

9. Introduction to IS-LM Analysis

EE 212

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- In previous chapters, we studied the DAE Model and the Money Market Model.
- The commodity market (DAE model) and the money market are analyzed separately.

Goods Market

$$Y = C + I + G + (X - M) = DAE$$

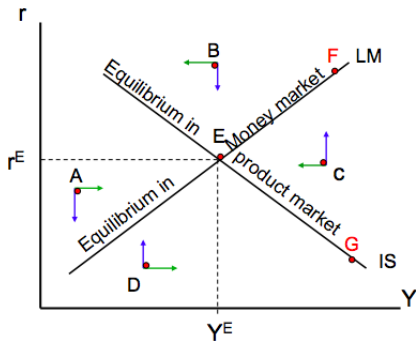
(determines Y_E)
 I depends on r

Money Market

$$M^s = M^d$$

(determines r^*)
 Money Demand depends on Y

- IS-LM model enables us to analyze the equilibrium in both markets at the same time.
- This chapter gives an introduction to the IS-LM Model.



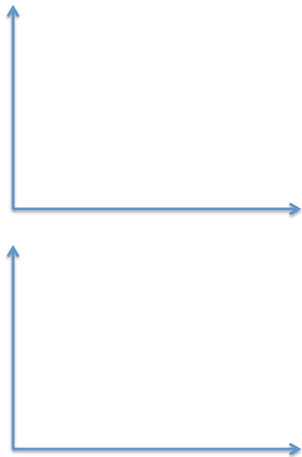
- IS : relationship between r^E and Y^E in the commodity market.
 - Given r , what is equilibrium Y in the commodity market?
 - $Y = DAE$, leakage = injection
- LM : relationship between r^E and Y^E in the money market.
 - Given Y , what is equilibrium r in the money market?
 - Money Supply = Money Demand

Outline

- 1 Product Market and IS Curve
- 2 Money Market and LM Curve
- 3 The IS-LM combined

1. Product Market and IS Curve

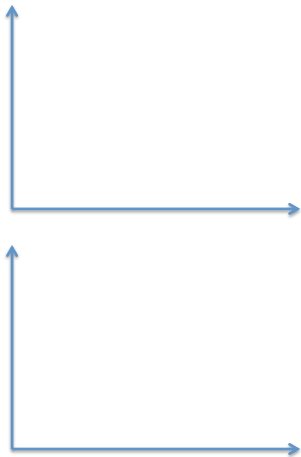
- Equilibrium in commodity market
 - $Y = DAE = C + I + G + X - M$
 - Leakage = Injection : $I + G + X = S + T + M$
- To derive IS curve, DAE approach is used.
- $r \uparrow \Rightarrow I \downarrow \Rightarrow DAE \downarrow \Rightarrow Y \downarrow$
- $r \downarrow \Rightarrow I \uparrow \Rightarrow DAE \uparrow \Rightarrow Y \uparrow$
- There is a negative relationship between r and Y ; IS curve is downward sloped.



- At r_1 , investment is equal to I_1 , DAE is at DAE_1 and equilibrium output is equal to Y_1
- When the interest rate decreases to r_2 , investment increases to I_2 . DAE is at DAE_2 is equal to Y_2 .
- $r \downarrow \Rightarrow I \uparrow \Rightarrow DAE \uparrow \Rightarrow Y \uparrow$
- There is a negative relationship between r and Y , that leads to commodity market equilibrium.
- IS curve is downward sloped.

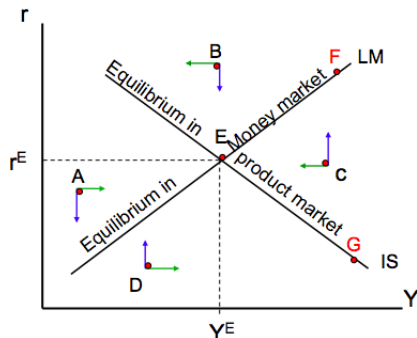
2. Money Market and LM curve

- Equilibrium in money market
 - Money Demand = Money Supply
 - $M^d = f(Y, r) = MS$
- $Y \uparrow \Rightarrow M^d \uparrow \Rightarrow r^E \uparrow$
- $Y \downarrow \Rightarrow M^d \downarrow \Rightarrow r^E \downarrow$
- There is a positive relationship between r and Y ; LM curve is upward sloped.

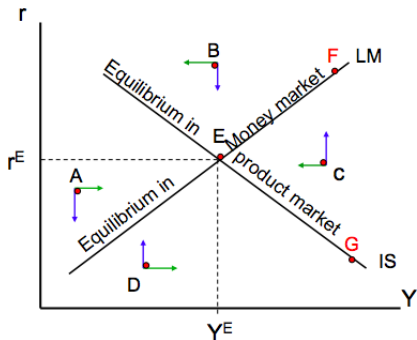


- At Y_1 , Money Demand is at M_1^d and equilibrium interest rate is equal to r_1
- When output increases to Y_2 , Money Demand increases, Money demand shifts to the right to M_2^d .
- $Y \uparrow \Rightarrow M^d \uparrow \Rightarrow \uparrow$
- There is a positive relationship between r and Y , that leads to money market equilibrium.
- LM curve is upward sloped.

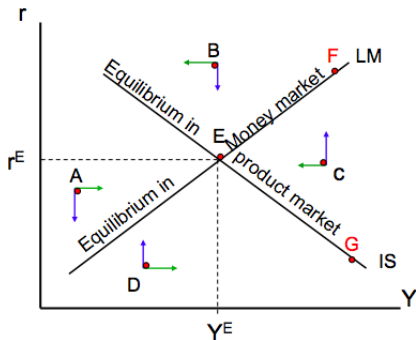
3. IS-LM combined



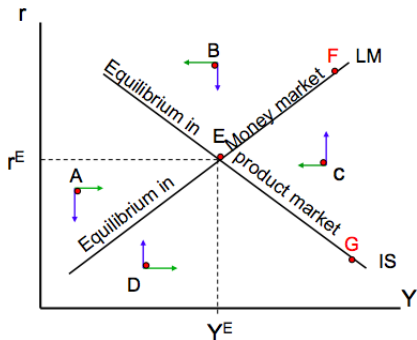
- Equilibrium is at point E.
- Points above LM : point and
 - given a level of Y , interest rates are too high for the money market to be in equilibrium
 - there is an excess money
 - people will use excess supply of money to buy more bonds
 - price of bonds increases and the interest rate decreases as a consequence
 - Adjust to LM curve



- Equilibrium is at point E.
- Points above IS : point ... and
 - Given a level interest rate, Y is too high for the commodity market to be in equilibrium
 - $Y \dots DAE$
 - inventory, producers produce less goods
 - $Y \downarrow$
 - Adjust to IS curve



- Equilibrium is at point E.
- Points below LM : point D and C
 - given a level of Y , interest rates are too low for the money market to be in equilibrium
 - there is an excess money demand
 - people will sell more bonds for the money
 - price of bonds decreases and the interest rate increases as a consequence
 - Adjust to LM curve



- Equilibrium is at point E.
- Points above IS : point A and D
 - Given a level interest rate, Y is too low for the commodity market to be in equilibrium
 - $Y < DAE$
 - inventory $\downarrow$, producers produce more goods
 - $Y \uparrow$
 - Adjust to IS curve