Whitman College
Econ 308
Exam 2
April 2, 2012

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

1. Use the Solow Growth Model with labor-augmenting technology to work (a)-(d) below. Assume a Cobb Douglass production function. Read all of parts (a)-(d) before you work any of them. Make one **large** graph and draw it carefully.

(a) (10pts) Draw a graph in which you put capital per effective worker on the horizontal axis, and output per effective worker on the vertical axis. On your graph, indicate the golden-rule steady state level of capital per effective worker, output per effective worker, and consumption per effective worker. Label these quantities k^*_{gr}, y^*_{gr} and c^*_{gr}.

For parts (b)-(d), suppose this economy's savings rate is below the golden rule savings rate.

(b) (5pts) On your graph, indicate this economy's steady-state level of capital per effective worker, output per effective worker, and consumption per effective worker. Label these quantities k^*, y^* and c^*.

For parts (c) and (d), suppose that this economy has a current level of capital per effective worker that is below the steady-state level you found in part (b).

(c) (5pts) On your graph, indicate this economy's current level of capital per effective worker, output per effective worker, and consumption per effective worker. Label these quantities k_1, y_1 and c_1.

(d) (5pts) On your graph, indicate what this economy's level of capital per effective worker and output per effective worker would be next period. Label these quantities k_2 and y_2. On your graph, show how you found k_2.

2. Consider a country where labor productivity grows annually by 2.2%, and the size of the labor force grows annually by 0.9%. Suppose that the Quantity Theory of Money holds, and the payments technology remains unchanged. Suppose also that the Solow Growth Model holds, and that this country is in its steady state.

(b) (10pts) If the central bank targets an inflation rate of 2.0%, at what average annual rate would the central bank have the money supply change?

(c) (5pts) If the average annual money supply growth rate were zero, what would happen on average to prices in this economy? Be as explicit as possible.

3. Consider the following information about a hypothetical economy. The monthly rate of job separation, s, is constant at 0.01. The monthly rate of job finding, f, is constant at 0.11. The labor force is fixed in size. Currently among those who are at least 16 years old, 100 million are working at jobs, 10 million are not working but are actively seeking work and are available for work, 2 million are not working and are willing to work but not actively seeking work, and 38 million are not working and are not willing to work and not actively seeking work.

(a) (5pts) What is the current unemployment rate?

(b) (5pts) What will the unemployment rate be after one month?

(c) (5pts) What is the natural rate of unemployment for this economy?

4. Countries with higher levels of inflation uncertainty typically have lower levels of growth of real Gross Domestic Product (GDP). Economic studies suggest that the inflation uncertainty reduces the growth of real GDP because it reduces the quality and quantity of investment.

(a) (2pts) Define investment.

(b) (8pts) Consider the inflation uncertainty experiment we ran in class on March 2. Explain how higher inflation uncertainty reduced the **quality** of the investment projects undertaken in the experiment.

For questions 5, 6 and 7(e) below, consider Federal Reserve Chairman Ben Bernanke's March 27, 2012 lecture "The Federal Reserve's Response to the Financial Crisis."

5. (10pts) In his lecture, Chairman Bernanke points out that "if you took all the subprime mortgages in the United States [in 2008] and put them all together and assume they were all worthless, the total losses to the financial system would be about the size of one bad day at the stock market." According to Chairman Bernanke, why did these subprime mortgages cause a problem?

6. (10pts) According to Chairman Bernanke, what were the two lessons the Federal Reserve learned from the Great Depression?

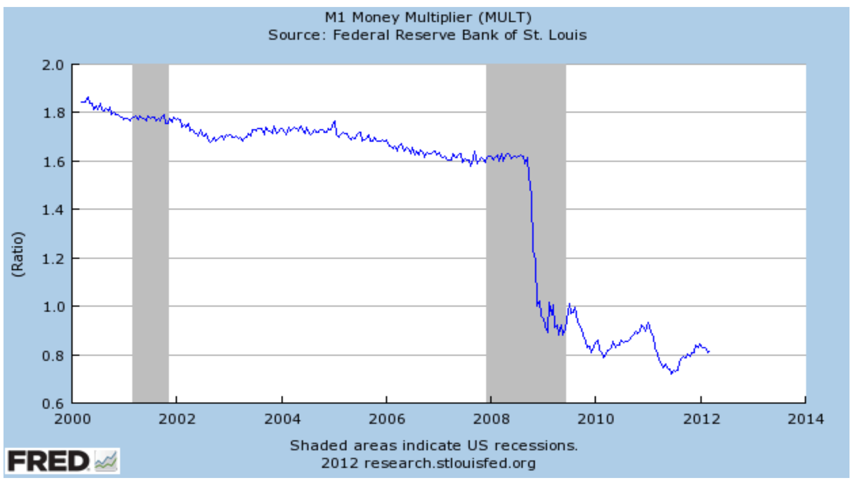
7. Consider an economy in which the banking system holds one kind of deposit, a checking deposit. The money supply (M1) is currency in the hands of the public (C) plus deposits (D). The public chooses the ratio of currency to deposits {C/D}. Banks choose the ratio of excess reserves to deposits {ER/D}. The required reserve ratio (r_D) is set by the central bank.

(a) (2pts) Define the monetary base.

(b) (2pts) Define the money multiplier.

(c) (2pts) Derive the formula for the money multiplier. Show your work.

(d) (5pts) Consider the graph below of the money multiplier for the United States. With reference to the formula you derived in part (c), explain what made the money multiplier drop during the financial crisis in 2008 and has kept it so low since.



(e) (4pts) Chairman Bernanke describes the Federal Reserve heeding the lessons of the Great Depression and therefore taking “vigorous actions” in 2008. Those actions included the Fed “aggressively” using its discount window to lend to banks. Explain why the resulting large increase in the monetary base has not caused a large increase in the money supply.