

Economics 302
Intermediate Macroeconomic
Theory and Policy
(Spring 2006)

Lecture 2

Monday, Jan. 23 2006

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; $S_g = (T - F - Q) - G$

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

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				
1995	7,397.7	4,975.8	1,144.0	-91.4	812.2	903.6	1,369.2	519.2	348.7	170.5	850.0	7,366.5	7,489.0	7,433.4
1996	7,816.9	5,256.8	1,240.3	-96.2	868.6	964.8	1,416.0	527.4	354.6	172.8	888.6	7,786.1	7,913.1	7,851.9
1997	8,304.3	5,547.4	1,389.8	-101.6	955.3	1,056.9	1,468.7	530.9	349.6	181.3	937.8	8,232.3	8,405.9	8,337.3
1998	8,747.0	5,879.5	1,509.1	-159.9	955.9	1,115.9	1,518.3	530.4	345.7	184.7	987.9	8,676.2	8,906.9	8,768.3
1999	9,268.4	6,282.5	1,625.7	-260.5	991.2	1,251.7	1,620.8	555.8	360.6	195.2	1,065.0	9,201.5	9,528.9	9,302.2
2000	9,817.0	6,739.4	1,735.5	-379.5	1,096.3	1,475.8	1,721.6	578.8	370.3	208.5	1,142.8	9,760.5	10,196.4	9,855.9
2001	10,128.0	7,055.0	1,614.3	-367.0	1,032.8	1,399.8	1,825.6	612.9	392.6	220.3	1,212.8	10,159.7	10,495.0	10,171.6
2002	10,469.6	7,350.7	1,582.1	-424.4	1,005.9	1,430.3	1,961.1	679.7	437.1	242.5	1,281.5	10,457.7	10,894.0	10,500.2
2003	10,971.2	7,709.9	1,670.4	-500.9	1,045.6	1,546.5	2,091.9	754.8	496.7	258.2	1,337.1	10,955.8	11,472.1	11,039.3
2004	11,734.3	8,214.3	1,928.1	-624.0	1,173.8	1,797.8	2,215.9	827.6	552.7	274.9	1,388.3	11,678.9	12,358.3	11,788.0
2002: I	10,333.3	7,230.3	1,564.1	-373.1	976.4	1,349.5	1,912.0	654.9	418.2	236.6	1,257.2	10,341.6	10,706.4	10,359.5
II	10,426.6	7,323.0	1,571.4	-416.1	1,008.2	1,424.3	1,948.3	675.2	431.1	244.1	1,273.1	10,424.0	10,842.7	10,448.3
III	10,527.4	7,396.6	1,592.9	-433.8	1,022.9	1,456.7	1,971.8	682.0	438.0	243.9	1,289.8	10,501.4	10,961.2	10,557.0
IV	10,591.1	7,453.1	1,600.1	-474.6	1,016.2	1,490.8	2,012.5	706.6	461.1	245.5	1,305.9	10,563.9	11,065.7	10,641.1
2003: I	10,717.0	7,555.2	1,610.0	-502.6	1,018.8	1,521.4	2,054.4	724.0	467.2	256.8	1,330.4	10,695.2	11,219.6	10,761.9
II	10,844.6	7,635.3	1,619.3	-500.6	1,016.1	1,516.6	2,090.5	763.4	507.2	256.3	1,327.1	10,845.0	11,345.2	10,911.4
III	11,087.4	7,782.4	1,694.2	-495.3	1,046.6	1,541.9	2,106.2	761.8	500.3	261.5	1,344.4	11,076.9	11,582.8	11,154.8
IV	11,236.0	7,866.6	1,757.9	-505.0	1,101.1	1,606.1	2,116.5	770.0	512.0	258.0	1,346.5	11,206.2	11,741.1	11,329.2
2004: I	11,457.1	8,032.3	1,818.2	-559.6	1,130.8	1,690.3	2,166.2	808.3	538.7	269.6	1,357.9	11,411.6	12,016.7	11,540.1
II	11,666.1	8,145.6	1,928.5	-613.1	1,163.3	1,776.4	2,205.0	824.6	547.2	277.4	1,380.4	11,594.2	12,279.1	11,712.8
III	11,818.8	8,263.2	1,961.2	-638.0	1,183.8	1,821.8	2,232.5	836.5	562.9	273.6	1,395.9	11,766.3	12,456.8	11,867.3
IV	11,995.2	8,416.1	2,004.5	-685.4	1,217.1	1,902.5	2,260.0	840.8	562.0	278.8	1,419.1	11,943.3	12,680.6	12,032.0
2005: I	12,198.8	8,535.8	2,058.5	-697.5	1,253.2	1,950.6	2,302.0	860.2	575.3	285.0	1,441.7	12,138.9	12,896.3	12,238.2
II	12,378.0	8,677.0	2,054.4	-691.0	1,297.1	1,988.1	2,337.6	869.8	582.5	287.3	1,467.7	12,382.1	13,069.0	12,413.5
III ^r	12,605.7	8,844.0	2,099.5	-730.4	1,314.6	2,045.1	2,392.7	892.2	601.7	290.5	1,500.4	12,625.4	13,336.1	12,650.0

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

Source: Department of Commerce, Bureau of Economic Analysis.

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

SOURCE: U.S. Department of Commerce, *Survey of Current Business*, May 2002, p. D-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	
Corporate profits	767.1	Profit share 27 percent
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

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

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

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

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

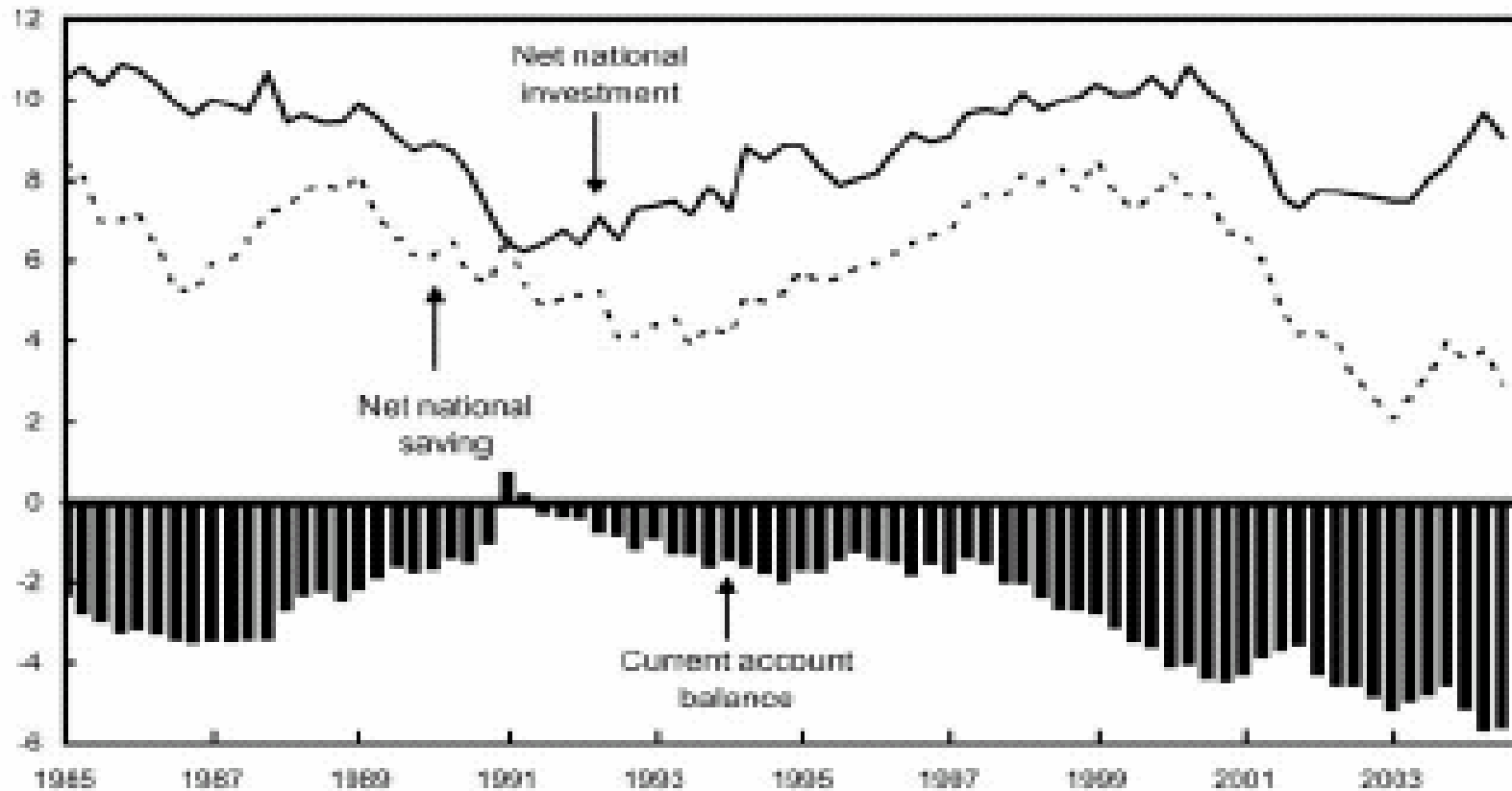
S_g

The US Example

Chart 1-3 Saving, Investment, and the Current Account Balance

Lower national saving primarily accounts for the widening of the current account deficit since 2000.

Percent of GDP



Source: Department of Commerce (Bureau of Economic Analysis).

Unemployment

$$U \equiv (L-N)/L$$

L is the labor force, as measured by statisticians at Bureau of Labor Statistics

N is employment, measured by BLS

So U is an unemployment rate in %

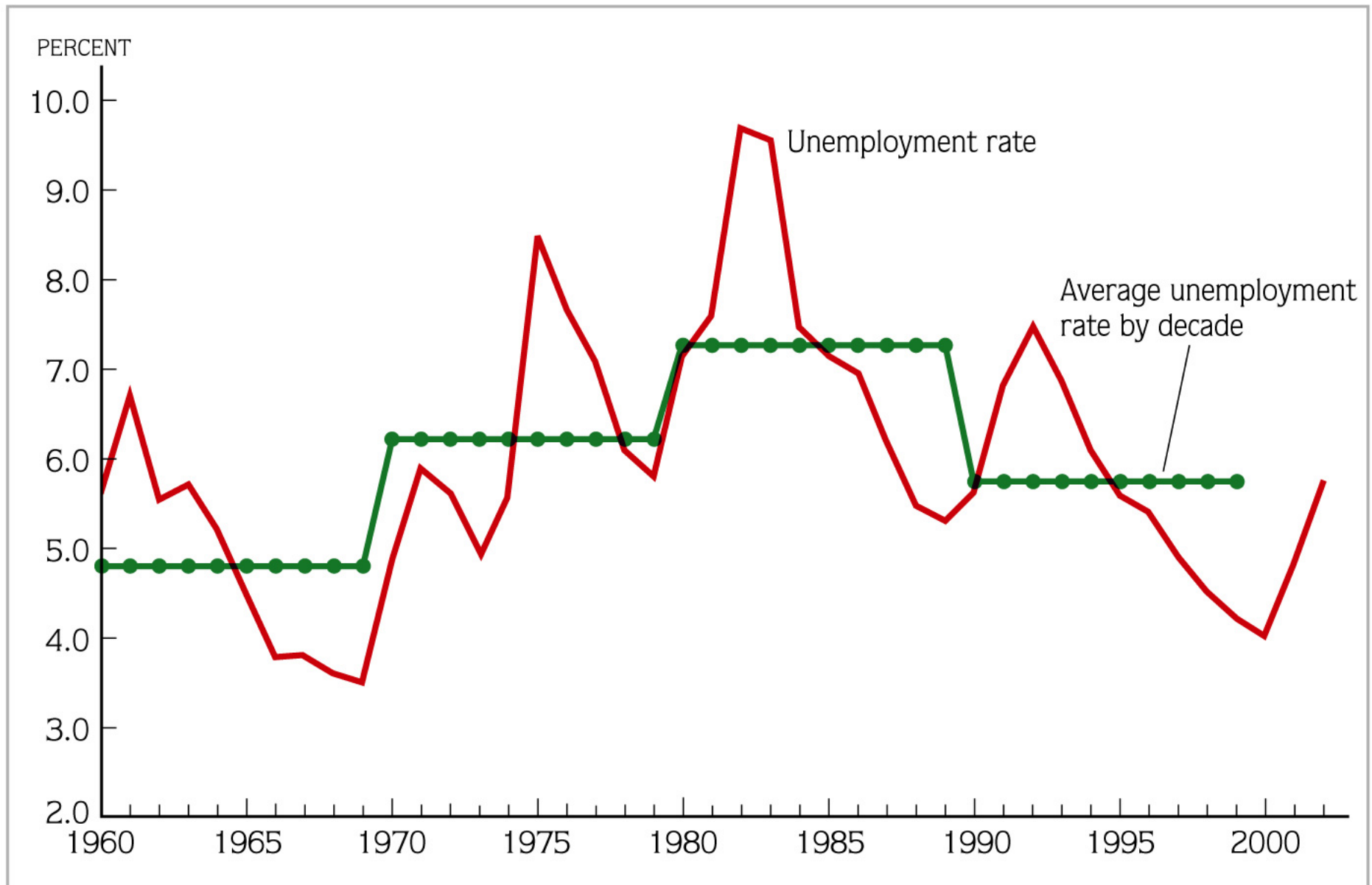


FIGURE 3.1 Unemployment in the United States

Caveats

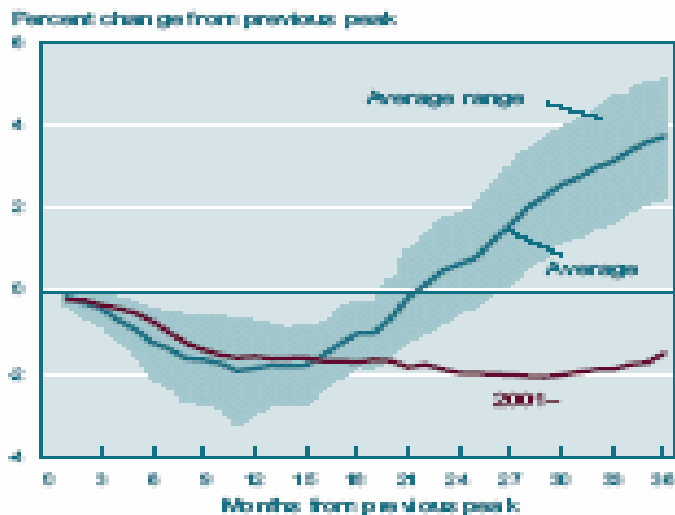
- The rate will be affected by both changes in L and N
- The unemployment rate since the last recession has declined
- But the rate of job creation has been unnaturally slow

Employment

**FIGURE 1 EMPLOYMENT:
HOUSEHOLD AND ESTABLISHMENT SURVEYS**



**FIGURE 2 BUSINESS CYCLE
PATTERN, ESTABLISHMENT
SURVEY EMPLOYMENT**

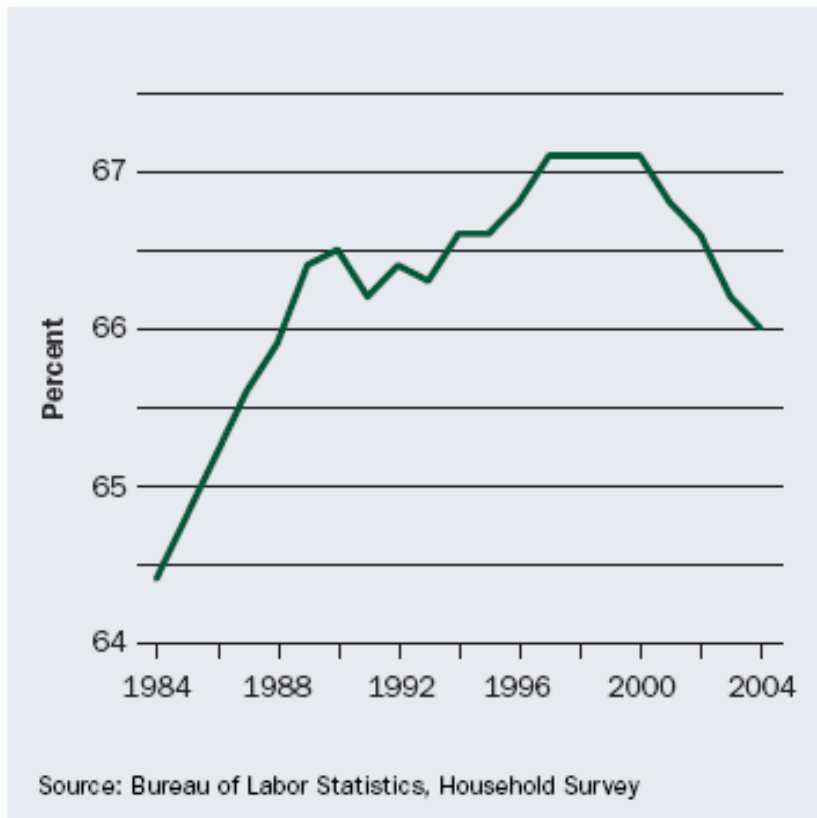


- There are two sources:
- Household based (relies on estimates of total US population)
- Establishment based (relies on firm survey)
- Latter more reliable

<http://www.clevelandfed.org/Research/Com2004/05-15.pdf>

Participation Rate

Figure 3
Labor Force Participation Rate



- But L has also declined.
- Demographics, but also opportunities (so L is endogenous)

Source:

<http://www.frbatlanta.org/filelegacy/docs/HOTCHKISS-final.pdf>

Alternative Measure of Unemployment

Figure 7
Standard Unemployment Rate and
Adjusted Rate for Discouraged Workers



- Adjustment to account for discouraged workers
- Results in somewhat higher U

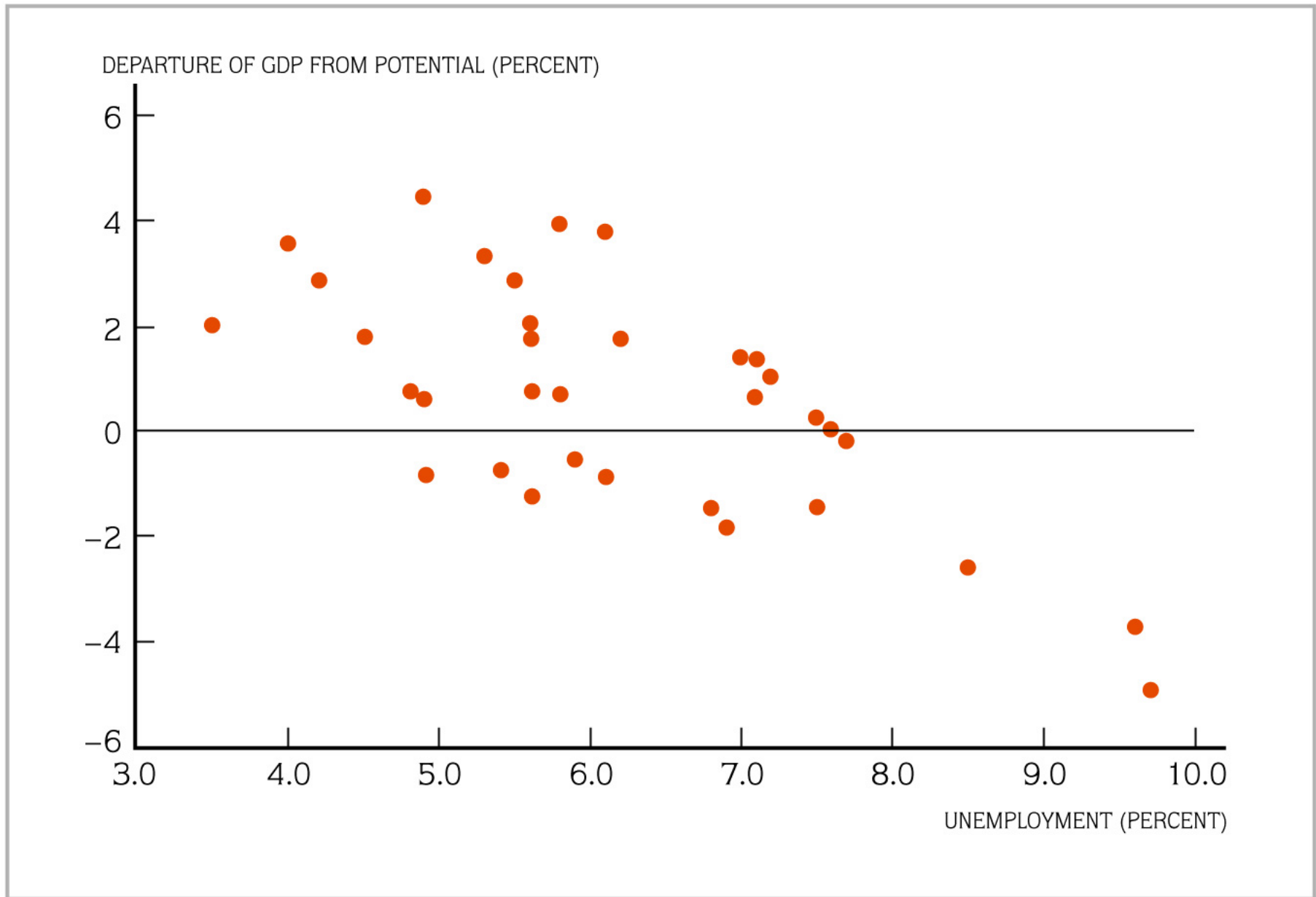


FIGURE 3.6 Okun's Law

Okun's Law

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

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

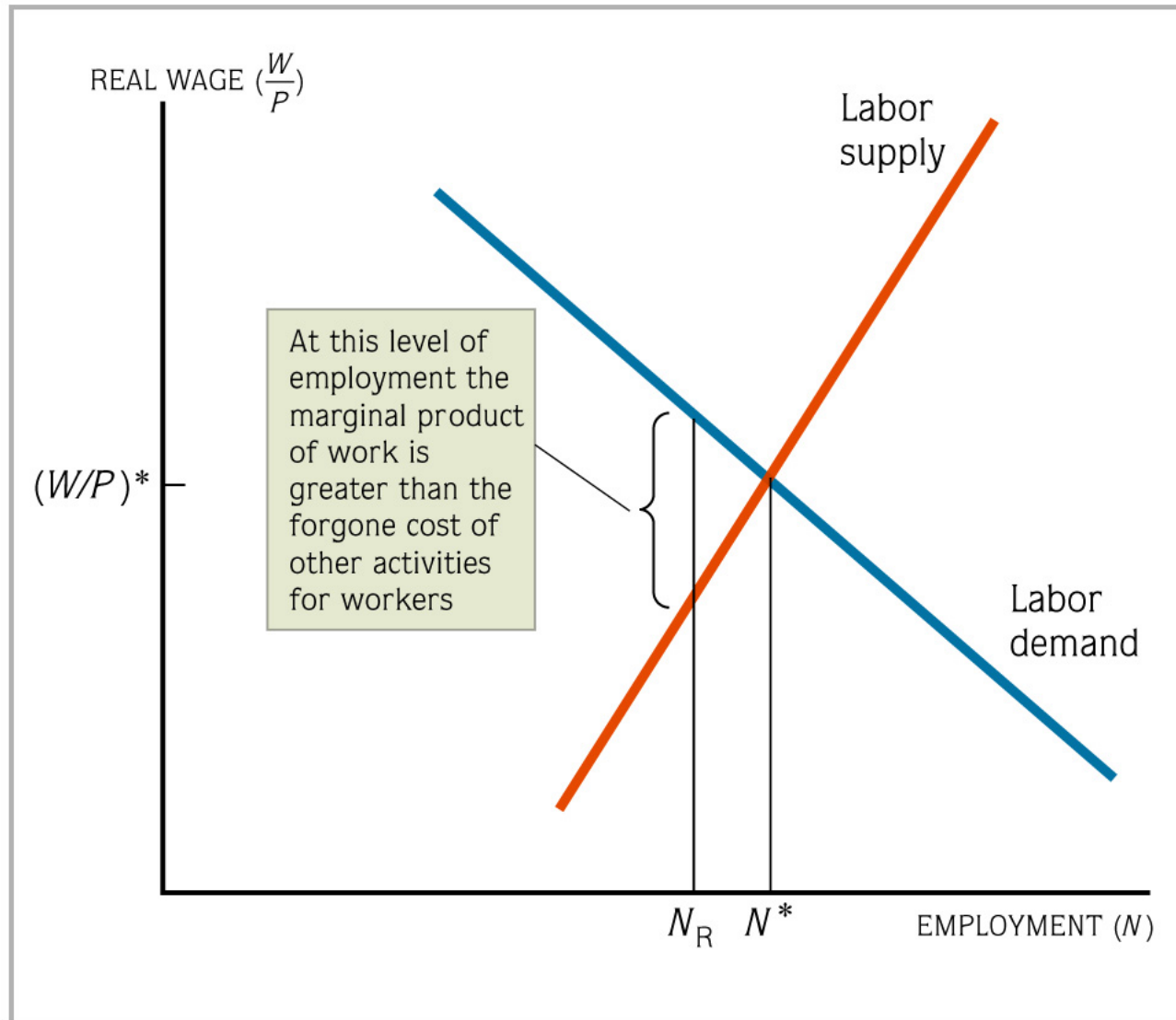


FIGURE 3.7 Incentives When Employment Is Below Equilibrium