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Problem Set III

EE212 — Principles of Macroeconomics

Semester 2/2019-2020

Total mark: 20 points

Due date: Friday 17 April 2020 **before midnight** to jenmana@econ.tu.ac.th.

Any late submission **will not** be graded.

Please submit in pdf form, and not word document.

Dear students,

Two weeks are given to complete this assignment. As mentioned, we will have four problem sets, each making up 7.5% of your total grade (30% in total). These will be challenging, and will demand you to revisit the topics that have been mentioned so far in class, as well as to read the mandatory readings.

Reminder on academic policy: I encourage you all to work together and exchange ideas out of class. However, I also encourage you all as university scholars to start independently critically approach a topic, a question, or a challenge that will be posed in this class, as well as the future ones.

I expect your independent completion of the short essays, as it would be obvious if they are not your own ideas. Plagiarism and cheating will be treated with disciplinary actions. Thammasat University, our faculty, and I take academic integrity extremely seriously.

Problem I: short answers and the right blend of policies (5 points)

1. *True or false?* The Bank of Thailand *cannot* set the real interest rate below zero due to the zero lower-bound problem. Explain your reasoning. (1 point)

   For the next two questions, let's assume that the economy is at the equilibrium (Y^*, i^*). Using the IS-LM model, (1) suggest a mix of policy that would satisfy each of the objectives, (2) draw the IS-LM diagram which shows the proposed mix of policies, and (3) discuss what are the changes to C, I, and G.

2. "Increasing aggregate income while keeping interest rate constant" (2 points)

3. "Improving budget balance $(T - G)$ while keeping Y constant" (2 points)

Problem II: the IS-LM model (10 points)

Here is a tip for finding equilibriums. Mathematically, we know that we have found the equilibrium when we have successfully characterised the relation with only exogenous variables. That is, if we are to characterise the equilibrium output, Y^* – if you have noticed – at the end everything must not be in relation to other endogenous variables (for instance, in this case, the interest rate i^*.

Let the economy be characterised by:

$$\begin{aligned} Y &= C(Y,T) + I(Y,i) + G \\ C &= c_0 + c_1 Y_d \\ I &= b_0 + b_1 Y - b_2 i \\ \left(\frac{M}{P}\right)^d &= d_1 Y - d_2 i \\ \left(\frac{M}{P}\right)^s &= \frac{M}{P} \end{aligned}$$

Where $\left(\frac{M}{P}\right)^d$ is the aggregate money demand and $\left(\frac{M}{P}\right)^s$ the real money supply. $(b_1 + c_1) < 1$ and G, T, and M are exogenously given and constant.

1. Derive the IS function. What is the slope of the IS curve? What is $\frac{dY}{di}$? What is the sign of the slope? Write about the two components that influences the steepness of the IS curve. (1 point)

   Tips: do note that $\frac{dY}{di}$ is not the slope of the IS curve since Y is on the horizontal axis, and i is the vertical axis.

2. Derive the LM function. What is the slope of the LM curve, i.e. ? The sign of the slope? Discuss what determines the steepness of the LM curve. (1 point)

3. Plot the equilibrium output and the equilibrium interest rate with proper labels for the IS and the LM relations, as well as the axis. *No need to solve for the equilibrium Y^* and i^* – just show them on the figure.* (1 point)

4. Now, let's assume, based on the quantity theory of money, that the money demand is independent of interest rates:

   $$\left(\frac{M}{P}\right)^d = d_1 Y$$

   (3.1) What does the money demand and the LM curve looks like? (1 point)

   (3.2) Solve for the equilibrium output and the equilibrium interest rate. (1 point)

   (3.3) How does output reacts to changes in taxation, T? (1 point)

5. Now let's assume that the money demand is independent of aggregate output – meaning that the LM curve is horizontal

   $$\left(\frac{M}{P}\right)^d = d_1 - d_2 i$$

   (4.1) Solve for the equilibrium output and the equilibrium interest rate. (1 point)

   (4.2) How does output reacts to changes in taxation, T? (1 point)

   (4.3) Comparing the answers from (3.3) and (4.2), what can you say about the differences? (2 points)

Problem III: "*Evil is the root of all money*"?

In our introduction to the money market, we discussed "double coincidence" being the reason for the use of money, in place of the barter system. David Andolfatto – a professor economics at the Simon Fraser university – concluded in "Evil is the root of all money" (your mandatory reading) that:

> *A lack of double coincidence is neither necessary or sufficient to explain the demand for money.*
> *Evil appears to be the root of all money. The sermon is now concluded!*

First, explain what double coincidence is in one or two sentences. Then, explain his rationale based on the article in 500 words.
Tip: ask yourself, to him, what is this "evil"?