Topics

- International Trade and Capital Flow
- Currency Exchange Rates

International Trade and Capital Flow

Important

- International trade
- **Comparative Advantage** (Ricardian & Heckscher-Ohlin)
- Trading Restriction (Tariffs, Quotas, VER, subsidy, MDC)
- Trading Agreements (free trade areas, customs union, common market, economic union, monetary union)
- Capital Restriction
- **Trade Accounts**
- World (IMF, WB, WT)

International Trade

- Imports
- Exports
- Autarky/Closed economy: do not trade with others
- Free trade: no restriction
- Trade protection
- World price: in world markets for those to whom trade is not restricted
- Domestic price
- Net exports
- Trade surplus
- Trade deficit
- **Terms of trade**
  - Export prices / import prices * 100
- Foreign direct investment
- Multinational corporation

International Trades Benefits

- Benefits
  - Import: Lower-cost goods
  - Export: Increasing employment, wages, profit
- Costs
  - Domestic industries that compete with imported goods

Absolute & Comparative Advantage

- **Absolute Advantage** (compare **cost** with another **country**) 绝对优势
  - The product of a good can be produced at a lower resource cost than another country
- **Opportunity costs (cost in terms of another: other value / self-value) 机会成本**
  - English: cloth 90, wine: 80
  - Cloth opportunity cost: 80/90=0.89
  - Wine opportunity cost: 90/80=1.125

- Comparative Advantage (opportunities cost with another country) 相对优势
    - Focus on a good has lower opportunity cost
    - 或者关注相对产能比较高的
- Two countries **gain** if opportunity costs are **different**

Comparative Advantage Models

- **Ricardian**
    - Factor: labor
    - Difference: labor productivity <- technology
- **Heckscher-Ohlin**
    - Factor: labor and capital
    - Difference: relative amounts of each factor
    - **Redistribution** of wealth between labor and capital
        - Abundant factor gains relative to scare factor
        - Capital intensive -> demand more capital, capital owners gain
        - Labor intensive -> demand more labor, workers gain

Trade Restriction Reasons

- With support: Infant industry, national security
- little support: protect domestic jobs, protect domestic industries

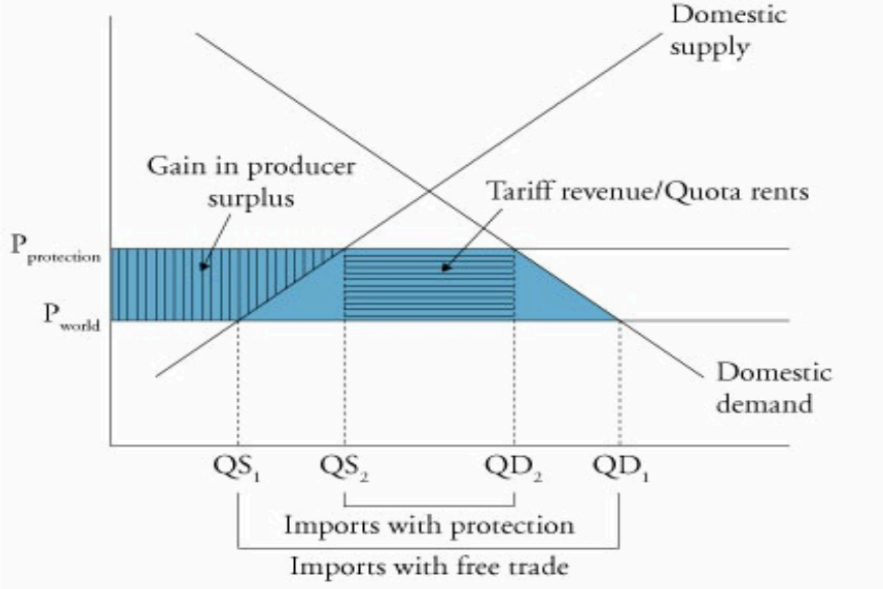
Trade Restriction Types

- **Importing**
    - Tariffs: tax on imported goods
        - Increase domestic prices, decrease quantity imported
        - Increase domestic supply
    - Quotas: limits the **amount** of imports allowed
        - Government revenue=Quota rents
        - Import license charge or not? Government or foreign exporters gain
            - If government **charge** Import license, same with tariffs
            - Otherwise, foreigner exporter gain
- **Exporting**
    - Export subsidies
        - government pay to exporting firms
        - small country: price will increase (domestic price = world price + subsidize)
        - large exporters: world price will decrease
    - Voluntary export restraint (VER)
        - voluntarily restricts the **amount** of a good that can be exported
        - Quota rents is gained by **foreign exporters**
    - Minimum domestic content
        - some **percentage** of content must be from domestic country

	Tariff	Quotas	Export Subsidy	VER
Type	Import	Import	Export	Export

Producer surplus	Increase	Increase	Increase	Increase
Consumer surplus	decrease	Decrease	Decrease	decrease
Government revenue	Increase	depends	Decrease	NO change
Quota rents	Government	Charge license, then government; otherwise, foreign exporter		foreigner exporter
National welfare	Small country: Decrease Large country: could increase	Small country: Decrease Large country: could increase	Decrease	Decrease

Figure 3: Effects of Tariffs and Quotas



Areas

- Consumer surplus reduction: the whole shaded area: A+B+C+D
  - $\frac{1}{2} \times (QD_1 + QD_2) \times (P_{world} - P_{domestic})$
- Producer surplus increment: A
  - $\frac{1}{2} \times (QS_1 + QS_2) \times (P_{world} - P_{domestic})$
- Tariff revenue/Quota Rents: C
  - $(QD_2 - QS_2) \times (P_{world} - P_{domestic})$
  - Tariff: by government
  - Quota: by government or foreign exporter (licence fee?)
  - VER: by foreign exporter
- Deadweight loss: B + C

Capital Restriction

- Restrict flow of financial capital across borders

    - Prohibition, restriction
- Overall, decrease economic welfare
- Short term: helped to avoid great inflow impact

Capital Restriction Objectives

- Reduce **variability** of domestic asset **prices**
- Maintain **fixed exchange** rates
- Keep domestic **interest** rate **low**
- Protect **strategic** industries

Trading Agreements Effects

- Positive
    - increased trading due to comparative advantage
    - increased competition
- Negative
    - Some group loss wealth

Trading Agreements Types

- Free **trade** areas: Goods and service
- **Custom** Union: + a common set of trade restriction with non-members
- Common **market**: +labor and capital
- **Economic** Union: + common institutions and economic **policy** for the union
- **Monetary** Union: + a single currency

Trade Accounts - Balance of payments

- Current: measure goods and service
- Capital
    - capital transfers
    - buy & sell of non-financial, non-produced products
- Financial: investment

Current Account 常规性账户

- Merchandise and services 商家和服务
    - Goods: raw materials
    - Service: tourism, transportation, business services, patents and copyrights on new technology, software, books, and movies
- Income receipts 收入（投资的收益）和支出（分红和利息）
    - Foreign income from dividends on stock and debt interest
    - Investment income received/paid
- Unilateral transfers 单边转移（援助）
    - Money received from working abroad and direct foreign aid
- 不包含统计误差

Capital Account 非生产的（自然资源、无形资产）、非金融资产

- **Capital transfers 资本转移**

    - Goods/financial assets that migrants bring when come to/leave from a country
    - **Fixed assets**, gift and inheritance taxes, death duties
- **Sales and purchase of non-financial assets 销售、购买**
    - rights to **natural** resources **自然资源**
    - **intangible** assets **无形资产**
        - patents, copyrights, trademarks, franchise, leases

Financial Account – 金融资产（投资、融资）

- government-owned assets abroad 本国资产：政府、储备、私人
    - god, foreign currencies, foreign securities, reserve position in IMF
    - credit and long-term assets, direct foreign investment, claims against foreign banks
- foreign-owned assets in the country 外国资产：官方、私人
    - liabilities to foreigners

Trade Balance

- Trade surplus (deficit) 贸易顺差和逆差
    - 只考虑 **current** account 常规账号
    - Imports > exports
        - Trade / current account deficit
    - Imports < exports
        - **Trade** / current account surplus
- **Combined capital account**
    - combine capital account + financial account
    - **Deficit** in current account must be balanced by a **surplus** in the combined capital account
- **Equation**
    - **current account + combined capital account = 0**
    - $current\ account = (\mathrm{X} - \mathrm{M}), \text{combined capital} = (\mathrm{B} - \mathrm{L})$
    - $(\mathrm{X} - \mathrm{M}) + (\mathrm{B} - \mathrm{L}) = 0$
    - $\rightarrow\ (\mathrm{X} - \mathrm{M}) = \text{net lending to foreign} = -\text{net borrowing from foreign}$

Equation

- $\text{investment} = \text{private saving} + \text{government saving} + \mathbf{foreign\ investment}$
    - $\mathrm{C} + \mathrm{I} + \mathrm{G} + (\mathrm{X} - \mathrm{M}) = \mathrm{C} + \mathrm{S} + \mathrm{T}$
    - $\rightarrow \mathrm{X} - \mathrm{M} = (\mathrm{S} - \mathrm{I}) + (\mathrm{T} - \mathrm{G})$
    - $\rightarrow \mathrm{I} = S + (T - G) + net\ borrowing\ from\ foreign$
    - $net\ borrowing\ from\ foreign = foreign\ investment\ in\ domestic$
- trade deficit cause
    - high consumption -> more liability -> no increase in future productive power
    - high investment -> more future productive power

World Bank Group

- International Monetary Fund (IMF)
    - International monetary cooperation

    - Promote **exchange** stability
    - **Multilateral** payments
    - Lending **foreign** currencies on a **temporary** basis to address balance of payment issues
- Word Bank
    - Provide **financial** and **technical** assistance to **developing** countries
    - provides **low** or no-interest **loans** and grants to **developing** countries that have unfavourable credit or no access to international credit markets
    - **International Development Association (IDA)**
        - Focus on world's **poorest** countries
    - International Bank for Reconstruction and Development (IBRD)
        - Reduce poverty in middle-income and creditworthy poorer countries
- World Trade Organization (WTO)
    - Regulating cross-border **trade** relationships on a global scale

Currency Exchange Rates

Important

- **Quotation** (Price/Base)
- **Real and nominal**: CPI
- **Cross-rate** (transition)
- Percentage change (Depreciation and Appreciation)
- Forward rate **Quotation** (points/percentage, premium/discount)
- interest rate parity (spot, forward, interest)
- Exchange Rate Regimes (formalization, currency board)
- exchange rate effects ()

Participants

- Hedge: reduce exposure
- Speculative: increase exposure
- Forward contract: buy side and sell side
- Buyers
    - Corporations
    - Investment accounts
        - Real money: mutual, pension, insurance (no derivative)
        - Leveraged: hedge (use derivative)
    - Governments
        - Sovereign wealth funds, central banks
    - Retail market

Quotation 报价

- Price currency / base currency (/ read as **per**)
- 标价货币/基础货币（**参考货币**）
- 1.4 USD/EUR: 1 EUR COSTS 1.4 USD

Real and Nominal 通胀能改变名义利率

- $\text{nominal} = real \times \frac{\text{CPI}_{\text{price}}}{CPI_{base}}$
    - real and nominal is based on price currency
- $\text{real} = \frac{nominal/\ \text{CPI}_{\text{price}}}{1/CPI_{base}}$
- country with **lower inflation** rate will see its real cost increase unless **appreciation** of its currency

Cross-Rate 交叉汇率

- Exchange rate between two currencies implied by their exchange rates with a common third party
- $\frac{\text{EUR}}{\text{USD}} = \frac{\text{EUR}}{\text{X}} \times \frac{\text{X}}{\text{USD}} = \frac{\text{EUR/X}}{\text{USD/X}} = \frac{\text{X/USD}}{\text{X/EUR}}$

Percentage Change (Depreciation and Appreciation)

- **升值或者贬值只能是相对于 base currency 而言**
- USD/EUR: 1.42 -> 1.39

    - EUR has **depreciated** by 2.11% relative to USD
- EUR/USD: 1/1.42=0.7042 -> 1/1.39=0.7194
    - USD has **appreciated** 2.16% relative to EUR

Forward Exchange Rate Quotation

- Forward points: $\mathrm{bp} = (\mathrm{F} - \mathrm{S}) * 10000 \rightarrow \mathrm{F} = \mathrm{S} + \mathrm{bp}/10000$
- Forward percentage: $\mathrm{p} = \frac{(\mathrm{F}-\mathrm{S})}{\mathrm{S}} \rightarrow \mathrm{F} = \mathrm{S} \times (1 + \mathrm{p})$

Interest Rate Parity (IRP)

- Continuous
    - $\mathrm{F} = \mathrm{S} \times \frac{e^{Rp \times t}}{e^{R_b \times t}} = S \times e^{(R_p - R_b) \times t}$
- Discrete
    - $\mathrm{F} = \frac{S \times (1 + R_p \times t)}{1 + R_b \times t} \rightarrow \frac{F}{S} = \frac{1 + R_p \times t}{1 + R_b \times t}$
    - t is the time in years
    - Interest and exchange rate should use the same time
    - Interest rate is quoted in **annual** base, should be converted w.r.t. time
    - 90-day riskless rate is 5%, should use 1+5%*1/4=1.0125
- Forward percentage
    - $\frac{\mathrm{F}}{\mathrm{S}} - 1 = \frac{(R_p - R_b) \times t}{1 + R_b \times t} < (R_p - R_b) \times \mathrm{t}$
- Arbitrage Profit: $|\frac{F}{S} \times (1 + R_b) - (1 + R_p)|$ (1-dollar price currency)
    - Borrow money from lower interest and invest in higher currency
- The currency with the higher (lower) interest rate will always trade at a discount (premium) in the forward market.
- The lower interest rate in the domestic country will be offset by the appreciation of the domestic country's currency over the investment horizon.

Forward Premium/Discount (percentage change)

- Premium/discount
    - $F > S \rightarrow forward\ premium \rightarrow$ base currency 升水
    - $F < S \rightarrow forward\ discount \rightarrow$ base currency 贴现
- Premium/discount Rate
    - **percentage** change from S to F for base currency is $\frac{\mathrm{F}}{\mathrm{S}} - 1$
    - annualized rate is $\frac{\frac{\mathrm{F}}{\mathrm{S}} - 1}{t}$, divided by time t

Exchange Rate Regimes

- Country without own currency
    - **Formal Dollarization**: Use the currency of another currency
        - Country **cannot** have its own monetary policy
        - Do not **create** money/currency
    - **Monetary Union**: a member in a monetary union
        - Use a **common** currency
        - Each country gives up ability to set **domestic** monetary policy
        - They all decide the monetary policy of the European central Bank

- Country have currency
    - Currency board arrangement 货币局制度 – 完全固定汇率
        - **Explicit** commitment to exchange domestic currency for a specified foreign currency at a **fixed** exchange rate
        - Give up **independent** monetary policy
        - Imports the **inflation** rate of outside currency
        - Example: HK 央行不是最后银行， 有 3 大银行
    - Conventional fixed peg arrangement
        - Pegs its currency within margins of $\pm 1\%$ versus another country or a basket of currencies
        - Direct intervention: purchase and sell currencies
        - Indirect intervention: interest rate policy, regulation of transaction
        - More flexible than currency board, monetary union, dollarization
    - Horizontal bands or target zone
        - Wider margin is $\pm 2\%$, more policy discretion
    - Crawling peg
        - **Passive** crawling peg
            - adjust **periodically**, adjust for higher inflation versus currency used in the peg
        - **Active** crawling peg
            - a series of adjustment over time is announced and implemented
    - Management of exchange rate within crawling bands
        - Width of the **bands** (permissible exchange rate) is **increased** over time
        - Purpose: transition from a fixed peg to a floating rate
    - Managed floating exchange rate
        - Influence exchange rate in respond to specific indicators (i.e., employment, inflation rate) without any specific target exchange rate
    - Independently floating
        - **Market**-determined
        - Market intervention is used only to **slow** the rate of change and reduce short-term **fluctuation**

Effect of exchange rate change on trade and capital flow

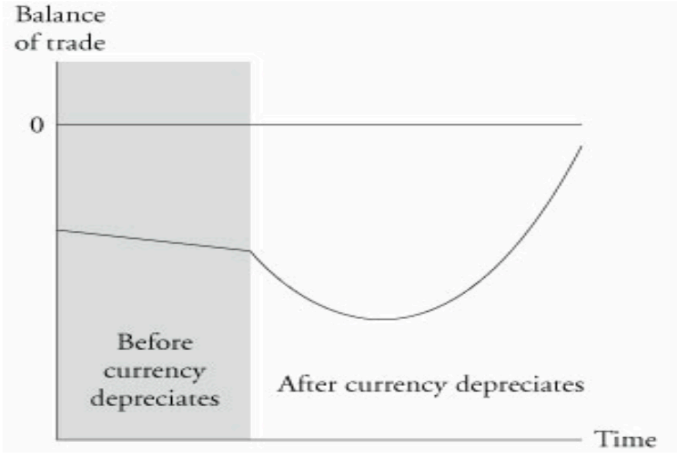
- Elasticities approach 弹性法 - goods flow
    - Goods flow: Impact on imports and exports
    - Weakness: ignore **capital flow**
- absorption approach 吸收法 – capital flows
    - Capital flow: Trade deficit (surplus) must be offset by a surplus (deficit) in **capital** account

Elasticities Approach

- assume initial trade **deficit** 初始贸易赤字
    - depreciation of domestic currency
    - export
        - depreciation -> export price decrease -> export **demand** increase

        - elastic large
    - import
        - depreciation -> price increase -> demand decrease
        - elastic large
- **Marshall-Lerner Condition**
    - Total trade = export + import
    - Trade balance = export – import
    - **Delta change:** $\boldsymbol{\text{depreciation perentage} \times (X \times \epsilon_x + M \times (\epsilon_m - 1))}$
    - **Condition**: $w_x \times \epsilon_x + w_m \times (\epsilon_m - 1) > 0$
        - $w_x = \frac{X}{I+X}, \mathrm{w_m} = \frac{I}{I+X}$
    - Classic: $\epsilon_x + \epsilon_m > 1$ (if weights are equal)
    - 改善条件 Conditions
        - 出口或者进口弹性要大
            - Luxury goods
            - goods with close substitutes
            - Goods represents a large proportion of overall spending
        - 出口量/进口量要很大
- Example
    - Given
        - Import: 6500, elasticity: 0.55
        - Export: 4800, elasticity: 0.7
        - Depreciation in domestic currency -12%
    - **Compute**
        - Delta imports: 12% × (0.55 − 1) × 6,500 =−351.0 (decrease)
        - Delta exports: 12% × 0.70 × 4,800 =403.2
        - Delta change: 52.2
        - Old trade balance: 4,800 − 6,500= -1700
        - New trade balance 4,800 − 6,500 + 52.2 =−1,648 (rounded)
- J-Curve
    - Contract: payment in the future, quantity is **insensitive** to depreciation in the short run 短期影响小，进一步恶化，之后才会逐渐改善

Figure 1: J-Curve Effect



Absorption approach 吸收法 – capital flows

- Capital flow, macroeconomic technique
  - $Trade\ Balance = Y(domestic\ production) - E\ (domestic\ absorption)$
  - Y: domestic production of goods and service or national income
  - E: domestic absorption of goods and service, total expenditure
  - $X - M = Y - (C + I + G)$
- Increase saving relative to investment
- Level of capacity utilization
  - Full-employment – full capacity utilization
    - Increase spending -> higher domestic prices -> reverse the relative price changes of currency depreciation
    - Y is max, absorption, reduce consumption, increase **saving**
  - Not full-employment
    - Y is not max, increase labor to increase Y