New Economic School
Macroeconomics 2

Problem set 4

Instructor: Andrei Sarychev

Due on November 1st before sections

1. **True, False, Uncertain. Explain your answer.**

   (a) Budget deficits always cause trade deficits.

   (b) The only way a country can eliminate an equilibrium trade surplus is through a painful appreciation of their currency, which reduces equilibrium income.

   (c) If under fixed exchange rate regime domestic inflation is higher than foreign inflation, and the Marshall-Lerner condition holds then net exports will fall sharply.

2. **Fiscal coordination.** Consider 2 adjacent economies which only trade with each other, described by the following equations (starred variables refer to the foreign country):

$C = 10 + 0.6\,(Y - T)$	$C^* = 5 + 0.3\,(Y^* - T^*)$
$G = 10$	$G^* = 5$
$T = 10$	$T^* = 10$
$Q = Y/10$	$Q^* = Y^*/10$
$X = 0.1Y^*$	$X^* = 0.1Y$

   There is no investment. For this reason, assume also that there are no capital movements between these two countries. Assume also prices are fixed, as is the nominal exchange rate, hence we can normalise the real exchange rate at 1.

   (a) Compute the equilibrium outputs in the two countries (you may assume that each country takes the other country's output as given, not taking into account the influence of imports on that). Compute the trade balance of each country.

   (b) By how much should countries increase their spending G, G^*, to achieve target levels of output at 40 and 15, if they decided to act separately?

   (c) What if the governments could coordinate their actions? Would your answer to b) change?

3. **Relaxing Mankiw's interest parity assumption.** Consider a small open economy, assuming now that there is also investment in both countries. Price levels are fixed in this model, so there is no difference between nominal and real exchange rate, denoted by e. Finally, international financial markets are open. The equilibrium conditions are given by

$$\begin{aligned} Y &= C(Y-T) + I(Y,r) + G + NX(Y,Y^*,e) && (1) \\ M/P &= L(Y,r) && (2) \end{aligned}$$

   (a) Instead of assuming that $r \equiv r^*$, write down explicitly the uncovered interest parity condition on e, e^e, r, r^*, that ensures that foreign exchange markets are in equilibirium (you may want to use the approximate version of this condition). Modify it so that e is on the left hand side. Substitute this expression for e into (1). Observe that you have just given an equation for the modified IS curve under openness. It **is** different from the IS* in Mankiw.

   (b) Assume that e^e is exogenously fixed. Analyze the effects of a tax cut on Y, i, e, I, NX. Did the change in exchange rate amplify or reduce the effect of the cut on output?

   (c) How would your analysis in a) change if the exchange rate were fixed??