

UNIVERSITY OF OSLO
DEPARTMENT OF ECONOMICS

Exam: **ECON4330 – International Macroeconomics**

Date of exam: Friday, May 22, 2015

Time for exam: 2.30 p.m. – 5.30 p.m.

The problem set covers 4 pages (not incl. the cover sheet)

Resources allowed:

- No resources allowed (except if you have been granted use of a dictionary from the Faculty of Social Sciences)

The grades given: A-F, with A as the best and E as the weakest passing grade. F is fail.

EXAM
ECON 4330
Spring 2015

Transfer problem(50%)

Consider a model with only tradable goods, but differentiated by country. Consumption c in the home country is the aggregate of home produced good c_h and foreign good c_f ,

$$c = \xi c_h^\omega c_f^{1-\omega}, \quad (1)$$

where $1 \geq \omega \geq 0.5$ and $\xi = \omega^{-\omega}(1 - \omega)^{-(1-\omega)}$. Households derive utility $u(c)$ from consuming c . The home country produces y_h of the home good at price p_h . The price of the foreign good is p_f , where the foreign good is the numeraire, so that $p_f = 1$. The budget constraint is then equal to

$$p_h y_h = p_h c_h + p_f c_f. \quad (2)$$

1. Write down the household's optimization problem.
2. Show that domestic demand for the home good is

$$c_h = \omega \frac{p}{p_h} c, \quad (3)$$

where the domestic consumer price index p includes the price of the home and foreign good and equals

$$p = p_h^\omega p_f^{1-\omega}. \quad (4)$$

3. Consider now the case of two symmetric countries, that is the foreign country has the preferences

$$c^* = \xi (c_f^*)^\omega (c_h^*)^{1-\omega} \quad (5)$$

and produces y_f goods. Write down the foreign household's optimization problem.

4. Show that foreign demand for the domestic good equals

$$c_h^* = (1 - \omega) \frac{p^*}{p_h} c^*, \quad (6)$$

where p^* is symmetrically defined as

$$p^* = p_f^\omega p_h^{1-\omega}. \quad (7)$$

5. Solve for the price p_h . Hint: Use the goods market clearing condition $c_h + c_h^* = y_h$.

6. Now suppose that the home country receives a transfer T from the foreign country, so that it can spend now $p_h y_h + T$ and the foreign country can spend $p_f y_f - T$. Solve for the price p_h . Hint: Use again the goods market clearing condition $c_h + c_h^* = y_h$.

7. How does the price p_h depend on T ?

8. Is there a value of ω where p_h is independent from T ? Why?

9. Is the change in the price p_h a burden or a benefit for the foreign country?

Inflation targeting (50%)

During this exercise all variables are in logs.

- e is the nominal exchange rate
- p the price of home goods
- r the real exchange rate
- ρ the real interest rate
- y output
- g government expenditures on home goods

A bar above a variable distinguishes its value in a full equilibrium. A subscript $*$ means a foreign variable. Dots indicate time rates of change and subscript e an expectation.

1. Consider first real interest rate parity(RIP) in the sense that:

$$\rho - \bar{\rho} = (\rho_* - \bar{\rho}) + \dot{r}_e$$

- (a) Explain the conditions necessary for real interest rate parity to prevail.
- (b) Develop RIP using uncovered interest rate parity and the definition of the real exchange rate.

This condition together with four other equations characterize our model. In the remainder of this exercise we consider at small open economy where:

$$r = e + p_* - p \quad (8)$$

$$\rho - \bar{\rho} = (\rho_* - \bar{\rho}) + \dot{r}_e \quad (9)$$

$$\dot{r}_e = -\epsilon(r - \bar{r}) \quad (10)$$

$$y - \bar{y} = -\alpha_\rho(\rho - \bar{\rho}) + \alpha_r(r - \bar{r}) + \alpha_g(g - \bar{g}) + \alpha_* u_{y*} \quad (11)$$

$$\dot{p} = \dot{p}_e + \gamma(y - \bar{y}) + u_s \quad (12)$$

Where u_{y*} is a foreign demand shock and u_s is a cost push shock. The country's exchange rate is floating. The central bank practices strict inflation targeting. The aim is to keep home goods inflation \dot{p} , as close to the target, $\bar{\pi}$, as possible. The bank takes the private sector expectation \dot{p}_e as given. Hence, in effect it decides the real interest rate $\rho = i - \dot{p}_e$, i , being the nominal interest rate. We can then proceed as if ρ is the instrument used by the bank.

2. Explain briefly the meaning of each equation (max 2-3 sentences per equation).
3. Derive the ISFX-equation(combinations of y and ρ yielding short run equilibrium in the goods market and the FX-market).
4. Find the slope of the ISFX-curve, $\frac{\partial y}{\partial \rho}$, and interpret the expression.
5. Consider a positive shock to the foreign economy, $u_{y*} = \Delta > 0$
 - (a) Show the response of the domestic Central Bank given strict inflation targeting. You can assume that the inflation target is credible.
 - (b) Show how this will affect the real exchange rate both analytically and graphically.
6. Discuss briefly how the answers to question 5 would change if the inflation target was not credible.

7. Consider a negative cost push shock, $u_s = -\Delta < 0$. What will the Central bank do and what is the effect on output. What are the direct effects of the shock and what are the effects through government intervention?