

Whitman College  
Econ 308  
Exam 1  
February 15, 2013

Write all answers in your blue book. On all graphs, label your axes. **Show all of your work.** After you finish the exam, you may keep the questions. The exam ends at 2:20.

1. (a) (2pts) Define moral hazard.

(b) (2pts) Define a fire sale of an asset.

(c) (2pts) Define a liquidity crisis.

2. Consider the November 15, 2012 speech “Solving the Too Big to Fail Problem” by William Dudley, President of the Federal Reserve Bank of New York. As you answer the following questions, explain how moral hazard, fire sales, and liquidity crises fit into your answers.

(a) (2pts) Mr. Dudley notes that sometimes a financial firm’s failure can cause undesirable externalities. These externalities have come to be known as the “too big to fail” (TBTF) problem. What are these externalities?

(b) (4pts) These externalities do not depend simply on the size of the failed financial firm. According to Mr. Dudley, what other factors affect the size of the externalities?

(c) (4pts) What dilemma do these large negative externalities create for policymakers?

(d) (4pts) What does Mr. Dudley mean when he says that a TBTF firm enjoys an artificial subsidy?

3. (10pts) Consider an economy with competitive markets and an aggregate production function that has diminishing marginal returns to labor setting in immediately. Suppose all workers are identical. Derive the demand curve for labor. Explain all of your work.

4. (5pts) Historically, what has Okun’s Law been for the United States? Write the equation that represents this relationship.

5. Consider the information in the following table for the United States economy. Use this information to answer questions (a)-(d) below.

Year	Nominal Gross Domestic Product	Real Gross Domestic Product in chained 2005 dollars
2009	\$13.9737 trillion	\$12.7579 trillion
2010	\$14.4989 trillion	\$13.0630 trillion
2011	\$15.0757 trillion	\$13.2991 trillion
2012	\$15.6760 trillion	\$13.5888 trillion

(a) (5pts) What is the Gross Domestic Product (GDP) price deflator for 2009?

(b) (10pts) Using the GDP deflator as the price level, what was the inflation rate between 2009 and 2010? What was the inflation rate between 2011 and 2012?

(c) (5pts) Explain how the Commerce Department will use the geometric mean formula to calculate real GDP in 2013.

(d) (5pts) If the historical Okun's Law relationship had held, what would have been the change in the U.S. unemployment rate between 2010 and 2011?

6. (10ts) Prove that a Cobb-Douglas production function exhibits constant returns to scale.

7. Consider the Solow Growth Model, with a Cobb-Douglas production function for the economy. Assume a constant savings rate,  $s$ , a constant depreciation rate,  $\delta$ , no change in the size of the labor force, and no innovation. Suppose that the savings rate is 0.3. Draw a graph with capital per worker on the horizontal axis and output per worker on the vertical axis. Make your graph large and clear.

(a) (10pts) On your graph, indicate the steady-state level of capital per worker ( $k^*$ ), output per worker ( $y^*$ ), consumption per worker ( $c^*$ ), and investment per worker ( $i^*$ ).

(b) (15pts) Suppose that the economy currently has a level of capital per worker that is smaller than the steady-state amount of capital per worker. On your graph from part (a), indicate the current level of capital per worker ( $k_1$ ) and output per worker ( $y_1$ ). On your graph, carefully indicate the amount by which capital per worker will change between the current period and the next period. Explain how you found this amount. On your graph, indicate the amount of output per worker in the next period ( $y_2$ ).

(c) (5pts) Does capital per worker stop changing once the economy reaches its steady-state? If so, why does it stop? If not, why not?