ECON20001 Intermediate Macroeconomics

Tutorial 3 (Week 4)

Zheng Fan

Semester 2, 2022
The University of Melbourne

Introduction

Zheng Fan

- Ph.D student in Economics at Unimelb
- Consultation & Ed discussion board (your first priority)
- Email Dr David Moreton for all administrative issues
- Consult Stop 1 for special consideration
- Email: fan.z@unimelb.edu.au (last resort!)

Before asking any questions, make sure you have gone through the Ed discussion board, subject guide and Q&A on Canvas!

Slides: github.com/zhengf1/InterMa2022

IS-LM

IS curve:

- $Y = C(Y, T) + I(Y, i) + G$
- Fiscal contraction: G decreases and/or T increases, IS curve shifts in
- Fiscal expansion: G increases and/or T decreases, IS curve shifts out
- Movement along LM curve

IS-LM

IS curve:

- $Y = C(Y, T) + I(Y, i) + G$
- Fiscal contraction: G decreases and/or T increases, IS curve shifts in
- Fiscal expansion: G increases and/or T decreases, IS curve shifts out
- Movement along LM curve

LM curve:

- $\frac{M}{P} = YL(i)$
- Monetary contraction , M decreases, LM curve shifts up
- Monetary expansion , M increases, LM curve shifts down
- Movement along IS curve

Policy mixture

Policy mix

- Large deficit: Fiscal Contraction, Monetary Expansion

Effectiveness of monetary and fiscal policy

Liquidity traps

Policy mixture

Policy mix

- Large deficit: Fiscal Contraction, Monetary Expansion
- Global boom: Fiscal Contraction, Monetary Contraction

Effectiveness of monetary and fiscal policy

Liquidity traps

Policy mixture

Policy mix

- Large deficit: Fiscal Contraction, Monetary Expansion
- Global boom: Fiscal Contraction, Monetary Contraction
- Global financial crisis: Fiscal Expansion, Monetary Expansion

Effectiveness of monetary and fiscal policy

Liquidity traps

Policy mixture

Policy mix

- Large deficit: Fiscal Contraction, Monetary Expansion
- Global boom: Fiscal Contraction, Monetary Contraction
- Global financial crisis: Fiscal Expansion, Monetary Expansion

Effectiveness of monetary and fiscal policy

Liquidity traps

Policy mixture

Policy mix

- Large deficit: Fiscal Contraction, Monetary Expansion
- Global boom: Fiscal Contraction, Monetary Contraction
- Global financial crisis: Fiscal Expansion, Monetary Expansion

Effectiveness of monetary and fiscal policy

- Comparative effects of monetary or fiscal policy depend on ... of IS and LM curves

Liquidity traps

Policy mixture

Policy mix

- Large deficit: Fiscal Contraction, Monetary Expansion
- Global boom: Fiscal Contraction, Monetary Contraction
- Global financial crisis: Fiscal Expansion, Monetary Expansion

Effectiveness of monetary and fiscal policy

- Comparative effects of monetary or fiscal policy depend on slopes of IS and LM curves

Liquidity traps

Policy mixture

Policy mix

- Large deficit: Fiscal Contraction, Monetary Expansion
- Global boom: Fiscal Contraction, Monetary Contraction
- Global financial crisis: Fiscal Expansion, Monetary Expansion

Effectiveness of monetary and fiscal policy

- Comparative effects of monetary or fiscal policy depend on slopes of IS and LM curves

Liquidity traps

- Nominal interest rates i cannot fall below zero

Policy mixture

Policy mix

- Large deficit: Fiscal Contraction, Monetary Expansion
- Global boom: Fiscal Contraction, Monetary Contraction
- Global financial crisis: Fiscal Expansion, Monetary Expansion

Effectiveness of monetary and fiscal policy

- Comparative effects of monetary or fiscal policy depend on slopes of IS and LM curves

Liquidity traps

- Nominal interest rates i cannot fall below zero
- ... policy becomes ineffective while ... policy is still effective

Policy mixture

Policy mix

- Large deficit: Fiscal Contraction, Monetary Expansion
- Global boom: Fiscal Contraction, Monetary Contraction
- Global financial crisis: Fiscal Expansion, Monetary Expansion

Effectiveness of monetary and fiscal policy

- Comparative effects of monetary or fiscal policy depend on slopes of IS and LM curves

Liquidity traps

- Nominal interest rates i cannot fall below zero
- Monetary policy becomes ineffective while Fiscal policy is still effective

In-tutorial Sheet - Q2

2. Consider the following numerical example of the IS-LM model:

$$
\begin{aligned}
C &= 100 + 0.3Y_D \\
I &= 150 + 0.2Y - 1000i \\
T &= 100 \\
G &= 200 \\
\bar{i} &= 0.01 \\
(M/P)^d &= 2Y - 4000i
\end{aligned}
$$

(a) Find the equation for aggregate demand.

(b) Derive the IS relation.

(c) Derive the LM relation if the central bank sets an interest rate of 1%.

In-tutorial Sheet - Q2

2. Consider the following numerical example of the IS-LM model:

$$
\begin{aligned}
C &= 100 + 0.3Y_D \\
I &= 150 + 0.2Y - 1000i \\
T &= 100 \\
G &= 200 \\
\bar{i} &= 0.01 \\
(M/P)^d &= 2Y - 4000i
\end{aligned}
$$

(a) Find the equation for aggregate demand.

Aggregate demand

$$Z = C + I + G = 100 + 0.3(Y - 100) + 150 + 0.2Y - 1000i + G$$

In-tutorial Sheet - Q2

(b) Derive the IS relation.

In-tutorial Sheet - Q2

(b) Derive the IS relation.

The IS relation is derived from goods market equilibrium condition, which requires

$$Y = Z = 100 + 0.3(Y - 100) + 150 + 0.2Y - 1000i + G$$

It follows

$$Y = 840 - 2000i$$

The IS relation is therefore

$$i = (840 - Y)/2000$$

In-tutorial Sheet - Q2

(b) Derive the IS relation.

The IS relation is derived from goods market equilibrium condition, which requires

$$Y = Z = 100 + 0.3(Y - 100) + 150 + 0.2Y - 1000i + G$$

It follows

$$Y = 840 - 2000i$$

The IS relation is therefore

$$i = (840 - Y)/2000$$

(c) Derive the LM relation if the central bank sets an interest rate of 1%.

In-tutorial Sheet - Q2

(b) Derive the IS relation.

The IS relation is derived from goods market equilibrium condition, which requires

$$Y = Z = 100 + 0.3(Y - 100) + 150 + 0.2Y - 1000i + G$$

It follows

$$Y = 840 - 2000i$$

The IS relation is therefore

$$i = (840 - Y)/2000$$

(c) Derive the LM relation if the central bank sets an interest rate of 1%.

Since the central bank sets the interest rate, the LM relation is $i = \bar{i} = 0.01$.

In-tutorial Sheet - Q2

(d) Solve for the equilibrium values of output, consumption, investment and real money supply.

In-tutorial Sheet - Q2

(d) Solve for the equilibrium values of output, consumption, investment and real money supply.

Using $\bar{i} = 0.01$, we can find

$$Y = 840 - 2000i = 820$$

Using the consumption function and investment function, we have

$$C = 100 + 0.3Y_D = 100 + 0.3(820 - 100) = 316$$

and

$$I = 150 + 0.2Y - 1000i = 150 + 0.2 \times 820 - 1000 \times 0.01 = 304$$

Use money market clearing condition to solve for real money supply

$$\frac{M^s}{P} = \frac{M^d}{P} = 2Y - 4000i = 2 \times 820 - 4000 \times 0.01 = 1600$$

In-tutorial Sheet - Q2

(e) Contractionary monetary policy:

Suppose that the central bank increases the interest rate to 0.03. What is the impact of this contractionary monetary policy on the IS and LM curves? Find the new equilibrium values of output, consumption, investment and real money supply.

In-tutorial Sheet - Q2

(e) Contractionary monetary policy:

Suppose that the central bank increases the interest rate to 0.03. What is the impact of this contractionary monetary policy on the IS and LM curves? Find the new equilibrium values of output, consumption, investment and real money supply.

With the contractionary monetary policy, the new interest rate is 0.03.

Following the same steps as before by substituting $\bar{i} = 0.03$ into the IS relation, we can find $Y = 780$.

Using the consumption function and investment function, $C = 304$ and $I = 276$.

The money market clearing condition gives $M/P = 1440$.

The contractionary monetary policy lowers output, consumption and investment. It requires a fall in real money supply.

In-tutorial Sheet - Q2

(f) Expansionary fiscal policy.

Suppose that the government increases its spending G to 300 (keeping $\bar{i} = 0.01$). What is the impact of this expansionary fiscal policy on the IS and LM curves? Find the new equilibrium values of output, consumption, investment and real money supply.

In-tutorial Sheet - Q2

(f) Expansionary fiscal policy.

Suppose that the government increases its spending G to 300 (keeping $\bar{i} = 0.01$). What is the impact of this expansionary fiscal policy on the IS and LM curves? Find the new equilibrium values of output, consumption, investment and real money supply.

With the expansionary fiscal policy, G increases to 300. The goods market equilibrium condition :

$$Y = 1040 - 2000i$$

Since $\bar{i} = 0.01$, we can solve for $Y = 1020$, $C = 376$ and $I = 344$. The money market clearing condition gives $M/P = 2000$.

Notice that the expansionary fiscal policy raises output, consumption and investment. To keep the interest rate at $\bar{i} = 0.01$, real money supply increases to accommodate the rise in money demand.

In-tutorial Sheet - Q3

3. Policy mix.

What policy mix of monetary and fiscal policy is needed to meet the objectives given here?

(a) Increase Y while keeping $\bar{i}$ constant. Would investment (I) change?

In-tutorial Sheet - Q3

3. Policy mix.

What policy mix of monetary and fiscal policy is needed to meet the objectives given here?

(a) Increase Y while keeping $\bar{i}$ constant. Would investment (I) change?

The interest rate constant
$\rightarrow$ the LM curve remains unchanged

To increase output, the government can use an expansionary fiscal policy by either increasing G or decreasing T
$\rightarrow$ the IS curve shifts to the right.

Investment will increase because output rises and the interest rate is constant.

In-tutorial Sheet - Q3

(b) Decrease a fiscal deficit while keeping Y constant. Why must $\bar{i}$ also change?

In-tutorial Sheet - Q3

(b) Decrease a fiscal deficit while keeping Y constant. Why must $\bar{i}$ also change?

The government should pursue a contractionary fiscal policy by either increasing T or decreasing G to reduce the fiscal deficit.
$\rightarrow$ The IS curve shifts to the left.

To keep output constant, monetary policy has to be expansionary
$\rightarrow$ The central bank should cut the interest rate to level output unchanged.
$\rightarrow$ The LM curve shifts down

The economy has a lower interest rate, but output is constant.

The end

Thanks for your attention! 😄