

Whitman College
Econ 308
Exam 1
February 14, 2011

Write all of your answers in your blue book. **Show all of your work.** The exam ends at 2:20.

1. (a) (15pts) In 2010, the unemployment rate in the United States averaged 9.6%. In his January 11, 2011 speech “It’s a Wonderful Fed,” Minneapolis Federal Reserve Bank President Narayana Kocherlakota says that he agrees with the Federal Open Market Committee’s forecast that in the U. S. “unemployment will remain above 9% throughout 2011.” According to Okun’s Law, what will happen to real GDP in the U.S. in 2011 if the unemployment rate averages 9.2%? Be precise in your answer and explain your work.

2. (5pts) The Federal Reserve Bank of St Louis’s *National Economic Trends* for January 2011 has a brief article entitled “Location and the Return to Education” in which Natalia Kolesnikova writes that “most studies find that, after controlling for other characteristics, each additional year of education increases hourly wages by 8 to 13 percent.” She goes on to explain why “the return to a college education is systematically lower in nicer, more-expensive cities.” What is her explanation?

3. (10pts) Explain, in detail, how to use the chain-weighted (geometric mean) method to find real Gross Domestic Product for 2008, if 2006 is your base year.

4. Suppose that a country's capital stock decreases, with no change in its labor supply. Assume that the country has a Cobb-Douglas production function and perfectly competitive markets.
 - (a) (12pts) What happens to the marginal product of labor and the wage paid to labor? Explain, with reference to a labor supply and labor demand diagram.
 - (b) (12pts) What happens to the marginal product of capital and the rental price of capital? Explain, with reference to a capital supply and capital demand diagram.

5. Consider the Cobb-Douglas production function where real aggregate output Y is given by $Y = A K^\alpha L^{1-\alpha}$, in which $A=5$ is a parameter measuring the productivity of the available technology, K is the amount of capital employed, L is the amount of labor employed, and $\alpha=0.2$. Suppose that currently $K=3000$, $L=100$, and the price level, P , is 10. The savings rate, s , is 0.25. The depreciation rate, δ , is 0.1. Assume that the population remains constant and that there is no change in the production technology. Use this information and the Solow Growth Model to answer the questions below.

(a) (6pts) What is the current real consumption per worker ($c=C/L$)?

(b) (20pts) What is the steady-state amount of real consumption per worker, c^* ?

(c) (20pts) In the steady-state, what will the total earnings of workers be?