

# Principles of Economics

## Chapter 8: Economic Fluctuations

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# Agenda

- 8 Economic Fluctuations
  - Goods Market Equilibrium
  - Financial Market Equilibrium
  - General Equilibrium

## Reading:

- Mankiw/Taylor (2023), Chapter 27
- Mankiw (2025), Chapters 13, 14



# Model

**Framework:** Consider a closed economy in the short run, where output prices and wages are fixed.

- Output  $Y$  and the interest rate  $r$  are simultaneously determined in the goods market and the financial market.
- Changes in the demand for goods and in money supply explain fluctuations of output and employment.

**General Equilibrium:** Simultaneous equilibrium in the goods market and the financial market

- In general equilibrium, there may be unemployment, and hence, output may fall short of the production possibilities.

# Goods Market

**Demand:** Planned expenditures  $Z$  comprise private consumption  $C$ , planned investment  $I$  and government consumption  $G$ .

$$Z = C(Y - T) + I(r) + G$$

- Private consumption is a function of disposable income  $Y - T$ , i.e. output net of taxes, where taxes  $T \geq 0$  are exogenous. Assume that the marginal propensity to consume is constant.

$$\text{MPC} = C'(Y - T) \in (0, 1).$$

- Planned investment is a function of the interest rate  $r$ , with

$$I'(r) < 0.$$

- Government consumption  $G \geq 0$  is exogenous.



# Goods Market

**Savings:** Total savings  $S$  comprise private savings  $S_{Pr}$  and government savings  $S_G$ .

- Private Savings: Disposable income net of private consumption

$$S_{Pr} = Y - T - C(Y - T)$$

- Government Savings: Taxes net of government consumption (Primary Surplus)

$$S_G = T - G$$

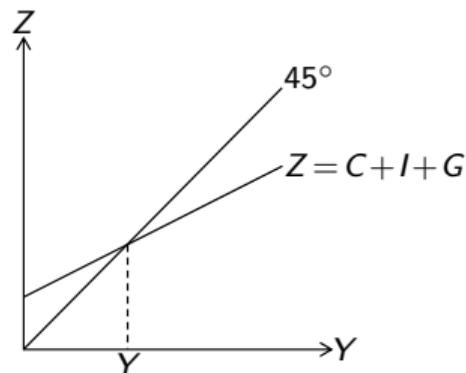
- Total Savings: Output net of private and government consumption

$$S = S_{Pr} + S_G = Y - C(Y - T) - G$$

# Goods Market

**Equilibrium:** Output equals demand, and, equivalently, planned investment equals savings.

$$Y = C(Y - T) + I(r) + G \quad \Leftrightarrow \quad I(r) = S$$

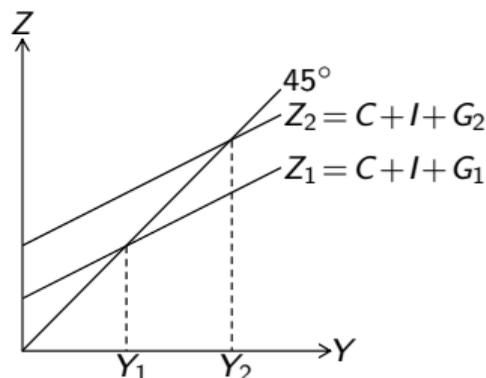


**Adjustment:** If demand falls short of (exceeds) output, or, equivalently, if planned investment falls short of (exceeds) savings, the resulting increase (decrease) in inventories induces a corresponding decrease (increase) in output, which in turn decreases (increases) consumption and hence demand etc..

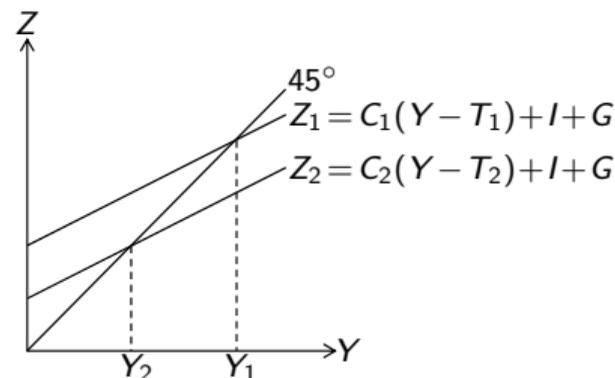
# Goods Market

**Multiplier Effect:** An exogenous increase (decrease) in demand causes an increase (a decrease) in output that is larger than the initial change in demand.

- Expenditure Multipliers:  $\frac{dY}{dG} = \frac{dY}{dI} = \frac{1}{1-MPC} > 1$
- Tax Multiplier:  $\frac{dY}{dT} = -\frac{MPC}{1-MPC} < 0$



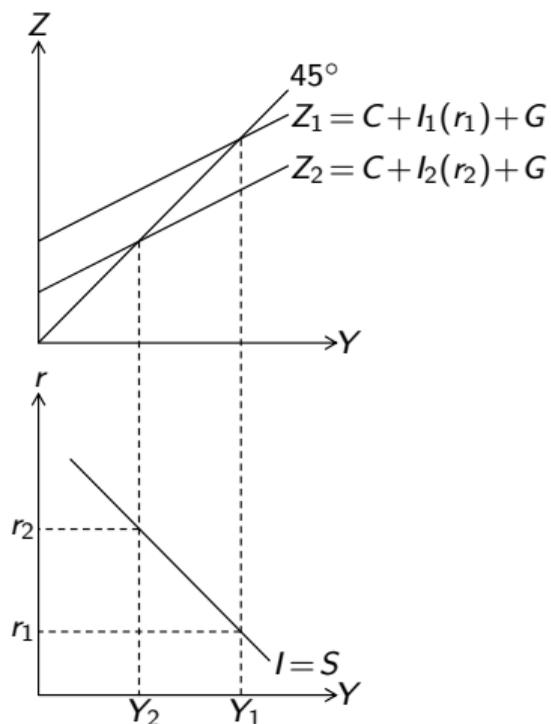
Increase in Government Consumption



Increase in Taxes

# Goods Market

**IS-Curve:** Locus of all combinations of interest rate and output, such that the goods market is in equilibrium



# Financial Market

**Liquidity Demand:** The demand for money, i.e. liquidity  $L$ , is a function of output and the interest rate.

$$L = L(Y, r)$$

- An increase in output increases the volume of market transactions and hence liquidity demand.

$$\frac{\partial L(Y, r)}{\partial Y} > 0$$

- An increase in the interest rate increases the opportunity cost of holding money, as interest-bearing bonds become more attractive, and hence decreases liquidity demand.

$$\frac{\partial L(Y, r)}{\partial r} < 0$$

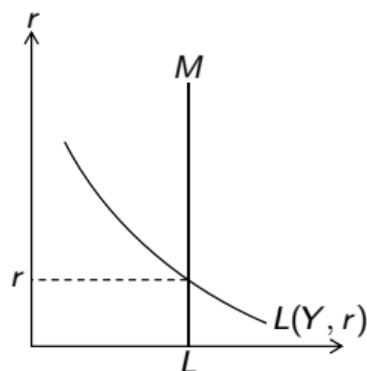
**Money Supply:** The amount of money  $M \geq 0$  is exogenous.



# Financial Market

**Equilibrium:** Liquidity demand equals money supply.

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

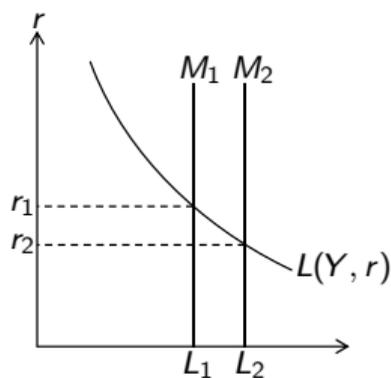


**Adjustment:** An excess supply of (demand for) money is mirrored by an excess demand for (supply of) bonds, resulting in a rise (decline) in the bond price and a corresponding decline (rise) in the interest rate.

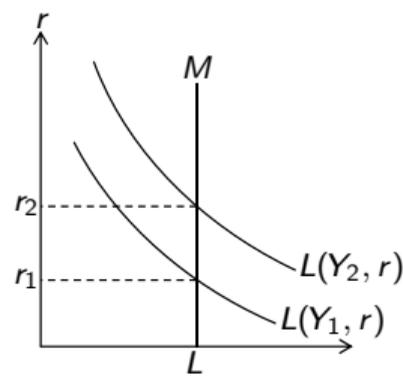
# Financial Market

**Change in Money Supply:** An increase (a decrease) in money supply causes a decline (rise) in the interest rate.

**Change in Output:** An increase (a decrease) in output causes an increase (a decrease) in liquidity demand and hence a rise (decline) in the interest rate.



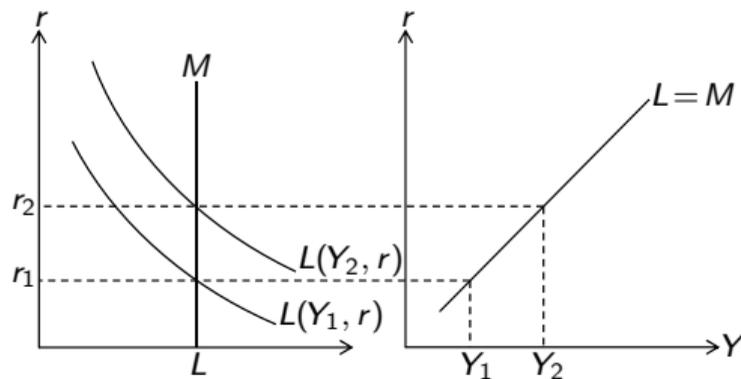
Increase in money supply



Increase in Output

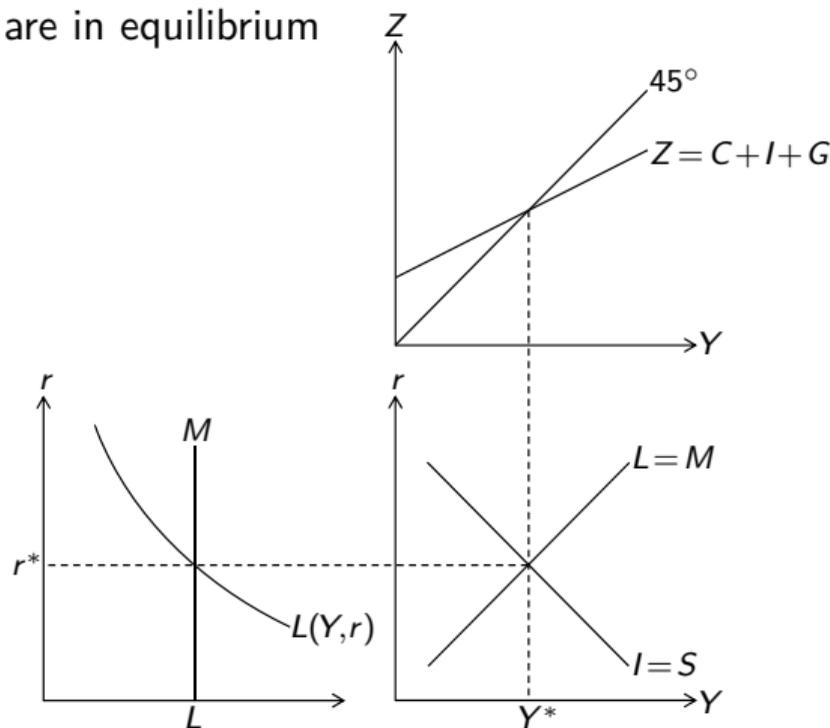
# Financial Market

**LM-Curve:** Locus of all combinations of output and interest rate, such that the financial market is in equilibrium



# Goods Market and Financial Market

**General Equilibrium:** Combination of output and interest rate, such that the goods market and the financial market are in equilibrium



# Goods Market and Financial Market

**Fiscal Policy:** Change in government consumption  $G$  or taxes  $T$

- Ceteris paribus, expansionary fiscal policy, i.e. an increase in government consumption or a decrease in taxes, causes an increase in output and a rise in the interest rate.
- Ceteris paribus, contractionary fiscal policy, i.e. a decrease in government consumption or an increase in taxes, causes a decrease in output and a decline in the interest rate.

**Monetary Policy:** Change in money supply  $M$

- Ceteris paribus, expansionary monetary policy, i.e. an increase in money supply, causes a decline in the interest rate and an increase in output.
- Ceteris paribus, contractionary monetary policy, i.e. a decrease in money supply, causes a rise in the interest rate and a decrease in output.

