Queen Mary University of London

January Examination Period 2025

ECN355 Macroeconomic Policy Duration: 2 hours

YOU ARE NOT PERMITTED TO READ THE CONTENTS OF THIS QUESTION PAPER UNTIL INSTRUCTED TO DO SO BY AN INVIGILATOR

Answer FOUR out of the FIVE questions in this paper.

If you answer more questions than specified, only the first answers (up to the specified number) will be marked.

For your reference, selected analytical expressions are provided at the end of this exam paper.

Non-programmable calculators are permitted in this examination. Please state on your answer book the name and type of machine used. Complete all rough workings in the answer book and cross through any work that is not to be assessed.

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EXAM PAPERS MUST NOT BE REMOVED FROM THE EXAM ROOM

Examiner: Prof F. X. Mateos-Planas

These questions consist of true/false statements. Indicate at the beginning of your answer whether the statement is True or False and explain your choice. Refer to the formal elements of the relevant models (e.g., graphs, equations, derivations) as necessary to support the explanation.

Question 1

A temporary positive productivity shock has a positive impact on aggregate output because increased incomes stimulate households' demand of goods and services.

[25 marks]

Question 2

Suppose the economy experiences a negative oil supply shock. The Bank of England should stick to a specified feedback rule on inflation for the interest rate in order to provide an optimal response.

[25 marks]

Question 3

A debt-financed reduction in the consumption tax rate affects aggregate output more if this tax change is permanent since consumers have more money in their pockets for longer.

[25 marks]

Question 4

A negative supply shock is particularly damaging to GDP when the short-term nominal interest rate is already at or near the zero lower bound.

[25 marks]

Question 5

Forward guidance is more effective when the Central Bank can credibly commit to returning to target inflation as quickly as possible after coming out of a liquidity trap.

[25 marks]

End of Paper

REFERENCE EQUATIONS

T1

$$\min_{\{\tau_t\}} \sum_{t=0}^{T} (x_t - \tau_t)^2 + \lambda \sum_{t=1}^{T-1} [(\tau_{t+1} - \tau_t) - (\tau_t - \tau_{t-1})]^2$$

$$B_0 y_t = B_1 y_{t-1} + B_2 y_{t-2} + ... + \omega_t$$

$$A = UU', \text{ with U lower triangular}$$

T2 to T5

$$\begin{aligned} y_t &= \theta_t - \sigma(r_t - \bar{r}) \\ r_t &= \bar{r} + \gamma(\pi_t - \bar{\pi}) \\ \pi_t &= \pi_{t-1} + \kappa(y_t - y_t^n) \end{aligned}$$

$$\begin{aligned} p_t^* &= \mu^* + w_t - z_t \\ w_t - p_t &= (y_t - (1-\xi)z_t)/\xi \\ \pi_t &= \pi_{t-1} + \left(\frac{1-\omega}{\omega}\right)(p_t^* - p_t) \\ y_t &= l_t + z_t \\ l_t &= \xi(w_t - p_t - z_t) \end{aligned}$$

$$y_t^n = z_t - \xi\mu^*$$

Topic 6

$$\begin{aligned} L(y_t, \pi_t) &= \lambda(y_t - \bar{y})^2 + (\pi_t - \bar{\pi})^2 \\ L_t^I &= L(y_t, \pi_t) + \beta L(y_{t+1}, \pi_{t+1}) + \beta^2 L(y_{t+2}, \pi_{t+2}) + ... \end{aligned}$$

If $\bar{y} = y^n = 0$:

$$\begin{aligned} \pi_{t+k} &= \Omega\pi_{t+k-1}, \ k = 0, 1, 2, ... \\ y_{t+k} &= -\kappa^{-1}(1-\Omega)\Omega^k \pi_{t-1} \\ \pi_{t+k} &= -\left(\frac{\kappa\Omega}{1-\Omega}\right) y_{t+k} \\ \Omega &= \begin{cases} \frac{\lambda}{\lambda+\kappa^2} & \text{when } \beta = 0 \\ \frac{1}{2\beta}\left[1 + \beta + \frac{k^2}{\lambda} - \sqrt{(1+\beta+\frac{k^2}{\lambda})^2 - 4\beta}\right] & \text{when } \beta > 0 \end{cases} \end{aligned}$$

If $\bar{y} = 0, y^n \neq 0$:

$$\pi_{t+k} = \Omega\pi_{t+k-1} - \Omega\kappa y_{t+k}^n, \ k = 0, 1, 2, ...$$

turn over ...

T8 & 9
Assumed: $r_t = \rho$; $z - \xi\mu^* = 0$; $v < \xi$.

$$\begin{aligned}
\pi_t &= \pi_{t-1} + \kappa(y_t - y_t^n) \\
y_t^n &= \xi(g_t - \tau_t^c - \tau_t^l) \text{ if } \mathrm{z_t} = -\mu^*\xi
\end{aligned}$$

$$y_t = \xi\left[\frac{(1-v)(g_t - \tau_t^c) + (1-\xi)\tau_\infty^c}{\xi - v}\right] - \xi\tau_\infty^l$$

$$\begin{aligned}
c_t^K &= w_t - p_t - \tau_t^l - \tau_t^c \\
c_t^R &= c_\infty^R + \tau_\infty^c - \tau_t^c \\
l_t^R &= \frac{\xi}{1-\xi}(w_t - p_t - \tau_t^l - \tau_t^c - c_t^R), \quad l_t^K = 0 \\
\xi\mu^* + (1-v)l_t^R &= vc_t^K + (1-v)c_t^R + g_t
\end{aligned}$$

$$c_\infty^R = \frac{(1-\xi)v\mu^* - (\xi - v)(\tau_t^c + \tau_t^l)}{1-v}$$

$$\begin{aligned}
p_t^* &= w_t - z_t + \mu^* \\
&= w_t + (1-\xi)\mu^*
\end{aligned}$$

T 10 & 11

$$\begin{aligned}
r_t &= \tilde{\imath}_t + \varphi - \pi_{t+1} \\
\tilde{\imath}_t &\geq \underline{i}^B \\
y_t &= \begin{cases} \hat{\theta} - \sigma\gamma\pi_t & \pi_t \geq \pi_{MIN} \\ \hat{\theta} + \sigma(\overline{r} - \varphi) + \frac{\sigma}{1+\kappa\sigma\gamma}\pi_t & \text{otherwise} \end{cases} \\
\pi_{MIN} &= \frac{(\varphi - \overline{r})(1+\kappa\sigma\gamma)}{1+\gamma(1+\kappa\sigma\gamma)}
\end{aligned}$$