I strongly encourage you to work in groups and discuss your answers and solutions, and write them down for me thereafter. This will save you time AND will improve your understanding of the subject. I do NOT advise you however to work on separate problems and then copy the rest from the other members of the group. This may spoil your exam preparation, as the questions you get on the homeworks will be similar to those you will answer and solve during the exams.

You can find more solutions and class materials at the class web-site. This homework covers the material covered up to and including lecture 12.1. Emphasis is given to the new material.

Problem 1. (10 pts.) Read Chapter 26 from the reader on the Transmission Mechanisms of Monetary Policy. After that, summarize in 3 paragraphs (5-6 sentences each, not more) the following: 1) the structural and reduced-form empirical frameworks for evaluating empirical evidence on monetary policy, their differences, and advantages/disadvantages; 2) the Keynesian evidence on the importance of money and the objections to them; 3) the monetarist evidence. The summary should contain your own words, not the words of the textbook author.

Answer: Answer not applicable here. A criterion for a good grade here is that you show you can extract the most valuable information from the text.

Problem 2. (10 pts.) "In every business cycle in the past 100 years, the rate at which the money supply is growing always decreases before output does. Therefore, the money supply causes business cycle movements.” Do you agree? What objections can you raise against this argument?

Answer: Not necessarily. The timing evidence presented in text is suspect because researchers may have focused on the one variable, the money growth rate, that suggests a relationship between money and the business cycle. Furthermore, instead of interpreting the data to say that the money growth rate leads the business cycle, it is also possible to interpret the data to say that the business cycle leads the money growth rate. What makes this timing evidence more convincing is that some of the episodes in which money growth slows appear to be exogenous events. The fact that recessions followed soon thereafter provides more convincing evidence that there is a link between money and business cycles.

Problem 3. (10pts.) In the 1973-1975 recession, the value of common stocks
in real terms fell by nearly 50%. How might this decline in the stock market have affected aggregate demand and thus contributed to the severity of this recession? Be specific about the mechanisms through which the stock market decline affected the economy.

**Answer:** There are three main mechanisms through which the decline in stock prices could have reduced aggregate demand and contributed to the severity of the recession. First, the decline in stock prices lowered Tobin’s q and might have reduced investment spending. Second, the decline in financial wealth, as a result of the stock price decline, could have caused a drop in consumption because consumers’ lifetime resources were reduced. Third, the decline in stock prices lowered the value of financial assets, which increased the public’s probability of financial distress, and so they cut back on their purchases of consumer durables and housing.

**Problem 4.** (10pts.) Predict what will happen to stock prices if the money supply rises. Why? State at least two reasons.

**Answer:** Stock prices will rise. One story is that when the money supply rises, people will have more money than they want to hold, so they buy stocks, bidding up their price. Another is that the rise in the money supply lowers interest rates, so the yields on alternative assets to stocks falls. This makes stocks more attractive, increases their demand, and hence raises their price.

**Problem 5.** (10pts.) Go to [www.martincapital.com](http://www.martincapital.com) and click on “charts and data” then on ”nominal versus real market rates” to find data showing the spread between real interest and nominal interest rates, and answer the following (each worth 2 pts.):

a) What is the sign (positive or negative) of the short-term real interest rate (RIR) at the beginning of 2008?

**Answer:** It is negative.

b) What has been the trend in the RIRs since the mid-2007?

**Answer:** The trend is downward, the real interest rates are declining.

c) What does this say about inflation?

**Answer:** If we assume the nominal interest rates stay constant, it means that inflation is going up. If the nominal interest rates decrease, and the real interest rates decrease even more, then inflation is still going up.
d) Can you make a prediction about the direction of change in investment, if the trend outlined in b) continues?

**Answer:** The investment will increase.

e) Suppose that the analytical department at the central bank observes the same graph. After a short period of fear of recession at the beginning of 2008, and knowing the expected trend in investment, the central bank governing board decides in November 2008 that the danger is now actually the opposite: overheating of the economy because of the high inflation and negative real interest rates. Can you suggest some measures (2-3) by the central bank if its goal is to bring back the real interest rates to surface (drive them positive), so that the economy does not overheat?

**Answer:** All measures that decrease the money supply so that the interbank nominal interest rate increases are acceptable: Sell government bonds; set a higher target rate for the discount loans; make a small increase in the reserve requirement ratio (or, required reserve ratio, both RRR).

**Problem 6. (10pts.)** Go to [www.federalreserve.gov/fomc](http://www.federalreserve.gov/fomc). This site reports activity by the open market committee. Scroll down to Calendar and click on the statement released after the last meeting (March 18, 2008), and answer the following (each worth 5 pts.):

a) Summarize this statement in one paragraph (5-6 sentences).

**Answer:** Not applicable for typing here.

b) What has been decided on March 10, 2008? What is Term Securities Lending Facility (TSLF)? What were the potential advantages and disadvantages for introducing this new instrument?

**Answer:** The FOMC decided to support liquidity on the market. The TSLF is a lending facility which allows primary dealers to buy Treasury bills with other securities, including mortgage-based securities. The Term Securities Lending Facility would allegedly help alleviate pressures in the financing markets for Treasury and some mortgage-backed securities. By improving conditions in funding markets, the measure is expected to help restore the functioning of financial markets more generally and thereby promote the effective conduct of monetary policy as well as macroeconomic stability. The concerns from using this facility is that establishment of the facility could be viewed as setting a precedent and thus raising
expectations of other similar actions in the future that would help liquidity. In other words, encourage moral hazard.

Problem 7. (10pts.) Go to the web-site of the European Central Bank: http://www.ecb.int. Find the Monetary Policy tab, browse around a bit to get acquainted with the site, and then find the Monetary Policy Instruments. Find the open market operations.

a) What was the ECB doing since January 2008? What did it do on Apr. 23, 2008?

b) Why are these measures needed?

Answer: a) A graph or a table is worth a thousand words, so here is what the ECB did:

<table>
<thead>
<tr>
<th>Key figures for outstanding open market operations</th>
<th>Main Refinancing Operations</th>
<th>Longer-Term Refinancing Operations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Settlement date</td>
<td>23-Apr-08</td>
<td>31-Jan-08</td>
</tr>
<tr>
<td>Maturity Date</td>
<td>30-Apr-08</td>
<td>02-May-08</td>
</tr>
<tr>
<td>Minimum Rate (bids)</td>
<td>4.00%</td>
<td>---</td>
</tr>
<tr>
<td>Marginal Rate</td>
<td>4.21%</td>
<td>4.21%</td>
</tr>
<tr>
<td>Weighted Average Rate</td>
<td>4.25%</td>
<td>4.33%</td>
</tr>
</tbody>
</table>
| Allotted Amount 
(+ indicates liquidity providing and - indicates liquidity absorbing operations) | 173 bn                      | 50 bn                             | 50 bn     | 50 bn     | 50 bn     | 50 bn     | 50 bn     | 25 bn     | 25 bn     |

With just one sentence, the ECB provided liquidity to the market.

b) The ECB needs to provide the market with liquidity because of the current market turmoil: losses from some exposure to the US subprime mortgage market, while in the US the FED is taking actions to bear some of the losses of the subprime mortgage market by accepting mortgage-backed securities as collateral for T-bills. On both sides of the ocean, the central banks are taking steps to reduce interbank interest rates so that credit becomes cheap again, and the economy does not go into a deep recession. Even if it does, the central banks are hoping to have taken the necessary measures that the eventual recession is V-shaped rather than U-shaped, or even worse, L-shaped with no short-term prospects of coming back to the growth path.

Policy section, and then the Inflation reports. In the inflation report of I/2008, find the CNB forecasts about the interest rates.

a) Present the printed graph of this forecast.

b) According to you, what is the reason that the central bank forecasts increased interest rates?

Answer: The Czech economy is growing fast. In an environment when inflation is rising, the real interest rates that matter for investment are falling. This means that investment in the Czech Republic will grow even more, and pose some risks of overheating to the Czech economy. Without proper measures from the central bank, the real interest rates would continue to fall. Thus, the Central bank needs to use some measures to increase interest rates a bit, in order to increase expectations about the real interest rate, and decrease investment.

Problem 9. (10pts.) If inflation is expected to fall starting from the 3rd quarter of 2008:

a) (1 pt.) What does this mean for the real interest rate and investment?

Answer: The RIR increase, and investment is expected to fall.

b) (9 pts.) What is your suggestion about the monetary policy measures in the situation that is expected in the future? Establish your reasoning on possible scenarios about the current economic situation (overheating, normal positive growth,
close to recession, recession.)

**Answer:** If the economy registers very high growth rates for a long period of time signalling for potential overheating, then a decrease in inflation and increase in the real interest rates means that the economy has headed into a stable path of a slow decline in economic activity. However, if the economy registers moderate or even barely positive growth rates, then an increase in the real interest rate (fall in inflation) may mean that the economy has headed into a recession. That is why the Central Bank should take a decision based on the situation at hand: if the economy is slowing down from a path of high growth, the central bank should do nothing; if the economy has headed into a recession, the CBank may want to consider measures that will lead to a decrease in the nominal interest rates. If the economy is already into a recession, and prices continue to fall, it means that the recovery will be very slow (the economy has headed to a depression). It may call for decreasing interest rates to zero, decreasing reserve requirements, and discount rates.

**Problem 10. (10pts.)** Why governments in some transition and developing countries wanted some degree of control over the decisions of the central bank in the early 1990s? What did it mean in terms of certain powers for them (Hint: who controlled the monetary policy in the US before 1913 and what did it mean for the government)? Can you state a major disadvantage of the Government controlling the central bank?

**Answer:** They wanted to have some control over the decisions taken at the central bank because the central bank is the only institution that has the power to print money. Having control over the money machine brings a lot of power to the government. In a period of a deep recession in the early 1990s and at the same time, widespread social discontent, having control over the money supply means that the government can raise the income of its citizen immediately before elections, thus raising social support and attempting to “buy” reelection, knowing that if it is not reelected, the next government will have to bear the social disgrace from higher inflation. However, the price of this control over the central bank is high: If the government abuses its control over the money supply and floods the economy with money that buy no more goods than before, then hyperinflation can eventually break down the financial system of the economy.