

**PART I. QUESTIONS FROM THE LAST SECTION OF THE COURSE
(80 points total; about 60 minutes total)**

Question 1 (40 points; 30 minutes)

Suppose the following equations describe the short-run economy.

$$\begin{array}{ll} C = 350 + 0.8Y^D & IM = 0.22Y \\ T = -500 + 0.10Y & V = 1,950 + 1,000i \\ I = 2,500 - 15,000r & \pi^e = 2 \text{ percent } (0.02) \\ G = 2,000 & M^s = 500 \\ GX = 500 - 10,000r & P = 100 \end{array}$$

A) (10 points) Suppose the Fed follows a money supply rule, setting the nominal money supply. What is the equilibrium real interest rate and real GDP? Put a box around your IS equation. Put a box around your LM equation. Put a box around your final answer. Show your work or no points.

B) (10 points) Now suppose the Fed decides to increase the nominal money supply. Explain the process by which the economy adjusts to a new equilibrium price level, real interest rate, and real GDP. (This part does not use the numbers in part A.) Supplement your explanation with a graph.



Now suppose instead that the Fed follows a simple Taylor rule. The C, T, I, G, GX, and IM equations from page 1 still describe the economy. In addition, the baseline or “normal” interest rate is 2 percent (use 0.02), and the target inflation rate is 2 percent (use 0.02). Whenever the actual inflation rate is 1 percentage point above the Fed’s target, the Fed raises the real interest rate by $\frac{1}{2}$ percentage point. Suppose further that the natural rate of unemployment is 4 percent and potential output is 10,500.

- C) (10 points) If the actual inflation rate is 2 percent, what unemployment rate will the Fed’s monetary policy generate? Show your work or no points.
- D) (6 points) Suppose instead that prices are not changing; prices are constant. In this case, what will unemployment be? Show your work or no points.
- E) (4 points) Using the axes at right, draw the monetary policy reaction function. Using your answers in parts (C) and (D), label two points on the graph.



Question 2 (25 points; 19 minutes)

Suppose that the economy is initially in equilibrium in the short run with the actual unemployment rate, u_1 , equal to the natural rate of unemployment (u^*) and also equal to the unemployment rate (u_0) that is generated when the Fed sets the real interest rate equal to the Fed’s notion of its baseline or “normal” rate, r_0 . In addition, the actual inflation rate π_1 is equal to the Fed’s target inflation rate (π^t) which also equals the expected inflation rate (π^e). Suppose the Fed follows a simple Taylor rule when setting its interest rate target.

- A) (10 points) Suppose an increase in consumer wealth leads to an increase in baseline consumption. Suppose inflationary expectations are static. What is the effect on the inflation and unemployment rates? Explain the process by which the economy adjusts from the initial equilibrium to the new equilibrium. Draw a graph at right to supplement your answer.



- B) (8 points) Suppose instead that inflationary expectations are adaptive. In this case, what effect would the rise in consumer wealth have on unemployment and inflation over time? Explain your answer. Supplement your answer with a graph.

- C) (7 points) Suppose instead that inflationary expectations are rational. (Suppose that expectations are what Prof. Olney called “crystal ball” expectations, where everyone accurately predicts the future.) In this case, what effect would the rise in consumer wealth have on unemployment and inflation? Explain your answer. Supplement your answer with a graph.

Question 3 (15 points; 11 minutes)

With online shopping (rather than traditional in-store shopping), merchants can more quickly and easily change their prices in reaction to changes in production costs or demand conditions.

- A) (5 points) Using the axes at right, show the effect on the Phillips Curve of the now-popular online shopping. Label the initial curve PC_A and label the new Phillips Curve PC_B . Why does the popularity of online shopping have an effect on the Phillips Curve?
- B) (5 points) Suppose expectations are static. Comparing before and after the adoption of online shopping, would the increase in baseline consumption in Question 2 have a larger, smaller, or the same effect on the inflation rate? Would the increase in baseline consumption in Question 2 have a larger, smaller, or the same effect on the unemployment rate? Briefly, explain your answers. (You may need to sketch a graph

to help you answer the question, but the graph won't be graded; just your answers and explanation will be graded.)

- C) (5 points) Suppose instead that expectations are rational. Comparing before and after the adoption of online shopping, would the increase in baseline consumption in Question 2 have a larger, smaller, or the same effect on the inflation rate? Would the increase in baseline consumption in Question 2 have a larger, smaller, or the same effect on the unemployment rate? Briefly, explain why. (You may need to sketch a graph to help you answer the question, but the graph won't be graded; just your answers and explanation will be graded.)

**PART II. QUESTIONS FROM ANY PART OF THE COURSE
(60 points total; about 50 minutes total)**

Question 4 (10 points; 7 minutes)

According to the article "Nicely Taylored" available online at economist.com, John Taylor says the Fed's target inflation rate is 2 percent and their target nominal Federal Funds rate is 4 percent. But currently the nominal Federal Funds rate is only 2.25 percent. In the statement issued by the Fed after the December 14 FOMC meeting, they wrote: "With underlying inflation expected to be relatively low, the Committee believes that policy accommodation can be removed at a pace that is likely to be measured." What does that quote seem to say about recent FOMC decisions? What does it imply with regard to what the Fed is likely to do at its February 2 FOMC meeting? And what does all of that imply with regard to how closely the Fed actually follows the Taylor rule?

Question 5 (20 points; 15 minutes)

Consider again the rise in baseline consumption discussed in Questions 2 and 3. Now suppose the rise in baseline consumption is permanent. Consider the long-run effects of the rise in baseline consumption.

- A) (10 points) What effect will the rise in baseline consumption have on real interest rates and investment in the long run? Carefully explain your answer. Supplement it with a graph.



B) (5 points) Using the graph of the Solow model, show the effect of the rise in baseline consumption on the standard of living. Briefly explain your result.



C) (5 points) What effect would the rise in baseline consumption have on the growth rate of the standard of living from generation to generation? Explain your answer.

Question 6 (30 points; 22 minutes)

Suppose the economy is initially in long-run balanced-growth equilibrium. Suppose in the long run, the flows of funds are equal, with saving equal to investment. And suppose in the short run, the unemployment and inflation rates are stable. Because of this stability, expectations are static.

Now suppose that government spending for education rises.

A) (10 points) In the short run, what effect will the rise in government spending for education have on the inflation and unemployment rates? Explain.

B) (10 points) In the long run, what effect will the rise in government spending for education have on the real interest rate and on private investment spending? Explain.

C) (10 points) In the very long run, what effect will the rise in government spending for education have on the standard of living and its growth rate? Explain.

The Comprehensive Essay Question

Congratulations! You've just been hired as a staff writer by The Economist magazine. What a great job! Your new boss admires your Cal education, and wants you to use your knowledge of macro to help general readers understand the long-run and short-run causes and implications of the fall of the dollar. Your article will be read by folks who have little detailed knowledge of economic theory. Don't use lingo (MPRF is lingo; "Federal Reserve monetary policy" is not). Graphs may not help; non-economists might not understand them. But do explain things clearly and highlight relevant assumptions. Here is your boss's memo to you.

Welcome to The Economist. Please prepare an article on the long-run and short-run causes and implications of the fall of the dollar. Because this is your first article for us, I pose some questions below and suggest you use them as an outline for your article. By the way, the next FOMC meeting is Tuesday December 14. It would be best if your article reflected what the Fed decided at that meeting.

- ▶ Recent reports on the U.S. economy have been somewhat mixed. Business Week reports: "Taken together, recent data point to modest, though not especially strong, growth ahead for the U.S. economy." Personal saving is at an all-time low. Prices seem to be rising at a higher rate than in recent years. Please begin your report by describing current economic conditions, especially those relevant to the rest of your article.
- ▶ What are the causes and consequences in the short run of a decline in the dollar? In this section, be sure to explain what factors may be responsible for the dollar's decline, be sure to define your terms (in particular, not every reader immediately knows what "the exchange rate" is, for instance), and explain how the dollar's decline can affect unemployment and inflation in the short run.
- ▶ In your next section, I think you should turn to the long-run implications of a decline of the dollar. What can we say about the long-run causes and consequences of the dollar's decline?
- ▶ So what can the Fed do? And should it do anything? Here, I'd like to see a good discussion of what determines Fed policy, why a decline in the dollar may (or may not) be something that they take into account in setting policy, and how their policy decisions will affect the economy.
- ▶ The speculative part of your article can come next. Everyone is talking about "what if foreigners tire of funding U.S. borrowing?" Explain for our readers why foreigners may stop lending despite rising domestic interest rates. What would happen in the U.S. economy in the short run and the long run if foreigners kept their wealth out of the U.S.? Should Americans be afraid, or not?
- ▶ Now that you've no doubt frightened your readers, you should give them some actions they could take, or that they could encourage others to take, that could alleviate their fears. Is the fate of the American economy completely in the hands of foreign investors? Or do Americans control their own fate?
- ▶ Finally, end with your thoughts on what will probably happen in the next year or so, and why.