EC201 Macroeconomics 2, Term 1 2025
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Support and Feedback Class 2 (week 4)
Current Account Sustainability and Determination

A. Pre-Class Review Questions

1. **Sustainability:** Indicate whether the following statements are true, false, or uncertain and explain why.

   (a) An economy that starts with a positive net international investment position will run a trade balance deficit at some point.

   (b) The fact that over the past quarter century the United States has run larger and larger current account deficits is proof that American house- hold savings have been shrinking.

2. **CA and TB Determination:** Consider a two-period small open endowment economy populated by a large number of households with preferences described by the lifetime utility function:

$$U(C_1, C_2) = C_1^{\frac{1}{10}} C_2^{\frac{1}{11}}$$

   where C_1 and C_2 denote, respectively, consumption in periods 1 and 2. Suppose that households receive exogenous endowments of goods given by $Q_1 = Q_2 = 10$ in periods 1 and 2, respectively. Every household enters period 1 with some debt, denoted B_0^*, inherited from the past. Let B_0^* be equal to -5. The interest rate on these liabilities, denoted r_0, is 20 percent. Finally, suppose that the country enjoys free capital mobility and that the world interest rate on assets held between periods 1 and 2, denoted r^*, is 10 percent.

   (a) Compute the equilibrium levels of consumption, the trade balance, and the current account in periods 1 and 2.

   (b) Assume now that the endowment in period 2 is expected to increase from 10 to 15. Calculate the effect of this anticipated output increase on consumption, the trade balance, and the current account in both periods. Compare your answer to that you gave for item (a) and provide intuition.

   (c) Finally, suppose now that foreign lenders decide to forgive all of the countryÕs initial external debt. How does this decision affect the country's levels of consumption, trade balance, and current account in periods 1 and 2. (For this question, assume that $Q_1 = Q_2 = 10$.) Compare your answer to the one you gave for item (a) and explain.

B. In-Class Questions

1. Consider a two-period model of a small open economy with a single good each period and no investment. Let preferences of the representative household be described by the utility function:

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

The parameter β is known as the subjective discount factor. It measures the consumerÕs degree of impatience in the sense that the smaller is β, the higher is the weight the consumer assigns to present consumption relative to future consumption. Assume that $\beta = 1/1.1$. The representative household has initial net foreign wealth of $(1 + r_0)B_0^* = 1$, with $r_0 = 0.1$, and is endowed with $Q_1 = 5$ units of goods in period 1 and $Q_2 = 10$ units in period 2. The world interest rate paid on assets held from period 1 to period 2, r^*, equals 10% (i.e., $r^* = 0.1$) and there is free international capital mobility.

   (a) Calculate the equilibrium levels of consumption in period 1, C_1, consumption in period 2, C_2, the trade balance in period 1, TB_1, and the current account balance in period 1, CA_1.

   (b) Suppose now that the government imposes capital controls that require that the country's net foreign asset position at the end of period 1 be nonnegative $B_1^* \geq 0$. Compute the equilibrium value of the domestic interest rate, r_1, consumption in periods 1 and 2, and the trade and current account balances in period 1.

   (c) Evaluate the effect of capital controls on welfare. Specifically, find the level of utility under capital controls and compare it to the level of utility obtained under free capital mobility.

   (d) For this question and the next, suppose that the country experiences a temporary increase in the endowment of period 1 to $Q_1 = 9$, with period 2 endowment unchanged. Calculate the effect of this output shock on C_1, C_2, TB_1, CA_1, and r_1 in the case that capital is freely mobile across countries.

   (e) Finally, suppose that the capital controls described in part (b) are in place. Will they still be binding (i.e., affect household behavior)?

C. Self-study questions

1. **Trade Balance and Current Account.** Consider a two-period economy that has at the beginning of period 1 a net foreign asset position of -100. In period 1, the country runs a current account deficit of 5 percent of GDP, and GDP in both periods is 120. Assume the interest rate in periods 1 and 2 is 10 percent.

   (a) Find the trade balance in period 1 (TB_1), the current account balance in period 1 (CA_1), and the countryÕs net foreign asset position at the beginning of period 2 (B_1^*).

   (b) Is the country living beyond its means? To answer this question find the country's current account balance in period 2 and the associated trade balance in period 2. Is this value for the trade balance feasible? [Hint: Keep in mind that the trade balance cannot exceed GDP.]

   (c) Now assume that in period 1, the country runs instead a much larger current account deficit of 10 percent of GDP. Find the country's net foreign asset position at the end of period 1, B_1^*. Is the country living beyond its means? If so, why?

2. **Is it good to force saving a lot in a growing economy?** Consider a two-period model of a small open endowment economy populated by households with preferences given by:

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

where C_1 and C_2 denote consumption in periods 1 and 2, respectively. HouseholdsÕ endowments are 5 units of goods in period 1 and 10 units of goods in period 2. Households start period 1 with a zero net asset position and the world interest rate is zero, $r^* = 0$.

(a) Find consumption in periods 1 and 2, the country's net foreign asset position at the end of period 1, and the trade balance in periods 1 and 2. Provide intuition for your findings.

(b) Find the level of welfare in the economy.

(c) Now assume that the government announces in period 1 that a strong nation is one with a positive net foreign asset position and that therefore the country must save more. In particular, the government enforces that the net foreign asset position at the end of period 1 is positive and equal to 2. That is, the government imposes capital controls of the form $B_1^* \geq 2$. Find the domestic interest rate that supports this allocation.

(d) Find the level of welfare under capital controls and compare it to the level of welfare under free capital mobility.