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Problem Set II

EE212 — Principles of Macroeconomics

Semester 2/2019-2020

Total mark: 20 points

Due date: Saturday 29 February 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 5% of your total grade (20% 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.

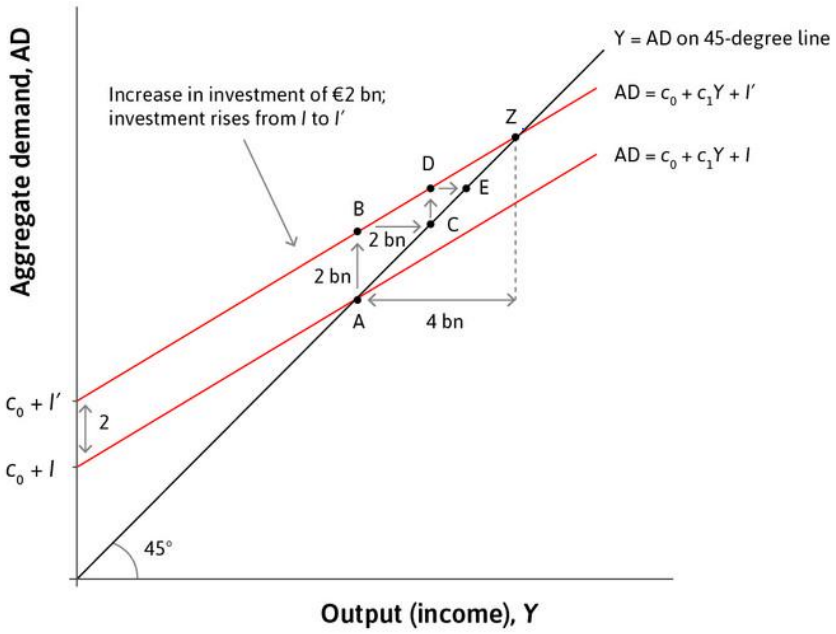
I expect your independent completion of the short essays, as it would be obvious if they are not your own ideas. Plagiarism and cheating will be treated with disciplinary actions. Thammasat University, our faculty, and I take academic integrity extremely seriously.

Problem I: Short answers (5 points)

1. "The Keynesian multiplier is always great than 1 if $T = 0$ and $G = 0$." True or false? Why?

2. "There is no private savings at the Keynesian equilibrium." True or false? Why?

3. Let's say there is no government spending and taxes, and no imports and exports. The consumption function is given by $C = c_0 + c_1 Y$, and I (investment) is given. The economy is graphically visualised as below:



There is a \$2 billion increase in investment. The marginal propensity to consume is 0.5. Which of the following statement is correct? (multiple correct answers may be possible)

(A) The new goods market equilibrium after the investment increase is E.

(B) Aggregate demand increases by a total of \$2 billion $\times$ 0.5 = \$1 billion due to the increase in investment.

(C) The multiplier is 2.

(D) The distance between C and D is three-quarters the distance between A and B (\$1.5 billion).

4. The Keynesian multiplier says that an increase in investment or government spending can lead to an even higher increase in total output. Explain how with intuition how it works, and how does it relate to the MPC.

5. The fiscal (government spendign) multiplier tends to be high during a recession, but they tend to be low (perhaps even lower than one) during an expansion. How could we explain this phenomenon?

เศรษฐกิจตกต่ำ

1) ถ้า MPC สูง ; multiplier สูงขึ้น
ถ้า MPC ต่ำ ; multiplier ต่ำลง
2) ยิ่งรวย MPC ยิ่งน้อย
↳ ถ้ามีเงิน 100 บาท กิน 80 , MPC 80/
10 M บาท กิน 1M , MPC 10/
3. เศรษฐกิจดี = คนรวย → MPC ↓
and multiplier ↓

Problem I: Short answers (5 points)

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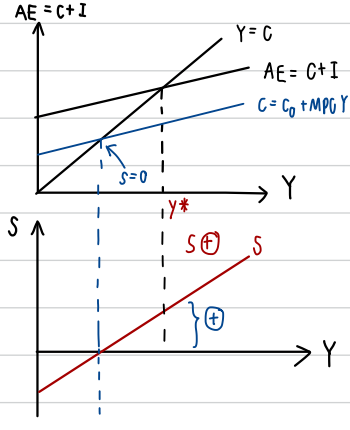
1. "The Keynesian multiplier is always great than 1 if $T = 0$ and $G = 0$." True or false? Why?

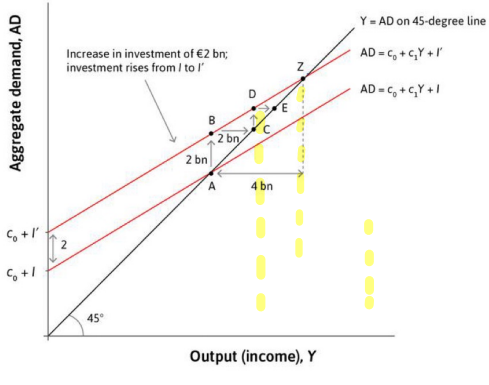
- True, the multiplier is always great than 1 (MPC>0) since multiplier = $\frac{1}{1-MPC}$. If MPC= 0, there are no multiplier

2. "There is no private savings at the Keynesian equilibrium." True or false? Why?

- False, at the Keynesian equilibrium (Y= C+I) saving is possitive as shown in the graph



3. Let's say there is no government spending and taxes, and no imports and exports. The consumption function is given by $C = c_0 + c_1 Y$, and I (investment) is given. The economy is graphically visualised as below:



There is a \$2 billion increase in investment. The marginal propensity to consume is 0.5. Which of the following statement is correct? (multiple correct answers may be possible)

(A) The new goods market equilibrium after the investment increase is E.

- False, new goods market equilibrium after investment increase is Z

(B) Aggregate demand increases by a total of \$2 billion $\times$ 0.5 = \$1 billion due to the increase in investment.

- False, aggregate demand increases by a total \$2 billion × 0.5 = \$ 4 billion due to increase in investment

As given MPC = 0.5

$$\frac{\Delta Y}{\Delta I} = \frac{1}{1 - MPC}$$

$$\Delta Y = \frac{1}{1 - 0.5}(2)$$

$$\Delta Y = 4$$

(C) The multiplier is 2.

- True, multiplier is $\frac{1}{1-MPC}$ then $\frac{1}{1-0.5} = 2$

(D) The distance between C and D is three-quarters the distance between A and B (\$1.5 billion).

- False, the answer is \$ 1 billion because as $C = c_0 + c_1 Y$ and $Y = C + I$

I increase \$ 2 (A to B) → Y increase \$ 2 (B to C) → C increase \$ 1 (C to D)

4. The Keynesian multiplier says that an increase in investment or government spending can lead to an even higher increase in total output. Explain how with intuition how it works, and how does it relate to the MPC.

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- Supposed that government spending increases 100 (G↑) ; Y increases 100 from $\Delta Y = \Delta C + \Delta I + \Delta G$ related to $\frac{\Delta Y}{\Delta G} = \frac{1}{1-MPC}$

and when Y increase 100 C increases from $\Delta C = \Delta C_0^{0} + MPC(100)$

then C increases MPC(100) → Y increases MPC(100) etc.

this will continue until the equilibrium at $\Delta Y = \frac{1}{1-MPC} \Delta G$

5. The fiscal (government spendign) multiplier tends to be high during a recession, but they tend to be low (perhaps even lower than one) during an expansion. How could we explain this phenomenon?

เศรษฐกิจตกต่ำ

- This phenomenon can be explained that when the economic is well people will be richer as well as MPC decreases and multiplier actually decreases. For more explaination, if MPC is highe multiplier also higher. Additionally, if people are richer MPC is lower.

Problem II: The Keynesian Cross in a small closed and open economy (10 points)

Assume that, in a closed economy:

$$\begin{aligned} C &= 500 + 0.5Y_D \\ I &= 100 \\ T &= 80 \\ G &= 200 \end{aligned}$$

1. (0.5 point) Solve for (i) equilibrium consumption; (ii) "planned" aggregate expenditure (aggregate demand); (iii) disposible income. Characterise the equilibrium.
2. (0.5 point) Graph – with proper labels – the equilibrium output and expenditure
3. (1 point) Solve for the equilibrium private savings and public savings.
4. (1 point) Calculate the Keynesian multiplier, as well as the autonomous spending. What do they mean?
5. (1 point) It is election year, and the incumbent government increases their government spending from 200 to 300. Find the new equilibrium demand, output, consumption, and disposable income. How much does each increase? Graph these changes. Why would the government want to do this?

Now let's consider a small open economy where the exchange rate and interest rate are pegged on the US.

$$\begin{aligned} C &= c_0 + c_1(Y - T) \\ I &= d_0 + d_1 Y - d_2 r \\ M &= m_1 Y \\ X &= x_1 Y^W \end{aligned}$$

Let r be the exogenous interest rate, and Y^W the level of foreign outputs. G is exogenous.

6. (1 point) All coefficients (e.g. c_1, d_1, d_2) are positive. According to your understanding, what is d_1 and d_2? What are the reasons for the signs before them (plus or minus)?
7. (3 points) What is the effect of lower government spending ($G \downarrow$) on the budget balance, $G - T = G - tY$? Assuming that $\big(1 - c_1(1-t) - d_1 + m_1\big) < 1$, and the linear tax rate t is constant.
8. (2 points) Suppose that the government is budget balanced – given by $G = T = tY$. Find the equilibrium output in this economy. How does the equilibrium output change when foreign output increases?
   Tip: replace G and T by tY.

Problem II: The Keynesian Cross in a small closed and open economy (10 points)

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Assume that, in a closed economy:

$$\begin{aligned} C &= 500 + 0.5Y_D \\ I &= 100 \\ T &= 80 \\ G &= 200 \end{aligned}$$

1. (0.5 point) Solve for (i) equilibrium consumption; (ii) "planned" aggregate expenditure (aggregate demand); (iii) disposible income. Characterise the equilibrium.

(i) $C = 500 + 0.5\,Y_D$

$C = 500 + 0.5(1520 - 80)$

$C = 1{,}220$

(ii) Aggregate expenditure : $AE = C + I + G$

$AE = 500 + 0.5(Y - T) + 100 + 200$

$AE = 500 + 0.5(1520 - 80) + 100 + 200$

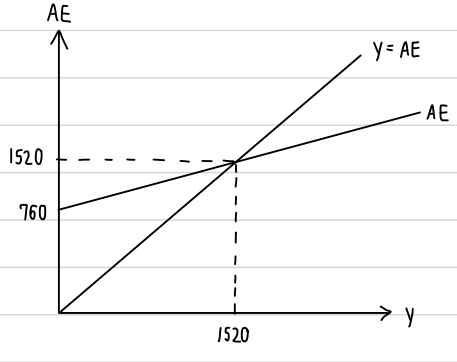
$AE = 1520$

(iii) Disposible income . $Y_D = Y - T$

$Y_D = (1520 - 80)$

$Y_D = 1440$

2. (0.5 point) Graph – with proper labels – the equilibrium output and expenditure



from $AE = C + I + G$

$AE = 500 + 0.5(Y - T) + 100 + 200$

$AE = 760 - 0.5Y$

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3. (1 point) Sólve for the equilibrium private savings and public savings.

- private savings : $S = Y - T - G$

$S = 1520 - 80 - 500 - 0.5(1520 - 80)$

$S = 220$

- public savings : $S = T - G$

$S = 80 - 200$

$S = -120$

4. (1 point) Calculate the Keynesian multiplier, as well as the autonomous spending. What do they mean?

- Keynesian multiplier : $\frac{1}{1-MPC} = \frac{1}{1-0.5} = 2$ #

- autonomous spending : from $AE = C + I + G$

$AE = 500 + 0.5(Y - T) + 100 + 200$

$AE = 760 + 0.5Y$

then autonomous spending = 760

- Autonomous spending is the payment that you have to spend without any action. However, spending depends on multiplier.

5. (1 point) It is election year, and the incumbent government increases their government spending from 200 to 300. Find the new equilibrium demand, output, consumption, and disposable income. How much does each increase? Graph these changes. Why would the government want to do this?

(i) equilibrium output

$Y = C + I + G$

$Y = 500 + 0.5(Y - 80) + 100 + 300$

$Y = 940 + 0.5Y$

$0.5Y = 940$

$Y = 1880$

(ii) $C = 500 + 0.5(Y - T)$

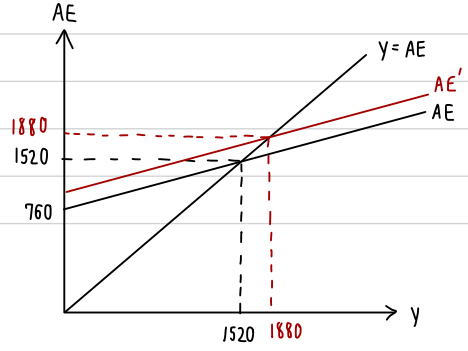
$C = 500 + 0.5(1880 - 80)$

$C = 1400$

(iii) disposable income : $Y_d = Y - T$

$Y_d = 1880 - 80$

$Y_d = 1800$



Ans equilibrium output increased by 1880 - 1520 = 360, equilibrium consumption increased by 1400 - 1220 = 180, Y_d increased by 1800 - 1440 = 360

- Government wants to do the election campaign. So, they increase government spending.

Now let's consider a small open economy where the exchange rate and interest rate are pegged on the US.

$$
\begin{aligned}
C &= c_0 + c_1(Y - T) \\
I &= d_0 + d_1 Y - d_2 r \\
M &= m_1 Y \\
X &= x_1 Y^W
\end{aligned}
$$

interest rate

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Let r be the exogenous interest rate, and Y^W the level of foreign outputs. G is exogenous.

6. (1 point) All coefficients (e.g. c_1, d_1, d_2) are positive. According to your understanding, what is d_1 and d_2? What are the reasons for the signs before them (plus or minus)?

- d_1 is plus because when income increases people will invest more
  d_1 is marginal propensity to invest (MPI)
- d_2 is minus because when interest increases people will invest less
  d_2 is sensitivity of investment to interest rate

7. (3 points) What is the effect of lower government spending ($G \downarrow$) on the budget balance, $G - T = G - tY$? Assuming that $(1 - c_1(1-t) - d_1 + m_1) < 1$, and the linear tax rate t is constant.

$$Y = c_0 + c_1(Y) - c_1(tY) + d_0 + d_1 Y - d_2 r + G + x_1 Y^W - m_1 Y$$

$$(1 - c_1 + c_1 t - d_1 + m_1) Y = c_0 + d_0 - d_2 r + G + x_1 Y^W$$

$$Y = \frac{1}{(1 - c_1(1-t) - d_1 + m_1)} (c_0 + d_0 - d_2 r + G + x_1 Y^W)$$

(multiplier)

$$Y = [\text{multiplier}](c_0 + d_0 - d_2 r + G + x_1 Y^W)$$

from budget balance $= G - tY$

$$= G - t(\text{multiplier})(c_0 + d_0 - d_2 r + G + x_1 Y^W)$$

$$= (1 - tm)G - tm\, c_0 - tm d_0 + tm d_2 r - tm x_1 Y^W$$

$$\frac{d\,\text{budget b.}}{dG} = 1 - \frac{t}{(1 - c_1(1-t) - d_1 + m_1)}$$

since $0 < t < 1$;

if $t > 1 - c_1(1-t) - d_1 + m_1$ .. $G\uparrow$ budget balance $\downarrow$

if $t < 1 - c_1(1-t) - d_1 + m_1$ $G\uparrow$ budget balance $\uparrow$

[$G\downarrow$ BB$\uparrow$ / $G\downarrow$ BB$\downarrow$]

8. (2 points) Suppose that the government is budget balanced – given by $G = T = tY$. Find the equilibrium output in this economy. How does the equilibrium output change when foreign output increases?
Tip: replace G and T by tY.

$$
\begin{aligned}
C &= c_0 + c_1(Y - T) \\
I &= d_0 + d_1 Y - d_2 r \\
M &= m_1 Y \\
X &= x_1 Y^W
\end{aligned}
$$

$Y = C + I + G + X - M$

$Y = C_0 + C_1(Y - tY) + d_0 + d_1 Y - d_2 r + tY + x_1 Y^W - m_1 Y$

$Y - C_1 Y - C_1 tY - d_1 Y - tY + m_1 Y = C_0 + d_0 - d_2 r + x_1 Y^W$

$Y(1 - C_1 - C_1 t - d_1 - t + m_1) = C_0 + d_0 - d_2 r + x_1 Y^W$

$$Y = \frac{1}{(1 - C_1 - C_1 t - d_1 - t + m_1)} (C_0 + d_0 - d_2 r + x_1 Y^W)$$

$$\frac{dY}{dY^W} = \frac{x_1}{1 - C_1 - C_1 t - d_1 - t + m_1}$$

$\therefore$ Then, if Y^W increases by 1 unit equilibrium output by $\frac{x_1}{1 - C_1 - C_1 t - d_1 - t + m_1}$

Problem IV: *"you shall earn your bread in sweat"* (5 points)

Based on your mandatory reading written by Michal Kalecki in 1943, titled *Political Aspects of Full Employment*, consider the text below.

The referenced work asked a perplexing question. *"The entrepreneurs in the slump are longing for a boom; why do they not gladly accept the synthetic boom which the government is able to offer them?"* Summarise the main reasons given.

My question is this. Does the same phenomenon (existence of political obstacles from capitalists against full-employment economic policy) happens in Thailand? If not, explain; and if so, do the same reasons apply? Are there any other reasons you think are more accurate?

word count: 600 words ($\pm$*20 words are allowed)*

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Problem IV: “you shall earn your bread in sweat” (5 points)

To begin with, full employment is an economic terminology which explains a situation in which a person who is willing to work at the prevailing rate of wages is fully employed. Additionally, there is no involuntary unemployment. Every economy aims to achieve full employment equilibrium where all its resources and output are maximized and efficiently employed leading to economic growth. Moreover, inequality will be reduced and relative poverty from those who are unemployed will be prevented as well as decreasing people’s stress and social problems. In the business field, both entrepreneurs and consumers feel confidence which will encourage better economic growth in long-term. Full employment actually helps the government to lower government spending such as welfare spending, and receives more income tax. On the other hand, full employment never occurs in reality because the economy always consists of some natural rate of unemployment, often taken as the sum of frictional and structural unemployment rates, and the discouraged-workers effect, which happens when people have given up looking for jobs.

The entrepreneurs in the slumps are longing for a boom; why do they not gladly accept the synthetic boom which the government is able to offer them? This question can be answered with these facts:

First of all, capitalists are not so keen on the idea of the government interfering with their mode-de-vie—which is called “state of confidence”. This “state” is the core of levels of employment, which keeps the level intact. With the level intact, private investment stays stabilized. To adjust towards equilibrium, both income tax and imports are the alternative choices in the aggregate expenditure that automatically change the state of the economy in a way as to stabilize or to reduce fluctuations in the business cycle, without direct intervention by policymakers or government.

Second, these capitalists dislike the government's intentions on how to spend their funds. The government, in this perspective, plans to spend their money with public investments, which impairs the profitability of private investment. According to Adam Smith's words:

"As every individual...endeavours...to employ his capital in the support of domestic industry, and to direct that industry that its produce may be of greatest value; every individual labours to render the annual revenue of society as great as he can. [While] he intends only his own gain, ...he is in this, as in many other cases, led by an invisible hand to promote an end which was no part of his intention."

In which, the invisible hand, in the economic mechanism to adjust its own demand and supply, is allowed the private investor to control its pricing at their level of the profits, in the contrast of the government which to balance the level of the economy.

The third one, is political. The maintenance of full employment would affect the society both politically and economically. The economical effects had been discussed in the paragraph above. But, for the political effects, the patron classes' position would be antagonized. The blue-collared classes would be more class-conscious. Strikes and manifestations for wage increase would happen. Surely, there would be more profit, but business leaders appreciate "discipline in the factories" and "political stability" much more than those of profits. Also, unemployment is a necessary element for the "normal" capitalist system.

To answer the question, the full employment phenomenon is difficult happening in Thailand as well as capitalists against this economic policy. First of all, the structure of our society, as we are known, unemployment especially frictional and structural unemployment exists and spreads over job fields. Hence, this supports that full employment does not occur. Sometimes efficiency wage is created by the capitalist for magnetizing effective workers; therefore, mismatched people will be disregarded. To be accepted, this economic policy helps the society, in the panorama view. But , the capitalist does not receive benefit as they need or they must have.

Cite;

Edwin Cannan,ed. (First published 1776).Retrived from

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Tejvan Pettinger,(2013,May 21).Retrieved from

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