Problemset 2

International Macroeconomics (Master)

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Exercise 1: Basic Model

Consider a small open economy inhabited by a representative household that maximizes a two–period lifetime utility function

$$U(C_1, C_2) = u(C_1) + \beta u(C_2) \tag{1}$$

subject to the intertemporal budget constraint

$$C_1 + \frac{C_2}{1+r} = Y_1 + \frac{Y_2}{1+r}. \tag{2}$$

(a) Give a brief intuition for the intertemporal budget constraint.

(b) Assume that the instantaneous utility function is given by $u(C_t) = \ln(C_t)$. Solve the representative household's optimization problem. Derive optimal consumption in period 1 and 2 as a function of lifetime income (i.e., wealth).

(c) Calculate the primary current account in both periods. What do you observe?

(d) How does the primary current account today react to changes in income?

(e) Show that $\beta = \frac{1}{1+r}$ implies complete consumption smoothing. What happens if $\beta > \frac{1}{1+r}$?

Exercise 2: Elasticity of Intertemporal Substitution (EIS)

(a) Define the elasticity of intertemporal substitution σ. Is there a link between the concept of relative risk aversion and the EIS of consumption?

(b) Consider the utility function given in (1) and assume the following instantaneous utility function (i.e., isoelastic utility function)

$$u(C_t) = \begin{cases} \frac{C_t^{1-\rho}-1}{1-\rho} & \rho \neq 1 \\ \ln(C_t) & \rho = 1. \end{cases} \tag{3}$$

Verify that σ is constant.

(c) Still consider the same utility function. If you assume that households are utility maximizing, how can you reinterpret the EIS?

(d) What are empirically relevant values for σ?