Written Exam for the B.Sc. in Economics autumn 2012-2013

Macro B

Final Exam

January 17 2013
(3 hours closed-book exam)

Please note that the language used in your exam paper must correspond to the language of the title for which you registered during exam registration. I.e. if you registered for the English title of the course, you must write your exam paper in English. Likewise, if you registered for the Danish title of the course or if you registered for the English title which was followed by "eksamen på dansk" in brackets, you must write your exam paper in Danish.
If you are in doubt about which title you registered for, please see the print of your exam registration from the students' self-service system.

All questions of both problems should be answered

Problem A

This exercise ask you to develop a model for the stock market valuation of firms. In the text book the following equation is used in describing the market valuation of firms

$$(r+\varepsilon)V_t = D_t^e + V_{t+1}^e - V_t \tag{A.1}$$

where r is a constant risk-free real interest rate, ε is a risk premium and D_t^e is the expected real dividend from owning stocks during period t, while V_t is the actual real market value of the firm at the beginning of period t, and V_{t+1}^e is the expected real market value at the beginning of period $t+1$.

1. Describe and interpret equation (A.1). Show that (A.1) can be rewritten as

$$V_t = \frac{D_t^e + V_{t+1}^e}{1+r+\varepsilon} \tag{A.2}$$

   Give an interpretation of (A.2).

Assume that

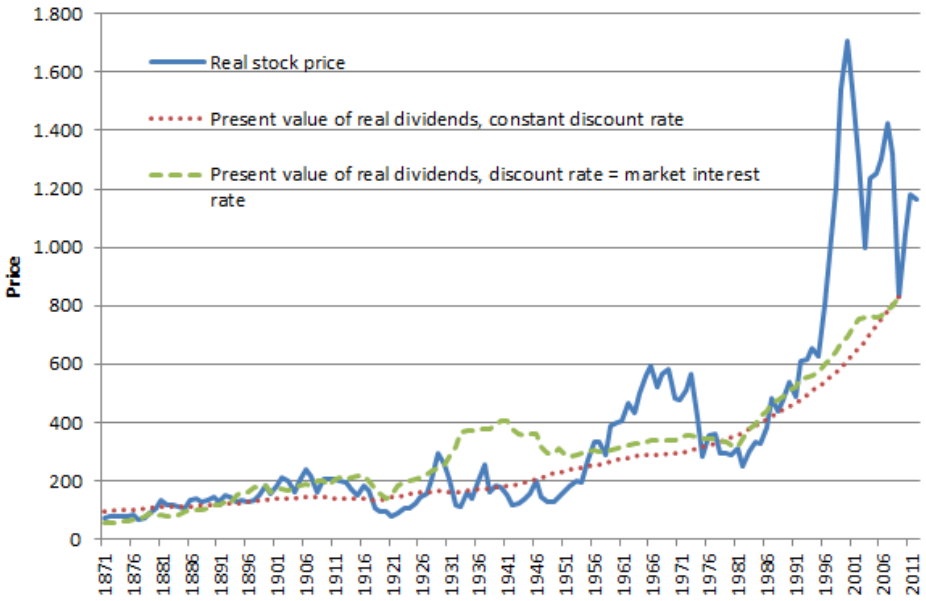
$$\lim_{n\to\infty} \frac{D_{t+n}^e + V_{t+n}^e}{(1+r+\varepsilon)^n} = 0 \tag{A.3}$$

2. Show that it is possible to recast (A.2) as

$$V_t = \sum_{n=0}^{\infty} \frac{D_{t+n}^e}{(1+r+\varepsilon)^{n+1}} \tag{A.4}$$

   and explain why this equation is may be labelled the fundamental market value of the company. Also, describe the intition in (A.3).

3. The figure below is an up-dated version of the figure used in the textbook to illustrate stock market is volatilily. Explain why the figure illustrates this and based on (A.4) explain why this volatility may be perfectly rational.



Now consider the model consisting og equation (A.2) and equations (A.5)-(A.8)

$$q_t = \frac{V_t}{K_t} \tag{A.5}$$

$$q_t^e = q_t \tag{A.6}$$

$$K_{t+1} = K_t(1-\delta) + I_t \tag{A.7}$$

$$D_t^e = \Pi_t^e - I_t - c(I_t), \qquad c(0) = 0, \quad c' = \frac{dc(I_t)}{dI_t} > 0 \tag{A.8}$$

4. Describe equation (A.5)-(A.8). and show that

$$V_t = \frac{\Pi_t^e - I_t - c(I_t) + q_t\left[K_t(1-\delta) + I_t\right]}{1 + r + \varepsilon} \tag{A.9}$$

whereby the market value of the company is linked with the decision variable of the firm.

5. Show that the first order condition that ensures maximization of the value of the company is

$$q_t = 1 + c'(I_t) \tag{A.10}$$

   Interpret (A.10). What is the role of $c(I_t)$? How does the stock market valuation of the company affect investments? Explain which factors that may induce fluctuations into investments.

Now consider the above as a description of the stock market and investments in a small open economy with a fixed exchange rate. The fixing of the exchange rate is considered fully credible so that no change in the nominal value of the exchange rate is expected.

6. Assuming investors are risk neutral, explain how domestic interest rates depends on foreign interest rates.

7. Now for some reason interest rates increase abroad. Other things equal, how does this affect domestic investments? Explain.

8. Now assume that investors are risk averse. Explain how this modifies your answer in question 6. Also, how does changes in the risk premium demanded by investors affect domestic investments? Explain. Currently investors consider the Danish (government) bonds a "safe heaven". Now assuming this may be reflected in the risk premium, what are the implications for investments in Denmark?

Problem B

1. Explain why it is socially desirable to stabilize the rate of inflation around some constant target value. Explain why even a constant rate of inflation generates welfare costs and explain why an inflation target of zero is not desirable.

2. Explain the "overshooting" behavior of exchange rates seen under a system of floating exchange rates. In particularly explain why this "overshooting" may be perfectly rational.

3. Describe the economic mechanism whereby convergence towards equilibrium takes place in AD-AS models developed in the textbook for the closed economy and AD-AS model for the small open closed economy with a fixed exchange rate.