Written Exam Economics summer 2016

Economics of Exchange Rates

June 6, 2016

(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.

This exam question consists of 3 pages (including this page) in total

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Written exam for the M. Sc in Economics
Economics of Exchange Rates

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Number of questions: This exam consists of 2 questions.

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1. (a) Explain how the foreign exchange market is organized and give brief account of how market participants interacts.

   (b) Assume that the spot exchange rate is given by

   $$s_t = (1 - b)\,\Sigma_{i=0}^{\infty} b^i \mathrm{E}\left[f_{t+i} \mid \Omega_t^D\right]$$

   where notation is standard. Explain in words what this equation implies for the determination of spot exchange rates.

   (c) Show that the equation above can be re-written as

   $$\Delta s_{t+1} = \frac{1-b}{b}\left(s_t - \mathrm{E}\left[f_t \mid \Omega_t^D\right]\right) + \varepsilon_{t+1}$$

   where

   $$\varepsilon_{t+1} = \frac{1-b}{b}\sum_{i=1}^{\infty} b^i \left(\mathrm{E}\left[f_{t+i} \mid \Omega_{t+1}^D\right] - \mathrm{E}\left[f_{t+i} \mid \Omega_t^D\right]\right)$$

   Explain what this decomposition implies. Give a detailed interpretation of the equation above. Your answer must include how new information affect spot rates.

   (d) The Portfolio Shift model identifies two determinants of spot exchange rates. Explain these two factors including how they relate to order flows.

   (e) Summarize the empirical evidence on linkages between order flows and spot exchange rates.

   (f) Summarize survey results concerning the behavior of market participants.

2. **The signaling approach to central bank intervention**

   (a) Give a brief explanation of the basic underlying assumptions of the signaling approach to central bank intervention.

   (b) Consider the signaling model developed by Reeves. The model consists of the following four equations

   $$M_t - P_t = \alpha_1 Y - \alpha_2 r_t \tag{1}$$

$$M_t^* - P_t^* = \alpha_1 Y^* - \alpha_2 r_t^*$$

$$r_t = r_t^* + E_t S_{t+1} - S_t \tag{2}$$

and

$$P_t = P_t^* + S_t \tag{3}$$

Notation is standard. Explain the underlying assumptions of the model, the implication of these expressions and why they hold.

(c) Assume that expectations are formed rationally and show that the model above can be used to derive the following expression for the spot exchange rate

$$S_t = \frac{1}{1+\alpha_2} \sum_{k=0}^{\infty} \left(\frac{\alpha_2}{1+\alpha_2} \right)^k E_t(M_{t+k} - M_{t+k}^* - \alpha_1(Y - Y^*)).$$

Explain any additional assumptions needed to obtain this solution.

(d) Derive the initial equilibrium exchange rate at time 0 under the assumption that the money supplies as well as output levels are constant.

(e) Assume now that the central bank intervenes in period 1 in order to send a signal that monetary policy will change in period 2. There is no change in the money supply in period 1. Can this policy affect the exchange rate in period 1?
[Hint: Assume that the money supplies in period 2 are given by $M_2 = M_0 + \gamma I$ and $M_2^* = M_0^* + \gamma I^*$ where I and I^* denote the intervention in period 0.]

(f) Replace equation (2) above by the following expression

$$r_t = r_t^* + E_t S_{t+1} - S_t - RP_t$$

where $RP_t > 0$. Explain the underlying assumptions of this expression. Assume now that the central bank intervenes in period 1 in order to send a signal that monetary policy will change in period 2. There is no change in the money supply in period 1. Can this policy affect the exchange rate in period 1? Explain carefully!

(g) How does the signaling model above relate to the idea of oral interventions? Explain what is meant by oral interventions and use the expression in (c) to explain how oral interventions affect the exchange rate and summarize the empirical evidence.