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 (2020), Chapter 27
- Mankiw (2022), Chapters 12, 13

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 the 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, where

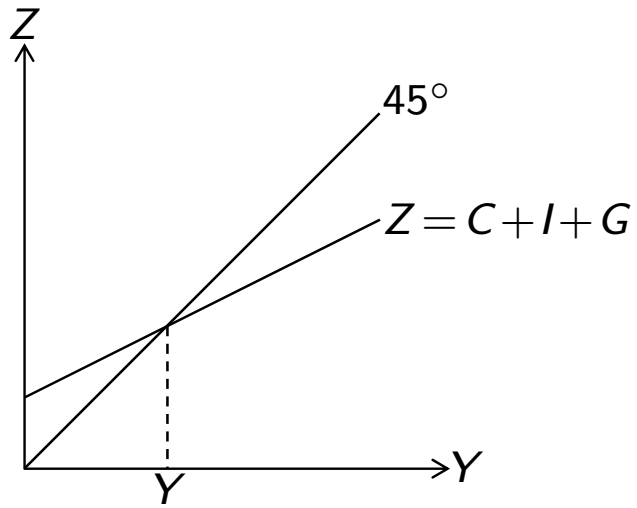
$$I'(r) < 0.$$

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

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

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

- Total Savings: Output net of private and government consumption

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

- Private Savings: Disposable income net of private consumption

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

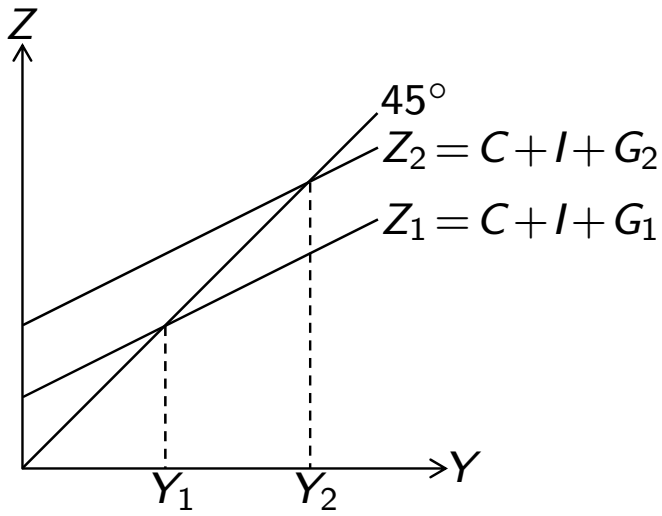
- Government Savings: Surplus of taxes over government consumption (Primary Surplus)

$$S_G = T - G$$

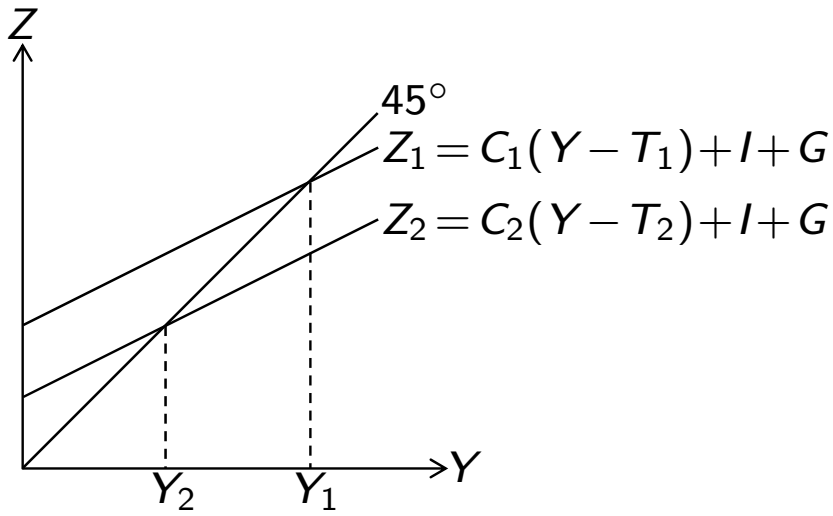
Goods Market

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



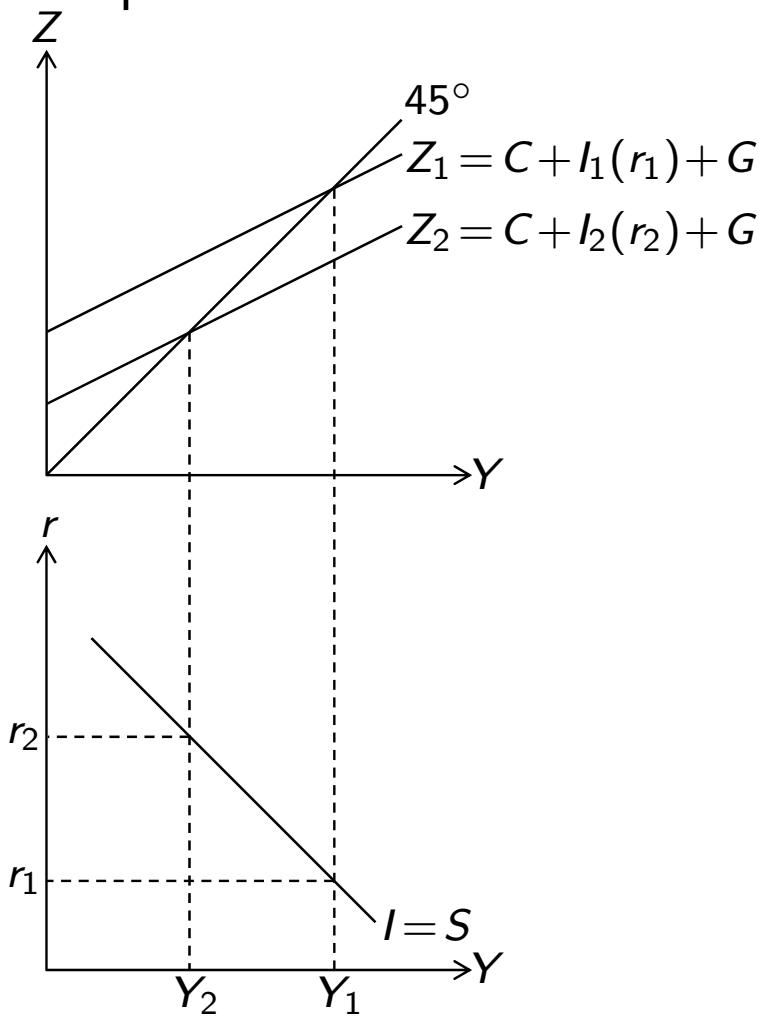
Increase in Government Consumption



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.

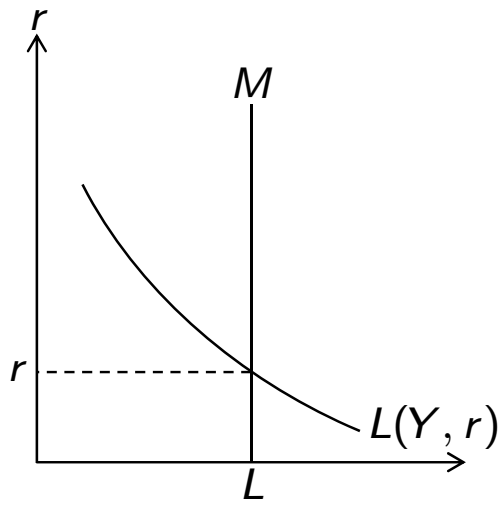
$$\frac{\partial L(Y, r)}{\partial r} < 0$$

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

Financial Market

Equilibrium: Liquidity demand equals money supply.

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

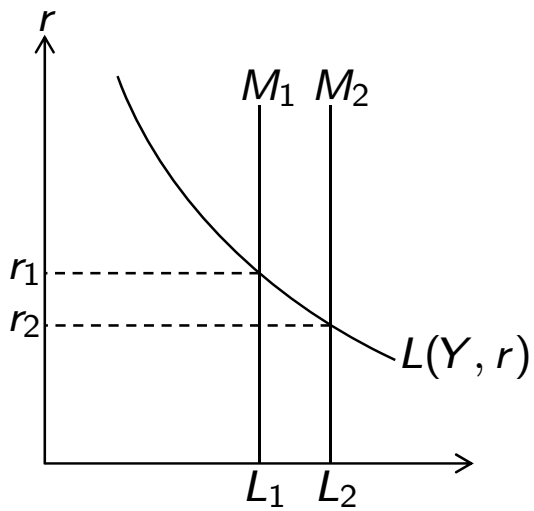


Adjustment: An excess supply of (demand for) money is mirrored by an excess demand for (supply of) bonds, resulting in a rise (decline) in the bond price and a corresponding decline (rise) in the interest rate.

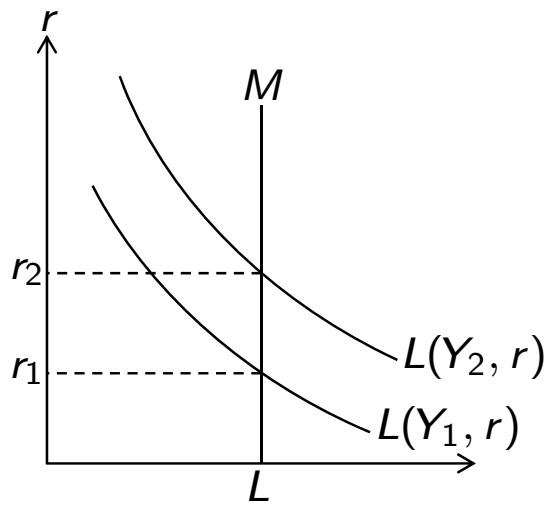
Financial Market

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.



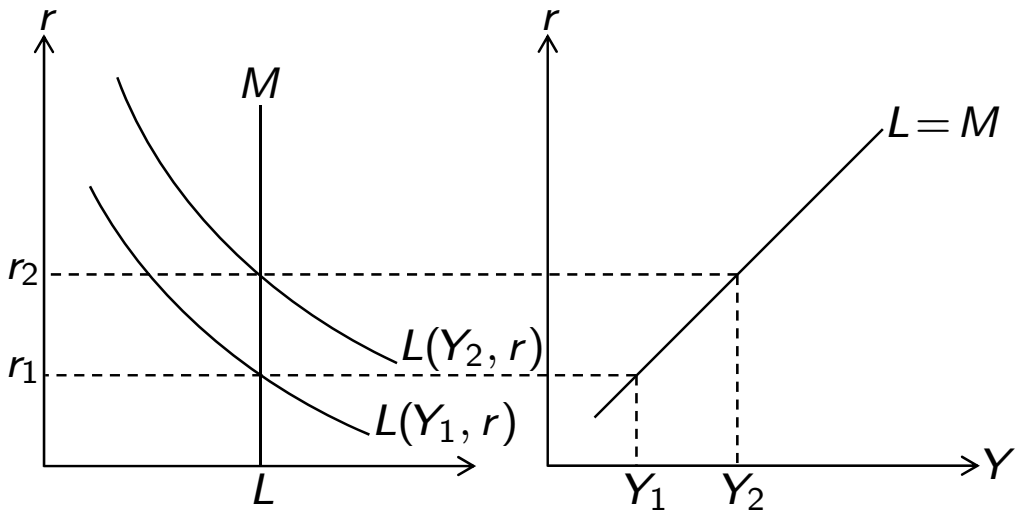
Increase in money supply



Increase in Output

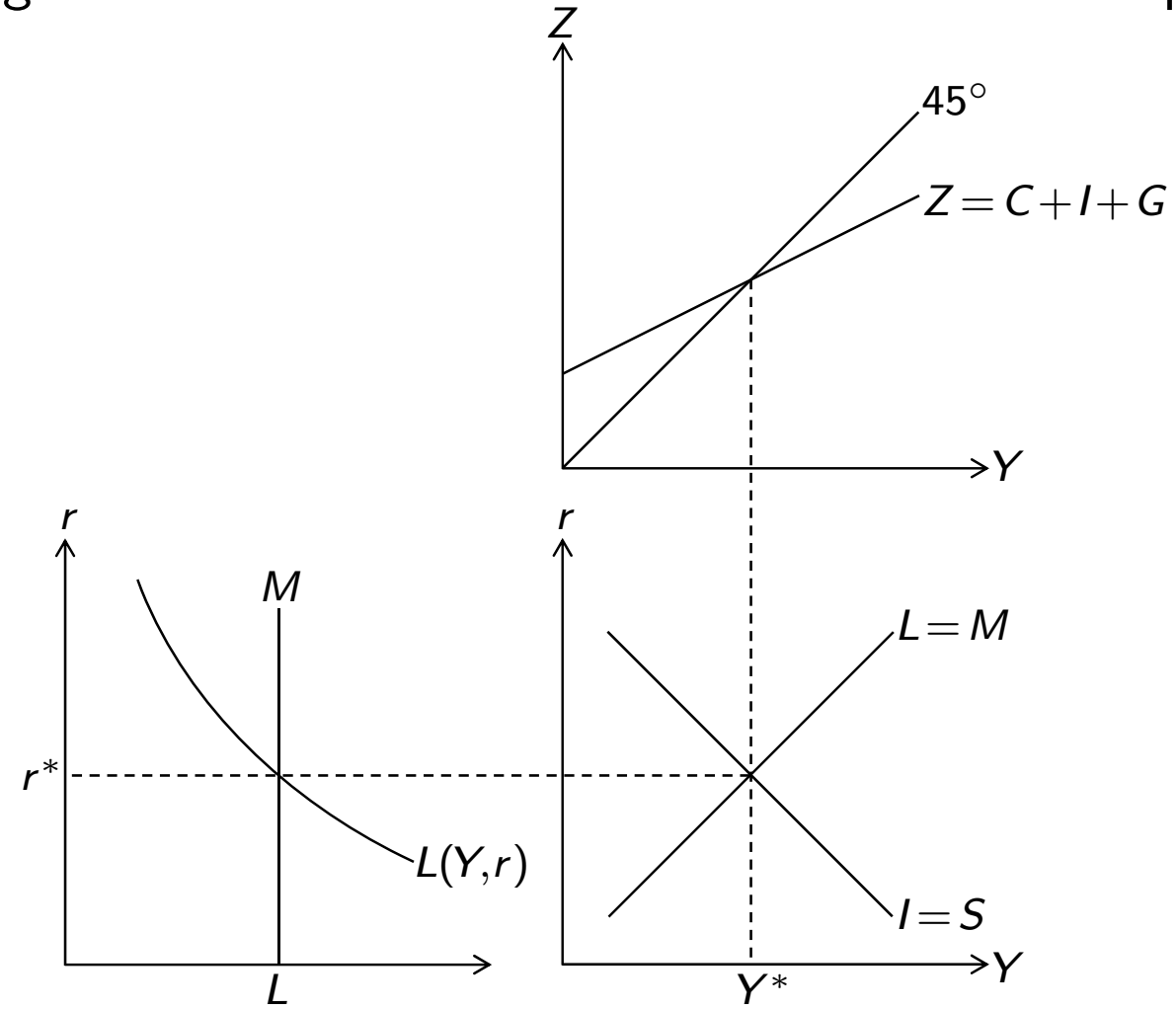
Financial Market

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 both 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.