Seminar in macroeconomics – Money and inflation, 4th week

1. ☺ What are the three functions of money? Which of these functions are met with the following goods and which are not? a) credit card b) a painting by Rembrandt c) meal ticket to eat Sodexo

2. ☺ Some economic historians say that during the period of the gold standard, new gold deposits were often discovered after long periods of deflation. What could be the reason for it?

3. ! a) Can the real interest rate be negative? Under what circumstances?
b) Can the nominal interest rate be negative?

4. ! Assume that the real rate of return on investment of the project is 5% and the inflation rate is 4%.

a) What is the nominal interest rate based on the Fisher equation?
b) Assume that Bank A charges a nominal interest rate of 8% on the loan. What will happen?
c) Assume that Bank B offers a nominal interest rate on the savings account of 12%. What will happen?

5. ! Suppose three periods in which the nominal interest rates are 5%, 5%, 6%, and the inflation rate is 1%, 2%, 4%.

a) What were the ex-post real interest rates in the three periods?
b) If the expected inflation for each period equals to the actual inflation in the previous period, what are the ex-ante real interest rates?
c) If someone borrows in the second period based on the ex-ante inflation expectations, is she going to be pleasantly or unpleasantly surprised?

6. ! For each of the following events determine the costs of inflation and explain it:

a) Due to the increased inflation, Blue Effect, Ltd. decided to publish a new catalog quarterly instead of annually.
b) A grandmother gets her pension amounting to CZK 10,000 per month until the end of her life from the First retirement Inc. She is surprised that due to high inflation the price level has tripled within a few years.
c) Mary lives in an economy with hyperinflation. On the days she gets paid at work she quickly runs to the store and spends her earnings as fast as she can.
d) Josef lives in an economy with an inflation rate of 10%. Over the last year he earned CZK 50,000 from his one million investments in stock. The tax rate is 20 percent, thus he paid CZK 10,000 in taxes.
e) Your father is telling you that when he was as old as you are now, he worked for an hourly wage of CZK 30. He argues that you are better off when you are paid CZK 100 per hour.

7. ! The velocity of the money is constant in Gondor. The real GDP is growing at a rate of 5% per annum, and the money supply is growing at an annual rate of 14%. The nominal interest rate is 11%. How much is the real interest rate in Gondor?

8. ! What will be the long-term impacts of these changes on the nominal interest rate, the demand for money and the price level?

a) a one-time increase in money supply now
b) a decrease in real interest rates
c) output growth
d) today's announcement about the planned reduction in the growth rate of money supply

9. ! Suppose the demand for money in the country has the form $(M/P)^d = k\mathrm{Y}$, where k is a constant. The money supply is growing at a rate of 12% per year and the real output is growing at a rate of 4% per year.

a) What will the average inflation rate?
b) If the growth rate of real output increases, how would it affect the rate of inflation?
c) Assume that the velocity of money is not constant, but starts increasing thanks to financial innovations. How does it influence the rate of inflation? Explain.

10. ☺ Assume that the money demand function has the form $(M/P)^d = L(i, Y) = Y/(5i)$

a) If the real output is growing at a rate *g*, what will be the rate of growth of the demand for real money balances (assuming constant nominal interest rates)?
b) What is the velocity of money in this economy?
c) Suppose the nominal interest rates and inflation are stable, what will be the rate of change (if any) in velocity of money?
d) What is the effect of an increase in the nominal interest rate on the velocity of money?

11. ☺ Explain the following:

a) What effect has the extension of the ATM network on the demand for money?
b) How do financial innovations affect the ability central banks to conduct of monetary policy?

12. ! Explain how these events influence the monetary base, money multiplier and money supply.

a) The central bank buys bonds on the open market.
b) The central bank increased the reserve rate.
c) The fear of a cyber-attack on banks leads people to keep more money in cash (instead of deposits).
d) The central bank drops recently-printed thousand-crown bills from a helicopter on the Freedom Square in Brno.

13. ☺ Between August 1929 and March 1933 the money supply in the US decreased by 28%. Some economists think that this decrease in the money supply was the main cause of the Great Depression. Now we focus on the causes of this decline. The table shows the basic monetary indicators in the US in this period:

	August 1929	March 1933
Money supply (M)	26.5	19.0
Monetary base (B)	7.1	8.4
Money multiplier (m = M/B)	3.7	2.3
Reserve-deposit ratio (rr = R/D)	0.14	0.21
Currency-deposit ratio (cr = C/D)	0.17	0.41

Money supply in the period 08/1929–03/1933 fell because both *rr* and *cr* have increased over this period. Use the data from the table to answer the following hypothetical questions:

a) What would happen to the money supply if the *cr* increased, but *rr* remained the same?
b) What would happen to the money supply if the *rr* increased, but remained the same *cr*?
c) Which of these changes was more responsible for the decline in the money supply in the US?

14. ☺ Suppose that the monetary base of an economy is CZK 1,000. Calculate money supply for the cases (a) - (d), and then respond to the question in point (e)

a) All the money is held as currency.
b) All the money is held as demand deposits. Banks have a 100% reserve ratio.
c) All the money is held as demand deposits. Banks have a 20% reserve ratio.
d) People hold the same amount as currency and deposits. Banks have a 20% reserve ratio.
e) The central bank wants to increase the money supply by 10 percent. What should be the increase in monetary base in each of the above points.

15. ☺ Suppose that consumption depends on the level of real money balances (because real money balances are part of the wealth). Show that if real money balances depend on the nominal interest rate, then an increase in the rate of growth in money supply affects consumption, investment and real interest rate. Does the nominal interest rate adjust to the expected inflation at a ratio greater than or less than one to one? This deviation from the classical dichotomy and the Fisher effect is called the Mundell-Tobin effect. How would you decide whether this effect is significant in reality?

16. ☺ Suppose you are the Finance Minister of the Banana Republic. You are considering two alternatives: to print your own currency, or to use currency of a larger neighboring country (e.g. the USA). What are the costs and benefits of having own currency? What is the role of political stability in these two countries?