PSET 2: Applied International Macroeconomics

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In this problem set we extend our basic understanding of the basic model of Lecture 5 to a world with two countries. You are more than welcome to work on this PSET with your classmates, but I need an individual upload of the solution to this PDF on Brightspace.

1 A two-country world with complete markets

Consider a two country (domestic and foreign) version of our small open economy model with complete markets analyzed in Lecture 5. Suppose that preferences are logarithmic and that countries have the same discount factor. We will use star superscripts to denote the foreign country variables. Since this is a two-country model, the following world output constraints will hold:

$$c_1 + c_1^* = y_1 + y_1^* \equiv y_1^W,$$

$$c_2^A + c_2^{A*} = y_2^A + y_2^{A*} \equiv y_2^{AW},$$

$$c_2^B + c_2^{B*} = y_2^B + y_2^{B*} \equiv y_2^{BW},$$

where a superscript "W" denotes world quantities. Notice that we have relabeled states "high" and "low" as "A" and "B," respectively. (The reason is that if, for instance, there is no aggregate uncertainty, then when domestic output is high, foreign output will be low and vice versa). In this context (in all cases explain the intuition behind your results):

- 1. Derive first-order conditions and show that the ratio of consumption across states of nature is the same at home and abroad. (HINT: Notice that the consumers' maximization in each country will be the same as in Lecture 5. What is different now is that world output constraints must hold and that the world real interest rate will be an endogenous variable.)
- 2. Derive equilibrium expressions for q_A and q_B . Explain the intuition behind these expressions.
- 3. Derive a reduced-form solution for the world real interest rate. Explain the intuition.
- 4. Show that consumption as a proportion of world output is constant across time and states of nature in both countries. Explain the intuition.