

Question 1 (10 points; 7 minutes)

In 2009, the money stock in the U.S. grew 20 percent. Some said, "Oh no! Inflation will be very high!!" Use the Quantity Theory of Money to explain (a) why some people made this prediction for inflation, and (b) why they were wrong.

Question 2 (10 points total; 7 minutes total)

- A. (7 points) What does a yield curve depict? Using the axes at the right, draw a normal yield curve. Be sure to include labels.
- B. (3 points) Why are predictions from the long-run flexible-price model relevant to the yield curve?

Question 3 (20 points total; 14 minutes total)

Using the standard equations, the equilibria conditions are

$$Y = \frac{C_0 - C_y T_0 + I_0 + G_0 + GX_0 + X_f Y^f + X_\varepsilon \varepsilon_0 + X_\varepsilon \varepsilon_r r^f - IM_0}{1 - C_y(1-t) + IM_y} - \frac{I_r + X_\varepsilon \varepsilon_r}{1 - C_y(1-t) + IM_y} r$$

and

$$r = \frac{C_0 - C_y T_0 + I_0 + G_0 + GX_0 + X_f Y^f + X_\varepsilon \varepsilon_0 + X_\varepsilon \varepsilon_r r^f - IM_0 + (C_y(1-t) - IM_y - 1)Y^*}{I_r + X_\varepsilon \varepsilon_r}$$

- A. (4 points) Using calculus, show the effect in the **long run** of an increase in ε_0 .
- B. (4 points) Using calculus, show the effect in the **short run** of an increase in ε_0 .
- C. (8 points) In words, describe the process by which an increase in ε_0 has the effect you predicted in part (B).
- D. (4 points) Why does an increase in ε_0 have no effect on GDP (Y) in the long run?

Question 4 (15 points; 10 minutes)

Suppose the economy can be described by the following equations. All values are billions of dollars per year. To make the math easier, interest rates are expressed as whole numbers not decimals (when $r = 8\%$, use 8, not 0.08).

$$C = 1,000 + 0.8Y^D$$

$$T = 0 + 0.2Y$$

$$I = 2,000 - 100r$$

$$G = 3,000$$

$$GX = 4,000 - 200r$$

$$IM = 1,000 + 0.24Y$$

$$\text{potential GDP} = 12,000$$

r set in the short-run by the monetary authorities (central bank, in the US the Fed) = 8 percent

In the short run, is there an unemployment problem in this economy? Show all your work and be sure you are clear in explaining how you arrived at your answer to this question.

Question 5 (16 points; 11 minutes)

In Problem Set 4, we explored the implications of a balanced budget rule: $G = T$. When $G = T$ and we have our usual

tax equation, then G changes with income. That is, $G = f(Y)$. We saw in PS4 that imposing this balanced budget rule had two effects. [A] It increased the size of the multiplier. And [B] It made a tax cut (a decrease in T_0) contractionary (decreasing GDP) rather than the usual result of expansionary (increasing GDP).

If instead we alter the standard model and make not government spending (G) but investment (I) a function of Y , do we come to the same conclusions as we did in PS4? That is, assume the investment equation is

$$I = I_0 + I_Y Y - I_r r$$

Address each part of our PS4 conclusion separately below. Be thorough and clear.

- A. (8 points) Does this alternative investment function increase the size of the multiplier? Explain.
- B. (8 points) Does this alternative investment function make tax cuts contractionary rather than the usual result of expansionary? Explain.

Question 6 (29 points; 20 minutes)

The United Kingdom (UK) is about to exit the European Union (EU). That is what “Brexit” means: Britain’s exit from the EU. Even though the pending exit has been known since June 2016, there is no agreed-upon plan as to what will happen. There is massive uncertainty especially regarding international trade (between the UK and the EU) and international finance (again, between the UK and the EU).

For this question, take the perspective of someone living in the UK. “Domestic” refers to the UK. “International” or “foreign” refers to any place other than the UK.

- A. (4 points) What is the effect of increased uncertainty on investment spending? Why?
- B. (4 points) The uncertainty associated with Brexit has decreased foreign demand for UK financial assets, *ceteris paribus*. Using the standard equation for the exchange rate, $\varepsilon = \varepsilon_0 - \varepsilon_r (r - r^f)$, how would you show the effect of the increased uncertainty? Defend your answer.
- C. (7 points) In the long run, what is the effect on interest rates and investment of the combination of the two effects you outlined in parts (A) and (B)? Explain. Include a relevant graph.
- D. (7 points) Suppose another effect of Brexit is to decrease the responsiveness of international wealth-holders to changes in UK interest rates, ε_r . Would the long-run effect of the change in investment spending (part A) on interest rates be greater or smaller than you predicted in part C? Explain.
- E. (7 points) Again, suppose another effect of Brexit is to decrease the responsiveness of international wealth-holders to changes in UK interest rates. Would the size of the short-run effect of the change in investment spending (part A) on GDP be affected by this change in ε_r ? Explain.