Seminar in macroeconomics – Open economy, 5th week

1. ! Household expenditures on domestic goods are 3,100, business investment expenditures on domestic goods are 600, household expenditures on foreign goods are 400; government expenditures on foreign goods are 100; total investment of companies is 800; total government expenditures are 1000 and total exports are 900. Calculate GDP and NX.

2. ! Russia imposes restrictions on Czech exports as a retaliatory measure after the sanctions following the Ukrainian crisis
   a) What will be the impact on Czech savings, investment, interest rate, net exports and the exchange rate?
   b) How does the change in the exchange rate affect the number of trips Czech tourists abroad?
   c) The Prime Minister wants to adjust the taxes in order to return the exchange rate to its original level. Should he increase or decrease taxes? If he does so, what will be the overall impact on savings, investment, net exports and interest rates?

3. ☺ Suppose the government of a small open economy decides to impose duties on imports of agricultural production with the intention to reduce its trade deficit.
   a) What will be the impact of this step on the trade balance of the economy?
   b) What will be the impact on the real and nominal exchange rate of the country?
   c) Who profits from such an economic policy, and who loses?

4. ! During the eighties the US decreased taxes and increased defense spending, which resulted in large budget deficits. What were the effects of this policy on investment, net capital exports, trade balance and the real exchange rate in Switzerland. In the same period Belgium had a high budget deficit. What was the impact of Belgian budget deficit on Swiss investments, net capital exports, trade balance and the real exchange rate?

5. ! At the beginning of the 21st century there was a considerable growth of world savings (so-called global savings glut). What was the impact of this change on investment, trade balance and the real exchange rate in the US? Assume that the US is a small open economy (relative to the global economy) and has a trade deficit.

6. ! Use the model of a small open economy to forecast what happens with the trade balance, nominal and real exchange rate due to the following changes:
   a) Households begin to have negative expectations about the future and begin to save more and spend less.
   b) Households start buying foreign cars instead of domestic cars.
   c) A denser network of ATMs reduces the demand for money.

7. ☺ Suppose that the economy is described by the following system of equations:

$$Y = C + I + G + NX \qquad G = 1.000 \qquad T = 1.000 \qquad C = 250 + 0{,}75(Y - T)$$
$$I = 1.000 - 50r \qquad NX = 500 - 500\varepsilon \qquad r = r^* = 5 \qquad Y = 5.000$$

   a) What are national savings, investment, trade balance and equilibrium exchange rate in this economy?
   b) How do the results change if the G rises to 1,250? Interpret the changes.
   c) How will the results change if the global interest rate increases from 5 to 10%? (G is again 1000.) Interpret the changes.

8. ! Suppose the supply of money grows at a yearly rate of 3.5%. Identify and explain what are the long-term effects an increase in the growth rate of money supply to 10.5% per annum for the following variables (where possible provide numerical estimates): annual rate of inflation, real interest rate, nominal interest rate, real exchange rate, nominal exchange rate, investment (ignoring taxes and uncertainty), and real GDP.

9. ! Suppose the price of a Big Mac hamburger is 3.06 dollars in the US and 10.5 yuan in China. Suppose the nominal exchange rate is 8.06 yuan per dollar.
  a) Calculate the real exchange rate.
  b) If the nominal prices remained unchanged in both countries, what would be the long-run values of the real and nominal exchange rates predicted by the theory of purchasing power parity?

10. ☺ Suppose that China exports televisions and uses the yuan as a monetary unit, while Russia exports vodka and uses the ruble as a monetary unit. China has a stable money supply and slow and continuous technological advances in television production. On the other hand, Russia is experiencing a rapid growth in money supply and no technological progress in the production of vodka. Based on this information what would be the predicted development of the real exchange rate (measured as the number of bottles of vodka per television) and the development of the nominal exchange rate (measured as the number of rubles per one yuan)? Explain. (*Hint*: For the real exchange rate, use the relationship between scarcity and relative prices.)

11. ☺ Suppose the nominal interest rate is 8% in the Czech Republic and 12% in the Eurozone. Assume also that all countries have the same real interest rates and that the theory of purchasing power parity holds.
  a) What can you say about inflation expectations in the euro area relative to the Czech Republic?
  b) What will be the expected EUR to CZK exchange rate?
  c) Is it possible profit on the interest arbitrage (on borrowing in the Czech Republic and investing in the Eurozone)?

12. ☺ The reunification of Germany has created many investment opportunities in East Germany. What is the impact of this increase in investment on German net capital exports, trade balance and the exchange rate? In the same period, the German government had to significantly increase spending to pay for the costs of reunification. How does this fact affect the answer to the first question?

13. ☺ The Czech Republic is a small open economy. Suppose we have a trade surplus, and the world interest rate is 3%.
  a) Plot the initial situation in the IS(r) graph and in the NX(ε) graph.
  b) Suppose that the world is rapidly increasing the demand for Skoda cars. For this reason, demand for Czech exports increases. Use the same graphs as in a) to draw the consequence of this change on the Czech NX curve and real exchange rate. What will be the impact on the Czech trade surplus?
  c) In order to help other industries Czech government wants to adjust taxes so as to maintain the real exchange rate at its original level. How should the government change the taxes? Draw again to IS(r) graph and the NX(ε) graph and show what will be the impact of the joint effect of points (b) and (c) on savings, investment, net exports and real interest rate.