



FEDERAL RESERVE BANK *of* NEW YORK

Preparing the Modal Forecast for the US Economy

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Disclaimer

The views in this presentation are those of the speaker and do not necessarily reflect the views of the Federal Reserve Bank of New York or the Federal Reserve System.

Overview

- Aggregate Expenditures
 - Adding up the current quarter.
 - Replicating BEA procedures
 - Thinking through the broad outlines over the forecast horizon.
 - Informed judgment
- Employment
 - Okun's Law
 - Cyclical and secular trends in population, labor force participation, and average weekly hours.
- Inflation
 - Inflation expectations augmented Phillips curve.

Income and Expenditures for 2009-Q3

Billions of Current Dollars

Income			Expenditures		
	Level	% of Total		Level	% of Total
Gross Domestic Product	14242.1	100.0	Gross Domestic Product	14242.1	100.0
Net Factor Income	11275.9	79.17	Consumption	10132.9	71.15
Gross National Product	14363.7	100.85	Durables	1051.3	7.38
Consumption of Fixed Capital	1850.7	12.99	Nondurables	2241.0	15.74
Private Consumption of Fixed Capital	1525.5	10.71	Services	6840.6	48.03
Govt Consumption of Fixed Capital	325.2	2.28	Gross Private Domestic Investment	1556.1	10.93
Net National Product	12512.9	87.86	Fixed Investment	1712.6	12.02
Statistical Discrepancy	163.2	1.15	Equipment	895.9	6.29
National Income	12349.7	86.71	Structures	457.9	3.22
Compensation of Employees	7841.5	55.06	Residential	358.8	2.52
Wage and Salary Accruals	6333.2	44.47	Change in Inventories	-156.5	-1.10
Supplements to Wages and Salaries	1508.3	10.59	Farm	0.0	0.00
Proprietors Income with Adj	1037.9	7.29	Nonfarm	-156.5	-1.10
Rental Income of Persons With Adj	277.9	1.95	Net Exports	-402.2	-2.82
Corporate Profits	1358.9	9.54	Exports	1573.8	11.05
Net Interest and Misc. Payments	759.7	5.33	Imports	1976.0	13.87
Taxes on Production and Imports	955.4	6.71	Government	2955.4	20.75
Business Current Transfer Payments	124.8	0.88	Federal	1164.3	8.18
Current Surplus of GSEs	-6.3	-0.04	State and Local	1791.1	12.58

Chart 2

Real Personal Consumption Expenditures

(Quarterly Percent Change at Annual Rate)

	2009Q2 Nominal Share	24 Months	12 Months	6 Months	3 Months	1 Month
Personal Consumption Expenditures	100.0	-0.4	0.8	2.3	-0.6	2.7
Durable Goods	10.1	-4.4	3.6	9.4	-18.5	15.5
Motor vehicles and parts	3.0	-11.4	3.2	4.3	-56.8	19.5
Furnishings and durable household equipment	2.5	-4.3	-0.8	7.0	6.2	5.9
Other durable goods	1.4	-4.6	1.5	3.8	-2.9	7.5
Nondurable goods	21.8	-0.7	0.9	3.3	4.7	7.5
Food and beverages purchased for off-premises consumption	7.9	0.5	3.3	5.0	8.5	9.0
Clothing and shoes	3.2	-2.6	-1.9	2.8	7.9	1.8
Gasoline, fuel oil, and other energy goods	2.8	-1.2	-0.1	-4.0	-8.1	11.6
Other nondurable goods	8.0	-0.7	0.1	4.7	5.3	6.5
Services	68.1	0.3	0.3	1.0	0.9	-0.7
Housing services	15.8	1.0	0.7	0.7	0.6	0.7
Household utilities	2.9	-2.0	-4.3	1.7	-0.8	-34.9
Gas and electric	2.1	-2.7	-5.8	2.4	-1.3	-45.2
Transportation services	3.0	-3.7	0.7	3.2	2.7	0.0
Medical care services	16.2	2.7	2.7	1.7	4.1	3.0
Recreation services	3.8	-1.2	-1.6	-3.1	-3.3	-5.5
Food services and accommodations	6.1	-2.0	-1.7	-1.3	-0.3	4.8
Other	9.4	0.5	0.2	1.1	-0.6	0.2
Energy goods and services	4.9	-1.9	-2.5	-1.2	-5.3	-14.7
PCE less food and energy	87.3	-0.4	0.8	2.3	-1.0	3.3
PCE less autos and household utilities	94.1	0.1	0.9	2.3	2.8	3.4

Source: Bureau of Economic Analysis

Note: Data through November 2009.

High Frequency Source Data

- Motor vehicle sales
- Retail Sales
- Consumer Price Index
- Heating Degree Days
- Personal Income

Real PCE: Motor Vehicles and Parts

Regression Statistics

Multiple R	0.981178097
R Square	0.962710457
Adjusted R Square	0.958905402
Standard Error	8196.036377
Observations	55

	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>	<i>Lower 95.0%</i>	<i>Upper 95.0%</i>
Intercept	47221.15058	33462.98991	1.411145588	0.164519751	-20025.24403	114467.5452	-20025.24403	114467.5452
Domestic Car Retail Sales	5634.589172	3351.917907	1.681004526	0.099126499	-1101.341924	12370.52027	-1101.341924	12370.52027
Imported Car Retail Sales	9114.763652	6363.73118	1.432298662	0.158407212	-3673.632702	21903.16001	-3673.632702	21903.16001
Domestic Light Truck Retail Sales	17968.91376	1525.274552	11.78077333	6.64273E-16	14903.75985	21034.06768	14903.75985	21034.06768
Imported Light Truck Retail Sales	40747.80966	10004.42796	4.072977469	0.00016912	20643.15935	60852.45997	20643.15935	60852.45997
Autos: Consumer Dollars as a Percent of Final Sales	2109.223153	539.7307574	3.90791728	0.000285705	1024.593609	3193.852697	1024.593609	3193.852697

Real PCE: Non-auto Durables Plus Non-durables

Regression Statistics

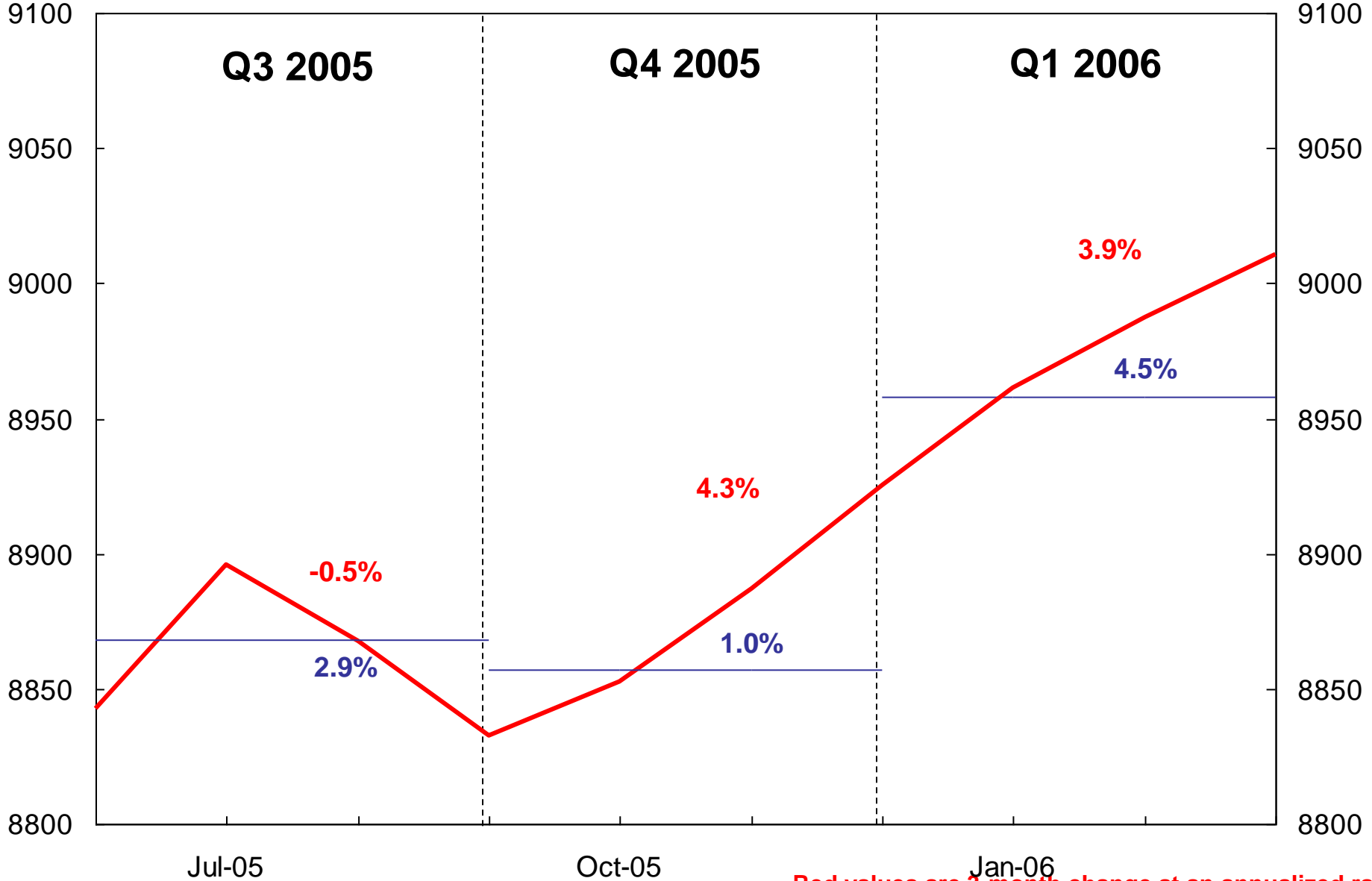
Multiple R	0.812
R Square	0.659
Adjusted R Square	0.639
Standard Error	0.004
Observations	37

	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>
Intercept	0.000424	0.000952	0.446	0.659	-0.001511	0.002360
Percent change in retail sales less motor vehicles and building materials	1.029856	0.129917	7.927	0.000	0.765833	1.293878
Percent change in BEA controlled price index	-0.409278	0.069802	-5.863	0.000	-0.551133	-0.267423

Level of Real Consumer Spending

\$ Billions, chained 2000

\$ Billions, chained 2000



Red values are 3-month change at an annualized rate

Blue values are change in quarterly average

Source: Bureau of Economic Analysis

Chart 3

Real Residential Investment

(Quarterly Percent Change at Annual Rate)

	2009Q3 Nominal Share	2008Q4	2009Q1	2009Q2	2009Q3
Residential Investment	100.0	-30.8	-41.9	-27.7	16.1
Permanent Site	37.8	-44.8	-62.0	-49.8	21.9
Single Family Structures	79.6	-48.4	-68.4	-52.0	63.0
Multi Family Structures	20.4	-28.3	-30.8	-42.6	-53.7
Other Structures	62.2	-15.7	-19.7	-8.6	12.7
Manufactured Homes	1.5	-33.4	-66.9	-60.5	35.9
Dormitories	1.0	-10.9	-41.9	-19.0	-77.5
Improvements	71.1	-1.2	-13.3	-11.8	3.0
Brokers' Commissions	28.5	-42.6	-28.0	8.0	50.4
Net Purchases of Used Structures	-2.1	0.0	0.0	0.0	0.0

High Frequency Source Data

- **New Residential Construction**
 - Provides data on housing starts, completions, and permits
- **New Residential Sales**
 - Provides data on volume and prices of new homes sold
- **Existing Home Sales**
 - Provides data on volume and prices of existing homes sold
- **Construction Spending**
 - Provides data on nominal construction put in place by type

Inventory Cycle Scenario

Hypothetical Example of the Inventory Cycle

Time Period	1	2	3	4	5	6	7	8
Sales	100	90	80	70	80	90	90	90
% Change		-10.0	-11.1	-12.5	14.3	12.5	0.0	0.0
Production	100	100	80	50	50	110	90	90
% Change		0.0	-20.0	-37.5	0.0	120.0	-18.2	0.0
Inventories	200	210	210	190	160	180	180	180
I/S Ratio	2.0	2.3	2.6	2.7	2.0	2.0	2.0	2.0

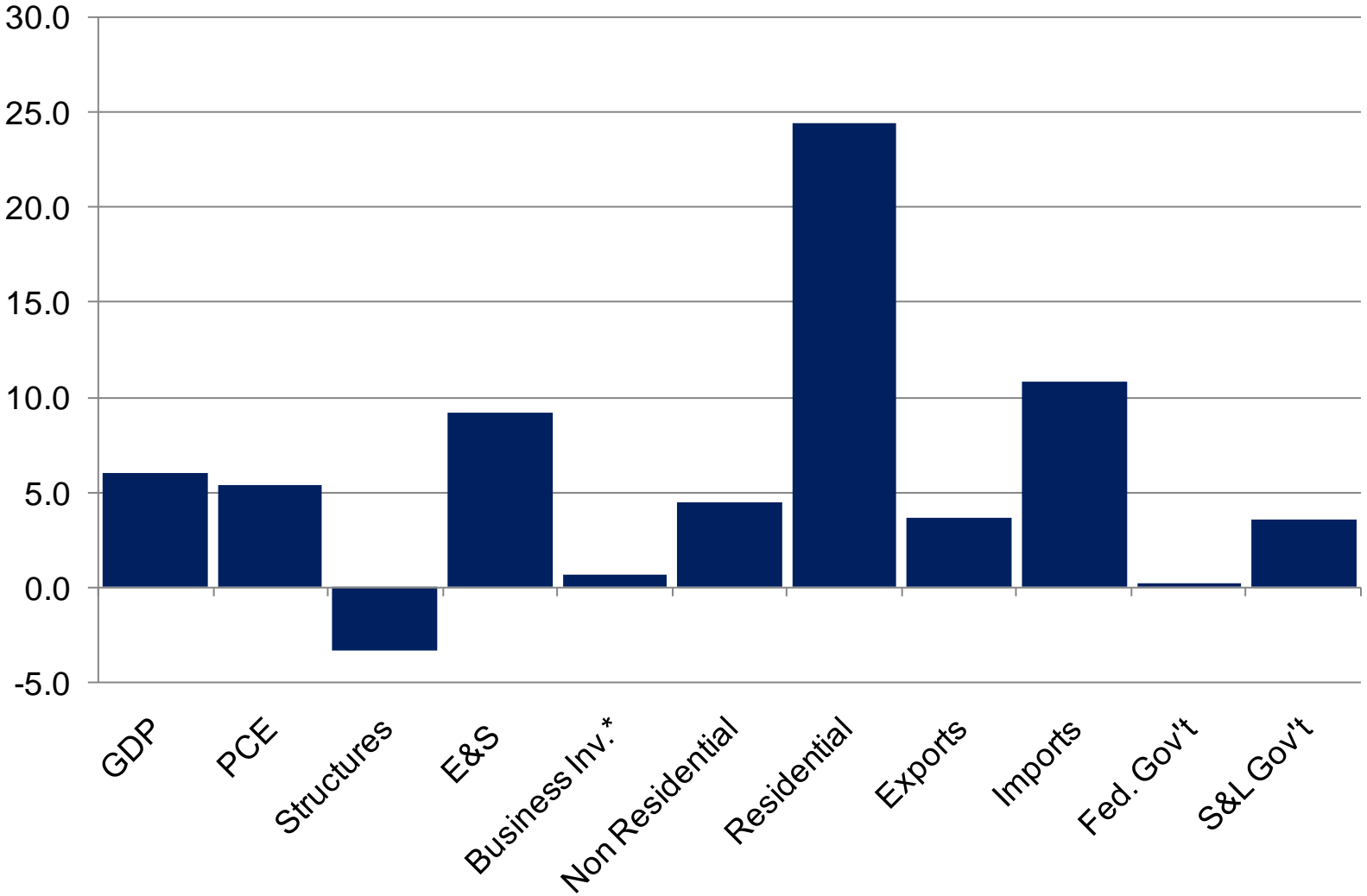
Thinking through the broad outlines over the forecast horizon.

- Consider past business cycles.
- What is the economies potential growth rate.
- Stance of fiscal policy
- Stance of monetary policy
- Financial market conditions
- Likely secular trends in the personal saving rate.

GDP Growth by Expenditure Component Over First Four Quarters of Recovery

% Change

% Change



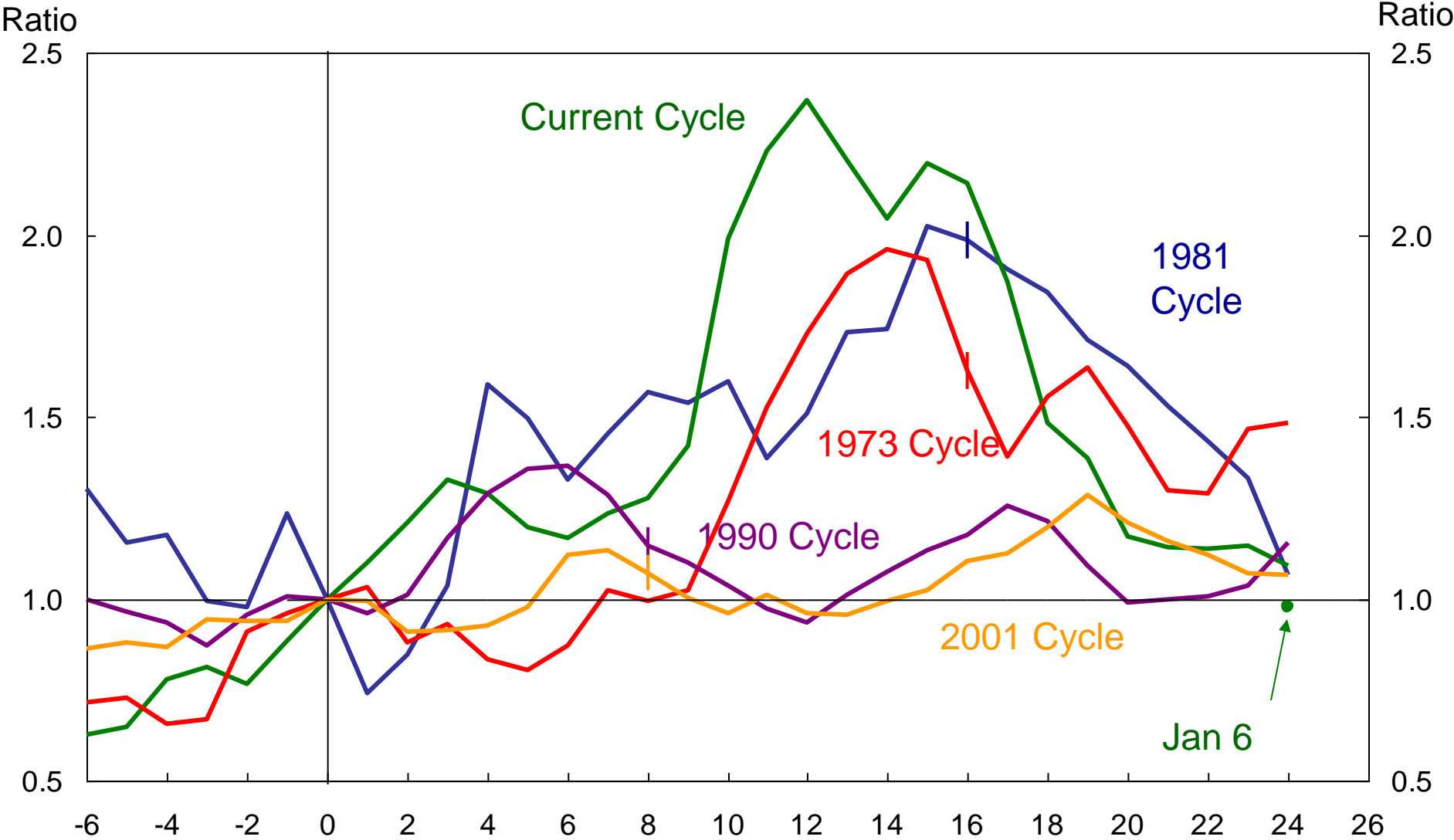
Note: Calculated using the average of all post war recoveries

* Growth contribution

Source: Bureau of Economic Analysis

BAA Spread

(Series Set to 1.0 at NBER Peak)

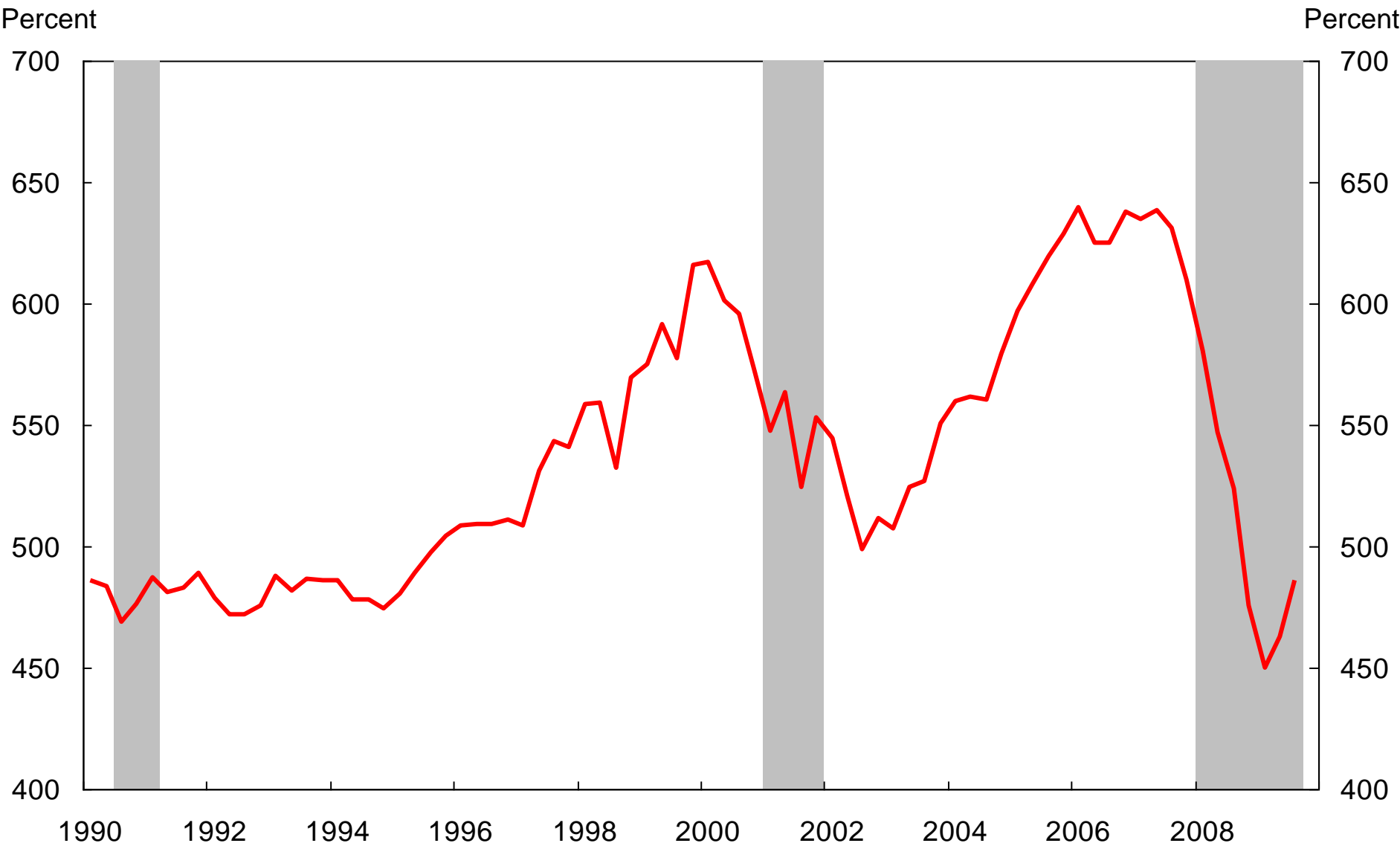


Months Since NBER Peak

Source: Bureau of Labor Statistics

Note: Vertical lines represent end of NBER recessions.

Net Worth over Disposable Personal Income



Source: Federal Reserve Board

Note: Shading represents NBER recessions.

Okun's Law

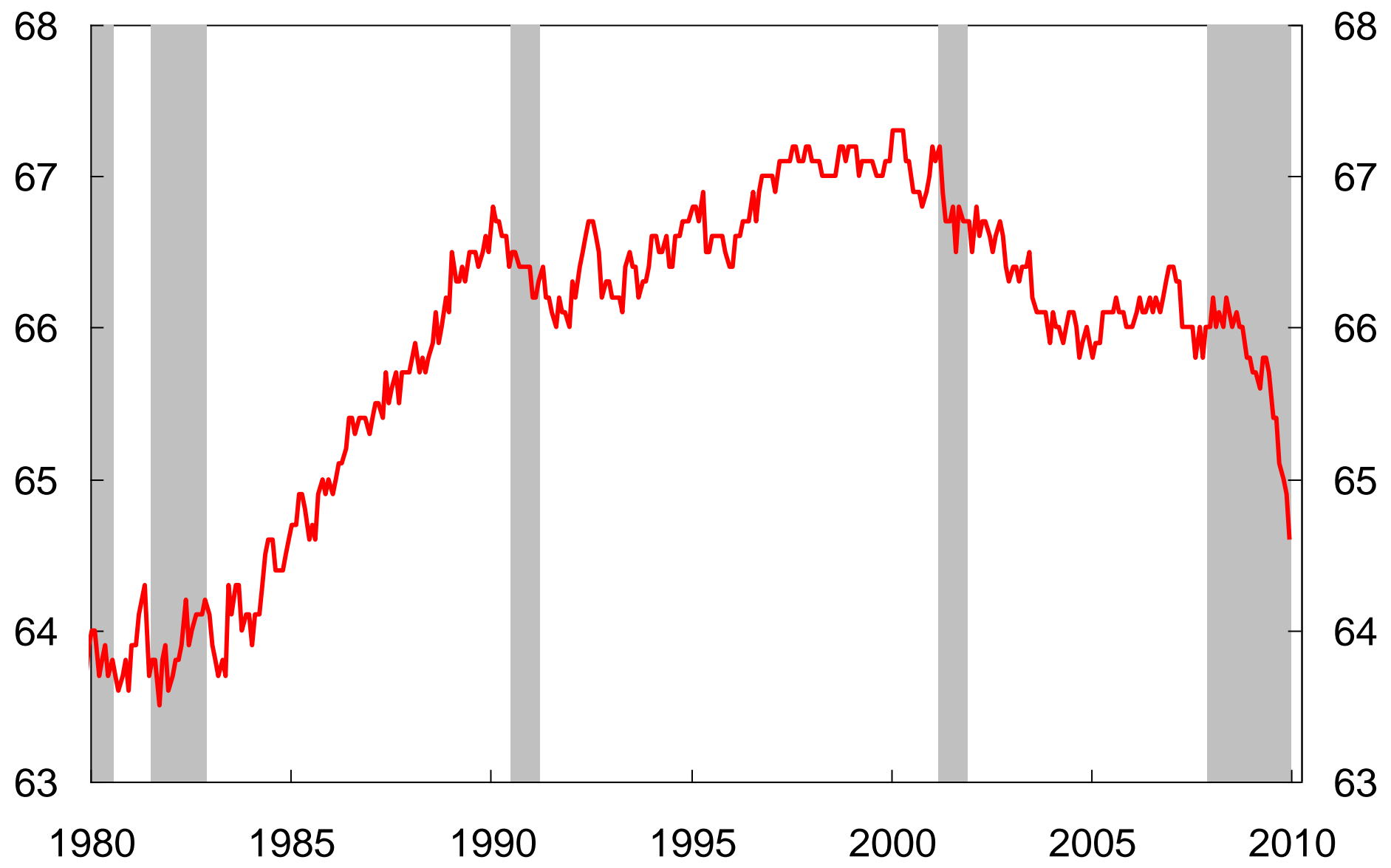


Note: Y^* = Potential GDP Growth Rate.

Labor Force Participation Rate

Percent

Percent

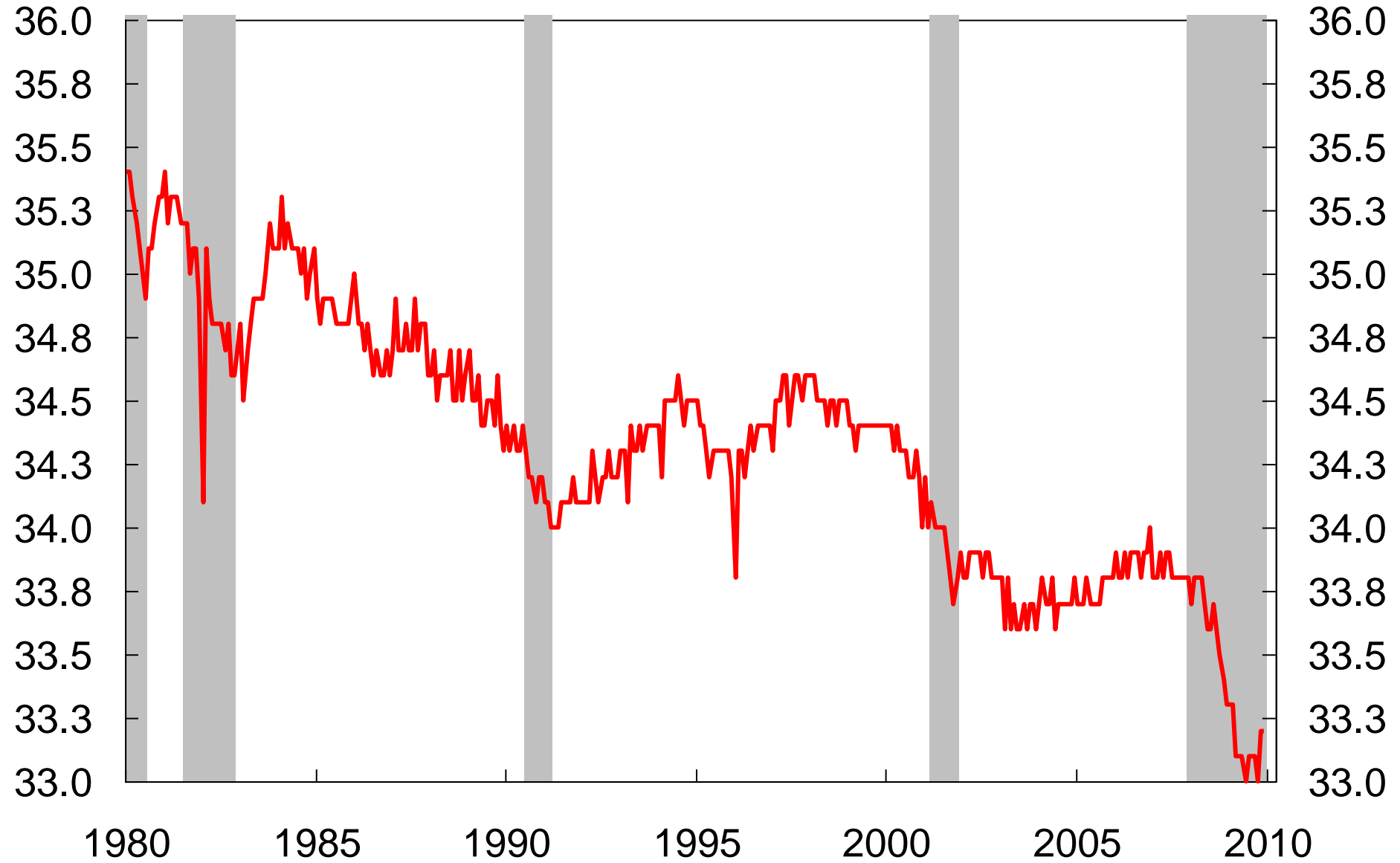


Source: Bureau of Labor Statistics

Average Weekly Hours

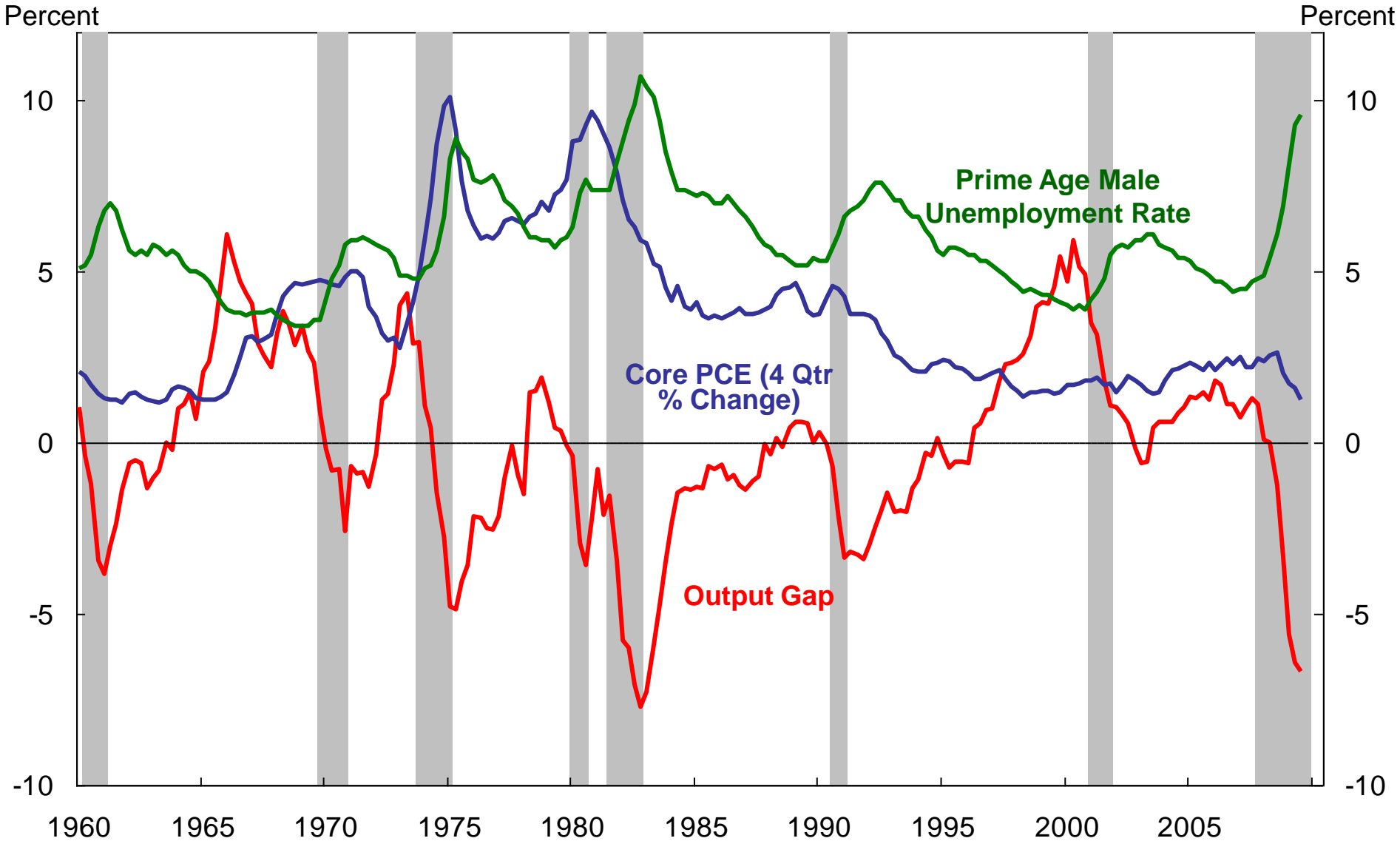
Percent

Percent



Source: Bureau of Labor Statistics

Output Gap, Inflation, and Unemployment



Source: Bureau of Economic Analysis, Bureau of Labor Statistics, and Congressional Budget Office

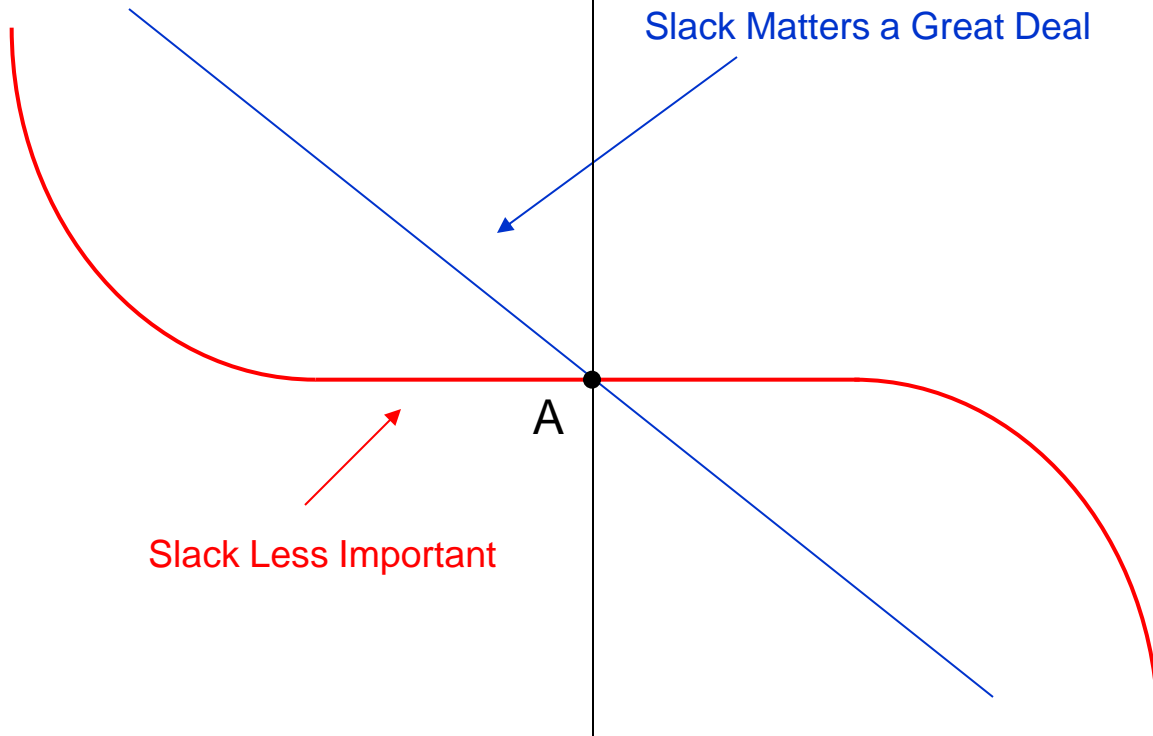
Note: Shading represents NBER recessions.

Inflation Expectations Augmented Phillips Curve

Inflation Rate

Level of real GDP above Potential

Level of real GDP below Potential



Slack Less Important

Slack Matters a Great Deal

A

Full Employment Unemployment Rate
(NAIRU)

Core CPI Inflation Model

- Dependent Variable: Quarterly change in core CPI inflation growth. ($\Delta\pi_t = \pi_t - \pi_{t-1}$)
- Independent Variables:
 - Two lags of the change in core CPI inflation.
 - $\Delta\pi_{t-1}, \Delta\pi_{t-2}$,
 - One lag of the PAM unemployment rate.
 - Profit Margin
 - One lag of inflation expectations.
 - Unemp Rate_{t-1}
 - Two lags of the relative import price.
 - Rel Imp Price_{t-2} = Import Price Inflation_{t-2} - π_{t-2}

Core CPI Model

R-squared: 0.78

Estimated from 1980Q1 through 2009 Q1

<u>Variable</u>	<u>Coefficient</u>	<u>t-Statistic</u>
Constant	0.364	1.53
$\Delta\pi_{t-1}$	0.267	2.91
$\Delta\pi_{t-2}$	0.392	4.27
$\Delta\pi_{t-1}$ expectations	0.341	3.66
Relative Import Price t-2	-0.008	-1.18
Unemp Rate _{t-1}	-0.008	-1.18
Profit Margin	-0.03	-1.44

Core CPI Actual and Predicted Values

