

# EDUCATION

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your high school level economics goals.*

# COLLEGE PREP ECONOMICS REVIEW BOOKLET

大学经济预科复习笔记 修订版

Prepared by Zihan Liang

# ON

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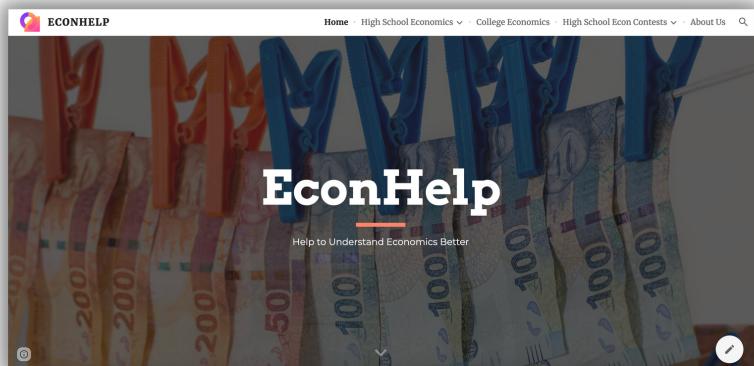
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大学经济预科复习笔记

# College Prep Economics Review Booklet

As a recent high school graduate who has just embarked on the journey towards higher education, I understand the apprehension and uncertainties that come with it. I often hear about the challenges and expectations of college courses, and it is natural for students to feel overwhelmed and underprepared.

However, it does not have to be this way. With the right mindset and resources, we can equip ourselves with the knowledge and skills necessary to thrive in college. This College Prep Economics Review Booklet aims to provide such resources, specifically tailored to international students in China.

The booklet covers four essential sections of economics: microeconomics, macroeconomics, international economics, and economics case study. It draws upon the seminal work of Gregory Mankiw's Principles of Economics, presenting important concepts in both English and Chinese. Our goal is to make these concepts accessible to as many students as possible, while preserving their academic rigor and depth.

Economics allows us to slowly understand the world we live in and unravel many real-world problems, such as why movie stars are paid so much more than regular actors and why the standard of living in many African countries is low. Gradually we can have our thinking and judgment about the world. This is a study of human development, and we hope to help more people break the spell of economics being difficult, so that more people can also experience this kind of economic thinking, not only to help prepare for exams but also to help have a better and deeper understanding of the world.

It is my hope that through this resource, more high school students will be encouraged to take college economics courses and be better prepared for the challenges ahead. Thank you for embarking on this journey with me.

Zihan Liang

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# Microeconomics Review Notes

## 微观经济学复习笔记

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大学经济预科复习笔记 修订版

# Fundamentals: Basic Economic Concept

## 1. 微宏观经济学与三种经济 Micro/Macroeconomics and Three Types of Economy

### a. 微观经济学与宏观经济学 Microeconomics and Macroeconomics

微观经济学 Microeconomics: 研究主体 (individuals and firms) 做出的选择、这些选择之前的相互作用以及政府对选择所施加的影响。

宏观经济学 Macroeconomics: 把经济作为整体来研究, 研究在经济中每个个体的选择对于经济总体的影响。

### b. 三种经济 Three Types of Economy

Types	Marker economy	Mixed economy	Planned economy
Who?	Private firms and consumers	Private firms, consumers, government	Government
How?	Price mechanism Government planning	Price mechanism Government planning	Government planning

## 2. 实证性陈述和规范性陈述 Positive Statements and Normative Statements

### a. 实证性陈述 Positive Statement

表述客观陈述, 描述事实

在科学家的立场, 试图说明世界是什么样子的观点

可以是对事实的检验来证实其描述是否正确

可以是正确的, 也可以是错误的

### b. 规范性陈述 Normative Statement

表述主观陈述, 描述观点

在政策顾问的立场, 试图描述世界应该是什么样子的观点

是人们对事物作出的价值判断, 无法做检验

谈不上正确或错误, 因为不同人对同一件事会有不同观点

## 3. 经济学十大原理 Ten Principles of Economics

### a. 原理一：人们面临权衡取舍 People Face Trade-Offs

“There is no such thing as a free lunch. Making decisions requires trading one goal for another.

A special example of a trade-off is the trade-off between efficiency and equity.

Efficiency: the property of society getting the maximum benefits from its scarce resources.

Equity: the property of distributing economic prosperity fairly among the members of society.

### b. 原理二：某种东西的成本是为了得到它放弃的东西 The Cost of Something Is What You Give up to Get It

When making any decision, decision makers should consider the opportunity costs of each individual possibility.

Opportunity cost: whatever must be given up in order to obtain some item, or the value of the next best alternative foregone.

### c. 原理三：理性人考虑边际量 Rational People Think at Margin

Rational: systematically and purposefully doing the best you can to achieve your objectives.

Rational people often make decisions by comparing marginal benefits and marginal costs.

If the additional satisfaction obtained by an addition in the units of a commodity is equal to the price a consumer is willing to pay for that commodity, he achieves maximum satisfaction, which is the main goal of every rational consumer.

**d. 原理四：人们会对激励做出反应 People Respond to Incentives**

Incentive is something that induces a person to act [by offering rewards or punishments to people who change their behavior].

Because rational people make decisions by comparing costs and benefits, they respond to incentives. Incentives may possess a negative or a positive intention.

**e. 原理五：贸易可以使每个人的状况都变得更好 Trade Can Make Everyone Better off**

Trade allows for specialization in products that benefits countries (or families) - comparative advantage.

Comparative advantage is an economy's ability to produce a particular good or service at a lower opportunity cost than its trading partners.

For example, it was widely believed for centuries that in international trade one country's gain from an exchange must be the other country's loss.

**f. 原理六：市场通常是组织经济活动的一种好方法 Markets Are usually A Good Way to Organize Economic Activities**

Market economy: an economy that allocates resources through the decentralized decisions of many firms and households as they interact in markets for goods and services.

Market prices reflect both the value of a product to consumers and the cost of the resources used to produce it.

**g. 原理七：政府有时可以改善市场结果 Governments Can Sometimes Improve Market Outcomes**

There are two broad reasons for the government to interfere with the economy: the promotion of efficiency and equity.

Government policy can be most useful when there is market failure, which is a situation in which a market left on its own fails to allocate resources efficiently.

**h. 原理八：一国的生活水平取决于它生产物品与服务的能力 A Country's Standard of Living Depends on Its Ability to Produce Goods and Services**

Differences in the standard of living from one country to another are quite large. Changes in living standards over time are also quite large. The explanation for differences in living standards lies in differences in productivity.

Productivity: the quantity of goods and services produced from each hour of a worker's time.

High productivity implies a high standard of living.

**i. 原理九：当政府发行了过多货币时，物价上升 Prices Rise when the Government Prints too much Money**

Inflation: sustained increase in the overall level of prices in the economy.

When the government creates a large amount of money, the value of money falls.

**j. 原理十：社会面临通货膨胀与失业之间的短期权衡取舍 Society Faces Short-Run Trade-Off**

### **between Inflation and Unemployment**

Most economists believe that the short-run effect of a monetary injection (injecting/adding money into the economy) is lower unemployment and higher prices.

The short-run trade-off between inflation and unemployment plays a key role in analysis of the business cycle.

Business cycle: fluctuations in economic activity, such as employment and production.

# Chapter 1 How Market Works

## Topic 1 Markets and Competition

### 1. 稀缺性, 选择与资源 Scarcity, Choice and Resource

#### a. 稀缺性 Scarcity

稀缺性是当资源不足以满足人类需求时存在的情况。资源是有限的，而人的欲望是无穷无尽的。

Economics resources are limited or finite.

- 在任何时期，用于提供商品和服务的资源都是有限的。
- 一天中只有一定的时间可以工作。
- 随着时间的推移，技术可以增加经济资源的供给，但在短期内供给是固定的。

#### b. 理性选择 Rational Choice

在新古典主义经济学 Neoclassical Economics 中，有一个重要假设：所有人都是理性人 people act rationally。

理性选择 Rational choice

- 人们按照对自己最有利的情况进行选择。
- 这种选择考虑边际收益 MB 和边际成本 MC。
- 只有 MB 大于或等于 MC，人们才会选择去做。

#### c. 资源 Resources

Resources in economy is anything that can be used to produce a good or service.

- Natural resources (land)
- Human resources (labor)
- Manufactured (capital)
- Entrepreneurship

资源分配 Resource Allocation: Every economy must decide what goods and services to produce how to produce them and who to produce them for.

### 2. 市场与竞争 Market and Competition

市场 market 是由某种物品或服务 goods and service 的买者与卖者组成的一个群体。买者 buyers 作为一个群体决定了一种产品的需求 demand，而卖者 seller 作为一个群体决定了一种产品的供给 supply。

在竞争市场 competitive market 中，有许多买者 buyers 与卖者 sellers，以至于每个人对市场价格的影响都微乎其微的市场。

## Topic 2 Demand and Demand Curve

### 1. 需求的定义 Definition of Demand

需求就是在一定时间内和一定价格条件下，消费者对某种商品或服务愿意并且能够购买的数量。

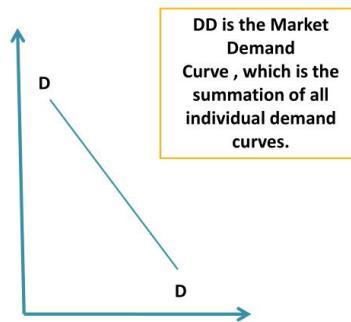
构成需求需要两个条件：desire to buy 和 purchasing power。

### 2. 需求法则 Law of Demand

随着价格 price 下降，需求量 quantity demanded 上升。这种反比关系 inverse relationship 称为需求向下倾斜定律 law of downward-sloping demand。

### 3. 需求曲线 Demand Schedule and Demand Curve

Price (Rs.)	Quantity Demanded			Market demand
	A	B	C	
4	1	1	3	5
3	2	3	5	10
2	3	5	7	15
1	5	9	10	24



Demand curve is downward sloping.

需求曲线 downward-sloping 的原因:

- 替代效应 Substitution effect

在更高的价格下, 消费者更愿意也更有能力寻找替代品 substitutes。替代效应 substitution effect 表明, 在较低的价格下, 消费者有动机用较便宜的商品代替较贵的商品。

- 收入效应 Income Effect

一种商品价格的下降会给消费者更多的购买力 purchasing power, 他现在可以用同样的收入购买更多的东西。这就是收入效应。

### 4. 需求量变动与需求变动 Change in Quantity Demanded and Change in Demand

#### a. 需求量变动 Change in Quantity Demanded

由于价格变化所引起的变动, 即价格变化只会引起 demand curve 线上的 movement, 不会引起 demand curve 的 shift。

P increase leads to Qd decrease; P decrease leads to Qd increase

#### b. 需求变动 Change in Demand (TRIBE)

T 消费者偏好 Consumers' tastes and preferences: 曾经被认为有用或无用、时尚或丑陋、健康或危险的东西现在可能会变成它的反面。

R 相关商品的价格 The price of related goods:

- 替代品 Substitutes: 如果原始商品的价格上涨, 对替代品的需求将会增加。比如: 牛奶和豆浆。
- 互补品 Complementary: 如果原始商品的价格下降会增加对另一种商品的需求。比如: 手机和手机膜。

I 收入 Income: 税后收入 disposable income 的增加导致需求曲线向右移动。

- 正常品 Normal goods: 收入的增加导致需求曲线向右移动。
- 劣质品 Inferior goods: 收入的增加导致需求曲线向左移动, 因为这些通常是人们在有更多消费时会避免使用的低质量物品。

B 市场买家数量 The number of buyers in the market: 需求取决于市场规模。

E 消费者期望 Consumer expectations: 如果人们预计某一特定商品的价格很快会大幅上涨, 那么现在可能会增加对该商品的需求。

## Topic 3 Supply and Supply Curve

### 1. 供给的定义 Definition of Supply

供给是在一定时间内在一定价格下, 生产者愿意并可能提供某些商品或服务的数量。

市场供给是所有生产者供给的总和。

## 2. 供给法则 Law of Supply

随着价格 price 下降，供应量 quantity supplied 减少。

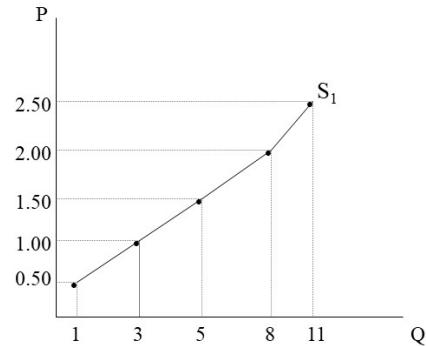
从商业的角度来看，企业的营利活动 profit seeking activities 是合乎逻辑的。因此，卖家将从价格低廉的市场中撤出。这种直接关系称为向上倾斜供给定律 the law of upward sloping supply。

## 3. 供给曲线 Supply Schedule and Supply Curve

- An Individual Supply Schedule

Seller 1's Supply of Apples	
Price per lb. (\$/lb.)	Quantity supplied per month
2.50	11
2.00	8
1.50	5
1.00	3
0.50	1

- An Individual Supply Curve



Supply curve is upward sloping.

供给曲线 upward sloping 的原因：供给法则 law of supply

## 4. 供给量变动与供给变动 Change in Quantity Supplied and Change in Supply

### a. 供给量变动 Change in Quantity Supplied (价格变动引起)

由于价格变化所引起的变动，即价格变化只会引起 supply curve 线上的 movement，不会引起 supply curve 的 shift。

P increase leads to Q<sub>s</sub> increase; P decrease leads to Q<sub>s</sub> decrease

### b. 供给变动 Change in Supply (RPTTEN)

R 资源价格 Resource Price: 最重要和最典型的原因

P 其他商品的价格/使用相同资源的商品价格 The price of other goods: 如果一种生产替代品的价格上涨，另一种替代品的供应将减少以增加利润。

T 科技 Technology: 技术上的新创新可以降低平均生产成本，从而增加供应。

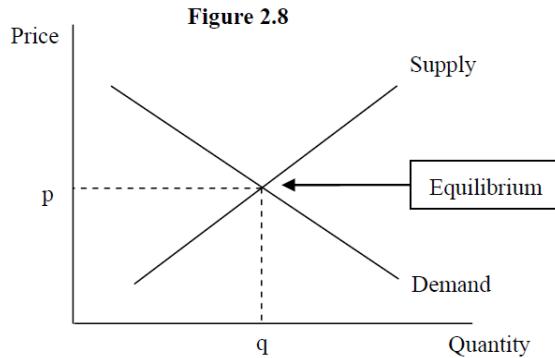
T 税收和补贴 Taxes and subsidies: 税收增加成本；补贴降低成本。

E 生产者期望 Producer expectations: 如果供应商预计价格会上涨，他们将等待将商品推向市场 send their goods to market。因为价格还没有改变，这是供应减少，这反过来又会导致价格上涨。如果供应商预计价格会下跌，他们会急于将商品推向市场 rush their goods to market，以期获得目前的高价。这增加了供应，这将导致价格下跌。

N 卖家数量 The number of sellers: 其他条件相同，供应商数量越多，市场供应量越大。

## Topic 4 Equilibrium (Comparative Static Analysis)

### 1. 市场均衡 Market Equilibrium



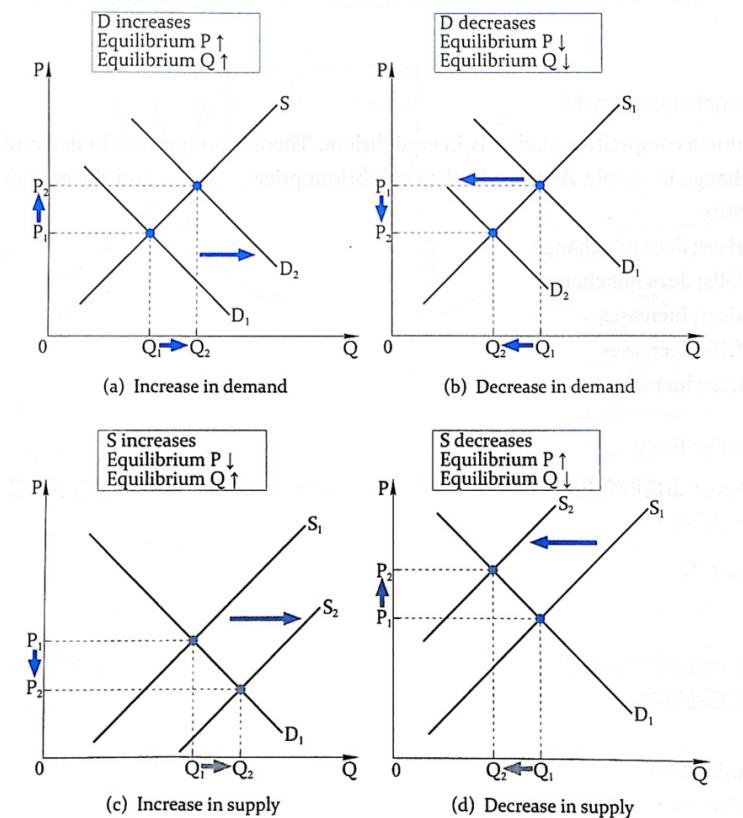
需求曲线 demand curve 和供给曲线 supply curve 相交的价格就是均衡价格 equilibrium price。

市场均衡 equilibrium price 出现在需求量 quantity demanded 等于供给量 quantity supplied 的价格上。如果市场价格低于均衡 below equilibrium, 买卖双方的个人决定 individual decisions 最终会推动价格上涨。如果市场价格高于均衡 above equilibrium, 则往往会发生相反的情况。

根据市场情况, 即刻或将来, 价格和数量将趋向均衡 move toward equilibrium, 因为买卖双方直觉和逻辑地执行供求规律 laws of demand and supply。

### 2. 需求供给变化对均衡价格和数量的影响 Changes in Demand or Supply the Effects on Equilibrium Price and Quantity

#### a. 需求和供给单独变化对均衡价格和数量的影响 The Effect of Separate Changes in Demand and Supply on Equilibrium Prices and Quantities



需求上升或下降, 均衡价格同升同降; 供给上升或下降, 均衡价格一升一降

b. 需求和供给同时变化对均衡价格和数量的影响 The Effect of Simultaneous Changes in Demand and Supply on Equilibrium Price and Quantity

Changes in demand	Changes in supply	Effect on price	Effect on quantity
Increase	Increase	Indeterminate	Increase
Decrease	Decrease	Indeterminate	Decrease
Increase	Decrease	Increase	Indeterminate
Decrease	Increase	Decrease	Indeterminate

需求供给同升同降，价格不定数量定；需求供给一升一降，数量不定价格定

## Topic 5 Elasticity and its Application

### 1. 需求价格弹性 Price Elasticity of Demand (PED)

#### a. 定义与计算

A measure of the extent to which the **quantity demanded of the good changes when the price of the good changes.**

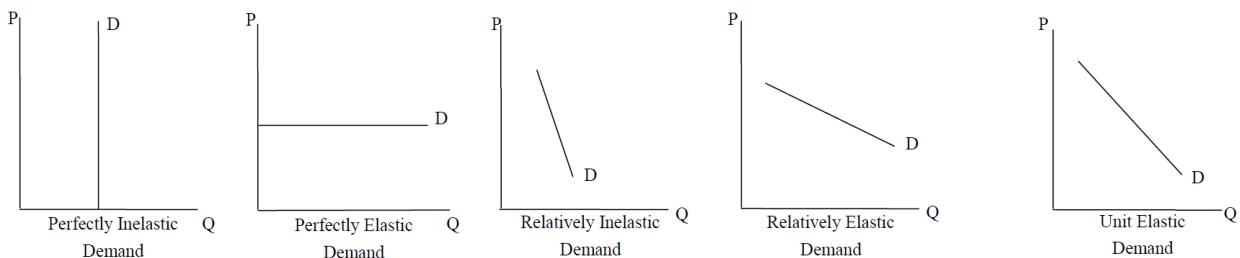
$$E_d = \frac{\text{percentage change in the quantity demanded}}{\text{the percentage change in price}}$$

$$E_d = \frac{\Delta \ln Qd}{Q} \div \frac{\Delta \ln P}{P}$$

$$\text{midpoint formula: } E_d = \frac{\Delta Qd}{(Qd_1 + Qd_2)/2} \div \frac{\Delta P}{(P_1 + P_2)/2}$$

#### b. 弹性与非弹性 Elastic and Inelastic

$|PED| > 1$  elastic;  $|PED| < 1$  inelastic;  $|PED| = 1$  unit elastic;  $|PED| = 0$  perfectly inelastic;  
 $|PED| = \infty$  perfectly elastic



#### c. 影响 PED 的因素 Factors Affecting PED

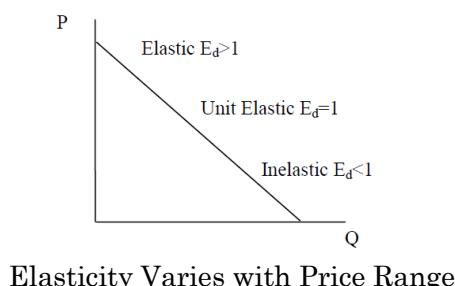
Close substitutes are available.

Whether the good is necessity or luxury

Share of income spent on the good.

The period of time.

#### d. 一根直线上的需求价格弹性 Elasticity along a Linear Demand Curve

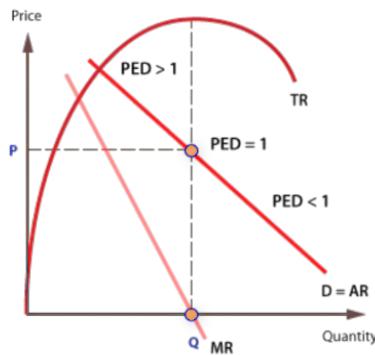


### e. 总收入与弹性测试 Total Revenue Test for Elasticity

总收入 Total Revenue (TR)=P×Q

PED	Price change	Total Revenue	P and TR
PED>1 elastic	increase	Decrease	P and TR move in the opposite direction.
	decrease	increase	
PED<1 inelastic	Increase	Increase	P and TR move in the same direction.
	decrease	decrease	
PED=1 Unit elastic	Increase	Unchanged	NO EFFECT on TR
	decrease	unchanged	

Total Revenue Test (TR Maximized at 1/2Q)



## 2. 供给价格弹性 Price Elasticity of Supply (PES)

### a. 定义与计算

PES is the responsiveness of **quantity supplied to a change in price**, along a given supply curve, ceteris paribus.

$$E_d = \frac{\text{percentage change in the quantity supplied}}{\text{the percentage change in price}}$$

$$E_s = \frac{\Delta \text{ in } Q_s}{Q} \div \frac{\Delta \text{ in } P}{P}$$

$$\text{midpoint formula: } E_s = \frac{\Delta Q_s}{(Q_{s1} + Q_{s2})/2} \div \frac{\Delta P}{(P_1 + P_2)/2}$$

### b. 弹性与非弹性 Elastic and Inelastic

|PES|>1 elastic; |PES|<1 inelastic; |PES|=1 unit elastic; |PES|=0 perfectly inelastic; |PES|=∞ perfectly elastic

### c. 影响 PES 的因素 Factors Affecting PES

The period of time: Long run—elastic; Short run—inelastic

Availability of input

## 3. 其他弹性 Other Elasticities

### a. 交叉价格弹性 Cross Elasticity of Demand (CED/XED)

$$E_{xy} = \frac{\% \Delta \text{ in } Q_d \text{ of } X}{\% \Delta \text{ in } P \text{ of } Y}$$

If  $E_{xy}$  is positive, then X and Y are substitute goods.

If  $E_{xy}$  is negative, then X and Y are complementary goods.

If  $E_{xy}$  is zero, then X and Y are independent goods.

## b. 收入价格弹性 Income Elasticity of Demand (YED)

$$Y_d = \frac{\% \Delta \text{ in } Q_d}{\% \Delta \text{ in } Y (\text{income})}$$

$YED > 0$  normal goods

$YED < 0$  inferior goods

$YED = 0$  necessary

# Topic 6 Controls on Prices (Ceiling and Floor)

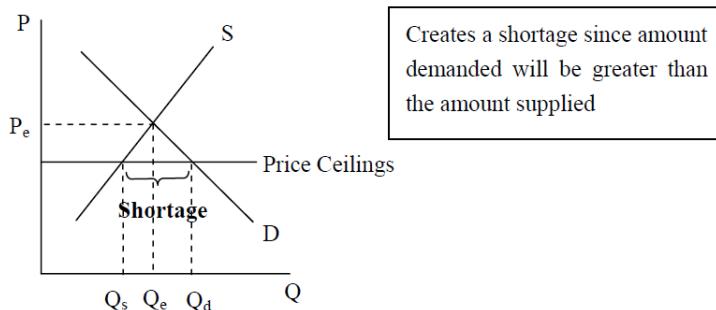
## 1. 价格上限 Price Ceiling

### a. 定义与目的 Definition and Purpose

政府为某种产品规定一个具体的价格，当这个价格被指定并实施之后，产品销售价格不得高于这个价格。其目的是 protect the interests of consumers 和 to reduce production costs for some producers。

### b. 有效的最高限价 Effective Price Ceiling

An effective price ceiling must be set **below the equilibrium price**. (价格上限反而低)



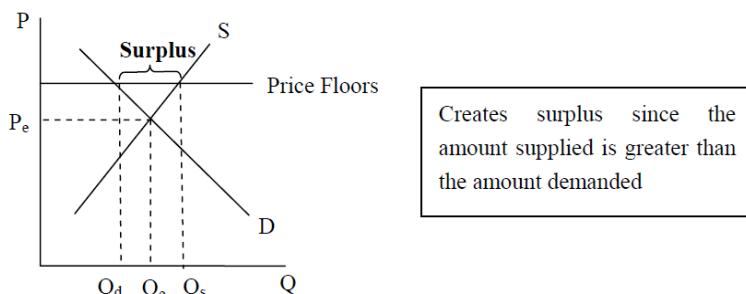
## 2. 价格下限 Price Floor

### a. 定义与目的 Definition and Purpose

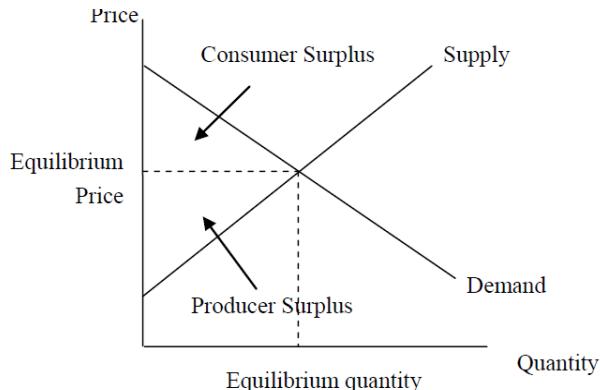
政府为某种产品规定一个具体的价格，当这个价格被指定并实施之后，市场交易只能在这个价格之上进行。其目的是 to protect the interests of producers 和 to support the development of an industry。

### b. 有效的最低限价 Effective Price Floor

An effective price floor must be set **above the equilibrium price**. (价格下限反而高)



## Topic 7 Consumer Surplus and Producer Surplus



消费者盈余 Consumer surplus: 消费者愿意支付的价格 willing to pay 和实际价格 actual price 的价格之差。

生产者盈余 Producer surplus: 生产者出售商品的实际金额 actual amount 与生产者最低所能接受 lowest amount of the producer 的价格之差。

总盈余 Total surplus: 消费者盈余 consumer surplus 加生产者盈余 producer surplus

## Topic 8 Market Efficiency, Market Failure and Deadweight Loss

### 1. 市场效率 Market Efficiency

生产效率 Productive efficiency:  $\min ATC$

分配效率 Allocative efficiency:  $P=MC$

### 2. 市场失灵 Market Failure

#### a. 市场失灵的定义 Definition of Market Failure

Some unregulated markets do not allocate resources efficiently. 不能有效的配置资源

#### b. 市场势力 Market Power

The assumption is that markets are perfectly competitive. But in the real world, competition is sometimes far from perfect. In some markets, a single seller or buyer (or a small group of sellers or buyers) can control the market price. This ability to influence prices is called market power. Market power can make markets inefficient because it can cause prices and quantities to deviate from the equilibrium between supply and demand.

假设市场是完全竞争的。但在现实世界中，竞争有时远非完全竞争。在一些市场上，某个单个卖者或者买者（或一小群卖者或者买者）可以控制市场价格。这种影响价格的能力被称为市场势力。市场势力可以使市场无效率，因为它会使价格和数量背离供求均衡。

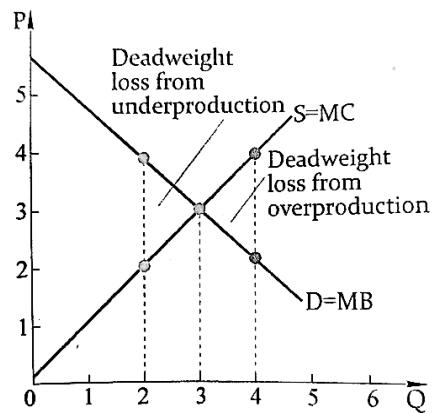
#### c. 外部性 Externalities

It is assumed that market outcomes affect only the buyers and sellers who participate in the market. However, in the real world, the decisions of buyers and sellers sometimes affect those who do not participate in the market at all, such as pollution. This side effect of the market is known as an externality.

假设市场结果只影响参与市场的买者和卖者。但在现实世界中，买者和卖者的决策有时会影响那些根本不参与市场的人，如污染。市场的这种副作用被称为外部性。

#### d. 无谓损失 Deadweight Loss

由于生产过少 underproduction 或生产过多 overproduction 导致的总盈余 Total Surplus 的减少。



# Chapter 2 The Economics of Public Sector

## Topic 9 Externalities and Market Inefficiency

### 1. 外部性 Externality

#### a. 外部性 Externality

对周围产生影响 The uncompensated impact of one person's actions on the wellbeing of a **bystander**.

#### b. 分类 Classification

正外部性 Positive Externalities: 对路人有好影响

- 正消费外部性 Positive consumption externalities
- 正生产外部性 Positive production externalities

负外部性 Negative Externalities: 对路人有坏影响

- 负消费外部性 Negative consumption externalities
- 负生产外部性 Negative production externalities

### 2. 边际收益和边际成本 Marginal Benefit and Marginal Cost

#### a. 边际收益与边际成本的定义 Definition of Marginal Benefit and Marginal Cost

边际收益 Marginal benefit: the extra benefit that is gained from the consumption of one extra unit.

边际成本 Marginal cost: The extra cost needed to produce one extra unit of the good.

### 3. 私人、外部和社会收益与成本 Private, External, and Social Benefits and Costs

#### a. 私人、外部和社会收益 Private, External, and Social Benefits

边际私人收益 Marginal private benefit (MPB): The benefit from an additional unit of a good or service that the consumer of that good or service receives.

边际外部收益 Marginal external benefit (MEB): The benefit from an additional unit of a good or service that people other than the consumer enjoys.

边际社会收益 Marginal social benefit (MSB): The marginal benefit enjoyed by consumers of a good or service (MPB) and by everyone else who benefits from it (MEB).

$$\text{Marginal social benefit} = \text{Marginal private benefit} + \text{Marginal external benefit}$$

#### b. 私人、外部和社会成本 Private, External, and Social Costs

边际私人成本 Marginal private cost (MPC): The cost of producing an additional unit of a good or service that is borne by the producer of that good or service.

边际外部成本 Marginal external cost (MEC): The cost of producing an additional unit of a good or service that falls on people other than the producer.

边际社会成本 Marginal social cost (MSC): The marginal cost incurred by the entire society: by the producer and by everyone else on whom the cost falls.

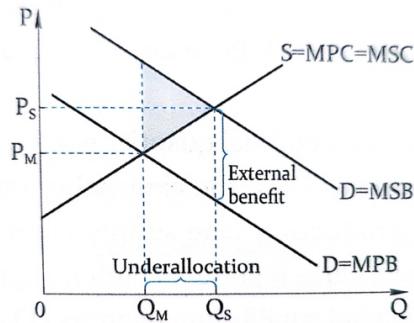
$$\text{Marginal social cost} = \text{Marginal private cost} + \text{Marginal external cost}$$

### 4. 社会资源配置 Social Allocative Efficiency

Allocative efficiency ensures that resources are used so that their marginal benefit to society is equal to their marginal cost. An efficient market is always reflected in the market prices of goods and services.

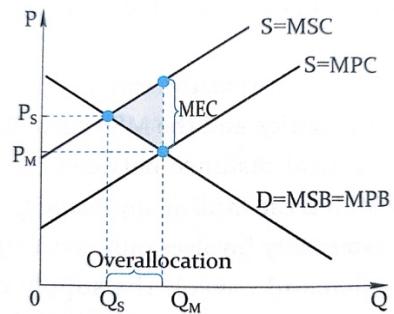
$$\text{Marginal social benefit (MSB)} = \text{Marginal social cost (MSC)}$$

## 5. 正消费外部性 Positive Consumption Externality



Socially optimal quantity  $MSB=MSC$

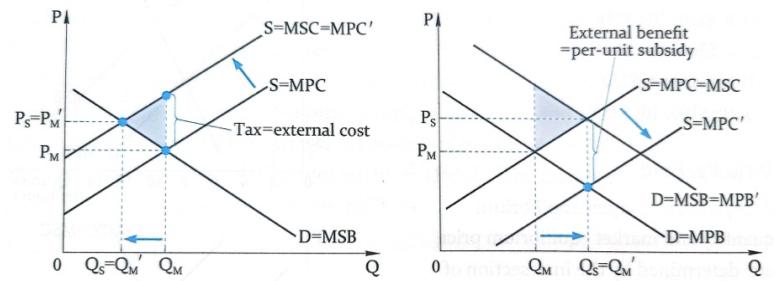
## 6. 负生产外部性 Negative Production Externality



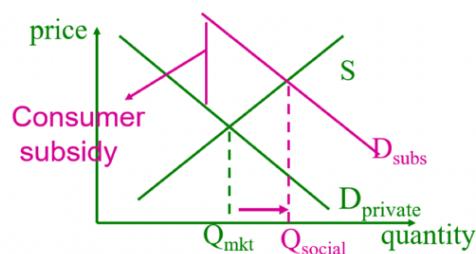
Socially optimal quantity  $MSB=MSC$

## 7. 外部性与政府干预 Externalities and Government Interventions

### a. 负外部性与间接税 Negative Externality and Indirect Tax



### b. 正外部性与从量补贴 Positive Externality and PerUnit Subsidies



## 8. 外部性的私人解决方法 Private Solutions for Externalities

### a. 私人解决方法的类型 Types of Private Solutions

用道德规范和社会约束来解决 Use ethical norms and social constraints to solve

慈善行为 Charitable act

通过依靠有关各方的利己来解决外部性问题 Solving externalities by relying on the self-interest of all parties involved

利益各方签订合约 Interested parties sign a contract

### b. 科斯定理 Coase Theorem

如果私人各方可以无成本地就资源配置进行协商，那么，他们就可以自己解决外部性问题的观点。

无论最初的权利（法律规定的权利）如何分配，有关各方总可以达成一种协议，在这种协议中，每个人的状况都可以变好，而且，结果是有效率的。

### c. 私人解决方法并不总是有效 Private Solutions Don't Always Work

交易成本 transaction cost 的存在

交易成本是各方在达成协议及遵守协议过程中所发生的成本

谈判破裂的可能

当利益各方人数众多时，达成有效率的协议就尤其困难，因为协调每个人的代价过于高昂

## Topic 10 Public Goods and Common Resources

### 1. 私人和公共产品 Public and Private Goods

#### a. 四种商品 Four Types of Goods

	Rival in consumption	Nonrival in consumption
Excludable	Private goods	Artificially scarce goods
Non-excludable	Common resources	Public goods

排他性 Excludable: 可以阻止他人使用

非排他性 Not-excludable: 不能阻止他人使用

竞争性 Rival: 有多个人同时使用

非竞争性 Not rival: 只能私人使用

#### b. 公共品 Public Goods

没有排他性 nonexcludable; 没有竞争性 nonrival

搭便车问题 Free rider problem

- Consumer attempts to benefit from a public good without paying for it
- Consumers know they can enjoy the provision of these goods without paying for them
- Thus, the gov. oftentimes provides these goods and pays for them through taxes

#### c. 私有品 Private Goods

排他性 excludable; 竞争性 rival

### 2. 成本-收益分析 Cost-Benefit Analysis

成本-收益分析提供一种公共物品的社会成本与社会收益的研究

## Topic 11 Taxes and Equity & Taxes and Efficiency

## 1. 累进税、成比例税和累退税 Progressive Tax, Proportional Tax and Regressive Tax

累进税 Progressive Tax: 随着收入的增加, 税款也随之增加, 占收入的比例越大, 对富人的压力最大。

成比例税 Proportional Tax: 无论收入多少, 税款不变。

累退税 Regressive Tax: 随着收入的增加，税款反而随之下降，占收入的比例越少。

## 2. 收益原则与支付能力原则 Benefits Principle and Ability-to-Pay Principle

收益原则 benefits principle 认为人们应该根据他们从政府服务中得到的利益来纳税的思想。

支付能力原则 ability-to-pay principle 认为应该根据一个人可以承受的负担来对这个人征税的思想。

支付能力原则得出了平等观念的两个推论：纵向平等和横向平等。

- 纵向平等 vertical equity 主张支付能力更强的纳税人应该缴纳更多税收的思想。但富人应该多多少呢？这是许多有关税收政策的争论的焦点。
  - 横向平等 horizontal equity 主张有相似支付能力的纳税人应该缴纳等量税收的思想。

### 3. 预算赤字与预算盈余 Budget Deficit and Budget Surplus

预算赤字 budget deficit: 政府支出 government spending 大于政府收入 government revenue。

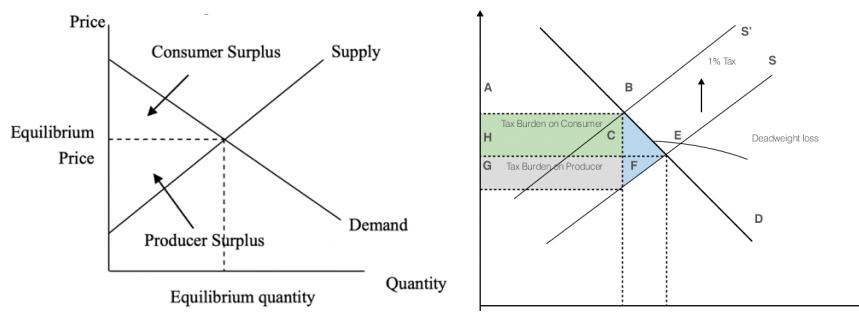
预算盈余 budget surplus: 政府收入 government revenue 大于政府支出 government spending。

#### 4. 税收负担与市场效率 Tax Incidence and Efficiency

#### a. 税收负担 Tax Incidence

Tax incidence is the division of the burden of a tax between the buyer and the seller.

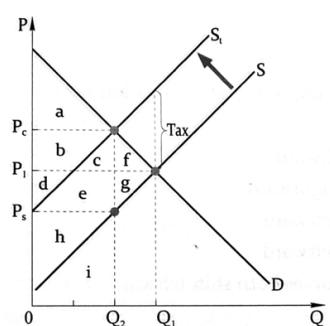
#### b. 从量税对市场的影响以及社会福利 Effects of Specific Taxes on Markets and Social Welfare



对于左图，是没有税收的市场，其是 efficient 的，也就是 marginal benefit is equal to marginal cost，其 total surplus 等于 consumer surplus 加上 producer surplus。

对于右图，政府针对 producer 加 per-unit tax, tax 作为一个 additional cost 使得 supply curve 左移。

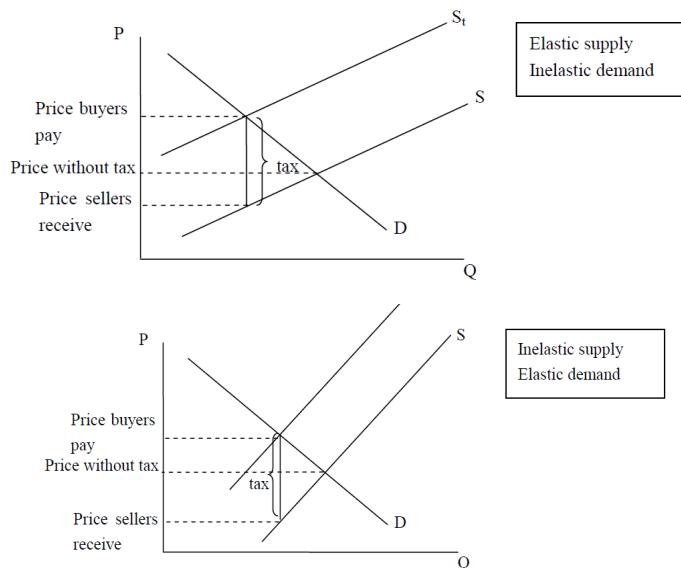
### c. 带有税收的市场图形图解 Explanation of Market with Tax



Price before tax, labeled P<sub>1</sub>  
 Quantity before tax, labeled Q<sub>1</sub>  
 Quantity after tax, labeled Q<sub>2</sub>  
 Tax per unit, labeled tax (tax is the vertical distance between two supply curves)  
 Prices consumers pay after tax, labeled P<sub>c</sub>  
 Prices producers receive after tax, labeled P<sub>s</sub>  
 Total tax revenue for the government after tax, labeled b+c+d+e  
 Consumer surplus before tax, labeled a+b+c+f  
 Producer surplus before tax, labeled d+e+g+h  
 Consumer surplus after tax, labeled a  
 Producer surplus after tax, labeled h  
 Deadweight loss due to tax, labeled f+g  
 Amount of tax revenue consumers pay, labeled b+c  
 Amount of tax revenue producers pay, labeled d+e  
 Total expenditures after tax, labeled b+c+d+e+h+i  
 Total revenue after tax, labeled h+i

#### d. 税收负担和弹性 Tax Incidence and Elasticity

Less elasticity, more tax burden (subsidy burden)



#### 5. 税收对无谓损失的影响 Magnitude of the Deadweight Loss from a Tax

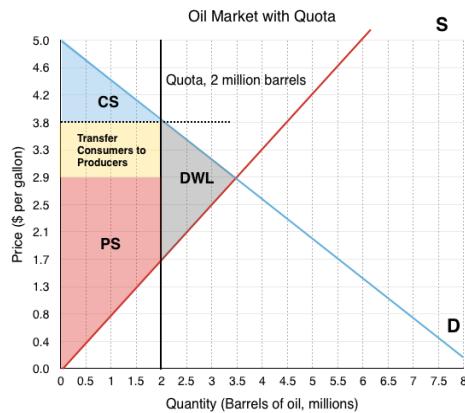
需求与供给弹性越强，DWL 越大；需求与供给弹性越小（inelastic），DWL 越小

#### 6. 边际税率与平均税率

平均税率 Average tax rate 是支付的总税收除以总收入。

边际税率 Marginal tax rate 是增加 1 元收入所支付的额外税收。

## Topic 12 Quantity Restrictions



政府规定某种商品交易数量 sets the number of certain commodities to be traded。政府会通过发放许可证 issuing permits 或者牌照 licenses 等方式来限制某个市场上的交易数量 number of transactions。

# Chapter 3 Firm Behavior and the Organization of Industry

## Topic 13 Production Possibilities

### 1. 机会成本 Opportunity Cost

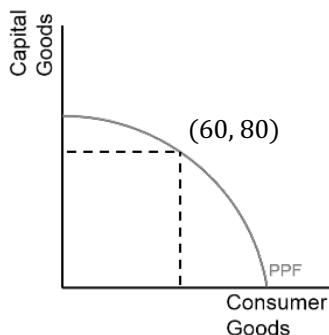
企业为从事某项经营活动而放弃另一项经营活动的机会，或利用一定资源获得某种收入时所放弃的另一种收入。

例如：人们上大学的机会成本是如果人们使用上大学的四年去工作所获得的收益。

### 2. 生产可能性曲线 Production Possibilities Curve

#### a. 生产可能性曲线的定义 Definition of Production Possibilities Curve

在一定的要素数量和技术水平下，使用所有的资源能够生产的产品和服务的各种可能的数量组合。也叫 Production Possibility Frontier (PPF) 和 Production Possibility Boundary (PPB)。



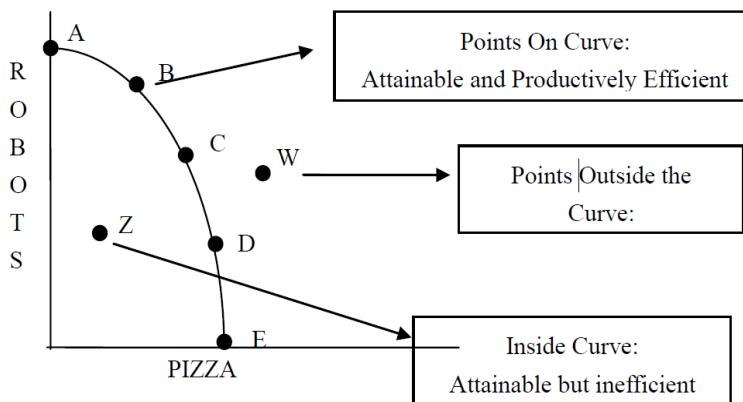
The opportunity cost of adding 60 capital goods is 80 consumer goods.

#### b. 消费品和资本品 Consumers Goods and Capital Goods

Consumer goods directly satisfy our wants, while capital goods satisfy indirectly since they permit more efficient production of consumer goods.

- 消费品 Consumers goods: 当下的欲望 A current choice favoring more consumer goods will result in only a modest movement to the right in the future.
- 资本品 Capital goods: 未来的需求 A current choice to produce a greater portion of capital goods with the available resources can result in a greater rightward movement in the future.

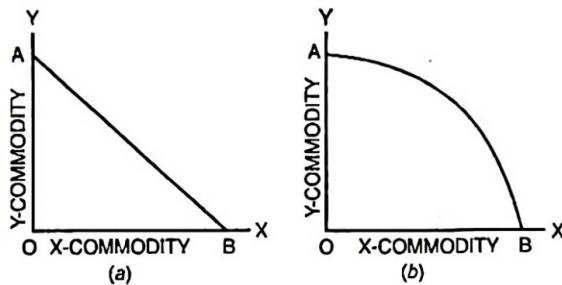
#### c. 线上、线内和线外的点 Points on, inside, and outside the PPC



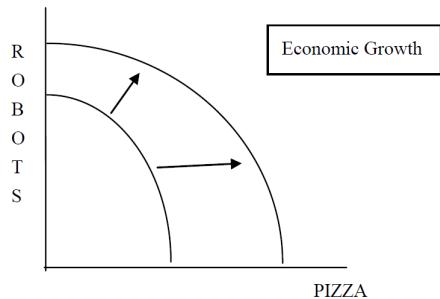
#### d. 生产可能性曲线的形状 Shapes of the PPC

PPC straight 的情况下：机会成本为 constant；资源可以完美替代

PPC bowed out 的情况下：机会成本 increasing

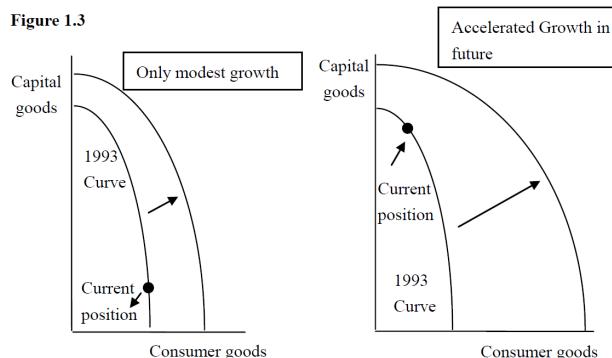


#### e. 生产可能性曲线的外移 Outward Shift of PPC



Reason: availability of resources, technological progress

#### f. 经济增长不平衡 Unbalanced Economic Growth



## Topic 14 The Cost of Production

### 1. 显性成本和隐性成本 Explicit Cost and Implicit Cost

显性成本 Explicit Cost: 通常是指金钱的支出。

隐性成本 Implicit Cost: 通常是指与公司使用其拥有的资源相关的**机会成本**。

经济成本 Economic Cost (机会成本 Opportunity Cost)

$$\text{Economic Costs} = \text{Explicit costs} + \text{Implicit costs}$$

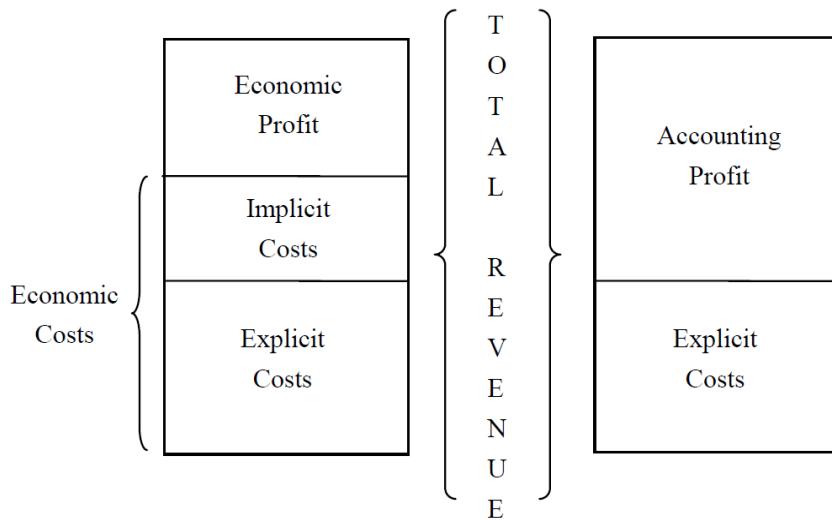
### 2. 会计利润和经济利润 Accounting Profit and Economic Profit

会计利润 Accounting Profit

$$\text{Accounting Profit} = \text{Total revenue}(TR) - \text{Explicit costs}$$

## 经济利润 Economic Profit

$$\begin{aligned} \text{Economic Profit} &= \text{Total revenue (TR)} - \text{Explicit costs} - \text{Implicit costs} \\ &= \text{accounting profit} - \text{implicit cost} \end{aligned}$$



### 3. 正常利润 Normal Profit

Normal profit is economic profit equals 0.

Normal profit is an economic term that refers to a situation where the total revenues of a company are equal to the total costs in a perfectly competitive market. It means that the company makes sufficient revenues to cover the overall cost of production and remain competitive in its respective industry.

### 4. 短期和长期 Short Run and Long Run

短期 Short Run

The short run is a time period in which the quantities of some resources are fixed. In a short run, a firm can usually change the quantity of labor it uses but not the quantity of capital.

长期 Long Run

The long run is a time period in which the quantities of all resources can be changed. In the long run the firm has no fixed resources; we say all resources are variable.

### 5. 短期要素投入与产出的关系 Short-Run Production Relationships

#### a. 总产量、边际产量和平均产量计算 Formulas for TP, MP and AP

总产量 Total Products: Total quantity of output produced by a firm.

边际产量 Marginal Products: MP is the additional output resulting from one additional unit of the variable input.

$$\text{total product} = \frac{\text{change in total product}}{\text{change in labor input}}$$

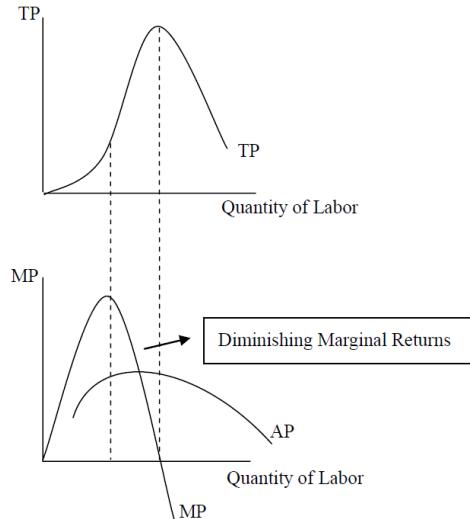
平均产量 Average Products: AP is the output per unit of input.

$$\text{average product} = \frac{\text{total product}}{\text{units of labor}}$$

#### b. 边际产量递减原则 Decreasing Marginal Returns (or Products)

Decreasing marginal returns occurs when the marginal product of an additional worker is less than the marginal product of the previous worker.

如果在固定数量的资本设备上增加更多的工人，产出最终会以越来越小的数量。



总产量和边际产量之间关系 Relationship between Total Product and Marginal Product

## 6. 生产成本 Costs of Production

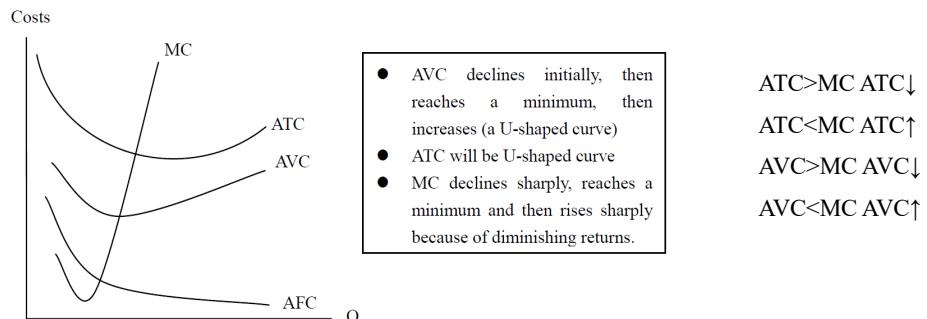
### a. 短期生产成本 Short-Run Production Costs

固定成本 Fixed Costs: 无论产出如何都必须支付的成本 Costs that do not vary with output; costs that must be paid regardless of output.

可变成本 Variable Costs: 成本随着产出水平的变化而变化 Costs vary with output levels.

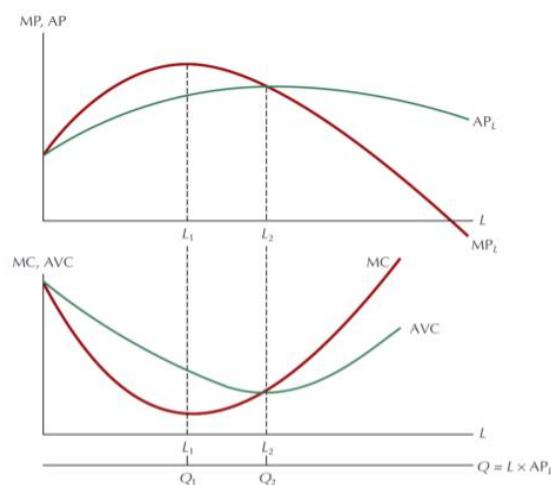
总成本 Total Costs:  $\text{Fixed Costs} + \text{Variable Costs}$

$$\text{AFC} = \frac{\text{TFC}}{Q} \quad \text{AVC} = \frac{\text{TC} - \text{FC}}{Q} \quad \text{ATC} = \frac{\text{TC}}{Q} \quad (\text{OR } \text{AFC} + \text{AVC})$$



MC, ATC, AVC and AFC

### 成本和产品曲线 Relating the Cost and Product Curves

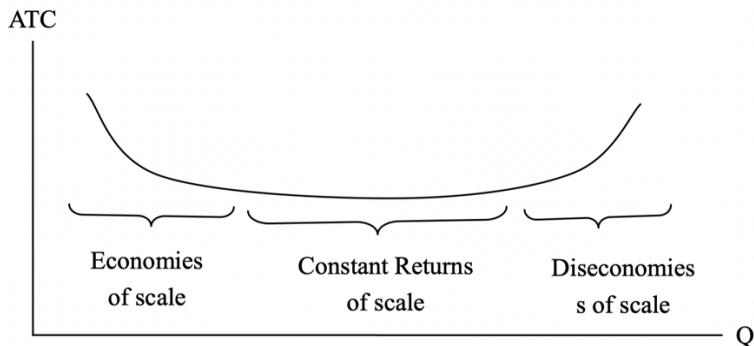


ATC 是 U 型曲线的原因 Why the ATC is U-shaped curves?

- 下降部分 spreading effect > diminishing returns effect
- 上升部分 spreading effect < diminishing returns effect

## Topic 15 Long-Run Cost

### 1. 长期平均成本 Long-Run ATC



规模经济 Economics of scale: LRATC↓

规模不经济 Diseconomies of scale: LRATC↑

规模报酬不变 Constant returns of scale: LRATC is constant.

### 2. 规模报酬递增/递减/不变 Increasing/decreasing/constant returns to scale

Increasing returns to scale

- Inputs=10 output=100
- Inputs=20 output>200

Decreasing returns to scale

- Inputs=10 output=100
- Inputs=20 output<200

Constant returns to scale

- Inputs=10 output=100
- Inputs=20 output=200

### 3. 沉没成本 Sunk costs

Sunk costs are expenses that have occurred in the past but are not related to current decisions.  
(Can be ignore)

## Topic 16 Profit Maximization of the Firm

### 1. 边际收益与边际成本 Marginal Revenue and Marginal Cost

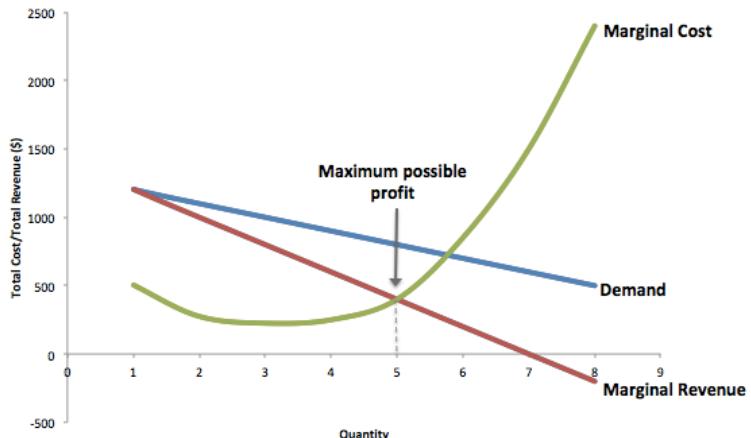
边际收益 Marginal Revenue: 每多生产一个产品所获得的收益。

边际成本 Marginal Cost: 每多生产一个产品所需要的成本。

$$MR = \frac{\Delta TR}{\Delta Q} = \frac{TR_{n+1} - TR_n}{1}$$

$$MC = \frac{\Delta TC}{\Delta Q} = \frac{TC_{n+1} - TC_n}{1}$$

## 2. 最优点和利润最大化 Optimal Point and Profit Maximization



Optimal rule:  $MC=MR$  (if  $MR>MC$ , increase production; if  $MR<MC$ , decrease production)

## 3. MC 是 U型曲线的原因 Why the MC is U-shaped curves?

$MC \uparrow$  diminishing marginal returns

$MC \downarrow$  specialization of labor

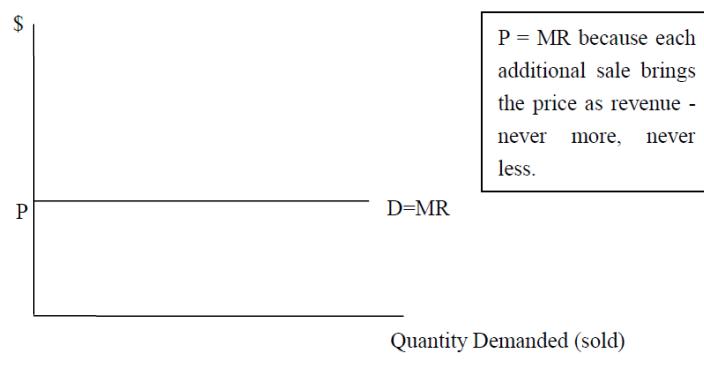
# Chapter 4 Market Structure

## Topic 17 Introduction of Competitive Market

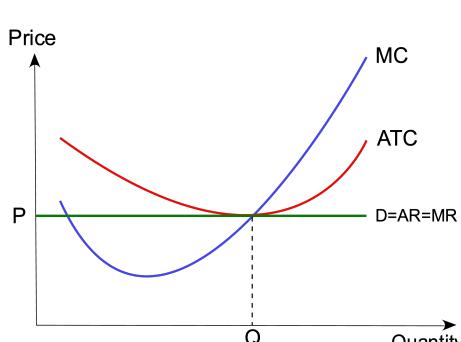
### 1. 特征 Characteristics

Perfect Competition	Number of firms	Type of Product	Ability to Set Price	Product Differentiation	Ease of Entry
	Numerous businesses	Homogeneous	None. Price-taker	None. Products are identical.	Relatively easy to start a new business

### 2. 完全竞争企业所见的需求 Demand as Seen by a Perfectly Competitive Firm



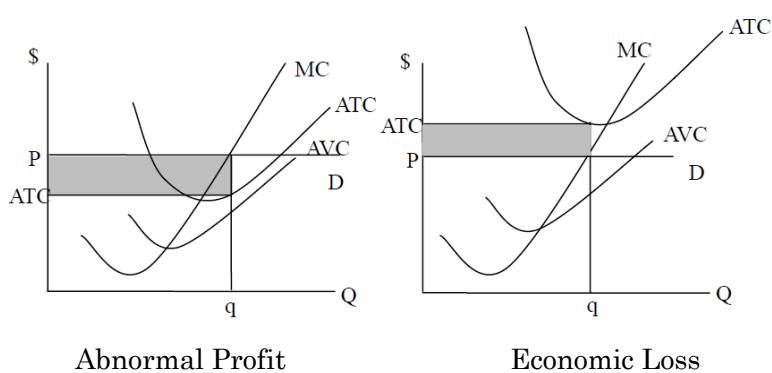
### 3. 完全竞争的利润最大化 Perfect Competition for Profit Maximization



在  $MR=MC$  时，是利润最大化 Profit Maximization 的产量

### 4. 短期完全竞争 Short-Run Perfect Competition

#### a. 超额利润与亏损 Abnormal Profit and Economic Loss

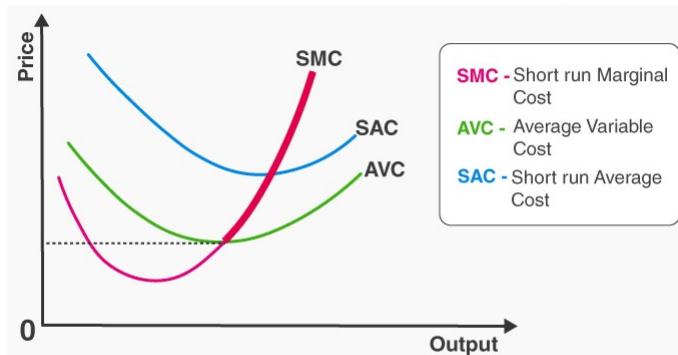


## b. 企业短期行为: 停业 Shutdown Point in the Short Run

$P \geq \min \text{AVC}$ —continue to produce

$P < \min \text{AVC}$ —shut down

## c. 企业短期供给曲线 Firm's Short-Run Supply Curve



Shutdown position 之上的 MC

Marginal cost curve above the minimum point of its average variable cost curve.

## 5. 长期完全竞争 Long-Run Perfect Competition

### a. 长期完全竞争市场前提 Long-Run Perfectly Competitive Market Premise

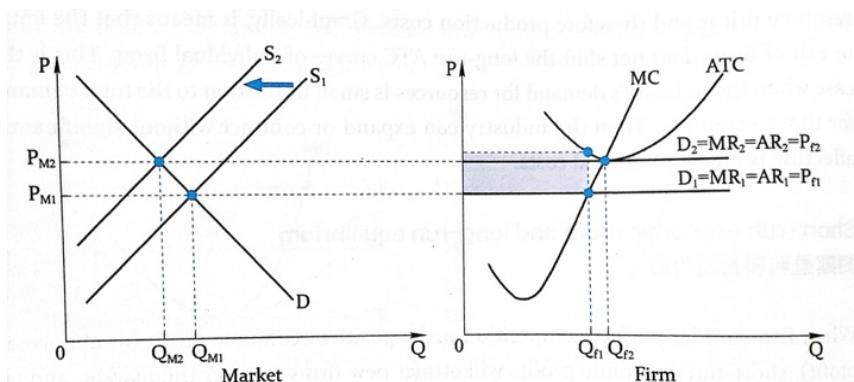
The only adjustments are the entry and exit of new companies.

All firms have the same cost curve.

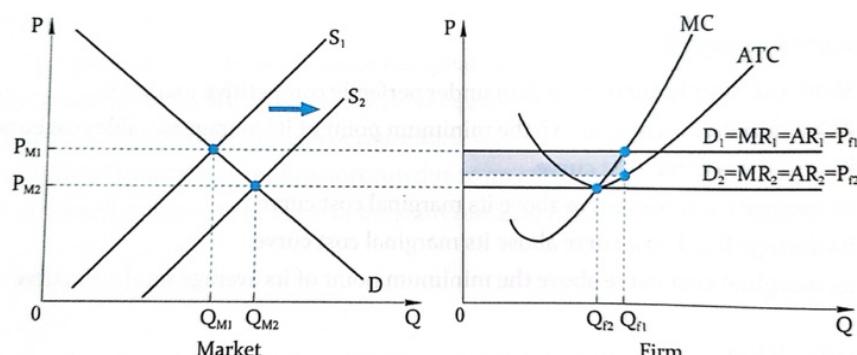
The industry is cost-constant (entry and exit do not affect resource prices).

### b. 企业和市场的对应 Side-By-Side Graph

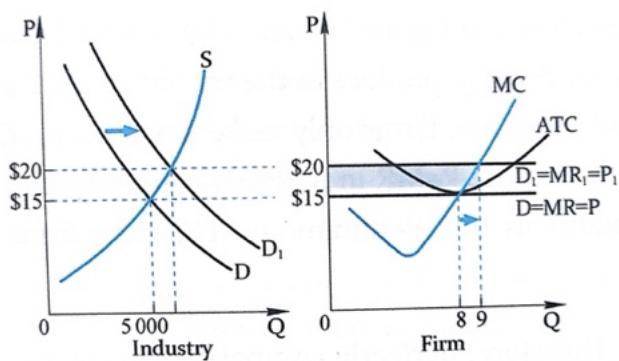
短期亏损和长期均衡 Short-Run Economic Loss and Long-Run Equilibrium



短期盈利和长期均衡 Short-Run Economic Profit and Long-Run Equilibrium



## 短期均衡 Short-Run Equilibrium



## 6. 效率 Efficiency

完全竞争市场同时满足生产有效与配置有效

## Topic 18 Introduction of Monopoly

### 1. 特征 Characteristics

	Number of firms	Type of Product	Ability to Set Price	Product Differentiation	Ease of Entry
Monopoly	A single producer	Unique; no substitutions	Most. Seller is only source of produce and can act like price maker.	None. Product is unique.	Very difficult.

Earn abnormal profit

Monopoly has sufficient market power

### 2. 进入壁垒 Barriers to Entry

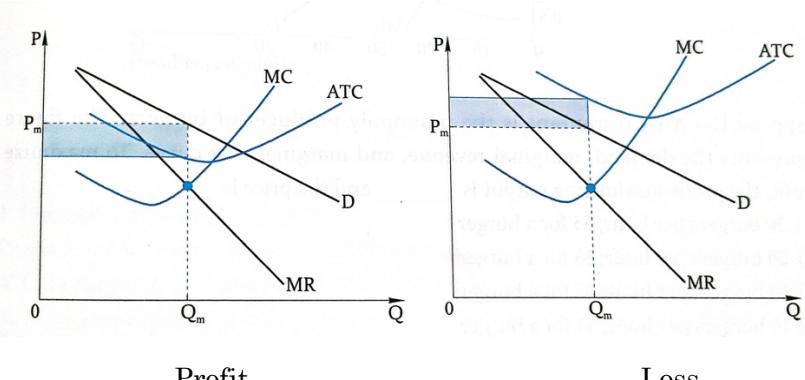
法律壁垒 Legal Barriers (专利问题 patent; 许可证问题 license)

对原材料的所有权 Resources Ownership

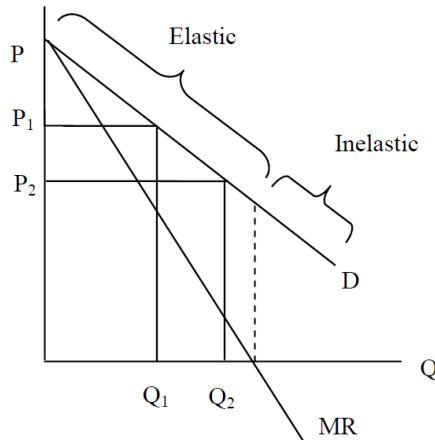
规模经济 Economics of Scale

### 3. 单一价格垄断 Single-Price Monopoly

#### a. 单一价格垄断短期图形 Single-Price Monopoly Short-Run Graph



## b. 边际收益与需求价格弹性的关系 The Relationship between Marginal Revenue and Elasticity



If a price fall increases total revenue, demand is elastic.

If a price fall decreases total revenue, demand is inelastic.

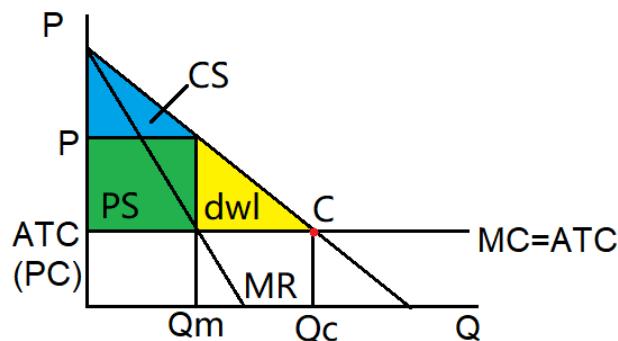
Total revenue is maximized when demand is unit elastic.

## c. 单一价格垄断效率 Single-Price Monopoly Efficiency

没有达到配置效率 allocative efficiency 与生产效率 productive efficiency

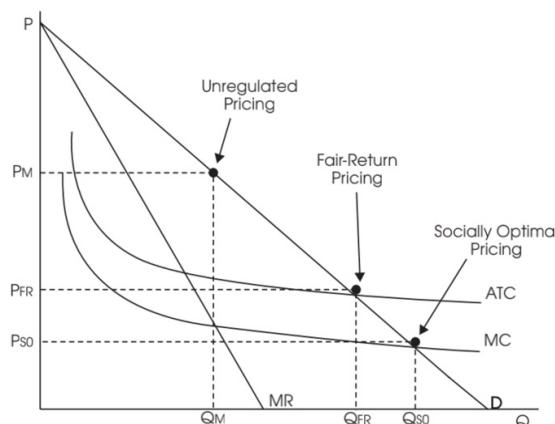
### 4. 单一价格垄断与完全竞争的比较 Comparison of Monopoly and Perfect Competition

If  $MC=ATC$



## 5. 自然垄断 Natural Monopoly

A natural monopoly is a type of monopoly in an industry or sector with high barriers to entry and start-up costs that prevent any rivals from competing.



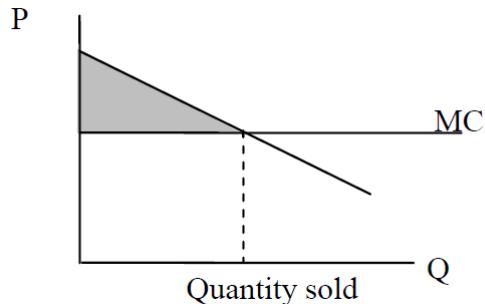
## 6. 价格歧视垄断 Price Discrimination Monopoly

### a. 定义

Charging different customers different prices for the same good.

### b. 完美价格歧视（第一价格歧视）Perfect Price Discrimination (First-Degree Price Discrimination)

每一单位产品都有不同的价格，即假定垄断者知道每一个消费者对任何数量的产品所要支付的最大货币量，并以此决定其价格，所确定的价正好等于对产品的需求价格，因而获得每个消费者的全部消费剩余。



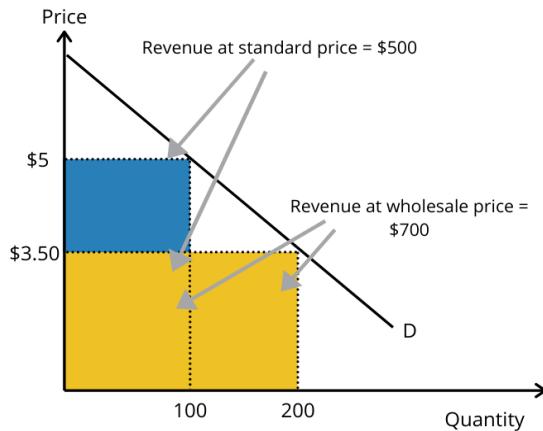
阴影部分为 AE (producer surplus) profit with perfect price discrimination

- Consumer surplus is equal to 0.
- As the last unit is sold where  $P=MC$ , there exists no deadweight loss under the pricing strategy.

### c. 第二价格歧视 Second-Degree Price Discrimination

第二价格歧视是在购买者角度存在自我选择机制 self-selection。

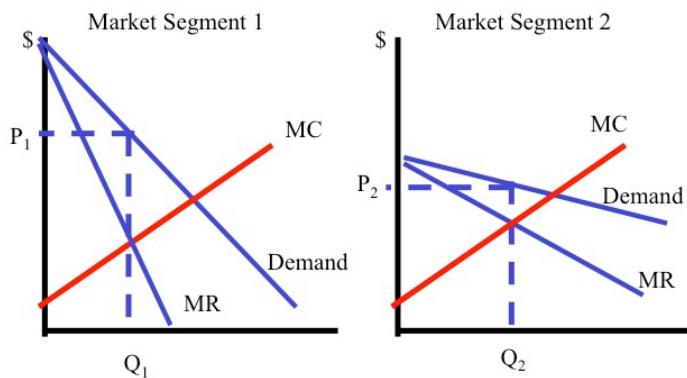
Second-degree price discrimination is the **practice of charging different prices for different quantities**, such as **quantity discounts for bulk purchases**. When a corporation **charges a variable price for different quantities consumed**, such as quantity discounts on bulk purchases, this occurs.



### d. 集体价格歧视（第三价格歧视）Third-Degree Price Discrimination (Group Price Discrimination)

第三价格歧视是对独特人口的价格歧视。

Third-degree price discrimination occurs when companies price products and services differently based on the **unique demographics of subsets of their consumer base**, such as students, military personnel, or older adults. As such, it's commonly called group pricing.

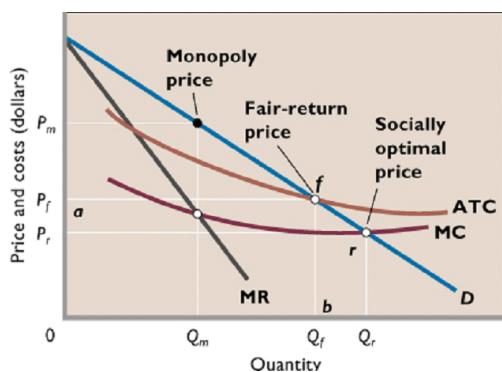


#### e. 价格歧视实现条件 Conditions for Price Discrimination

- Market power.
- Different elasticity of demand.
- Make sure no resales between the consumers.

#### 7. 管制垄断市场 Regulated Monopoly

##### a. 社会最优价格与公平收益价格 Socially Optimal Price and Fair-Return Price



社会最优价格 Socially Optimal Price:  $P=MC$

公平收益价格 Fair-Return Price:  $P=ATC$

##### b. 反垄断法 Antitrust Laws

Prevent mergers.

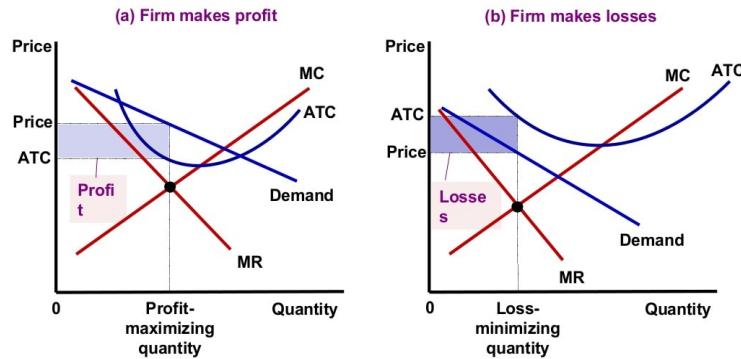
Break up big companies.

## Topic 19 Introduction of Monopolistic Competition

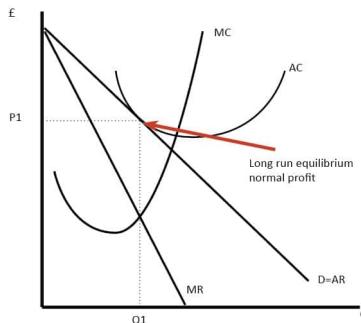
### 1. 特征 Characteristics

	Number of firms	Type of Product	Ability to Set Price	Product Differentiation	Ease of Entry
Monopolistic Competitive	Large number of businesses	Differentiated	Some. The degree of product differentiation will affect the ability of the seller to set price.	Varies depending on the industry	Relatively easy to start a new business

## 2. 短期超额利润或亏损 Short-Run-Making Abnormal Profit or Loss



## 3. 正常利润 Short-Run-Making Normal Profit



ATC 最低点对应 Q 为 minimum-cost output

## 4. 垄断竞争与完全竞争对比 Comparing Monopolistic Competition with Perfect Competition

In P.C.  $ATC=P=MR=MC$

In M.C.  $ATC>P>MR=MC$

P.C. achieves productive efficiency by producing at the min ATC.

M.C. results in excess capacity (they produce less than the output at which average total cost is minimized)

## 5. 广告 Advertising

### a. 市场类型和广告 Market Types and Advertising

除了完全竞争市场外，其余市场均需要通过打广告 **advertise** 吸引消费者。

### b. 关于广告的争论 Arguments about Advertising

广告的批评者 Critics of advertising

- 企业做广告是为了操纵人们的爱好 Manipulating people's hobbies
- 许多广告是心理性的，而不是信息性的 It's psychological, not informational
- 有些广告创造了一种本来不存在的欲望 Creates a desire that did not exist
- 广告抑制了竞争 Suppressed competition

广告的辩护者 Defenders of advertising

- 企业用广告向顾客提供信息，传递所销售物品的价格，新产品的存在和零售店的位置等信息 Providing information to customers
- 广告促进竞争，因为广告使顾客能更充分地了解市场上的所有企业，这样顾客更容易利用价格差，使得每个企业拥有的市场势力变小了 Promotes competition
- 广告容易使新企业进入，因为新进入者可从现有企业中吸引顾客 Easy for new businesses to enter

# Topic 20 Introduction of Oligopoly

## 1. 特征 Characteristics

	Number of firms	Type of Product	Ability to Set Price	Product Differentiation	Ease of Entry
Oligopoly	A few large businesses	Homogeneous or differentiated	More. Sellers can act as monopoly setting price or sellers can act independently and ability to set price is determined by differentiation.	Varies. Some industries may be identical; others may be differentiated.	Difficult. High Startup costs

## 2. 双头垄断 Duopoly

An oligopoly with 2 members.

## 3. 勾结和卡特尔 Collusion and Cartel

勾结 Collusion (agreement): increase their profit, restrict output or raise price.

卡特尔 Cartel: a group of firms acting in unison.

## 4. 博弈论 Game Theory

### a. 博弈论的定义 Definition of Game Theory

Study of how interdependence decision makers make choice.

### b. 收益矩阵 Payoff Matrix

A diagram showing how the payoffs to each player in a game, depend on the actions of both.

For example,

		Suspect 2	
		Confess	Don't Confess
Suspect 1	Confess	(1) 6 years (2) 6 years	(1) 1 year (2) 10 years
	Don't Confess	(1) 10 years (2) 1 year	(1) 2 years (2) 2 years

关于 suspect 1, 横着看。如果是 confess 的话, 则为 6 和 1; 如果是 don't confess 的话, 则为 10 和 2。6 和 1 比 10 和 2 要小, 所以选 confess (suspect 1 的 dominant strategy)。

关于 suspect 2, 竖着看。如果是 confess 的话, 则为 6 和 1; 如果是 don't confess 的话, 则为 10 和 2。6 和 1 比 10 和 2 要小, 所以选 confess (suspect 2 的 dominant strategy)。

所以, (confess, confess)就是 Nash equilibrium.

### c. 最优策略 Dominant strategy

An action that is a player's best action regardless of what the other player does.

### d. 纳什均衡 Nash equilibrium

Occurs when the game end.

最优策略均衡 Dominant strategy equilibrium: 两家企业都选择了 dominant strategy。

## 5. 赫芬达尔—赫希曼指数 Herfindahl Index (HHI)

The Herfindahl index is a measure of the size of firms in relation to the industry they are in and is an indicator of the amount of competition among them.

- 行业内所有公司的市场份额的平方之和
- 大公司的权重更大
- 指数越大，行业内的市场力量就越大

# Chapter 5 Economics of Labor Markets

## Topic 21 Demand and Supply of Labor

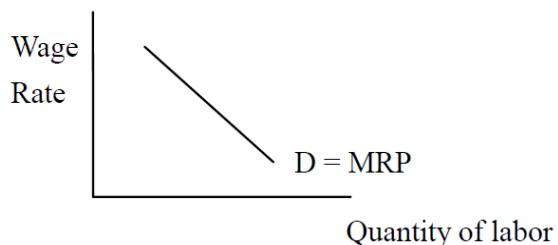
### 1. 衍生需求 Derived Demand

The demand for a factor of production is a derived demand.

### 2. 边际收益产品 Marginal Revenue Product (MRP)

MRPL of a factor is the additional revenue generated by employing one more unit of the factor. 多雇佣一个人所带来的收益

$$MRP_L = \frac{\Delta TR}{\Delta Q \text{ of resource}} = MP \times MR = MP \times P \text{ (perfectly competitive market)}$$



Under pure competition, the price is constant, so the **diminishing productivity** is the sole reason why the demand curve is down sloping.

### 3. 边际要素成本 Marginal Factor Cost/Marginal Resource Cost (MFC/MRC)

MFC is additional cost of an additional worker. 多雇佣一个人所带来的成本

$$MFC = \frac{\Delta TC}{\Delta Q \text{ of resource}} = wage \text{ (perfectly competitive labor market)}$$

### 4. 资源需求和资源供应 Resource Demand and Resource Supply

#### a. MRP as Resource Demand and MFC as Resources Supply

#### b. 资源需求的决定因素 Determinants of Resource Demand

Changes in the price of goods.

- Derived demand price of products increases demand more labor.

Changes in the supply of other factors.

- Capital/land is more plentiful MP of labor increases demand shift high wards.

Changes in technology process.

- Increasing labor productivity demand shift rightwards.

#### c. 资源供给的决定因素 Determinants of Resource Supply

Preferences and social norms

Population

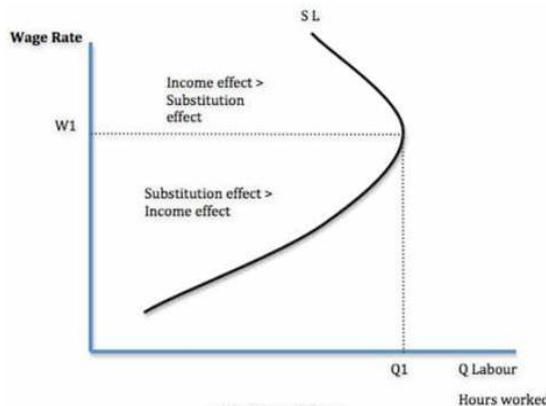
Opportunities

Wealth

#### d. 经济租金 Economic rent

The payment to a factor of production in excess of the minimum payment necessary to employ that factor.

e. 个体劳动力供给的替代效应和收入效应 Substitution Effect and Income Effect for Individual supply of Labor



Substation effect: as wage rate rises, the O.C. of leisure is increasing, thus, labor will work more.

Income effect: as leisure is a normal good, when income rises, labor will demand more leisure and work less.

## 5. 要素市场的利润最大化 Profit Maximization in Factor Markets

$MRP=MFC$  企业利润最大化的条件

$MRP>MFC$  使用更多的要素

$MRP<MFC$  减少劳动力的雇佣

## Topic 22 Equilibrium in the Labor Market

### 1. 完全竞争的劳动力市场 Perfectly Competitive Labor Market

#### a. 特征 Feature

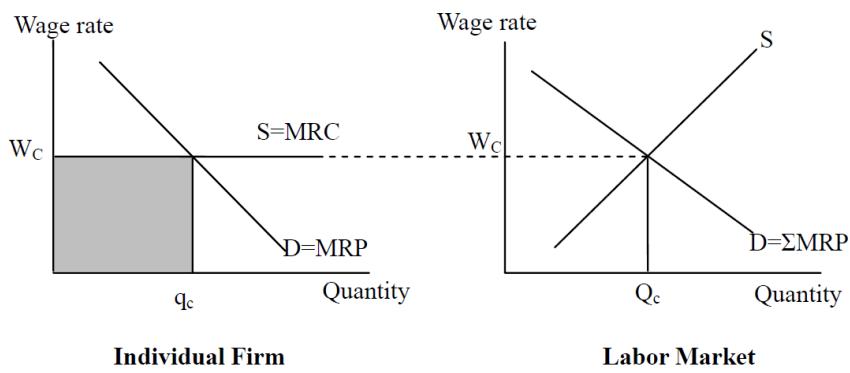
Many small firms are hiring workers

Workers with identical skills

Wage is constant

Workers are wage takers

#### b. 市场图形 Market Graph



Side-by-side graph for perfectly competition labor market

In the perfectly competitive market, for individual firm,  $MRPL$  is downward sloping and  $MFC$  is horizontal.

$MRP=MFC$  is the profit maximizing rule.

## 2. 垄断的劳动力市场 Monopolistic Market

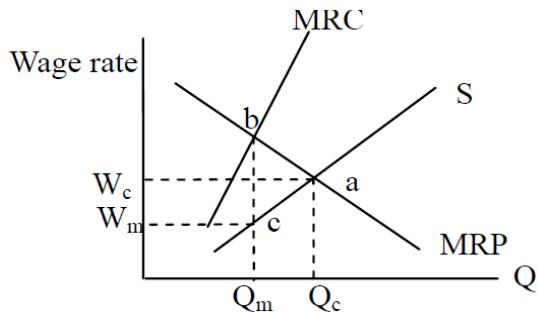
### a. 特征 Feature

Only a single buyer of labor.

Labor is immobile.

The firm is a wage maker.

### b. 市场图形 Market Graph



A 点为完全竞争市场均衡点；B 点为  $MRPL=MFCL$ ；工人工资在  $W_m$  处

Hire worker until  $MRPL=MFCL$

## 3. 资源优化组合：成本最低法则 Optimal Combination of Resources: Cost Minimizing Rule

$$\frac{MP_L}{P_L} = \frac{MP_K}{P_K}$$

$MPL/PL > MPK/PK$  增加工人 work 减少机器设备 capital

$MPL/PL < MPK/PK$  减少工人 work 增加机器设备 capital

## Topic 23 Earnings and Discrimination

### 1. 决定均衡工资的若干因素 Some Factors That Determine Equilibrium Wages

#### a. 补偿性工资差别 Compensatory Wage Differential

抵消不同工作的非货币特性而产生的工资差别

Compensating wage differentials arise to compensate workers for nonwage characteristics of the job (i.e. how ‘pleasant’ or ‘unpleasant’ a job is). If a job is unpleasant, the firm must probably offer a higher wage to attract workers and vice versa. Workers have different preferences and firms have different working conditions.

For example,

- 煤矿工人得到的工资高于其他有相似教育水平的工人的工资。他们的高工资用来补偿采煤的不干净和危险性，以及煤矿工人所面临的长期健康问题。
- 工厂中夜班工人的工资也高于同类白班工人的工资。高工资用来补偿他们不得不夜里工作而白天睡觉这种大多数人都不喜欢的生活方式。

#### b. 人力资本 Human Capital

对人的投资的积累，如教育和在职培训。

#### c. 能力、努力和机遇 Capabilities, Efforts and Opportunities

#### d. 超级明星现象 Superstar Phenomenon

市场上每位顾客都想享受最优生产者提供的物品

生产这种物品所用的技术使最优生产者以低成本向每位顾客提供产品成为可能

**e. 高于均衡水平的工资 Above Equilibrium Wages**

工会 union 与雇主谈判工资和工作条件的工人协会。

罢工 strike 工会有组织地从企业撤出劳动。

效率工资 efficiency wages 企业为了提高工人的生产率而支付高于均衡工资的工资。

**2. 歧视经济学 Economics of Discrimination**

歧视 discrimination 对仅仅是种族、民族、性别、年龄或其他个人特征不同的相似个人提供不同的机会。

# Chapter 6 Theory of Consumer Choice

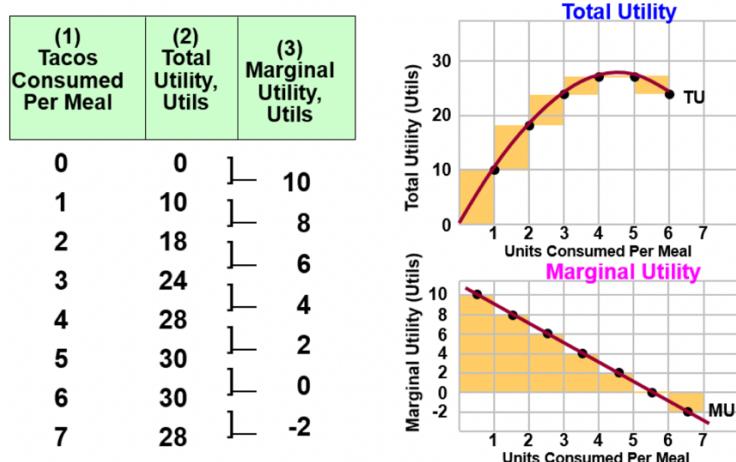
## Topic 24 Constraints, Preference and Optimization

### 1. 总效用与边际效用 Total Utility and Marginal Utility

总效用 Total Utility (TU): Total amount of satisfaction or pleasure a person derives from consuming some specific quantity.

边际效用 Marginal Utility (MU): Extra satisfaction a consumer realizes from an additional unit of the product.

$$\text{Marginal Utility} = \frac{\text{Change in total utility}}{\text{Change in quantity consumed}}$$



边际效用递减原则 Diminishing Marginal Utility: Diminishing marginal utility is the principle that as more of a good or service is consumed, its marginal utility decreases.

### 2. 效用最大化规则 Utility Maximization Rule: Equalizing Marginal Utility per Dollar

效用之比等于价格之比

$$\frac{MU_A}{P_A} = \frac{MU_B}{P_B}$$

$MUA/PA > MUB/PB$ —consumers will buy more good A and less good B

$MUA/PA < MUB/PB$ —consumers will buy more good B and less good A

应用：钻石与水悖论 The Diamond-Water Paradox

$$\frac{MU \text{ of water (low)}}{\text{Price of water (low)}} = \frac{MU \text{ of diamonds (high)}}{\text{Price of diamonds (high)}}$$

## Topic 25 Asymmetric Information and Behavioral Economics

### 1. 不对称信息 Asymmetric Information

#### a. 不对称信息的定义 Definition of Asymmetric Information

一个人对正在发生的事情知道的比另一个人多。人们在获得与相互影响相关的知识上的差别。

#### b. 不对称信息与公共政策 Asymmetric Information and Public Policy

当一些人知道的比另一些人多时，市场也不能使资源得到最好的利用 not making the best use of

resources。由于买者担心买到次品，那些拥有高质量二手车的人会在卖车时遇到麻烦。由于保险公司把那些很少生病与那些有大病（但隐瞒起来了）的人放在一起，前者将很难得到低成本医疗保险。

## 2. 行为经济学 Behavioral Economics

### a. 行为经济学的定义 Definition of Behavioral Economics

经济学中将心理学的观点考虑进来的分支学科。

Behavioral economics combines elements of economics and psychology to understand how and why people behave the way they do in the real world.

### b. 一些行为经济学论断 Some Behavioral Economic Assertions

人们并不总是理性的 People are not always rational.

- 人们过分自信 People are overconfident.
- 人们过分重视从现实生活中观察到的细枝末节 People place too much emphasis on the minutiae observed from real life.
- 人们不愿改变自己的观念 People are reluctant to change their minds.

人们关注公正 People care about justice.

人们是前后不一致的 People are inconsistent.



# Macroeconomics Review Notes

宏观经济学复习笔记

Prepared by: Zihan Liang  
Pre-University Economics Review Notes  
大学经济预科复习笔记 修订版

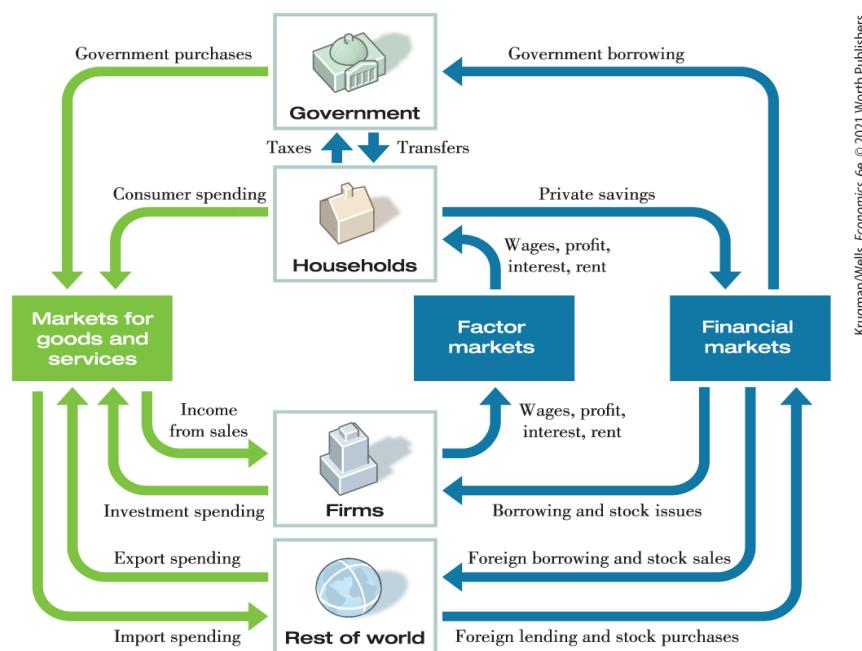
# Chapter 7 Measuring of a Nation's Income & the Cost of Living

## Topic 26 The Economy's Income and Expenditure

### 1. 循环流动模型 Circular Flow Model

Circular flow model, 用一种非常简化的方式描述了金钱和商品在整个经济体系中的流动过程。

这个模型体现了一个经济体中的所有要素，既包括 household，又包括 firms，并且将市场分为了两个领域：Product Market 商品与服务市场、Resources/Factor Market 要素市场。



### 2. 与循环流程图有关的困难概念 Difficult Concepts Related to Circular Flow Diagram

家庭/户 Household: A household is a group of people who live together and share income and expenses (even if they are not related to each other). Examples of one household: A married couple who live together are one household.

转移支付 Transfer payments are a redistribution of funds from one individual to another individual.

### 3. 两个市场的供给与需求 Supply and Demand in Two Markets

在 Product Market 中 household 是 demand good or services, 同时 firms 是 supply good or services. 在 Factor Market 中 household 是 supply factor of production, 同时 firms 是 demand factors.

### 4. 流入与流出 Injections and Withdrawals

流入 Injections: where money flows into the circular flow in the form of **I, G, and exports**. 货币以投资、政府支出 和出口的形式流入循环流动。

流出 Withdrawals (leakage): where money flows out of the circular flow in the form of **savings, taxation, and imports**. 资金以储蓄、税收和进口的形式流出循环流。

## Topic 27 Gross Domestic Product (GDP)

### 1. 国内生产总值 Gross Domestic Product (GDP)

#### a. 国内生产总值的定义 Definition of Gross Domestic Product (GDP)

The market value of all the final goods and services produced within a country in a given time period.

where produced: 在哪个国家生产的就计入哪个国家 GDP。

when produced: 在哪一年生产就计入哪年的 GDP。

#### b. 关于 GDP 的重要概念 Important Concepts Related to GDP

增值 Value added: 计算产品或服务的市场价值与其构成要素的总价值之间的差额。Value added of a producer is the value of its sales minus the value of its purchases of intermediate goods and services.

中间产品和服务 Intermediate goods and services: goods and services (bought from one firm by another firm) that are inputs for production of final goods and services.

最终产品和服务 Final goods and services: goods and services sold to the final, or end, user.

### 2. 不计入 GDP 的内容 What's not Included in GDP

Underground economy (违法不算 GDP: 黑市交易的/毒品)

Nonmarket transactions (私下不算 GDP: exchange with friends/自给自足/家务劳动)

Intermediate goods (批发不算 GDP: 制作桌子的原材料)

Financial asset (股票债券不算 GDP: bond/share/funds)

Second-hand products (二手物品不算 GDP: 二手车, 其计入生产年份的 GDP)

### 3. GDP, GNP 与 NDP 的区别 Difference between GDP, GNP & NDP

GDP 是一个地域概念, 是一个国家范围内生产的最终产品的市场价值。

GNP 是一个国民概念, 指一个国家国民所有的生产要素所生产的最终产品的市场价值。

NDP 和 GDP 同样是一个地域概念, 指 GDP 扣除折旧 depreciations 的部分。

$$NDP = GDP - \text{depreciations}$$

$$GNP = GDP + (\text{income earned by domestic factors of production in other countries} \\ - \text{income received by foreign residents from their home country})$$

### 4. 计算 GDP 的三种方法 Three Ways to Calculate GDP

#### a. 产出法 Output Approach

Add up the total value of all final goods and services produced ()

$$GDP = \Sigma(\text{price} \times \text{quantity})$$

#### b. 支出法 Expenditure Approach

Add up all spending on domestically produced final goods and services (expenditure approach)

$$GDP = C + I + G + X - IM = C + I + G + NX$$

$C$  = consumer spending

$I$  = investment spending

$G$  = government purchases of goods and services

$X$  = sales to foreigners, and

$IM$  = imports (purchases of foreign goods)

### c. 收入法 Income Approach

Add up the total factor income earned by households from firms in the economy (income approach)

$$GDP = \text{total income} = \text{wage} + \text{interest} + \text{rent} + \text{profit}$$

## 5. 实际国内生产总值和名义国内生产总值 Real GDP and Nominal GDP

### a. 实际 GDP 和名义 GDP 的定义与计算 Definition and Calculation of Real and Nominal GDP

Real GDP: the total value of the final goods and services produced in the economy during a given year, calculated using the prices of a selected base year.

$$\text{Real GDP} = \text{price at base year} \times \text{quantity at this year}$$

Nominal GDP: the value of all final goods and services produced in the economy during a given year, calculated using the prices current in the year in which the output is produced.

$$\text{Nominal GDP} = \text{price at this year} \times \text{quantity at this year}$$

### b. 实际 GDP 的准确性 Accuracy of Real GDP

Real GDP can be measured by excluding the price level to more accurately reflect the economy.

Real GDP in base year is equal to the nominal GDP in base year.

### c. 链式美元 Chained Dollars

Chained dollars: the method of calculating changes in real GDP using the average between the growth rate calculated on an early base year and the growth rate calculated on a late base year.

### d. 由于通货膨胀导致的名义 GDP 增长 Nominal GDP Growth due to Inflation

- 计算增加在名义 GDPs (GDP 全部的内容)
- 计算增加在真实 GDPs (GDP 中没有 due to inflation 的部分)
- 增加在名义 GDP 减去增加在真实 GDP 即可得到增加在名义 GDP due to inflation

## Topic 28 Price Indexes and the Aggregate Price Level

### 1. 价格总水平与市场篮子 Aggregate Price Level and Market Basket

价格总水平 Aggregate price level is a measure of the overall level of prices in the economy.

市场篮子 Market basket: a hypothetical set of consumer purchases of goods and services.

### 2. 衡量价格水平的指标——消费者物价指数 Consumer Price Index (CPI)

A measure of the average prices paid by urban consumers for a fixed market basket of consumer good and service. 衡量城市消费者为固定的市场一揽子消费品和服务支付的平均价格

$$CPI = \frac{\text{cost of market basket at current period prices}}{\text{cost of market basket at base period prices}} \times 100 \quad CPI \text{ base year} = 100$$

$$CPI = \frac{\text{quantity at basket (base year)} \times \text{price at this year}}{\text{quantity at basket (base year)} \times \text{price at base year}} \times 100$$

It refers price level and measures the cost of living.

### 3. 生产者物价指数 Producer Price Index (PPI)

The Producer Price Index (PPI) is a family of indexes that measures the average change over time in selling prices received by domestic producers of goods and services.

#### 4. CPI 偏差的来源 Sources of Bias in CPI

新的货物偏差 New good bias—inflation↓

质量变化偏差 Quality change bias—inflation↑

商品替代偏差 Commodity substitution bias—inflation↑

出口替代偏差 Outlet substitution bias—inflation↑

#### 5. 衡量价格水平的指标——GDP 平减指数 GDP Deflator

$$GDP \text{ deflator} = \frac{\text{nominal GDP}}{\text{real GDP}} \times 100$$

GDP deflator measures price level. GDP deflator of base year is equal to 100.

#### 6. CPI 与 GDP deflator 的区别 Differences between CPI and GDP Deflator

共同点: They both measure price level.

区别: CPI measures price level of consumer goods and services; GDP deflator measures all domestic goods and services.

使用 CPI 计算的 inflation 中, 可能含有 import; 使用 GDP deflator 计算的 inflation 中, 内容相比于 CPI 计算的要多。

For example, military goods—GDP deflator; import clothes—CPI

#### 7. 通货膨胀与通货紧缩 Inflation and Deflation

##### a. 通货膨胀的定义 Definition of Inflation

Inflation: It is the phenomenon of a sustained increase in the general price level over a certain period of time.

Inflation rate: It is percentage change in price level from one year to the next.

$$\text{inflation rate} = \frac{\text{CPI in current year} - \text{CPI in previous year}}{\text{CPI in previous year}} \times 100 = \text{nominal GDP\%} - \text{real GDP\%}$$

$$\text{inflation rate} = \frac{\text{GDP deflator in current year} - \text{GDP deflator in previous year}}{\text{GDP deflator in previous year}} \times 100$$

##### b. 高通胀的成本 High inflation costs

皮鞋成本 Shoe-leather costs: the increased costs of transactions caused by inflation. 由于现金在高通胀期间迅速贬值, 人们会浪费更多的时间四处奔波, 以最快的速度花掉现金, 因此高通胀导致了更高的交易成本, 也就是皮鞋成本。

菜单成本 Menu cost: the real cost of changing a listed price. 更改列出价格的实际成本。

记账单位成本 Unit-of-account costs: Costs arising from the way inflation makes money a less reliable unit of measurement. Calculations are hard when inflation is high. 通货膨胀使货币成为不那么可靠的计量单位而产生的成本。通胀率高时, 计算很困难。

##### c. 预料之外的通货膨胀的影响 Consequence of Unexpected Inflation

Actual inflation > expected inflation	Employee <b>lost</b> and employer <b>gain</b>	Fixed income recipients <b>lost</b>	Savers <b>lost</b> and borrowers <b>gain</b>
Actual inflation > expected inflation	Employee <b>gain</b> and employer <b>lost</b>	Fixed income recipients <b>gain</b>	Savers <b>gain</b> and borrowers <b>lost</b>

##### d. 通货膨胀的程度 Degrees of Inflation

爬行式通货膨胀 Creeping inflation: <5%

加速通货膨胀 Accelerating inflation: 5%-25%

恶性通货膨胀 Hyperinflation: 50%+

#### e. 通货膨胀的成因 Causes of Inflation

需求拉动通货膨胀 Demand-pull inflation

成本推动通货膨胀 Cost-push inflation

货币通胀 Monetary inflation

输入型通货膨胀 Imported inflation

### 8. 通胀放缓和通货紧缩的区别 Disinflation vs Deflation

Disinflation is a decrease in the rate of inflation. 还在通货膨胀，但是速率下降了。

Deflation is a decrease in the general price level. 开始通货紧缩，价格水平下降了。

### 9. 名义值和实际值 Nominal and Real Values

#### a. 实际工资与收入 Real Wage and Income

Inflation does not make everyone poorer because incomes often rise with prices. Real wage and income are better measurements.

$$\text{real wage} = \frac{\text{wage rate}}{\text{price level}}$$

$$\text{real income} = \frac{\text{income}}{\text{price level}}$$

#### b. 名义利率与实际利率 Nominal Interest Rate and Real Interest Rate

Interest rate: the price (calculated as a percentage of the amount borrowed) that a lender charges for the use of his or her savings for one year.

Nominal interest rate: the interest rate expressed in dollar terms.

Real interest rate: the nominal interest rate minus the rate of inflation.

$$\text{Real interest rate} = \text{nominal interest rate} - \text{expected inflation/inflation}$$

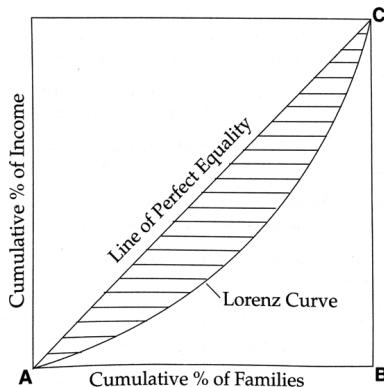
#### c. 转换价格 Converting Price

$$\text{price at year } n = \frac{\text{price at year } m}{\text{CPI in year } m} \times \text{CPI in year } n$$

# Chapter 8 The Real Economy in the Long-Run Market and Welfare

## Topic 29 Distribution of Income

### 1. 不公平现象 Inequality



Measure of income inequality

Horizontal axis starts with the poorest families on the left and ends with the richest families

### 2. 基尼系数 Gini Coefficient

$$\text{Gini coefficient} = \frac{\text{shaded area}}{\text{area of } \Delta ABC}$$

If the Lorenz curve was the line of perfect equality, the poorest  $n\%$  of people would own  $n\%$  of the wealth in their nation: Gini coefficient = 0

United States Gini coefficient: 0.45

## Topic 30 Unemployment

### 1. 失业与劳动力的定义 Definition of Unemployment and Labor Force

Unemployment: people who don't have a job right now but are actively looking for one.

Unemployment rate: the percent of the total number of people in the labor force who are unemployed. (the most commonly used indicator for understanding conditions in the labor market)

$$\text{unemployment rate} = \frac{\text{number of unemployed}}{\text{labor force}} \times 100$$

Labor force: all workers, employed or unemployed.

Labor force participation rate: the percentage of adults (people 16 and over) in the labor force.

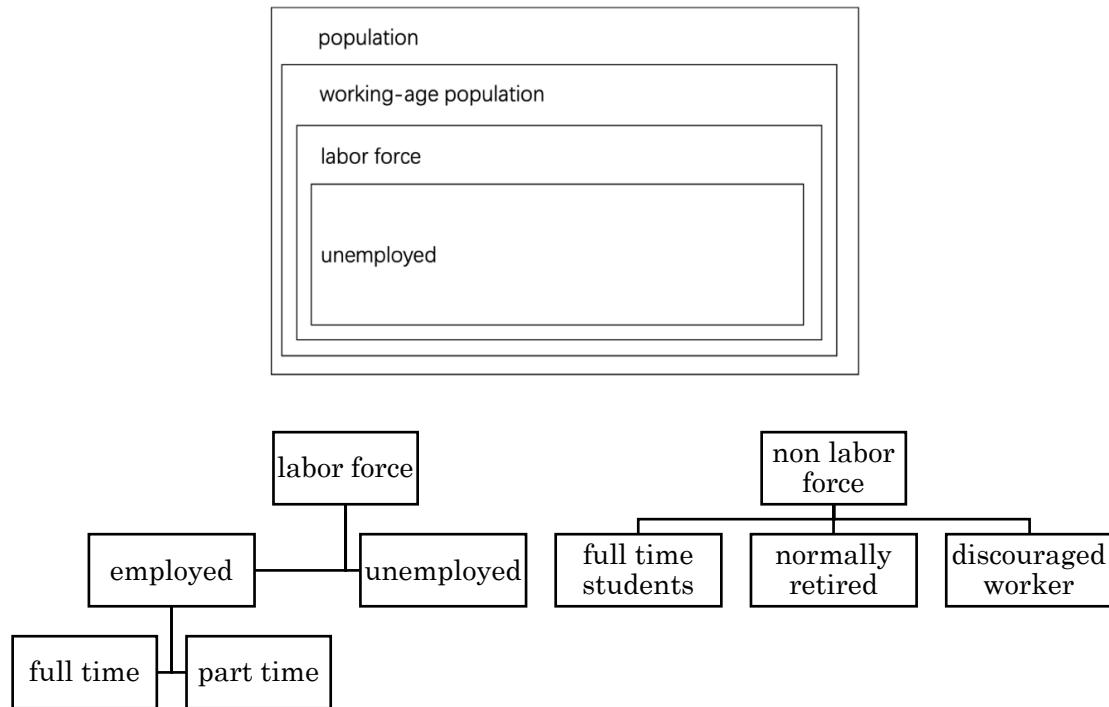
$$\text{labor force participation rate} = \frac{\text{labor force}}{\text{adult population (working age)}} \times 100$$

### 2. 工作年龄人口、劳动力与灰心工人 Working-Age Population, Labor Force and Discouraged Workers

#### a. 工作年龄人口 Working-Age Population

The working-age population in a region consists of those in a range of ages, typically 18-64 or 15-64, considered able and likely to work (16+, not in jail/hospital/rehab center/army).

b. 人口、工作年龄人口、劳动力和失业人口之间的关系 The Relationship between Population, Working-Age Population, Labor Force and Unemployed People



c. 灰心工人、准待业工人与未充分就业工人 Discouraged Workers, Marginally Attached Workers and Underemployed Workers

灰心工人 Discouraged workers: Nonworking people who have given up looking for work for the time being. Not considered unemployed. The deeper the recession, the more discouraged workers there are.

准待业工人 Marginally attached workers: Those who were available and actively looked for work recently but are not currently looking (in the past 12 months but NOT in the past 4 weeks). The group of marginally attached workers includes discouraged workers.

未充分就业工人 Underemployed workers: People who has a job, but whose abilities don't match the job; People who work part time because they cannot find full-time jobs.

### 3. 失业的类型 Types of Unemployment

#### a. 摩擦性失业 Frictional Unemployment

Unemployment due to the time workers spend in job search.

Scarcity of information creates frictional unemployment. (Matching people to jobs takes time.)

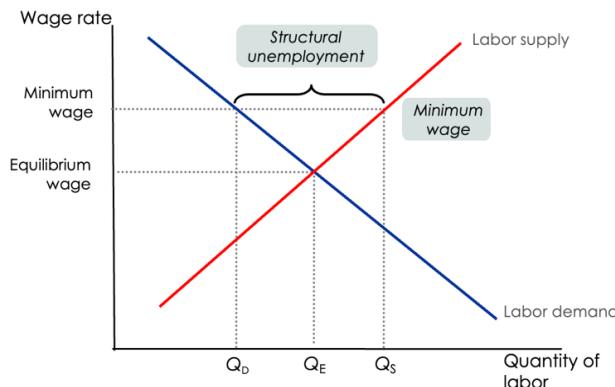
Example of frictional unemployment

- 刚刚到达劳动力市场
- 换工作
- 由于工作表现不好被开除
- 季节性失业 Seasonal unemployment: 由于某些部门的间歇性生产特征而造成的失业，是摩擦性失业的一种。

#### b. 结构性失业 Structural Unemployment

在劳动力市场中，同一工资水平下，供给大于需求所导致的失业。(求职人数多于当前工资水平下的职位数量)。当现有工作岗位与求职者不匹配时，就会出现结构性失业。

More people are seeking jobs in a particular labor market than there are jobs available at the current wage rate, even when the economy is at the peak of the business cycle. Structural unemployment occurs when there is a mismatch between the jobs that are available and the people looking for work.



结构性失业的两种情况 Two cases of structural unemployment

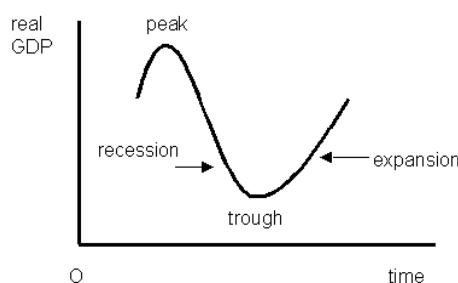
- 由于技术问题导致失业 workers lack the requisite job skills
- 由于地区问题导致失业 workers live too far from regions where jobs are available and cannot move closer

导致结构性失业的一些原因 Some causes of structural unemployment

- Minimum wages 导致劳动力市场供大于需
- Labor unions (associations of workers that bargain collectively with employers over wages, benefits, and working conditions) 导致劳动力市场供大于需
- Efficiency wages (wages that employers set above the equilibrium rate as an incentive for better employee performance) 导致劳动力市场供大于需
- Side effects of government policies 导致劳动力市场供大于需
- Mismatches between employees and employers

### c. 周期性失业 Cyclical Unemployment

Unemployment correlated with the business cycle—the deviation from the natural rate.



周期性失业是由于经济波动所导致的失业: Increase during a recession; decrease during an expansion.

## 4. 工会、集体谈判与罢工 Union, Collective Bargaining and Strike

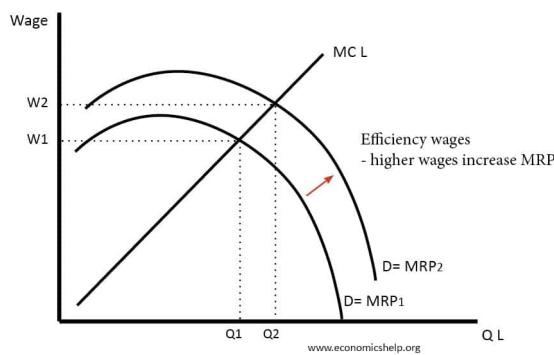
工会 Union 是一个就工资与工作条件与雇主进行谈判的工人协会。工会是一种 Cartel，经济中大部分人是单独与雇主谈判，而工会的工人是作为一个集体去谈判。工会同时能够提高工资到没有工会存在时的水平以上，因为他们可以通过号召罢工来威胁从企业撤出工人。

集体谈判 Collective bargaining 是指工会与企业就就业条件达成协议的过程。

罢工 Strike 是指工人为了实现某种利益要求/表示抗议而集体停止工作的行为，比如说为了提高工资、缩短工时、改善劳动条件等

## 5. 效率工资 Efficiency Wages

企业为了提高工人的生产效率而支付的高于均衡工资 equilibrium wage 的工资。



# Topic 31 Long-Run Economic Growth

## 1. 经济增长的收益与成本 Growth Has Benefits and Costs

成本: 空气污染 Delhi and Beijing have terrible air quality—which is a bad thing.

收益: 经济增长 But it is a by-product of a very good thing: the remarkable economic growth.

## 2. 比较不同时空的经济体—人均实际国内生产总值 Comparing Economies Across Time and Space — Real GDP Per Capita

### a. 实际 GDP 的重要性 Importance of Real GDP

Real GDP per capita (real GDP divided by the population size) is the key statistic.

$$\text{Real GDP per capita} = \frac{\text{Real GDP}}{\text{population}}$$

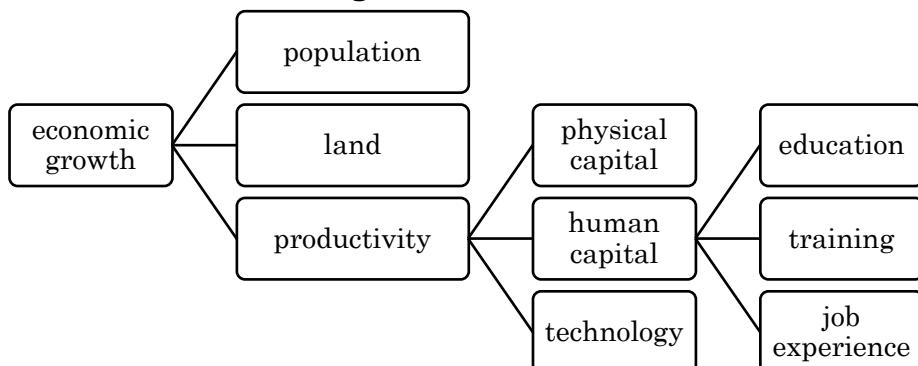
### b. 七十规则 The Rule of 70

七十规则是指用来评估在当前的通货膨胀率水平下，物价需要花费多长时间才能翻一番的计算方法。随着时间的推移，增长率的微小差异也会被放大。

$$\text{Doubling time for a variable} = 70 / (\% \text{ growth rate})$$

For example, if real GDP per capita is growing at an annual growth rate of 3.5%, it will double in:  $70/3.5=20$ .

## 3. 长期经济增长的来源 Sources of Long-Run Economic Growth



$$\text{productivity} = \frac{\text{total output}}{\text{labor}} \quad \text{human capital} = \text{the skill people have}$$

劳动力 Labor productivity (often referred to simply as productivity): output per worker

物质资本 Physical capital: human-made resources, such as buildings and machines

人力资本 Human capital: the improvement in labor created by the education and knowledge embodied in the workforce.

科技进步 Technological progress: an advance in the technical means of production in goods & services.

#### 4. 反映经济增长的因素 Factors that Reflect Economic Growth

Increase in LRAS

Increase in Real GDP per person

Sustained growth of Real GDP

PPC outward

Increase in Potential GDP

#### 5. 总生产函数 Aggregate Production Function (PF)

##### a. 总生产函数的定义 Definition of Aggregate Production Function

PF is a hypothetical function that shows how productivity (real GDP per worker) depends on the quantities of physical capital per worker and human capital per worker as well as the state of technology.

$$GDP \text{ per worker} = T \times (\text{physical capital per worker})^{0.4} \times (\text{human capital per worker})^{0.6}$$

If China had more physical capital than India, that would explain its quicker growth.

##### b. 物质资本递减原则 Diminishing Returns to Physical Capital

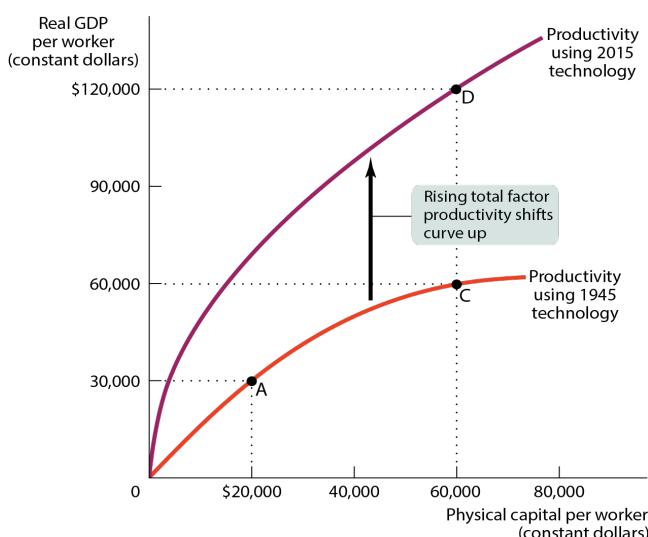
假设人力资本和科技状况不变，物质资本每增加一点，生产力提高的幅度就小一点。（生产力仍然在提高，但是提高的幅度越来越小）。 Holding the amount of human capital per worker and the state of technology fixed, each successive increase in the amount of physical capital per worker leads to a smaller increase in productivity.

Example: A second computer improves his productivity, but not by as much as the first computer did.

#### 6. 科技进步与生产力增长 Technological Progress and Productivity Growth

##### a. 科技进步对总生产函数的影响 Impact of Technological Progress on the PF

科技进步导致 PF 整根线向上移动。Technological progress raises productivity and shifts the aggregate production function upward.



b. 如何判断经济增长的原因并制定未来经济政策? **How do we tell what caused the growth (and help develop future policy)?**

增长核算 Growth accounting: estimates of the contribution of each major factor in the aggregate production function to economic growth.

全要素生产率 Total factor productivity: the amount of output that can be produced with a given amount of factor inputs. When total factor productivity **increases**, the economy can produce **more output with the same quantity of physical capital, human capital, and labor.**)

增加全要素生产率对经济增长非常重要; 而科技进步可以导致全要素生产率增加 (在 same quantity of capital and labor 的情况下, 增加 output); 因此科技进步对经济增产非常重要。

## 7. 自然资源 Natural Resources

In the modern world, **human or physical capital matter more than natural resources** for the great majority of countries.

In the past, natural resources are more important.

## 8. 影响经济增长率的因素 Some Factors Related to Growth Rate

- Savings and investment spending
- Education
- Research and development (spending to create and implement new technologies.)

Example: 中国的经济快速增长和人力资源的进步息息相关 (Year of schooling 逐年上升)。

## 9. 政府在推动经济进步中的作用 Role of Government on Promoting Economic Growth

Function 1: Government policies

- Subsidies to infrastructure
- Subsidies to education
- Subsidies to R&D
- Maintaining a well-functioning financial system

Function 2: Protection of property rights

Function 3: Political stability and good governance

## 10. 关于经济增长的一些实际案例 Some Cases on Economic Growth

东亚国家案例: East Asia's development and miracle

- 高储蓄率使其可以高借贷所导致的物质资源增长 Very high savings rates that allow businesses to borrow and add more physical capital per worker.
- 良好的教育所导致的人力资源增长 Very good basic education has permitted a rapid improvement in human capital.
- 持续性的科技增长 Substantial technological progress.

拉美国家案例: Argentina (and other Latin American nations) back

- 高通胀侵蚀储蓄 Irresponsible government action that eroded savings through high inflation
- 不重视教育 Lack of emphasis on education
- 政治不稳定 Political instability

非洲国家案例: What's holding much of Africa back?

- 政府腐败 Government corruption
- 内战和政治不稳定 Civil wars & political instability
- 不利的地理环境 Unfavorable geography

## 11. 趋同论/赶超效应 Convergence Hypothesis & Catch-Up Effect

结论一：实际人均国内生产总值的国际差异往往会随着时间的推移而缩小。International differences in real GDP per capita tend to narrow over time.

结论二：低人均收入国家的增长速度应快于高人均收入国家，并最终趋同。According to the convergence hypotheses, countries with low per capita incomes should grow at a faster rate than countries with high per capita income and eventually converge.

如果趋同论成立：

对于那些正在追赶上 Real GDP 国家的国家而言，经济增长尤其迅速。Economic growth can be fast for countries playing catch-up with countries that already have high real GDP per capita.

相对贫穷国家的经济增长会特别快。Economic growth can be fast for poor countries.

## 12. 可持续长期经济增长 Sustainable Long-Run Economic Growth

### a. 可持续长期经济增长定义 Definition of Sustainable Long-Run Economic Growth

Sustainable long-run economic growth: long-run growth that can continue in the face of the limited supply of natural resources and the impact of growth on the environment.

### b. 有限的自然资源对长期经济增长的影响 Impact of Limited Natural Resources on Long-Run Economic Growth

How large are the supplies of key natural resources? Geologists are figuring it out.

How effective will technology be at finding alternatives to natural resources? Engineers are figuring it out.

Can long-run economic growth continue in the face of resource scarcity? A question for economists. Resource scarcity and higher prices don't necessarily cost growth.

### c. 经济增长往往增加人类对环境的影响 Economic Growth Tends to Increase the Human Impact on the Environment

The United States and Europe have historically been responsible for the great bulk of carbon dioxide emissions.

As China and other emerging economies have grown, they began to emit much more carbon dioxide.

### d. 需要政府采取行动应对气候变化 Need for Government Action on Climate Change

经济学家建议采用市场激励机制，即设置碳税和限额与交易制度（许可证制度）。Economists prefer **market-based incentives**, in the form of **carbon tax** (a tax per unit of carbon emitted) or **cap and trade system** in which the total amount of emissions is capped and producers must buy licenses to emit greenhouse gases.

## 13. 气候变化和巴黎协定 Climate Change and Paris Agreement of 2015

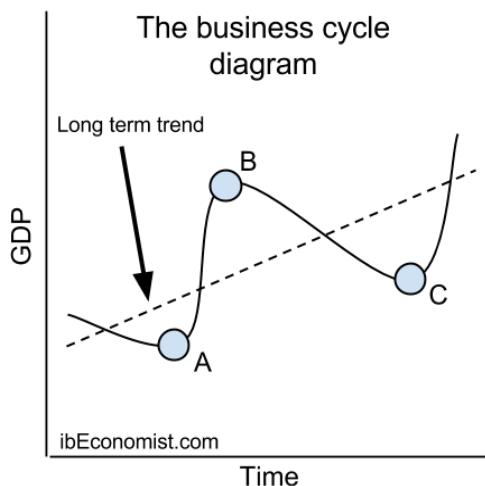
气候变化 Climate change: 人类活动造成的地球气候变化。到 2100 年，如果气候变化得不到缓解，将使全球 GDP 损失 20%。而且，这些成本往往更多地落到穷国身上。

2015 年的《巴黎协定》：196 个国家同意减少温室气体排放，努力将地球温度上升限制在不超过 2 摄氏度的范围内。

# Chapter 9 Short-Run Economic Fluctuations

## Topic 32 Economic Fluctuations

The business cycle also known as the trade cycle shows growth of an economy around the long-term trend (dashed line) measured by changes in GDP.



### 1. Boom/Peak

Boom/peak is at point B.

- Rapidly rising inflation
- Shortage of factors of production (most probably labor)
- Rising property values

### 2. Trough

Trough is at points A and C.

- High unemployment

### 3. Recovery

Recovery takes place after troughs right when GDP starts growing again.

- Falling unemployment
- Growing consumption/investment
- Possible rise in inflation
- Growing tax revenue (possibly falling government expenditure on e.g. unemployment benefits)

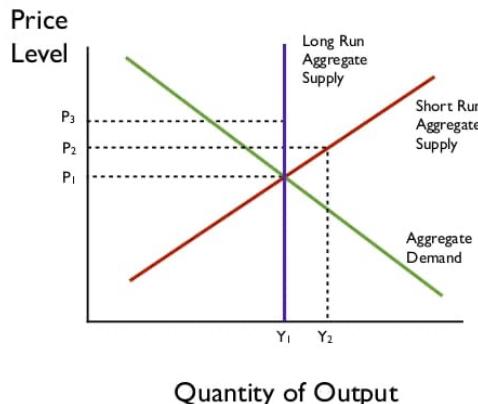
### 4. Recession

Recession occurs when GDP falls for at least two consecutive quarters, hence takes place shortly after booms/peaks (right when GDP begins decreasing).

- Rising unemployment
- Falling consumption and investment
- Increasing government expenditure and shrinking tax revenue
- Possible businesses' bankruptcies

# Topic 33 Aggregate Demand & Aggregate Supply

## 1. 总需求总供给曲线 Aggregate Demand and Aggregate Supply Curves



### a. 总需求 Aggregate Demand

曲线为向下倾斜 downward sloping。

原因一: The wealth effect — A higher aggregate price level reduces the purchasing power of households' wealth and reduces consumer spending.

原因二: The interest rate effect — A higher aggregate price level makes households hold more money and leads to a rise in interest rates (and a fall in investment spending and consumer spending).

### b. 短期总供给 Short-Run Aggregate Supply

曲线为向上倾斜 upward sloping。

原因一: Nominal wages are sticky in the short run. 由于企业和员工签订了合约, 短期内 nominal wage 无法变动。但是当 price level 上升时, real wage 会下降, 从而导致 real GDP supplied 上升。

原因二: Many firms are in very competitive industries, so they have no control over price. Some aren't—and can raise price when demand is strong.

### c. 长期总供给 Long-Run Aggregate Supply

曲线为竖直 vertical。

原因: 足够长的时间使名义工资完全适应物价水平。Long enough for **nominal wage** to fully adjust to **price level**.

## 2. 总需求曲线移动因素 AD Shifting Factors

### a. 消费 Consumption

Income tax↑—disposable income↓—consumption↓—AD↓

Transfer payment↑—disposable income↑—consumption↑—AD↑

Asset↑—consumption↑—AD↑

### b. 政府花费 Government Expenditures

Government expenditures↑—AD↑

### c. 投资 Investment

MS↑—interest rate↓—investment↑—AD↑

Expected profit in the future↑—investment↑—AD↑

#### d. 净出口 Net Export

Foreigner's income↑—export↑—NX↑—AD↑  
 Exchange rate↑—export↓—import↑—NX↓—AD↓

### 3. 总供给曲线移动因素 AS Shifting Factors

#### a. 成本 Cost

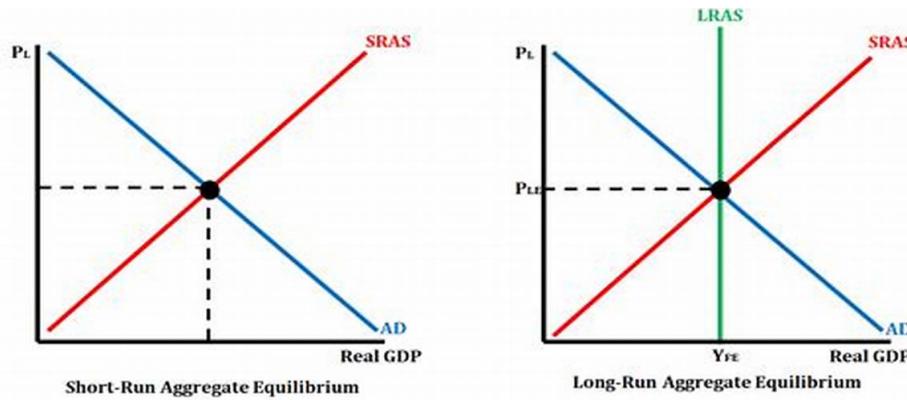
Cost↑—SRAS↓  
 Business tax↑—profit↓—investment↓—AD↓

#### b. 资源与生产力 Resource and Productivity

Resource and productivity↑—SRAS/LRAS↑

### 4. 宏观经济均衡 Macroeconomic Equilibrium

#### a. 长期均衡与短期均衡 Long-Run Equilibrium and Short-Run Equilibrium



长期均衡 Long-run equilibrium:  $AD=SRAS=LRAS$ ; Real GDP=Potential GDP

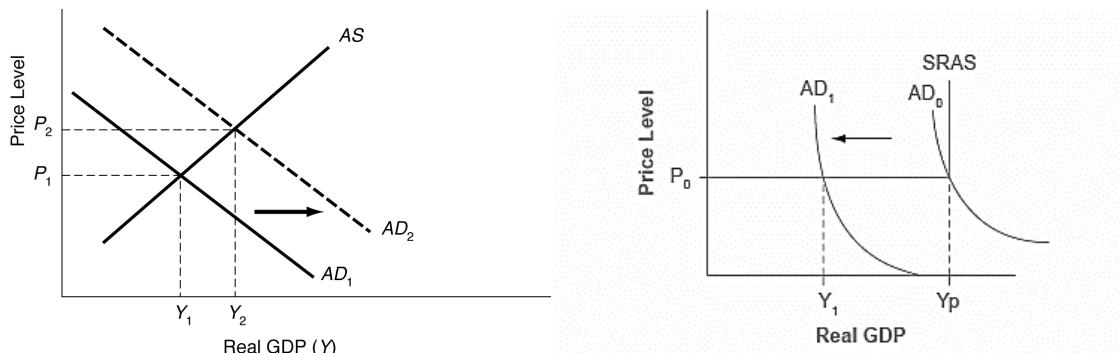
短期均衡 Short-run equilibrium:  $AD=SRAS$

#### b. 短期均衡的变化 Changes of Short-Run Equilibrium

##### Demand Shock

Negative demand shock:  $AD \downarrow$  — real GDP↓ — price level↓ — unemployment↑

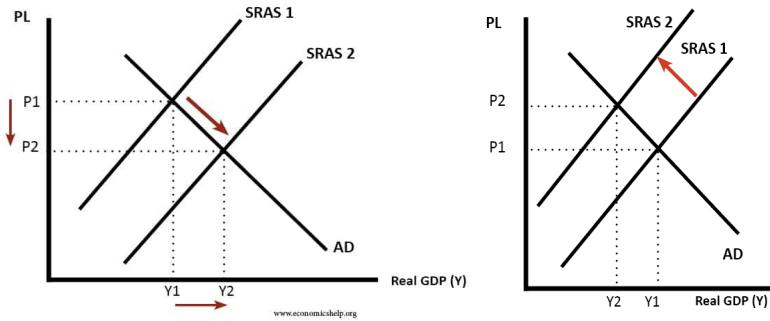
Positive demand shock/demand-pull inflation:  $AD \uparrow$  — real GDP↑ — price level↑ — unemployment↓



##### Supply Shock

Negative supply shock/cost-push inflation/stagflation:  $AS \downarrow$  — real GDP↓ — price level↑ — unemployment↑

Positive supply shock/supply boom:  $AS \uparrow$  — real GDP↑ — price level↓ — unemployment↓

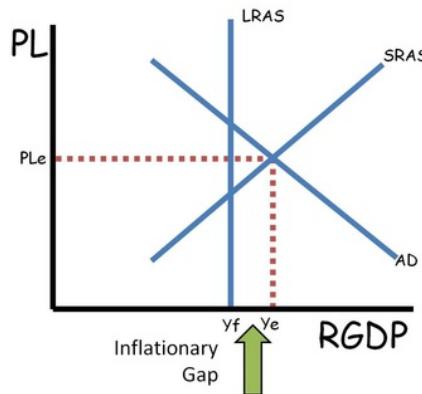


## 5. 通胀缺口与衰退缺口 Inflationary Gap and Recessionary Gap

### a. 通胀缺口 Inflationary Gap (Caused by Positive Demand Shock)

Inflationary gap: When aggregate output is above potential output.

Real GDP > potential GDP; unemployment < natural unemployment



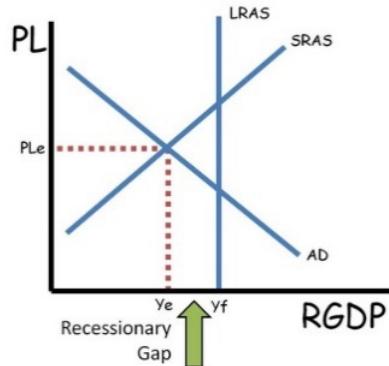
解决方案一【古典经济学理论—长期自我调整 Long run self-adjusting】— 由于现阶段 price level较高，且在短期内 nominal wage 是 sticky 的，因此人们的 real wage 降低了。在长期内，企业会提高 nominal wage，企业运营成本增加，SRAS 下降，回到长期均衡点。

解决方案二【凯恩斯经济学理论 Keynesian economic theory】— 运用政府的 fiscal policy 和 monetary policy 调整以降低 AD。

### b. 衰退缺口 Recessionary Gap (Caused by Negative Demand Shock)

Recessionary gap: when aggregate output is below potential output.

Real GDP < potential GDP; unemployment > natural unemployment



解决方案一【古典经济学理论—长期自我调整 Long run self-adjusting】— 由于现阶段 price level较低，且在短期内 nominal wage 是 sticky 的，因此人们的 real wage 增加了。在长期内，企业会降低 nominal wage，企业运营成本下降，SRAS 增加，回到长期均衡点。

解决方案二【凯恩斯经济学理论 Keynesian economic theory】— 运用政府的 fiscal policy 和 monetary policy 调整以增加 AD。

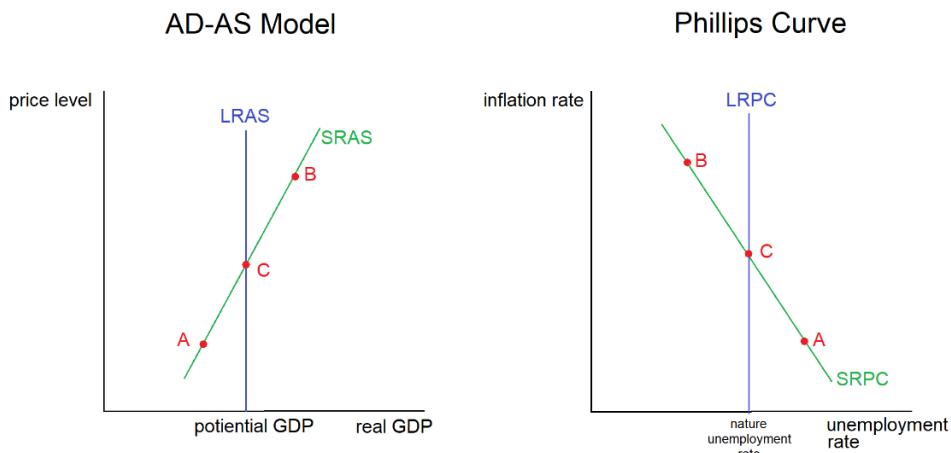
### c. 产出缺口 Output Gap

Output gap: the % difference between actual aggregate output and potential output

$$\text{output gap} = \frac{\text{Actual aggregate output} - \text{Potential output}}{\text{Potential output}} \times 100$$

## Topic 34 The Phillips Curve

### 1. 菲利普斯曲线与总需求总供给模型 Phillips Curve and AD-AS Model



- 两图完全对称。
- 在 AD-AS 图中, 位于 SRAS 的点 B 表示 high PL + high real GDP, 其对应到 SRPC 中为 high inflation + low unemployment。
- 在 SRPC 中, inflation 与 unemployment 之间有 tradeoff。
- 在 AD-AS 图中, LRAS 具有 potential GDP is independent of PL 的性质, 对于 LRPC, 其 natural unemployment is independent of inflation。

### 2. 菲利普斯曲线点的移动 Point Moves Along SRPC

$AD \uparrow \rightarrow PL \uparrow$  real GDP  $\uparrow \rightarrow$  inflation  $\uparrow$  unemployment  $\downarrow \rightarrow$  point moves upward along SRPC

$AD \downarrow \rightarrow PL \downarrow$  real GDP  $\downarrow \rightarrow$  inflation  $\downarrow$  unemployment  $\uparrow \rightarrow$  point moves downward along SRPC

### 3. 短期与长期菲利普斯曲线的移动 Shift of SRPC and LRPC

$AS \uparrow \rightarrow PL \downarrow$  real GDP  $\uparrow \rightarrow$  inflation rate  $\downarrow$  unemployment rate  $\downarrow \rightarrow$  SRPC  $\downarrow$

Expected inflation rate  $\uparrow \rightarrow$  nominal wage  $\uparrow \rightarrow$  SRAS  $\downarrow \rightarrow$  SRPC  $\uparrow$

Unemployment benefit  $\uparrow$  & min wage  $\uparrow \rightarrow$  natural unemployment rate  $\uparrow \rightarrow$  SRPC and LRPC  $\uparrow$

### 4. 理性预期 Rational Expectation

使用所有相关数据和经济科学得出的通货膨胀预测:

- Real GDP 和失业率未受影响
- Real inflation rate 完全可以预期 (=expected inflation)

# Chapter 10 Macroeconomics Policy

## Topic 35 Loanable Funds Market

### 1. 金融系统 Financial System

#### a. 金融市场与资产 Financial Markets and Assets

在金融市场，个人把储蓄 savings 放在那里，企业也从那里获得投资支出的资金 funding for investment expenditure。金融市场包括银行系统 banking system、股票市场 equity markets (e.g., the New York Stock Exchange, or the NASDAQ Stock Market)、债券市场 bond markets、商品市场 commodity markets 等。在 21 世纪，金融市场是全球性的，美国人将储蓄存入 domestic bank accounts, foreign and domestic stocks and foreign and domestic bonds。

一些金融市场中的重要概念 Some important concepts in financial markets

- All financial assets are called securities.
- Equities (i.e. stocks) give savers ownership in a company in return for dividends (a regular payment from the company) and/or capital gains (e.g. when you sell the stock at a profit).
- Bonds are a type of debt.
- All forms of debt are IOUs, where a saver lends money to a borrower in return for an interest payment.

#### b. 通过银行和债券进行借贷 Borrowing: Banks and Bonds

企业需要资金来运营和发展。当企业有收入记录，或者更好的是有利润记录时，企业就有可能借到钱。企业有两种主要的借款方式：银行 banks 和债券 bonds。

方式一：银行 banks

A bank loan for a firm works in much the same way as a loan for an individual who is buying a car or a house. The firm borrows an amount of money and then promises to repay it, including some rate of interest, over a predetermined period of time. If the firm fails to make its loan payments, the bank (or banks) can take the firm to court and require it to sell its buildings or equipment to pay its debt.

方式二：债券 bonds

Another source of financial capital is a bond. A bond is a financial contract like a loan, but with two additional properties: typically, bond interest rates are lower than loan interest rates, and there are organized secondary markets for bonds, making them more liquid to bondholders than loans. Bonds are issued by major corporations and also by various levels of government. For example, cities borrow money by issuing municipal bonds, states borrow money by issuing state bonds, and the federal government borrows money when the U.S. Department of the Treasury issues Treasury bonds.

例如，一家大公司可能会发行 1000 万美元的债券。该公司承诺按 8% 的年利率支付利息，即每年支付 80 万美元，然后在 10 年后偿还最初借贷的 1,000 万美元。

#### c. 公司股票 Corporate Stock

A corporation is a business that “incorporates”—that is owned by shareholders that have limited liability for the company’s debt but share in its profits (and losses). Corporations may be private or public and may or may not have publicly traded stock. They may raise funds to finance their operations or new investments by raising capital through selling stock or issuing bonds. We will not discuss stocks at this stage and assume that all money raised is through borrowing.

## d. 国民收入账户中储蓄与投资恒等式 Saving and Investment Identities in National Income Accounts

国内生产总值 GDP 指一国或地区在一定时期(通常为一年)所生产的全部最终产品(物品和劳务 good and service)的市场价值。GDP(用 Y 代表)分为四个支出部分: 消费 C、投资 I、政府购买 G 和净出口 NX, 则有:

$$Y = C + I + G + NX$$

封闭经济 closed economy 是不与其他经济交易的经济。一个 closed economy 既不进行 good and service 的国际贸易, 也不进行国际借贷, 即净出口 NX 为零。

$$Y = C + I + G$$

为了说明这个恒等式对于金融市场的意义, 从这个等式两边减去 C 和 G。可以得出:

$$Y - C - G = I$$

其中, 等式的左边  $Y - C - G$  是在消费和政府购买之后留下的总收入, 这个量称为国民储蓄 national saving 或简称储蓄 saving, 并用 S 来代表。用 S 代替  $Y - C - G$ , 我们可以把上式写为:  $S = I$ 。这个等式说明: 储蓄等于投资。

设 T 表示政府以税收的形式从家庭得到的数量减去以转移支付形式返还给家庭的数量(税收 Tax)。这样, 可以用两个方式来写出国民储蓄 national savings:  $S = Y - C - G$  或者  $S = (Y - T - C) + (T - G)$ 。

私人储蓄 private saving 是指家庭在支付了税收和消费之后剩下的收入量。特别地, 由于家庭得到收入 Y, 支付税收 T 以及消费支出 C, 所以, 私人储蓄是  $Y - T - C$ 。

Summary:

$$Y = C + I + G + NX$$

$$Y = C + I + G$$

$$S = Y - C - G = (Y - T - C) + (T - G)$$

$$SP = Y - T - C$$

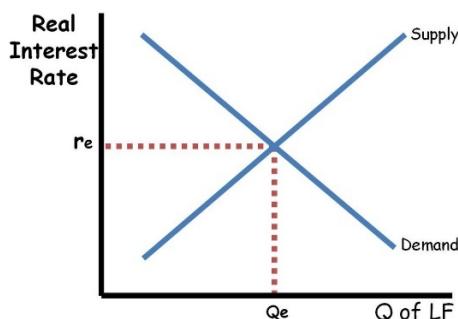
消费 Consumption—C	投资 Investment—I	政府花费 Government Expenditure—G	净出口 Net Exports—NX
国民储蓄 National Saving—S	国内生产总值 GDP—Y	税收 Tax—T	私人储蓄 Private Savings—SP

## 2. 可贷资金市场定义 Loanable Funds Market Definition

Loanable funds: money inside banks and other financial institutions which can be loaned out.

- Borrowers demand funds (e.g. firm/individual/government...)
- Savers supply funds (e.g. household/foreign funds/government...)
- Banks and other financial institutions connect borrowers and savers together.

## 3. 可贷资金市场 Loanable Funds Market



### a. 资金需求 Demand of Funds

曲线为向下倾斜 downward sloping。

原因: Real interest rate ↓ — opportunity cost of borrowing funds ↓ — Qd ↑

## b. 资金供给 Supply of Funds

曲线为向上倾斜 upward sloping.

原因: Real interest rate $\downarrow$  — household/foreigners supply funds —  $Q_s \downarrow$

## 4. 需求与供给线的移动 Demand and Supply for Funds Shifting Factors

### a. 资金需求线的移动 Demand of Funds Shifting

Future profit $\uparrow$ ... D for funds $\uparrow$ ... real interest rate $\uparrow$

G deficit spending $\uparrow$ ... G borrowing $\uparrow$ ... D for funds $\uparrow$

Remarks:

G budget deficit: tax revenue $<$ G spending; G budget surplus: tax revenue $>$ G spending; when there is a budget deficit, G can borrow or issue bonds.

### b. 资金供给线的移动 Supply of Funds Shifting

Disposable income $\uparrow$  — household saving $\uparrow$  — S for funds $\uparrow$

Disposable income remains the same but consumption $\downarrow$  — household saving $\uparrow$  — S for funds $\uparrow$

Oversea financial capital $\uparrow$  — S for funds $\uparrow$

Domestic political stability $\uparrow$  — S for funds $\uparrow$

Government budget surplus — S for funds $\uparrow$

### c. 可贷资金市场的变化对实际 GDP 的影响 Influence on Real GDP

D for funds $\uparrow$  — real interest rate $\uparrow$  — saving $\downarrow$  investment $\downarrow$  consumption $\downarrow$  — real GDP $\downarrow$

D for funds $\downarrow$  — real interest rate $\downarrow$  — saving $\uparrow$  investment $\uparrow$  consumption $\uparrow$  — real GDP $\uparrow$

S for funds $\uparrow$  — real interest rate $\downarrow$  — investment $\uparrow$  — real GDP $\uparrow$

## Topic 36 Fiscal Policy

### 1. 财政政策 Fiscal Policy

#### a. 财政政策的定义与目的 Definition and Purpose of Fiscal Policy

财政政策 Fiscal policy: the use of taxes, government transfers, or government purchases of goods and services to shift the aggregate demand curve. Fiscal policy is generally categorized into the following two types.

- 自动稳定器/自动财政政策 Automatic stabilizers (automatic fiscal policy)
- 相机抉择的财政政策 Discretionary fiscal policy

#### b. 财政政策的滞后性 Lags in Fiscal Policy

财政政策的滞后性 Lags in fiscal policy: there is an important reason for caution: there are significant lags in its use. It takes time to:

- realize the recessionary or inflationary gap by collecting and analyzing economic data.
- develop a plan.
- implement the action plan (spending the money).

### 2. 相机抉择的财政政策 Discretionary Fiscal Policy

#### a. 扩张型财政政策 Expansionary fiscal policy

扩张型财政政策 Expansionary fiscal policy: fiscal policy that increases AD; Expansionary fiscal policy can close the recessionary gap.

- an increase in government purchases of goods and services
- a cut in taxes
- an increase in government transfers

### b. 紧缩性财政政策 Contractionary Fiscal Policy

紧缩性财政政策 Contractionary fiscal policy: fiscal policy that decreases AD; Contractionary fiscal policy can close the inflationary gap.

- a reduction in government purchases of goods and services
- an increase in taxes
- a reduction in government transfers

### c. 扩张性财政政策的有效性—挤出效应 Effectiveness of Expansionary Fiscal Policy (Crowding-Out Effect)

挤出效应 Crowding-Out Effect: 当政府实施 Expansionary Fiscal Policy, 政府的财政收入减少的同时支出增加, 因此 government deficit spending 增加。在 loanable funds market 中, 当 demand for funds 增加时, real interest rate 上升, investment 下降, 反而导致了 real GDP 下降。

## 3. 自动稳定器/自动财政政策 Automatic Stabilizers (Automatic Fiscal Policy)

Government spending and taxation rules that cause fiscal policy to be automatically expansionary when the economy contracts and automatically contractionary when the economy expands (unemployment insurance).

- Recessions—income decrease—tax decrease—transfer payment decrease—stabilization
- Expansion—income increase—tax increase—transfer payment decrease—stabilization
- 自动稳定器不能调整, 只能稳定。

## 4. 财政政策与乘数效应 Fiscal Policy and Multipliers

### a. 总支出的自主变化 Autonomous Change in Aggregate Spending

国民收入变化量 (总支出的自主变化) Autonomous change in aggregate spending: an initial change in the desired level of spending by firms, households, or government at a given level of real GDP.

### b. 边际消费倾向与边际储蓄倾向 Marginal Propensity to Consume and Marginal Propensity to Saving

MPC (marginal propensity to consume): 每增加或减少一个单位的可支配收入时消费的变动情况 (每多一笔可支配收入, 人们花费其中多少)

$$MPC = \frac{\Delta C}{\Delta DI}$$

MPS (marginal propensity to saving): 居民收入每变动一单位时的居民储蓄的变动额 (每多一笔可支配收入, 人们储蓄其中多少)

$$MPS = \frac{\Delta S}{\Delta DI} \quad MPC + MPS = 1$$

### c. 乘数效应 Multipliers

Expenditure multipliers: the expenditure multiplier shows what impact a change in autonomous spending will have on total spending and aggregate demand in the economy.

$$\text{expenditure multiplier} = \frac{\Delta GDP \text{ max} & \text{ total expenditure}}{\Delta G \& I \& C \& NX}$$

$$\text{expenditure multiplier} = \frac{1}{1 - MPC} = \frac{1}{MPS}$$

$$\Delta GDP = \Delta G \frac{1}{1 - MPC}$$

Tax multipliers: The tax multiplier measures how gross domestic product (GDP) is impacted by changes in taxation.

$$\text{tax multiplier} = \frac{\Delta GDP}{\Delta tax}$$

$$\Delta GDP = \Delta tax \frac{MPC}{1 - MPC}$$

$$\text{tax multiplier} = \frac{MPC}{1 - MPC} = \frac{MPC}{MPS} \quad (\Delta tax \text{ 与 } \Delta GDP \text{ 成反比 意思是})$$

$$\text{transfer multiplier} = \frac{MPC}{1 - MPC}$$

MPC and tax: MPC itself receives the effect of the tax rate if the tax imposed by the government on each consumption is not ignored.

$$\text{the true MPC} = MPC \times (1 - \text{tax rate})$$

Balanced budget multiplier: if the government increases spending and taxation by the same amount, then equilibrium national income (GDP) rises by this amount.

## Topic 37 Money Market and Monetary Policy

### 1. 易货经济 Barter Economy

易货经济的定义: 直接交换物品的经济

问题所在

- Require double coincidence of wants 需要双方正好需求
- High transaction cost 高昂的交换成本
- Rely on self-sufficiency 依赖于自给自足

### 2. 货币 Money

#### a. 货币的定义 Definition of Money

任何被普遍接受作为支付手段的商品或代币。

Any commodity or token that is generally accepted as a means of payment.

#### b. 货币包括现金与存款 Currency Includes Cash and Deposits

*Money = currency of business and individuals + deposits at banks and other financial institutions*

- Bills and coins are currency (cash).
- Currency inside banks is deposit. Deposits are money, because they can be converted into currency.
- All cards are not money.
- Gold is not money.

#### c. 货币的作用 Functions of Money

交易媒介 medium of exchange

衡量价值尺度 unit of account

储蓄 store of value (when there is inflation, money is not a good store of value)  
延迟支付 measure of deferred payment (e.g., credit card)

#### d. 货币分类 Currency Classification

商品货币 commodity money (具有内在价值)

法定货币 fiat money (无内在价值, 政府和央行定义的货币)

#### e. 流通中的现金, 狹义货币与广义货币 M0, M1 and M2

According to liquidity (how easily an asset can be converted to cash), money is divided into M0, M1 and M2.

- M0=cash in circulation
- M1=M0 + checkable deposit + travelers' checks (money supply 内容)
- M2=M1 + saving deposit + small time deposit + money market funds

### 3. 银行 Bank

#### a. 商业银行 Commercial Bank

A type of bank, the duties of which are through deposits, loans, remittances, savings, etc.

#### b. 中央银行 Central Bank

Provide banking services to banks and regulates financial markets. (e.g. Federal Reserve FED)

- Regulate money supply 调节货币供应量
- Oversee banking systems 监督银行系统
- Banks' bank and government's bank 银行的银行和政府的银行

To adjust the quantity of money in the economy by using monetary policy.

Not to make profit.

### 4. 基础货币 Monetary Base (MB)

$$MB = \text{currency (coins + notes)} + \text{reserves}$$

### 5. 货币的时间价值 Time Value of Money (TVM)

由于其盈利潜力, 一笔货币现在的价值大于未来的价值

$$FV = PV(1 + r)^n \quad PV = \frac{FV}{(1 + r)^n}$$

### 6. 央行货币政策手段 FED Monetary Policy Tools

#### a. 存款准备金率 Required Reserve Ratio (RRR)

计算方式 Calculation method

$$\text{required reserve} = \text{required reserve ratio} \times \text{deposit}$$

$$\text{reserves} = \text{required reserve} + \text{excess reserve}$$

银行的资产负债表 Bank's balance sheet (一笔账, 记两次)

银行的资产负债表 Bank's balance sheet	
资产 Asset	负债 Liabilities
储备金 Reserves	存款 Deposits
美国政府证券 U.S. Government securities	
贷款 Loans	

央行的资产负债表 FED's balance sheet	
资产 Asset	负债 Liabilities
黄金和其他中央银行的存款 Gold and deposits in other central banks	央行纸币 FED notes
美国政府证券 U.S. Government securities	银行的储备金 Banks' reserves
对银行的贷款 Loans to banks	

### b. 贴现率 Discount Rate

商业银行向央行借钱时央行收取的利率。

### c. 公开市场操作 Open Market Operations (OMO)

央行买卖国债（与商业银行或公众交易）。

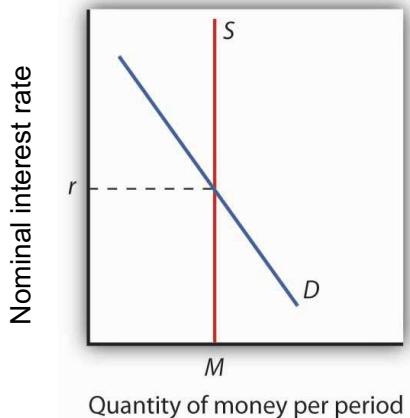
FED buy or sell government securities/bonds in the open market.

### d. 联邦基金利率/拆借利率 Federal Funds Rate

It is the interest that banks charge other banks for short-run loans.

- Federal funds rate↑--- MS↓
- FED buy government bonds from commercial banks---bank excess reserves↑--- federal funds rate↓

## 7. 货币市场供需曲线 Money Market Supply and Demand Curves



Interest rate 是货币的价格

### a. 货币需求 Money Demand

曲线为向下倾斜 downward sloping。

原因: The lower nominal interest rate — the lower opportunity cost of holding money — the greater quantity of money demand

※Bond price and nominal interest rate are in negative relationship bond

### b. 货币供给 Money Supply

曲线为竖直 vertical。

Quantity of money supplied ( $Q_{md}$ ) is determined by central banks and actions of commercial banks.

## 8. 货币需求曲线移动因素 MD Shifting Factors

Price level↑ — MD↑

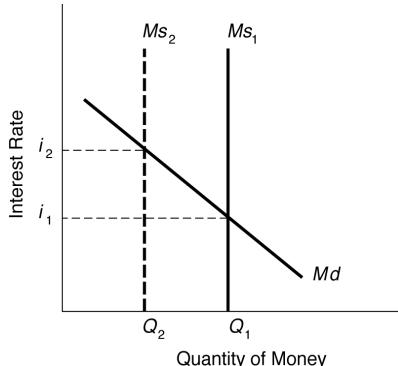
Real GDP/nominal GDP↑ — total income↑ — desire to buy↑ — spending↑ — MD↑

## Financial technology

- 有些让货币需求上升（微信支付，余额宝）
- 有些让货币需求下降（花呗，月末还钱）

## 9. 货币供给曲线移动因素 MS Shifting Factors

- Required reserve ratio $\uparrow$  — 央行手里的钱 $\uparrow$  — money in circulation $\downarrow$  — MS $\downarrow$
- Discount rate $\uparrow$  — interest rate $\uparrow$  — 不向央行借钱 — MS $\downarrow$
- Open market operation: Sell G securities — 商业银行买国债，钱给央行 — money in circulation $\downarrow$  — MS $\downarrow$



MS 为左右移动，向左移为降，向右移为升

## 10. 货币政策及其短期/长期效应 Monetary Policy and Its Short-Run/Long-Run Effects

### a. 扩张的货币政策 Expansionary Monetary Policy

- Required reserve ratio $\downarrow$  — MS $\uparrow$
- Discount rate $\downarrow$  — MS $\uparrow$
- Open market operation: Buy G securities — MS $\uparrow$

Short-run effect: MS $\uparrow$  — nominal interest rate $\downarrow$  — firms cost of borrowing $\downarrow$  — investment $\uparrow$  — GDP $\uparrow$

### b. 紧缩的货币政策 Contractionary Monetary Policy

- Required reserve ratio $\uparrow$  — MS $\downarrow$
- Discount rate $\uparrow$  — MS $\downarrow$
- Open market operation: Sell G securities — MS $\downarrow$

Short-run effect: MS $\downarrow$  — nominal interest rate $\uparrow$  — firms cost of borrowing $\uparrow$  — investment $\downarrow$  — GDP $\downarrow$

### c. 长期影响 Long-Run Effect

货币数量论 Quantity Theory of Money

$$M \times V = P \times Q(T) = \text{Nominal GDP}$$

M: quantity of money; V: velocity of circulation; P: price level (GDP deflator); Q(T): real GDP

- 在长期内，流通速度趋于稳定。
- 在长期内，实际 GDP 等于潜在 GDP。
- 在长期内，货币数量的增加等于物价水平的增加。（物价水平 price level 的变化率等于通货膨胀 inflation 的变化率）。

## Topic 38 Money Multiplier and Money Creation

### 1. 货币乘数 Money Multiplier (MM)

货币乘数 money multiplier 用一元准备金所产生的货币量，是准备金率 RRR 的倒数

$$\text{money multiplier} = \frac{1}{rr}$$

## 2. 货币扩张 Money creation

### a. 贷款变化 Change in Loans

What is the max amount of additional lending this bank can undertake?

Initial change in excess reserve

What is the max amount by which loans in the banking system can increase?

Initial change in excess reserve x money multiplier

### b. 货币供给变化 Change in Money Supply

Initial money supply: no change (is equal to 0)

Max expansion of money supply: initial excess reserves x money multiplier + initial money supply

### c. 存款变化 Change in Deposit

Max increase in deposit: Initial change in deposit x money multiplier

## 3. 货币扩张情况总结 Summary of Monetary Creation

情况 计算内容	Cash → deposit	Fed buy/sell government bonds from bank	Fed buy/sell government bonds from public
Increase in reserves	<i>Deposit</i>	<i>Bonds</i>	<i>Bonds</i>
Max loans the first bank can make (Excess reserves)	<i>Deposit 1 × (1 - rr)</i>	<i>Bonds</i>	<i>Deposit 1 × (1 - rr)</i>
Max loans banking can make (banking system)		<i>Excess reserves</i> $\frac{rr}{rr}$	
Max increase in deposit		<i>Deposit 1</i> $\frac{rr}{rr}$	
Max increase in money	$\frac{deposit 1}{rr} - deposit 1$		$\frac{deposit 1}{rr}$

## Topic 39 Supply-Side Policy

### 1. 人力资本投资 Investment in Human Capital

Governments might invest in education and training of people. Improve the level of schools or make education free. Also, provide various training schemes. In the short run, such policies increase aggregate demand, but importantly – shift the LRAS curve to the right. This happens because people's skills improve. Hence, productivity increases.

## 2. 新型技术投资 Investment in New Technology

Governments could invest in research and development of new technologies. Again, that would increase aggregate demand in the short run, however, in the long run LRAS would increase. That happens because new technology can increase productivity: e.g., 3D printers made modelling or even production of various products quicker than ever.

## 3. 基础设施投资 Investment in Infrastructure

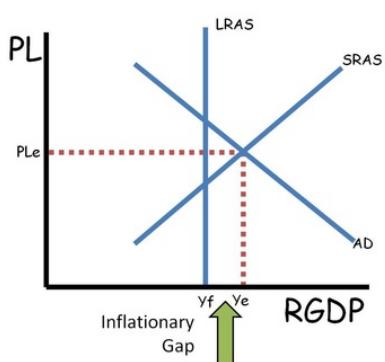
Government expenditure might go towards infrastructure. Simple example – improving logistics could decrease transfer times and costs in turn increasing productivity and shifting the LRAS to the right. Remember the short-term effect on AD!

## 4. 产业政策 Industrial Policies

Governments might target specific economic areas through tax cuts, tax allowances and subsidized borrowing which would promote growth of those areas. E.g., Useful startups which could improve the efficiency of other areas of the economy.

# Summary: Combination of AD-AS Model and Two Policies

## Case 1: Inflationary gap—potential GDP<real GDP

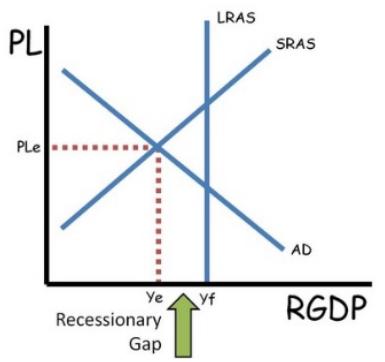


**Contractionary fiscal policy:** AD↓  
tax↑--- G spending↓--- AD↓

**Contractionary monetary policy:** AD↓  
MS↓--- r↑--- firms cost of borrowing↑--- I↓--- AD↓  
(required reserve ratio↑, discount rate↑, sell bonds)

**No policy:** AS↓  
Nominal wage↑--- SRAS↓

## Case 2: Recessionary gap—potential GDP>real GDP



**Expansionary fiscal policy:** AD↑  
tax↓--- G spending↑--- AD↑

**Expansionary monetary policy:** AD↑  
MS↑--- r↓--- firms cost of borrowing↓--- I↑--- AD↑  
(required reserve ratio↓, discount rate↓, buy bonds)

**No policy:** AS↑  
Nominal wage↓--- SRAS↑

## Case 3: Two Policies Reinforce Each Other

Expansionary policies

AD↑ (GDP↑ PL↑); interest rate indetermined

Contractionary policies

AD↓ (GDP↓ PL↓); interest rate indetermined

#### Case 4: Two Polices Offset Each Other

Expansionary fiscal policy + contractionary monetary policy

AD indetermined; interest rate↑

Contractionary fiscal policy + expansionary monetary policy

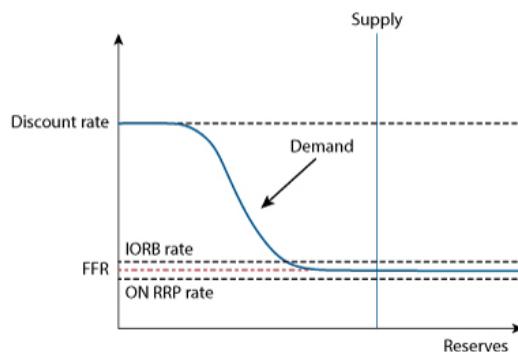
AD indetermined; interest rate↓

## Topic 40 Ample Reserves and Monetary Policy in Practice

All reserves can be divided into **Limited Reserves** and **Ample Reserves**. The direct result of ample reserves policy implementation is **increasing or decreasing of AD**.

There are 4 key tools of ample reserves policy implementation.

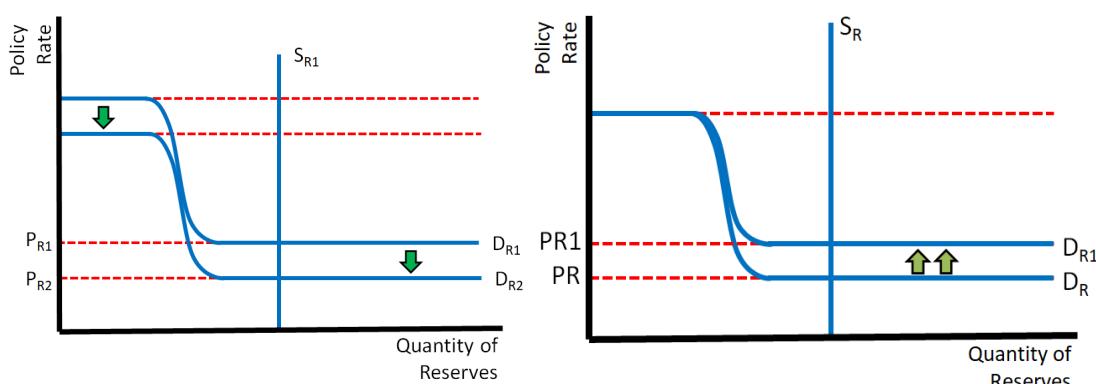
- Fed's Primary Tools: Interest on Reserve Balances (**IORB Rate**)
- Setting a Floor for the Federal Funds Rate: the Overnight Reserve Repurchase Agreement Facility (**ONRRP Rate**)
- Setting a Ceiling for the **Federal Funds Rate**: Discount Window
- Final Action: Open Market Operation (OMO)



Ample Reserves Market

In the ample reserves market, we also have two types of monetary polices:

- Contractionary Monetary Policy on Ample Reserves
  - 3 Rates **increase**—Federal Funds Effective Rate **increase**—AD **decrease**
- Expansionary Monetary Policy on Ample Reserves
  - 3 Rates **decrease**—Federal Funds Effective Rate **decrease**—AD **increase**



Expansionary Monetary Policy Graph Example

\*Federal Funds Rate: the interest rate at which depository institutions trade federal funds.

\*Discount Rate: the interest rate charged to commercial banks and other depository institutions on loans they receive from their regional Federal Reserve Bank's lending facility.

## **Monetary Policy in Practice**

Monetary policy in practice is more complicated than it appears in theory. First, recessionary and inflationary gaps need to be detected. Then, the exact amount of the increase or decrease in the money supply must be determined. Finally, there is no guarantee the policy will be effective.

Economic data are only available with a lag. Even then, the data will be revised in the months and years ahead. Determining when the economy needs a monetary intervention is an art with science mixed in.

Once a gap is detected, the Fed determines the exact amount the money supply should be changed by focusing on interest rates. Remember, the change in the money supply affects the macroeconomy through interest rates. The Fed is well aware of this and keeps a close watch on one interest rate in particular: the federal funds rate. The federal funds rate is the interest rate charged when one bank loans funds to another for a short amount of time. This is not to be confused with the discount rate—the rate charged by the Fed when making a loan to a bank.

One bank can make a loan to another at whatever rate it can negotiate. However, the Fed keeps an eye on these loan agreements as they occur. If the Fed wants this interest rate to be at 2.0 percent and it sees that loans from one bank to another are occurring at 2.2 percent, then it increases the money supply. As we saw, this lowers the interest rate. The Fed will continue to pump money into the economy until there is enough so that a loan from one bank to another occurs at 2.0 percent interest, not 2.2 percent. Once the federal funds rate decreases, other rates usually follow suit.

In order to stimulate the economy, the Fed would increase the money supply, most likely through open market purchases, in order to lower the federal funds rate to the desired level. Targeting the federal funds rate in this manner determines exactly how much the money supply should be changed to close the recessionary or inflationary gap.

In 2007, coming into the financial crisis that spawned the Great Recession, the federal funds rate was 5.25 percent. In response to the crisis and the recession, the Fed flooded banks with reserves, enabling one bank to borrow short-term funds from another at 0.25 percent. That is to say, the Fed undertook an aggressive expansionary monetary policy in the face of the financial crisis, lowering the federal funds rate from 5.25 to 0.25 percent. This may have prevented the Great Recession from swelling into another Great Depression.

Despite this example, monetary policy may not be effective. The Fed can always change the federal funds rate to the desired level. However, it is uncertain if the change in interest rates will actually change borrowing and spending in the economy. For instance, the Fed may increase the money supply, thereby lowering the federal funds rate. But banks may not loan out the reserves pumped in by the Fed. And consumers and businesses may not want to take out loans during the recession. Aggregate demand does not increase, and the recessionary gap does not close.

Another reason monetary policy might be ineffectual in the face of a recession is a liquidity trap. This occurs when the federal funds rate is already close to zero. In this case, it is nearly impossible for the Fed to lower the federal funds rate any further. Some central banks have tried negative federal funds rates, but doing this raises a separate set of problems.

When banks are flush with reserves, two of the Fed's four tools of monetary control are largely ineffective. Suppose the Fed wants to decrease the monetary base and thereby increase interest rates at a time when banks have ample reserves. If required reserves are raised, nothing happens because banks already have more than enough reserves on hand to meet the higher reserve requirement. Indeed, the Fed gave up using this tool long ago. The Fed's reserve requirement is zero, and U.S. depository institutions currently hold as many reserves as their managers see fit. Since the U.S. banks currently hold plenty of reserves, changing this requirement would be

ineffective.

When the banking system has plenty of reserves, the Fed can sell Treasury securities to banks with open market operations. This will draw bank reserves down, but it will not increase the federal funds rate since banks have ample reserves to buy Treasuries and continue making loans to other banks at low rates.

In this situation, the most effective tool for increasing interest rates in the economy is to increase the interest paid on bank reserves. The federal funds rate will increase because no bank will lend to another at a lower interest rate than that paid on bank reserves. If a bank wants to borrow funds from another, it must at least offer to pay more in interest than the lending bank is currently receiving on its idle reserves.

Increasing the discount rate will help in this situation because no bank will borrow from another if the funds could be borrowed from the Fed at a lower rate. A higher discount rate allows for a higher federal funds rate.

When the banking system is well capitalized and holds ample reserves, changing reserve requirements and open market operations are ineffective tools for monetary policy because the federal funds rate will not be changed. Banks will continue to lend to one another at the prevailing rate because they have plenty of reserves to do that and meet the new reserve requirement or buy Treasuries. In this circumstance, the only way to change the federal funds rate is to change the interest paid on bank reserves and to change the discount rate.

The interest paid on bank reserves serves as a floor for the federal funds rate. No bank will lend to another when more could be earned by holding the funds as reserves. The discount rate serves as a ceiling on the federal rate. No bank will borrow from another if the funds could be obtained from the Fed at a lower rate.

In a banking system with ample reserves, the federal funds rate lies between the interest paid on bank reserves and the discount rate. Increasing both these policy rates increases the federal funds rate. Other interest rates in the economy follow suit. The higher rates discourage borrowing and spending. Aggregate demand decreases, and inflationary pressures are reduced.

To lower the federal funds rate and conduct expansionary monetary policy when banks have ample reserves, the Fed would lower the interest rate it pays on bank reserves along with the discount rate.



# Tariffs

# International Economics Review Notes

## 国际经济学复习笔记

Prepared by: Zihan Liang  
Pre-University Economics Review Notes  
大学经济预科复习笔记 修订版

# Chapter 11 International Trading

## Topic 41 The Terms of Trade (TOT)

### 1. 贸易条款如何运作 How Does Terms of Trade Work?

#### a. 定义 Definition

The terms of trade is the amount of imports that can be exchanged for one unit of exports  
贸易条件是一单位出口可以换取的进口量。

#### b. 衡量 Measurement

The terms of trade measures the purchasing power of a country's exports, e.g. how many units of exports are needed to buy a unit of imports. As each country is exporting and importing many different products, the Terms of Trade are calculated using the export price index (shows combined price changes of all exported products) and import price index (shows the combined changes in prices of all imported goods).

### 2. 贸易条款公式 Terms of Trade Formula

Terms of Trade Formula =

(Weighted Index of Average Export Prices / Weighted Index of Average Import Prices) x 100

### 3. 贸易条件的改善和恶化 Improvement and Deterioration in the Terms of Trade

#### a. 贸易条件的改善 Improvement of TOT

贸易条件的改善必须意味着发生了以下变化之一

- Export prices have risen, import prices have stayed the same
- Export prices have risen, import prices have fallen
- Export prices have risen faster than import prices
- Export prices have fallen by less than import prices
- Export prices have stayed the same but import prices have fallen

贸易条件比率的提高 increase in the terms of trade ratio 通常被描述为贸易条件的改善或有利变化 an improvement, or favorable movement, in the terms of trade. 这是因为相同数量的出口现在将购买更多的进口 the same volume of exports will now buy more imports.

#### b. 贸易条件的恶化 Deterioration of TOT

贸易条件比率的下降 decrease in the terms of trade ratio 通常被描述为贸易条件恶化、恶化或不利变动 deterioration, or a worsening or unfavorable movement. 这是因为在出口量相同的情况下, 该国可以承受更少的进口 the country can afford fewer imports with the same volume of exports.

### 4. 贸易条件变化的原因 Causes of Changes in the Terms of Trade

#### a. 短期 Short Term

The term of trade is the price relationship between a country's exports and imports and will, therefore, be influenced by **all the factors which determine the prices of imports and exports**. 受到决定进出口价格的所有因素的影响

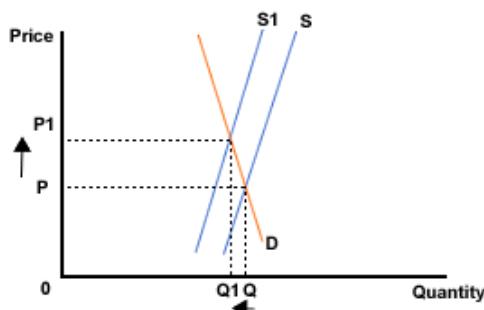
汇率 Exchange Rates

- 在短期内, 进出口相对价格的变化可能是由汇率波动引起的。贸易 trade、资本流动 capital flows、利率 interest rates、投机 speculation、通货膨胀 inflation 和政府使用外汇储备 use of foreign currency reserves by the government 的变化可能会导致汇率波动。

- You will recall that a depreciation of the exchange rate causes import prices to increase and export prices to decrease, while an appreciation causes the opposite effects.

### 商品价格 Prices of Commodities

对于农产品来说尤其如此，其供应经常受到干旱、洪水、疾病等的影响。鉴于这些商品的需求和供应非常缺乏弹性 highly inelastic，供应的变化将导致价格相应地发生更大的变化 proportionately greater change in price。



### b. 长期 Long Term

In the longer term, changes in the terms of trade are likely to be determined by those factors which exert a longterm influence on the demand for, and supply of, a country's exports and imports. 一国进出口的供求产生长期影响的因素

对于主要出口初级产品 primary goods 和进口制成品 manufactured goods 的发展中国家而言，由于出口供应增加和出口需求减少，其出口价格往往会随着时间的推移而下降：

- Supply has increased, mainly due to improvements in technology and, in the case of coffee, new producers entering the market. 由于技术的改进导致的供给增加
- Demand has fallen / not risen rapidly, for a variety of reasons. 需求下降

补充：初级产品与制成品 Supplement: Primary and Manufactured Products

- 初级产品 primary goods 指未经加工或因销售习惯而略作加工的产品，如天然橡胶、原油、铁矿石等农林牧渔矿产品。指人们通过劳动，直接从自然界获得的、尚待进一步加工或已经简单加工的产品。
- 制成品 manufactured goods 指在一个企业内已完成全部生产过程、按规定标准检验合格、可供销售的产品。

导致需求下降的原因 The reasons for demand falling include:

- 开发合成替代品 Development of synthetic substitutes  
比如：塑料减少了对几种原材料的需求。
- 初级商品需求的低收入弹性 Low income elasticity of demand for primary commodities  
随着现实世界收入的增长，对初级商品的需求增长不成比例。
- 农业保护 Agricultural protection  
尽管生产成本较低，但发展中国家很难打入富裕国家的市场，因为那里的农民经常得到大量补贴，而且就欧盟而言，受到共同对外关税的保护。
- 小型化 Miniaturization  
现代微芯片技术使产品变得更小，例如个人电脑，这减少了原材料的使用，导致需求下降。
- 初级商品出口的价格无弹性需求 Price inelastic demand for exports of primary commodities  
初级商品的需求往往缺乏价格弹性，因此价格下降导致需求量的增长低于比例。

## Topic 42 International Trade

### 1. 相对优势 Comparative Advantage

The ability to produce a good at a lower **opportunity cost** than another producer. (比较机会成本)

### 2. 绝对优势 Absolute Advantage

The ability to produce a good using fewer **inputs** than another producer. (比较生产投入)

### 3. 相对优势输出输入练习题 Comparative Advantage Output and Input Practice Question

#### a. 输出问题 Output Question

The following table shows the number of donuts or cupcakes that John and Erica can each produce in one day.

	Donuts	Cupcakes
John	200	100
Erica	150	50

#### Analysis Process:

John  $200D=100C$ :  $1D=0.5C$  **1C=2D**

Erica  $150D=50C$ : **1D=1/3C**  $1C=3D$

John has the comparative advantage in producing **cupcakes**. Erica has the comparative advantage in producing **donuts**.

**Trade:** 交换比例 **Term of trade:** 介于机会成本之间

$1C=2D$ ;  $1D=0.5C$

#### b. 输入问题 Input Question

	Brazil	Spain
Corn	2 hours of labor	4 hours of labor
Shoes	8 hours of labor	12 hours of labor

#### Analysis Process: Input 问题换数字

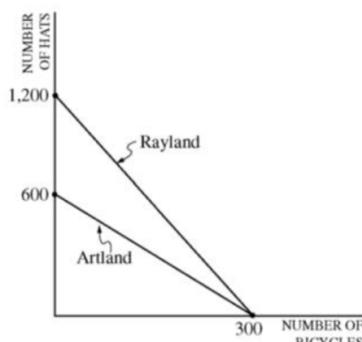
Brazil  $8C=2S$ : **1C=1/4S**  $1S=4C$

Spain  $12C=4S$ : **1C=1/3S** **1S=3C**

Brazil has the comparative advantage in producing **corn**. Spain has the comparative advantage in producing **shoes**.

Trade:  $1S=34C$ ;  $1C=1/41/3S$

#### c. 与 PPF 结合题型 Combined with PPF



(a) Calculate the opportunity cost of a bicycle in Artland

Artland  $600 \text{ hats} = 300 \text{ bicycles}$ :  $1 \text{ hat} = 1/2 \text{ bicycle}$ ; **1 bicycle=2 hats** 对自行车有相对优势

Rayland 1200 hats=300 bicycles: 1 hat=1/4 bicycle; 1 bicycle=4 hats 对帽子有相对优势

(b) If the two countries specialize and trade, which country will import bicycles? Explain

Rayland will import bicycle. 因为其生产帽子所以进口自行车

(c) If the terms of trade are 5 hats for 1 bicycle, would trade be advantageous for each of the following?

- a) Artland
- b) Rayland

Artland benefit; Rayland loss.

(d) If productivity in Artland triples, which country has the comparative advantage in the production of hats?

Artland 1800 hats=900 bicycles: 1 hat=1/2 bicycles 1 bicycle=2 hats

如果某个国家的生产率翻倍，机会成本不变，相对优势情况不变

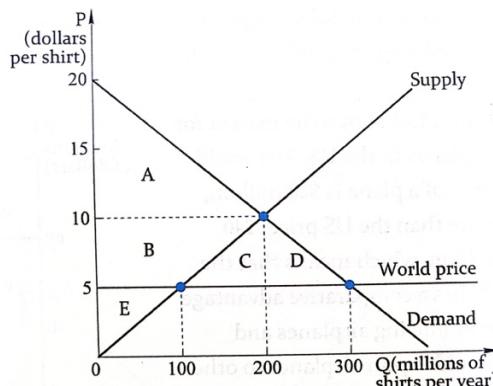
#### 4. 贸易 Trade

Trade can **benefit everyone in society** because it allows people to **specialize in activities** in which they **have a comparative advantage**.

### Topic 43 Restrictions on Free Trade

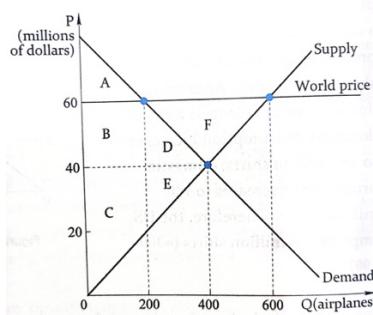
#### 1. 自由国际贸易 Free International Trade

##### a. 进口的得与失 Gains and Losses from Imports



Before Trade	After Trade
Consumer surplus=A	Consumer surplus=A+B+C+D
Producer surplus=B+E	Producer surplus=E
Total surplus=A+B+E	Total surplus=A+B+C+D+E

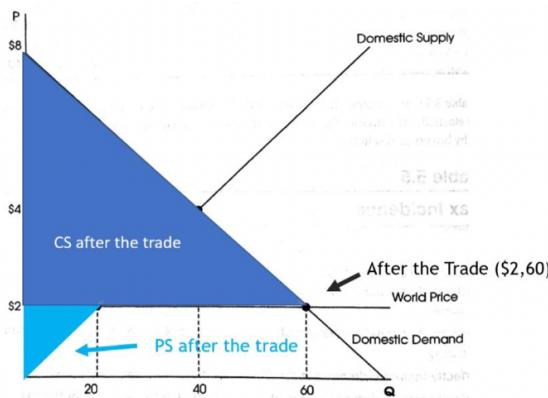
##### b. 出口的得与失 Gains and Losses from Exports



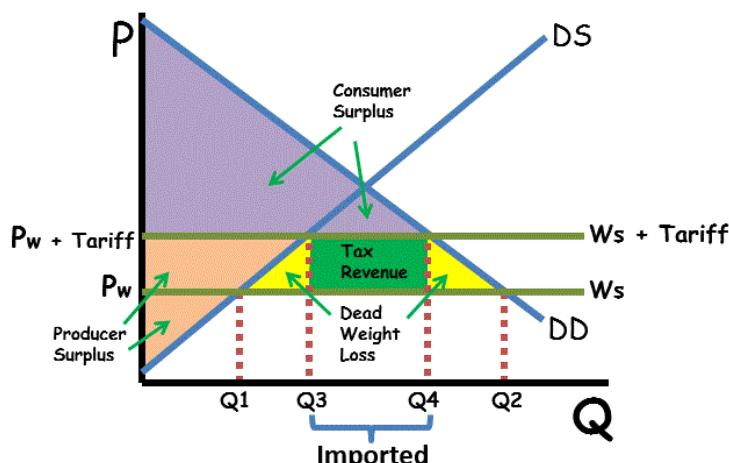
Before Trade	After Trade
Consumer surplus=A+B+D	Consumer surplus=A
Producer surplus=C+E	Producer surplus=B+C+D+E+F
Total surplus=A+B+C+D+E	Total surplus=A+B+C+D+E+F

## 2. 贸易保护 Trade Protections

### a. 关税 Tariffs

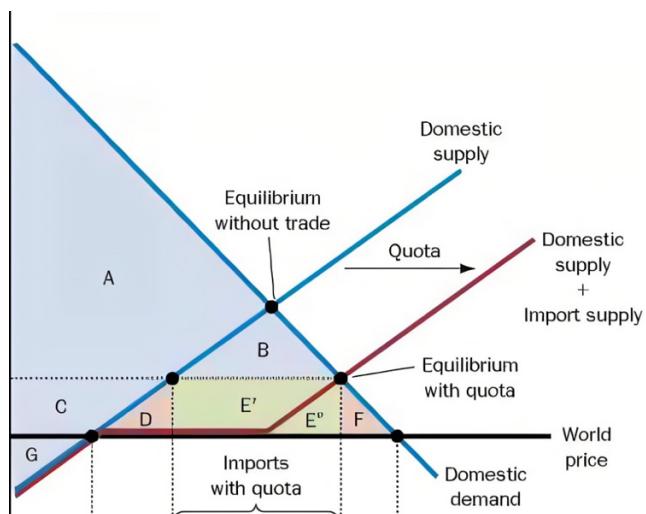


关税之前的 CS 和 PS



关税后 CS 和 PS (Q3Q4 是关税后的 import; Q1Q2 是关税前的 import)

### b. 进口配额 Import Quota



## Topic 44 The Balance of Payments

### 1. 国际收支账户 Balance of payment accounts

只有国际贸易计入国际收支账户

国际收支账户内容

经常账户 Current account	
Exports of goods and service	+
Imports of goods and service	-
Net interest (在外国投资的公司所赚取的利润)	+/-
Net transfer (往外国或收到外国的援助)	+/-
资本与金融账户 Capital and financial account	
Foreign direct invest	+
Portfolio investment and other investment	+
Change in official reserve	+/-
官方结算账户 Official settlements account (外汇储备)	

Current account + Capital and financial account + Official settlements account=0

Current account 与 Capital and financial account 必然一个为正一个为负

### 2. 贸易逆差与贸易顺差 trade deficit and trade surplus

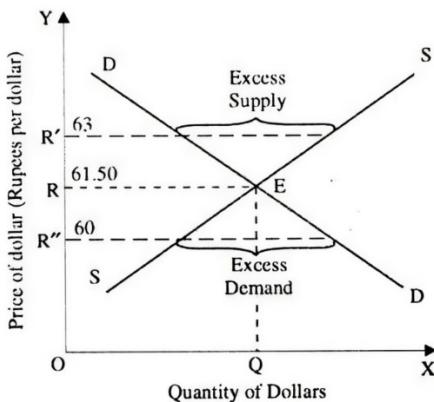
trade deficit: export < import

trade surplus: export > import

# Chapter 12 Exchange Rate

## Topic 45 Exchange Rate Market

### 1. 汇率图形 Exchange Rate Graph



横纵坐标 Horizontal and vertical coordinates

- 纵坐标: price of 本币 in 外币; 外币 per 本币
- 横坐标: quantity of 本币

汇率市场中供给和需求的含义 Demand and supply meaning

- 需求 demand: 需要本国货币的量
- 供给 supply: 供给用于兑换外国货币的本国货币的量

汇率市场中的盈余与短缺 Surplus and shortage

- Excess supply surplus:  $Q_s > Q_d$  exchange rate ↓
- Excess demand shortage:  $Q_s < Q_d$  exchange rate ↑

### 2. 贬值与升值 Depreciation and Appreciation

贬值 Depreciation: 一种货币相对于另一种货币的价值下降, 汇率下降

升值 Appreciation: 一种货币相对于另一种货币的价值上升, 汇率上升

### 3. 汇率波动 Exchange Rate Fluctuations

Interest rate

$R \uparrow$  — financial assets become more attractive — funds and capital flow into us — **d for dollars** ↑ — **dollars appreciation**

$R \downarrow$  — financial assets become less attractive — funds and capital flow out of us — **s for dollars** ↑ — **dollars depreciation**

( $MS \uparrow R \downarrow$ ;  $S$  of funds ↓  $R \uparrow$ )

Export and import

**Export** ↑ — foreigners need dollars to buy us g&s — **d for dollars** ↑ **dollars appreciate**

**Import** ↑ — us people need to exchange dollars for other currency to buy foreign g&s — **s for dollars** ↑ — **dollars depreciation**

( $PL \uparrow$  export ↓ import ↑; income ↑ import ↑; Japan recession — us export ↓

(dollars depreciation — export ↑ import ↓)

FED 调整汇率的方法

Fed buy currency —  $D \uparrow$  dollar appreciation; Fed sell currency —  $S \uparrow$  dollar depreciation

## Topic 46 How Policies and Events Affect an Open Economy

### 1. 浮动利率制 Floating System

The value of the exchange rate is determined by the supply and demand of the currency on the foreign exchange market. 汇率的价值取决于外汇市场上货币的供求情况

### 2. 固定汇率 Fixed Exchange Rates

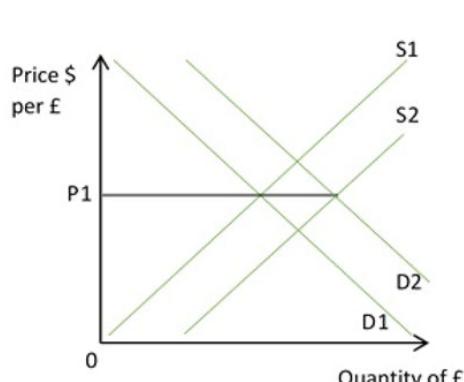
The central bank buys and sell foreign currencies to ensure that the value of its currency remains at a single fixed rate. 中央银行买卖外币，以确保其货币的价值保持在单一的固定汇率上。

### 3. 重估与贬值 Revaluation and Devaluation

重估 Revaluation: the price of the currency is deliberately increased in a fixed exchange rate system.  
在固定汇率制度下故意提高货币的价格

贬值 Devaluation: the price of the currency is deliberately decreased in a fixed exchange rate system.  
在固定汇率制度下，故意降低货币的价格

Example



This diagram indicates how a fixed exchange rate system operates. Inflation may occur which causes imports to seem more attractive and supply of £s to increase, so the currency would then naturally depreciate. However, because of the government's intentions, the central bank would start to buy £s and therefore artificially increase demand for its currency. This then allows the value of the currency to remain at the same stable level. (In reality, neither the USA nor the UK have fixed exchange rate systems.)

该图显示了固定汇率系统的运作方式。可能会发生通货膨胀，导致进口看起来更具吸引力并且英镑的供应增加，因此货币自然会贬值。然而，由于政府的意图，央行将开始购买英镑，从而人为地增加对其货币的需求。然后，这允许货币的价值保持在相同的稳定水平。（实际上，美国和英国都没有固定汇率制度。）

### 4. 管理汇率 Managed Exchange Rates

政府通常会设定一个汇率应保持的区间 sets a range between which the exchange rate should remain, 然后如果汇率低于或高于这个理想区间，中央银行 central bank 就会定期进行干预 intervention。干预可能涉及操纵利率或买卖货币 involve the interest rate being manipulated or the currency being bought or sold。

### 5. 高估和低估 Overvaluation and Undervaluation

#### a. 高估 Overvaluation:

Imported goods become cheaper so there is downward pressure on the inflation rate. 进口商品变得更便宜，因此通胀率面临下行压力。

Competition from the cheaper foreign imports forces domestic producers to become more efficient.  
来自更便宜的外国进口产品的竞争迫使国内生产商变得更有效率

Exports become relatively expensive, so the export industries receive lower profits. 出口变得相对昂贵，因此出口行业获得的利润较低

The balance of payments worsens due to fewer exports and greater imports. 由于出口减少和进口增加，国际收支恶化

### b. 低估 Undervaluation

Exports become cheaper so the export industry grows 出口变得更便宜，因此出口行业增长

Imports become more expensive, so domestic consumers favour domestic goods. 进口商品变得更加昂贵，因此国内消费者更青睐国产商品。

Imports become more expensive, which may result in imported cost push inflation as raw materials and intermediate goods are more costly 进口变得更加昂贵，这可能导致进口成本推高通胀，因为原材料和中间产品的成本更高

The balance of payments improves as exports increase and imports fall. 随着出口增加和进口下降，国际收支有所改善。

## 6. 不同汇率制度的评估 Evaluation of different exchange rate systems

### a. 浮动汇率 Floating Exchange Rate

优势 Advantages of a floating exchange rate

- Monetary policy can continue to be used as the government is not intervening in the pricing of the currency. For instance, the interest rate can be manipulated to encourage growth as the currency is able to depreciate freely. 由于政府不干预货币定价，因此可以继续使用货币政策。
- Trade imbalances can naturally adjust. For instance, if the currency appreciates as a result of the demand for exports increasing, then this demand will gradually fall because the price of exports increases as the currency appreciates. 贸易失衡可以自然调整。
- These exchange rate changes are smooth and continuous, as the government will not suddenly intervene. 这些汇率变化是平稳而连续的，因为政府不会突然干预。
- Speculation may be lower as there is no strict value that is perceived to be ideal of the currency to be at, therefore, there is less opportunity to make a profit on the changes in its value. 投机可能较低。
- The central bank does not need to hold as much in foreign reserves as they have no reason to use these reserves as a mechanism to intervene in the exchange rate. 中央银行不需要持有如此多的外汇储备。

劣势 Disadvantages of a floating exchange rate

- There is increased uncertainty as the exchange rate has no fixed value, so investors, exporters and importers face greater risks and be less confident in the market. This in turn tends to lead to lower rates of cross border investment. 不确定性增加，投资者对市场缺乏信心。
- The government may be more likely to employ inflationary policies in order to achieve short term growth, as they are not restrained from using monetary policy. 政府可能更有可能采用通胀政策来实现短期增长。

### b. 固定汇率 Fixed Exchange Rate

优势 Advantages of a fixed exchange rate

- There is less uncertainty as the currency maintains its fixed value, so it may be a safer

opportunity for investors. 对投资者来说可能是一个更安全的机会。

- Inflationary growth is not an option, so the government must act with discipline in reaching its macroeconomic aims. 通货膨胀增长不是一种选择。
- The exchange rate can be manipulated to combat high inflation. 可以操纵汇率来对抗高通胀。

#### 劣势 Disadvantages of a fixed exchange rate

- The government cannot use monetary policy to achieve domestic goals, as this would also effect the exchange rate. 政府不能使用货币政策来实现国内目标。
- Expansionary fiscal policy cannot be used to finance a deficit as this could affect the money supply and interest rates. 扩张性财政政策不能用于为赤字融资。
- The exchange adjustments are abrupt, rather than being fluid, which could be very disruptive both domestically and for foreign investors. 汇率调整是突然的，而不是流动的。
- Trade deficits cannot automatically be corrected, instead contractionary fiscal policy may be necessary. 贸易逆差不能自动纠正。
- The central bank must keep large foreign exchange reserves so that they can intervene in the exchange rate. 中央银行必须保留大量外汇储备。

# Chapter 13 International Economics

## Topic 47 Foreign Direct Investment (FDI)

### 1. 外国直接投资的作用 The Role of Foreign Direct Investment

Foreign direct investment (FDI): a firm based in one country establishes its presence in another country by providing long term investment. 位于一个国家的公司通过提供长期投资在另一个国家建立业务。

### 2. 分类 Classification

#### a. 按照公司开展的活动进行分类 Categorized by the Activities Carried out by the Company

横向 Horizontal

The company carries out the same activities as it does abroad. 公司开展与国外相同的活动。

例如，Tesco 是一家英国超市，现在在其他 11 个国家/地区设有商店。它现在不仅是英国领先的超市，也是爱尔兰、匈牙利、马来西亚和泰国的领先超市。

纵向 Vertical

The company carries out different stages of activities abroad. 公司在国外开展不同阶段的活动。

例如，2014 年捷豹路虎在中国开设了第一家完整的海外制造工厂。

企业集团 Conglomerate

The company carries out activities unrelated to its domestic business. 公司开展与其国内业务无关的活动。例如，太古集团的总部设在伦敦，其许多业务在亚太地区，并主要在香港和中国内地开展业务。其业务种类繁多，但主要集中在房地产、航空、饮料、海事服务或贸易和工业。

#### b. 按照开展新业务的方式分类 Categorized by Way of Starting New Business

绿地投资 Greenfield investment

the company starts a new venture abroad by constructing new factories or stores. 公司通过建设新工厂或商店在国外开展新业务。

例如，星巴克和麦当劳倾向于这样做。

褐地投资/跨国并购 Browfield investment

The company purchases existing factories or stores to begin new production. 公司购买现有工厂或商店开始新的生产。

## Topic 48 Foreign Aid and Multilateral Development Assistance

### 1. 外援与官方主义援助 Foreign Aid and Official Development Assistance

外援 Foreign aid: Money, food or resources given or lent by one country to another.

官方发展援助 Official development assistance: Aid which is granted to economically less developed countries by governments is called.

### 2. 人道主义援助 Humanitarian Aid

Food aid, medical relief and emergency relief aid which is often provided by nongovernmental organizations (NGOs). 通常由非政府组织 (NGO) 提供的食品援助、医疗救济和紧急救济援助。

NGOs are nonprofit, citizenbased groups that are independent of government and aim to provide aid on a small scale to achieve development objectives. 非政府组织是非营利的、以公民为基础的团体，它们独立于政府，旨在提供小规模援助以实现发展目标。

Examples of NGOs include Oxfam, Action Aid, Unicef, Amnesty and Greenpeace.

### **3. 捆绑援助、项目援助与计划援助 Tied Aid, Project Aid and Program Aid**

捆绑援助 Tied aid: One country donates money or resources to another on the condition that the funds are used to buy imports from the donor country or linked to a specific project. For example, Britain granted aid to Malaysia for the Pergau Dam project in exchange for a major arms deal.

项目援助 Project aid: Aid which is given for a specific purpose, including support for schools and hospitals.

计划援助 Program Aid: Funding provided for specific programs which is dependent on the recipient adhering to specific conditions. This includes support for sectors like the education sector and the financial sector.



# CASE STUDY

## Economics Case Study Preparation Guide

经济学课题研究准备指南

Prepared by: Zihan Liang  
Pre-University Economics Review Notes  
大学经济预科复习笔记 修订版

# **Critical Thinking - Key Takeaway**

## **Judge's Scoring Rubrics**

- Identifying & Solving the Problem
- Knowledge Application
- Research
- Analysis & Evaluation \*\*\*\*
- Format and Expression

## **Steps to Approaching Your Case**

- Understand your task
- Understand the case
- Identify the main problem(s)
- Analyze the problems
- Develop and evaluate the solutions
- Make recommendation for action

## **How to Write Your Essay**

- Introduction
- Problem Identification & Analysis
- Statements of Major Problems
- Recommendation & Conclusion
- Reference

# Critical Thinking Sample

## THE ISSUE:

There is widespread agreement among economists that wealth and income inequality have increased steadily in the United States since the 1970s. We see evidence of this growing inequality in the graph to the left, which shows steadily rising Gini ratios,<sup>[1]</sup> a common measure of income inequality. An increasingly unequal distribution of income means that a larger portion of total income is going to the rich and that the gap between the rich and the poor is widening. This issue has been receiving more attention among economists in recent years. The New York Times reported that at the annual meetings of the American Economic Association in January 2016, the issue of income inequality was “taking center stage” after having been largely ignored in the past (1/4/16).

## THE PROBLEM:

Policy makers and the American public need to understand the implications of growing income inequality on the economy and on the quality of life in America.

## YOUR TEAM'S TASK:

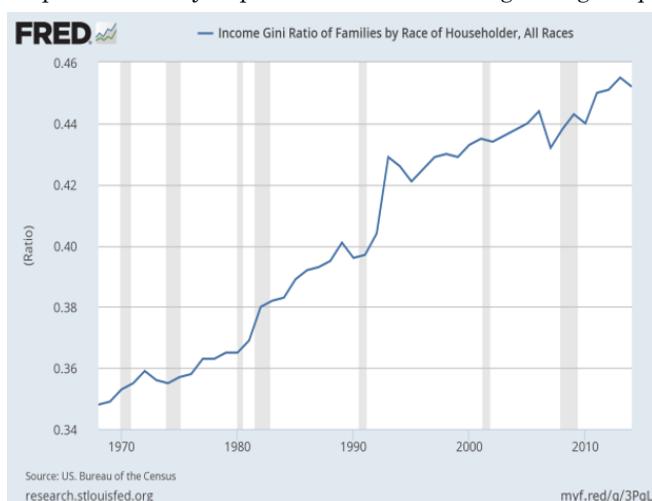
Your team is a non-partisan advisory committee that is meeting today to provide information to congressional workers about the long and short-run implications of growing income inequality on the economy and on the American people. Your team has been chosen because of your expertise in economics and in the economic way of thinking.

The people you are advising are seeking information on both sides of this issue: Should the government more stringently address the problem of growing income inequality, and if so what policies could they use? What would be the likely positive outcomes of these policies?

On the other hand, since overall standards of living have increased for Americans over time (albeit faster for some than for others), why do some economists argue that government policies to reduce income inequality might negatively impact the economy?

Choose one policy that, given your analysis, you believe to be the most effective policy.

[1] Gini ratios range between 0 (perfect equality) and 1 (perfect inequality) and are a measure that economists frequently use to show the distribution of total income in a country. You are not expected to discuss Gini ratios in your presentation: the data are presented only to provide evidence of the growing inequality.



Citation for graph: US. Bureau of the Census, *Income Gini Ratio for Households by Race of Householder, All Races*, retrieved from FRED, Federal Reserve Bank of St. Louis, March 18, 2016.

# Critical Thinking Sample Ideas

what is income inequality?

how unevenly income is distributed throughout a population.

贫富差距，看这个差距到底多大

(穷人富人收入之间的 gap, 看 gap 多大)

what factors cause inequality?

1. technology change (科技发达后很多 workers 失业, 找不到工作, 只能做一些底层的工作, 可能因为没有受过高等教育、专业培训. 还有很多行业因为科技发展被时代淘汰了.)

① 像工厂的工人, 现在被替换为机器的流水线.

② 因为机器生产的便捷, 很多营业厅的人被淘汰.

③ 仓库, 盒马这种超市, 便利店, 自助收银 (收银员被淘汰)

无人驾驶, 高速收费 (ETC), 酒店机器人

有机器减少成本, 用人的成本变高, 不雇人

2. globalization & trade

rich country ↑ imports 向发展中国家购买一些制成品 (中国) 一些小产品

products made in China, 因为发展中国家的 low-skilled labor 成本低

导致本国的劳动者找不到这样的工作

export 一些高科技产品, 需要的是 high-skilled labor

3. population growth↑

age distribution 改变, larger fraction on the young people (low-paid)  
或压根没工资

Income inequality ↑ 会导致什么?

① crime ↑ (robbery, murder...) 没钱或差距过大, 嫉妒心理↑

有研究, small permanent ↓ in inequality, ↓ homicide 20%, ↓ robbery 23%

② life expectancy ↓ adult (infant) mortality ↑

long-period 更显著

影响 physical health, mental health

obesity ↑ (只能吃便宜的垃圾食品)

③ happiness ↓

lower level of life satisfaction & life standard

#### ④ engagement with Politics & society ↓

穷的人顾不上这些，维持自己的生活

voter turnout ↓ 选民投票率 ↓

#### ⑤ rent-seeking ↑

收入高的群体增加，利用他们的职位来增加个人收益

个人利益增加，社会利益 ↓ 经济效率 ↓

(society 没有 benefit).

example: 有一个土地所有者有条河，他在河上放条铁链，向所有要过这条河的船只收取费用。这是 rent-seeking, why? 铁链没有生产力，没有提供 service，这个土地所有者也没有对河流做任何改善或增加价值。他所做的就是从以前本来免费的东西上赚钱，只有 individual benefit, 没有 society benefit

or 公司请人游说，说服 government 改变政策，或出台对公司有利的政策

这样公司更好的挣钱 而不是说画时间、钱来 improve 他们的产品

subsidy

long-term contract 垄断

grants

tariffs ---

Government 能做些什么？

#### ① Redistribution

从高收入的人那里拿走一部分收入给低收入者

通过什么？ tax

Federal income tax, 累进税制 progressive tax program

↳ 富人交更高的税

收入越高，交的税越高

比如 Canada, over \$21651 的收入要交 33% 的税

US, 最高的 tax rate 达 37%

#### ② 社会保障 Welfare

福利项目，subsidy，医疗补助，劳动所得税抵免

#### ③ education

鼓励 education, 给补助，这样避免穷人的孩子辍学去打工

↳ 有了高学历，收入也会变高 ↓ income inequality. → 长远 GDP growth ↑

#### ④ ↓ discrimination

有 earning gap between immigrants & non-immigrants  
men & women

建立 effective legal rules 会 ↓ gap

#### ⑤ 减少抑制竞争的 market regulation, 可以增加 employment 减少 income inequality → 减少垄断

#### ⑥ Promote immigration (失业率↓)

移民会带来 labor supply/D, 提高就业率, 会帮助更多 less-educated 的人  
如何 promote? 提供语言课程, 政策放宽, 移民目标人数增加..  
↳ 还会带来 GDP growth ↑

On the other hand, since overall standards of living have increased for Americans over time (albeit faster for some than for others), why do some economists argue that government policies to reduce income inequality might negatively impact the economy?

#### ① Redistribution 的问题

涉及 unethical, 辛苦赚的钱被拿走  
reduce the rewards for working hard, 认真工作, 结果钱少, 那还认真做什么?  
↳ 钱给别人了

discourage work & entrepreneurship

心理不平衡

↳ 对 economy 有 negative impact

#### ② 社会保障 ↑

例如 unemployment 的补贴, high, long-lasting

some 有惰性, 反正政府会补贴, 温饱不愁, 找工作的 incentives ↓

那么 employment rates 导致 GDP per capital

也会导致 wage ↑ 因为 labor supply ↓

穷人还是穷, poverty trap

#### ③ promote immigration (美国)

会导致原本的美国人工资变低 (如因 移民 增加 10% 的 labor supply, 可能导致  
美国本土的人工资下降 3% 到 4%)  
因为高技术人才移民会与本国人抢就业位置

# **30 Macroeconomic Models for Critical Thinking**

Macroeconomic models are analytical tools designed to describe the operation of the problems of the economy of a country or a region. They are widely used in academia in research and are also widely used by international organizations, national governments, larger corporations, as well as economic consultants and think tanks.

This learning material includes the overviews of 30 macroeconomic models available to participating students to prepare the Critical Thinking Round for the National Economics Challenge. Participants are suggested to read this learning material to get a general knowledge of the models and apply the appropriate model in case analysis, which may help them stand out in the Critical Thinking Round.

## **1. The Production Possibilities Curve Model**

The production possibilities curve illustrates the trade-offs facing an economy that produces only two goods. It shows the maximum quantity of one good that can be produced for each possible quantity of the other good produced.

Thinking in terms of a production possibilities curve simplifies the complexities of reality. The real-world economy produces millions of different goods. Even a castaway on an island would produce more than two different items (for example, he would need clothing and housing as well as food). But in this model, we imagine an economy that produces only two goods, because, in a model with many goods, it would be much harder to study trade-offs, efficiency, and economic growth.

## **2. AD-AS Model**

The AD-AS model is a very powerful tool for thinking about how an economy will respond to given events, such as a technological advance or a dip in consumer confidence.

In the AD-AS model, the intersection of the short-run aggregate supply curve and the aggregate demand curve is the point of short-run macroeconomic equilibrium. It determines the short-run equilibrium aggregate price level and the level of short-run equilibrium aggregate output.

The AD-AS model suggests that shifts in the aggregate supply and demand cause fluctuations in economic activity. The resulting changes in equilibrium output and prices are the business cycles that we observe in the real world.

## **3. IS-LM Model**

The IS-LM model describes how aggregate markets for real goods and financial markets interact to balance the rate of interest and total output in the macroeconomy.

- IS-LM stands for "investment savings-liquidity preference-money supply."
- The model was devised as a formal graphic representation of a principle of Keynesian economic theory.
- On the IS-LM graph, "IS" represents one curve while "LM" represents another curve.
- IS-LM can be used to describe how changes in market preferences alter the equilibrium levels of gross domestic product (GDP) and market interest rates.
- The IS-LM model lacks the precision and realism to be a useful prescription tool for economic policy.

## 4. Income-Expenditure Model

The income-expenditure model, or the Keynesian cross, is named after John Keynes, the famous macroeconomist of the Depression-era.

There are several assumptions that we make in constructing this model:

- The price level is fixed.
- Suppliers will supply any level of output that is demanded at the fixed price level. There are no government expenditures or net exports.
- The interest rate in the economy is determined outside the model.
- There are no taxes.

With these assumptions in place, we are ready to begin our model construction.

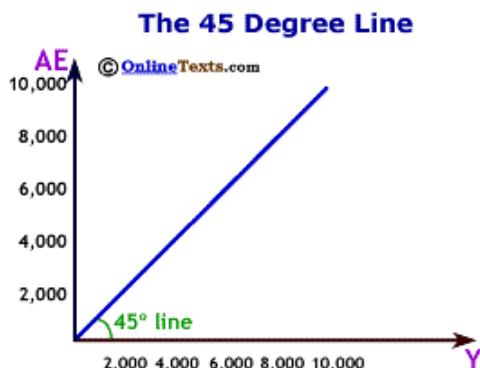
**Aggregate Expenditures** is the aggregate amount that consumers, investors, government, and foreigners wish to spend on the purchase of final goods and services produced in the domestic borders, given the price level. This definition is identical to Aggregate Demand. The reason that we use a different terminology is to separate the Income-Expenditure model from the AD-AS model. Aggregate Expenditures is simply the sum of Consumption (C), Investment (I), Government Expenditures (G), and Net Exports (NX), or  $AE = C + I + G + NX$ .

Because we assume that government expenditures and net exports are zero, the equation reduces to  $AE = C + I$ .

**Consumption** is the largest component of Aggregate Expenditures, accounting for two-thirds of GDP. Factors that influence Consumption are Disposable Income (DI), wealth, interest rates, and expectation of consumer incomes. The equation for the consumption function is  $C = A + MPC * YD$ .

**Investment** is determined by interest rates, business confidence, taxes, and capacity utilization.

The 45-degree line can help us find the equilibrium in the income-expenditure diagram. On any chart, if the horizontal and vertical axes have the same scale, then any (x,y) point on the 45-degree line will have the same value on both axes.

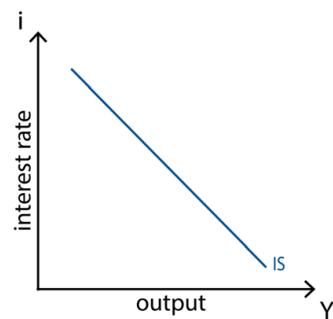


Every point on the 45-degree line is a point that satisfies the condition  $Y = AE$ . Therefore, we must look for an equilibrium where the AE line crosses the 45-degree line.

## 5. IS-LM-BP Model

The IS-LM-BP model (also known as IS-LM-BoP or Mundell-Fleming model) is an extension of the IS-LM model, which was formulated by the economists Robert Mundell and Marcus Fleming, who made almost simultaneously an analysis of open economies in the 60s. Basically, we could say that the Mundell-Fleming model is a version of the IS-LM model for an open economy. In addition to the balance in goods and financial markets, the model incorporates an analysis of the balance of payments.

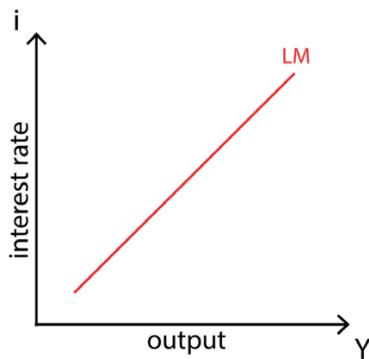
**IS curve:** the market for goods and services



IS curve represents the value of equilibrium for any interest rate. An increasing interest rate will cause a reduction in production through its effect on investment. Therefore, the curve has a negative slope.

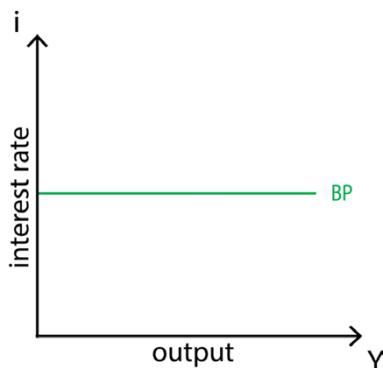
To sum up, an increase in exchange rates causes net exports to increase (IS curve shifts to the right) and a decrease in exchange rates causes net export to decrease (IS curve shifts to the left).

**LM curve:** the market for money



The slope of the LM curve is positive, contrary to what happened in the IS curve. This is because the slope reflects the positive relationship between output and interest rates.

**BP curve:** the balance of payments



The BP curve shows combinations of production and interest rates. It will usually slope up since the higher the production, the higher the imports, which will disturb the equilibrium of the balance of payments unless interest rates rise (which would cause capital inflows to maintain the equilibrium). However, depending on how great the mobility of capital is, it will have a greater or smaller slope: the higher the mobility, the flatter the curve.

## 6. Harrod-Domar Model

The Harrod-Domar model suggests that the rate of economic growth depends on two things:

- level of savings (higher savings enable higher investment)
- capital-output ratio (lower capital-output ratio means investment is more efficient and the growth rate will be higher)

A simplified model of Harrod-Domar is:

$$\text{Rate of economic growth}(g) = \text{Level of savings}(s) / \text{Capital output ratio}(k)$$

According to the Harrod-Domar model, three main factors affecting economic growth are:

- Level of savings – Higher savings enable greater investment in capital stock
- The marginal efficiency of capital – the productivity of investment
- Depreciation – old capital wearing out
- 

## 7. Solow Growth Model

The Solow Growth Model is an exogenous model of economic growth that analyzes changes in the level of output in an economy over time as a result of changes in the population growth rate, the savings rate, and the rate of technological progress. This model is the basis for the modern theory of economic growth.

### Assumptions

- The population grows at a constant rate  $g$ .
- All consumers in the economy save a constant proportion, ' $s$ ', of their incomes and consume the rest.
- All firms in the economy produce output using the same production technology that takes in capital and labor as inputs.
- Present capital stock( $K$ ), future capital stock( $K'$ ), the rate of capital depreciation( $d$ ), and level of capital investment( $I$ ) are linked through the capital accumulation equation  $K' = K(1-d) + I$ .

### Implications

There is no growth in the long term. If countries have the same population growth rate, savings rate, and capital depreciation rate, then they have the same steady-state, so they will converge, i.e., the Solow Growth Model predicts conditional convergence. Along this convergence path, a poorer country grows faster.

Countries with different saving rates have different steady states, and they will not converge, i.e. the Solow Growth Model does not predict absolute convergence. When saving rates are different, growth is not always higher in a country with lower initial capital stock.

## 8. Endogenous Growth Model

Endogenous growth models (EGM) describe a collection of theories that model economic growth through the medium of technological discoveries and progress. As seen in the neoclassical growth model (NGM), economic growth is determined by the rates of savings and capital accumulation. In the EGM, technology progress is seen as the core determinant of long-run economic growth which the NGM could not account for. Hence, technological progress becomes endogenous in endogenous growth models.

Three of the most common endogenous growth models are as follows:

### The AK model

The AK model emphasizes the possibility of productivity depending on output per worker. In the AK model, economic growth is induced by savings, capital accumulation, and efficiency. Efficiency is defined as the increase in the productivity of factor inputs by "learning by doing".

### **Product Variety**

The product variety model postulates that economic growth is a consequence of the expansion of specialized intermediate varieties of products. The basic product variety model can be characterized as the interactions between the research sector, the intermediate goods sector, and the final goods sector.

### **The Schumpeterian Growth Model**

This model of economic growth emphasizes that growth is generated by a sequence of quality improvements or vertical innovations. It is called Schumpeterian because it embodies the forces that Schumpeter describes as "creative destruction" – an innovation that drives growth creates new technology and at the same time destroys older technology by making them redundant.

## **9. Mundell-Fleming model**

The Mundell-Fleming model is based on a very restrictive assumption. It considers a small open economy with perfect capital mobility. This means that the economy can borrow or lend freely from the international capital markets at the prevailing rate of interest since its domestic rate of interest is determined by the world rate of interest. So, the rate of interest is not a policy variable in the small economy being studied.

This means that macroeconomic adjustment occurs only through exchange rate changes. In other words, the brunt of adjustment is borne by exchange rate movements in foreign exchange markets to maintain the officially determined exchange rate. The central bank permits the exchange rate to move up or down in response to changing economic conditions.

The basic assumption of this model is that the domestic rate of interest ( $r$ ) is equal to the world rate of interest ( $r^*$ ) in a small open economy with perfect capital mobility. No doubt any change within the domestic economy may alter the domestic rate of interest, but the rate of interest cannot stay out of line with the world rate of interest for long.

The table below summarises the effects of three different policies in the Mundell-Fleming model.

Policy	Exchange Rate System					
	Floating		Fixed			Impact on
	$Y$	$e$	$NX$	$Y$	$e$	
Fiscal ( $G$ rises, $T$ falls)	—	↑	↓	↑	—	—
Monetary ( $M$ rises)	↑	↓	↑	—	—	—
Trade (Imports fall)	—	↑	—	↑	—	↑

Note : The sign — implies no effect; ↑ implies a rise and ↓ implies a fall

## **10. Mundell-Tobin Effect**

The Mundell-Tobin effect suggests that nominal interest rates would rise less than one-for-one with inflation because in response to inflation the public would hold less in money balances and more in other assets, which would drive interest rates down. In other words, an increase in the exogenous growth rate of money increases the nominal interest rate and velocity of money but decreases the real interest rate.

The importance of the Mundell-Tobin effect is in that it appears as a deviation from the classical

dichotomy. Robert Mundell was the first to show expected inflation has real economic effects. A similar argument was introduced by economist James Tobin.

## 11. Taylor Rule

The Taylor rule (sometimes referred to as Taylor's rule or Taylor principle) is an econometric model that describes the relationship between Federal Reserve operating targets and the rates of inflation and gross domestic product growth. The Taylor rule has been interpreted both as a way to forecast Fed monetary policy and as a fixed rule policy to guide monetary policy in response to changes in economic conditions. The rule consists of a formula that relates the Fed's operating target for short-term interest rates to two factors: the deviation between actual and desired inflation rates and the deviation between real GDP growth and the desired GDP growth rates.

Taylor's equation looks like:  $r = p + 0.5y + 0.5(p - 2) + 2$  Where:

$r$  = nominal fed funds rate

$p$  = the rate of inflation

$y$  = the percent deviation between current real GDP and the long-term linear trend in GDP

## 12. Dynamic Stochastic General Equilibrium (DSGE) Model

Dynamic stochastic general equilibrium (DSGE) models to evaluate monetary policy rules anchored in rich micro-foundations have become a popular tool for macroeconomic analysis in recent years.

- DSGE models have become the fundamental tool in current macroeconomic analysis.
- They are in common use in academia and in central banks.
- Useful to analyze how economic agents respond to changes in their environment, in a dynamic general equilibrium micro-founded theoretical setting in which all endogenous variables are determined simultaneously.
- Static models and partial equilibrium models have limited value to study how the economy responds to a particular shock.
- Modern macro analysis is increasingly concerned with the construction, calibration and/or estimation, and simulation of DSGE models.
- DSGE models start from micro-foundations, taking special consideration of the rational expectation forward-looking economic behavior of agents.

## 13. ACE Model

Agent-based computational economics (ACE) is the computational study of economic processes modeled as dynamic systems of interacting agents. Here agent refers broadly to a bundle of data and behavioral methods representing an entity constituting part of a computationally constructed world. Examples of possible agents include individuals (e.g. consumers, producers), social groupings (e.g. families, firms, communities, government agencies), institutions (e.g. markets, regulatory systems), biological entities (e.g. crops, livestock, forests), and physical entities (e.g. infrastructure, weather, and geographical regions). Thus, agents can range from active data-gathering decision-makers with sophisticated embodied cognitive capabilities to passive world features with no cognitive function. Moreover, agents can be composed of other agents, thus permitting hierarchical constructions. For example, a firm agent might be composed of worker agents, managing agents, and shareholder agents.

## 14. OLG Model

The overlapping generations (OLG) model is one of the dominating frameworks of analysis in the study of macroeconomic dynamics and economic growth. In contrast, to the Ramsey–Cass–Koopmans neoclassical growth model in which individuals are infinitely-lived, in the OLG model individuals live a finite length of time, long enough to overlap with at least one period of another agent's life.

### Key Difference of OLG Model

- Agents have finite lives
  - They live in two periods
    - They are "Young", then "Old", then dead
    - When one generation becomes "Old", another "Young" generation is born... hence, the "overlapping"
- This is different than Ramsey where agents lived for infinity

### Implications of OLG to take away

- Can have multiple steady states
- It is possible to have dynamically inefficient outcomes
  - In Solow Model with exogenous savings, this could happen
  - In Ramsey with endogenous savings, this never happens
  - In OLG, it can happen despite optimal saving at the individual level

### Application of the OLG Model

- Can look at how taxing people when they are old and young can matter for economic growth, capital accumulation, and savings
- Can use it to analyze social security proposals

## 15. DMP Model

The DMP model of unemployment is widely accepted as the most realistic account of unemployment based on a careful and full statement of the underlying economic principles governing labor turnover, job-finding rates, and wage determination. Its building blocks are:

- a stochastic model of labor turnover, where workers separate from jobs, become unemployed, and find new jobs,
- a model of labor-market tightness, with employers choosing job creation volumes and exerting recruiting effort that controls the job-finding rate, in response to the payoff to job creation,
- a bargaining model of wage determination, which sets the incentive to create jobs because employers capture the difference between workers' productivity and their wages.

## 16. Kiyotaki-Moore Model

The Kiyotaki–Moore model of credit cycles is an economic model developed by Nobuhiro Kiyotaki and John H. Moore that shows how small shocks to the economy might be amplified by credit restrictions, giving rise to large output fluctuations.

The model assumes that borrowers cannot be forced to repay their debts. Therefore, in equilibrium, lending occurs only if it is collateralized. That is, borrowers must own a sufficient quantity of capital that can be confiscated in case they fail to repay. This collateral requirement amplifies business cycle fluctuations because, in a recession, the income from capital falls, causing the price of capital to fall,

which makes capital less valuable as collateral, which limits firms' investment by forcing them to reduce their borrowing, and thereby worsens the recession.

## 17. Multiplier-Accelerator Model

A model for the business cycle at the macroeconomic level. As the name implies, it combines the Keynesian multiplier model with the accelerator model. The multiplier-accelerator model is cyclical and has three phases.

- First, the government increases its expenditures, which increases consumer income.
- The increase in income leads consumers to buy more goods and services, which increases economic output.
- The higher output leads to higher investment in the economy.

The multiplier makes output rise following a rise in investment, and the accelerator makes investment increase when output increases. Once expansion starts, if the accelerator is weak the expansion slows down, which lowers investment and causes incomes to decline. A slump follows, during which investment is low and capital wears out. Once capital has fallen sufficiently relative to output, investment starts again and the economy expands. This can produce persistent business cycles of alternating booms and slumps.

## 18. Classical Model

The classical model extends the concepts of neoclassical microeconomics to macroeconomics. That is, the conceptual understanding of the theory of the firm, the theory of the consumer, and supply and demand are applied to aggregate economic activity. Specific points include determining the level of aggregate employment and output, analyzing the effects of changes in the money supply, and considering the use of fiscal policy to offset business cycles. The present version of the Classical Model is largely a post-Keynesian construction that puts the Classical Model in the more mathematically formal language of modern economics.

A very brief version of the classical model starts from the following assumptions:

- All economic agents can decide how much to buy or sell, in order to maximize their utility, as rational agents;
- All economic agents have the same level of information regarding prices;
- Prices are perfectly flexible which allows them to adjust until the market-clearing level;
- There is a fictional Walrasian auctioneer who makes sure that no good is traded until the market-clearing price is agreed;
- Agents have stable expectations.

## 19. Baumol-Tobin Model

The Baumol-Tobin model of money demand is a model that describes economic agents' demand for money for transactions. The model was first developed by William Baumol in 1952. The theory argues that people tradeoff having money for liquidity considerations and forgoing interest on that money. The model is also used in corporate finance by companies to manage the amount of cash the company should hold.

If the Baumol-Tobin model is applied, the following assumptions should be met:

- The spending rate of cash is constant, and the total cash need is known in advance.
- Funds can be held in either money or short-term investments (e.g., marketable securities).
- The minimum cash balance is zero. The opportunity cost for holding cash is constant.
- The excess cash is invested in marketable securities.
- The transaction cost is the same each time when marketable securities are converted to cash.
- The line of credit or overdraft is not available.

## 20. Imperfect-Information Model

The imperfect-information model is based on the assumption that each supplier in the economy produces a single good and consumes many goods. Since innumerable goods are produced in an economy, it is virtually impossible for suppliers to observe all prices at all times. It has to be noted that suppliers of certain goods are consumers of other goods, i.e., they are both sellers and buyers.

They keep a close watch on the prices of the products they sell, but it is not possible for them to closely watch the prices of the goods they buy for consumption purposes. Due to imperfect information, they fail to understand the difference between inflation or deflation (which refers to the rise or fall in the overall price level) and price movements (changes in relative prices).

This confusion influences decisions about how much output to offer for sale and a positive relation is established between the price level and output in the short run. In case of unanticipated inflation, all the suppliers find that the prices of their goods are rising at the same time. They all predict rationally, but wrongly, that the relative prices of the goods they produce have risen. So they work harder and produce more. Since the actual prices exceeded their expected levels, suppliers raise their output.

## 21. Macro-Econometric Model

A macro-econometric model like the US model is a set of equations designed to explain the economy or some part of the economy. There are two types of equations: stochastic, or behavioral, and identities. Stochastic equations are estimated from the historical data. Identities are equations that hold by definition; they are always true.

There are two types of variables in macro-econometric models: endogenous and exogenous. Endogenous variables are explained by the equations, either the stochastic equations or the identities. Exogenous variables are not explained within the model. They are taken as given from the point of view of the model. For example, suppose you are trying to explain the consumption of individuals in the United States. Consumption would be an endogenous variable-a variable you are trying to explain. One possible exogenous variable is the income tax rate. The income tax rate is set by the government, and if you are not interested in explaining government behavior, you would take the tax rate as exogenous.

## 22. Solow-Swan Model

The Solow-Swan model or exogenous growth model is an economic model of long-run economic growth. It attempts to explain long-run economic growth by looking at capital accumulation, labor or population growth, and increases in productivity largely driven by technological progress. At its core, it is an aggregate production function, often specified to be of Cobb-Douglas type, which enables

the model "to make contact with microeconomics". The model was developed independently by Robert Solow and Trevor Swan in 1956 and superseded the Keynesian Harrod–Domar model. Mathematically, the Solow–Swan model is a nonlinear system consisting of a single ordinary differential equation that models the evolution of the per capita stock of capital. Due to its particularly attractive mathematical characteristics, Solow–Swan proved to be a convenient starting point for various extensions. For instance, in 1965, David Cass and Tjalling Koopmans integrated Frank Ramsey's analysis of consumer optimization, thereby endogenizing[clarification needed] the saving rate, to create what is now known as the Ramsey–Cass–Koopmans model.

## **23. Neoclassical Model of Investment**

After Keynes, a neoclassical theory of investment has been developed to explain investment behavior with regard to fixed business investment.

This theory is called the neoclassical theory of investment behavior because it is based on the neoclassical theory of optimal capital accumulation which is determined by relative prices of factors of production.

It may be recalled that fixed business investment refers to the purchase of machines, construction of new factories, warehouses, office buildings, etc. by businessmen. The neoclassical theory of investment throws new light on the causes of fluctuations in investment which are responsible for the occurrence of business cycles in a free market economy.

According to this neoclassical theory, investment, that is, add to the stock of capital in an economy is determined by marginal product of capital (MPK) and user cost of capital which is also called real rental cost of capital. Marginal product of capital (MPK) measures the addition to the production by using an additional unit of capital, labor, and technology remaining constant.

## **24. Sticky-Wage Model**

The sticky-wage theory or sticky-wage model hypothesizes that employee pay tends to respond slowly to changes in company performance or to the economy. According to the theory, when unemployment rises, the wages of those workers that remain employed tend to stay the same or grow at a slower rate rather than falling with the decrease in demand for labor. Specifically, wages are often said to be sticky-down, meaning that they can move up easily but move down only with difficulty.

A key piece of Keynesian economic theory, "stickiness" has been seen in other areas as well such as in certain prices and taxation levels.

## **25. Sticky-Price Model**

The sticky-price model of the upward sloping short-run aggregate supply curve is based on the idea that firms do not adjust their price instantly to changes in the economy.

Price stickiness, or sticky prices, is the failure of the market price ( $s$ ) to change quickly, despite shifts in the broad economy suggesting a different price is optimal. When prices cannot adjust immediately to changes in economic conditions or in the aggregate price level, there is an inefficiency or disequilibrium in the market.

In the sticky-price model appositive relation between price and output exists in the short run. This is due to the high-expected price level in the short run. In response to this firms also expect the input

prices to be high. So they set the price of the final goods high so as to compensate for the high input costs.

## 26. Worker-Misperception Model

The worker misperception (fooling) model, presented by Friedman in 1968 (in his article entitled "Role of Monetary Policy", American Economic Review) is based on the assumption that wages can adjust freely and quickly to equilibrate the labor market.

Since workers temporarily equate a rise in nominal wage to a rise in the real wage, i.e., they suffer from money illusion, unexpected movements in the price level influence labor supply. In this model, while the quantity of labor demanded by firms depends on the actual real wage, the quantity of labor supplied depends on the expected real wage, which is a nominal wage deflated by the expected price level. The reason for this is that while deciding on how much labor to supply, workers know their nominal wage but not the overall price level.

In this model, where workers believe (in the event of a rise in the overall price level) that the real wage is higher than it actually is, deviations of actual prices from their expected levels induce the workers to increase their supply of labor. This, in its turn, alters the output levels of firms.

## 27. Cagan Model

In a classic 1956 article, the Chicago economist Phillip Cagan developed a simple model which does surprisingly well at accounting for the behavior of inflation and the demand for money even in the midst of such dramatic events. Cagan was interested in whether 'momentum' effects in the dynamics of inflation expectations could exacerbate inflation that originally gets started because of a government's decision to 'monetize' a fiscal deficit (that is, to finance a deficit by printing money). Cagan's model consists of two equations, one which describes individuals' demand for money and another which describes the evolution of inflation expectations over time. Specifically, Cagan supposed that the velocity of money is increasing in the nominal interest rate  $i$ . Since bonds and money are both safe assets (in nominal terms), the opportunity cost of holding money is the nominal interest foregone. Therefore, if the nominal interest rate increases, money should turn over more quickly (velocity should rise) as individuals substitute away from money towards bonds.

## 28. Two-Sector Model

A two-sector model of income determination of an economy consists only of domestic and business sectors.

The income determination in a closed economy is based on the following assumptions:

- It is a two-sector economy where only consumption and investment expenditures take place. Thus the total output of the economy is the sum of consumption and investment expenditure. Investment relates to net investment after deducting depreciation.
- It is a closed economy in which there are no exports or imports.
- There are no corporate firms in the economy so there are no corporate undistributed profits. There are no business taxes, no income taxes and no social security taxes so disposable personal income equals NNP.
- There are no transfer payments.
- There is no government.

- There is an autonomous investment.
- The economy is at less than the full employment level of output.
- The price level remains constant up to the level of full employment.
- The money wage rate is constant.
- There is a stable consumption function.
- The rate of interest is fixed.
- The analysis relates to the short period.

Given these assumptions, the equilibrium level of national income can be determined by the equality of aggregate demand and aggregate supply or by the equality of saving and investment.

## 29. Three-Sector Model

A three-sector model of income determination consists of a two-sector model and the government sector. The government increases aggregate demand by spending on goods and services, and by collecting taxes.

To explain it, given all the above assumptions except the government sector in the two-sector model, income determination is as follows:

By adding government expenditure (G) to the equation of the two-sector model,  $Y = C+I$ , we have  $Y = C+I+G$

Similarly, by adding government expenditure (G) to the saving (S) and investment (I) equation, when we have  $Y=C+I+G$   $Y=C+S$   $I+G=S$

## 30. Cobweb Model

The cobweb model or cobweb theory is the idea that price fluctuations can lead to fluctuations in supply which causes a cycle of rising and falling prices. It describes cyclical supply and demand in a market where the amount produced must be chosen before prices are observed.

In a simple cobweb model, we assume there is an agricultural market where supply can vary due to variable factors, such as the weather.

- In an agricultural market, farmers have to decide how much to produce a year in advance – before they know what the market price will be.
- A key determinant of supply will be the price from the previous year.
- A low price will mean some farmers go out of business. Also, a low price will discourage farmers from growing that crop in the next year. Demand for agricultural goods is usually price inelastic.

If there is a very good harvest, then supply will be greater than expected and this will cause a fall in price. However, this fall in price may cause some farmers to go out of business. Next year farmers may be put off by the low price and produce something else. The consequence is that if we have one year of low prices, next year farmers reduce the supply. If supply is reduced, then this will cause the price to rise. If farmers see high prices (and high profits), then next year they are inclined to increase supply because that product is more profitable.

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