

Economics W4505  
**International Monetary Theory and Policy**  
Spring 2010  
Homework 2  
Due February 4, in class

**Capital controls**

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  $\beta$  is known as the subjective discount factor. It measures the consumer's degree of impatience in the sense that the smaller is  $\beta$ , 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. f

1. 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,  $CA_1$ .
2. 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.
3. 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.
4. 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.
5. Finally, suppose that the capital controls described in part (b) are in place. Will they still be binding (i.e., affect household behavior)?