
14.02 Principles of Macroeconomics
Problem Set 5
Fall 2005

Posted: Wednesday, November 16, 2005
Due: Wednesday, November 23, 2005

Please write your name AND your TA's name on your problem set. Thanks!

Exercise I. True/False? Explain

- 1) Depending on expectations, a contractionary fiscal policy can reduce the budget deficit without a decrease of the output level.
- 2) Tradable goods prices are a better measure of the degree of openness of an economy than trade volume.
- 3) In the medium run equilibrium, the current account has to be balanced.
- 4) If the uncovered interest parity does not hold, it surely means that there is an arbitrage opportunity.
- 5) The higher the degree of openness of an economy, the less of an effect a domestic expansionary fiscal policy has on the output level.

Exercise II. Exchange Rates and the Interest Parity Condition

Assume that the uncovered interest parity holds.

European bonds		US bonds	
maturity	i^*	maturity	i
1-y	0.02	1-y	0.036
2-y	0.02	2-y	0.04
3-y	0.0225	3-y	0.0425
4-y	0.035	4-y	0.044
5-y	0.025	5-y	0.045

- 1) Knowing that the current exchange rate between dollar and euro E_t is 0.85 (euros per 1 dollar), calculate the market expectation about the nominal exchange rate for the next 5 years $(E_{t+1}^e, E_{t+2}^e, E_{t+3}^e, E_{t+4}^e, E_{t+5}^e)$. (HINT: You may want to use a spreadsheet to do the calculations.)
- 2) Assume that the price indexes are $P_t^* = 0.99$ for Europe and $P_t = 1.32$ for the US. Calculate the current bilateral real exchange rate between the US and Europe, ε_t .

- 3) Suppose that in the next 5 years inflation rates are expected to be fixed at $\pi^* = 2\%$ in Europe and at $\pi = 3\%$ in the US. Calculate the market expectations for the real exchange rate for the next 5 years.
- 4) Keeping everything else constant, how does your answer change if the market expects $\pi^* = 3\%$ and $\pi = 2\%$ instead? Is the assumption to keep everything else constant plausible? Explain.

Exercise III. Open Economy IS-LM

Consider the following open economy:

$$C = 100 + 0.2(Y - T)$$

$$I = 100 + 0.2Y - 240r$$

$$IM = 0.1Y\varepsilon + 24\varepsilon^2$$

$$X = 0.02Y^* - 24\varepsilon$$

$$T = 50$$

$$G = 50$$

$$Y^* = 5000 \text{ (GDP of the rest of the world)}$$

$$M^s = 200$$

$$M^d = PY - 3600i$$

Suppose that $P = P^* = 1$ and that there is no inflation $\pi^* = \pi = 0$.

- 1) Assume the economy commits to having a trade balance (net exports) equal to zero (TB=0). Calculate the equilibrium (Y , r , ε).
- 2) If $r^* = 0.02$ and the uncovered interest parity holds, what is the expected change in the real exchange rate for the next period?
- 3) Keep TB=0 and imagine that G increases by 48. Calculate the new equilibrium. How does your answer to part 2) change?
- 4) Assume $G=50$ as in the beginning of this question. Imagine the economy commits to having a fixed real exchange rate $\varepsilon_t = \varepsilon_{t+1} = \varepsilon$ and allows the trade balance to vary. Calculate the equilibrium.
- 5) Imagine that G increases by 48. Assume that the Central Bank does not accommodate this policy, (i.e. the CB does nothing). Calculate the new equilibrium. How does the TB change? Comment. (HINT: The government still wants to keep $\varepsilon_t = \varepsilon_{t+1} = \varepsilon$, but they could change the value of ε).
- 6) Assume $G=50$ again. How does a decrease in Y^* by 2400 affect the equilibriums you calculated in part 1) and part 3), respectively? Comment.