

Lecture 3

Chapter 3

Fiscal Policy & the IS curve

- ⇒ full employment and potential real GDP
- ⇒ Fiscal Policy
- ⇒ IS Curve

full employment and potential real GDP.

→ When the economy is at full employment:

real GDP = potential real GDP.

actual unemployment rate = the natural unemployment rate

→ when the economy is below full employment,

unemployment rate > natural unemployment rate

& real GDP < potential GDP

In this case it needs expansionary policy

→ When the economy is above full employment,

unemployment rate < the natural unemployment rate

& real GDP > potential GDP

Operating above potential is only possible for a short while

In this case it needs contractionary policy

Note

- The natural rate of unemployment includes only frictional and structural unemployment, and not cyclical unemployment.

NOTE

The purpose of contractionary fiscal policy is to slow growth to a healthy economic level. An economy that grows above that level creates four negative consequences.

1. It creates inflation. That's when prices rise too fast in clothing, food, and other necessities. This decreases the standard of living.
2. It drives up prices in investments.
3. It's unsustainable (not continue in the long-run).
4. It lowers unemployment to below the natural rate of unemployment.

Fiscal Policy

- * Fiscal policy is the use of government spending and taxes to stabilize the economy
- * Tools of fiscal policy are Taxes T & Government expenditure G
- * The goals of fiscal policy include:
 - Expand or slow economic growth
 - Achieve full employment
 - Maintain price stability

* TYPES OF FISCAL POLICY

<u>Expansionary fiscal policy</u>	<u>Contractionary fiscal policy</u>
Fiscal policy that encourages economic growth Y 	Fiscal policy that reduces economic growth Y 
Higher spending, tax cuts G  or T 	Lower spending, higher taxes G  or T 

LIMITS OF FISCAL POLICY

- * Hard for the government to change spending levels
- * Hard to predict the future (Sometimes, fiscal policy cannot have the desired impact on the economy)
- * *Implementing economic decisions does not happen instantly but takes time, this is known as a policy lag.*

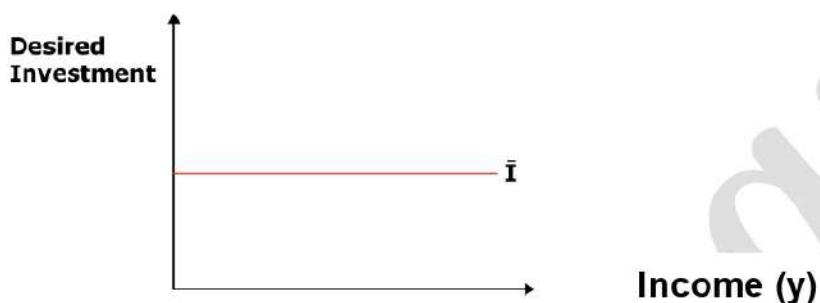


IMPORTANT NOTE

INVESTMENT CAN BE DIVIDED INTO TWO TYPES

1. The autonomous investment (\bar{I})

Investment that is unaffected by changes in any of the factors, including interest rate and income.



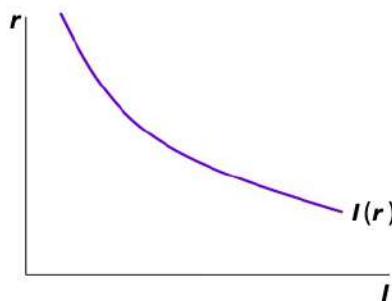
2. Interest Induced Investment

Whenever an entrepreneur decides to invest, he either uses his own resources to finance the investment or **borrow funds from the market** for which he has to pay the market rate of interest.

→ If the interest rate increases (higher cost of borrowing), investment will be unprofitable. Therefore, as the interest rate rises, investors will reduce the quantity that they borrow, and investment will decrease.

Investment and the real interest rate

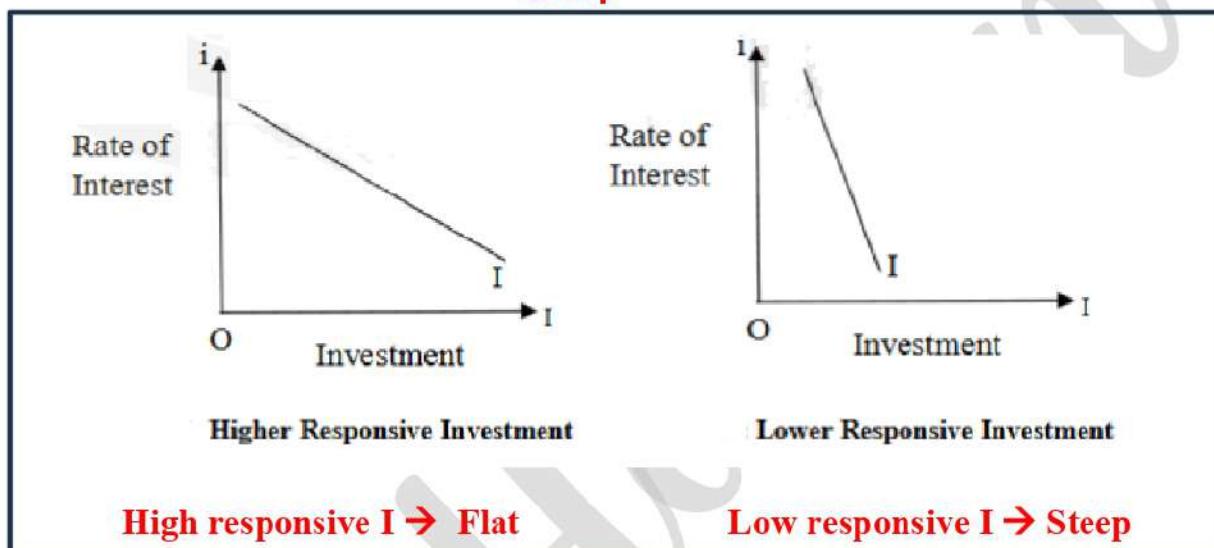
- Assumption: **investment spending is inversely related to the real interest rate**
- $I = I(r)$, such that $r \uparrow \Rightarrow I \downarrow$



→ The responsiveness of investment to interest rate

If the responsiveness of investment to interest rate is **high**, a small decline in interest rate will lead to a large increase in investment and investment curve would be **flat**.

If the responsiveness of investment to interest rate is **low**, the same decline in interest rate will lead to a small increase in investment and investment curve would be **steep**.



→ The effect of responsiveness of investment to interest rate on equilibrium income:

- In case of a **flat** Investment curve, a small decrease in interest rate brings a large increase in equilibrium income.
- In case of a **steep** Investment curve, the same small decrease in interest rate brings a small increase in equilibrium income.

IS curve

→ Definition & Derivation

- What causes movement along the IS curve??
- What makes the IS curve steep or flat??
- What causes shift of the IS curve??

Definition of IS curve:

A graph of all combinations of r and Y that result in goods market equilibrium

i.e. *actual expenditure (output)*
= *planned expenditure*

The equation for the IS curve is:

$$Y = C(Y - \bar{T}) + I(r) + \bar{G}$$

consumption function: $\rightarrow C = C(Y - T)$
govt policy variables: $\rightarrow G = \bar{G}, T = \bar{T}$

For Simplicity

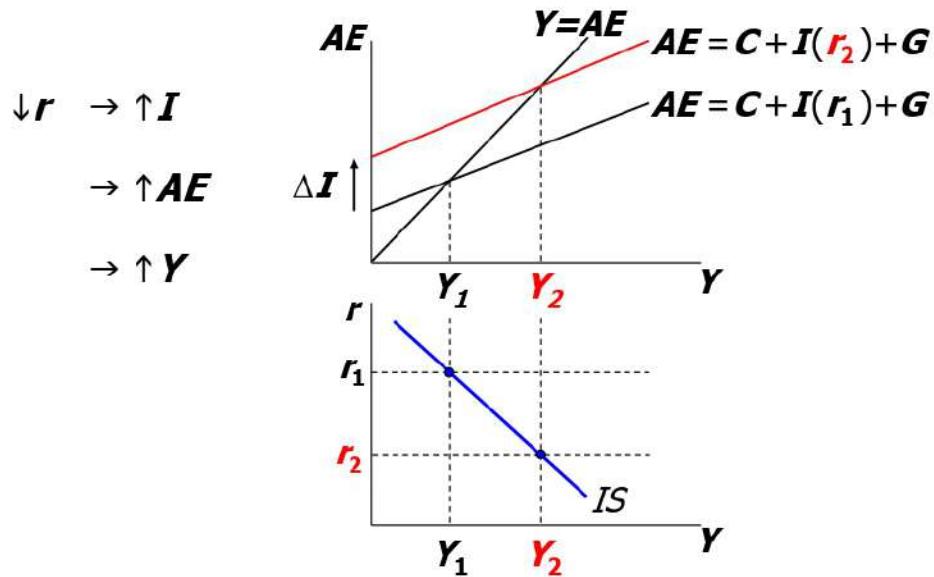
In this Chapter

We deal with closed economy with lumpsum tax

No income tax - No Exports - No Imports

Deriving the IS curve:

At lower interest rates, equilibrium output in goods market is higher.



Why the IS curve is negatively sloped???

A fall in the interest rate (r) motivates firms to increase investment spending, which drives up total planned aggregate expenditure (upward shift in AE). To restore equilibrium in the goods market, output (Y or GDP) must increase.

→ What causes movement along the IS curve??

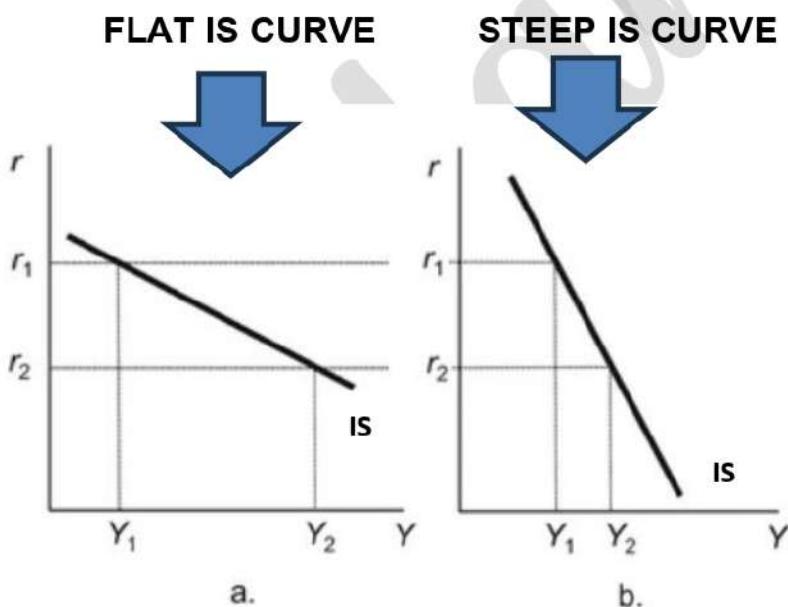
Change in the interest rate: as r rise $\rightarrow Y$ falls

NOTE:

Change in the interest rate causes shift in AE & movement on the same IS curve

→ What makes the IS curve steep or flat??

- When investment is very responsive to interest rate changes, i.e. **flat investment curve**, a small change in interest rate brings a large change in investment which causes a large change in income. In this case **IS curve is flat**, this is because a given change in interest rate produces large change in income.
- When investment is less responsive to interest rate changes, i.e., **steep investment curve**, the same change in interest rate brings a smaller change in investment which causes a smaller change in income. In this case **IS curve is steep**.



Steep Investment → Steep IS

Flat Investment → Flat IS

→ What causes shift of the IS curve??

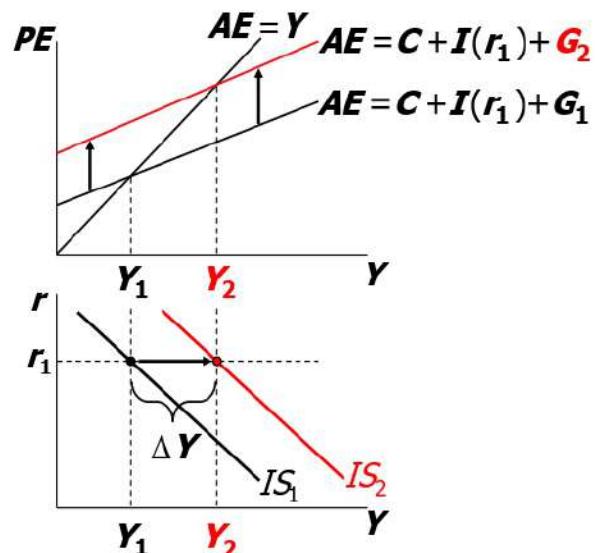
Change in G & T

Shifting the IS curve: ΔG

At any value of r ,

$\uparrow G \rightarrow \uparrow AE \rightarrow \uparrow Y$

...so the IS curve shifts to the right.



⇒ As government spending increases, output increases for any given interest rate: shifts the IS curve rightward

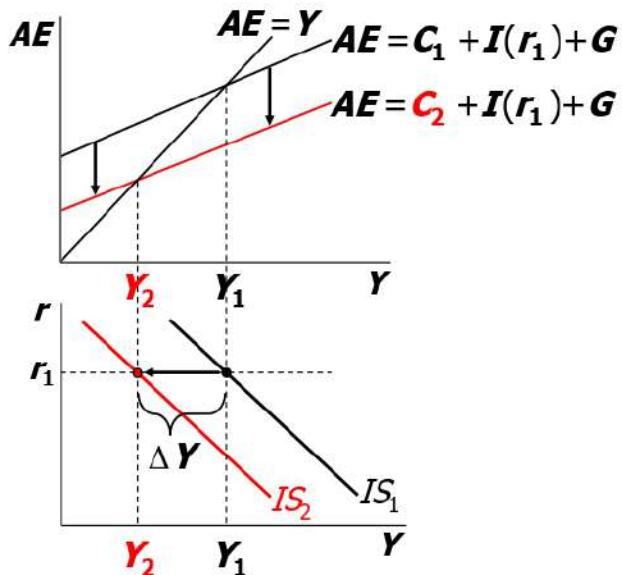
⇒ The horizontal distance of IS shift in case of increasing G equals

$$\Delta Y = k_g * \Delta G = \frac{1}{1-b} * \Delta G$$

Shifting the IS curve: ΔT (Lumpsum tax change)

At any value of r ,
 $\uparrow T \rightarrow \downarrow C \rightarrow \downarrow AE$

...so the IS curve shifts
 to the left.



⇒ As lumpsum taxes increases, consumption decrease & AE shifts downward → output Y decreases for any given interest rate, this shifts the IS curve **leftward**

⇒ The horizontal distance of IS shift in case of increasing T equals

$$\Delta Y = k_T * \Delta T = \frac{-b}{1-b} * \Delta T$$

Summary of Fiscal policy & IS Curve



	Expansionary $G \uparrow$ or $T \downarrow$	Contractionary $G \downarrow$ or $T \uparrow$
AE curve	Upward Shift	Downward shift
Output (Y or GDP)	Increase \uparrow	Decrease \downarrow
IS curve	Rightward shift	Leftward shift

Problem

$$C = 100 + 0.8 Y_d \quad I = 50 - 25 r \quad G = T = 50$$

- Determine the IS equation
- If G increases by 100, calculate the horizontal shift in IS
- If T increases by 100, calculate the horizontal shift in IS

SOLUTION

- Determine the IS equation

$$Y = C + I + G$$

$$Y = 100 + 0.8 Y_d + 50 - 25 r + 50$$

$$Y = 100 + 0.8 (Y - 50) + 50 - 25 r + 50$$

$$Y = 100 + 0.8 Y - 40 + 50 - 25 r + 50$$

$$Y = 160 + 0.8 Y - 25 r$$

$$0.2 Y = 160 - 25 r \quad \text{divided by 0.2}$$

$$Y = (160/0.2) - (25/0.2) r$$

$$Y = 800 - 125 r \rightarrow \text{IS equation}$$

- If G increases by 100, calculate the horizontal shift in IS

The horizontal distance of IS shift in case of increasing G by 100 equals

$$\Delta Y = k_g * \Delta G = \frac{1}{1-0.8} * 100 = 5 * 100 = 500$$

- If T increases by 100, calculate the horizontal shift in IS

The horizontal distance of IS shift in case of increasing T by 100 equals

$$\Delta Y = k_T * \Delta T = \frac{-0.8}{1-0.8} * 100 = -4 * 100 = -400$$

