Written Exam for the M.Sc. in Economics summer 2014

International Finance

Master's Course

June 18, 2014

(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 in total

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Written exam for the M. Sc in Economics
International Finance

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Number of questions: This exam consists of 2 questions.

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1. **The signalling approach to central bank intervention**

   (a) Explain the basic underlying ideas 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 rational expectations and show that the solution to the model is

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

   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) Summarize the empirical evidence on the signaling channel.

2. **Macro data releases and the spot exchange rate**

   (a) Consider the following macro based model

   $$\delta_t = \mathbb{E}[\Delta s_{t+1}|\Omega_t] + \hat{r}_t - r_t$$

   $$\varepsilon_t = s_t + \hat{p}_t - p_t$$

   $$R_t = r_t - \mathbb{E}[\Delta p_{t+1} \mid \Omega_t]$$

   and

   $$\hat{R}_t = \hat{r}_t - \mathbb{E}[\Delta \hat{p}_{t+1} \mid \Omega_t]$$

   Notation is standard. Explain the underlying assumptions and the implications of the model.

   (b) The unexpected variation in the real exchange rate between the start of period t and before the start of period $t + 1$, i.e., at period $t + \epsilon$ for $\epsilon < 1$ can be written as

   $$\varepsilon_{t+\epsilon} - \mathbb{E}[\varepsilon_{t+\epsilon} \mid \Omega_t] = \eta_{t+\epsilon,t+1} - \mathbb{E}[\eta_{t+\epsilon,t+1} \mid \Omega_t] +$$

   $$\sum_{j=1}^{\infty} \{\mathbb{E}[\eta_{t+j,t+j+1} \mid \Omega_{t+\epsilon}] - \mathbb{E}[\eta_{t+j,t+j+1} \mid \Omega_t]\} + \varepsilon_{t+\epsilon}^{\infty} - \varepsilon_t^{\infty} \qquad (4)$$

   where

   $$\eta_{t,t+1} = (\hat{r}_t - \mathbb{E}[\Delta \hat{p}_{t+1}|\Omega_t]) - (r_t - \mathbb{E}[\Delta p_{t+1}|\Omega_t]) - \delta_t$$

   and $\varepsilon_t^{\infty} = \lim_{h \to \infty} \mathbb{E}[\varepsilon_{t+h} \mid \Omega_t]$. Assume that there is a macro data release that takes place between t and $t + \epsilon$ where the interval covers only a few minutes. Derive an expression for the change in the spot exchange rate. Explain carefully the channels by which macro data releases affect the spot exchange rate.

   (c) Does the model imply that spot rates always respond to macro data releases? Provide a detailed discussion.

   (d) Summarize the empirical evidence on the effects of macro data releases.