1. Current account and balance of payments

Here are some questions concerning the concepts of current account and balance of payments.

a) Explain the concepts of “current account” and “balance of payments”. What are the components in the current account?

b) What can a country do to reduce a current account deficit?

c) Some people recommend restrictions on imports from foreign countries to reduce the home country’s current account deficit. How would higher barriers to imports affect the country’s private saving, domestic investment, and government deficit? Do you agree that import restrictions would necessarily reduce the country’s current account deficit?

1 Blanchard & Illing (2009), Kapitel 18, or Krugman & Obstfeld (2008), Chapter 12.

2. The Marshall-Lerner condition

Derive the Marshall-Lerner condition. Apply this condition to explain the evolution of US current account.

Obstfeld & Rogoff (1996), Chapter 1, Appendix 1A.

3. The current account: An intertemporal approach

Consider a small open economy which lasts for two periods. There’s only one commodity that is tradable but cannot be stored, and in each period the representative household is endowed

1Readers may find the following literature helpful to read before attempting to solve this problem.
with \( y_1 \) and \( y_2 \) of such good. The representative household has a perfect foresight and is able to borrow or save at a constant real interest rate in the first period. The exogenous world market interest rate is given as \( r \).

**a)** Derive the intertemporal budget constraint for the representative household.

**b)** The household maximizes its utility, which is defined as the sum of periodical utility functions of consumption \( U = u(c_1) + \beta u(c_2) \) with discount factor \( \beta \in (0, 1) \). Derive the intertemporal Euler equation and interpret your result.

Assume that the economy as a whole cannot borrow from abroad (so-called “financial autarky”). Using the utility function \( U = u(c_1) + \beta u(c_2) \)

**c)** Determine the optimal consumption for both periods, and the domestic equilibrium real interest rate (so-called “autarky rate”).

Now suppose that the economy is able to borrow from abroad at any exogenous world interest rate, given that its budget constraint holds

**d)** Determine the optimal consumption for both periods. Under which condition the household consumes equal amount in each period?

**e)** Interpret the maximization problem graphically. Compare representative household’s utility in autarky with that under perfect capital mobility and world market interest rate lower than the autarky rate.

**f)** Suppose \( y_1 = y_2 \) and \( U = \ln(c_1) + \beta \ln(c_2) \). Under what condition there is a current account surplus for the first period? Under what condition there’s no additional benefit from the intertemporal trade with the rest of the world, comparing with the outcomes under autarky?

**g)** Suppose \( \beta = \frac{1}{1+r} \) and \( y_1 = y_2 \). How does the current account change under a (i) permanent, (ii) temporary income shock?

**h)** How will the household’s saving decision and consumption in each period after a rise in the world interest rate, if present and future consumption are normal goods? (Distinguish between two cases: (i) a household that has saved with the original interest rate, (ii) a household that has been originally in debt)

[Obstfeld & Rogoff (1996), Chapter 1, or Végh (forthcoming) Chapter 2-2 and 2-4.]

### 4. The current account: An intertemporal approach (cont’d)

Consider the same model of a small open economy as in Problem 3. Now suppose that the period 2 good \( y \) is endogenous. The representative household has an exogenous capital stock \( K_1 \) at the beginning of the first period and may choose to increase the capital stock in period 2 by raising investment and reducing consumption of the first period. At the end of period 2
the capital stock $K_3$ is zero. The depreciation rate is constant at $\delta$. The net foreign debts at the beginning of the first period and the end of the second period are zero. The production function is $F(K) = AK^\alpha$, and the world interest rate is $r$.

a) Derive the intertemporal budget constraint.

b) Derive the conditions for the optimal consumption and investment.

c) Calculate the optimal capital stock for period 2.

d) Explain the optimal consumption and production decisions graphically, for the case in which the autarky real interest rate is higher than the world interest rate. Find the current account.


5. The No-Ponzi-Game Condition

Consider a small open economy for an infinite time horizon. There’s only one commodity that is tradable but cannot be stored, and in each period $t$ the representative household receives an endowment $y_t$ of this good. The representative household has perfect foresight and has the ability to access financial market, i.e. to borrow or save at a constant real interest rate in each period. The net foreign debt at the beginning of the world, i.e. period 0, is $W_0$, and the world interest rate is exogenously given at $r$.

a) Derive the intertemporal budget constraint.

b) What does No-Ponzi-Game Condition mean in this case?

c) Under No-Ponzi-Game Condition, can a country make a permanent trade deficit? Examine the case for a constant world interest rate $r = 0.1$ and a given net foreign assets $W_0 = 30$. Assume that the trade deficit is constant, how high can it be in each period?

d) Under No-Ponzi-Game Condition, can a country afford a sustained current account deficit?


References

