Economics 302 (Sec. 001)
Intermediate Macroeconomic Theory and Policy
(Spring 2010)

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Lecture 2

Monday, Jan. 25, 2010

Outline

- National Income and Product Accounts
- National Savings Identity
- Employment, Unemployment

Accounting

$C + I + G + X \equiv Y$

$S_p \equiv (Y + V + F + Q - T) - C$

Where (.) is disp. inc; $S_g = (T - F - Q) - G$

➜ $Y + V \equiv C + S_p + (T - F - Q)$
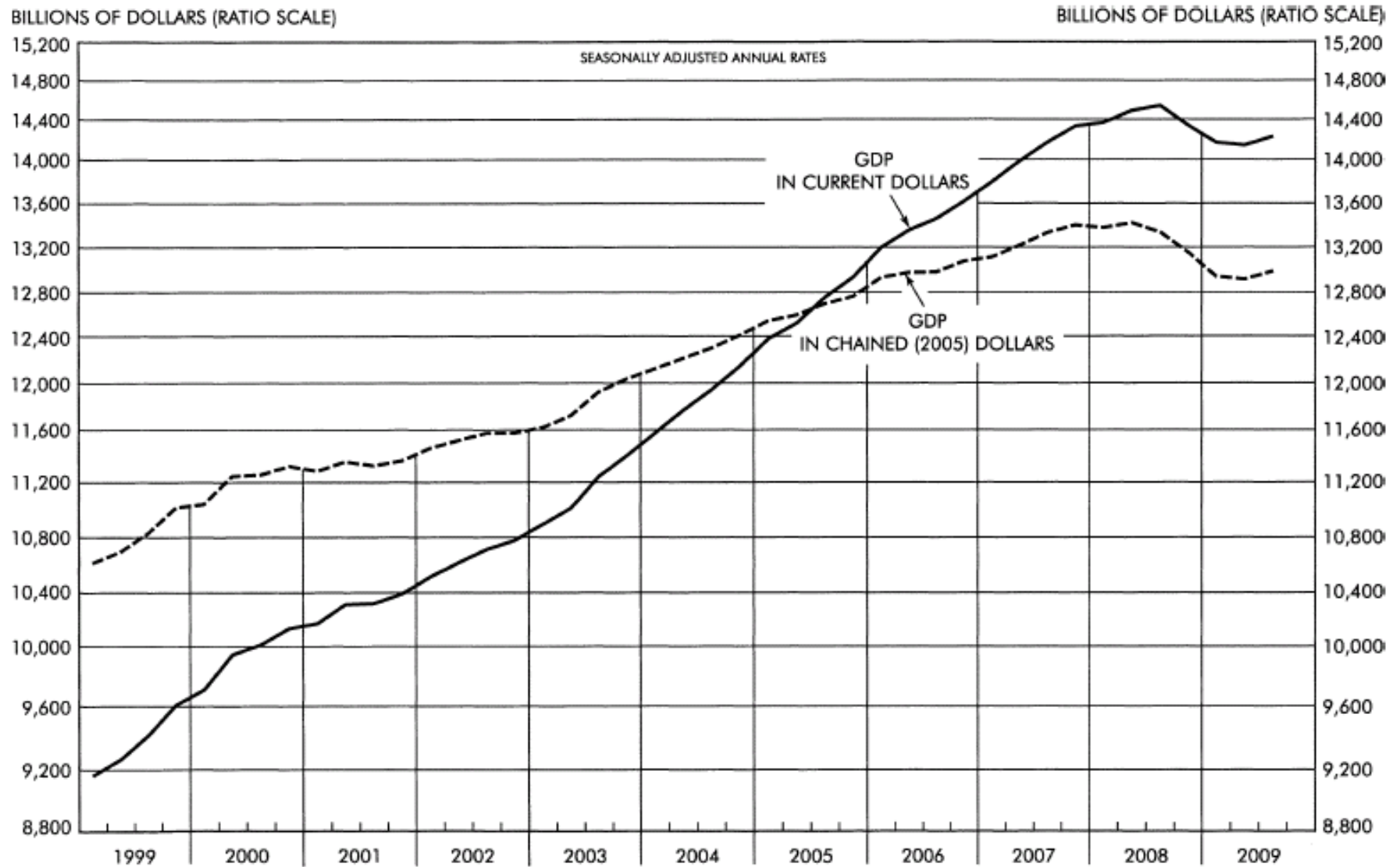
National Income Accounting

[Billions of current dollars; quarterly data at seasonally adjusted annual rates]

Period	Gross domestic product	Personal consumption expenditures	Gross private domestic investment	Exports and imports of goods and services			Government consumption expenditures and gross investment					Final sales of domestic product	Gross domestic purchases [1]	Addendum: Gross national product
				Net exports	Exports	Imports	Total	Federal			State and local			
								Total	National defense	Non-defense				
1999	9,353.5	6,342.8	1,641.5	−262.1	989.3	1,251.4	1,631.3	554.9	361.1	193.8	1,076.3	9,292.7	9,615.6	9,381.3
2000	9,951.5	6,830.4	1,772.2	−382.1	1,093.2	1,475.3	1,731.0	576.1	371.0	205.0	1,154.9	9,896.9	10,333.5	9,989.2
2001	10,286.2	7,148.8	1,661.9	−371.0	1,027.7	1,398.7	1,846.4	611.7	393.0	218.7	1,234.7	10,324.5	10,657.2	10,338.1
2002	10,642.3	7,439.2	1,647.0	−427.2	1,003.0	1,430.2	1,983.3	680.6	437.7	242.9	1,302.7	10,630.3	11,069.5	10,691.4
2003	11,142.1	7,804.0	1,729.7	−504.1	1,041.0	1,545.1	2,112.6	756.5	497.9	258.5	1,356.1	11,125.8	11,646.3	11,210.8
2004	11,867.8	8,285.1	1,968.6	−618.7	1,180.2	1,798.9	2,232.8	824.6	550.8	273.9	1,408.2	11,802.8	12,486.4	11,959.0
2005	12,638.4	8,819.0	2,172.2	−722.7	1,305.1	2,027.8	2,369.9	876.3	589.0	287.3	1,493.6	12,588.4	13,361.1	12,735.5
2006	13,398.9	9,322.7	2,327.2	−769.3	1,471.0	2,240.3	2,518.4	931.7	624.9	306.8	1,586.7	13,339.0	14,168.2	13,471.3
2007	14,077.6	9,826.4	2,288.5	−713.8	1,655.9	2,369.7	2,676.5	976.7	662.1	314.5	1,699.8	14,058.3	14,791.4	14,193.3
2008	14,441.4	10,129.9	2,136.1	−707.8	1,831.1	2,538.9	2,883.2	1,082.6	737.9	344.7	1,800.6	14,476.2	15,149.2	14,583.3
2006: I	13,183.5	9,148.2	2,336.5	−775.8	1,414.0	2,189.8	2,474.5	928.5	615.5	313.0	1,546.1	13,117.5	13,959.3	13,264.0
II	13,347.8	9,266.6	2,352.1	−781.4	1,456.0	2,237.4	2,510.5	930.3	624.1	306.2	1,580.2	13,275.4	14,129.2	13,423.3
III	13,452.9	9,391.8	2,333.5	−805.7	1,476.0	2,281.7	2,533.3	932.2	623.3	308.9	1,601.2	13,383.8	14,258.6	13,514.8
IV	13,611.5	9,484.1	2,286.5	−714.3	1,538.2	2,252.5	2,555.2	935.9	636.6	299.3	1,619.4	13,579.2	14,325.8	13,683.2
2007: I	13,795.6	9,658.5	2,267.2	−729.4	1,564.9	2,294.3	2,599.3	942.8	636.7	306.1	1,656.5	13,782.5	14,525.0	13,859.5
II	13,997.2	9,762.5	2,302.0	−724.8	1,602.1	2,326.9	2,657.4	968.1	656.6	311.6	1,689.3	13,973.7	14,722.0	14,073.3
III	14,179.9	9,865.6	2,311.9	−698.4	1,685.2	2,383.6	2,700.9	991.4	674.4	317.0	1,709.5	14,148.8	14,878.3	14,318.3
IV	14,337.9	10,019.2	2,272.9	−702.5	1,771.6	2,474.0	2,748.3	1,004.3	680.8	323.6	1,743.9	14,328.0	15,040.3	14,522.2
2008: I	14,373.9	10,095.1	2,214.8	−744.4	1,803.6	2,548.1	2,808.4	1,038.3	703.6	334.8	1,770.1	14,382.1	15,118.3	14,544.9
II	14,497.8	10,194.7	2,164.6	−738.7	1,901.5	2,640.2	2,877.1	1,069.5	725.6	343.9	1,807.6	14,547.1	15,236.4	14,626.6
III	14,546.7	10,220.1	2,142.7	−757.5	1,913.1	2,670.5	2,941.4	1,108.3	763.6	344.7	1,833.1	14,583.7	15,304.2	14,707.5
IV	14,347.3	10,009.8	2,022.1	−590.5	1,706.2	2,296.7	2,905.9	1,114.3	758.9	355.3	1,791.7	14,391.8	14,937.8	14,454.3
2009: I	14,178.0	9,987.7	1,689.9	−378.5	1,509.3	1,887.9	2,879.0	1,106.7	750.7	356.0	1,772.3	14,305.3	14,556.5	14,277.9
II	14,151.2	9,999.3	1,561.5	−339.1	1,493.7	1,832.8	2,929.4	1,138.3	776.2	362.1	1,791.2	14,327.4	14,490.3	14,243.8
III r	14,242.1	10,132.9	1,556.1	−402.2	1,573.8	1,976.0	2,955.4	1,164.3	795.8	368.5	1,791.1	14,398.7	14,644.3	14,363.7

[1] GDP less exports of goods and services plus imports of goods and services.

Source: Department of Commerce, Bureau of Economic Analysis.

Real vs. Nominal GDP

TABLE 2.3 RELATION BETWEEN GDP AND NATIONAL INCOME IN 2001 (BILLIONS OF DOLLARS)

Gross domestic product	10208.1
plus: Net factor payments	−5.3
equals: Gross national product	10202.8
less: Depreciation	1351.4
equals: Net national product	8851.4
less: Sales and excise taxes	794
less: Business transfers	44.6
less: Statistical discrepancy	−149.8
plus: Net subsidies to government business	54.8
equals: National income	8217.5

TABLE 2.4 NATIONAL INCOME, PERSONAL INCOME, AND PERSONAL DISPOSABLE INCOME IN 2001 (BILLIONS OF DOLLARS)

National income	8217.5
less: Contributions for social insurance	731.2
less: Corporate retained earnings	1321.4
plus: Nonbusiness interest	1409.9
plus: Transfer payments from government and business	1148.8
equals: Personal income	8723.5
less: Income taxes	1306.2
equals: Personal disposable income	7417.3

Note: Wage accruals less disbursements, a trivial accounting item, is omitted from the list of adjustments to national income.
SOURCE: U.S. Department of Commerce, *Survey of Current Business,* May 2002, pp. D-5 and D-7.

TABLE 2.5 LABOR AND PROFIT SHARES OF NATIONAL INCOME IN 2001 (BILLIONS OF DOLLARS)

Compensation of employees	6010	Labor share 73 percent
Proprietors' income	743.5	
Rental income of persons	142.6	Profit share 27 percent
Corporate profits	767.1	
Net interest	554.3	
National income	8217.5	

SOURCE: U.S. Department of Commerce, *Survey of Current Business*, May 2002, p. D-6.

TABLE 2.6 GROSS SAVING AND INVESTMENT, 2002 (BILLIONS OF DOLLARS)

National saving $(S_p + S_g)$	1573.7
plus: Foreign saving (S_r)	495.6
equals: Investment (I)	2069.3

SOURCE: *Economic Report of the President,* 2003, Table B-32.

The National Savings Identity
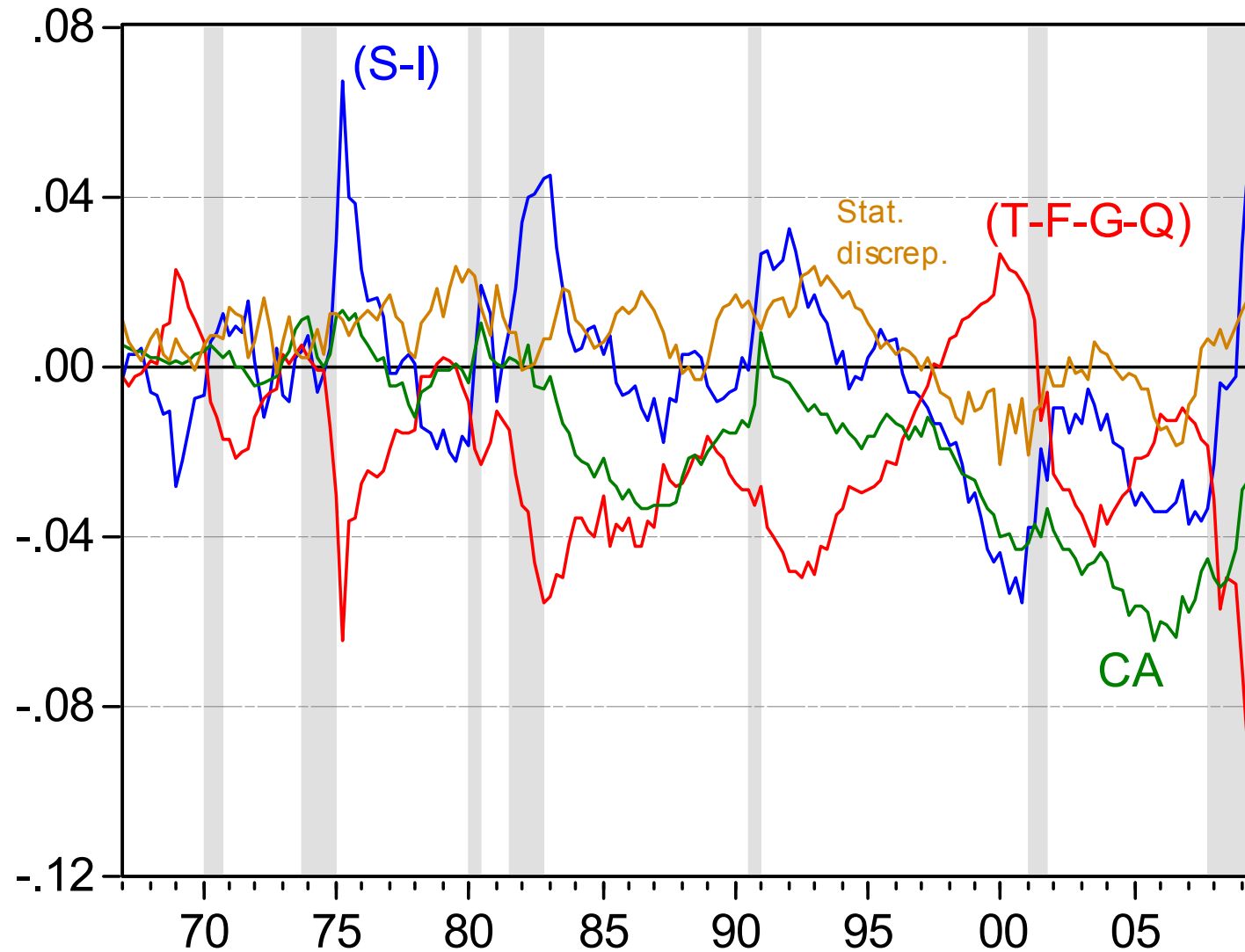
$C + I + G + X \equiv Y$

$Y + V \equiv C + S_p + (T - F - Q)$

$C + I + G + X + V \equiv C + S_p + (T - F - Q)$

$CA \equiv X + V \equiv (S_p - I) + (T - F - Q) - G$

$\qquad\qquad\qquad\qquad\qquad\qquad\qquad\quad S_g$

The US Example

Source: BEA, 2009Q2 GDP 2nd release (Aug. 2009), NBER, author's calculations

Employment and Unemployment

$U \equiv (L-N)/L$, "the unemployment rate"

- L is the labor force, as measured by statisticians at Bureau of Labor Statistics
- N is employment, measured by BLS (using household survey)
- So U is an unemployment rate in %

Employment

- There are two series for employment:
- Household based (relies on estimates of total US population)
- Establishment based (relies on firm survey)
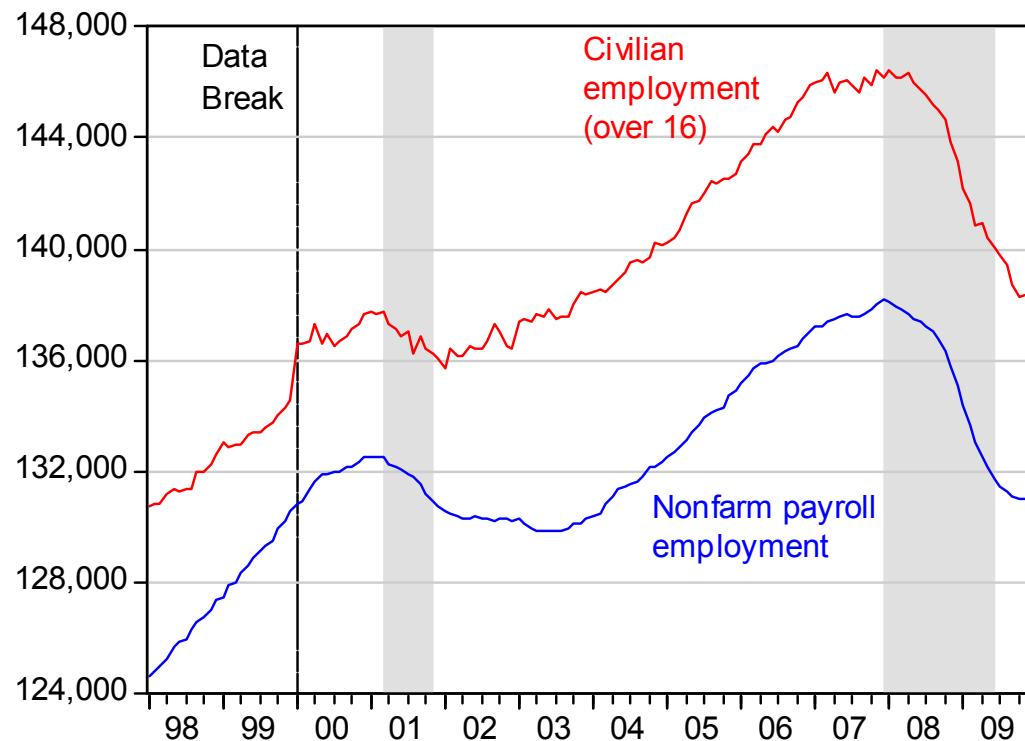- Latter more reliable; former used for U

PERCENT

Unemployment rate

Average unemployment rate by decade

FIGURE 3.1 Unemployment in the United States

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Caveats

- The rate will be affected by both changes in L *and* N

- But the rate of job creation has been unnaturally slow in last recovery

- The standard unemployment rate does not take into account *under*employment

Unemployment Rate:
Official v. Alternative
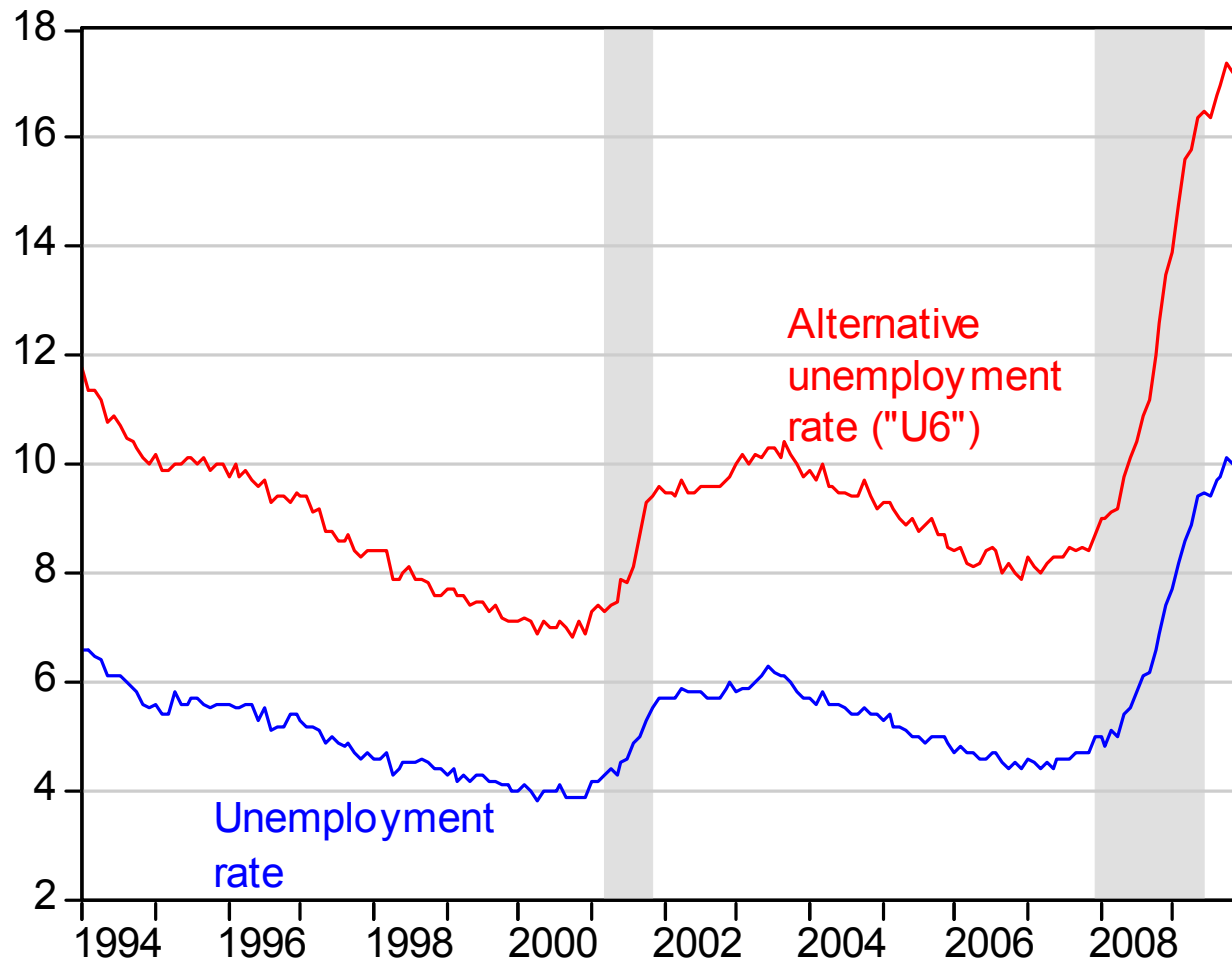
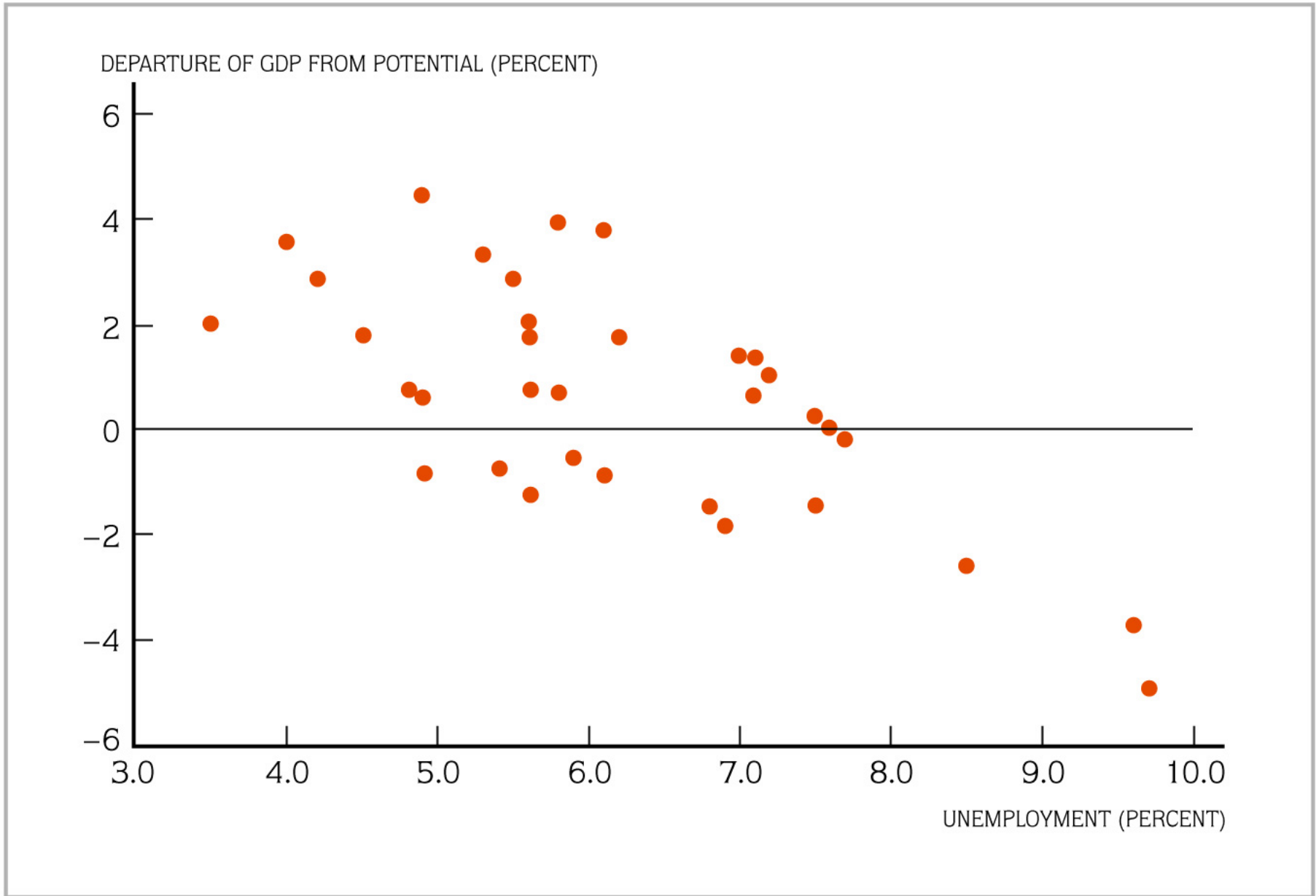Source: BLS, December Employment Situation.

DEPARTURE OF GDP FROM POTENTIAL (PERCENT)

UNEMPLOYMENT (PERCENT)

FIGURE 3.6 **Okun's Law**

Okun's Law

$$(Y-Y^*)/Y^* = -3 \times (U-U^*)$$

- Unemployment moves in opposite direction to output gap.
- When U=U*, Y=Y*

REAL WAGE ($\frac{W}{P}$)

Labor supply

At this level of employment the marginal product of work is greater than the forgone cost of other activities for workers

$(W/P)^*$
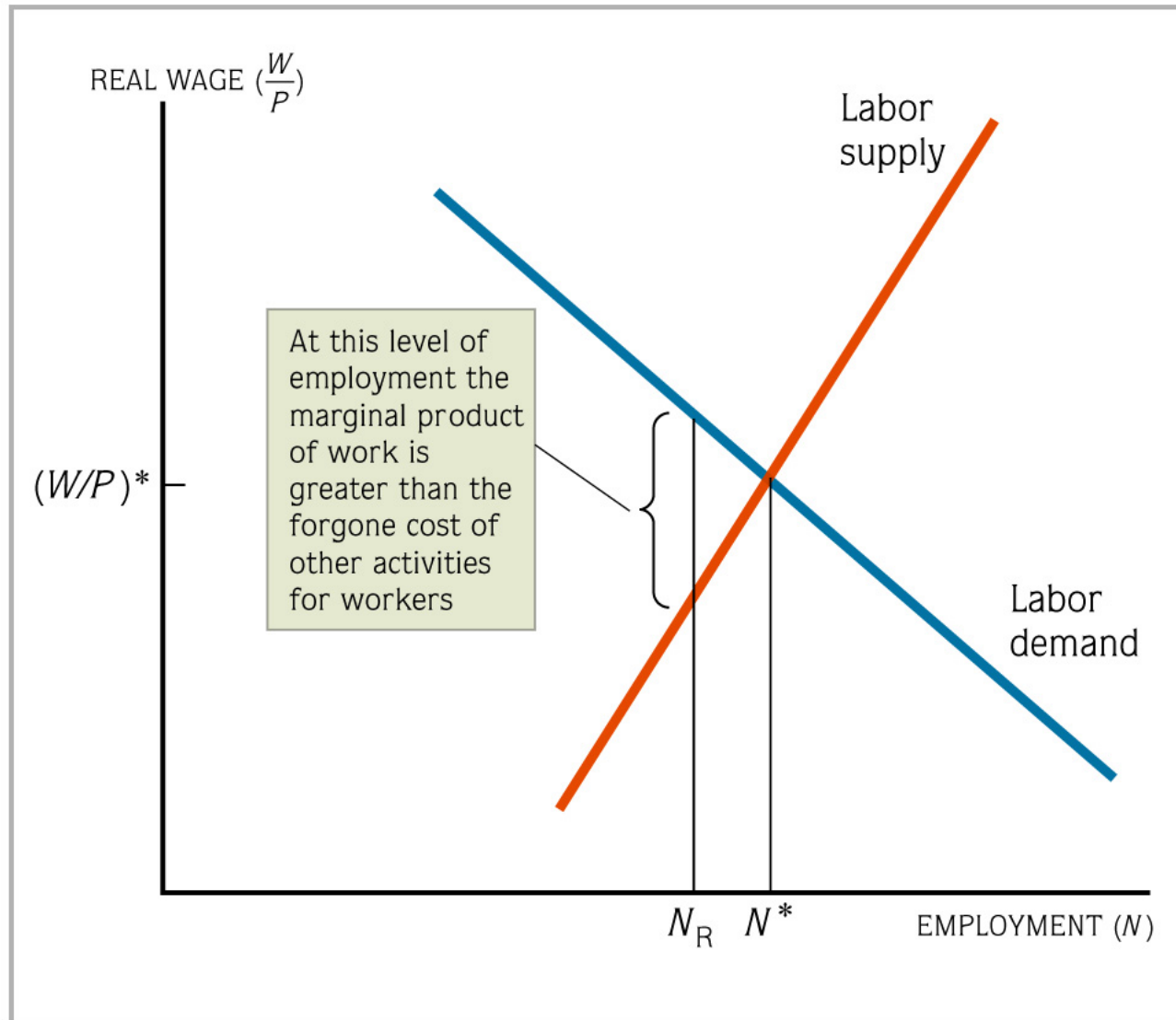
Labor demand

N_R N^* EMPLOYMENT (N)

FIGURE 3.7 Incentives When Employment Is Below Equilibrium

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