

SIMON FRASER UNIVERSITY  
Department of Economics

Econ 446  
Seminar in International Finance

Prof. Kasa  
Spring 2022

PROBLEM SET 1  
(Due February 3)

1. (10 points). Consider a 2-period world economy consisting of two countries. Each has preferences

$$U(C_1, C_2) = \sqrt{C_1} + \sqrt{C_2}$$

The Home country has endowments  $Q_1 = 1$  and  $Q_2 = 2$ . The Foreign country has endowments  $Q_1^* = 2$  and  $Q_2^* = 1.3$ . Both countries have open capital markets, and both begin with zero net foreign assets.

- (a) Compute the equilibrium world interest rate. (Hint: Equilibrium requires  $S(r) + S^*(r) = 0$ , where  $S(r)$  and  $S^*(r)$  are the Home and Foreign saving functions, e.g.,  $S(r) = Q_1 - C_1(r)$ .)
  - (b) Given this interest rate, what are the equilibrium values of Home consumption,  $C_1$  and  $C_2$ . Use the above utility function to then compute Home utility.
  - (c) Now suppose the Foreign country experiences a higher growth rate. In particular, suppose  $Q_2^* = 2.5$ , with all other endowments remaining the same. What is the new world interest rate? What is Home utility now? Is Foreign growth good or bad for the Home economy? Explain.
2. (10 points). Consider a 2-period model of a small open production economy (i.e., the economy can now invest, but the world interest rate is still exogenous). Assume preferences are

$$\ln(C_1) + \ln(C_2)$$

where  $\ln$  denotes the natural logarithm. Assume that the initial stock of capital is 100 (i.e.,  $K_1 = 100$ ), and the production function in both periods is

$$Q = \sqrt{K}$$

For simplicity, assume that capital completely depreciates during the period, so that  $\delta = 1$ . Finally, assume the world interest rate is constant at 10% ( $r^* = .10$ ), and the economy's initial net foreign assets are zero (i.e.,  $B_0^* = 0$ ).

- (a) Compute the firm's optimal investment during period 1, and its resulting period 2 profits,  $\Pi_2$ .
  - (b) Solve for the household's optimal consumption in periods 1 and 2.
  - (c) Using the fact that  $CA_1 = S_1 - I_1$ , compute the first period current account balance.
3. (10 points) Using whatever software you want, report time-series plots of the current account, as a fraction of GDP, for Canada, the USA, and China. If you can, go back to at least 1990. If you cannot find the data, let me know, and I will send it to you.