

# MACROECONOMICS





NEW

SZÉCHENYI PLAN

# MACROECONOMICS

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Course Material Developed by Department of Economics,

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# MACROECONOMICS

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# MACROECONOMICS

Week 12

**Keynesian model,  
rigid prices**

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# Disequilibrium model

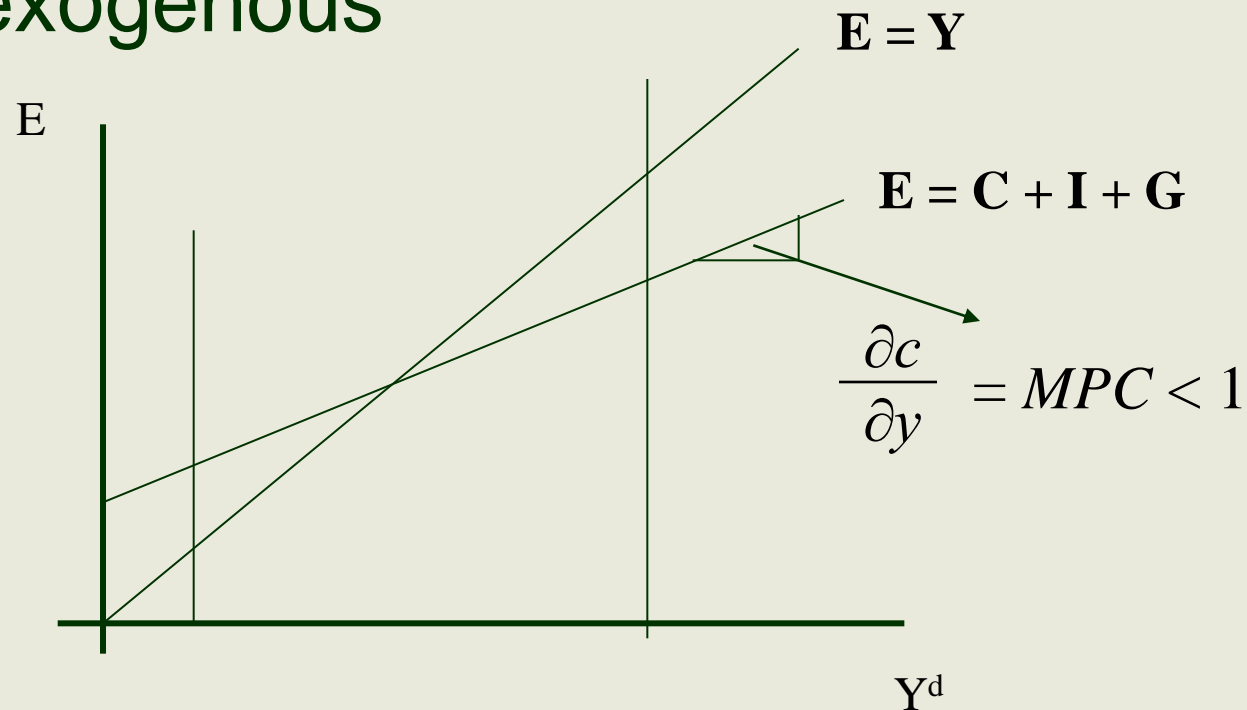
- In some markets prices are rigid or adjust slowly
- Up until full adjustment in prices quantities adjust
- They still sell as much as the quantity others buy, but they do not sell as much as they wish
- Short side rules

# Handling of price rigidities

- In the original Keynesian models there is no micro foundation, the price level is simply exogenous
- The supply side is not worked out, supply simply adjusts to the changes in demand. Some capacity underutilization is exogenously assumed
- The model is static, if expectations have a role, they are exogenous

# Keynesian depression model

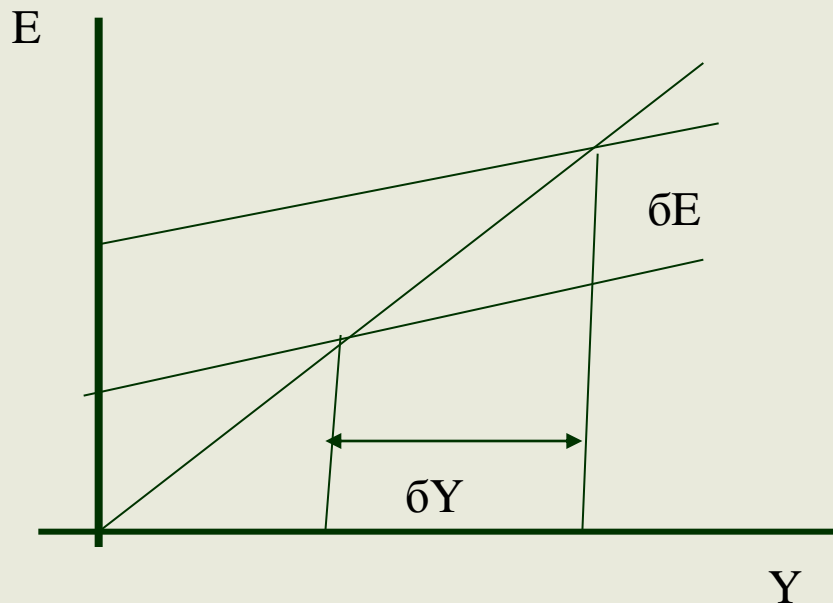
- $Y = C(Y) + I + G$
- $I$  is exogenous





# Multiplier effect

- Exogenous demand shocks cause larger swings in output, because consumption also depends on output



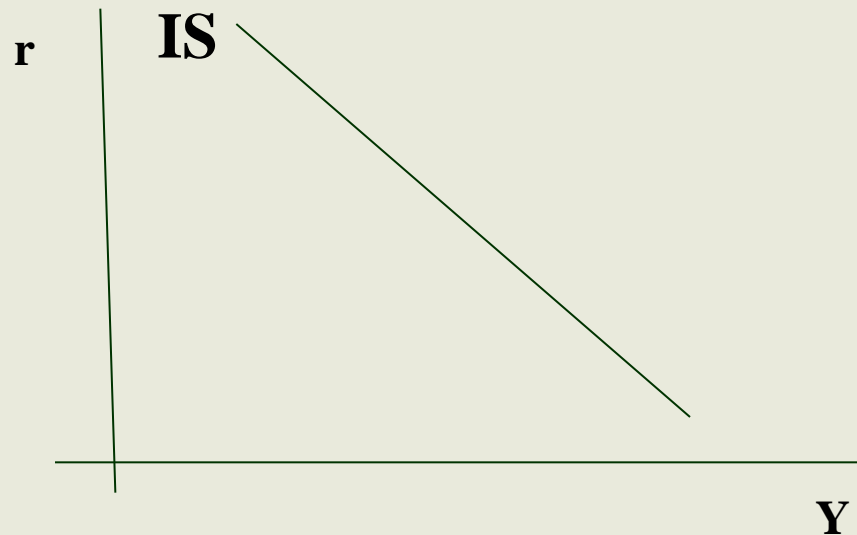
$$\Delta Y^d = \frac{1}{1 - MPC} \Delta E$$

# Multiplier effect

- The size of the multiplier effect is unrealistically large in this setting, as everything that dampens it is assumed away
- Policy conclusion: (partly ideological) the macroeconomy of a market system is unstable. It requires government stabilization measures, large degree of government involvement
- Empirical evidence on the multiplier effect

# IS curve

- $Y = C(Y) + I(r) + G$
- This resembles the output demand curve in the RBC model. However, as supply adjusts passively to demand, this is also equilibrium output



# Shifts in the IS curve

- Any exogenous event, that is, any changes apart from changes in  $Y$  and  $r$  would shift the curve
- Examples
- Government spending
- Taxes
- Business sentiments, investments
- Shifts in the consumption behavior

# The interest rate

- In the RBC model  $r$  was determined by intertemporal substitution and through this it influenced current labor supply
- In the static Keynesian model  $r$  is not relative price between the present and the future, but the relative price influencing portfolio decision between holdings of money and bonds (interest bearing assets), Therefore  $r$  is determined on the money market

# Money market

- Demand for money: result of a portfolio decision. How to divide existing wealth among two types of assets
- Money is means of transactions and store of wealth
- Larger  $Y$  is, more transactions require more money
- Money does not have return, therefore the return on other assets ( $R$ ) influences the wish for holding money

# Money market

- $P$  is given exogenously, there is no inflation, therefore  $R = r$

$$M^d = PL(Y, r), \text{ and } M = M^s$$

- Money market equilibrium

$$M = PL(Y, r)$$

- In the RBC model  $Y$  and  $r$  was given from the goods market, money influenced  $P$  only
- Money was neutral

# Money market

- Here  $P$  is exogenous (constant)

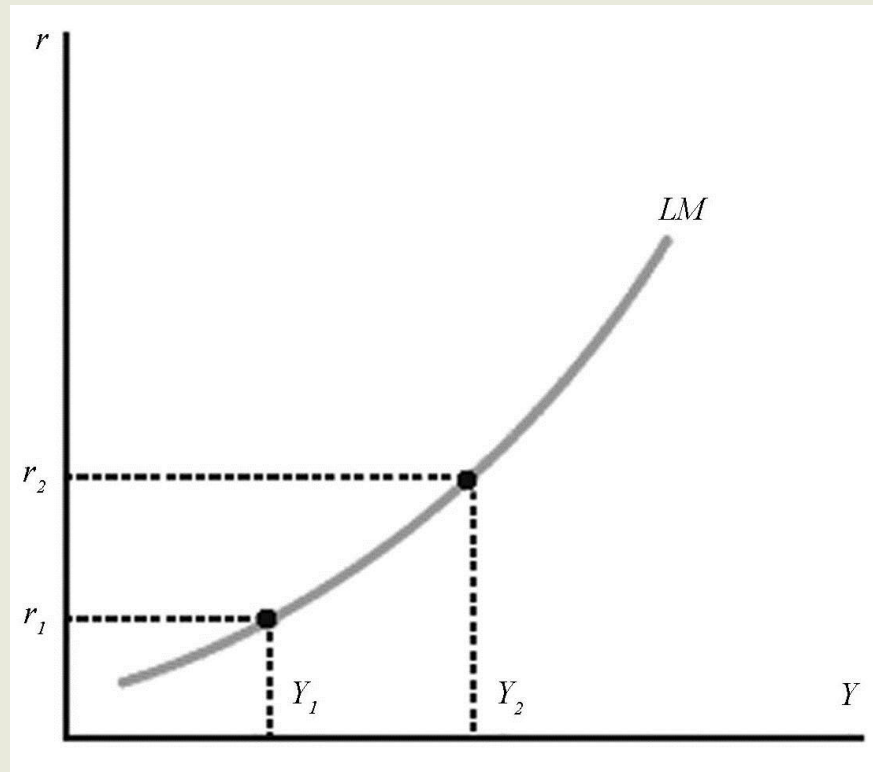
$$M/P = L(Y, r)$$

- $M$  determines the *real* quantity of money
- Money market reaches its equilibrium through adjustments in  $Y$  and  $r$
- LM curve: all the combinations of  $Y$  and  $r$  that bring the money market into equilibrium given  $M$  and  $P$



# LM curve

- Given the real quantity of money, features of the LM curve are determined by the L function

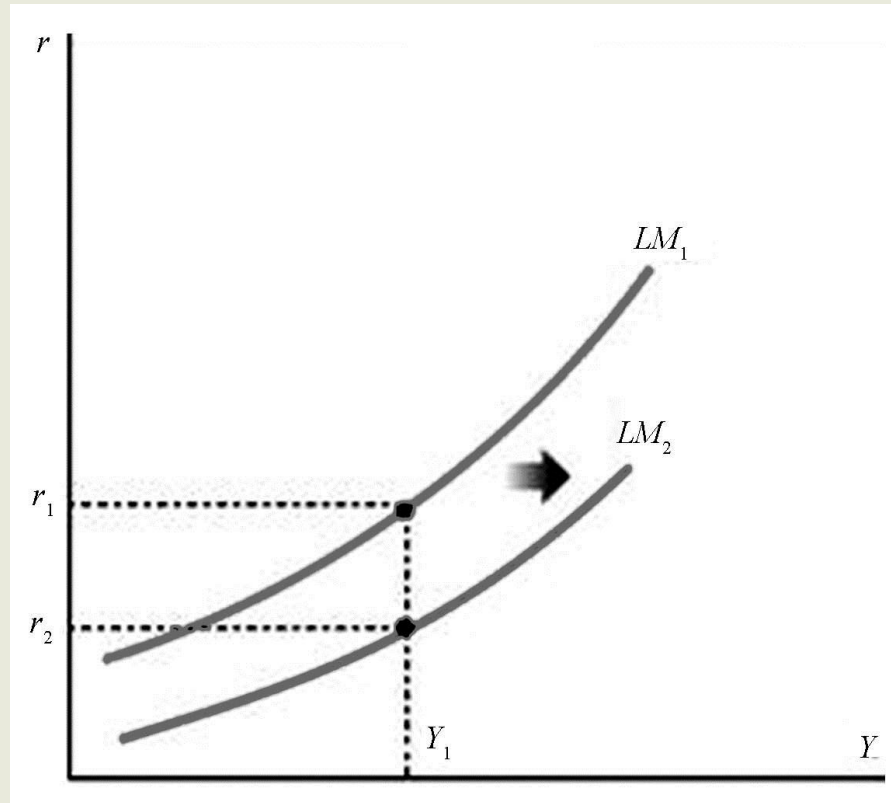


# LM curve

- Equilibrium condition of the money market, given the real money supply
- Has a positive slope. Any increase in  $Y$  increases the real demand for money. Given the supply,  $r$  has to increase so that money demand decreases back to the given level of supply

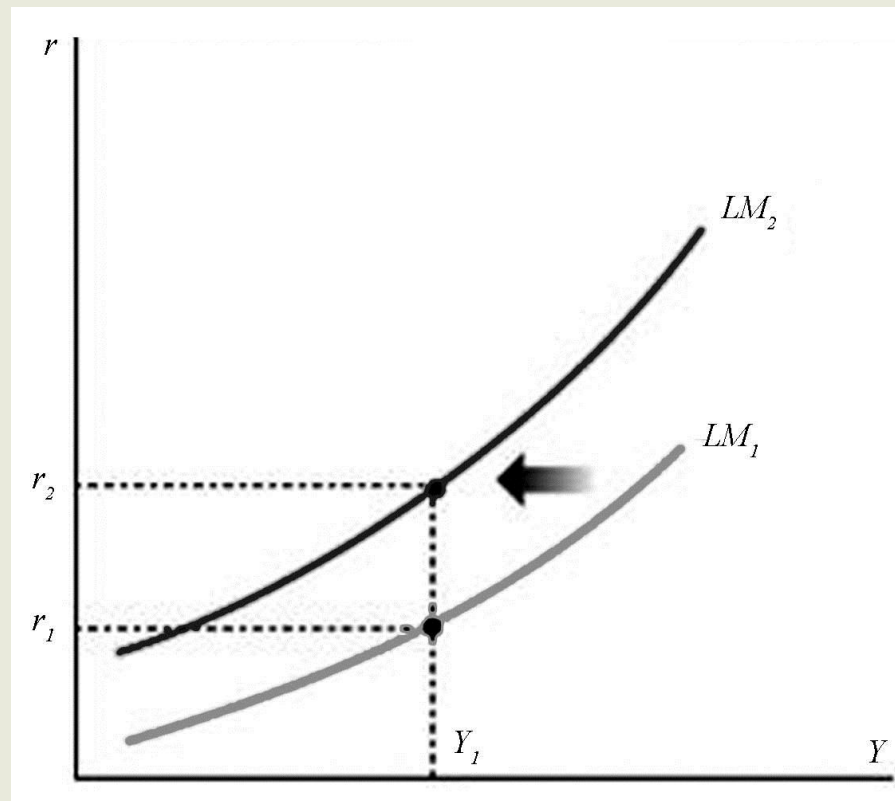
# Shifts of the LM curve

- Expansionary monetary policy: an increase in  $M$  (given  $P$ )



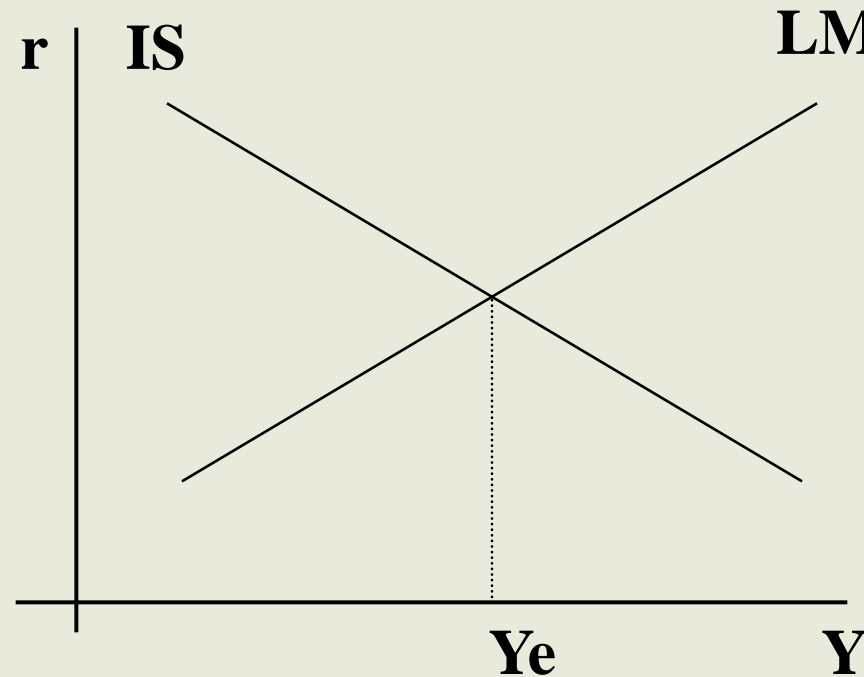
# Shifts in the LM curve

- An increase in the demand for real money



# IS-LM equilibrium

- $M/P = L(Y, r)$
- $Y = C(Y) + I(r) + G$
- Two markets determine two variables,  $Y$  and  $r$



# Comparative statics

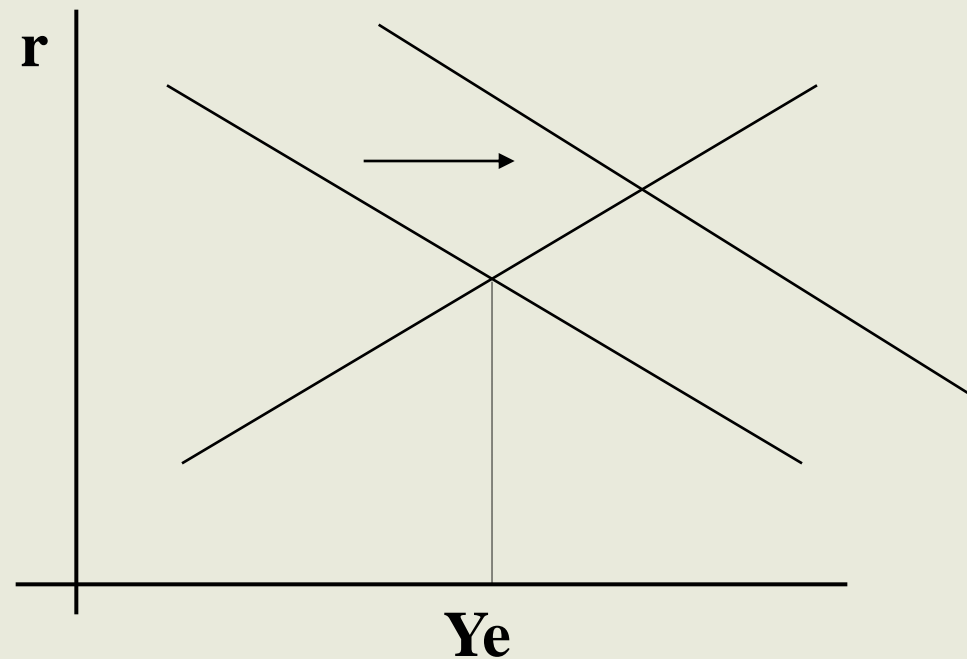
- Any exogenous change influencing any of the markets shifts one or both of the curves, resulting in new equilibrium values of  $Y$  and  $r$
- Comparative static analysis
- Examples
- Fiscal policy
- Monetary policy etc.

# Economic policy

- Variables controlled by the government (G, T, M) are considered to be exogenous. Government can manipulate them in order to influence some other macro variables
- Supply is not modeled in this model. The government can try to manipulate demand only
- Fiscal policy, G and T
- Monetary policy  $M \rightarrow r \rightarrow I \rightarrow Y$

# Economic policy

Fiscal expansion crowds out investment due to the increase in the interest rate





# Evaluation of the IS-LM model

- Static, lacks micro foundation, expectations are handled exogenously
- Price level is not explained, it is given
- Production, supply is not modeled, it does not restrict adjustments
- As a result of the above: it gives extremely optimistic predictions on the efficiency of demand management policy
- You just create demand and that is it

# Long run – short run

- In the long run macro performance of output cannot be independent of production possibilities, resources, supply conditions
- Keynesian model can be applied as an explanation of the short run cyclical movements around normal capacity utilization, caused by demand disturbances
- A model of demand determined cycles

# Long run – short run

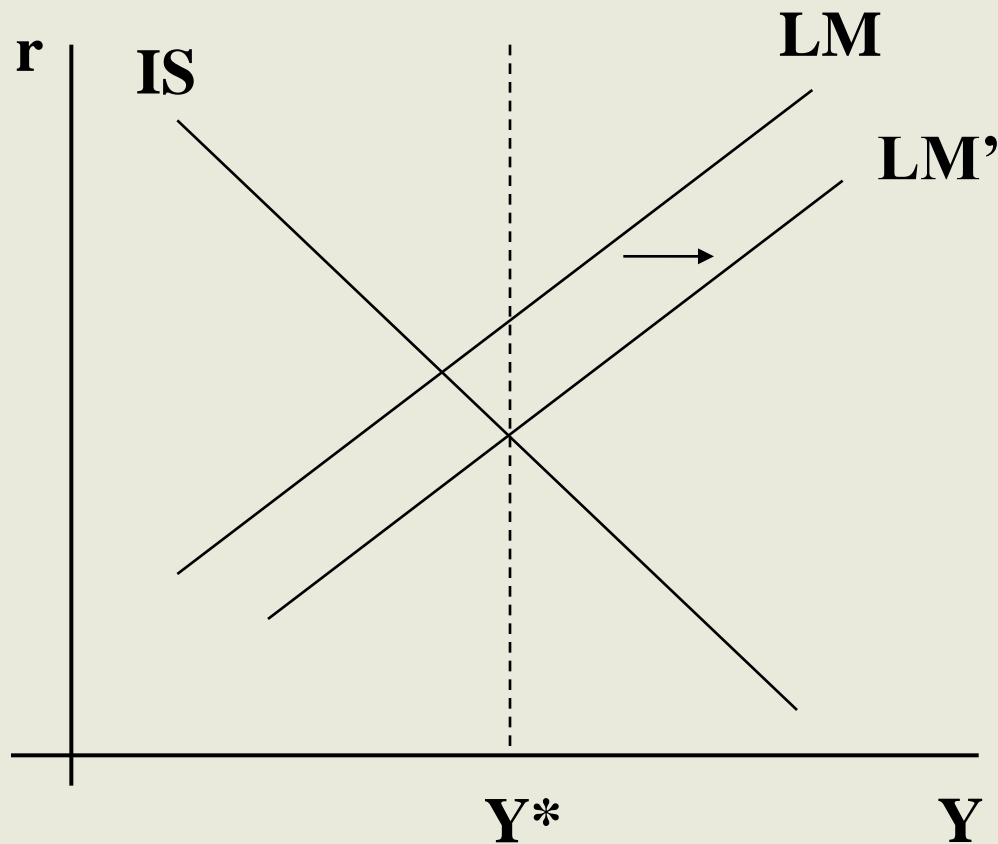
- Natural rate – potential output
- The level of output that would prevail if prices were flexible
- Prices are rigid, rather than flexible in the short run, therefore the measured output is not the same as the potential
- In the long run the price level can adjust, and this draws demand back to the level of potential output

# Equilibrium in the short run and in the long run

- $M/P = L(Y, r)$
- $Y = C(Y) + I(r) + G$
- Short run  $P = P^*$
- Long run  $Y = Y^*$  exogenous
- In the long run if  $Y > Y^*$  sooner or later  $P$  will increase. In the opposite case  $P$  will decrease
- Given  $M$ , changes in  $P$  would change the value of the real money supply causing  $r$  to change

# IS-LM long run

If  $Y < Y^*$ ,  $P$  will increase shifting LM backwards

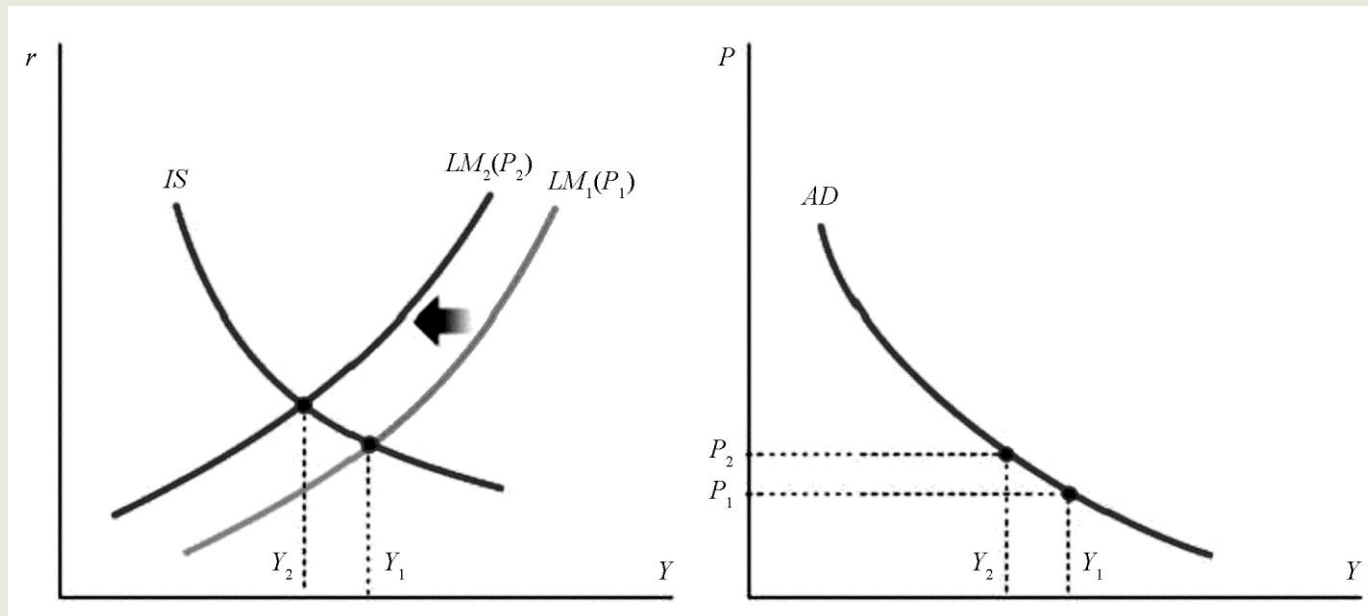


# Self correcting mechanism

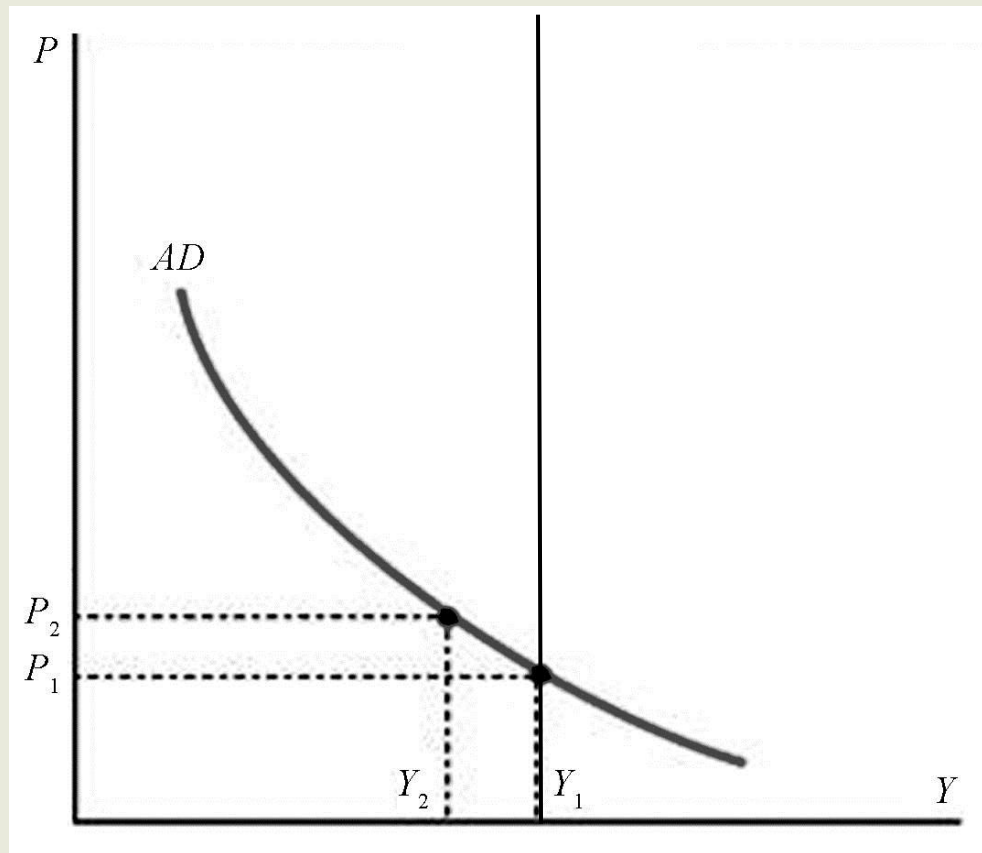
- In the long run adjustments in the price level drive back the economy to full capacity utilization equilibrium
- However, it may take a time too long. Price adjustment is staggering, prices may be rigid downwards
- Economic policy can fasten this adjustments
- Stabilization policy

# Aggregate demand

- Impact of changing  $P$  on IS-LM equilibrium. Notice that unlike in RBC, the aggregate demand is a function of the price level



# AS-AD long run

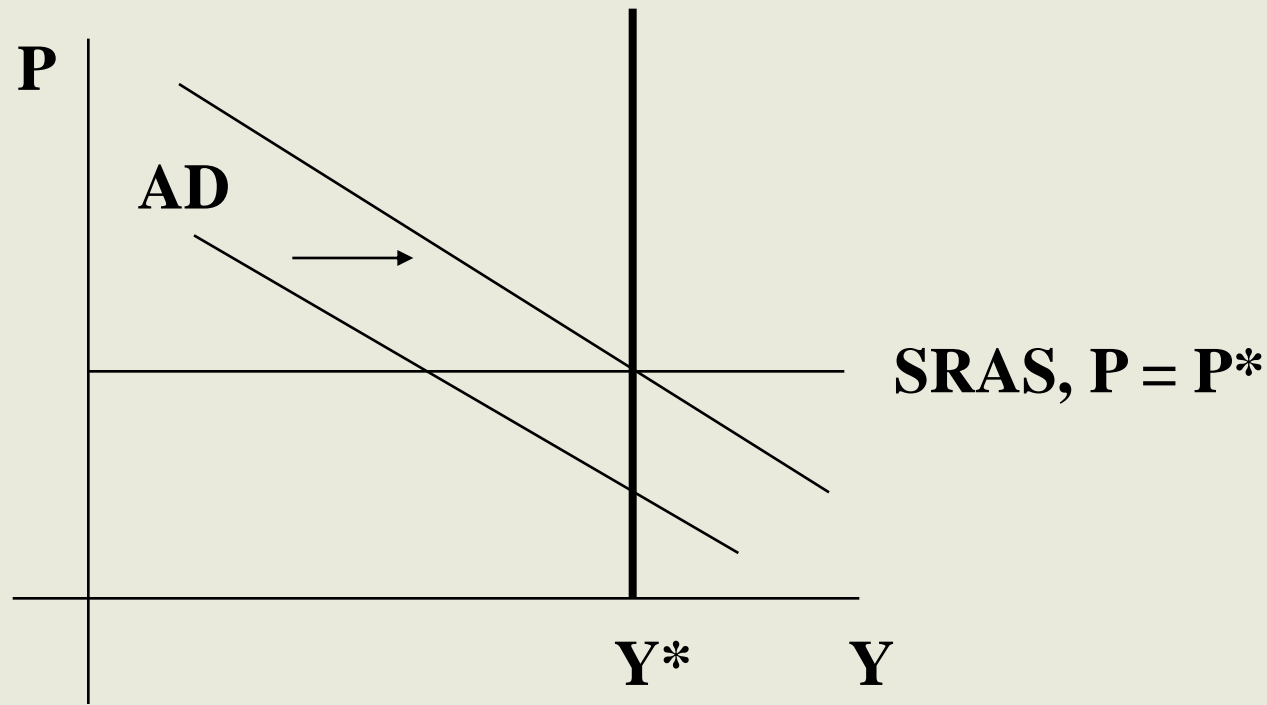


$Y^*$



# Economic policy

- Generating demand to fight recessions



# Monetary policy

- Money is not neutral in the short run
- By changing money supply, demand changes and due to rigid prices the quantity of output adjusts
- In the long run prices adjust so, that demand goes back to the capacity level. No effect in the long run
- Monetary policy can be applied for short run output stabilization, but not for long run manipulation of output