



UNIwersYTET WARSZAWSKI
Wydział Nauk Ekonomicznych

Macroeconomics 1

Keynesian cross model

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Ekonomia klasyczna a Keynesiści

Classics

- Long-term analysis(LR),
- Flexible wages and prices (automatically restore balance),
- Production at the potential level (all markets in long-term equilibrium),

Keynesian

- Short-term analysis (SR) (why production differs from potential in the short term)
- Rigid wages and prices (the slowness of nominal adjustments causes significant fluctuations in production),
- Underutilization of production factors,



Classical economics and Keynesians

Classics

- The invisible hand of the market,
- supply model,
- Adam Smith, The Wealth of Nations, 1776,

Keynesian

- State interventionism,
- Demand model
(consumption is primary to production - the volume of production depends on aggregate expenditure,
- John Maynard Keynes, The General Theory of Employment, Interest and Money, 1936,

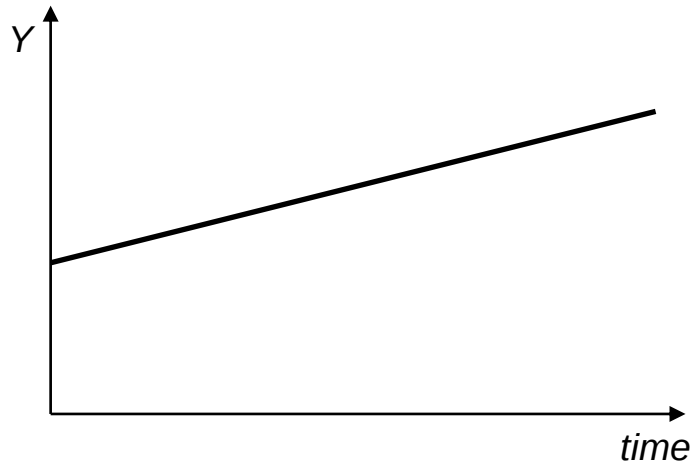


Model assumptions

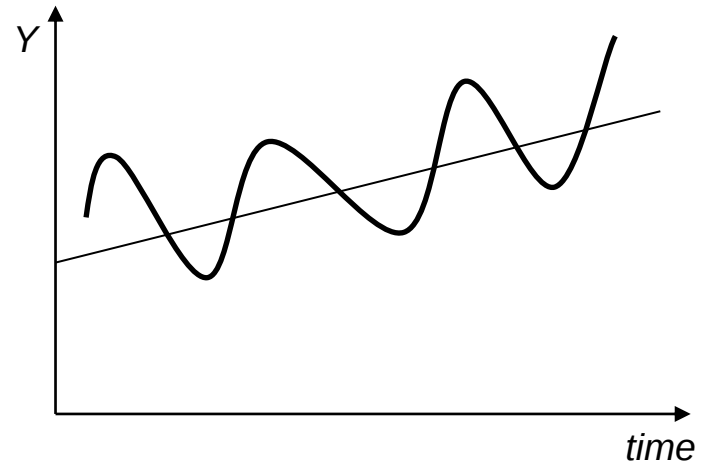
- closed economy, no state,
- actual production may be lower than potential,
- wage and price rigidity,
- at a given level of wages and prices, there is unused production capacity (limitations exist on the demand side, not on production capacity),
- Investments (I) independent of income.



Potential and actual production



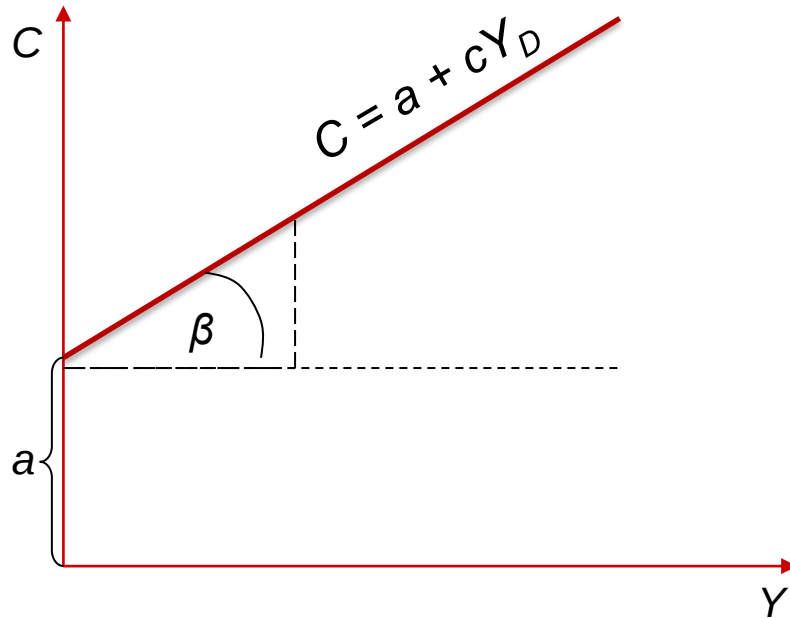
Potential production – increases evenly as the resources of production factors increase (e.g. population, technical progress, etc.)



Actual production – results from current market needs, in the short term it may differ from potential production.



Consumption Function



a - autonomous consumption
(independent of income)

c - marginal propensity to
consume (MPC)

$$C = f(Y) = a + cY_D$$

$$a > 0$$

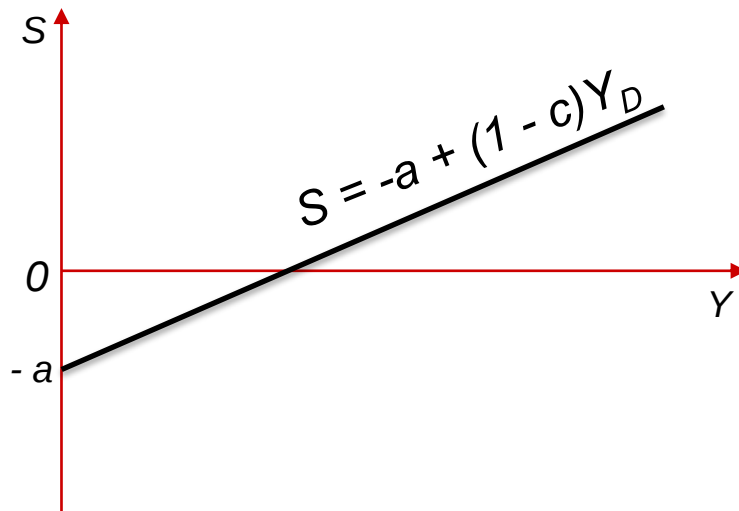
$$0 < c < 1 \Rightarrow 0^\circ < \beta < 45^\circ$$

$$c = MPC = \frac{dC}{dY_D} = \operatorname{tg} \beta$$



Savings function

- Households decide how to spend their income,
 $Y_D = C + S$



s - Marginal Propensity to Saving (MPS)

$$Y_D = C + S \Rightarrow S = -C + Y_D, \quad C = a + cY_D$$

$$S = Y_D - C = Y_D - a - cY_D = -a + \underbrace{(1 - c)}_s Y_D$$

$$S = -a + sY_D$$

$$s = \frac{dS}{dY_D} = \text{MPS}, \quad 0 < s < 1$$

$$c + s = 1 = \text{MPC} + \text{MPS}$$

$$\text{MPS} = 1 - \text{MPC}$$



Average propensity to consume and save

- APC – Average propensity to consume,

$$APC = C/Y_D = (a + cY_D)/Y_D = a/Y_D + c$$

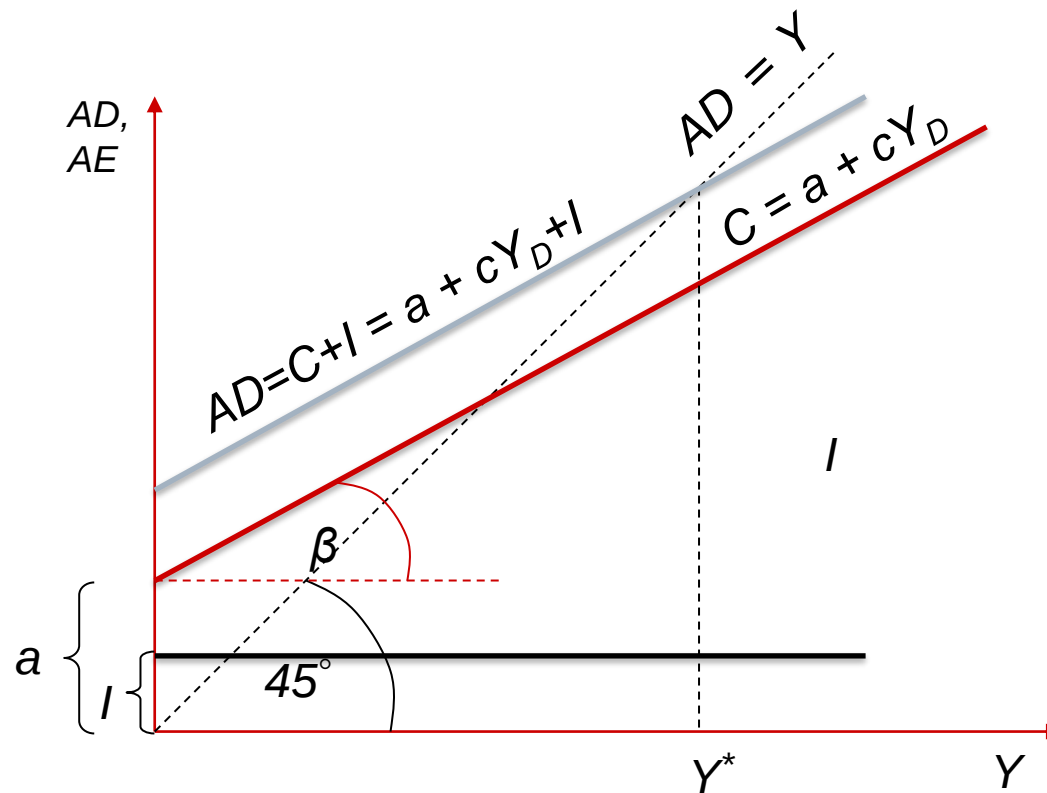
$$APC = a/Y_D + MPC \rightarrow APC > MPC$$

- APS – Average propensity to save

$$APS = S/Y_D$$



Keynesian cross



Equilibrium

- AE curve shifts – changes in autonomous values (a, I), $A = a + I$.

$$AD = Y^* = C^* + I$$

$$AD = Y^* = a + I + cY^* \rightarrow Y^*(1 - c) = a + I$$

$$Y^* = \frac{1}{(1 - c)}[a + I] = \frac{1}{s}[a + I]$$

$$Y^* = \frac{1}{(1 - c)}[A] = \frac{1}{s}[A]$$



Expenditure multiplier

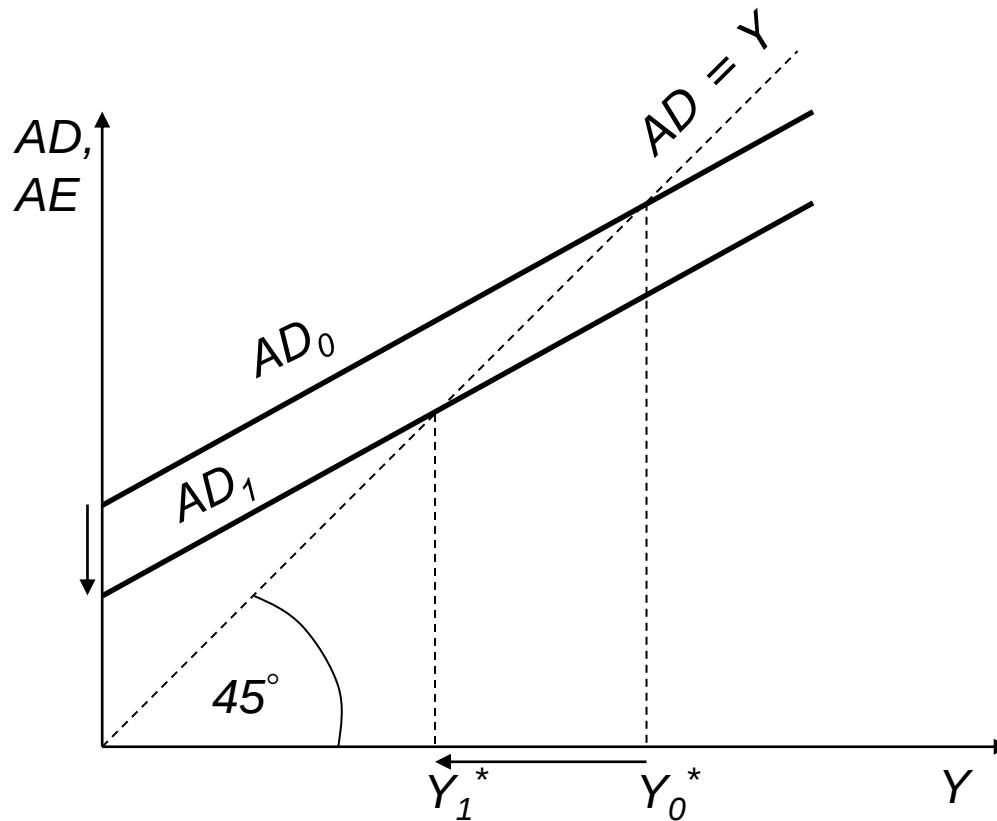
- How will production change as a result of a change in autonomous expenditure (A) by 1 unit

$$\alpha = \frac{dY}{dA} = \frac{1}{1-c} = \frac{1}{1-MPC} = \frac{1}{MPS} = \frac{1}{s}$$

$$\alpha > 1$$



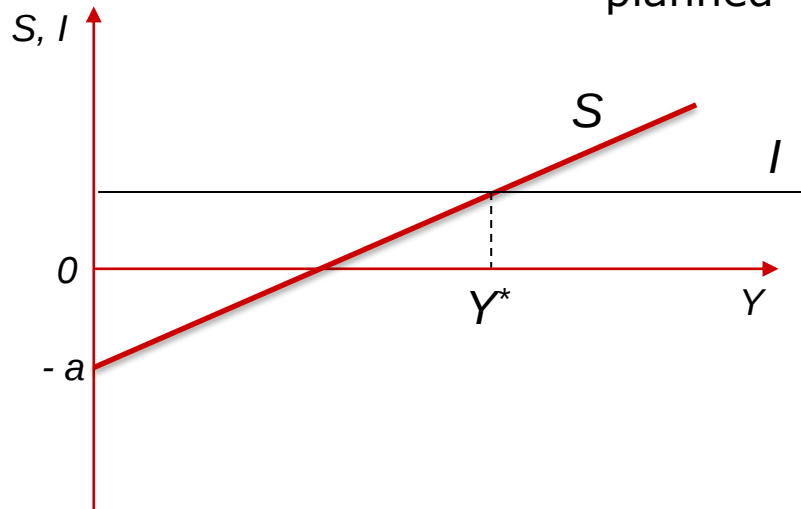
Change in autonomous expenses



Equilibrium

- Planned investments are equal to planned savings

$$I_{\text{planned}} = S_{\text{planned}}$$



A state of imbalance

