Written Exam for the M.Sc. in Economics summer 2015

International Finance

Master's Course

June 26, 2015

(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

Universidad of Copenhagen

Department of Economics

Michael Bergman

Written exam for the M. Sc in Economics
International Finance

June 26, 2015

Number of questions: This exam consists of 2 questions.

---

1. **Central bank intervention**

    (a) Explain how the central bank intervenes on the foreign exchange market and the differences between sterilized and non-sterilized interventions.

    (b) What are the main arguments for and against central bank intervention including the practice of using secret interventions.

    (c) Compare and contrast the two major models of central bank intervention, the portfolio balance channel and the signaling channel.

    (d) Are central bank interventions effective? Summarize the empirical evidence.

2. **Micro based macro model**

    (a) Consider the following two-country (the US and the euro area) micro based macro model

    $$s_t = \mathbb{E}_t^D[s_{t+1}] + \hat{r}_t - r_t - \delta_t \tag{1}$$

    $$\mathbb{E}_t^D(\hat{r}_{t+i} - r_{t+i}) = (1+\gamma_\pi)\mathbb{E}_t^D(\Delta\hat{p}_{t+1+i} - \Delta p_{t+1+i}) + \gamma_y\mathbb{E}_t^D(\hat{y}_{t+i} - y_{t+i}) - \gamma_\varepsilon\mathbb{E}_t^D\varepsilon_{t+i} \tag{2}$$

    $$\varepsilon_t = s_t + \hat{p}_t - p_t \tag{3}$$

    where notation is standard. Explain the underlying assumptions and the implications of the equations above.

    (b) Show that the nominal exchange rate (ruling out bubbles) can be written as

    $$s_t = (\hat{r}_t - r_t) + \mathbb{E}_t^D \sum_{i=1}^{\infty} \rho^i f_{t+i} - \mathbb{E}_t^D \sum_{i=0}^{\infty} \rho^i \delta_{t+i} \tag{4}$$

    where

    $$f_t = (1 + \gamma_\pi)(\Delta\hat{p}_{t+1} - \Delta p_{t+1}) + \gamma_y(\hat{y}_t - y_t) + \frac{1-\rho}{\rho}(p_t - \hat{p}_t). \tag{5}$$

    Explain the implications of these relations.

(c) Assume that the aggregate demand for foreign currency is given by

$$\alpha_t = \int_0^1 \alpha_t^n \, dn = \alpha_s(\overline{\mathbb{E}}_t^n s_{t+1} - s_t + \hat{r}_t - r_t) + h_t \tag{6}$$

and the risk sharing condition that $\mathbb{E}_t^D \alpha_t = 0$. Show that the risk premium can be written as

$$\delta_t = \mathbb{E}_t^D \left[s_{t+1}^e - \tfrac{1}{\alpha_s} h_t \right] \tag{7}$$

where $s_{t+1}^e = s_{t+1} - \overline{\mathbb{E}}_t^n s_{t+1}$.
[Hint: Use the identity $\overline{\mathbb{E}}_t^n s_{t+1} = \mathbb{E}_t^D s_{t+1} + \mathbb{E}_t^D \left(\overline{\mathbb{E}}_t^n s_{t+1} - s_{t+1} \right)$.] Discuss the implications of the risk premium relation.

(d) Combine equations (4), (5) and (7) to show that

$$s_t = (\hat{r}_t - r_t) + \mathbb{E}_t^D \sum_{i=1}^{\infty} \rho^i f_{t+i} + \tfrac{1}{\alpha_s} \mathbb{E}_t^D \sum_{i=0}^{\infty} \rho^i h_{t+i} - \tfrac{1}{\rho} \mathbb{E}_t^D \sum_{i=1}^{\infty} \rho^i s_{t+i}^e \tag{8}$$

(e) Explain how the model above differs from a standard macro-based exchange rate model.

(f) The micro structure literature emphasizes the role played by order flows in determining the spot exchange rate. Explain how order flows affect the exchange rate in the model above.

(g) Summarize the empirical evidence on order flows as a determinant of the current state of the economy.