

ECON4330

Exam questions

Spring 2022

1 Technology Innovation [40 Points]

Suppose the Home country is poor but suddenly discover a pathbreaking technology to produce electricity at a low price for 50 years. It can produce so much electricity that it could become an energy exporter.

Consider two scenarios.

- Scenario 1: The country can export and import as much as it wants.
- Scenario 2: The country does not participate in international trade.

Discuss the economic consequences for the home country of scenario 1 and 2. What does this mean for the NFA, consumption and imports of this country.

Explain your results. Keep your answer concise. There is no benefit from long but imprecise answers.

2 Mundell-Fleming-Tobin Model [30 Points]

Assume the following (reduced-form) model

$$Y = C(Y, E, i) + G + X(E, Y), \quad (1)$$

$$\frac{M}{P} = m(i, Y), \quad (2)$$

$$\frac{B}{P} = W_p(E) - f(i, E) - m(i, Y), \quad (3)$$

$$F_g + F_p(i, E) + F_*, \quad (4)$$

where (1) is the *IS* curve, (2) is the *LM* curve, (3) is the *BB* curve, and (4) is the *FX* curve. Further, assume a fixed exchange rate regime where the interest rate is exogenous.

- Sketch the MFT model graphically. Why does the *LM* curve increase?
- Explain what sterilization of the money market is.
- Assume an exogenous increase in government expenditure, G , and compare sterilization with fixed interest rate.
- Now assume a floating exchange rate regime. Explain why the relationship between i and Y (the *IS*-curve) looks different under the floating and fixed exchange rate regime.

3 Mean-Variance Model of Portfolio Choice [30 Points]

Assume a representative investor who maximize the utility function

$$U(\pi) = E(\pi) - \frac{R}{2}\text{Var}(\pi) \quad (5)$$

subject to

$$\pi = (1 - f)i + f(i^* + e) - p \quad (6)$$

where R is the relative risk aversion, π is the real rate of return, f is the share of foreign currency in portfolio, e is the rate of depreciation and p is the price level (inflation), i is the domestic currency rate of interest and i^* is the foreign currency rate of interest.

(a) Find $E(\pi)$ and $\text{Var}(\pi)$.

(b) Show that the optimal share of foreign currency is given

$$f = \frac{\sigma_{ep}}{\sigma_{ee}} + \frac{i^* + \mu_e - i}{R\sigma_{ee}}. \quad (7)$$

(c) Explain what is meant by inflation hedging and how this is incorporated into equation (7).

(d) Why does the relative risk aversion, R , have a negative relationship with the share of foreign currency, f ?

(e) What happens as $R \rightarrow 0$?