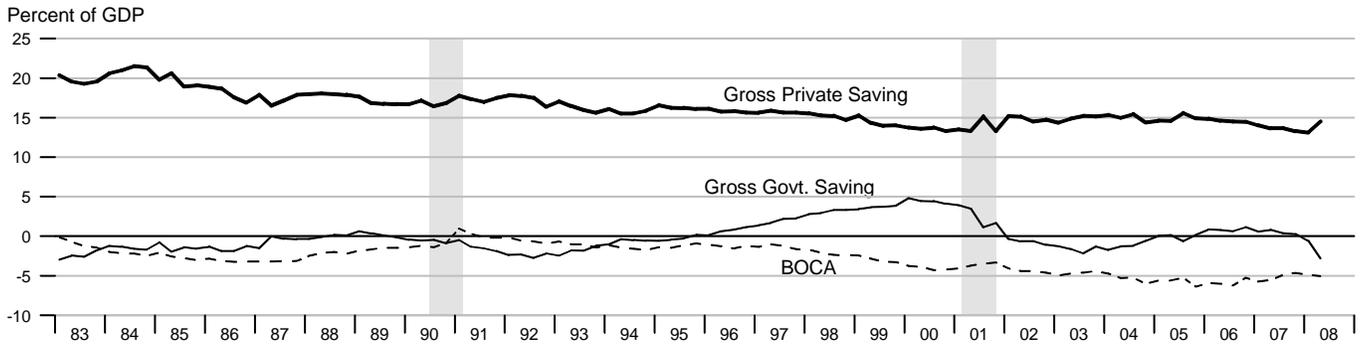


Real Residential Fixed Investment

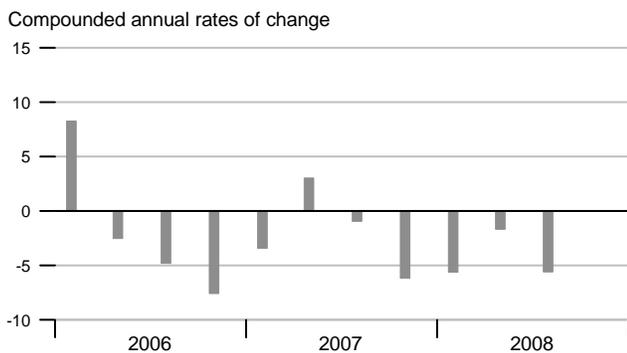
Percent change from year ago



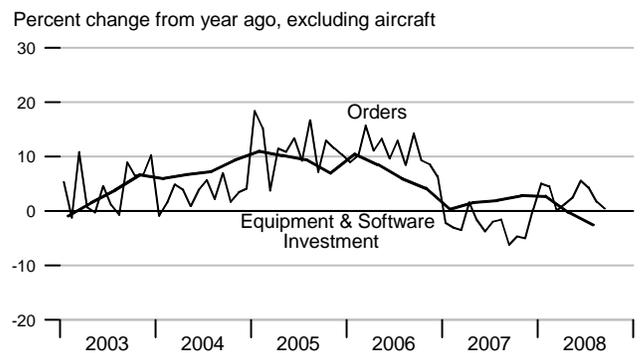
Gross Saving Rates and Balance on Current Account (NIPA)



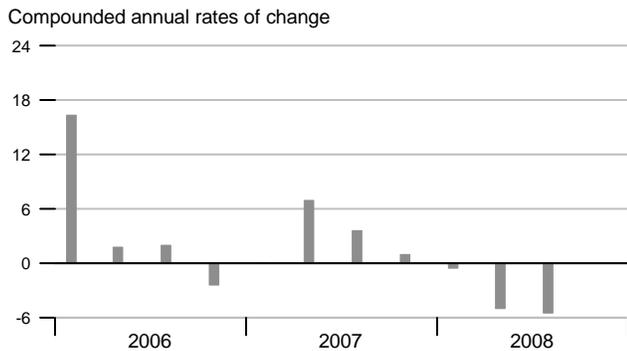
Real Private Fixed Investment



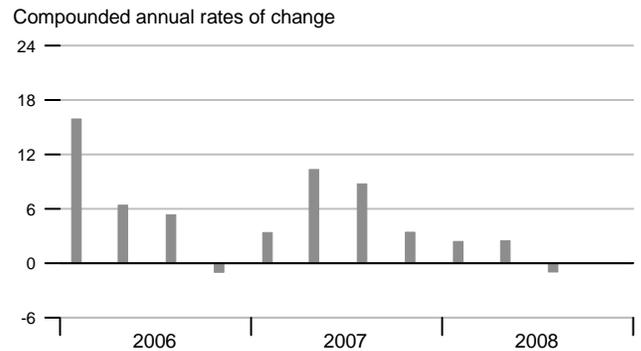
Nondefense Capital Goods Orders



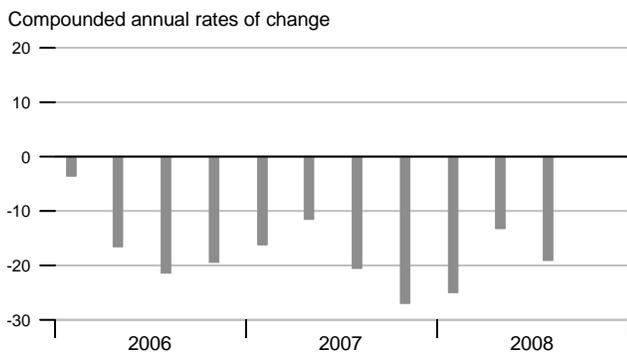
Real Equipment & Software Investment



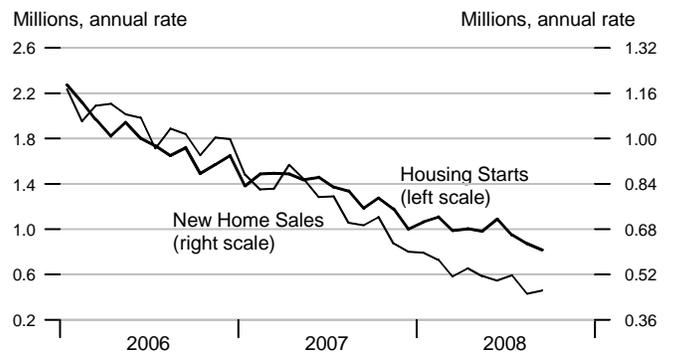
Real Nonresidential Fixed Investment



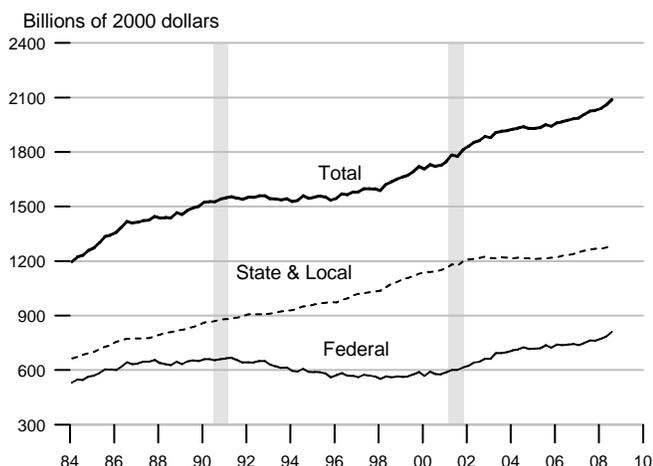
Real Residential Fixed Investment



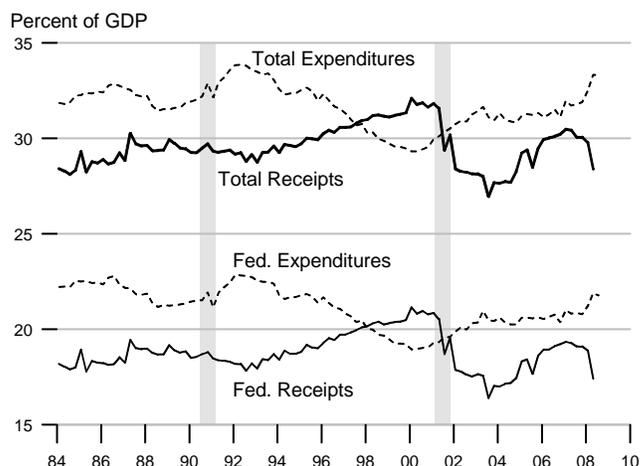
Housing Starts and New Home Sales



Govt. Consumption and Investment



Govt. Current Receipts and Expenditures



Government Budgets

Billions of dollars

National Income Accounts

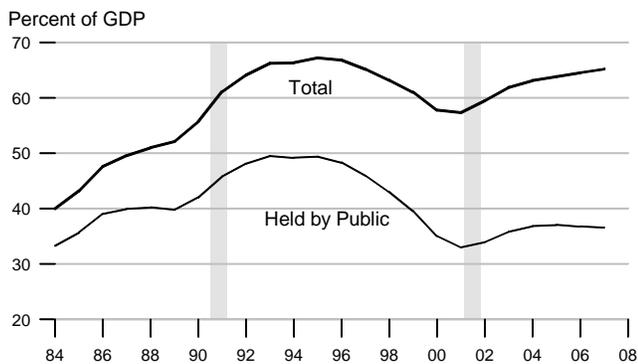
Calendar Years

Unified Budget

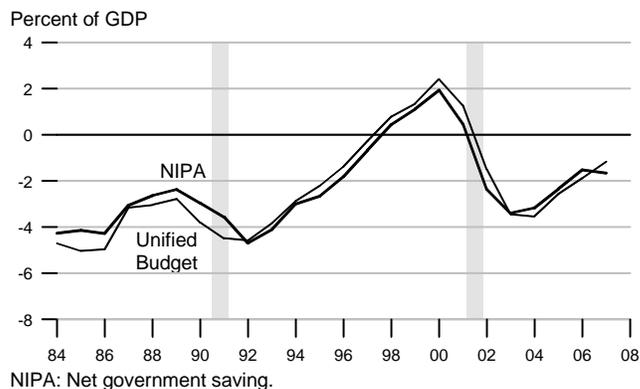
Fiscal Years

	State and Local			Federal			Federal		
	Receipts	Expenditures	Surplus or Deficit (-)	Receipts	Expenditures	Surplus or Deficit (-)	Receipts	Outlays	Surplus or Deficit (-)
1991	789.2	793.3	-4.1	1101.3	1315.0	-213.7	1055.1	1324.3	-269.2
1992	845.7	845.0	0.7	1147.2	1444.6	-297.4	1091.3	1381.6	-290.3
1993	886.9	886.0	0.9	1222.5	1496.0	-273.5	1154.5	1409.5	-255.1
1994	942.9	932.4	10.5	1320.8	1533.1	-212.3	1258.7	1461.9	-203.2
1995	990.2	978.2	12.0	1406.5	1603.5	-197.0	1351.9	1515.9	-164.0
1996	1043.3	1017.5	25.8	1524.0	1665.8	-141.8	1453.2	1560.6	-107.4
1997	1097.4	1058.3	39.1	1653.1	1708.9	-55.8	1579.4	1601.3	-21.9
1998	1163.2	1111.2	52.0	1773.8	1734.9	38.9	1722.0	1652.7	69.3
1999	1236.7	1186.3	50.4	1891.2	1787.6	103.6	1827.6	1702.0	125.6
2000	1319.5	1269.5	50.0	2053.8	1864.4	189.4	2025.5	1789.2	236.2
2001	1373.0	1368.2	4.8	2016.2	1969.5	46.7	1991.4	1863.2	128.2
2002	1410.1	1444.3	-34.2	1853.2	2101.1	-247.9	1853.4	2011.2	-157.8
2003	1494.2	1514.5	-20.3	1879.9	2252.1	-372.2	1782.5	2160.1	-377.6
2004	1594.3	1592.8	1.5	2008.9	2379.5	-370.6	1880.3	2293.0	-412.7
2005	1714.4	1684.9	29.5	2266.9	2558.6	-291.7	2153.9	2472.2	-318.3
2006	1811.4	1765.3	46.1	2510.4	2711.6	-201.2	2407.3	2655.4	-248.2
2007	1902.8	1892.4	10.4	2651.2	2880.5	-229.3	2567.7	2729.2	-161.5
2006Q4	1828.4	1796.6	31.8	2568.6	2721.8	-153.2	573.5	653.9	-80.4
2007Q1	1877.5	1854.3	23.2	2612.8	2837.9	-225.1	547.4	725.4	-178.0
2007Q2	1909.8	1874.0	35.8	2648.1	2859.5	-211.4	824.4	686.9	137.5
2007Q3	1905.5	1900.7	4.8	2664.9	2909.2	-244.3	622.3	662.9	-40.6
2007Q4	1918.4	1940.7	-22.3	2679.2	2915.6	-236.4	606.2	713.0	-106.8
2008Q1	1922.9	1975.3	-52.4	2672.5	3003.2	-330.7	539.8	745.7	-205.9
2008Q2	1955.4	2022.3	-66.9	2488.4	3128.4	-640.0	787.9	761.0	26.9
2008Q3	.	2050.0	.	.	3139.6	.	590.0	758.9	-169.0

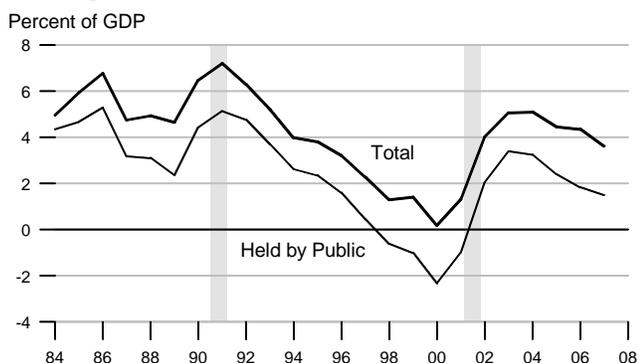
Federal Debt



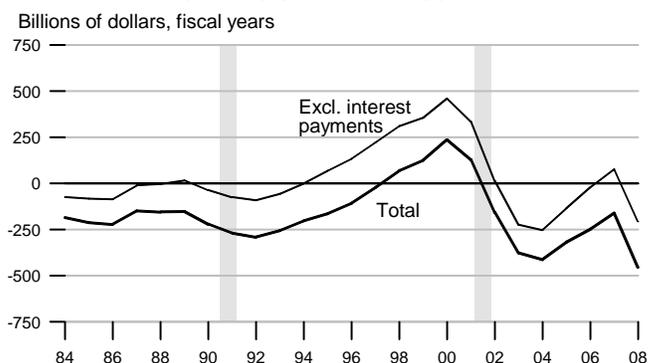
Federal Surplus (+) / Deficit (-)



Change in Federal Debt



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

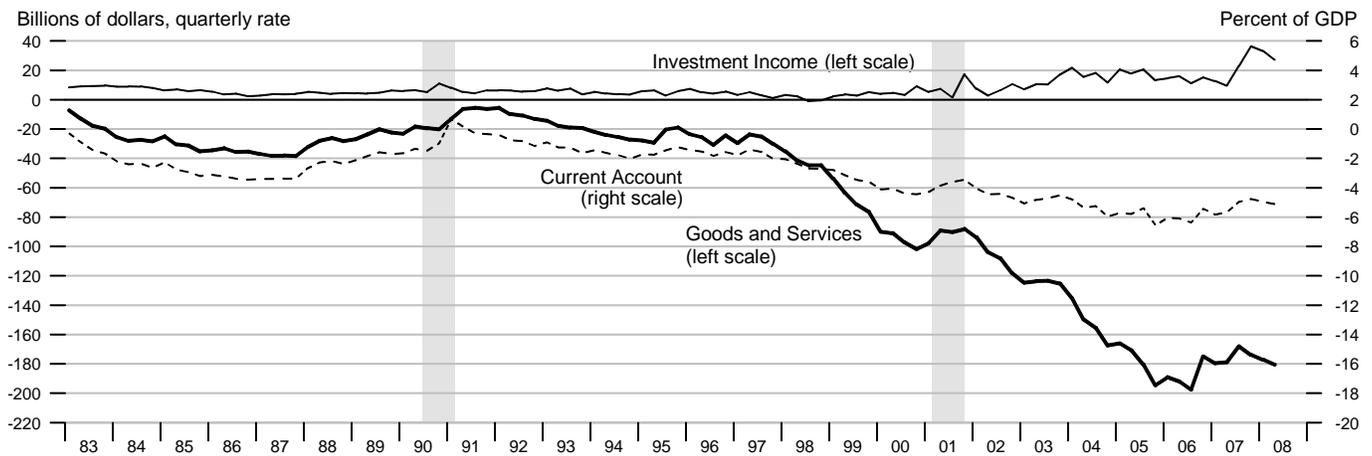


Federal Government Debt

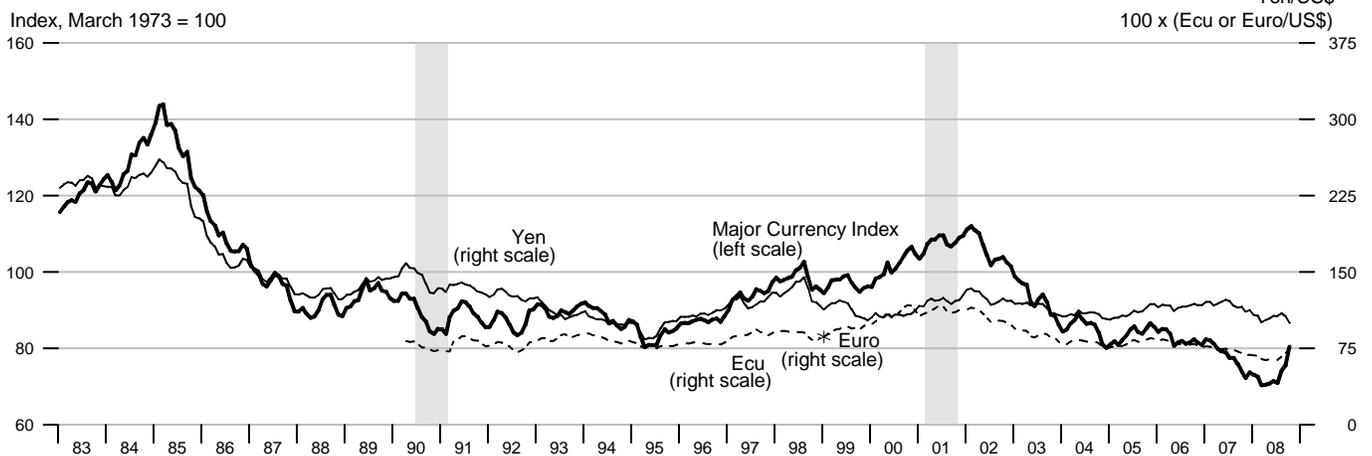
Billions of dollars, end of month or fiscal year
Excludes Agency-issued debt

	Total Public Debt	Held by Agencies and Trusts	Held by Public		Held by Private Investors	
			Total	Federal Reserve Banks	Total	Foreign and International
2005	7932.7	3331.1	4601.6	736.4	3864.9	1930.6
2006	8507.0	3663.8	4843.2	768.9	4074.2	2027.3
2007	9007.7	3958.4	5049.2	779.6	4269.7	2237.2
2005						
March	7776.9	3204.5	4572.4	717.3	3855.4	1956.3
June	7836.5	3308.9	4527.6	724.7	3803.0	1879.6
September	7932.7	3331.1	4601.6	736.4	3864.9	1930.6
December	8170.4	3455.8	4714.6	744.2	3970.6	2036.0
2006						
March	8371.2	3498.4	4872.8	758.5	4114.0	2084.5
June	8420.0	3622.6	4797.5	766.4	4030.8	1979.8
September	8507.0	3663.8	4843.2	768.9	4074.2	2027.3
December	8680.2	3779.0	4901.2	778.9	4122.1	2105.0
2007						
March	8849.7	3795.4	5054.3	780.9	4273.1	2196.7
June	8867.7	3924.7	4943.0	790.5	4152.6	2193.9
September	9007.7	3958.4	5049.2	779.6	4269.7	2237.2
December	9229.2	4092.9	5136.3	740.6	4395.7	2355.1
2008						
March	9437.6	4103.6	5334.0	591.2	4742.9	2515.6
June	9492.0	4207.0	5285.0	478.8	4806.2	2648.0

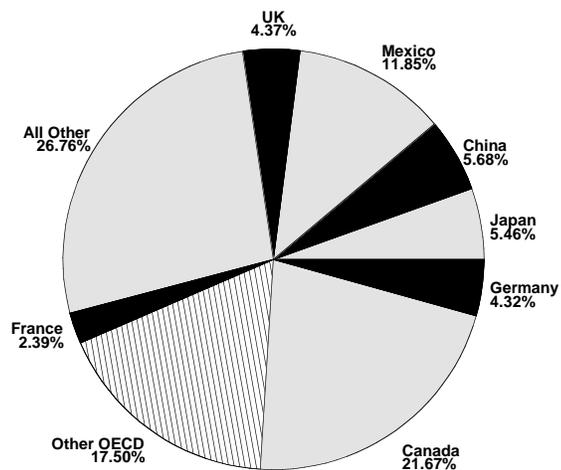
Current Account, Trade and Investment Income Balances



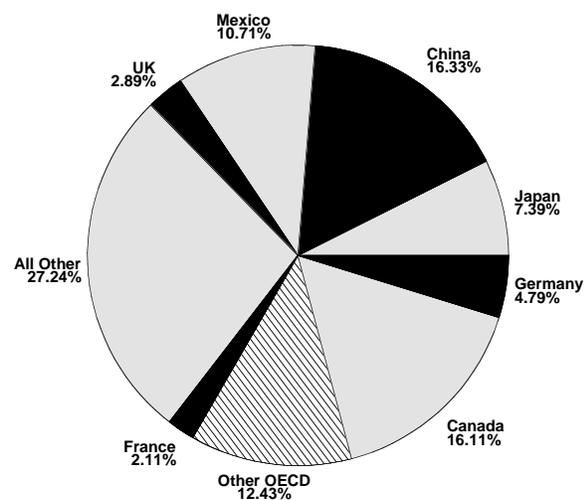
Exchange Rates



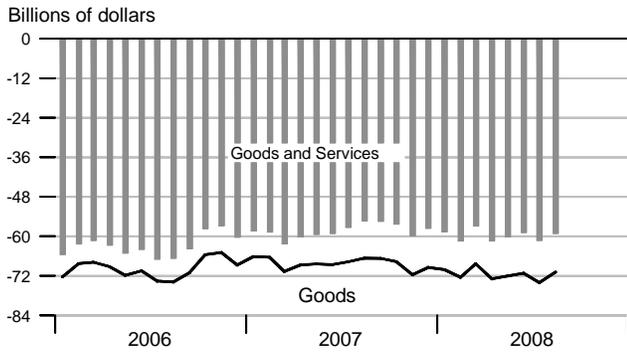
Goods Export Shares, 2007



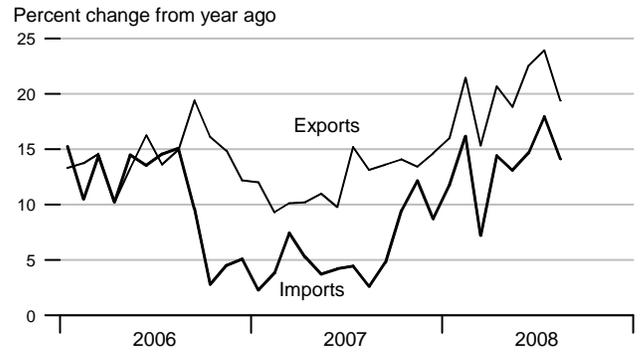
Goods Import Shares, 2007



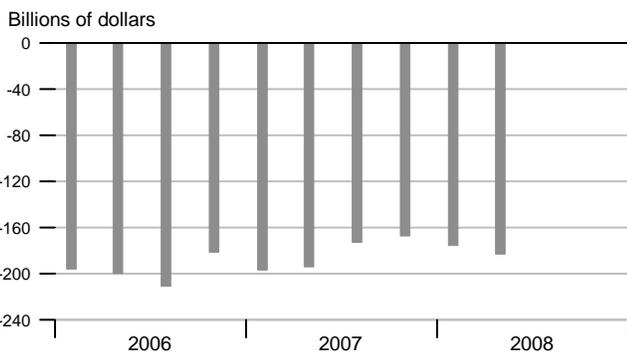
Trade Balance



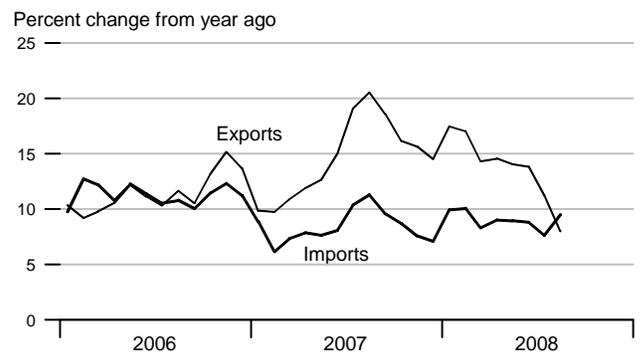
Goods Trade



Current Account Balance



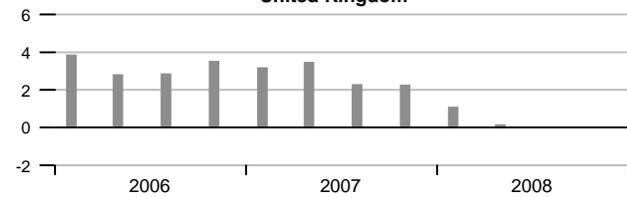
Services Trade



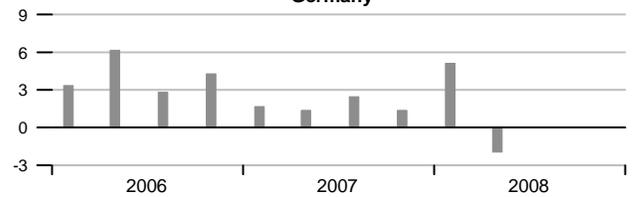
Real GDP Growth of Major Trading Partners

Compounded annual rates of change

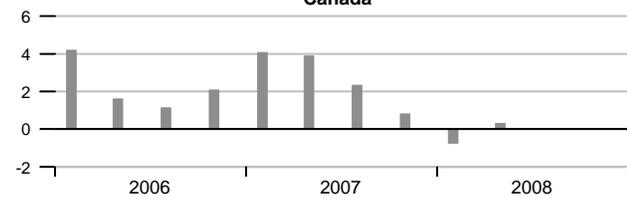
United Kingdom



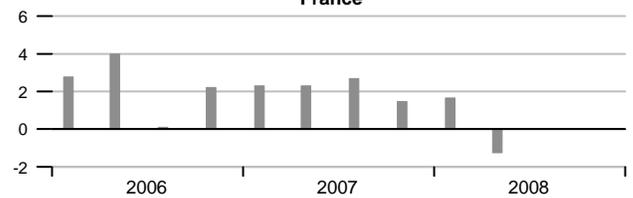
Germany



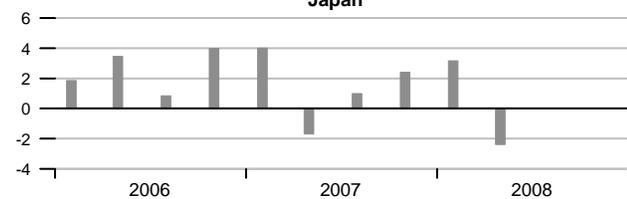
Canada



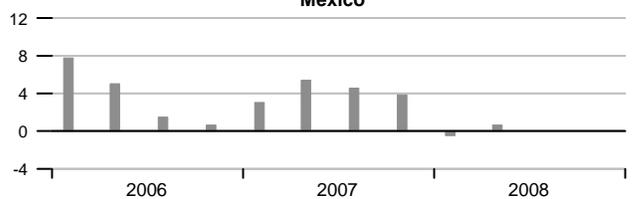
France



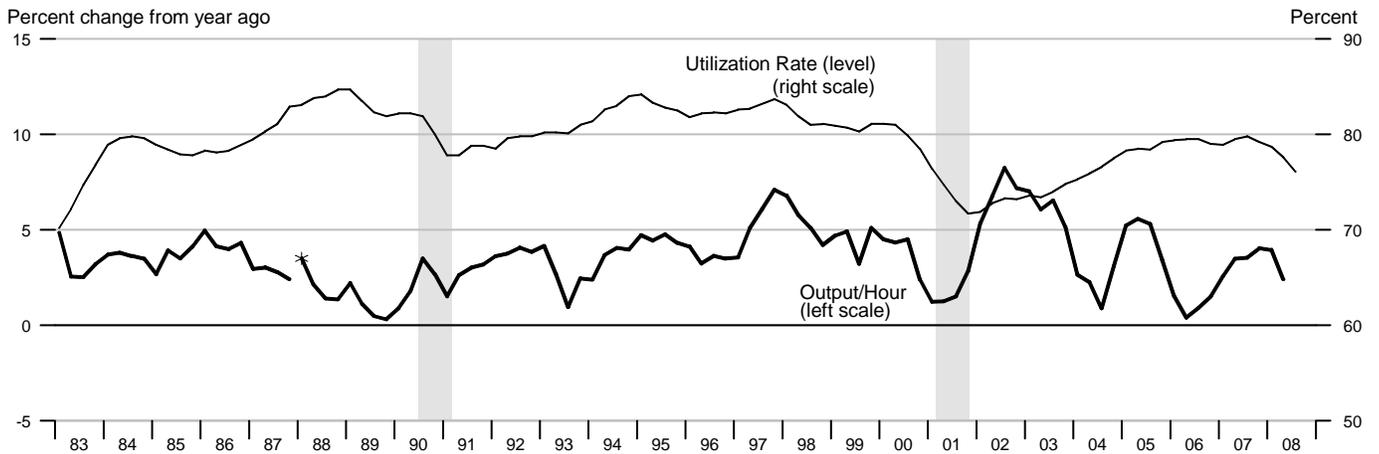
Japan



Mexico

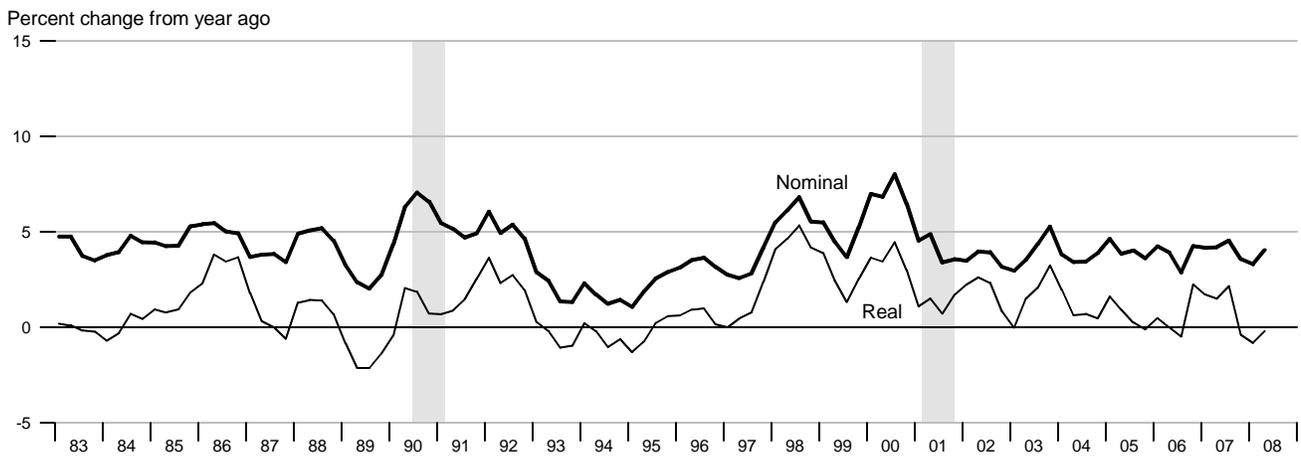


Output per Hour and Capacity Utilization, Manufacturing

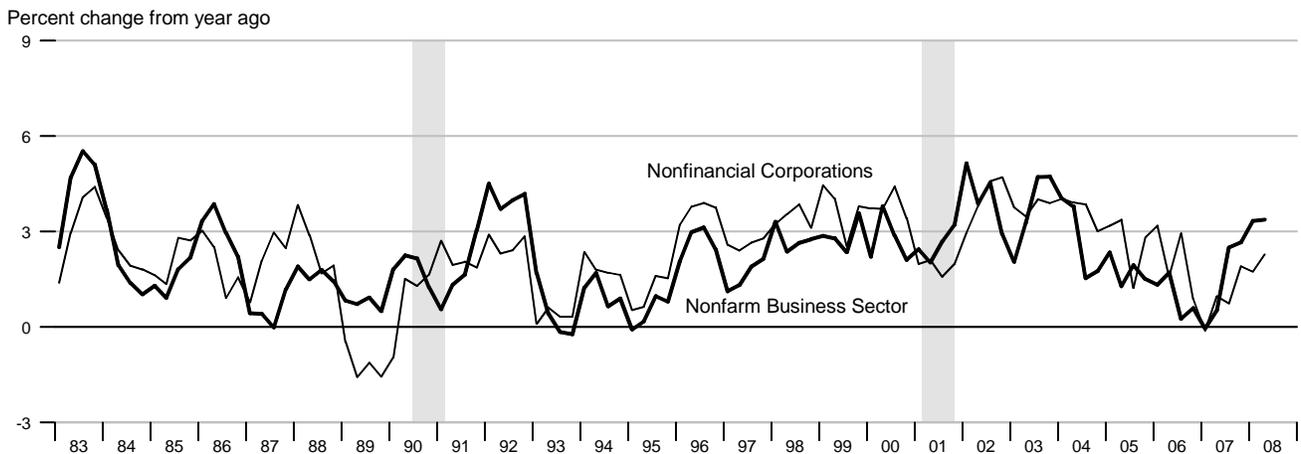


*Data from 1987 to the present are on a NAICS basis; data prior to 1987 are on an SIC basis and are not strictly comparable (see End Note).

Nonfarm Compensation per Hour

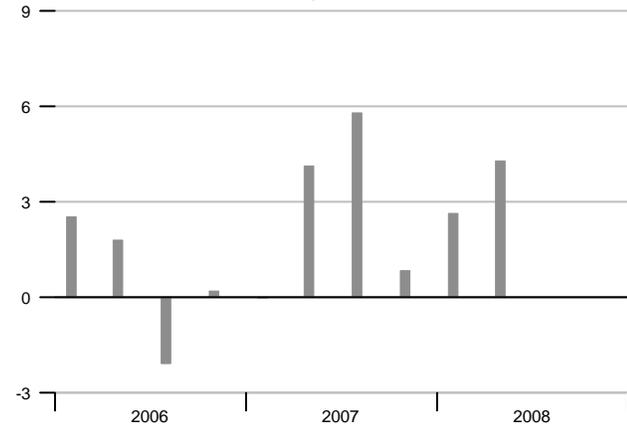


Output per Hour, Nonfarm Business and Nonfinancial Corporations



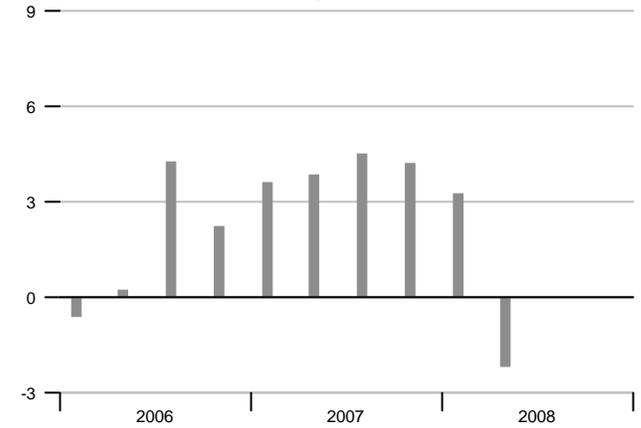
Nonfarm Output per Hour

Compounded annual rates of change

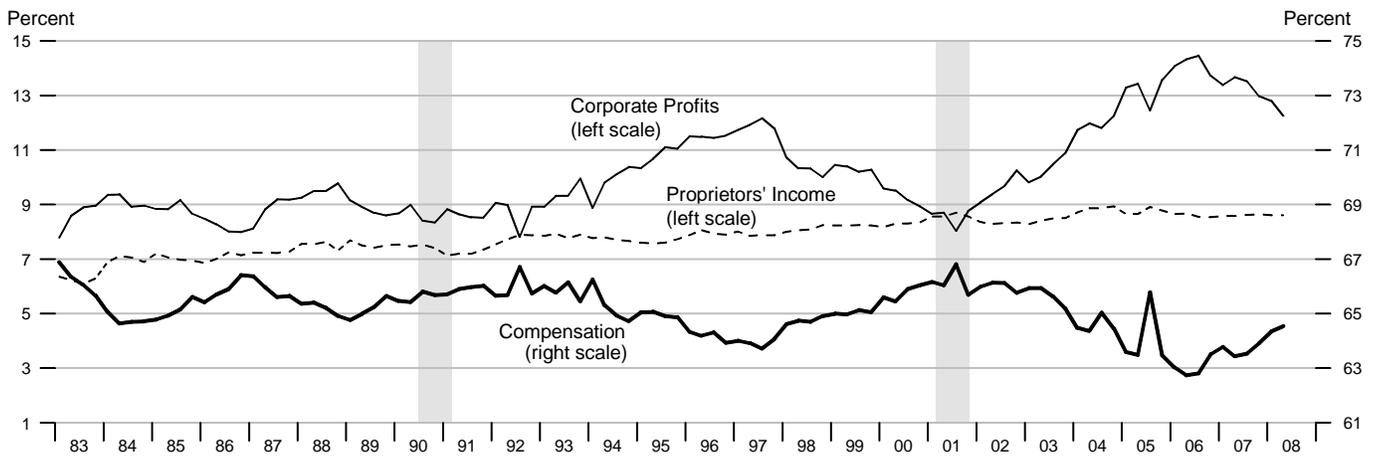


Manufacturing Output per Hour

Compounded annual rates of change

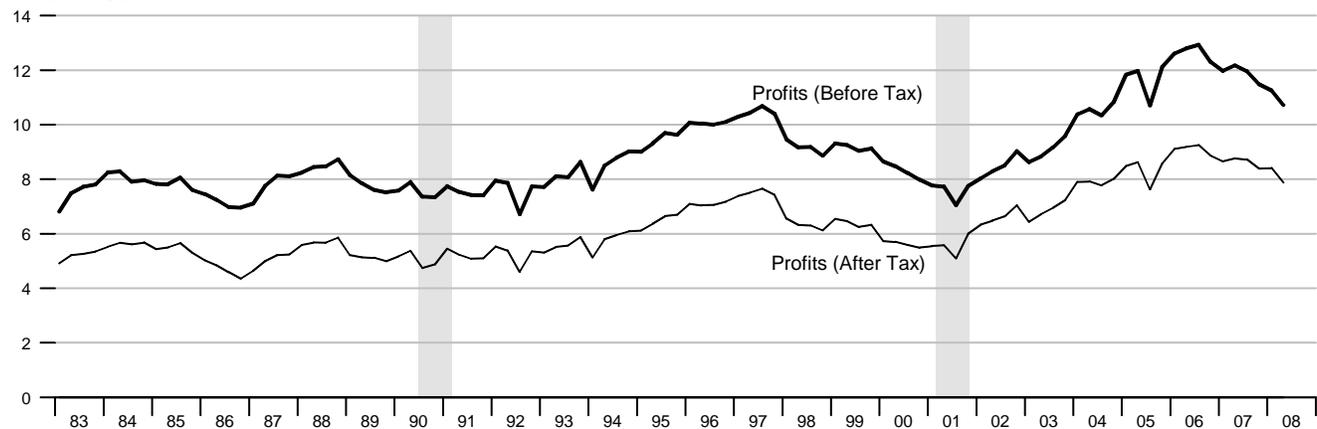


Selected Component Shares of National Income



Corporate Profits

Percent of GDP



	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
2004	109.462		2.9	96.2		3.8	96.8		2.7	94.8		6.8
2005	113.039		3.3	99.2		3.1	99.2		2.5	99.2		4.6
2006	116.676		3.2	102.1		2.9	102.1		2.9	102.1		2.9
2007	119.819		2.7	105.2		3.1	105.5		3.4	104.5		2.4
2005 1	111.778	4.0	3.3	98.2	3.8	3.5	98.3	2.5	2.6	98.0	6.4	5.5
2	112.357	2.1	2.9	98.8	2.5	3.1	98.8	2.1	2.5	98.8	3.3	4.7
3	113.487	4.1	3.4	99.5	2.9	2.9	99.4	2.5	2.3	99.7	3.7	4.5
4	114.536	3.7	3.5	100.2	2.8	3.0	100.1	2.8	2.5	100.3	2.4	3.9
2006 1	115.536	3.5	3.4	100.8	2.4	2.6	100.8	2.8	2.5	100.8	2.0	2.9
2	116.317	2.7	3.5	101.6	3.2	2.8	101.6	3.2	2.8	101.6	3.2	2.8
3	117.109	2.8	3.2	102.5	3.6	3.0	102.5	3.6	3.1	102.5	3.6	2.8
4	117.742	2.2	2.8	103.3	3.2	3.1	103.3	3.2	3.2	103.4	3.6	3.1
2007 1	118.935	4.1	2.9	104.0	2.7	3.2	104.3	3.9	3.5	103.1	-1.2	2.3
2	119.531	2.0	2.8	104.8	3.1	3.1	105.1	3.1	3.4	104.2	4.3	2.6
3	119.984	1.5	2.5	105.6	3.1	3.0	105.9	3.1	3.3	105.0	3.1	2.4
4	120.826	2.8	2.6	106.5	3.5	3.1	106.7	3.1	3.3	105.8	3.1	2.3
2008 1	121.613	2.6	2.3	107.3	3.0	3.2	107.6	3.4	3.2	106.4	2.3	3.2
2	121.951	1.1	2.0	107.9	2.3	3.0	108.4	3.0	3.1	106.9	1.9	2.6
3	123.203	4.2	2.7	108.6	2.6	2.8	109.0	2.2	2.9	107.5	2.3	2.4
	Exports			Imports			Nonfarm Output per Hour			Nonfarm Compensation per Hour		
	Billions of 2000 \$	Percent change		Billions of 2000 \$	Percent change		Index	Percent change		Index	Percent change	
		Annual rate	Year ago		Annual rate	Year ago		Annual rate	Year ago		Annual rate	Year ago
2004	1126.134		9.7	1719.939		11.3	131.571		2.8	155.899		3.6
2005	1205.274		7.0	1821.900		5.9	133.887		1.8	162.179		4.0
2006	1314.848		9.1	1930.515		6.0	135.180		1.0	168.367		3.8
2007	1425.912		8.4	1972.412		2.2	137.081		1.4	175.290		4.1
2005 1	1177.922	8.1	6.9	1801.652	3.2	9.1	133.301	3.2	2.3	160.015	2.8	4.6
2	1203.137	8.8	7.5	1804.427	0.6	5.5	133.394	0.3	1.3	160.775	1.9	3.9
3	1204.299	0.4	6.8	1807.939	0.8	4.5	134.616	3.7	1.9	163.199	6.2	4.0
4	1235.740	10.9	7.0	1873.551	15.3	4.8	134.232	-1.1	1.5	164.677	3.7	3.6
2006 1	1284.261	16.7	9.0	1920.229	10.3	6.6	135.071	2.5	1.3	166.793	5.2	4.2
2	1301.418	5.5	8.2	1920.864	0.1	6.5	135.672	1.8	1.7	167.081	0.7	3.9
3	1312.622	3.5	9.0	1935.666	3.1	7.1	134.957	-2.1	0.3	167.887	1.9	2.9
4	1361.067	15.6	10.1	1945.317	2.0	3.8	135.021	0.2	0.6	171.676	9.3	4.3
2007 1	1363.150	0.6	6.1	1981.783	7.7	3.2	135.013	-0.0	-0.0	173.744	4.9	4.2
2	1392.190	8.8	7.0	1963.366	-3.7	2.2	136.384	4.1	0.5	174.098	0.8	4.2
3	1466.244	23.0	11.7	1978.005	3.0	2.2	138.320	5.8	2.5	175.505	3.3	4.5
4	1482.053	4.4	8.9	1966.509	-2.3	1.1	138.606	0.8	2.7	177.806	5.3	3.6
2008 1	1500.591	5.1	10.1	1962.628	-0.8	-1.0	139.511	2.6	3.3	179.486	3.8	3.3
2	1544.749	12.3	11.0	1926.000	-7.3	-1.9	140.983	4.3	3.4	181.131	3.7	4.0
3	1566.960	5.9	6.9	1916.938	-1.9	-3.1						

		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
2003		137729	1248		0.9	129996	-344		-0.3	98.6			-1.4
2004		139242	1512		1.1	131419	1423		1.1	100.2			1.6
2005		141716	2474		1.8	133695	2276		1.7	102.8			2.6
2006		144421	2706		1.9	136092	2397		1.8	105.7			2.9
2007		146049	1628		1.1	137618	1527		1.1	107.2			1.4
2006	1	143356	704	2.0	2.1	135383	722	2.2	2.1	104.9	0.9	3.8	3.2
	2	144083	727	2.0	1.8	135840	457	1.4	1.9	105.6	0.7	2.7	3.1
	3	144604	521	1.5	1.6	136354	514	1.5	1.7	106.0	0.4	1.7	2.8
	4	145642	1038	2.9	2.1	136789	434	1.3	1.6	106.4	0.3	1.4	2.4
2007	1	145983	340	0.9	1.8	137184	395	1.2	1.3	106.6	0.2	0.8	1.6
	2	145904	-78	-0.2	1.3	137500	316	0.9	1.2	107.2	0.5	2.1	1.5
	3	146019	115	0.3	1.0	137758	259	0.8	1.0	107.5	0.3	1.1	1.4
	4	146291	272	0.7	0.4	138031	272	0.8	0.9	107.7	0.2	1.0	1.3
2008	1	146070	-221	-0.6	0.1	137917	-113	-0.3	0.5	107.4	-0.3	-1.1	0.8
	2	146089	19	0.1	0.1	137699	-218	-0.6	0.1	107.2	-0.2	-0.9	0.0
	3	145517	-572	-1.6	-0.3	137448	-251	-0.7	-0.2	106.7	-0.5	-2.0	-0.7
2006	Sep	144846	175	1.5	1.7	136528	165	1.5	1.7	105.9	-0.3	-3.3	2.3
	Oct	145395	549	4.6	2.0	136601	73	0.6	1.7	106.3	0.4	4.6	2.6
	Nov	145583	188	1.6	2.1	136783	182	1.6	1.5	106.2	-0.1	-1.1	2.1
	Dec	145949	366	3.1	2.2	136982	199	1.8	1.6	106.7	0.5	5.8	2.4
2007	Jan	145915	-34	-0.3	2.0	137108	126	1.1	1.5	106.5	-0.2	-2.2	1.6
	Feb	145888	-27	-0.2	1.8	137133	25	0.2	1.3	106.2	-0.3	-3.3	1.3
	Mar	146145	257	2.1	1.8	137310	177	1.6	1.2	107.1	0.8	10.7	1.9
	Apr	145713	-432	-3.5	1.3	137356	46	0.4	1.2	106.8	-0.3	-3.3	1.1
	May	145913	200	1.7	1.3	137518	162	1.4	1.3	107.1	0.3	3.4	1.6
	Jun	146087	174	1.4	1.2	137625	107	0.9	1.3	107.6	0.5	5.7	1.7
	Jul	146045	-42	-0.3	1.2	137682	57	0.5	1.1	107.4	-0.2	-2.2	1.3
	Aug	145753	-292	-2.4	0.7	137756	74	0.6	1.0	107.4	0.0	0.0	1.1
	Sep	146260	507	4.3	1.0	137837	81	0.7	1.0	107.6	0.2	2.3	1.6
	Oct	146016	-244	-2.0	0.4	137977	140	1.2	1.0	107.7	0.1	1.1	1.3
	Nov	146647	631	5.3	0.7	138037	60	0.5	0.9	107.7	0.0	0.0	1.4
	Dec	146211	-436	-3.5	0.2	138078	41	0.4	0.8	107.8	0.1	1.1	1.0
2008	Jan	146248	37	0.3	0.2	138002	-76	-0.7	0.7	107.4	-0.4	-4.4	0.8
	Feb	145993	-255	-2.1	0.1	137919	-83	-0.7	0.6	107.3	-0.1	-1.1	1.0
	Mar	145969	-24	-0.2	-0.1	137831	-88	-0.8	0.4	107.6	0.3	3.4	0.5
	Apr	146331	362	3.0	0.4	137764	-67	-0.6	0.3	107.5	-0.1	-1.1	0.7
	May	146046	-285	-2.3	0.1	137717	-47	-0.4	0.1	107.1	-0.4	-4.4	0.0
	Jun	145891	-155	-1.3	-0.1	137617	-100	-0.9	-0.0	107.0	-0.1	-1.1	-0.6
	Jul	145819	-72	-0.6	-0.2	137550	-67	-0.6	-0.1	106.9	-0.1	-1.1	-0.5
	Aug	145477	-342	-2.8	-0.2	137477	-73	-0.6	-0.2	106.8	-0.1	-1.1	-0.6
	Sep	145255	-222	-1.8	-0.7	137318	-159	-1.4	-0.4	106.3	-0.5	-5.5	-1.2

		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
2003		6.0	3614.120			4.2	101.2448			1.2	1.01	4.02
2004		5.5	3832.862			6.1	103.7644			2.5	1.37	4.27
2005		5.1	4078.592			6.4	107.2099			3.3	3.15	4.29
2006		4.6	4313.695			5.8	109.5711			2.2	4.73	4.79
2007		4.6	4488.464			4.1	111.3932			1.7	4.35	4.63
2006	1	4.7	1070.109	3.1	13.0	7.6	108.8526	0.8	3.2	2.1	4.39	4.57
	2	4.7	1075.965	0.5	2.2	6.0	109.5473	0.6	2.6	2.2	4.70	5.07
	3	4.6	1082.149	0.6	2.3	5.0	110.0689	0.5	1.9	2.8	4.91	4.90
	4	4.4	1085.472	0.3	1.2	4.6	109.8155	-0.2	-0.9	1.7	4.90	4.63
2007	1	4.5	1105.203	1.8	7.5	3.3	110.2336	0.4	1.5	1.3	4.98	4.68
	2	4.5	1119.377	1.3	5.2	4.0	111.0922	0.8	3.2	1.4	4.74	4.85
	3	4.7	1127.893	0.8	3.1	4.2	112.0778	0.9	3.6	1.8	4.30	4.73
	4	4.8	1135.991	0.7	2.9	4.7	112.1693	0.1	0.3	2.1	3.39	4.26
2008	1	4.9	1138.145	0.2	0.8	3.0	112.2848	0.1	0.4	1.9	2.04	3.66
	2	5.3	1148.626	0.9	3.7	2.6	111.3970	-0.8	-3.1	0.3	1.63	3.89
	3	6.0	1136.927	-1.0	-4.0	0.8	109.6831	-1.5	-6.0	-2.1	1.49	3.86
2006	Oct	4.4	359.706	0.1	1.6	4.5	109.7437	-0.1	-0.9	2.5	4.92	4.73
	Nov	4.5	360.428	0.2	2.4	4.0	109.5274	-0.2	-2.3	1.2	4.94	4.60
	Dec	4.4	365.338	1.4	17.6	5.3	110.1754	0.6	7.3	1.3	4.85	4.56
2007	Jan	4.6	365.610	0.1	0.9	2.1	109.7791	-0.4	-4.2	0.9	4.98	4.76
	Feb	4.5	368.271	0.7	9.1	3.6	110.5181	0.7	8.4	1.6	5.03	4.72
	Mar	4.4	371.322	0.8	10.4	4.1	110.4036	-0.1	-1.2	1.3	4.94	4.56
	Apr	4.5	370.568	-0.2	-2.4	3.1	110.9530	0.5	6.1	1.4	4.87	4.69
	May	4.5	376.206	1.5	19.9	5.0	110.9686	0.0	0.2	1.5	4.73	4.75
	Jun	4.6	372.603	-1.0	-10.9	4.0	111.3551	0.3	4.3	1.4	4.61	5.10
	Jul	4.7	374.270	0.4	5.5	3.7	112.0024	0.6	7.2	1.7	4.82	5.00
	Aug	4.7	374.253	-0.0	-0.1	3.4	111.9712	-0.0	-0.3	1.6	4.20	4.67
	Sep	4.7	379.370	1.4	17.7	5.6	112.2598	0.3	3.1	2.2	3.89	4.52
	Oct	4.8	376.802	-0.7	-7.8	4.8	111.8262	-0.4	-4.5	1.9	3.90	4.53
	Nov	4.7	381.280	1.2	15.2	5.8	112.2962	0.4	5.2	2.5	3.27	4.15
	Dec	5.0	377.909	-0.9	-10.1	3.4	112.3855	0.1	1.0	2.0	3.00	4.10
2008	Jan	4.9	380.019	0.6	6.9	3.9	112.5704	0.2	2.0	2.5	2.75	3.74
	Feb	4.8	378.106	-0.5	-5.9	2.7	112.2604	-0.3	-3.3	1.6	2.12	3.74
	Mar	5.1	380.020	0.5	6.2	2.3	112.0235	-0.2	-2.5	1.5	1.26	3.51
	Apr	5.0	380.788	0.2	2.5	2.8	111.4410	-0.5	-6.1	0.4	1.29	3.68
	May	5.5	383.769	0.8	9.8	2.0	111.2978	-0.1	-1.5	0.3	1.73	3.88
	Jun	5.5	384.069	0.1	0.9	3.1	111.4523	0.1	1.7	0.1	1.86	4.10
	Jul	5.7	381.578	-0.6	-7.5	2.0	111.4349	-0.0	-0.2	-0.5	1.63	4.01
	Aug	6.1	379.876	-0.4	-5.2	1.5	110.3603	-1.0	-11.0	-1.4	1.72	3.89
	Sep	6.1	375.473	-1.2	-13.1	-1.0	107.2540	-2.8	-29.0	-4.5	1.13	3.69
	Oct										0.67	3.81

		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
2003		184.000			2.3		193.225			1.5		143.3			3.2
2004		188.908			2.7		196.633			1.8		148.5			3.6
2005		195.283			3.4		200.875			2.2		155.7			4.9
2006		201.583			3.2		205.933			2.5		160.3			3.0
2007		207.345			2.9		210.731			2.3		166.6			3.9
2006	1	199.433	0.4	1.8	3.7	1.8	203.667	0.6	2.5	2.1	2.5	159.6	0.1	0.6	4.5
	2	201.267	0.9	3.7	3.9	2.7	205.400	0.9	3.4	2.5	3.0	160.8	0.8	3.0	4.3
	3	203.200	1.0	3.9	3.3	3.1	206.867	0.7	2.9	2.8	2.9	161.1	0.2	0.8	2.8
	4	202.433	-0.4	-1.5	1.9	1.9	207.800	0.5	1.8	2.7	2.7	159.8	-0.8	-3.3	0.3
2007	1	204.269	0.9	3.7	2.4	3.7	208.975	0.6	2.3	2.6	2.3	162.7	1.9	7.6	2.0
	2	206.566	1.1	4.6	2.6	4.1	210.025	0.5	2.0	2.3	2.2	166.2	2.1	8.8	3.4
	3	207.989	0.7	2.8	2.4	3.7	211.309	0.6	2.5	2.1	2.3	166.9	0.4	1.6	3.6
	4	210.555	1.2	5.0	4.0	4.0	212.615	0.6	2.5	2.3	2.3	170.5	2.2	9.1	6.7
2008	1	212.796	1.1	4.3	4.2	4.3	213.931	0.6	2.5	2.4	2.5	174.3	2.2	9.2	7.1
	2	215.426	1.2	5.0	4.3	4.7	214.919	0.5	1.9	2.3	2.2	178.8	2.6	10.6	7.6
	3	218.958	1.6	6.7	5.3	5.4	216.612	0.8	3.2	2.5	2.5	182.5	2.1	8.6	9.4
2006	Sep	202.900	-0.4	-5.2	2.1	3.2	207.300	0.2	2.3	2.9	3.0	160.0	-1.4	-15.7	0.9
	Oct	201.900	-0.5	-5.8	1.4	2.2	207.600	0.1	1.8	2.8	2.8	158.1	-1.2	-13.4	-1.2
	Nov	202.100	0.1	1.2	1.9	2.1	207.700	0.0	0.6	2.6	2.6	160.1	1.3	16.3	0.9
	Dec	203.300	0.6	7.4	2.6	2.6	208.100	0.2	2.3	2.6	2.6	161.1	0.6	7.8	1.1
2007	Jan	203.552	0.1	1.5	2.1	1.5	208.608	0.2	3.0	2.7	3.0	160.9	-0.1	-1.5	0.2
	Feb	204.158	0.3	3.6	2.4	2.6	209.085	0.2	2.8	2.7	2.9	162.9	1.2	16.0	2.6
	Mar	205.098	0.5	5.7	2.8	3.6	209.233	0.1	0.9	2.5	2.2	164.4	0.9	11.6	3.2
	Apr	205.751	0.3	3.9	2.6	3.7	209.650	0.2	2.4	2.4	2.3	165.5	0.7	8.3	3.2
	May	206.700	0.5	5.7	2.7	4.1	209.978	0.2	1.9	2.2	2.2	166.5	0.6	7.5	3.7
	Jun	207.246	0.3	3.2	2.6	3.9	210.446	0.2	2.7	2.2	2.3	166.6	0.1	0.7	3.2
	Jul	207.708	0.2	2.7	2.4	3.7	210.926	0.2	2.8	2.2	2.3	167.5	0.5	6.7	4.0
	Aug	207.749	0.0	0.2	1.9	3.3	211.265	0.2	1.9	2.1	2.3	166.1	-0.8	-9.6	2.3
	Sep	208.509	0.4	4.5	2.8	3.4	211.737	0.2	2.7	2.1	2.3	167.0	0.5	6.7	4.4
	Oct	209.055	0.3	3.2	3.5	3.4	212.115	0.2	2.2	2.2	2.3	167.9	0.5	6.7	6.2
	Nov	210.930	0.9	11.3	4.4	4.1	212.626	0.2	2.9	2.4	2.4	172.3	2.6	36.4	7.6
	Dec	211.680	0.4	4.4	4.1	4.1	213.103	0.2	2.7	2.4	2.4	171.4	-0.5	-6.1	6.4
2008	Jan	212.516	0.4	4.8	4.4	4.8	213.765	0.3	3.8	2.5	3.8	173.4	1.2	14.9	7.8
	Feb	212.571	0.0	0.3	4.1	2.6	213.851	0.0	0.5	2.3	2.1	174.0	0.3	4.2	6.8
	Mar	213.301	0.3	4.2	4.0	3.1	214.176	0.2	1.8	2.4	2.0	175.6	0.9	11.6	6.8
	Apr	213.743	0.2	2.5	3.9	3.0	214.398	0.1	1.3	2.3	1.8	176.1	0.3	3.5	6.4
	May	215.132	0.6	8.1	4.1	4.0	214.832	0.2	2.5	2.3	2.0	178.6	1.4	18.4	7.3
	Jun	217.403	1.1	13.4	4.9	5.5	215.526	0.3	3.9	2.4	2.3	181.7	1.7	22.9	9.1
	Jul	219.181	0.8	10.3	5.5	6.2	216.230	0.3	4.0	2.5	2.5	183.9	1.2	15.5	9.8
	Aug	218.880	-0.1	-1.6	5.4	5.1	216.650	0.2	2.4	2.5	2.5	182.2	-0.9	-10.5	9.7
	Sep	218.813	-0.0	-0.4	4.9	4.5	216.956	0.1	1.7	2.5	2.4	181.5	-0.4	-4.5	8.7

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 2000 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 January 2008 **Employment Situation**, the establishment survey data for employment, hours, and earnings have been converted from the 2002 NAICS system to the 2007 NAICS system. For more information see <http://www.bls.gov/ces/>. **Nonfarm Payroll Employment** is counted in a survey of about 400,000 establishments (Current Employment Statistics). 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 ($\pm 430,000$) 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/. The **Job Openings rate** is the number of job openings on the last business day of the month as a percent of total employment plus job openings.

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.

Page 15: **Gross Private Saving** is the sum of personal saving, undistributed corporate profits with IVA and CCAj (see notes for pp. 18-19), and private wage accruals less disbursements. **Gross Government Saving** is net government saving (surplus/deficit) plus consumption of fixed capital. **Balance on Current Account (NIPA)** is net capital transfer payments to the rest of the world plus net lending or net borrowing (international trade and income flows).

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 77 percent of the value of GDP in 2000, 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 (CCAj)** 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.

Organization for Economic Cooperation and Development (OECD)

GDP for major trading partners (not available on FRED).