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

International Monetary Economics

Master's Course

February 19, 2013

(3-hour 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.

University of Copenhagen
Department of Economics
Michael Bergman

Written exam for the M.Sc. in Economics
International Monetary Economics

February 19, 2013

Number of questions: This exam consists of 3 questions.

1. **Which of the following statements are correct? Remember to provide a brief explanation.**
   (a) Is it always the case that if covered interest rate parity holds, then uncovered interest parity must also hold?
   (b) The main objective of the ECB is to target inflation.
   (c) According to the Frankel real interest rate differential model an increase in the domestic real interest rate does not lead to a depreciation.
   (d) Mundell suggests that the cost of joining a monetary union is high if prices and wages are sticky and factor mobility is low.

2. **The Harrod-Balassa-Samuelson model**
   Consider the following two-country model

$$P_N = \frac{W_N}{Q_N} \quad \text{and} \quad P_T = \frac{W_T}{Q_T} \tag{1}$$

$$P_{N^*} = \frac{W_{N^*}}{Q_{N^*}} \quad \text{and} \quad P_{T^*} = \frac{W_{T^*}}{Q_{T^*}} \tag{2}$$

   where N denotes the non-traded sector and T the traded sector in each country. An asterisk denotes the foreign country. Assume that $W_N = W_T$ and $W_{N^*} = W_{T^*}$, $Q_N = Q_{N^*}$ and that $S = \frac{P_T}{P_{T^*}}$.
   (a) Explain the rationale behind the equations of the model.
   (b) Assume that the aggregate price index in the two countries is equal to a weighted average of prices in the traded and non-traded sectors, i.e.,

$$P_1 = \alpha P_N + (1-\alpha) P_T \tag{3}$$

   and

$$P_{1^*} = \beta P_{N^*} + (1-\beta) P_{T^*}. \tag{4}$$

Show that the nominal exchange rate can be expressed as

$$S = \frac{P_1}{P_{1^*}} \frac{\beta \frac{P_{N^*}}{P_{T^*}} + (1-\beta)}{\alpha \frac{P_N}{P_T} + (1-\alpha)} \tag{5}$$

and use this relation to explain why empirical tests often tend to reject PPP.

(c) Use the expression above to derive the nominal exchange rate as functions of the productivity in the two countries. What are the effects of an increased productivity in the traded sector in the foreign country?

(d) How would an increase in the foreign non-traded sector affect the nominal exchange rate?

(e) What would the theory tell us about the relative overall price levels in rich and poor countries?

(f) Briefly summarize the empirical evidence on the Harrod-Balassa-Samuelson hypothesis.

3. **Mundell-Fleming and Dornbusch model**
Consider first the Mundell-Fleming model comprised of the following equations

$$\dot{s} = i - i^* \tag{6}$$

$$m = \sigma s + \kappa y - \theta i \tag{7}$$

$$\dot{y} = \chi \left(\alpha + \mu s - y \right). \tag{8}$$

(a) Explain the rationale behind these equations of the Mundell-Fleming model.

(b) Derive the two differential equations (the LM-curve and the IS-curve) and illustrate the model in the y-s plane.

(c) Show the effects on the exchange rate and output from expansionary monetary policy. Explain carefully!

(d) Show the effects of expansionary fiscal policy on the nominal exchange rate and output. Compare with the effects from monetary policy. Is fiscal policy effective? If so explain why.

(e) Consider then the Dornbusch model where we replace equation 8 with

$$\dot{p} = \gamma \left(\alpha + \mu \left(s - p \right) - \bar{y} \right) \tag{9}$$

such that the Dornbusch model is comprised by equations (6), (7) and (9). What are the main differences between the Mundell-Fleming model and the Dornbusch model?

(f) Derive the two differential equations (the goods market and the money market equilibrium curves) and illustrate the model in the s-p plane.

(g) What are the effects of expansionary monetary policy on the nominal exchange rate and the price level? Compare and contrast these effects to the effects of monetary policy in the Mundell-Fleming model.