EXAM
ECON 4330

Real Exchange Rates and Labor Supply

Consider the model with tradable and non-tradable goods as in class but with two modifications. There is no capital and the production function in the non-tradable sector has decreasing returns to scale. To remind you: The country produces Y_T tradables and Y_N nontradables. Tradables can be imported and exported without any costs, while nontradables are impossible to export/import. Labor is mobile across sectors, but not across countries The tradable good is the numeraire. p is the relative price of nontradables. w is the wage rate. Output is assumed to be given by two production functions:

$$Y_T = A_T L_T \tag{1}$$

$$Y_N = A_N L_N^{\xi}, \tag{2}$$

where L_T and L_N are labor inputs into the tradable sector and non-tradable sector respectively and $0 < \xi < 1$. We assume a representative agent who chooses consumption C_T and C_N to maximize utility, for $0 < \epsilon < 1$,

$$C_T^{\epsilon} C_N^{1-\epsilon}$$

subject to the budget constraint $C_T + pC_N = wL + \Pi$, where L is inelastically supplied labor and Π are profits. In equilibrium $L = L_T + L_N$.

Now assume that a shock hits the home country (and only the home country) so that the production of non-tradables chnages to $Y_N = A_N L_N^{\hat{\xi}}$. Assume $C_T = Y_T$.

1. Derive the labor allocation before and after the shock.

2. Derive the real exchange rate before and after the shock.

Important: You have to explain your results. Just writing down equations without clear, short and sensible explanations is **not** sufficient.

Hint: Define the real exchange rate, use the household's optimization problem, derive the demand for tradable and nontradable goods, the price of non-tradables and the allocation of labor across sectors.

ECON4330 Exam Part B

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Guidelines: Explain in your own words. Do not simply copy paste formulas or text from the lecture notes/books. You can include formulas, but you have to explain them in words with the goal to convince the reader that you have 100% understood what the formula means. You do not have to write down the definition of the variables in an equation as long as you are using the notation from the corresponding lecture notes/book chapters.

Mean-variance model of portfolio choice

1. Consider the mean-variance model of portfolio choice. The investor's optimal portfolio share of foreign currency can be expressed as the sum of two portfolios, a return-driven portfolio and a minimum-variance portfolio.

   (a) Show analytically that the minimum-variance portfolio minimizes the variances of the real return.

   (b) Why can investment in foreign currency help to hedge domestic inflation risk?

   (c) What is the relationship between exchange-rate risk and inflation risk when the real exchange rate is constant?

   (d) Suppose that the real exchange rate is constant and inflation is uncorrelated across countries. Use the optimal investment in the minimum variance portfolio to show that hedging domestic inflation risk through investment in foreign currency is more attractive when domestic inflation risk is high and less attractive when foreign inflation risk is high.

Imperfections in international capital markets

2. Explain why imperfect observability of countries' output can lead to a breakdown of the international market for risky assets.

3. Which country suffers from the breakdown of the international market for risky assets and why?

4. Why may borrowing countries be better off if they can be sanctioned for defaulting on their debt?

5. In the model with sovereign default, sanctions, and investment, why do lenders always prefer that the borrowing country invests more of the borrowed funds?

6. What is the debt overhang problem?

7. Explain under what circumstances it can be optimal for lenders to forgive a part of the debt.