Economics 304 Fall 2017

Homework Set #7 Due: 9am, Friday, December 1

1. For many years, the economy of Reedia has thrived based on exports of reedium, a rare and expensive mineral that is a key raw material used in telepathic projectors. Reedia is a small, open economy with perfectly open capital markets. Its central bank Reedbank maintains a fixed exchange rate for its currency, the veriton.

a. In 2050, projector producers switch to whitmanum, a new, cheaper substitute material that also avoids stress-inducing side effects that have been attributed to reedium. World demand for reedium plummets. Use the *IS/TR/IFM* and *AD/AS* diagrams to analyze the effects on the Reedian economy in the short run.
b. Frederica Farmer, the Minister of Agriculture, has argued that the shift from reedium production will favor the country's agricultural exports. Is she correct? Why?
c. Reedbank and the Reedian government have several options to cope with the situation. Analyze (using the graphs) the impact of each of the following choices in the short run and long run:
    1) Do nothing
    2) Use fiscal policy to attempt to stabilize output
    3) Change the exchange rate (devalue or revalue, but keep it fixed after that)
    4) Float the veriton
d. Which would you recommend and why?

2. Given that the Taylor Rule is expressed (here) in terms of the nominal interest rate i, why must a be greater than one? (Hint: If $a < 1$, what would happen to the real interest rate $r = i - \pi$ when the central bank responded to a one-unit increase in π? How would this affect spending? Would this be the effect that the Fed desired?)

3. Early in the semester, we characterized the long-run equilibrium of a macroeconomy by a few key conditions, including

$$Y = \overline{Y}$$
$$u = \overline{u}$$
$$M = kPY$$
$$i = r + \pi$$
$$\frac{\Delta S}{S} = \pi^* - \pi$$
$$i = i^* - \frac{\Delta S}{S}$$

Consider the case of an increase in the central bank's inflation target ($\overline{\pi}$) under floating exchange rates.

a. Show the change in the economy's long-run equilibrium in both the *IS*/*TR*/*IFM* and *AS*/*AD* diagrams and show that these equilibria conform to the relevant long-run equations above.
b. What must happen to the rate of money growth in the long run? Why?

4. Suppose that Alopecia is a small, open economy with a floating exchange rate. Following the election of protectionist president Leika Q. Ball, Alopecia enacts high tariffs on imports. These tariffs make imports more expensive and therefore cause Alopecia's net export function to shift upward: net exports are larger (more positive) for given values of the foreign and domestic incomes and the exchange rate. Trace the short-run and long-run effects on the Alopecian economy using the *IS*/*TR*/*IFM* and *AS*/*AD* diagrams. Then use your analysis to evaluate the following statements:

a. Alopecia will have higher GDP in the short run.
b. Alopecia will have higher GDP in the long run.
c. Alopecia will have larger net exports in the short run.
d. Alopecia will have larger net exports in the long run.
e. Alopecia's exchange rate will be unchanged in the long run.