

Whitman College
Econ 102
Exam 2
October 24, 2011

Write all answers on the exam. **Show all of your work.** The exam ends at 12:00.

1 (a) (5pts) In the United States in 2009 real Gross Domestic Product (GDP) was \$12.813 trillion, and nominal GDP was \$14.087 trillion. What was the GDP deflator in 2009?

(b) (5pts) In the U.S. in 2010 real Gross Domestic Product (GDP) was \$13.216 trillion, and nominal GDP was \$14.755 trillion. What was the GDP deflator in 2010?

(c) (5pts) Using the GDP deflator as your measure of the price level, calculate the annual inflation rate between 2009 and 2010.

(d) (5pts) In the U.S. in 2000, the Consumer Price Index (CPI) was 172.2. In 2010 the CPI was 218.1. In 2000 the median nominal household income was \$41,362. In 2010 the median nominal household income was \$48,753. In real terms, was median household income larger in 2000 or in 2010? Show your work.

(e) (10pts) When economists are choosing which measure of the price level to use to determine whether income has kept up with the cost of living, why do we use the CPI rather than the GDP deflator?

2. (15pts) On Friday, October 21, 2011, the nominal interest rate on a one-year Treasury bill (i.e. a one year loan to the United States government) was 0.12%. If the inflation rate over the next year turns out to be 1.72%, what real interest rate will the U.S. government pay on this Treasury bill?

3. (a) (5pts) Graph the production function for an economy like that of the United States. On your graph, put capital per worker on the horizontal axis and output per worker on the vertical axis.

(b) (5pts) Define capital.

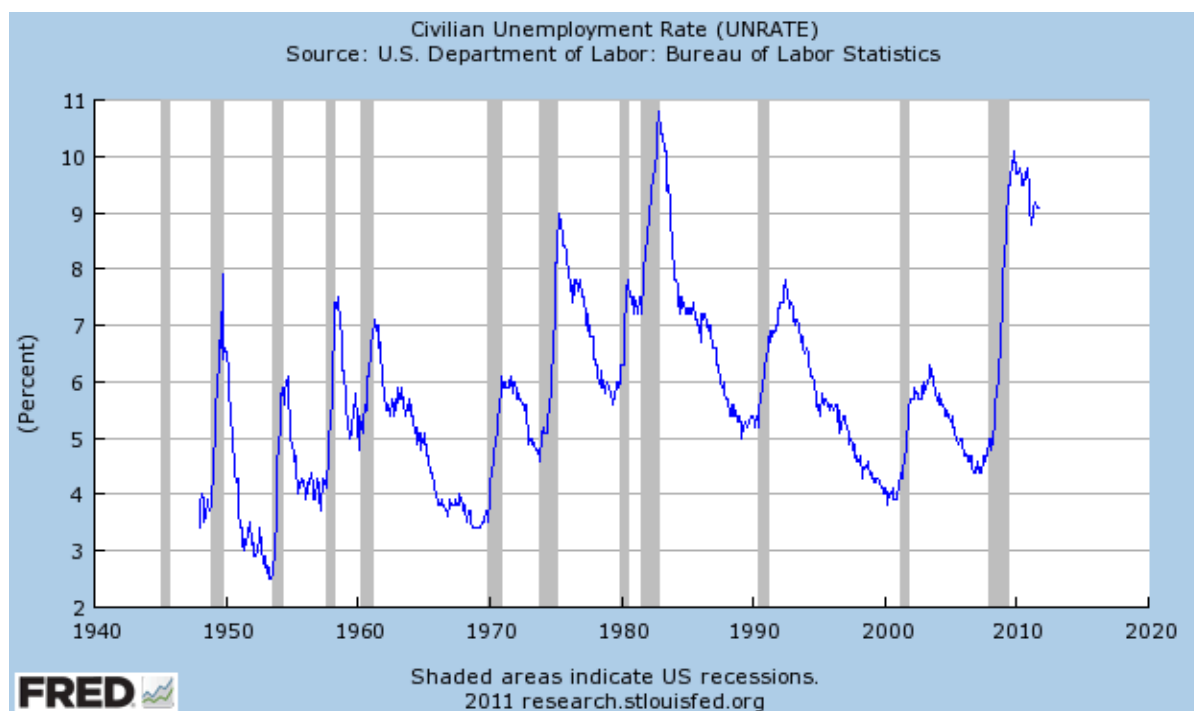
(c) (5pts) Consider the factors that determine output per worker, but which are being held constant in order to draw the production function in part (a). List these factors. The factors you list should include those Gregory Mankiw lists in *Principles of Macroeconomics*.

(d) (5pts) Pick one of the factors you listed in part (c) and suppose that one factor changes, while the others stay constant. In the space below, describe how that factor changes. Then, on your production function graph in part (a), show the effect of that particular change.

(e) (10pts) In Paul Romer's 2009 TED Talk, he says "The reason we can be so well off, even though there are so many people on earth, is because of the power of ideas. We can share ideas with other people, and when they discover them, they share with us. It's not like scarce objects, where sharing means we each get less. When we share ideas we all get more. When we think about ideas in that way, we usually think about technologies. But there is another class of ideas..."

What is that other class of ideas? Why, according to Professor Romer, is that other class of ideas important?

4. (5pts) On the graph below, draw the natural rate of unemployment for the United States in the years 1948-2011.



5. (a) (16pts) Consider the following information about three hypothetical countries, none of which engages in international trade. Use the data from the table and your knowledge of national income accounting identities to fill in the table. Suppose all values are in real terms.

Category	Country X	Country Y	Country Z
Investment (I)		300	200
Taxes minus Transfer Payments (T)	60	400	100
Consumption (C)	300		800
Government Purchases (G)		300	
Gross Domestic Product (Y)	450	2000	1150
Private Savings	90		
Public (i.e. Government) Savings	10		

(b) (4pts) Define investment.