Student ID.....

EE212 Principles of Macroeconomics, 2/2016 (Sec. 046401)

Problem Sets 4

Chapter 6. ISLM Model

Please submit at the BE office, 5th floor department of Economics building.

Deadline of submission : April 24, 2016, before 15.00 hrs.

Note that we will have a tutorial session on Wednesday **19, April (afternoon)**.
Also, we will have our usual class Wednesday **19, April, 8.00 - 9.30 am**.
A quiz is arranged on **Wednesday 26, April, 8.00 am**.
Late submission will not be accepted. Please do all questions on your own paper sheets. Attach your paper sheets with the question sheet and then submit on or before the due date.

NOTE THAT EXAM QUESTIONS WILL INCLUDE ONLY ESSAY QUESTION. PLEASE ATTACH A SEPARATE SHEET.

1. We normally draw the IS curve as downward sloping and the LM curve as upward sloping, as appropriate for our usual assumptions about behavior. How would either or both of these curves look different if the following unusual assumptions were made? Either describe or draw your answers, being sure in either case to make clear what you mean.

   (a) Investment does not depend on the interest rate. In other words, elasticity of investment demand with respect to interest rate is equal to zero.

   (b) Investment demand is perfectly elastic with respect to interest rate.

   (c) Demand for money does not depend on interest rate. In other words, elasticity of money demand with respect to interest rate is equal to zero.

   (d) Demad for money is perfectly elastic with respect to interest rate. Note that this case is called "liquidity trap" in macroeconomics.

2. Consider an economy in which the goods and money markets are described by the following equations:

- Aggregate consumption: $C = 400 + 0.2(Y - T)$
- Aggregate investment: $I = 80 + 0.5Y - 10r$.
- Government sector: $G = T = 100$.
- Money demand: $M^d = 100 + Y - 50r$.
- Real Money supply: $\frac{M^s}{P} = 100$.

Hint.

I. **Equilibrium in the good market** : $Y = DAE = C + I + G$.

$$\begin{aligned} Y &= DAE \\ &= 400 + 0.2(Y - 100) + 80 + 0.5Y - 10r + 100 \\ &= 400 + 0.2Y - 20 + 80 + 0.5Y - 10r + 100 \\ &= 560 + 0.7Y - 10r \end{aligned}$$

$$Y = \frac{1}{0.3}[560 - 10r] \tag{1}$$

Equation (1) is the IS equation. It shows us the combination between interest rate (r) and output (Y) that makes equilibrium in the good market. The minus sign of the coefficient in front of the varaiable r, shows us that the slope of IS is negative.

II. **Equilibrium in the money market** : $\frac{M^s}{P} = M^d$

$$\begin{aligned} \frac{M^s}{P} &= M^d \\ 100 &= 100 + Y - 50r \\ r &= \frac{1}{50}Y \end{aligned}$$

$$r = \frac{1}{50}Y \tag{2}$$

Equation (2) is the IS equation. It shows us the combination between interest rate (r) and output (Y) that makes equilibrium in the good market. The positive sign of the coefficient in front of variable Y, shows us that the slope of LM curve is positive.

(a) Equilibrium for ISLM model holds when both equation (1) and equation (2) are satisfied. The combination between interest rate (r) and output (Y) that makes equilibrium in both the good market and the money market. Solve the system of two equations, equation (1) and equation (2). Calculate the equilibrium level of income and interest rate, and describe your solution with a graph.

(b) Suppose government spending increases to 200. Compute the fiscal policy multiplier (hint: this is the increase in Y divided by the increase in G).

Note that : Solutions for the summarizing part will be provided in the class. If you would like to have the solution, please attend the class.

Summarize. ISLM

IS	LM
Derivation : equilibrium in the **goods** market $r \uparrow \Rightarrow I.... \Rightarrow DAE..... \Rightarrow Y.....$ r and Y has ..... relationship (negative/positive) IS has ..... slope (negative/positive)	**Derivation:** equilibrium in the **money** market $Y \uparrow \Rightarrow M^d..... \Rightarrow r.....$ r and Y has .....relationship(negative/positive) LM has ..... slope (negative/positive)
Slope of IS, $\left\|\frac{\Delta r}{\Delta Y}\right\|$ depends on 1. **MPC** : MPC is high, income multiplier is ..... (high/low) **High MPC** $\Rightarrow$ IS curve is ..... (steep/flat) high MPC, Y increase a little, consumption increases a lot. Income multiplier is high, as autonomous expenditure increases a little, equilibrium output increases a lot [in the goods market] $r \uparrow \Rightarrow I \downarrow \Rightarrow DAE \downarrow$ a..... $\Rightarrow Y \downarrow$ a ..... (a little/ a lot) 2. **Interest elasticity of investment** **High** $\varepsilon_r^I \Rightarrow$ IS curve is ..... (steep/flat) high ε_r^I, as interest rate increases a little, investment decreases a lot. $r \uparrow$ a little $\Rightarrow I \downarrow$ a ..... $\Rightarrow DAE \downarrow$ a ..... $\Rightarrow Y \downarrow$ a ..... (a little/ a lot)	**Slope of LM** $= \frac{\Delta r}{\Delta Y}$ depends on 1. **Money demand elasticity of income** **High** $\varepsilon_Y^{Md} \Rightarrow$ LM curve is ..... (steep/flat) High ε_Y^{Md} , when output (Y) increases a little, Money demand increases a lot. $Y \uparrow \Rightarrow M^d = L(Y,r), \uparrow a..... \Rightarrow r \uparrow a.....$ (a little/ a lot) 2. **Money demand elasticity of interest rate** **High** $\varepsilon_r^{Md} \Rightarrow$ LM curve is ..... (steep/flat) **High** ε_r^{Md}, when interest rate(r) increases a little, Money demand decreases a lot. Equilibrium in the money market : $\frac{M^s}{P} = M^d = L(Y,r)$ Since real money supply is constant, given that interest rates increases, Money demand decreases a lot, output needs to increases a lot to raise money demand up to the original level, causing equilibrium in money market. $r \uparrow$ a little $\Rightarrow M^d = L(Y,r), M^d \downarrow a.....$ $\Rightarrow$ to make money market in equilibrium $\Rightarrow$ it requires a ..... (a little/ a lot) increase in Y
Shift in IS : Fiscal Policy 1. expansionary fiscal policy $\Rightarrow$ IS curve shifts to the ..... (left/right) 2. Contractionary fiscal policy $\Rightarrow$ IS curve shifts to the ..... (left/right) 3. ΔAutonomous spending $\Rightarrow IS$ shifts to the	**Shift in LM : Monetary Policy** 1. Expansionary monetary policy $M^S \uparrow \Rightarrow$ LM shifts to the ..... 2. Contractionary monetary policy $M^S \downarrow \Rightarrow$ LM shifts to the ..... 3. $M^d \uparrow$ for all levels of r and Y $\Rightarrow$ LM shifts to the .....

Summarize. ISLM and Policy

	Expansionary Fiscal Polcy	**Expansionary Monetary Policy**
interest rate (r)	..... (increase/ decrease)	..... (increase/ decrease)
output (Y)	..... (increase/ decrease)	..... (increase/ decrease)
Tools	G.... T..... Balance budget	OMO : central bank ..... (buy/sell) bonds ..... discount rate, bank rate. (increase/decrease) ..... reserve requirement ratio (increase/decrease)

	Contractionary Fiscal Polcy	**Contactionary Monetary Policy**
interest rate (r)	..... (increase/ decrease)	..... (increase/ decrease)
output (Y)	..... (increase/ decrease)	..... (increase/ decrease)
Tools	G.... T..... Balance budget	OMO : central bank ..... (buy/sell) bonds ..... discount rate, bank rate. (increase/decrease) ..... reserve requirement ratio (increase/decrease)

Summarize. Policy Effectiveness

1. Fiscal Policy Effectiveness

	IS	**LM**
Steep	..... (effective/ineffective)	..... (effective/ineffective)
flat	..... (effective/ineffective)	..... (effective/ineffective)

2. Monetary Policy Effectiveness

	IS	**LM**
Steep	..... (effective/ineffective)	..... (effective/ineffective)
flat	..... (effective/ineffective)	..... (effective/ineffective)