西方经济学

Part 2 Classical Theory

Lecture 2A A Real Model of a Closed Economy

宏 { Classical Theory { Closed { real eco. / monitary eco.
Open: NPI、E.
宏 { Kegnesian Theory 1936

Growth Theory

Policy: expectationes

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高等教育出版社
高等教育电子音像出版社

Supplement Readings

(1) S3.1. [1]

(2) 其他文献：Baumol, William, J. 1999. "Retrospectives: Say's Law." Journal of Economic Perspectives, 13 (1): 195-204.

(3) 其他文献：National Income: Where It Comes From and Where It Goes

[1] M 指代马工程教材，S 指代课外阅读材料沈坤荣教程。

学习目标

(1) 掌握古典经济学中的实体经济模型。

(2) 掌握马工程教材精神。

Basic Assumptions in This Course

Assumption 1

For convenience, we assume $G^I = 0$, $NFP = 0$, $TR = 0$, and $INT^G = 0$.

It implies $G = G^C$, $\widetilde{I} = I$, $GDP = GNP = Y$, $CA = NX$, $Y^{dis} = Y - T$.

$Y^{dis} = Y + NFP - (T - TR - INT^G)$

Outline

Production Function: Homogeneity

Definition 1

A function $f: \mathbb{R}^n \to \mathbb{R}$, $y = f(x_1, x_2, \cdots, x_n)$, is said to be homogeneous of degree k if

$$f(t \cdot x_1, t \cdot x_2, \cdots, t \cdot x_n) = t^k \cdot f(x_1, x_2, \cdots, x_n). \quad (1)$$

齐次函数

Theorem 2

Suppose a differentiable function $f: \mathbb{R}^n \to \mathbb{R}$, $y = f(x_1, x_2, \cdots, x_n)$, is homogeneous of degree k.

i. *The partial derivatives of f is homogeneous of degree $k-1$. That is, for every $j = 1, \cdots, n$,*

$$f(tx_1, tx_2, \cdots, tx_n) = t^k f(x_1, \cdots, x_n)$$

$$t f_j'(tx_1, tx_2, \cdots, tx_n) = t^k f_j'(x_1, \cdots, x_n)$$

$$\Rightarrow f_j(tx_1, \cdots, tx_j, \cdots, tx_n) = t^{k-1} \cdot f_j(x_1, \cdots, x_j, \cdots, x_n); \quad (2)$$

ii. ***Euler's theorem*** *holds:* 对 t 求导

$$f(tx_1, tx_2, \cdots, tx_n) = t^k f(x_1, \cdots, x_n)$$

$$x_1 f_1(tx_1, \cdots, tx_n) + \cdots + x_n f_n(tx_1, \cdots, tx_n) = k t^{k-1} f(x_1, \cdots, x_n) \text{ (式3)}$$

$$x_1 t^{k-1} f_1(x_1, \cdots, x_n) + \cdots + x_n t^{k-1} f_n(x_1, \cdots, x_n) = k t^{k-1} f(x_1, \cdots, x_n)$$

$$\Rightarrow \boxed{k f(x_1, \cdots, x_n) = x_1 f_1(x_1, \cdots, x_n) + \cdots + x_n f_n(x_1, \cdots, x_n),} \quad (3)$$

where f_j denotes the partial derivative of f with respect to the jth argument.

Production Function: Neoclassical Properties

Let $Y(t) = F[K(t), L(t), A(t)]$ denote a production function where Y is the flow of output produced at time t, K is the durable physical input or physical capital input at time t, L is the labor input at time t, and A is the level of knowledge or technology at time t. K and L are two rival inputs while A is a non-rival input.

Definition 3 (Neoclassical Properties)

A production function $F: \mathbb{R}^3_+ \to \mathbb{R}_+$, $Y = F(K, L, A)$, twice differentiable in K and L, is *neoclassical* if it satisfies the following properties:

i. Constant returns to scale or homogeneity of degree one in K and L.

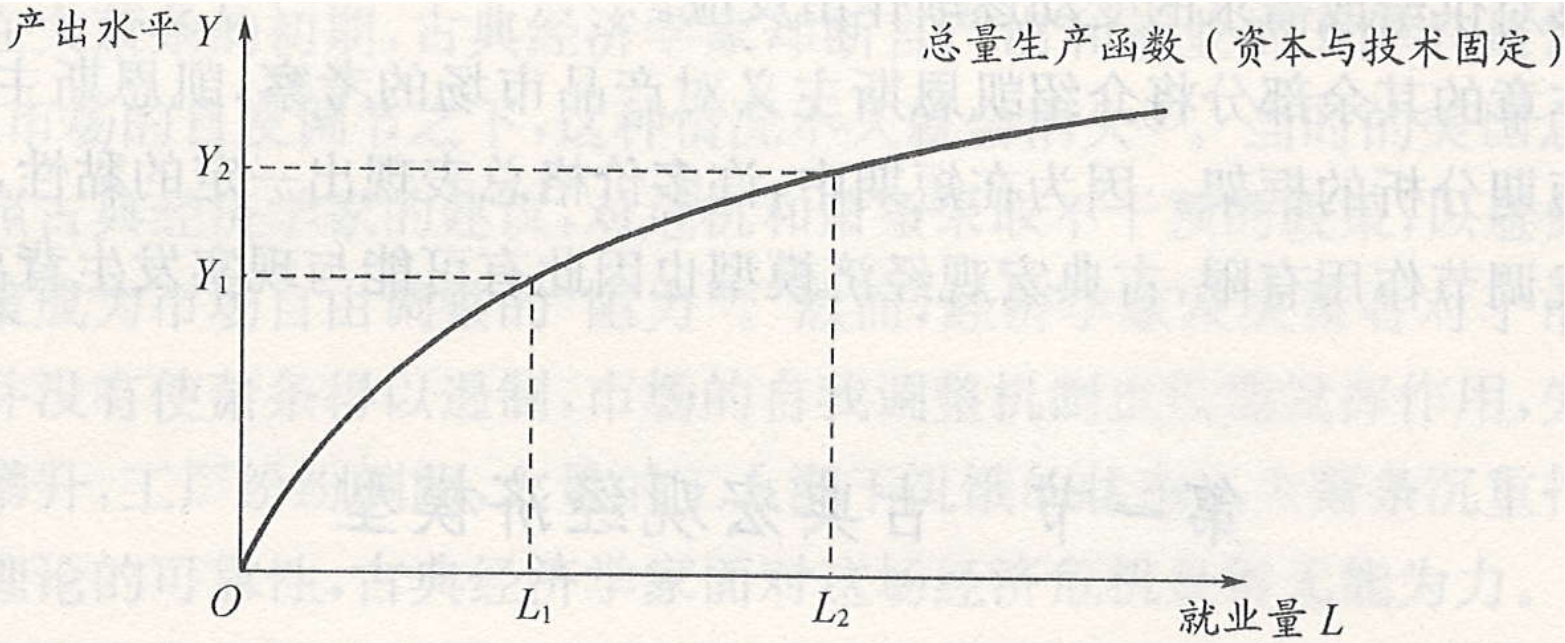
$$F(\lambda K, \lambda L, A) = \lambda \cdot F(K, L, A), \quad \forall \lambda > 0.$$

ii. Positive and diminishing returns to private inputs.

$$F_K(K, L, A) > 0, \quad F_L(K, L, A) > 0,$$
$$F_{KK}(K, L, A) < 0, \quad F_{LL}(K, L, A) < 0.$$

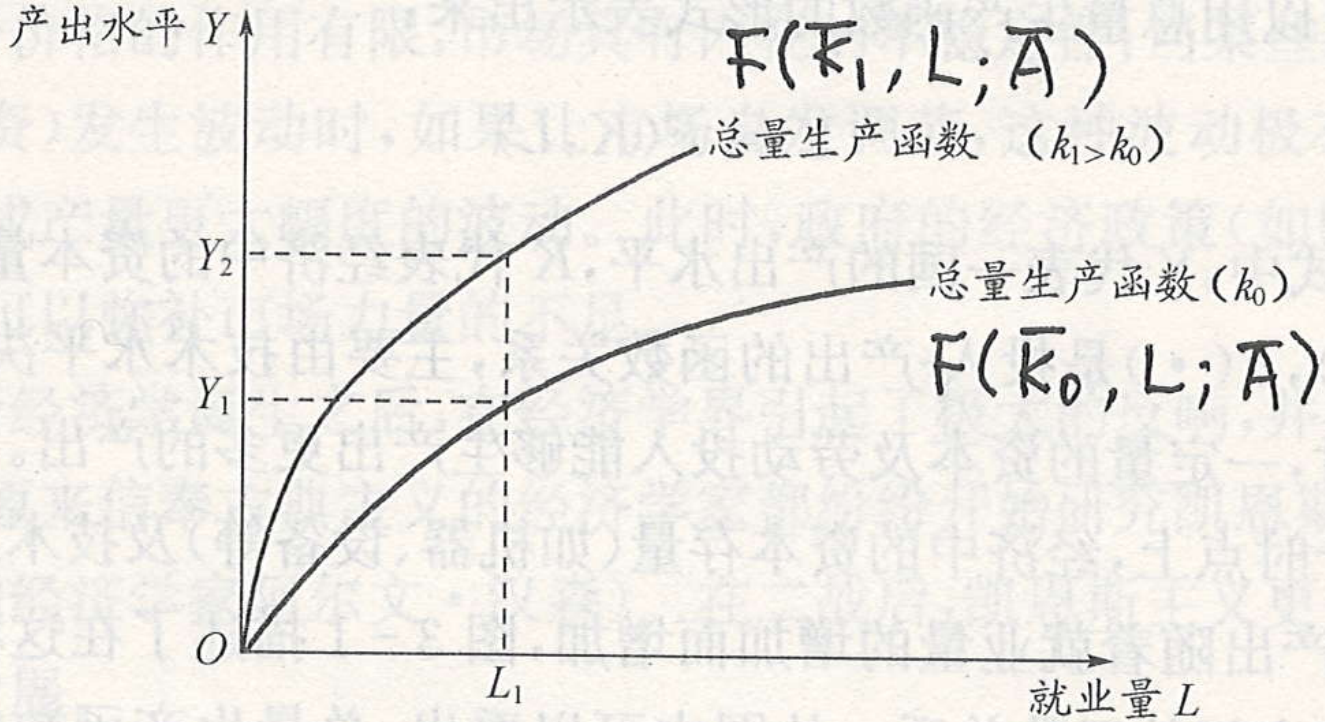
iii. Inada conditions.

$$\lim_{K \to 0} F_K = \lim_{L \to 0} F_L = +\infty, \quad \lim_{K \to \infty} F_K = \lim_{L \to \infty} F_L = 0.$$



在资本和技术固定的情况下，总量生产函数描述了总产出与就业量之间的正向变动关系。虽然随着就业量的增加，总产出也会增加，但产出增加的比率递减。

图 3-1　总量生产函数



图中 k 表示经济中的资本量。从 k_0 到 k_1 的资本增加导致总量生产函数向上平移。这表现为：一定的就业量能够生产的产出更多。

图 3-2　资本增加(或技术进步)导致总量生产函数向上平移

Markets for Factors: Demands for Inputs

A firm has to make a decision of how much capital and labor it should employ. The objective of the firm is to maximize the economic profit.

$$\max_{K,L} \quad P \times F(K, L, A) - W \times L - R \times K$$

$\pi = P \times F(K, L, A) - (WL + RK)$

R: 名义租金

The first-order conditions are

$\frac{\partial \pi}{\partial K} = P f_K(K, L, A) - R = 0 \Rightarrow \underbrace{F_K(K, L)}_{MP_K} = \frac{R}{P}$ 实际租金

$\frac{\partial \pi}{\partial L} = P f_L(K, L, A) - W = 0 \Rightarrow \underbrace{F_L(K, L)}_{MP_L} = \frac{W}{P}$ 实际工资

W: 名义工资

$$F_L(K, L, A) = W/P, \quad F_K(K, L, A) = R/P$$

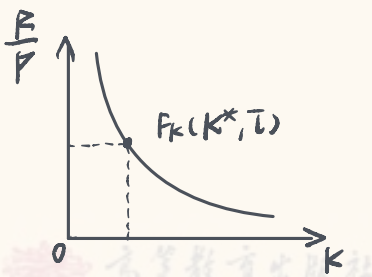
which determine demands for capital and labor in the factor markets. The slopes of demand curves are negative since $F_{LL} < 0$ given K and $F_{KK} < 0$ given L.

$F_K(K, \bar{L}) = \frac{R}{P} = z$.

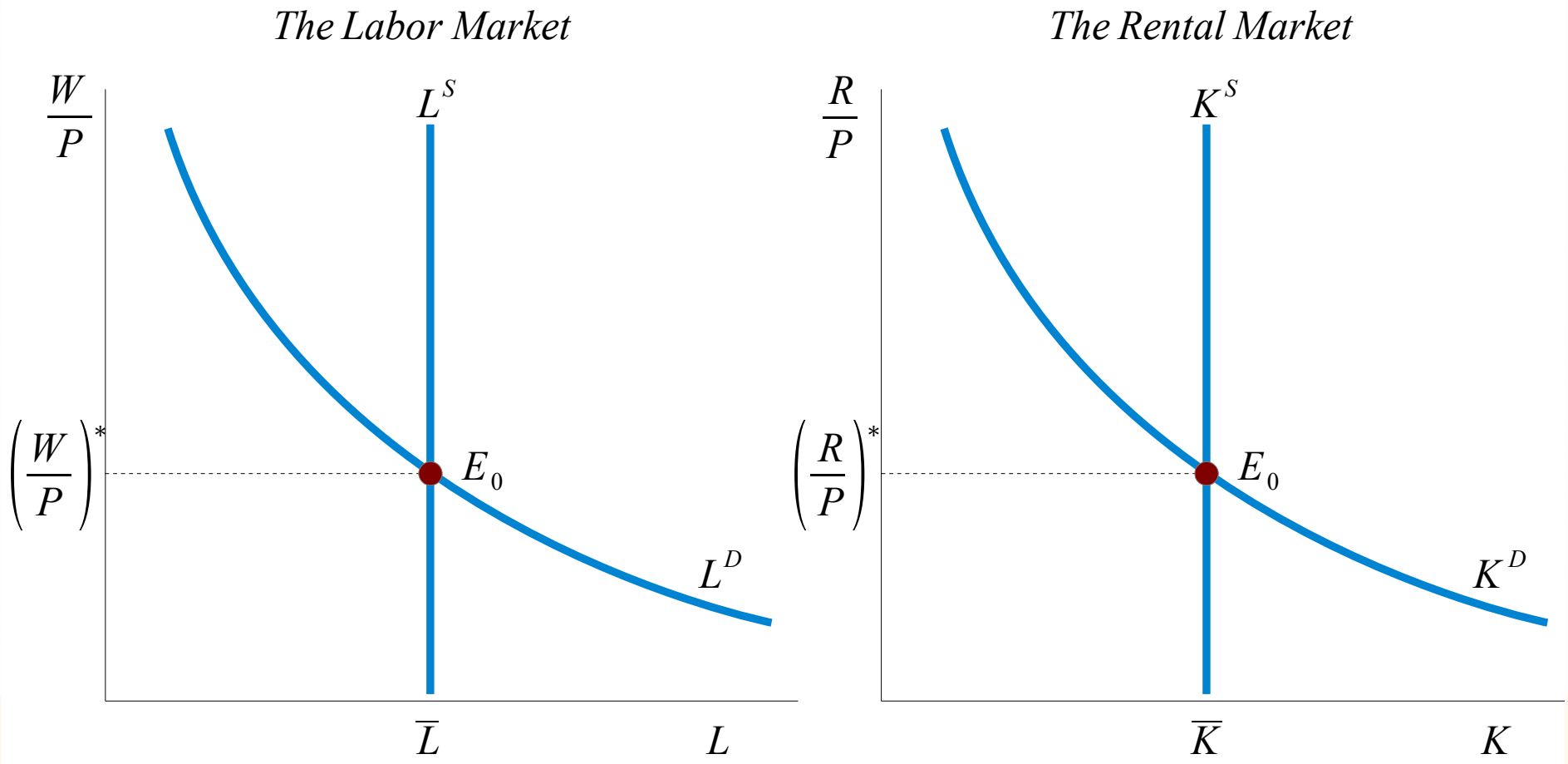
$\frac{\partial}{\partial z} F_K(K, \bar{L}) = 1$

$F_{KK}(K^*, \bar{L}) \cdot \frac{\partial K^*}{\partial z} = 1$

$\Rightarrow \frac{\partial K^*}{\partial z} = \frac{1}{F_{KK}(K^*, \bar{L})} < 0$



Markets for Factors: Determination of Factor Prices

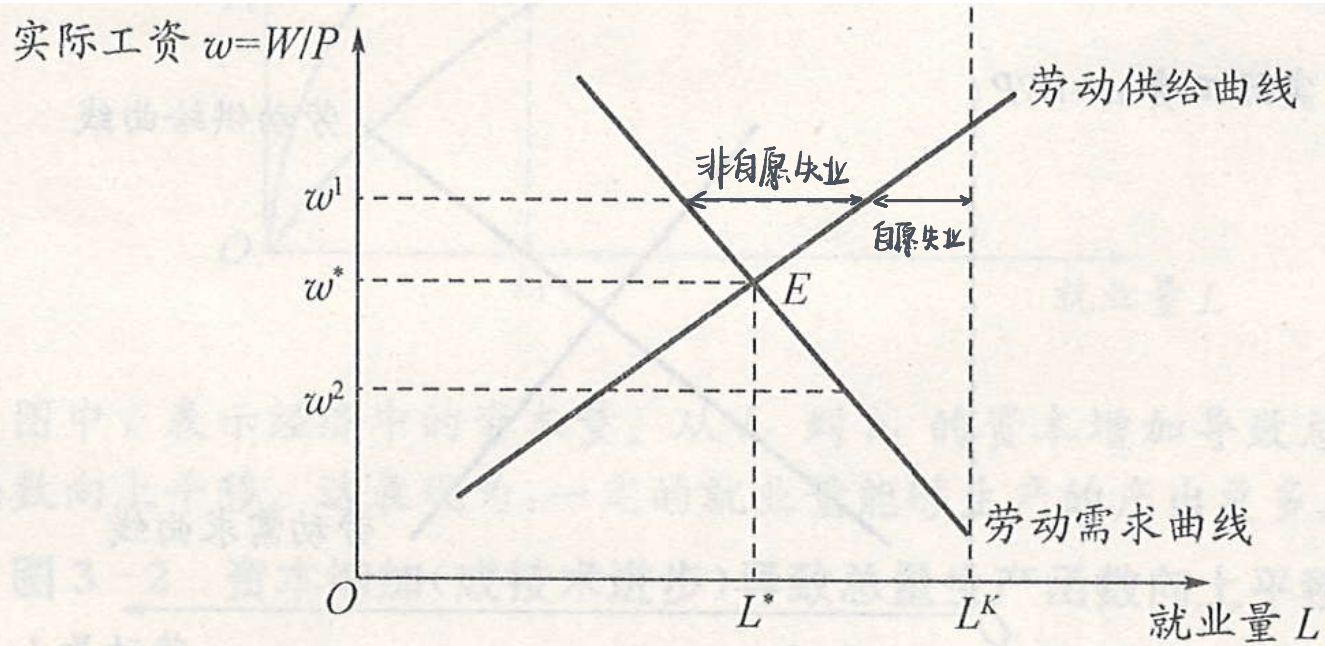


Given δ and existing capital stock, private investment is $I(\underline{r})$.

$K_{t+1} = I_t + (1-\delta)K_t$ 净收益 $I(\frac{R}{P}+\delta) = I(r+\delta)$

折旧

Generalization of the Labor Market



由于假设实际工资具有伸缩性，古典模型中的就业量即为市场出清时的就业量（充分就业量）。但这并不意味着经济中所有具备劳动能力的人（L^K）都已经就业，存在自愿失业人口。

图 3-4　古典模型中的就业量

Full Employment

Definition 4

The *full-employment level* of labor is an equilibrium level where the aggregate demand for labor is equal to the aggregate supply after the complete adjustment of nominal wage rate and the price of final goods. The output is called the *full-employment output*, *potential output* or *natural level of output* if labor is at full-employment level. The rate of unemployment corresponding to the full-employment level of labor is called the *natural rate of unemployment*. 自然失业率.

The full employment of labor implies there is no *involuntary* unemployment. The definition of full employment can be generalized to other factor-markets.

Distribution of National Income

The maximized economic profit is

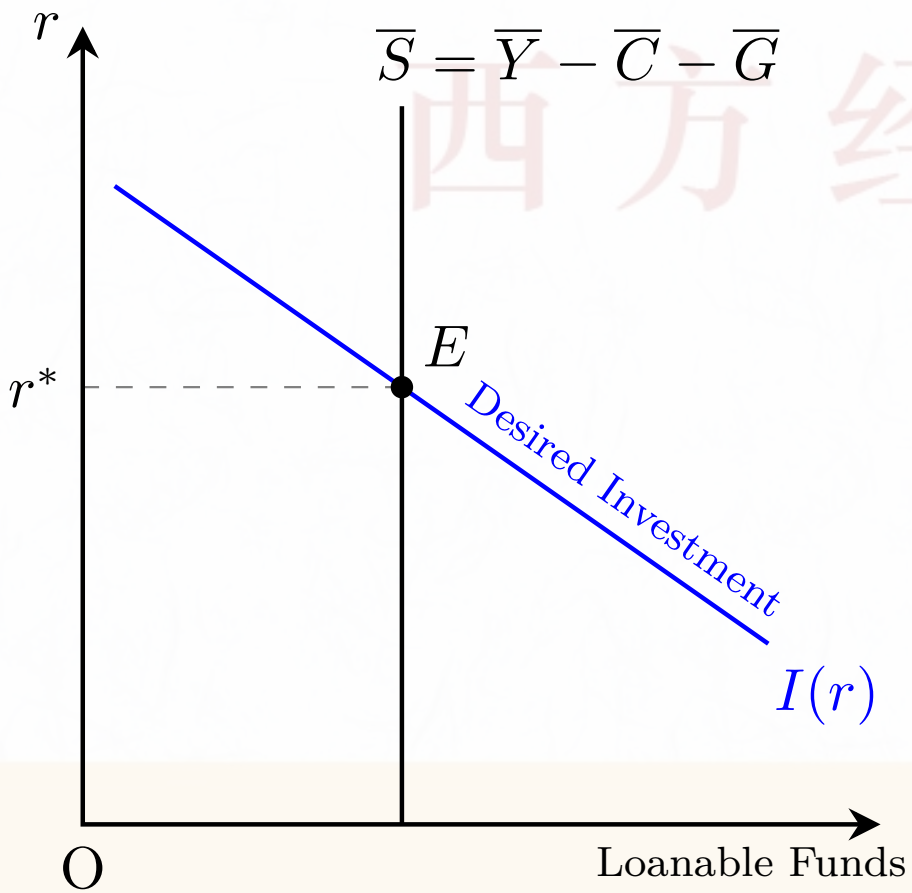
$$\text{Economic Profit} = P \times F(K, L, A) - P \times F_L \times L - P \times F_K \times K = 0$$

where the last equation uses homogeneity of degree one. Thus the economic profit is zero.

$$\begin{aligned} \text{Output } Y &= MPL \times L \quad + MPK \times K \\ &= \text{Labor Income} \\ &\quad + \text{Capital Income} + \text{Depreciation of Capital} \end{aligned}$$

资本折旧

Loanable Funds Market: Equilibrium



The equilibrium in the factor market determines the output: $Y = F(\overline{K}, \overline{L}, A) \triangleq \overline{Y}$. In equilibrium, $Y^S = Y^D$ implies

tax

$$\overline{Y} = C(\overline{Y} - \overline{T}) + I(r) + \overline{G}$$

可支配收入

$$\overline{Y} - \overline{C} - \overline{G} = I(r)$$

$$(\overline{Y} - \overline{T} - \overline{C}) + (\overline{T} - \overline{G}) = I(r)$$

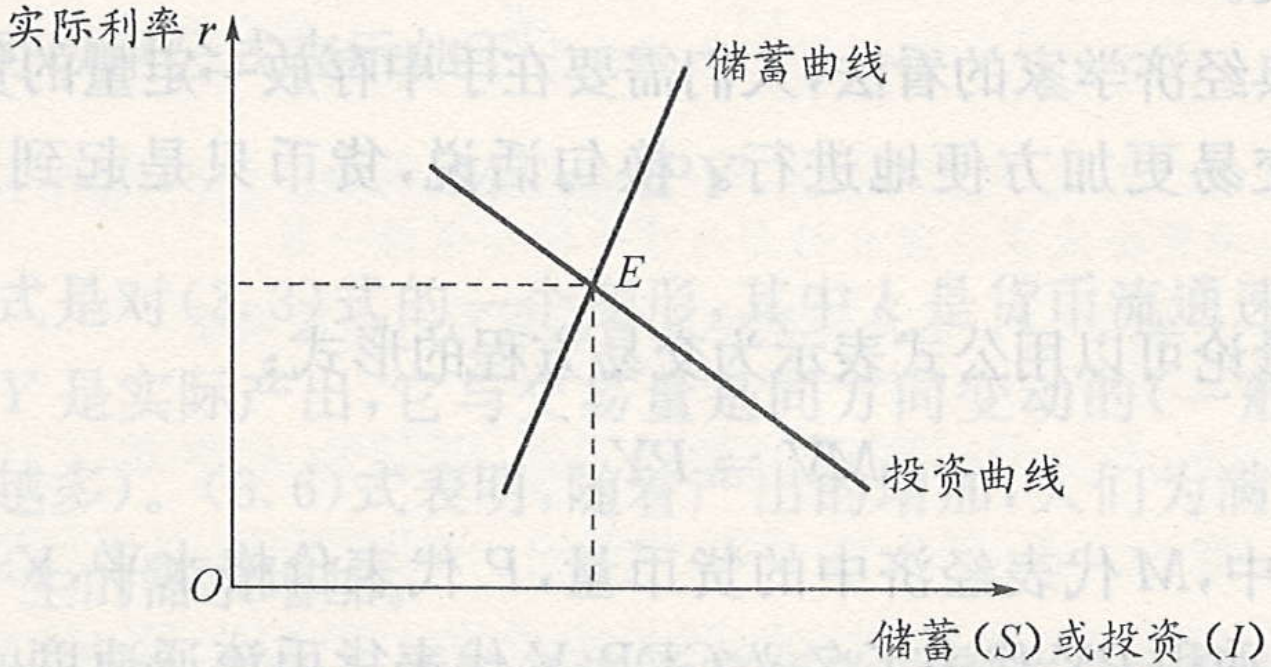
$$\text{Private Saving} + \text{Public Saving} = I(r)$$

$$\text{National Saving } \overline{S} = I(r)$$

It implies that the supply of loanable funds is equal to the demand for loanable funds.

Loanable Funds Market: Generalization

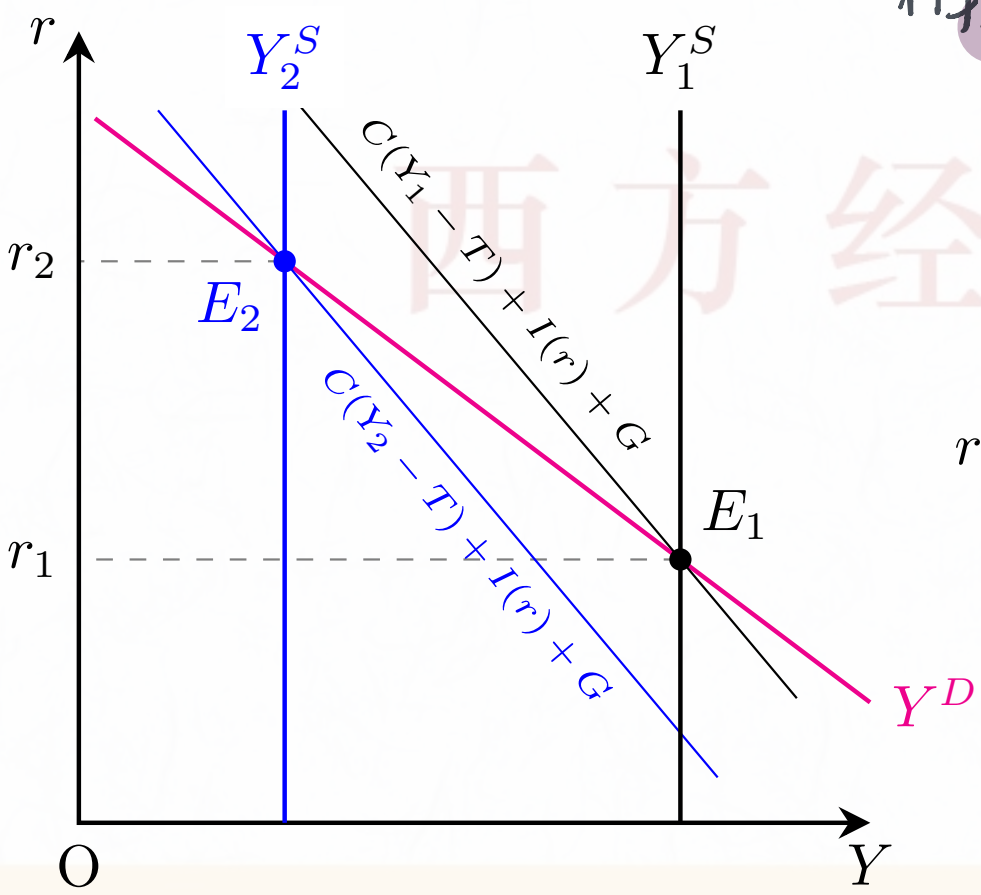
If $C = C(\overline{Y} - \overline{T}, \underset{-}{r})$, then $S(\underset{+}{r}) = \overline{Y} - C(\overline{Y} - \overline{T}, r) - \overline{G}$.



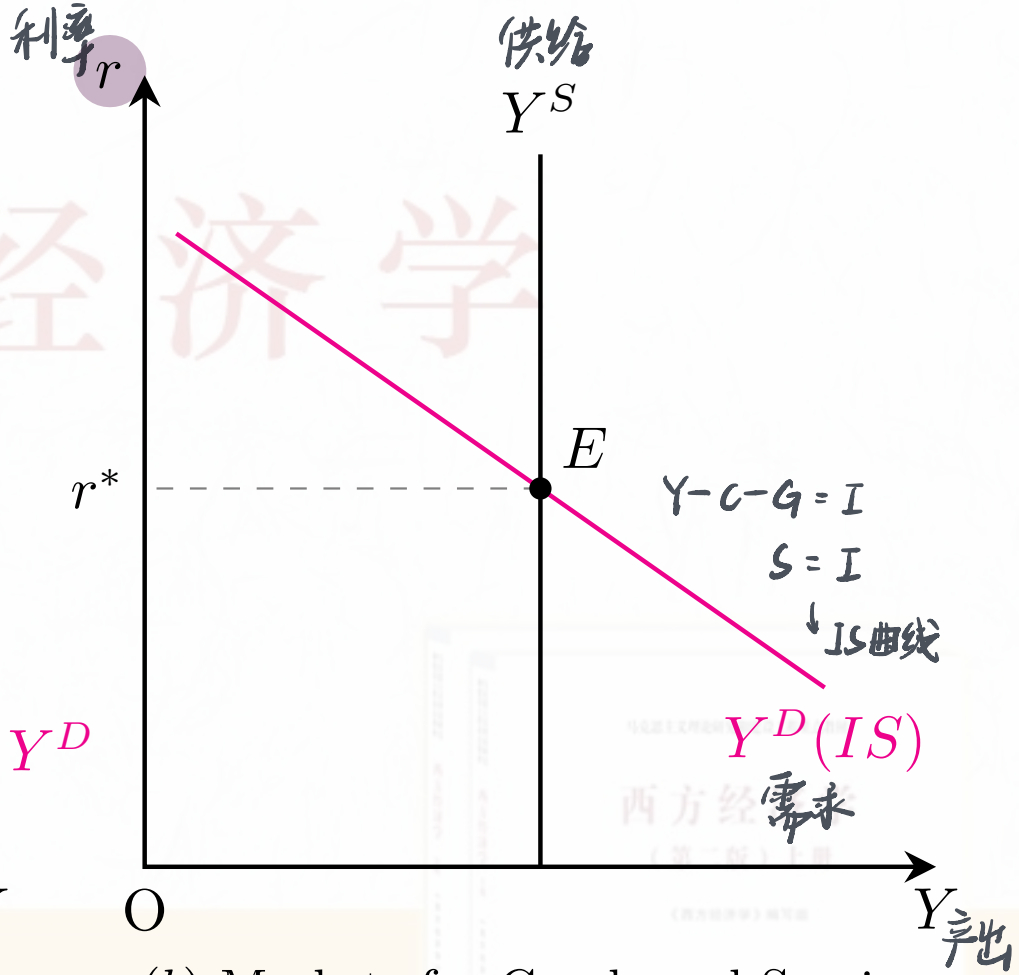
储蓄构成资本的供给，是实际利率的增函数；投资构成资本的需求，是实际利率的减函数。由于实际利率具有伸缩性，这保证了储蓄能够全部转化为投资。

图 3－6　古典模型中的资本市场

Markets of Goods and Services: Equilibrium



(a) Demand for Goods and Services



(b) Markets for Goods and Services

$$Y^S = Y^D \Rightarrow \overline{Y} = C(\overline{Y} - \overline{T}) + I(r) + \overline{G}$$

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

$$\frac{\partial Y}{\partial r} = C_Y \cdot \frac{\partial Y}{\partial r} + I'(r)$$

$$\Rightarrow \frac{\partial Y}{\partial r} = \frac{I'(r)}{1 - C_Y}$$

Say's Law

Jean-Baptiste Say (1803) introduced the idea in his work, *A Treatise on Political Economy*. (see Wiki)

"It is worth while to remark, that a product is no sooner created, than it, from that instant, affords a market for other products to the full extent of its own value. When the producer has put the finishing hand to his product, he is most anxious to sell it immediately, lest its value should diminish in his hands. Nor is he less anxious to dispose of the money he may get for it; for the value of money is also perishable. But the only way of getting rid of money is in the purchase of some product or other. Thus, the mere circumstance of the creation of one product immediately opens a vent for other products."

Proposition 5 (Say's Law)

Supply creates its own demand. 供给创造需求

Working with the Model

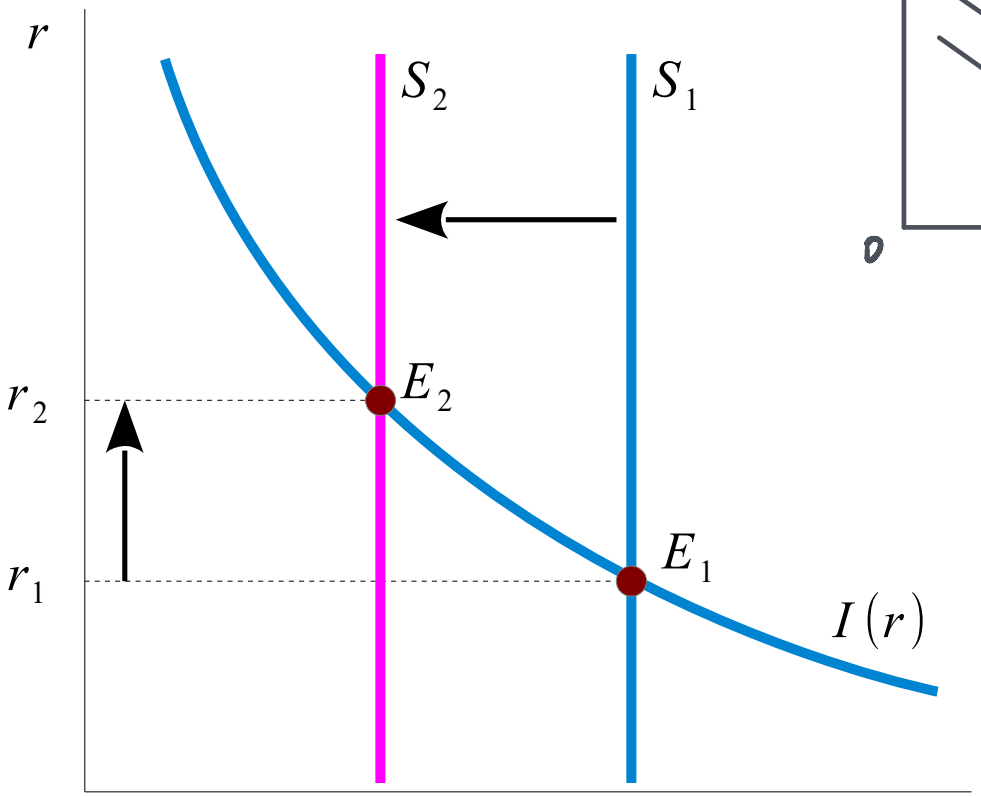
以旧换新分析：$Y = C(Y-T, \xi) + I(r) + G(\xi)$

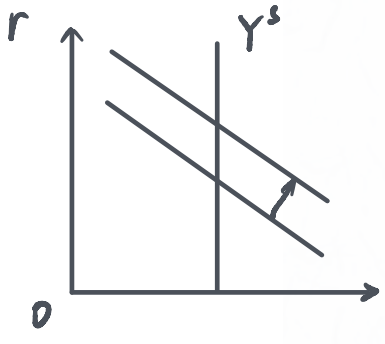
$Y_\xi = C_Y Y_\xi + C_\xi + G'$

$Y_\xi = \frac{\partial Y}{\partial \xi} = \frac{C_\xi + G'}{1 - C_Y} > 0$

储蓄减少

Effects of a Reduction of Saving



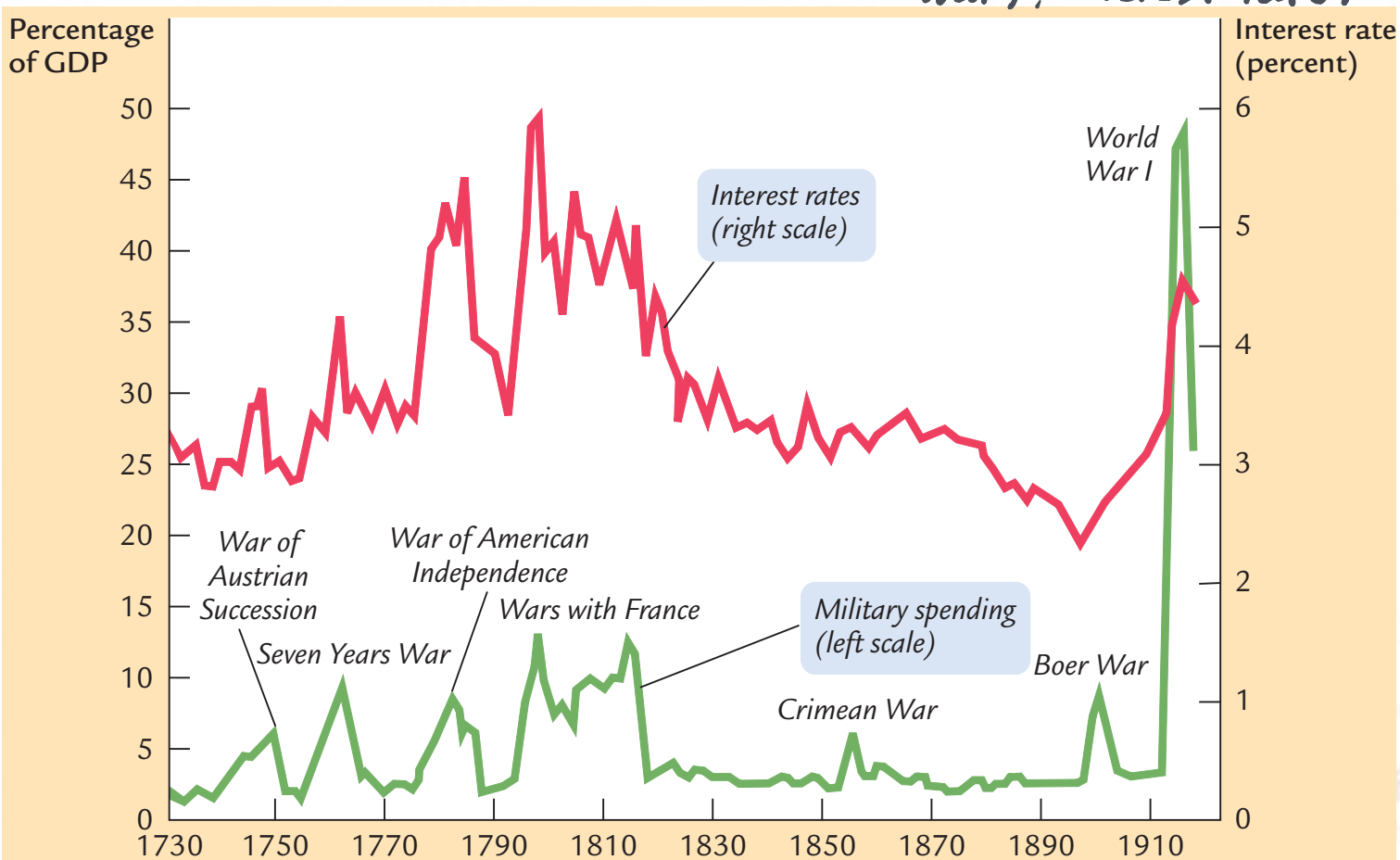


$\bar{Y} = \bar{C} + I\downarrow + G\uparrow$

$I\downarrow, r\uparrow$

$(\frac{R}{P}, \frac{W}{P})$

war↑, interest rate↑

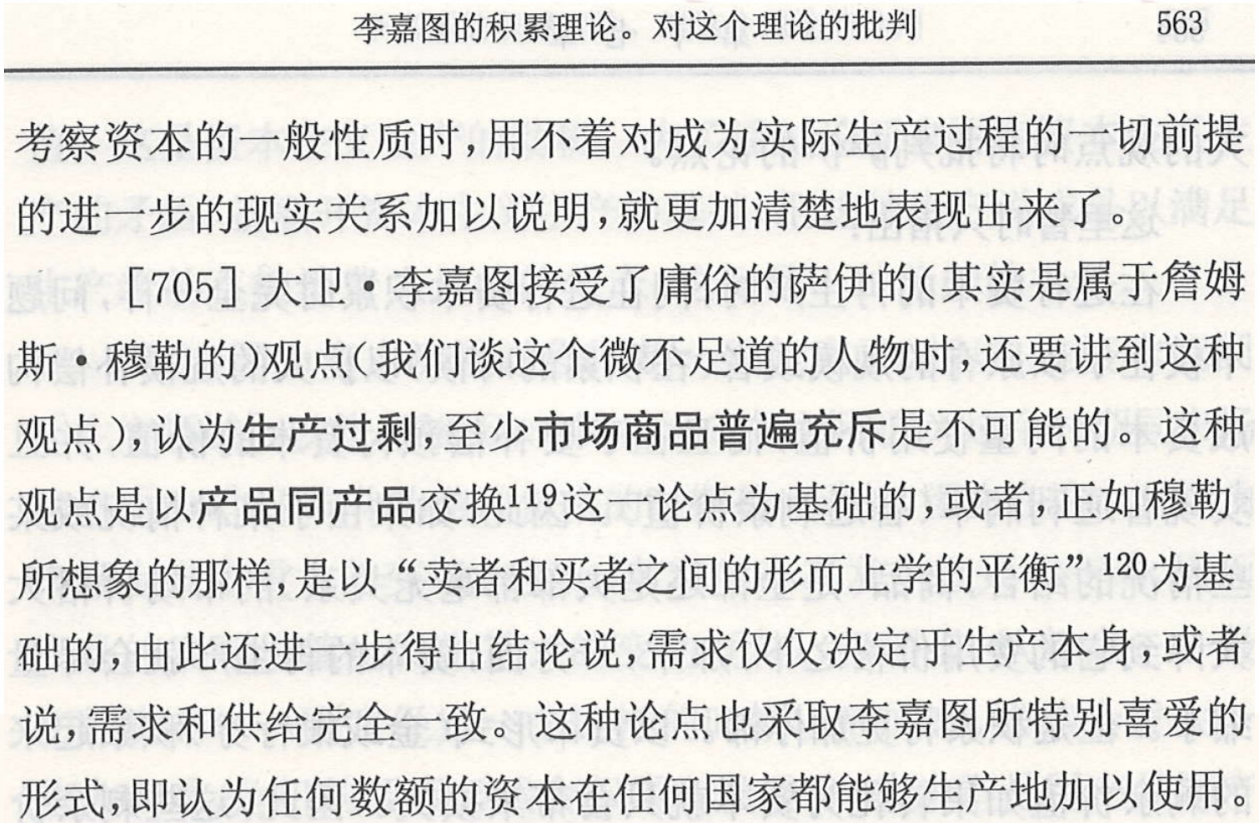


Military Spending and the Interest Rate in the United Kingdom from 1730 to 1919. Military spending is measured as a percentage of GDP.

Outline

马克思对萨伊定律的批判

《马克思恩格斯全集》，第 26 卷（《资本论》第四卷“剩余价值理论”），第二册，人民出版社，1973 年，p.563



李嘉图的积累理论。对这个理论的批判 563

考察资本的一般性质时，用不着对成为实际生产过程的一切前提的进一步的现实关系加以说明，就更加清楚地表现出来了。

[705] 大卫·李嘉图接受了庸俗的萨伊的（其实是属于詹姆斯·穆勒的）观点（我们谈这个微不足道的人物时，还要讲到这种观点），认为**生产过剩**，至少**市场商品普遍充斥**是不可能的。这种观点是以**产品同产品**交换[119]这一论点为基础的，或者，正如穆勒所想象的那样，是以“卖者和买者之间的形而上学的平衡”[120]为基础的，由此还进一步得出结论说，需求仅仅决定于生产本身，或者说，需求和供给完全一致。这种论点也采取李嘉图所特别喜爱的形式，即认为任何数额的资本在任何国家都能够生产地加以使用。

扩展阅读：

Baumol, William, J. 1999. "Retrospectives: Say's Law." Journal of Economic Perspectives, 13 (1): 195-204.

疑难重点

(1) 掌握生产函数的 Homogeneity 以及欧拉定理。
(2) 什么是新古典生产函数?
(3) 掌握要素市场需求曲线的推导。
(4) 什么是充分就业？什么是潜在产出？什么是自然失业率？什么是非自愿失业?
(5) 能够证明国民收入分配的公式。
(6) 如何从可贷资金市场理解商品市场的均衡?
(7) 商品市场上的总供给如何确定？总需求如何确定?
(8) 什么是萨伊定律?

马工程教材疑难重点

1（E2, p.175）

根据马工程教材观点，应当如何评析西方经济学的失业理论?

2（E2, p.311）

根据马工程教材观点，应当如何评析西方经济学的边际分配论?

3（E2, p.223）

根据马工程教材观点，应当如何评析西方经济学的完全竞争假设?

4（E2, p.188）

根据马工程教材观点，应当如何评析西方经济学的生产函数?

西方经济学

Part 2 Classical Theory

Lecture 2B A Monetary Model of a Closed Economy

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高等教育电子音像出版社

Supplement Readings

(1) M11.2, M13.2; S4.4, S4. 附录, S6.2. [1]

(2) 其他文献：电影《Die Fälscher (The Counterfeiters)》(2007), 电影《一出好戏 (The Island)》(2018)

(3) 其他文献：The Monetary System: What It Is and How It Works

(4) 其他文献：Inflation: Its Causes, Effects, and Social Costs

[1] M 指代马工程教材，S 指代课外阅读材料沈坤荣教程。

学习目标

(1) 掌握古典经济学中的货币经济模型。
(2) 理解古典二分法。
(3) 掌握马工程教材精神。

观察与思考

伯纳德行动如何影响盟国经济?

知乎:《各国政府为什么不直接开动印钞机仿制敌对国家的纸币?》

把假钞作为战争手段并非纳粹的发明,但是他们做出名了。到 1945 年,市面上流通的英镑有 1/3 是纳粹的“英格兰银行”印刷的!1942 年 9 月 24 日,英格兰银行从西非分行处收到了一捆面值为 10 英镑的假钞,当时的记录上写道:“这是迄今为止最危险的发现。”对当时的出纳总监肯尼思来说,麻烦远远还没有结束,随后各种面值的假钞又在欧洲、非洲、中东、美国和亚洲各地出现。当时的英国政府还不知道,这些假币是纳粹摧毁盟国经济计划的一部分,该计划常因其主管军官的姓氏而被称为“伯纳德行动”(Operation Bernhard),该计划的最高领导者是德国元首希特勒本人。

观察与思考

物价是如何决定的?

国务院新闻办公室于 2023 年 3 月 3 日举行“权威部门话开局”系列主题新闻发布会，中国人民银行：货币政策在总量上保持对实体经济的支持力度。…… 政策的重点是强调保持物价的稳定。这就要求广义货币和社会融资规模的增长率大体上和名义 GDP 增长率匹配，这样就能够保持有合适的货币供给，使得整体上中国的物价是稳定的。

社会融资规模 指一定时期内实体经济从金融体系获得的资金总额，是增量概念。主要包括：人民币贷款、外币贷款（折合人民币）、委托贷款、信托贷款、未贴现的银行承兑汇票、企业债券、非金融企业境内股票融资、投资性房地产、保险公司赔偿等。

Outline

Creation of Money

Private bank's balance sheet

Money is used for transactions and pays no interest. It includes two types of money: *Currency* (coins and bills) and *checkable deposits* (the bank deposits on which you can write checks). Bonds pay a positive interest but they cannot be used for transactions.

Activities	Assets		Liabilities	
Dwarf sells bonds to the central bank and deposits the money in private banks	Vault Cash (R)	$-b$	Checkable Deposits	$+b$
Loan to Tom	Vault Cash (R)	$b(1-\theta)$		
	Loan	$-b(1-\theta)$		
Tom's deposits	Vault Cash (R)	$-b(1-\theta)$	Checkable Deposits	$+b(1-\theta)$
Loan to Jerry	Vault Cash (R)	$+b(1-\theta)^2$		
	Loan	-b $(1-\theta)^2$		
Jerry's deposits	Vault Cash (R)	$-b(1-\theta)^2$	Checkable Deposits	$+b(1-\theta)^2$
	⋮	⋮	⋮	⋮
	Total Assets	$-b/\theta$	**Total Liabilities**	$+b/\theta$

M = The money supply, the aggregate money, or the money stock

B = The monetary base

D = Checkable deposits

R = Total bank reserves = Vault Cash + Reserve deposits

CU = Currency held by the nonbank public

$\theta = R/D$ = The banks' desired reserve-deposit ratio[1]

$c_D = CU/D$ = The public's desired currency-deposit ratio.

The monetary base[2] is defined as total liabilities of the central bank.

$$B = \text{Reserve deposits} + \text{Vault cash} + CU = R + CU.^{3}$$

$$M = D + CU.$$

$$\frac{M}{B} = \frac{D + CU}{R + CU} = \frac{1 + c_D}{\theta + c_D} \geq 1.$$

[1] A banking system with $\theta < 1$ is called fractional reserve banking while the one with $\theta = 1$ is called 100% reserve banking.

[2] The monetary base is also called *high-powered money*, the *central bank money*, or *outside money*. Outside money is the quantity of money coming from outside of the private sector. The New Palgrave.

[3] Reserve deposites or balances are balances held by depository institutions in master accounts and excess balance accounts at the central bank. Vault cash plus CU is called currency in circulation, which is outside the Treasury and the central bank.

Measuring Money 货币测量

The monetary base, B, is also called M_0. [2] There are two widely used definitions of the overall money M^s (the aggregate money, the money supply, or the money stock):

(1) $M_1 = \frac{1+c_D}{\theta+c_D} B$;

(2) M_2 which composes M_1 and other assets that are somewhat less moneylike but almost checkable.

The US money stock measures can be found at Federal Reserve Statistical Release (http://www.federalreserve.gov/releases/H6/).

$M_0 = B$

$M_1 = \frac{1+c_D}{\theta+c_D} M_0 = \frac{1+c_D}{\theta+c_D} B$.

$M_2 \supset M_1$

[2] In China, M_0 is just measured as CU.

Outline

The Transactions Form of the Quantity Equation

交易形式的数量方程

The relationship between transactions and money is called the **quantity equation** or the **equation of exchange**. The transactions form of the quantity equation is formulated by Simon Newcomb (1885) and popularized by Irving Fisher (1911).

货币 流通速度 价格 交易次数

$$\textbf{M}\text{oney} \times \textbf{V}\text{elocity} = \textbf{P}\text{rice} \times \underline{\textbf{T}\text{ransactions}}$$

$$M \times V = P \times T$$

货币交易速度

where V is the **transaction velocity of money** (the number of times money enters into transactions), T is the total number of transactions during some period of time, P is the price of a typical transaction. The quantity equation is an accounting identity.

From an Identity to a Theory

Assumption 1

The velocity of money is constant since it is determined by institutional factors and could be regarded as fixed for the short run.

Under assumption 1, the quantity equation becomes the quantity theory of money:

$$M \times \overline{V} = P \times T, \tag{1}$$

where M, T, and V are determined by other forces; P is determined endogenously.

Disadvantages: The number of transactions is difficult to measure. The volume of transactions includes final goods and services, intermediate goods, and existing assets. 最终商品、中间品、已存在的商品

The role of money: It serves as the medium of exchange. It is 'in motion.' 运动中

The Income Form of the Quantity Equation 收入形式的数量方程

Pigou (1927) replaced gross transactions with income transactions in the quantity equation.

$$\textbf{M}\text{oney} \times \textbf{V}\text{elocity} = \textbf{P}\text{rice} \times \underline{\text{Output}}$$

$$M \times V = P \times Y \quad \text{产出水平}$$

货币收入流通速度

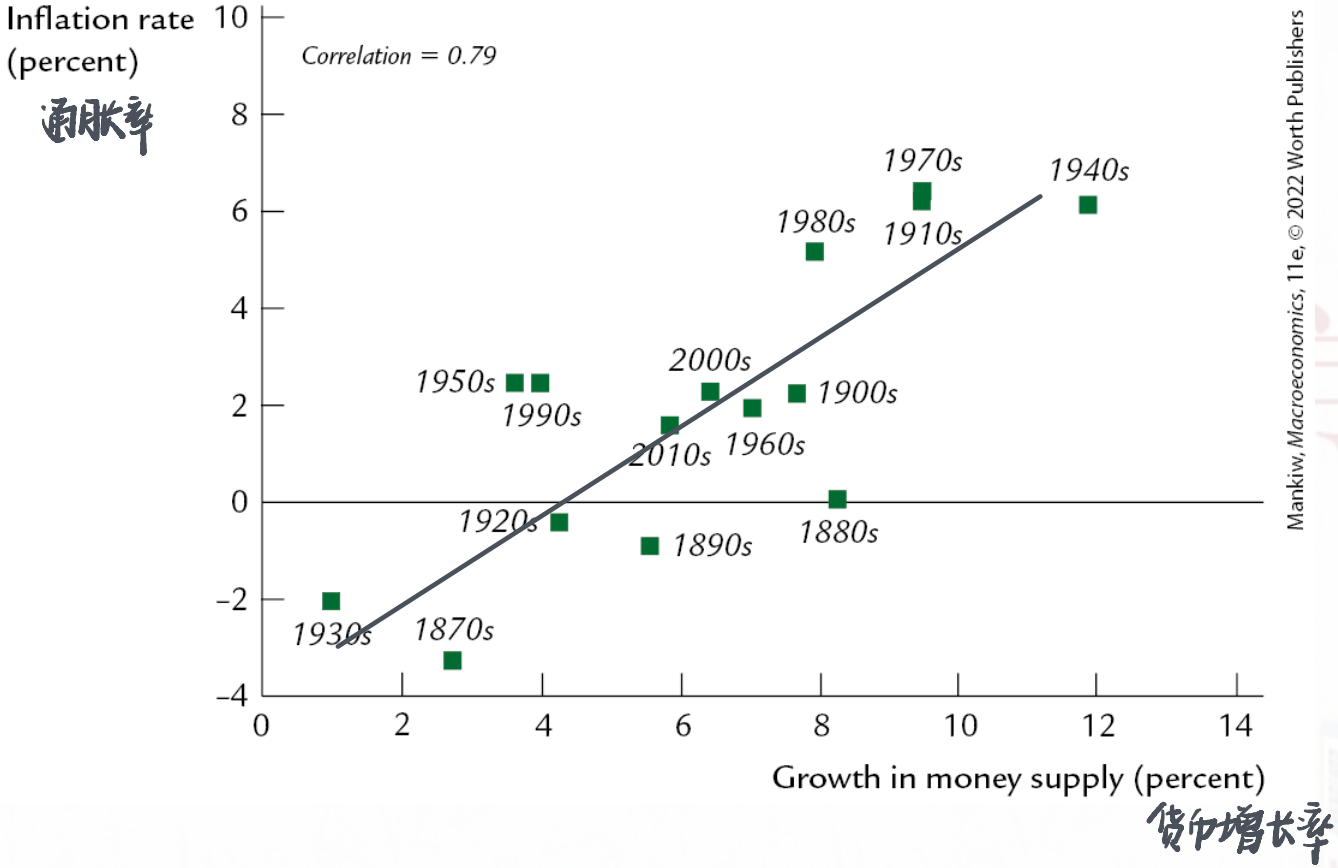
where V is the **income velocity of money** (the number of times money enters income), Y is the output, and P is the price of one unit of output.

(1) V is constant under assumption 1.
(2) M is controlled by the central bank.
(3) Y is determined by factor supply and the production function.
(4) P is determined endogenously.

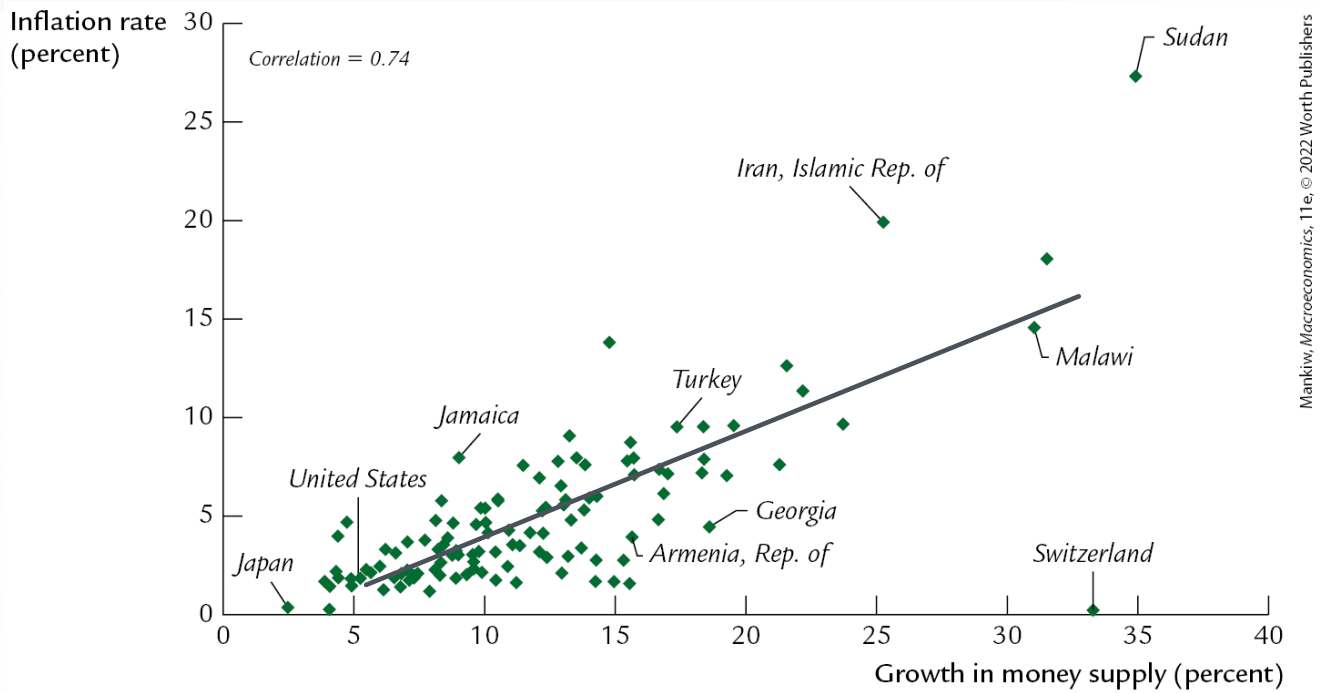
The quantity theory of money implies that the quantity of money determines nominal GDP under assumption 1.

Due to $\dot{V} = 0$, it also implies $\ln M + \ln V = \ln P + \ln Y$

对 t 求导有 $\dfrac{\dot{M}}{M} = \dfrac{\dot{P}}{P} + \dfrac{\dot{Y}}{Y}$. $\dot{M} = M'(t)$

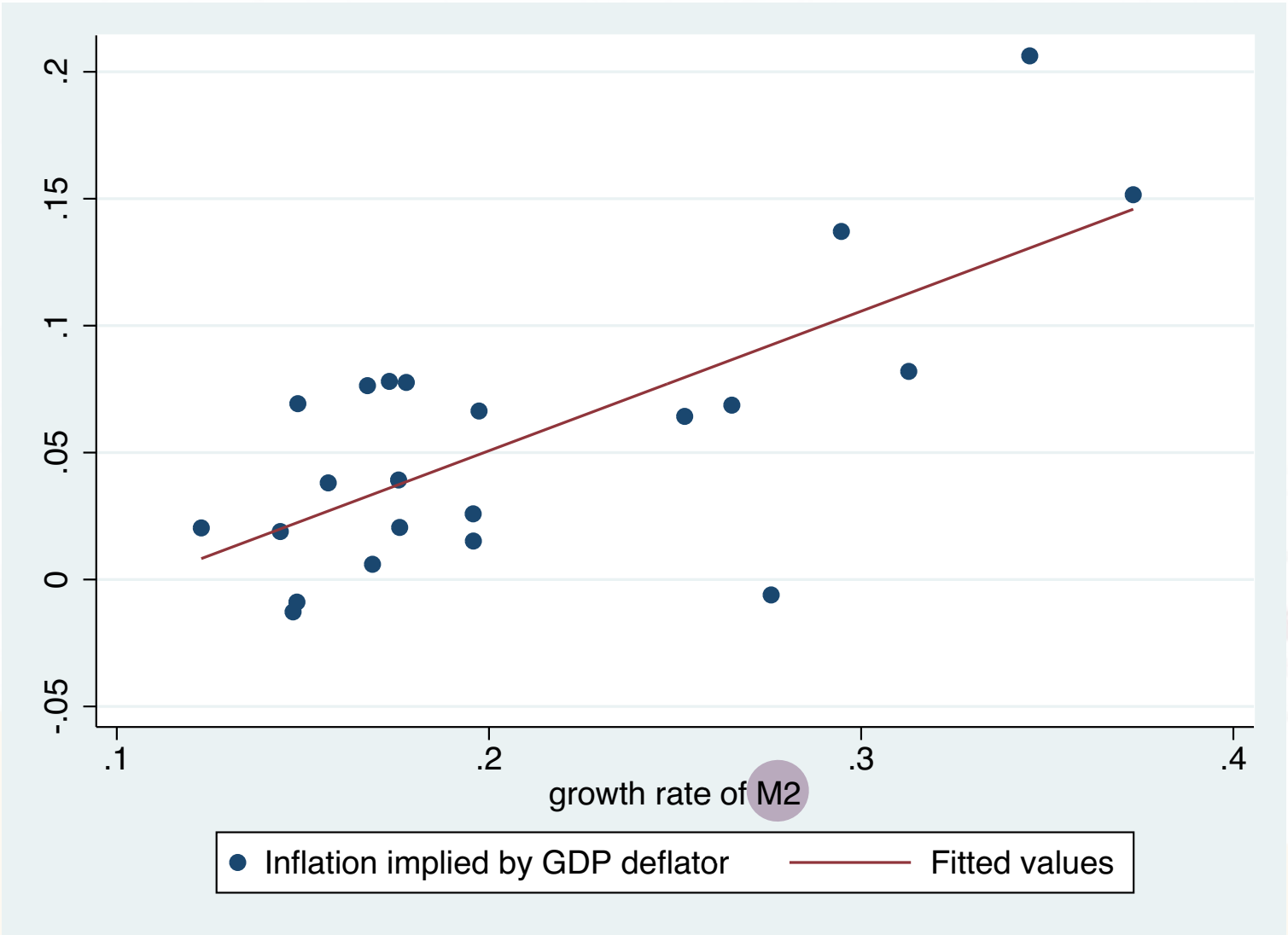


Historical Data on U.S. Inflation and Money Growth. Each point represents a decade. The horizontal axis shows the average growth in the money supply (as measured by M2) over the decade, and the vertical axis shows the average rate of inflation (as measured by the GDP deflator). The positive correlation between money growth and inflation is evidence for the quantity theory's prediction that high money growth leads to high inflation. The coefficient of correlation is 0.79.



International Data on Inflation and Money Growth. Each point represents a country. The horizontal axis shows the average growth in the money supply (as measured by a broad monetary aggregate) from 2007 to 2019, and the vertical axis shows the average rate of inflation (as measured by the CPI). Once again, the positive correlation is evidence for the quantity theory′ s prediction that high money growth leads to high inflation.

The Quantity Theory of Money and China



The quantity theory of money states that the central bank, which controls the money supply, has ultimate control over the rate of inflation. If the central bank keeps the money supply stable, the price level will be stable. If the central bank increases the money supply rapidly, the price level will rise rapidly.

"*Inflation is always and everywhere a monetary phenomenon*."

by Milton Friedman (July 31, 1912—November 16, 2006)
The great economist who won the Nobel Prize in economics in 1976.

Cambridge Cash Balance Approach 剑桥现金余额法

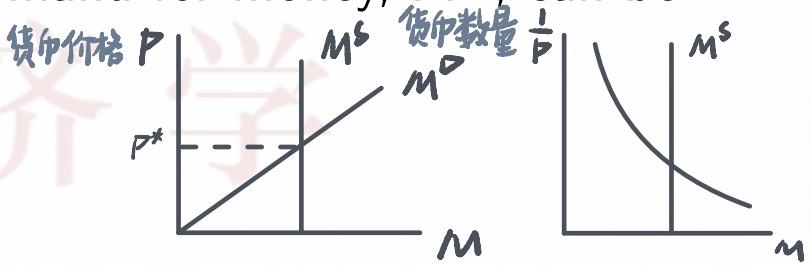
马歇尔 凯恩斯

Pigou (1917), Marshall (1923), and Keynes (1923) assumed that the demand for money would be a proportion of income. The demand for money, M^D, can be written as

$$M^D = kPY$$

$MV = PY$

$\Rightarrow M = \frac{PY}{V} = kPY \quad (k = \frac{1}{V})$



where PY is the nominal income, k is a constant which is the quantity of real money balances demanded for one unit of income. In equilibrium, the demand for money, M^D, is equal to the supply of money, M. The Cambridge approach to the quantity equation can be expressed to be

$$M = kPY,$$

which is equivalent to the income form of the quantity equation if $k = 1/V$. If people want to hold a lot of money (a high k), then money circulates slowly (a low V).

Advantages: It fits with the Marshallian demand–supply apparatus.

The role of money: It is a temporary abode of purchasing power. It is 'at rest.'

Interest Rate and Inflation: the Fisher Effect

The **Fisher equation** is given by

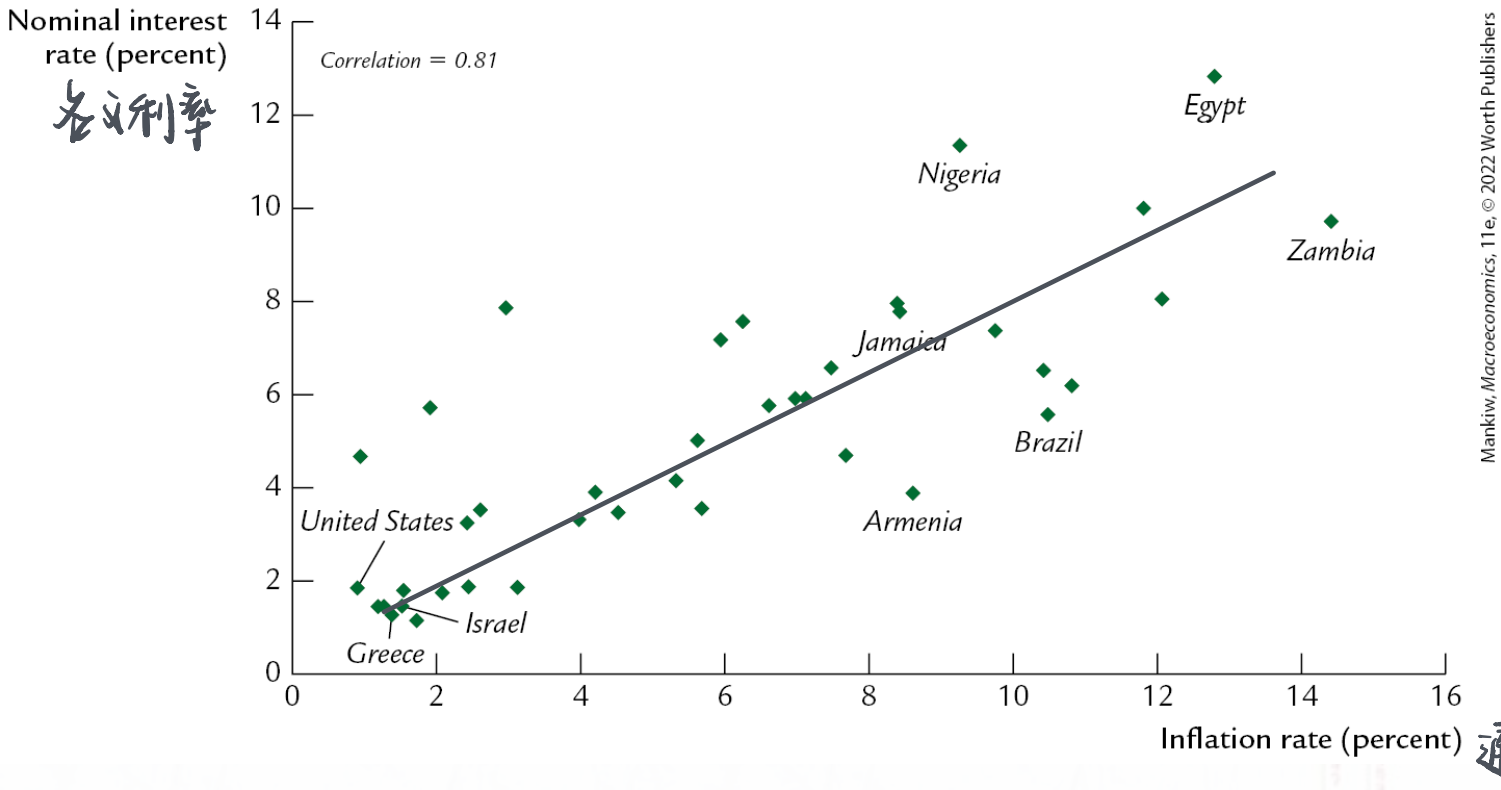
$$i_t = r_t + \pi_{t+1},$$

where $\pi_{t+1} = P_{t+1}/P_t - 1$ is the *ex post* inflation rate; r_t is the *ex post* real interest rate. The *ex ante* version of the Fisher equation is

$$i_t = r_t^A + \mathbb{E}_t \pi_{t+1},$$

where $\mathbb{E}_t \pi_{t+1}$ is the expected inflation rate; r_t^A is the *ex ante* real interest rate. In this case, r_t^A is determined by the equilibrium in the loanable funds market. An increase in $\mathbb{E}_t \pi_{t+1}$ by one percentage point leads to an increase in the nominal interest rate by one percentage point. The one-to-one relation between $\mathbb{E}_t \pi_{t+1}$ and the nominal interest rate is called the **Fisher effect**.

Evidence of the Fisher Effect



Inflation and Nominal Interest Rates Across Countries. This scatterplot shows the average nominal interest rate on short-term Treasury bills and the average inflation rate in 40 countries from 2007 to 2019. The positive correlation between the inflation rate and the nominal interest rate is evidence of the Fisher effect.

Costs of Inflation 通胀成本

The costs of expected inflation:

1. Shoeleather cost of inflation. The Fisher effect implies that inflation raises the nominal interest rate which lowers the demand for real money balances. Thus people have to go to banks more frequently than before. 频繁存取钱 → 皮鞋成本
2. Menu costs. Producers have to change their posted prices more frequently than before. 频繁改变价格 → 菜单成本
3. Microeconomic inefficiencies due to variability of relative prices when producers cannot change their prices flexibly. 相对价格变化/无法灵活变价 → 微观经济低效
4. Altering tax burden, often in ways that lawmakers did not intend.
5. Inconvenience of living in a world with a changing standard. Money is a standard with which we measure economic transactions.

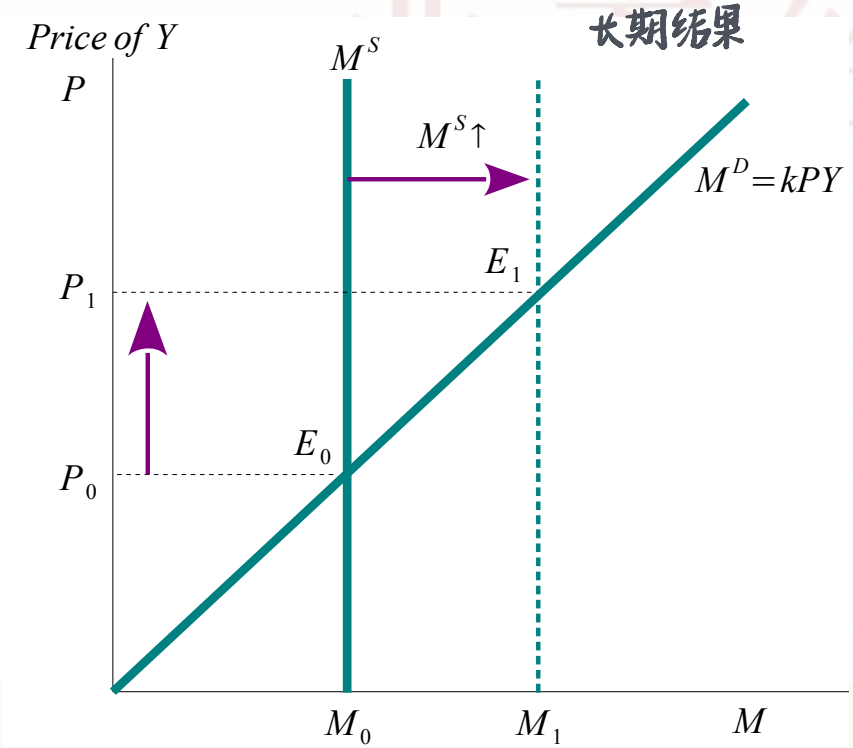
The costs of unexpected inflation:

1. Redistribution of wealth among individuals. 个人财富的重新分配 e.g. 退休工资
2. It hurts individuals living on fixed income. 固定收入人群利益收损 e.g. 名义工资
3. Individuals with imperfect information often have price-misperceptions which distort their decisions. 不完全信息导致价格误解 → 扭曲决策

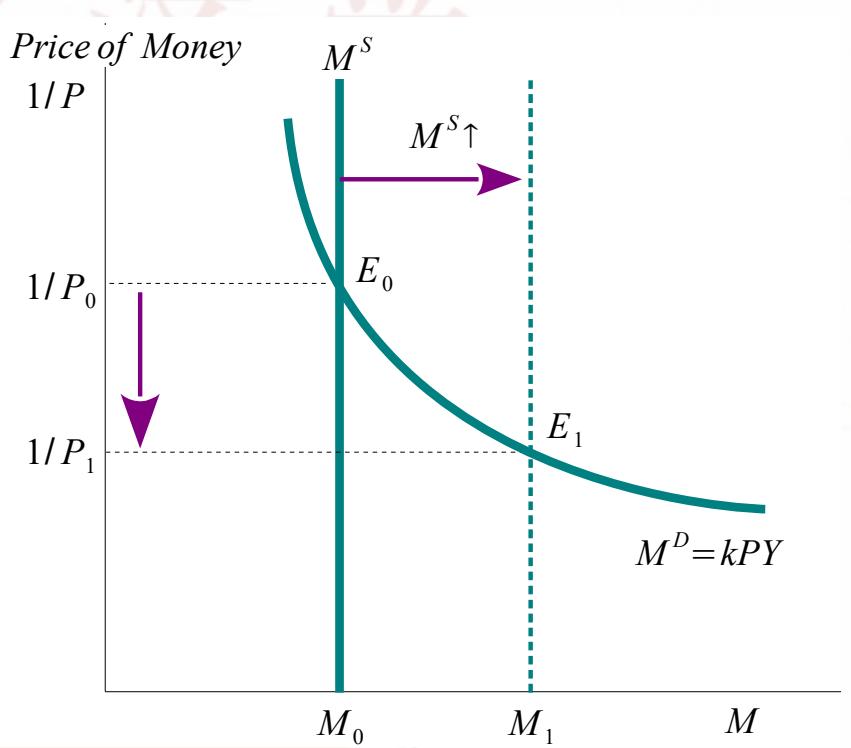
One benefit of inflation: A 2 percent wage cut in a zero-inflation world is, in real terms, the same as a 3 percent raise with 5 percent inflation.

Determination of Price

The Equilibrium in the Money Market 货币市场的均衡



(a) S(p.72)



(b)

Nicolaus Copernicus (1517), *Memorandum on Monetary Policy*.
哥白尼

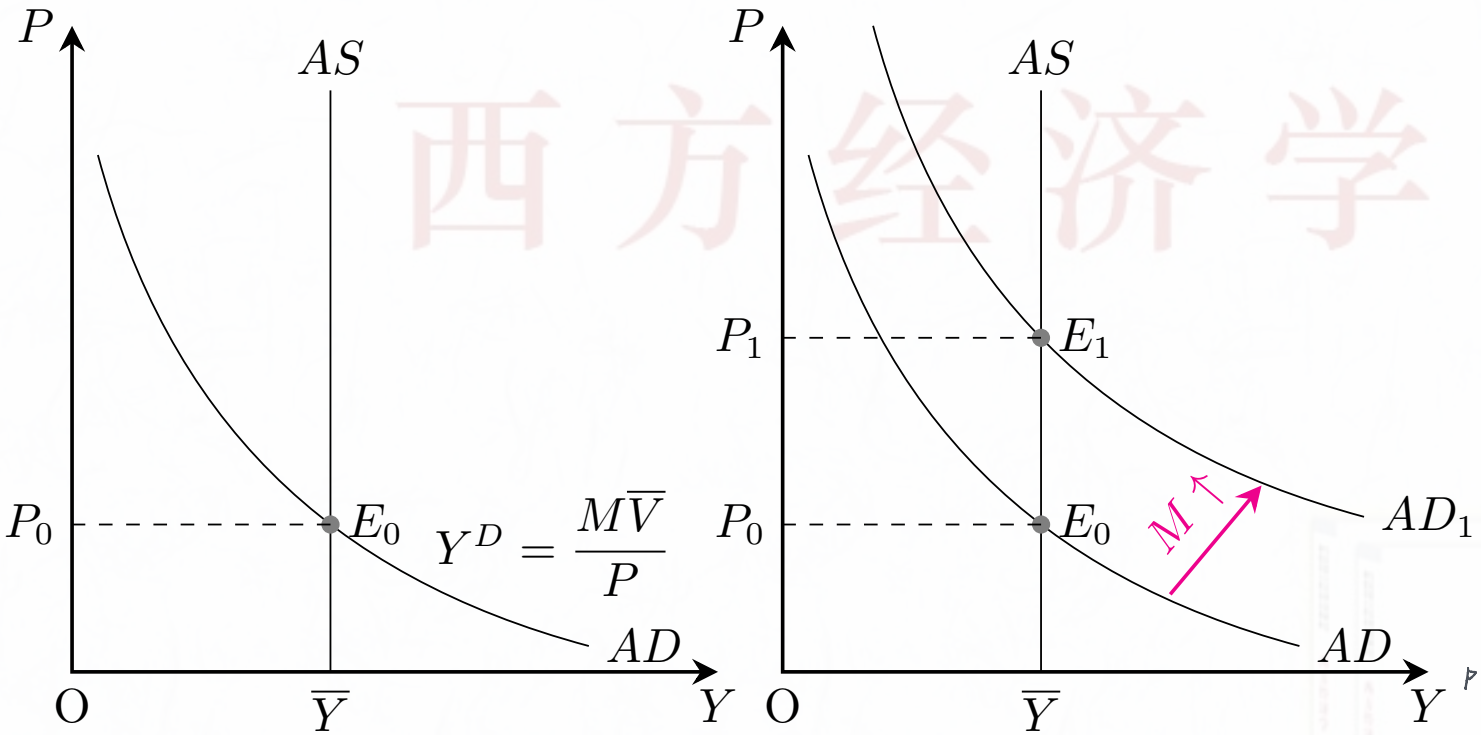
Determination of Price

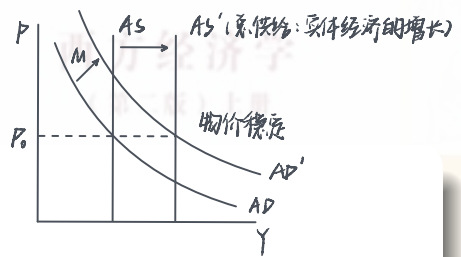
Schumpeter's AS–AD Framework of Classical Theory [3]

$MV = PY$

商品需求 $\frac{M\bar{V}}{P} = Y$ 商品供给

$Y^d = Y^s$

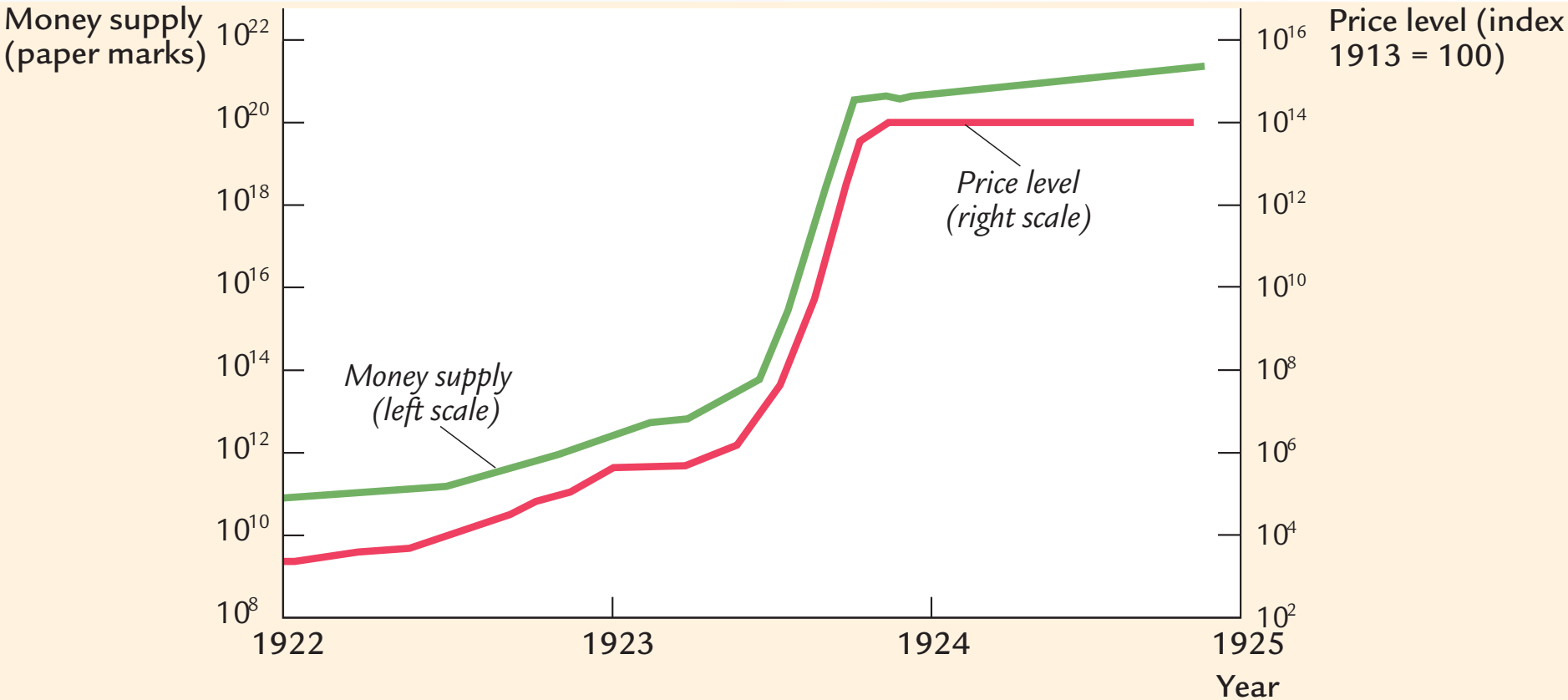




Example 1 (观察与思考)

物价是如何决定的？中国人民银行：货币政策在总量上保持对实体经济的支持力度。…… 政策的重点是强调保持物价的稳定。

[3] Schumpeter, Joseph A., 1954, History of Economic Analysis, Great Britain: Routledge.



The quantity of money and the general price level in Germany from January 1922 to December 1924.

Example 2 (观察与思考)

伯纳德行动如何影响盟国经济?

The Classical Dichotomy 古典二分法

The real aspect of an economy: 实际部分：实体经济

$\frac{R}{P} = r + \delta$ (折旧)

$$\left.\begin{array}{l}\text{Firm: } \max \text{Profit} \Longrightarrow K^D, L^D \\ \text{Household: } K^S = \overline{K}, L^S = \overline{L}\end{array}\right\} \Longrightarrow \left\{\begin{array}{l} W/P, R/P, r. \\ \text{Output } \overline{Y} = F(\overline{K}, \overline{L}, A).\end{array}\right.$$

简化假设：不变

The nominal aspect of the economy: 名义部分：货币关系

决定

$$\left.\begin{array}{l}\text{Cambridge Equation: } M^D = kPY \\ \text{Central Bank: } M^S = \overline{M}\end{array}\right\} \Longrightarrow P = \overline{M}/(k\overline{Y})$$

简化假设：不变

$$\Longrightarrow \text{Inflation Rate } \pi$$

$$\Longrightarrow \text{Nominal Interest Rate } i = r + \pi$$

In the classical macroeconomic theory, the real and the nominal aspects of an economy can be analyzed separately, which is called the *classical dichotomy*. That is, the real variables such as Y, R/P and W/P can be determined completely without consideration of the money supply, price, and nominal interest rate. Therefore, *money as a veil* is neutral.

货币是中性的

Example 3

电影《一出好戏》中，扑克牌作为孤岛上的货币，能交换的物品数量由什么决定的？与黄金有什么关系？

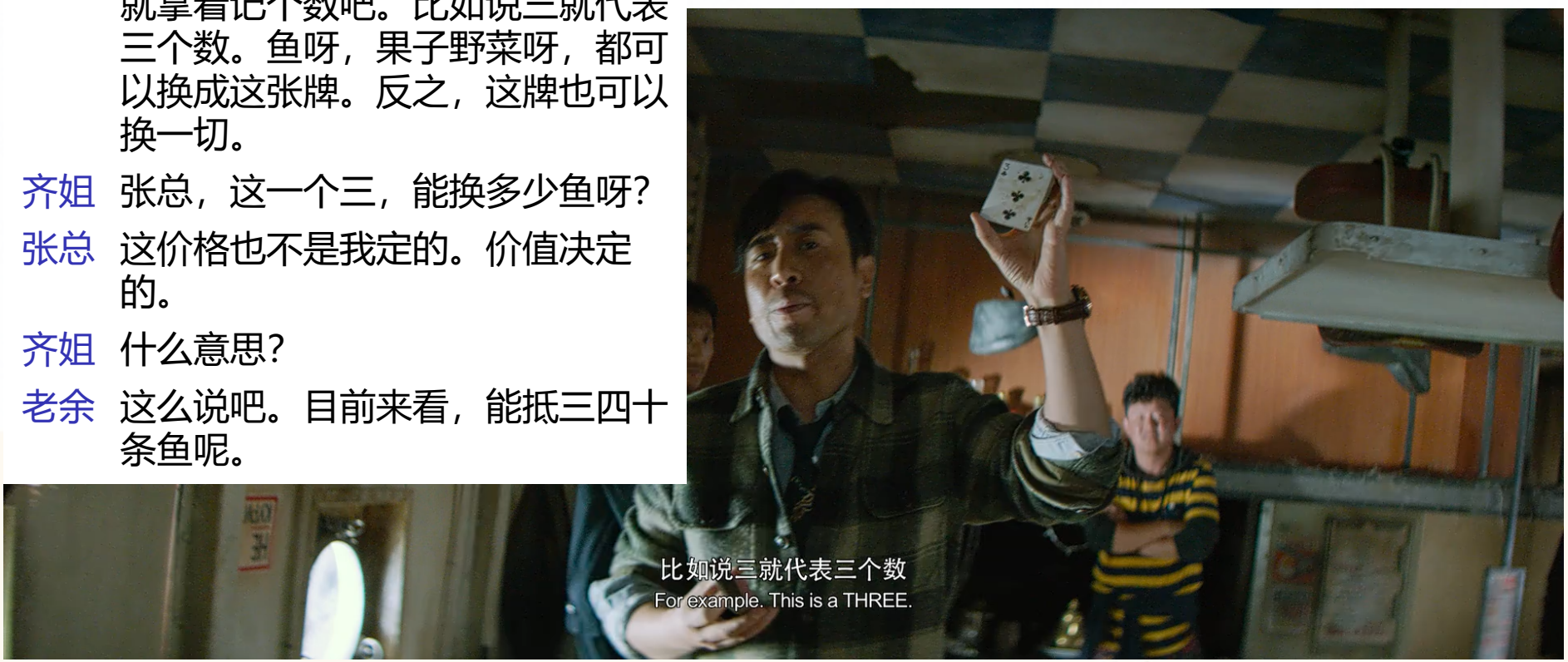
张总　这岛上啊，只有这么两副牌。咱们就拿着记个数吧。比如说三就代表三个数。鱼呀，果子野菜呀，都可以换成这张牌。反之，这牌也可以换一切。

齐姐　张总，这一个三，能换多少鱼呀？

张总　这价格也不是我定的。价值决定的。

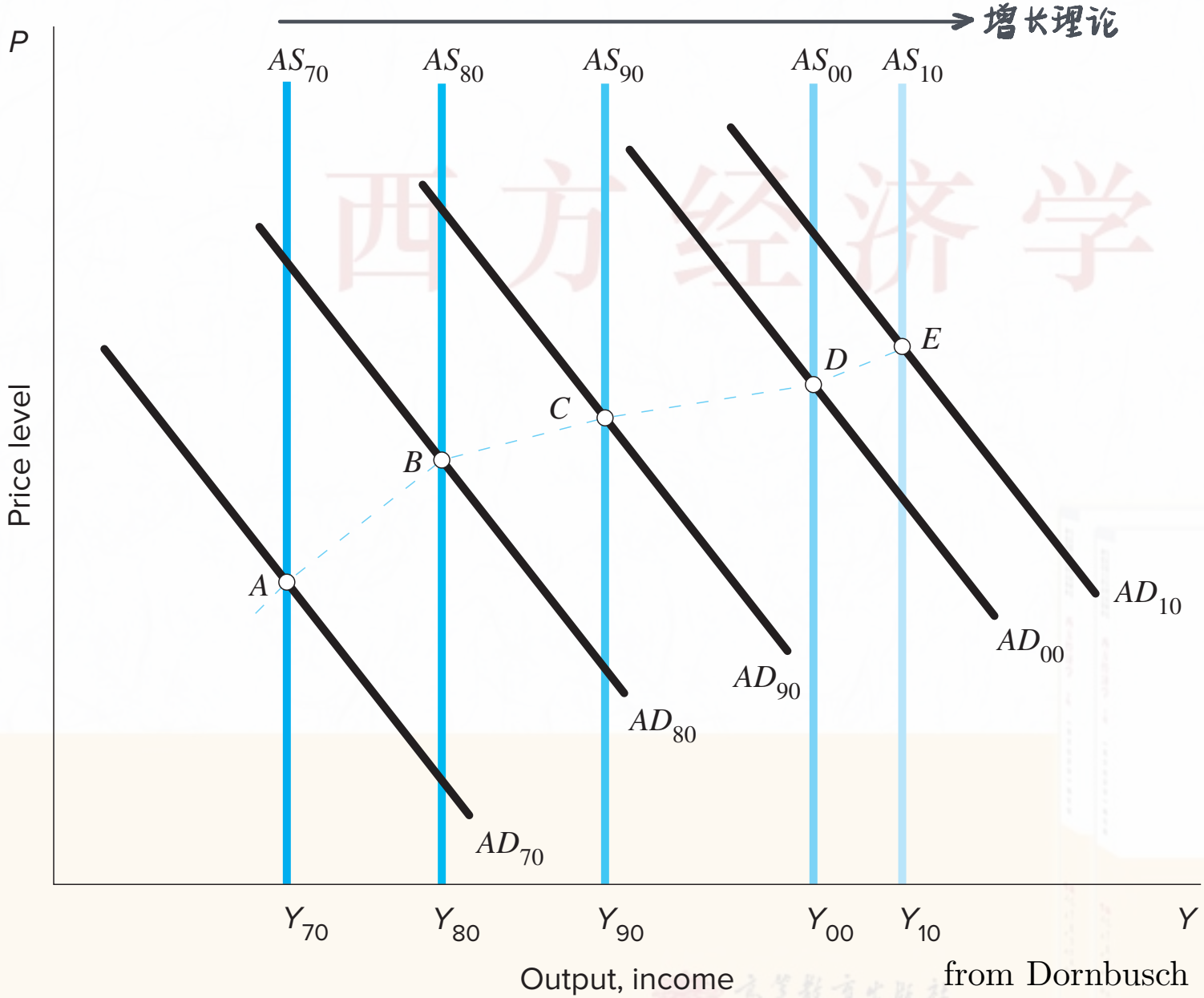
齐姐　什么意思？

老余　这么说吧。目前来看，能抵三四十条鱼呢。



Outline

From the long run to the very long run



from Dornbusch

Horizons of Macroeconomics

凯恩斯主义 短期

(1) In the short run, aggregate supplies of factors are fixed $(\overline{K}, \overline{L})$ while wages and prices are sticky. Involuntary unemployment of factors *could* occur $(L < \overline{L}, K < \overline{K})$. 黏性

古典经济理论

(2) In the long run, aggregate supplies of factors are fixed $(\overline{K}, \overline{L})$ while wages and prices are flexible. There is no involuntary unemployment of factors $(L = \overline{L}, K = \overline{K})$. 要素市场出清

经济增长理论

(3) In the very long run, aggregate supplies of factors change; wages and prices are flexible.

The Keynesian macroeconomics corresponds to the short-run analysis; the classical macroeconomics focuses on the long-run analysis; and economic growth theories correspond to the very-long-run analysis.

Horizons of Macroeconomics

来自宏观经济学中对时间范围的基本界定。此处，我们对“短期”“长期”的概念做一个回顾，并加入对“超长期”的说明。

短期　短期的各种价格都是黏性的，即价格会针对市场供求的变化逐步（缓慢地）进行调整。由于这种价格黏性，即价格体系的非及时调整，“短期”这一概念也往往意味着资本、劳动等生产要素不一定能够得到最为有效的配置（要素市场不出清）。短期框架中的一个极端形式是价格具有刚性。刚性意味着价格完全固定。

长期　在延续几年的视野范围内，价格往往能够针对市场供求的变化做出充分调整。长期框架中通常假设价格具有完全的伸缩性，而且不考虑价格调整的时滞。这个假设前提意味着长期中的各个市场均能够保持出清，从而资源能够得以充分利用。长期性假设是古典模型的基本假设。另外，在长期的框架中，往往将资本、劳动和技术视为既定的。

超长期　在一个可以延续几十年或更长的时期，不仅价格具有伸缩性，资本、劳动、技术等要素也会发生改变。经济增长理论（第九章、第十章）所考察的就是超长期的产出增长问题。

Outline

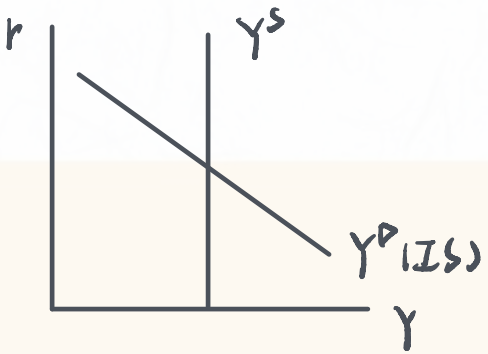
疑难重点

(1) 掌握 the quantity theory of money, Cambridge cash balance approach, the Fisher effect.

(2) 预期到的和非预期到的通胀，会产生什么成本?

(3) 古典经济学中，价格是如何决定的? 什么是古典二分法?

(4) 微积分技能：外生变量对内生变量的效应的偏导数推导。



$$\begin{cases} Y = F(K, L) \\ Y = C(Y-T) + I(r) + G \\ P = \dfrac{MV}{Y} \end{cases}$$

$$\frac{\partial r}{\partial G} =$$

马工程教材疑难重点

1 (E2, p.176)

根据马工程教材观点，应当如何评析西方经济学的通货膨胀理论?

2 (E2, p.349)

根据马工程教材观点，资本主义经济为什么不能像一般均衡理论所描述的那样实现所有市场的供求均衡?

西方经济学

Part 2 Classical Theory

Lecture 2C A Classical Open Economy

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高等教育出版社
高等教育电子音像出版社

Supplement Readings

(1) M14.1; S11.1, S11.2. [1]

(2) 其他文献：The Open Economy

[1] M 指代马工程教材，S 指代课外阅读材料沈坤荣教程。

学习目标

(1) 掌握小国经济模型。
(2) 掌握大国经济模型。
(3) 掌握马工程教材精神。

Outline

Exchange Rates

Definition 1

The *nominal exchange rate*, denoted by e, is the price of the domestic currency in terms of foreign currency. The *real exchange rate*, denoted by ϵ, is the price of domestic goods in terms of goods of a foreign country.

Let P denote the price of domestic goods, P^* denote the price of goods of a foreign country. The real exchange rate can be written as

$$\epsilon = e \times P/P^*. \qquad \epsilon = \frac{eP}{P^*}$$

If ϵ is high, foreign goods are relatively cheap and domestic goods are relatively expensive. Other things being equal, a higher real exchange rate implies that a country imports more and exports less. Therefore the net exports NX is decreasing in ϵ.

$$NX = NX(\epsilon), \quad NX'(\epsilon) < 0$$

马工程观点 (M, 2019, p.182)

名义汇率是两个国家（或地区）货币的相对价格，即一种货币能兑换另一种货币的数量，用 e 表示。名义汇率有两种不同的标价方法。一种是直接标价法，是用本国货币形式表示的国外货币的价格，即购买 1 单位或 100 单位的外币应该付出多少本国货币，故又称为应付标价法。这样，当本币升值时，购买单位外币所必须支付的本币就减少，即本币升值，汇率下降，也就是说，汇率升降与本国货币对外价值的高低成反比。另一种为间接标价法，即用国外货币表示本国货币的价格。它以购买一定单位（如 1 单位）的本国货币为标准来计算应收多少单位外币，故又称为应收标价法。由于这种标价法将本国货币设定为一定的数额，当本币币值上升时，单位本币所能兑换的外币就增加，也就是说，外币价值的高低和汇率的升降成反比。为了方便起见，本章采用间接标价法。

Purchasing Power Parity

Proposition 2 (The Law of One Price) 一价定律

If markets are perfectly competitive and there are no frictions, then identical goods sold in different locations must sell for the same price in terms of a common currency.

完全竞争 无摩擦

Proposition 3 (Purchasing Power of Parity [PPP]) 购买力平价理论

If markets are perfectly competitive and there are no frictions, then the real exchange rate ϵ is equal to 1.

$\epsilon = \frac{eP}{P^*} = 1 \Rightarrow e = \frac{P^*}{P}$

Proposition 3 implies $e = P^*/P$, which is called absolute PPP. In form of growth rate,

$$\frac{\dot{e}}{e} = \frac{\dot{P}^*}{P^*} - \frac{\dot{P}}{P}$$

which is called relative PPP.

Uncovered Interest Parity 未贴现利息平价

Proposition 4 资本流动完美

If capital mobility is perfect, then equilibrium in the foreign exchange market implies the uncovered interest parity:[a]

$$1 + i_t = (1 + i_t^*)\frac{e_t}{e_{t+1}^e}$$

e_{t+1}^e 猜测值

CNY: 1 → $1+i_t$; e_t → e_{t+1}

USD: e_t → $(1+i_t^*)e_t$ (covered, $\hookrightarrow f_{t+1}$)

$$\frac{e_t(1+i_t^*)}{e_{t+1}} = 1 + i_t$$

则 $1+i_t = \frac{e_t(1+i_t^*)}{f_{t+1}}$

or the uncovered real interest parity:

$1+i_t = (1+r_t)(1+\pi_{t+1})$, $1+i_t^* = (1+r_t^*)(1+\pi_{t+1}^*)$, 代入 $1+i_t = \frac{e_t(1+i_t^*)}{e_{t+1}}$

$\pi_{t+1} = \frac{P_{t+1}^e - P_t}{P_t}$, $\pi_{t+1}^* = \frac{(P_{t+1}^*)^e - P_t^*}{P_t^*}$

$$1 + r_t = (1 + r_t^*)\frac{\epsilon_t}{\epsilon_{t+1}^e}$$

[a] Parity: the quality or state of being equal or equivalent; equivalence of a commodity price expressed in one currency to its price expressed in another. – from Webster

$\Rightarrow (1+r_t)\frac{P_{t+1}^e}{P_t} = (1+r_t^*)\frac{P_{t+1}^*}{P_t^*}\cdot\frac{e_t}{e_{t+1}^e}$

$= (1+r_t^*)\frac{(P_{t+1}^*)^e}{P_t^*}\cdot\frac{e_t}{\epsilon_{t+1}^e}\frac{P_t^*}{P_t}$

$= (1+r_t^*)\frac{\epsilon_t}{\epsilon_{t+1}^e}\cdot\frac{P_{t+1}^e}{P_t}$

$\Rightarrow 1+r_t = (1+r_t^*)\frac{\epsilon_t}{\epsilon_{t+1}^e}$

Assumptions

Definition 5

An economy is a *small open economy* if it is a small part of the world market and the net capital flow of the economy has only a negligible effect on the world interest rate. An economy is a *large open economy* if it is a large part of the world market and the net capital flow of the economy has a significant effect on the world interest rate.

Assumption 1 (Perfect Capital Mobility [PCM])

Residents of a country have full access to world financial markets.

Assumption 2 (Static Expectations of ϵ)

$\epsilon^e_{t+1} = \epsilon_t$.

Assumption 3

PPP does not hold.

Outline

Case: Small Home vs. Large Foreign (Assumptions 1–3)

Assumptions 1 and 2 imply $r = r^*$. For a small open economy, r^* is exogenous.

外源性的

1. Market for Goods and Services

$$\overline{Y} = C(\overline{Y} - \overline{T}) + I(r^*) + \overline{G} + NX(\epsilon).$$

~唯一内生变量

The only endogenous variable is $NX(\epsilon)$ which plays a role of equating the left-hand side and the right-hand side.

2. Market for Loanable Funds

$\overline{S} = \overline{Y} - C(\overline{Y} - \overline{T}) - \overline{G}$

$$\overline{S} = I(r^*) + NX(\epsilon).$$

The difference between the supply and demand for loanable funds is called net foreign investment (NFI).

3. Market for Foreign Exchange

$$\overline{S} - I(r^*) = NX(\epsilon).$$

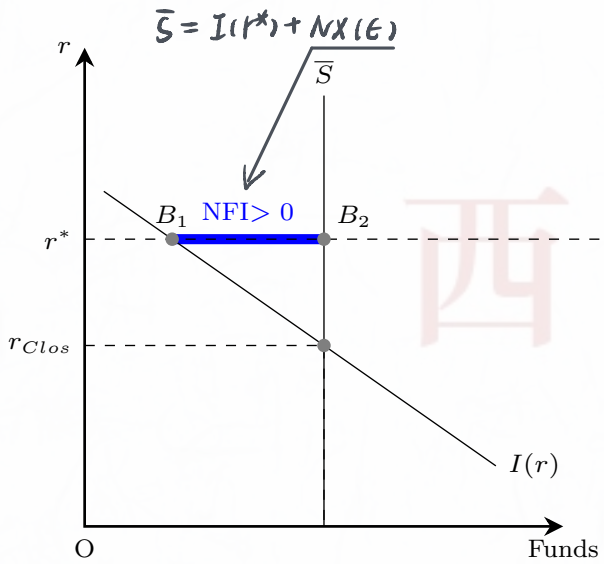
外国货币需求

$\overline{S} - I(r^*)$ captures supply of domestic currency or demand for foreign currency; NX captures demand for domestic currency or supply of foreign currency.

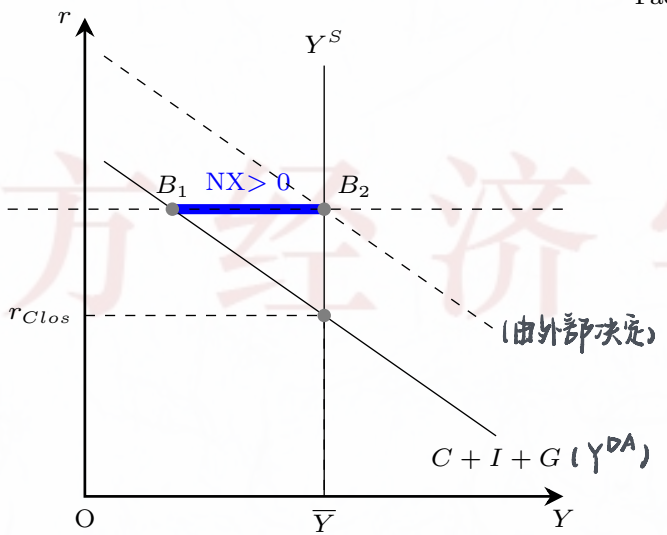
外国货币供给

$\bar{Y} = C(\bar{Y} - \bar{T}) + I(r^*) + G + NX(\epsilon)$ $\quad \bar{Y} = Y^S = Y^D = \bar{Y}$ $\quad C + I + G \triangleq$ domestic absorbtion $= Y^{DA}$

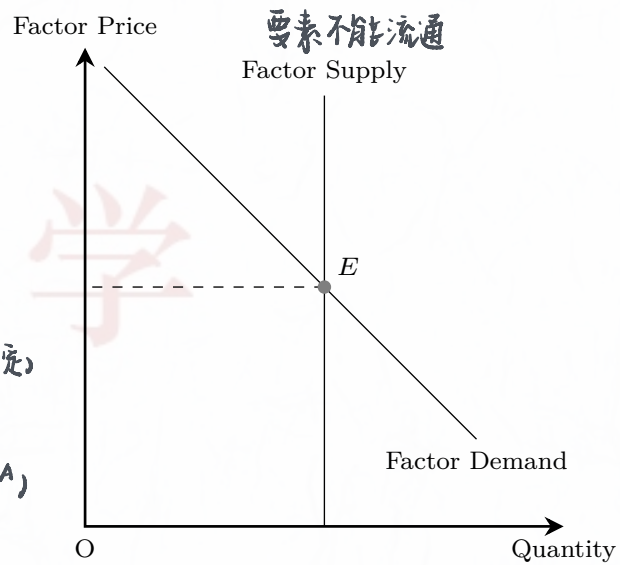
Classical Small Open Economy with PCM and Floating ϵ



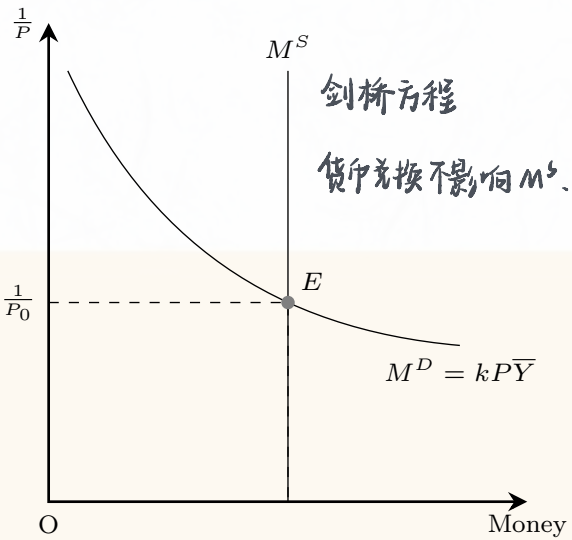
(a) Market for Loanable Funds



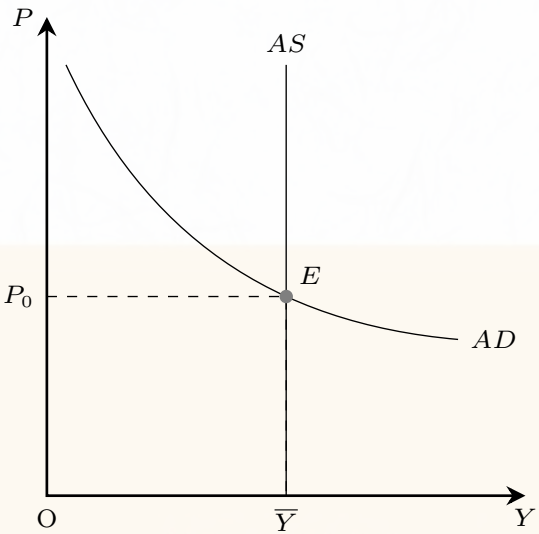
(c) Market for Goods



(e) Markets for Factors

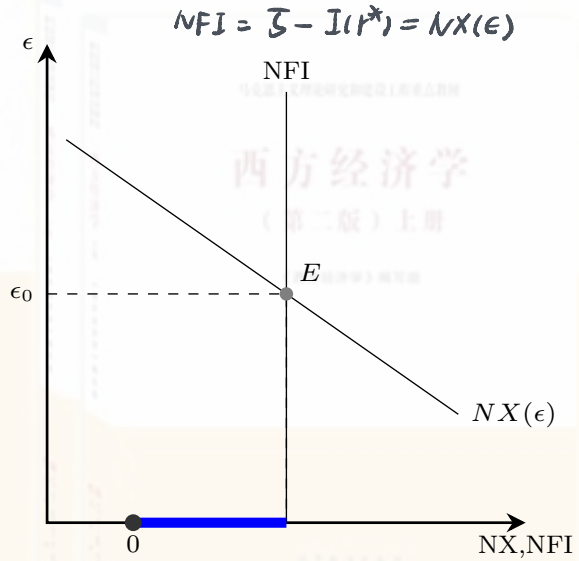


(b) Market for Money



(d) Classical AS–AD

古典 AS-AD 模型

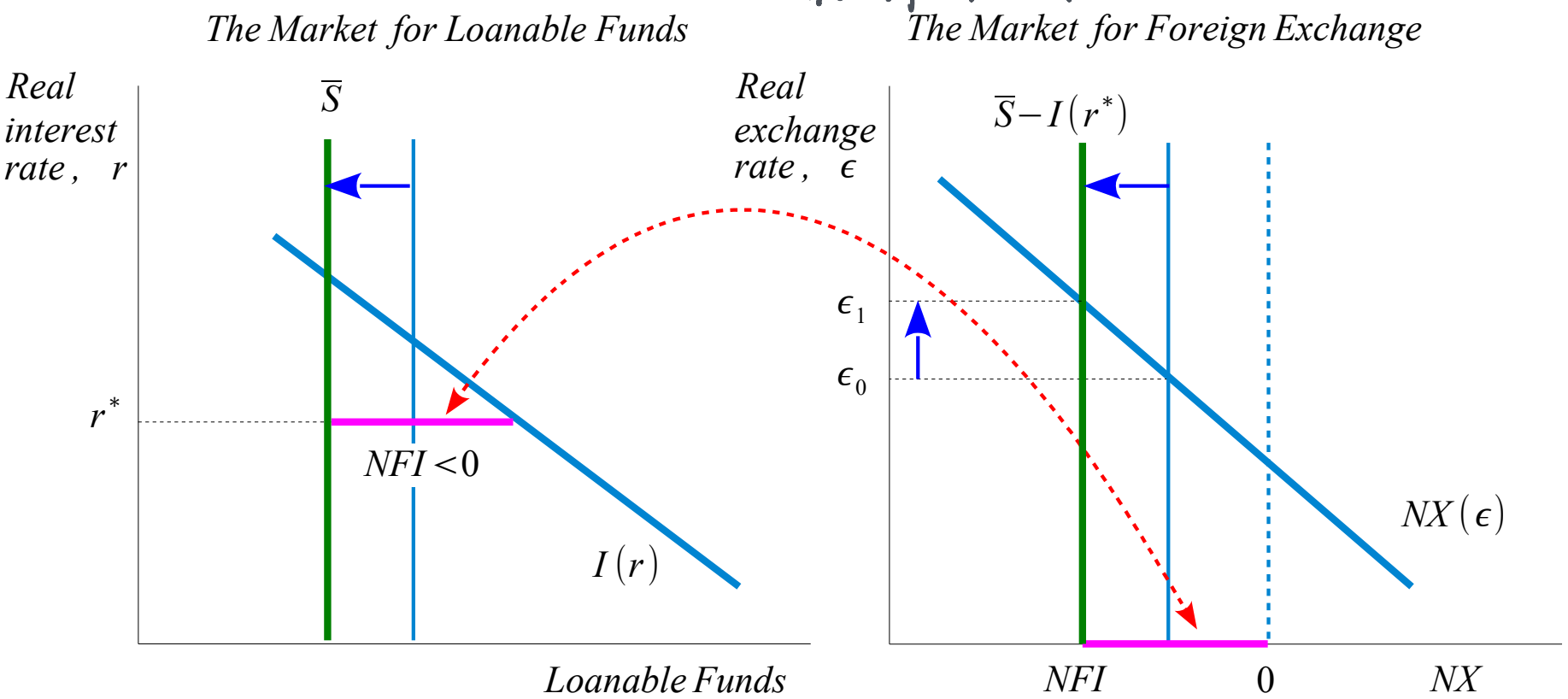


(f) Market for Foreign Exchange

外汇市场

A Reduction in Home's Saving 国内储蓄下降

实际利率↑，进口↑



Example 1 (观察与思考)

消费品以旧换新，对开放经济有何影响？ 对Y无影响，使增外债.

Outline

Case: Large Home vs. Large Foreign (Assumptions 1–3)

$\epsilon^* = \frac{1}{\epsilon}$

$$\text{Large Home}: \quad NX(\epsilon) = \overline{Y} - C(\overline{Y} - \overline{T}) - G - I(r); \tag{1}$$

$$\text{Large Foreign}: \quad NX^*(1/\epsilon) = \overline{Y}^* - C^*(\overline{Y}^* - \overline{T}^*) - G^* - I^*(r^*); \tag{2}$$

$$\text{Perfect Capital Mobility}: \quad r = r^*;$$

$$\text{The World is closed}: \quad NX(\epsilon) + NX^*(1/\epsilon) = 0. \tag{3}$$

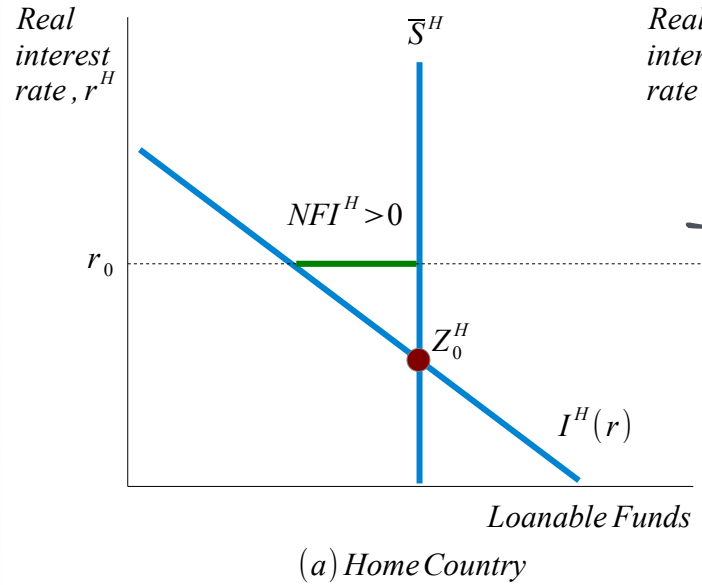
$\Rightarrow \overline{S} + \overline{S}^* = I(r) + I^*(r).$

① + ② 并代入 ③ $\quad 0 = \overline{Y} + \overline{Y}^* - C - G - I(r) - C^* - G^* - I^*(r^*)$

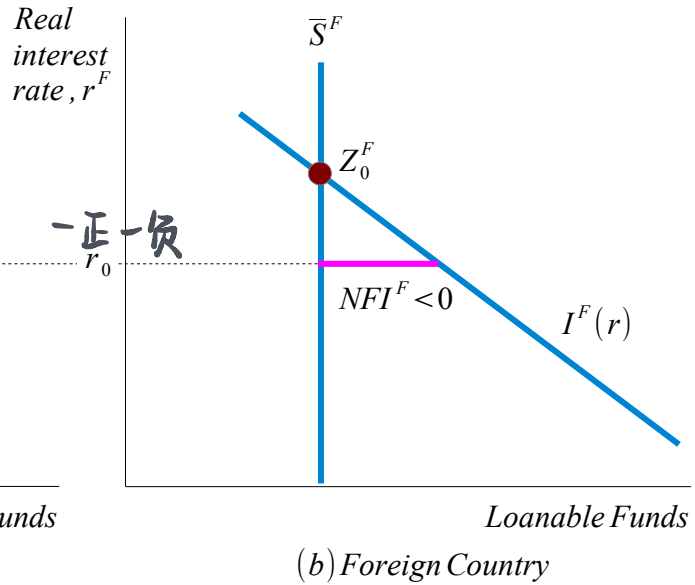
$\Rightarrow 0 = \overline{S} - I(r) + \overline{S}^* - I^*(r^*)$

$\Rightarrow \overline{S} + \overline{S}^* = I(r) + I^*(r)$

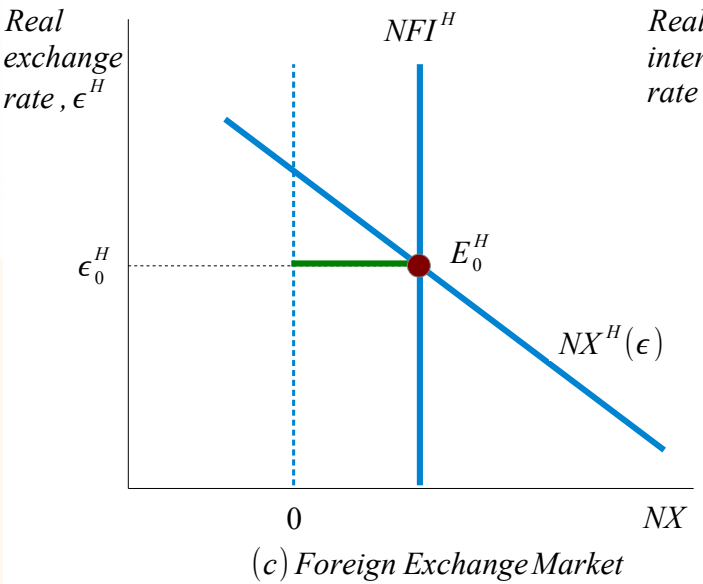
Case: Large Home vs. Large Foreign (Assumptions 1–3)



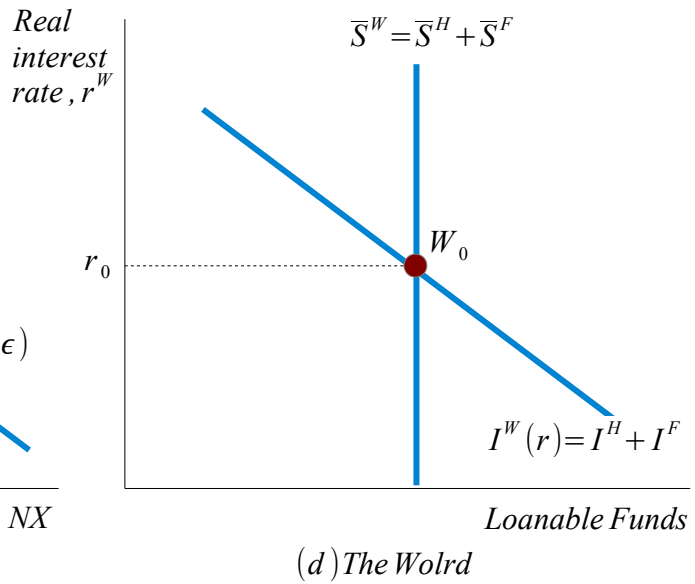
(a) Home Country



(b) Foreign Country



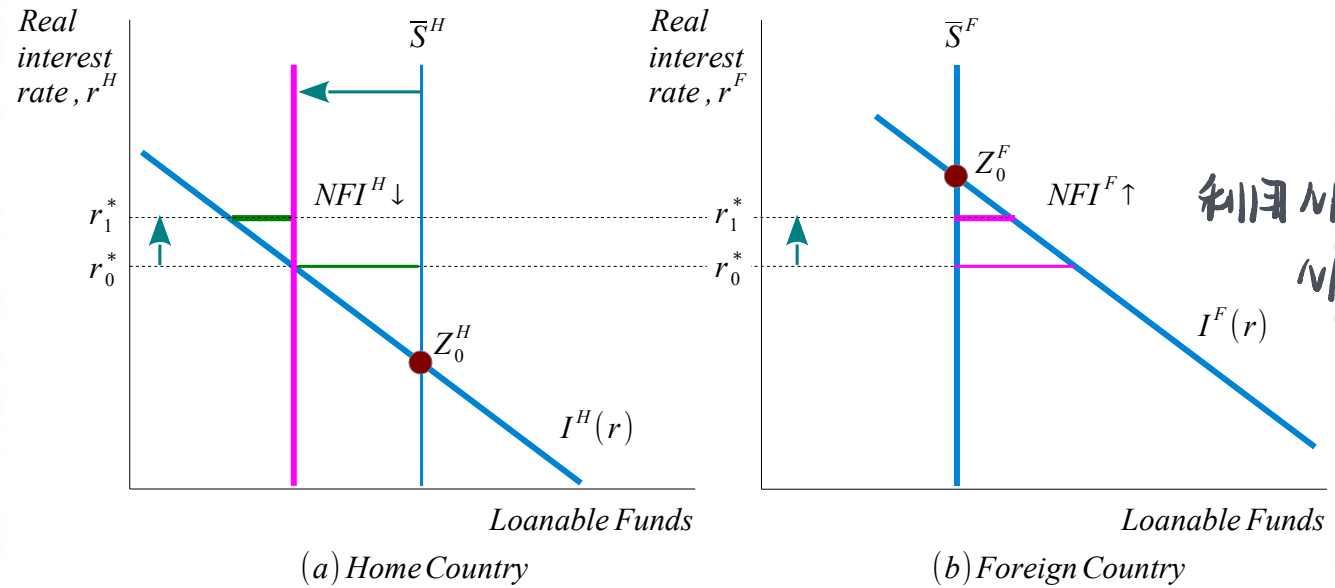
(c) Foreign Exchange Market



(d) The Wolrd

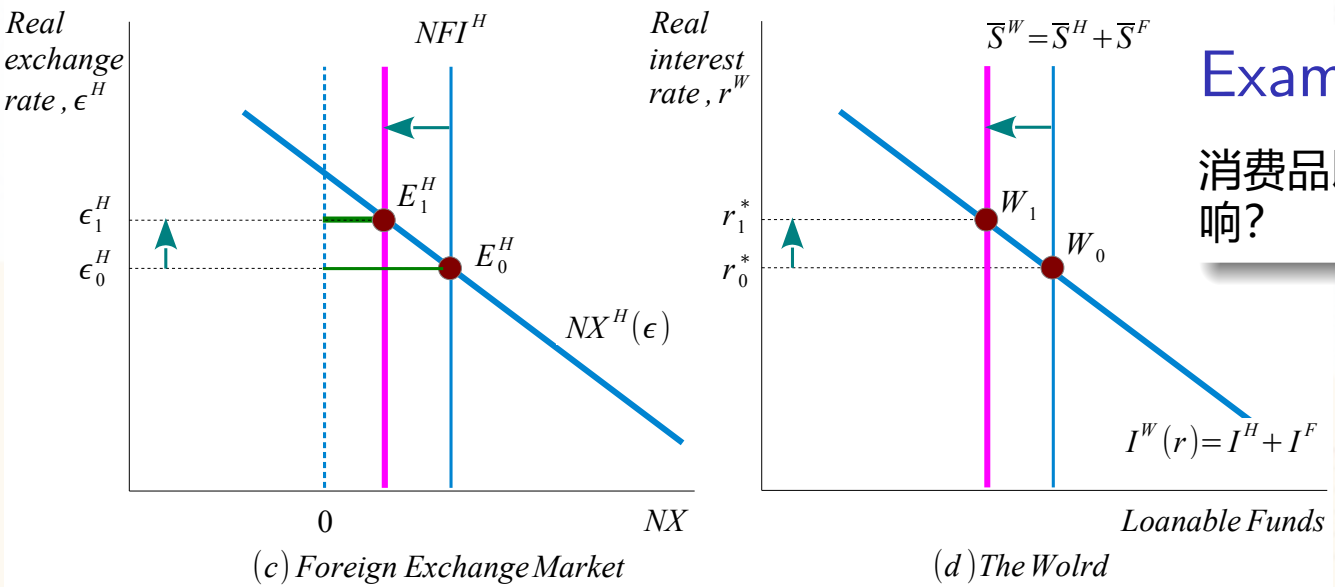
先分析 World 确定 r_0
后决定了 NFI^H / NFI^F.

A Reduction in Home's Saving



利用 NFI^F 分析 NFI^N.

$NFI^F = NFI^N$.



Example 2 (观察与思考)

消费品以旧换新，对开放经济有何影响?

Outline

疑难重点

(1) 理解实际汇率的计算。

(2) 掌握 The law of one price, PPP, uncovered interest parity.

(3) 在 Small home-large foreign 模型中，实际产出、实际利率、NFI、NX 和实际汇率如何决定?

(4) 在 large home-large foreign 模型中，实际产出、实际利率、NFI、NX 和实际汇率如何决定?

(5) 微积分技能：外生变量对内生变量的效应的偏导数推导。

马工程教材疑难重点

1（E2, p.84）

根据马工程教材观点，西方经济学的供求分析存在哪些理论缺陷？

2（E2, p.39）

根据马工程教材观点，为什么 1830 年后的经济学被马克思界定为“庸俗经济学”？

3（E2, p.3）

根据马工程教材观点，应当如何评析西方经济学的科学因素和阶级属性？