EC 450
Advanced Macroeconomics
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Assignment 7 (OPTIONAL)

Part B Problem Solving Questions

Read each part of the question very carefully. Show all the steps of your calculations to get full marks.

B1.

Consider a closed economy where aggregate demand for goods and services consists of the sum of real private consumption, *C*, real private investment, *I*, and real government demand for goods and services, *G*. Based on the theory of private investment we can summarize private investment behaviour in an investment function of the form $I = I(Y, r, \varepsilon)$, where *Y* is total output of the economy, *r* is the real interest rate and ε is a parameter capturing the 'state of confidence', reflecting the expected growth of income and demand. Investment increases with current output and with growth expectations, ε, whereas it decreases with the real interest rate. Based on the theory of private consumption we can summarize private consumption behaviour in an consumption function of the form $C = C(Y - T, r, \varepsilon)$, where *T* denotes the total tax payments so that $Y - T$ is current disposable income. Consumption increases with current disposable income and with growth expectations, ε. The marginal propensity to consume current disposable income is assumed to be less than 1. The real interest rate has an ambiguous effect on consumption, due to offsetting income and substitution effects on consumption. To avoid complications arising from the dynamics of government debt accumulation, we assume that the government balances its budget so that $T = G$.

(1) Derive the goods market equilibrium condition in the log-linearized form.

Assume that the central bank in this economy can observe the expected inflation rate π^e_{+1} and its inflation target is π^*. Since private saving and investment decisions depend on the *ex ante* real interest rate $r = i - \pi^e_{+1}$, we assume that the central bank sets the short-term nominal interest rate in accordance with the following slightly modified version of the Taylor rule:

$$i = \bar{r} + \pi^e_{+1} + h(\pi - \pi^*) + b(y - \bar{y}) \ , \qquad h > 0, \qquad b > 0.$$

(2) Derive the aggregate demand curve in the log-linearized form.

(3) Identify the determinants of the position and the slope of the *AD* curve in the (y, π) plane. Explain with a diagram how the slope of the *AD* curve varies with a change in the values of the parameters *h* and *b* in the Taylor rule.

B2.

Exercise 1 of Chapter 17 of the textbook: Part 1 and Part 2

B3.

Exercise 2 of Chapter 17 of the textbook: Part 1, 2 and 3.

B4.

Exercise 3 of Chapter 17 of the textbook: Part 1 and 2.