



2023 年中级宏观经济学笔记

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声明：请勿用于个人学习外其他用途！

个人笔记，如有错误，欢迎纠正

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第一章

Introduction

1.1 当我们在谈论宏观经济学，我们在谈论什么？

- 涉及到方方面面：产业分类/地域经济
- 我们在测算什么？
 - 经济体量 (size of economy)
 - 生活水平 (standards of living)
 - 健康福祉 (health and happiness)

1.1.1 浅谈 GDP

政府工作报告（2022）包含如下内容

- 国内生产总值达到 114w 亿，增长 8.1%
- 全国财政收入突破 20w 亿，增长 10.7%
- 城镇新增就业 1269w，调查失业率平均为 5.1%
- 居民消费价格上涨 0.9%
- 国际收支基本平衡

宏观经济运行的几个指标：

- GDP, CPI, PPI, 总人口, 粮食产量, 工业增长率

GDP 是一个让人又爱又恨的指标。

GDP 的诞生：美国大萧条，罗斯福发现没有一个综合的指标来衡量国家的收入和生产。1932 年 Kuznets 进行了国家总收入计算。（此时的含义更贴近于亚当斯密的国民财富）

Keynes 想要计算英国能制造多少枪支、坦克、飞机等等，有了 GDP 的现代定义：私人消费，投资，政府部门的支出。Keynes 的影响力很大，在二战后的马歇尔计划要求欧洲测算 GDP，GDP 得到进一步普及。在 50 年代联合国要求各国进行测算 GDP，更好一起评价。1993 中国正式接受 GDP 作为经济表现的指标，类似概念的在之前也有，更接近于苏联的评价标准。

第二章

Measuring the Macroeconomy

2.1 GDP

定义 2.1 (Gross Domestic Product)

Gross Domestic Product:

the **market value** of **final goods and services** produced **within a country's geographical borders** over a **particular period of time**

笔记

- 市场价格
 - 家庭经济/地下经济不计入
- 必须是 final goods and services, 必须是最终的
 - 中间产品不计入, 因为一个原料可以无限流转。计算最终产品避免重复计算
- 地理范围的国家边界
 - 中国人在美国打工, 增长了美国的 gdp
 - GNP 国民生产总值: 按照国籍来划分。GDP 是国家生产总值, 以地理来限制经济范围。
 - 不存在跨国流动的时候, GDP 和 GNP 是等同的
- 在特定的时间范围内
 - 测算的是在某个特定时间内的“流量”
 - 去年的产物不计入今年

练习 2.1

- 定义速判: 下列哪些会纳入 2022 的 GDP 测算?
- 工厂生产并销售了 60w 台灯
 - Yes
- 生产了 60w 台灯, 45w 卖出去了
 - 算 15w 的成本价和 45w 的市场价 (中间品当作最终产品)
- 60w 螺丝被用于生产上述台灯
 - 不算, 卖出去的算过了, 没卖出去的也当作成本价算了
- 大学生一年点了 300 份外卖
 - Yes
 - 但是外卖的店家的成本不算
- 全职麻麻/粑粑全年做了 1000 顿饭
 - X, 没有投放市场
 - 家务劳动事实上很大程度上被低估了, 或许家政市场可以为家务劳动提供一个机会成本的估计。这也是需要 GDP 继续优化的部分: ta 忽视了很多暗处的经济产出
- 歪果仁在中国当外教
 - Yes
- 群众卖掉了自己住了十年的房子
 - 不满足第四个要素, 是过去的产出
 - 二手交易不计入 gdp, 但是完成二手交易所提供的服务价值计入 GDP (譬如房产中介)

- 二手房的增值不计入 GDP，因为没有新的产出。

2.2 Calculation

1. 生产法 (Product approach)

- 很难知道到哪一步是最终的，有时候会用增值来衡量
- 比如椰子生产商零成本卖椰子 5r，食堂卖 15r，增值 10r，总共增值 15r。

2. 收入法 (Income approach)

- 把所有人的组织的收入都加总
- 市场交易买和卖是对称的: 椰子生产商是 5r 收入，食堂的净收入是 10r，从而 15r

3. 支出法 (Expenditure approach)

- $GDP = C + I + G + NX$
- C 消费，I 投资，G 政府花销，NX 净出口
- 学生消费了 15r， $C = 15$ ，食堂已经做成 15r 的最终商品卖出了，食堂的投资已经得到回报 15r，因而此时投资已经归 0 了，如果没卖出去，投资是 5r 要纳入计算。

2.3 Example

Table 1 Coconut Producer		Table 3 After-Tax Profits	
Total Revenue	\$20 million	Coconut Producer	\$13 million
Wages	\$5 million	Restaurant	\$11 million
Interest on Loan	\$0.5 million	Table 4 Government	
Taxes	\$1.5 million	Tax Revenue	\$5.5 million
Table 2 Restaurant		Wages	\$5.5 million
Total Revenue	\$30 million	Table 5 Consumers	
Cost of Coconuts	\$12 million	Wage Income	\$14.5 million
Wages	\$4 million	Interest Income	\$0.5 million
Taxes	\$3 million	Taxes	\$1 million
		Profits Distributed to Producers	\$24 million

- 收入法：算净收入
 - 椰子生产商的净收入：13
 - 餐馆净收入：11
 - 家庭净收入：14.5+0.5-1 = 14
 - 政府净收入：5.5
 - wages 为什么不是都花掉？
 - wages 被理解为 spendings，政府的开支不当做成本，当作政府支出
 - 政府没有净利润这个说法，没有自己的“税后”收入
 - 总和：43.5
- 生产法/增值法
 - 椰子生产商净增值：20（上游是 0，卖出 20，创造的增值是 20）
 - 餐馆净增值：30-12=18（12 是上游的价值，30 是基于这 12 产生的价值，另外的 8 没有增值不需要计算）

- 贷款要不要作为一个金融部门来考虑?
- 金融部门作为提供资本的机构，创造了 0.5 的服务价值，然后椰子生产商的成本要减去 0.5 的贷款利息。
- 政府的净增值：5.5(政府创造的价值以政府的支出/收入来看)
- 家庭部门不属于生产部门，没有产品增值。其产生的劳动价值已经算作公司的要素投入而增值
- 总和：43.5
- 支出法
 - 消费 C：30。产生的总消费
 - 投资 I：8。没有花出去的 8million 椰子作为投资计算（也可以认为这 8 个椰子被餐馆消费了）
 - 政府支出 G：5.5
 - 总和：43.5
- GDP 剔除价格因素后算出的指标更加精准！（下节讨论）

2.4 Problems in Measuring GDP

- 不刻画地下经济和非法经济
- 政府创造的价值难以衡量，没有市场价值用来衡量，十分不精准。而且价格不能衡量所有东西，譬如国防系统等。
- 很难去评价部分劳动力产生的价值——比如家庭主妇/全职妈妈
 - 耗电量、铁路货运量和贷款发放量的平均值来分析经济状况
 - 花旗银行设定权重为 0.4, 0.25, 0.35
 - 这三个指标很难造假，所以更为真实。
- 无法度量快乐、幸福等心理因素。

第三章

Economic Growth

3.1 两会是在干嘛呢

- 最熟悉的：政府工作报告。两会审议报告并表决通过。
- 第一项：国内生产总值初步核算增长 3% 左右（去年年末的数据可能还不完全，所以是初步核算：讲究时效性的初步数字）

3.2 价格水平与通货膨胀

- 用当年的价格计算当年的生产，计算当年的 GDP 产出：名义 GDP
- 名义 GDP 衡量了价格变化和生产能力变化。单独拎出来生产能力就是真实 GDP，拎出来价格变化就是 Price Index

定义 3.1 (Nominal GDP)

Nominal GDP: using current year's prices and quantities

定义 3.2 (Real GDP)

Real GDP: excluding price changes from the GDP calculation

定义 3.3 (Price Index)

Price Index: Weighted average of a set of observed prices that gives a measure of the price level. （一篮子物品的价格估算：衡量加总的价格水平变化）

- A measure of the inflation rate allows us to determine how much of an increase in GDP is nominal and how much is real.
- Separate the growth of quantity and the growth of price (inflation)

练习 3.1

两部门经济体的增长和通胀

- Consider an economy with two sectors: Apples and Oranges
- What is the growth rate of GDP?
- What is the growth rate of the price level (i.e., inflation)?

	Apples	Oranges
Quantity in Year 1	$Q_1^a = 50$	$Q_1^o = 100$
Price in Year 1	$P_1^a = \$1.00$	$P_1^o = \$0.80$
Quantity in Year 2	$Q_2^a = 80$	$Q_2^o = 120$
Price in Year 2	$P_2^a = \$1.25$	$P_2^o = \$1.60$

- 第一年名义 GDP: $1 \times 50 + 0.8 \times 100 = 130$
- 第二年名义 GDP: $1.25 \times 80 + 1.6 \times 120 = 292$
- 名义 GDP 可能高估了经济实际增长，因为有通货膨胀

- 计算真实/不变价 GDP：首先确定基年。基年选择也很重要，我们此处的目的仅仅是排除价格的影响。此处假定第一年为基年，第一年的实际 GDP 即为名义 GDP。第二年则为 $1 \times 80 + 0.8 \times 120 = 176$
- 若以第二年为 GDP，第二年的真实 GDP 就是名义 GDP，此处第一年的真实 GDP 即为 $1.25 \times 50 + 1.6 \times 100 = 222.5$
- 选定基年的时候，其实就决定了 GDP 参与计算时的各商品的权重：以当年的价格为权重，赋予权重越高，意味着在 GDP 中占比越高。从而也会影响到 GDP 增长率的测算。如何尽量避免基年选取的影响？——后面的链式法则会对这个进行一个改良（几何平均代替）。

3.3 GDP 增长率计算步骤

3.3.1 GDP 增长率

定义 3.4 (GDP 增长率)

增长率定义：

$$g_t^{GDP} = \left(\frac{GDP_t}{GDP_{t-1}} - 1 \right) \times 100\%$$

近似公式：

$$g_t^{GDP} \approx \ln(GDP_t) - \ln(GDP_{t-1})$$

GDP	Year 1	Year 2	% Increase
Nominal	130	292	124.6
Year 1 = base year	130	176	35.4
Year 2 = base year	222.5	292	31.2

3.4 价格水平指标：GDP 平减指数

定义 3.5 (GDP 平减指数)

GDP 平减指数定义为名义 GDP 与真实 GDP 之比（意味着也要选择基年）：

$$GDP_Deflator = \frac{Nominal_GDP}{Real_GDP} \times 100$$

这是对价格水平的刻画，而非对变化率的刻画。变化率即位通胀率。

GDP Price Deflators	Year 1	Year 2	% Increase
Year 1 = base year	$\frac{130}{130} \times 100 = 100$	$\frac{292}{176} \times 100 = 165.9$	65.9
Year 2 = base year	$\frac{130}{222.5} \times 100 = 58.4$	$\frac{292}{292} \times 100 = 100$	71.2
Chain-weighting	100	168.5	68.5

- 可以看到，两者的增长率不一。也就是用来刻画的权重不一。而链式法则可以避免差异性。
- 橘子价格变化更大，所以如果给橘子赋予更高的价格权重，体现出的通胀率也会更高。也就是选取第二年为基年的结果。

3.5 价格水平指标：消费者价格指数（CPI）

定义 3.6 (CPI)

CPI（居民消费价格指数, consumer price index）度量了居民家庭一般所购买的一篮子消费商品和服务的价格变动情况。Consumer price index (CPI) is based on a fixed basket of goods and services consumed by a **typical household**.

- 城乡居民购买支付生活消费品和服务项目的价格是社会产品和服务项目的最终价格，同人民生活密切相关，在整个国民经济价格体系中具有极为重要的地位。
- 像大宗商品涨价，必须传导到最终的消费品上才会影响到 CPI。
- 按年度计算的居民消费价格指数变动率通常被用来作为反映通货膨胀或紧缩程度的指标。一般来讲，物价全面地、持续地上涨被认为发生了通货膨胀。



笔记 CPI 和 GDP 平减指数有什么差别吗？美国会算 Core CPI：石油价格会剧烈影响 CPI，从而定义了更窄的领域 CoreCPI。——CPI 可以衡量进口商品和服务对价格的影响，但是 GDP 平减指数不会考虑（只考虑国内的）。而生活很有可能会受到进口商品的影响。

- CPI 和生活更加息息相关，更容易被消费者给感知到。
- 虽然房价和我们息息相关，但是房价可能不被衡量进 CPI。且 CPI 也是个均值，如果均值不能代表大多数人的时候，可能就是因为贫富差距剧烈拉大。

3.6 Problems in Measuring Real GDP and the Price Level

- The relative prices of goods change over time –a problem for CPI measurement.
- CPI 固定了一个篮子，但是每个人的消费不是固定的。一个商品的价格下降了，可能人们就会去涌向便宜的商品。此时的 CPI 高估了实际的消费水平，因为 CPI 还是以较高价格的商品为基准。
- The quality of goods and services changes over time
- 没有把一些技术要素提高时带来的价格相对下降衡量进去。所以 CPI 仍然可能偏高
- New goods and services are introduced, and some goods and services become obsolete.
- 新商品引进和旧商品退出都会让“篮子”中的商品有滞后性。

美国数据：二战以来的价格指数变动

Inflation Rate Calculated from the CPI and from the Implicit GDP Price Deflator



- 大部分时间 CPI 和 GDP 平减指数衡量的差不多
- 在某些情况下会出现分歧。七十年代末期 CPI 远高于 GDP Deflator（滞胀/石油危机的影响——价格上涨）
- GDP 中消费 C 虽然增长了，但是净出口 $NX=X-M$ 中减去了进口 M

3.7 就业与劳动力市场

3.7.1 Labor Market Measurement

- The Bureau of Labor Statistics monthly household survey divides the working-age population(适合工作的人，不包括太年轻的和太老的等等) into three groups:
 - Employed
 - Unemployed: 想要工作且是适龄劳动力但是找不到工作的人：过去三个月都在积极的找工作。
 - Not in the Labor Force: 没有意愿去工作的人
- 上述分类被诟病的原因：Discouraged Workers 的分类。长时间找不到工作而遭受打击从而不想找工作的人，这一类没有算在 Unemployed 而是算在了 Not in the Labor Force，没有算在失业率中。
- Labor Force = Employed + Unemployed

Three Key Labor Market Measures

1.

$$\text{Unemployment Rate} = \frac{\text{Number of Unemployed}}{\text{Labor Force}}$$

2.

$$\text{Participation Rate} = \frac{\text{Labor Force}}{\text{Working Age Population}}$$

3. 劳动力除以所有适龄工作人群，这就把 Discouraged Workers 衡量在内。总和失业率和参与率就可以有更全面的认知。

4.

$$\text{Emp-Pop Ratio} = \frac{\text{Employment}}{\text{Working Age Population}}$$

5. 就业人口比：结合上述两者，有工作的人直接除以适龄工作人群

Measures of labor market tightness moved in unison before the pandemic, but have been having differently recently.



- 很多派生的指标：Prime-age nonemployment rate（黄金年龄未工作率）
- Unemployed per job opening: 衡量找工作难度的指标，失业人口除以空缺职位。比如一个人失业了，放出了三个空缺职位，那么就是一个很好找工作的情况。
- Quits Rate: 辞职不干的情况，疫情期间上升：餐厅的服务员/工厂工人不愿意上班，担心感染的风险。
- 疫情之后，各个指标分化比较严重了。为什么关心这个？衡量经济是否完全复苏：财政政策/就业政策是否到位了？各个指标的意义不同

3.8 两会还讲了什么?

- 两会的第二项：新增就业人口 1206w
- 第三项：城镇失业率 5.5%
- 第四项：CPI 上涨 2%
- 第五项：粮食产量 13731 亿斤，增 0.5%
- 第六项：赤字率 2.8%
- 第七项：财政支出规模扩大 1.43w 亿
- 第八项：中央本级支出预算。
- 第九项：中央对地方的转移支付。
- 第十项：地方政府专项债券 3.65w 亿
- 第十一项：小微企业 100w 到 300w 部分减半征收所得税
- 第十二项：减税退税
- 第十三项：失业保险基金/稳岗培训
- 第十四项：科技型中小企业加计扣除比例从 75% 提高到 100%
- 第十五项：中央预算投资 6400 亿元
- 第十六项：18 亿亩耕地红线
- 第十七项：1 亿亩高标准农田
- 第十八项：居民医保提高
- 第十九项：定点医疗机构建设
- 人大的议案通过有法律效力，政协议案是参政议政的建议，没有法律效力。

3.9 现实中的经济增长度量

3.9.1 Fixed-weighted Real GDP

- A fundamental issue in comparing GDP this year with GDP in years past is determining how much of any increase is real and how much reflects price inflation.
- A natural way to control for price inflation is to value GDP in both periods using the same, constant set of prices.
- This is exactly what the fixed-weighted GDP measure does: GDP is valued at a common basket of prices, say 1992 prices, and the resulting estimates are called GDP in “constant 1992 dollars.”

3.9.2 Problems with fixed-weighted indexes

- The easiest way to calculate real GDP is to specify a single base- period, or constant, set of prices and then value the output in all periods in those prices.
- Unfortunately, because relative prices and associated patterns of purchases change over time, **this measure of real GDP growth will be quite sensitive to the choice of the base year**
- A shift in the base year often has a significant impact on the measured growth rates

3.9.3 Laspeyres (拉氏指数) vs. Paasche (帕氏指数)

- Laspeyres index (proposed by German economist Étienne Laspeyres): using a fixed base year 拉氏指数有一个固定基期
- The Laspeyres price index tends to overstate price increases

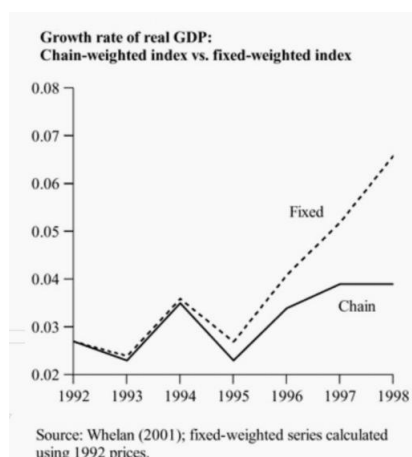
 **笔记** 因为如前所述，存在替代效应。As prices change, consumers typically alter their purchasing decisions by selecting fewer products with large price increases while buying more products that show low or no price increases.

- Paasche index (developed by German economist Hermann Paasche): using current year as the base year 帕氏指数以当期为基础
- The Paasche price index tends to understate price increases

 **笔记** It already reflects some of the changes in consumption patterns that occur when consumers respond to price increases —i.e., increased consumption of goods will indicate reduced relative prices. 已经考虑进去消费者的偏好偏移了，所以刚好和拉氏指数相反。

3.10 Chained Laspeyres Indexes 链式拉氏指数

- Some countries address the long-run distortions caused by fixed weighted output indexes by using chained Laspeyres indexes
- That is, updating the base period at 5- or 10-year intervals and then using the new fixed-weighted (Laspeyres) index to extrapolate forward the old fixed-weighted index, thereby creating a series of fixed-weighted indexes that are linked together like a chain.
- 也就是用五年一换。
- 我国 CPI 的各种类指数和总指数的计算采用链式拉氏公式，逐级加权平均计算



- The measure of real GDP also becomes less and less accurate as one moves further away from the base year
- As the figure illustrates, in constant 1992 dollars, the growth rate of fixed-weighted GDP increasingly overstates the “true” chain weighted growth rate of real GDP.
- The reason is that the components of GDP that grow fastest tend to be those that exhibit the smallest price increases, or even price declines (for instance, personal computer and smartphones)
- So the fixed-weighted real GDP measure tends to weight these components more heavily than later prices would suggest (often called substitution bias)
- That is, base year’s (higher) prices multiplied with current year’s (larger) quantities -> overestimation of GDP

3.11 我国的 GDP 核算方法

- 不同行业的不变价增加值核算方法也有所不同，如物量指数外推法（某行业不变价增加值 = 该行业上年不变价增加值 $\times$ (1 + 该行业不变价增加值增长速度)）、价格指数缩减法（某行业不变价增加值 = 该行业现价增加值 $\div$ 该行业价格指数）等

- 分行业不变价增加值采用固定基期方法计算，目前每 5 年更换一次基期，2021 年至 2025 年不变价增加值的基期是 2020 年
- But the resulting chained Laspeyres indexes is still subject to inaccuracy and bias during periods of extreme price movements.
- In periods such as the energy crisis of 1973–75, relative price and consumption patterns can change rapidly, and significant bias can creep into fixed-weighted measures even during periods close to the base period.

3.12 Chain-weighted Real GDP

- The chain-weighted measure of real GDP solves this problem by updating the weights in every period
- For example, the growth rate between 1992 and 1993 is computed using prices that prevailed in 1992 and 1993, while the growth rate between 1997 and 1998 is computed using prices that prevailed in 1997 and 1998.
- In 1997, the United States introduced the **chain-type Fisher index** into its measures of real output and prices to address these problems.
- This index, developed by Irving Fisher, is a geometric mean of the conventional fixed-weighted Laspeyres index (which uses the weights of the first period in a two-period example) and a Paasche index (which uses the weights of the second period)

$$1 + g_F = \sqrt{(1 + g_L)(1 + g_P)}$$

第四章

许宪春老师问答录

1. 中国经济高质量发展反映在 GDP 和 CPI 上如何体现？还应考虑哪些宏观指标？

- 高质量发展和很多事情相关。习总书记说，高质量发展是社会主义现代化的首要目标。GDP 从多个角度反映了经济水平，比如结构/价格/总量等多个角度。量的增长可以通过 GDP 来反映，是一个非常重要的指标。每一个年度规划里都会衡量 GDP 来发展。
- CPI 和居民生活非常相关，非常影响低收入群体。CPI 都控制在 3% 左右
- 这些指标还远远不够，还涉及到绿色发展、创新发展、对外开放程度等等。GDP 和 CPI 都是不足以衡量这些的。譬如传统产业的数字化转型。这些都需要很多新的指标。

2. 二手房交易中哪些可以放入 GDP 衡量？出售前精装修算不算？

- 房价上涨是 GDP 衡量不了的。但是可以用“个人持有收益”来衡量。精装修花了 500w 怎么体现？住户的装修价格比较高的话，划入了投资的范畴。或者从生产的角度，在建筑业中也可以得到体现。用的水泥、瓷砖等等也会体现在生产领域中。

3. 如何对复杂的统计数据的真实性进行衡量？

- 国家统计局尽可能的排除数据的干扰，做了很多的工作。在数据采集环节，在一百多万多家企业，都通过联网直报方式直接填表。授予了各省市看数据的权利，但是不允许地方修改数据。可以提出问题反馈给企业，企业可以修改。地方修改了数据就会被统计局发现。企业如果改了假数据，也会追究责任。
- 抽样调查，统计局垂直管理调查总队，有 32 只调查总队。主要干部由统计局党组担任，避免地方染指。国家统计局会去地方检查，并进行处理。
- 数据的评估：例如衡量产业产值的增长和主要产品的增长，观察是否一致。没给月份国家统计局都会对各个数据进行评估，各司司长和专业人员都会参加数据评析会议，从多个源头进行评估，评估合理才能上报/发布。
- 但是数据总会有问题，太复杂了。许老师去意大利访问，街上游行的人在抗议统计局的数据真实。统计局在尽可能的避免数据造假问题。

4. 为何 GDP 核算材料由下往上传递，但是公布由上往下？初步核算和最终核算有什么不同呢？经济普查会对数据有很大的纠正，这是为什么呢？

- 第四次经济普查（2018）的数据在 2019 算出，之后有一次重大改革，对地区 GDP 核算进行改革。
- 在这之前，叫做分级核算，国家算国家的，省算省的，市算市的。这种情况下还是国家先发布，是因为有的数据是一致的（联网直报的数据，发布给地方使用），抽样调查也是报送给国家和地方，即使是同样的数据来源，方法虽然是统一规定的，数据也是有差异的。数据评估的环节中，国家统计局的专业水平高一点，计算能力更高，对数据的把握也更加全面。地方的统计具有两重性，这些数据既是发展的指标，也是政绩的指标，所以压水压的不多。
- 国家统计局不光要算准，还要对各级数据评估，所以数据的发布是先上后下的，有上级的评估之后才能统一发布
- 18 年改革后为统一核算，国家统计局组织人员对地方进行计算。国家统计局把数据反馈给地方后，地方才能发布。从而也是由上到下。

5. 传统失业率的定义很繁琐，有很多限制。为什么用这样的方式定义失业率？这个又有什么现实的意义？近几年的城镇失业率稳定在 5%，似乎也没有收到疫情很大的影响？我国对失业率有什么符合国情的改变呢？

- 统计部门把 16 岁人口区分为劳动力和非劳动力。就业人口定义为：统计调查节点的前一周，对这一周中为了获取经济收入而工作一个小时及以上的人称为就业人口（休假的再加上）。这是与国际劳工组织的定义一样的。（没有社保，有收入就行）
- 失业：没有工作，过去三个月在找工作，有了合适的工作能去工作。这类人群就是失业人口。其余的就是非劳动力。
- 应届毕业生没找到工作，这就符合失业的标准了。
- 调查失业率就是失业人口比上劳动力。国际的标准是同样的，这是为了使数据具有可比性。
- 时间有限没回答完 qwq

6. 一线城市房价价格上涨，二三线城市房价下跌，该如何应对处理？

- 确实是这样的。这对经济确实会有影响的，比如对房地产投资/房地产附加值有影响。国家在房贷上/首贷上有一些措施，今年的房地产业会有所恢复。

第五章

经济增长的历史

- 为什么有的国家穷，有的国家富？
- 为什么有的国家历史上富裕，而现在落后了？（资源富裕型国家）
- 为什么有的国家历史上贫穷，而现在能富起来？（中国、日本）
- 用什么来衡量经济体是否富有？

Malthusian Model

“The power of population is so superior to the power in the earth to produce subsistence for man, that premature death must in some shape or other visit the human race. The vices of mankind are active and able ministers of depopulation. They are the precursors in the great army of destruction; and often finish the dreadful work themselves. But should they fail in this war of extermination, sickly seasons, epidemics, pestilence, and plague, advance in terrific array, and sweep off their thousands and ten thousands. Should success be still incomplete, gigantic inevitable famine stalks in the rear, and with one mighty blow levels the population with the food of the world.”

- A Malthusian model of economic growth predicts that a technological advance will only increase population, with no long-run change in the standard of living
- Output is produced from land and labor inputs.
- Population growth is higher the higher per-capita consumption is. **In equilibrium, consumption equals output produced.**
- 农业社会中最主要的财产和资源是土地，自然限制为主要的限制人口的因素。技术进步只能是一个线性的增长过程，而人口是指数增长的，自然无法维系下去。
- Productivity increases shifts up the per-worker production function. In the long run, the population increases to the point where per capita consumption returns to its initial level. There is no long-run change in living standards.
- 马寅初校长曾经提出过控制人口。

第六章

经济增长的现实

6.1 经济增长率的差异

- 发达国家的经济增长进入了一个相对稳定的状态。富裕国家的增长率差别不大。
- 发展中国家的发展速度却差距巨大。为什么？

U.S. Per Capita Real Income Growth

- Except for the Great Depression and World War II, growth in U.S. per capita real income has not strayed far from 2% per year since 1900.

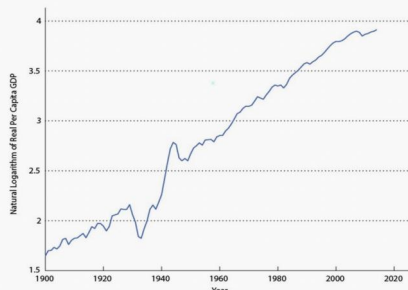
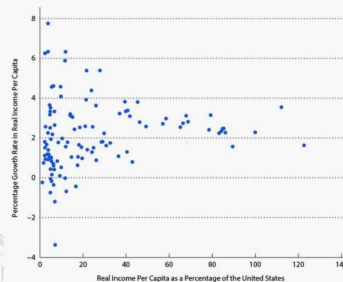


Figure 7.4 Growth Rate in Per Capita Income vs. Level of Per Capita Income



6.2 “72”法则

定义 6.1 (72 法则)

一个经济体的年增长速率是 $x\%$ 的话，则经济总量翻一番需要 $\frac{72}{x}$ 年。
数学上是一个很简单的原理：增长率为 x 的话，增长 t 年总量为两倍：

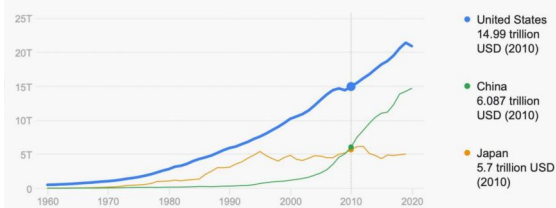
$$(1+x)^t = 2 \Rightarrow t \ln(1+x) = \ln 2 \approx 0.69 \Rightarrow t = \frac{0.69}{\ln(1+x)}$$

当 x 比较小的时候， $\ln(1+x) \approx x$ ，但 $\ln(1+x) \leq x$ 始终成立，所以通常选择上浮 0.69 到 0.7 或者 0.72，且 x 是以百分之几的形式计算的，所以出现了 72 法则。

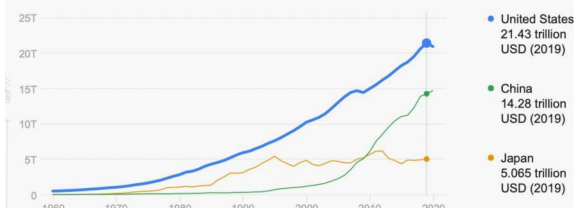
$$t = \frac{72}{x}$$

- 可以用这个理论来直观的预测国家的增长速度：增速多少才能翻一番？

Macroeconomic Development across Countries
跨国对比宏观经济的发展历程



Macroeconomic Development across Countries
跨国对比宏观经济的发展历程



第七章

新古典生产函数

7.1 Neoclassical Production Function

7.2 宏观经济增长的驱动力来自哪里？

- Population growth?
- Capital investment?
- Government spending and stimulus?
- Education?
- Technology?
-
- 亚洲四小龙的经济迅速增长，在于政府的产业政策引导和大量投资。
- 如何刻画增长和增长动力呢？新古典生产函数就可以做到这一点。

定义 7.1 (Neoclassical Production Function)

Representative Firm's Production Function:

$$Y = AF(K, L)$$

A 是全要素生产力，所有不能被 K 和 L 解释的都可以放入 A。K 是资本，L 是劳动力。

 笔记 生产函数应该满足如下三个性质：

1. CRS: Constant returns to scale

$$AF(\lambda K, \lambda L) = \lambda AF(K, L)$$

$$\frac{Y}{L} = AF\left(\frac{K}{L}, 1\right) \Rightarrow y = Af(k)$$

- 代表一个稳定的生产过程，产出十分标准化。始终按照一定比例投入要素生产。数学上生产函数是一个齐次函数。
- 假定了所有人口都是劳动力。人均产出（人均 GDP）记为 y，人均资本记为 k。

2. 正的但是递减的边际产出。Positive but diminishing marginal product (MP) of physical capital (K) and labor (L)

$$MPK = \frac{\partial Y}{\partial K} > 0, \quad \frac{\partial MPK}{\partial K} < 0$$

$$MPL = \frac{\partial Y}{\partial L} > 0, \quad \frac{\partial MPL}{\partial L} < 0$$

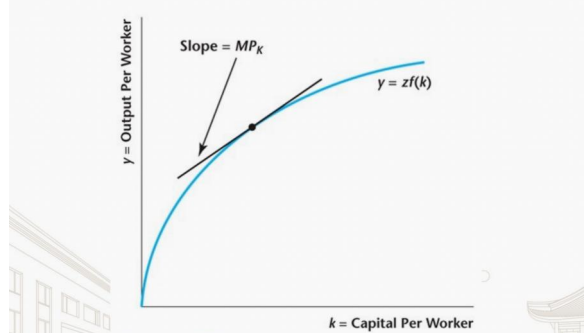
- 雇佣人/使用资本如果不增长经济，总可以不用。那么边际产出是递增的（更严格来说是不减的，通常递增）。

3. Inada conditions（稻田条件）

$$\lim_{K \rightarrow 0} MPK = \infty, \quad \lim_{K \rightarrow \infty} MPK = 0$$

$$\lim_{L \rightarrow 0} MPL = \infty, \quad \lim_{L \rightarrow \infty} MPL = 0$$

Figure 7.12 The Per-Worker Production Function



7.3 Special Case: Cobb-Douglas Production Function

定义 7.2 (Cobb-Douglas Production Function)

$$Y = AF(K, L) = AK^\alpha L^{1-\alpha} \quad \alpha \in (0, 1)$$

- Does it satisfy the three properties of neoclassical production function? Of course! Try yourself.
- A labor share in national income of 70% gives $\alpha = 0.3$

7.4 Factor Shares

定义 7.3 (Factor Shares)

The factor share of one input is defined as the proportion of the total income that is spent on that input. (收入法定义)

The factor share of one input is also the proportion of the whole output that is contributed by the input. (生产法定义/增值法定义)

Again, the equivalence between the income and output approaches.

- When the markets for labor and capital are competitive, then the wage w is equal to the marginal product of labor and the rent r is equal to the marginal product of capital
- 完全竞争市场上要满足一阶条件。

$$\text{Factor Share of Capital} = \frac{rK}{Y} = \frac{MPK \times K}{Y}$$

$$\text{Factor Share of Labor} = \frac{wL}{Y} = \frac{MPL \times L}{Y}$$

- In the Cobb-Douglas production function

$$Y = AF(K, L) = AK^\alpha L^{1-\alpha}$$

$$MPK = \frac{\partial Y}{\partial K} = \frac{\alpha Y}{K}$$

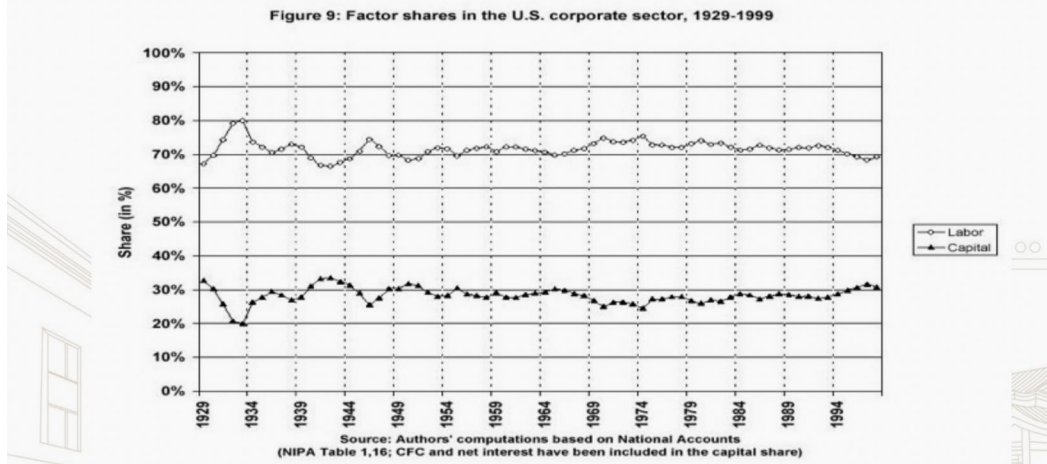
$$MPL = \frac{\partial Y}{\partial L} = \frac{(1-\alpha)Y}{L}$$

$$\text{Factor Share of Capital} = \alpha$$

$$\text{Factor Share of Labor} = 1 - \alpha$$

- The Cobb-Douglas production function is a good approximation to the US economy because the shares of GDP appropriated by capitalists and by workers are constant over the long run
- The Cobb-Douglas production function of the US can be written as $Y = AF(K, L) = AK^{0.3}L^{0.7}$

Labor and Capital Shares in the United States



第八章

经济增长的索洛模型

8.1 The Solow Growth Model

- The basis for the modern theory of economic growth.
- A key prediction is that technological progress is necessary for sustained increases in standards of living

8.1.1 Production (Y)

- Representative Firm's Neoclassical Production Function: $Y = AF(K, L)$
- Y is both the production and the income. i.e., the equivalence between the income approach and the production approach to calculating GDP

8.1.2 Population Growth (n)

- In the Solow growth model, population is assumed to grow at a constant rate n.
- We assume constant labor participation rate, which is normalized to one $L = N$

$$N_{t+1} = (1 + n)N_t$$

8.1.3 Consumption-Savings Behavior (s)

- 我们假设所有人消费占收入/产出的比例是相同的。s 就是储蓄率。则有总消费和总产出的关系。
- 在均衡条件下，总储蓄都变成了总资本，也就是总投资 $S = I$ 。

$$C = (1 - s)Y, \quad S = sY$$

8.1.4 Income-Expenditure Identity

- 我们将 Y 划分为了总消费和总储蓄，总储蓄等于总投资，此时还没有政府的引入和外部交流，从而就是一个支出法的 GDP 计算：

$$Y = C + I$$

8.1.5 Evolution of the Capital Stock (K)

- Future capital equals the capital remaining after depreciation, plus current investment
- Capital Stock 即为资本存量的概念，但是存量会不断折旧：老的资本品不断损坏更新。
- δ denotes the depreciation rate(折旧率)

$$K_{t+1} = (1 - \delta)K_t + I = (1 - \delta)K_t + S = (1 - \delta)K_t + sY$$

- 上式倒数第二个等式是在均衡条件下投资等于储蓄。最后一个等号来源于我们的假设，消费者按照固定储蓄率将收入储蓄。

8.1.6 Fundamental Equation of the Solow Model

- 这是 Solow 模型最基本的公式

$$(1+n)k_{t+1} = sAf(k_t) + (1-\delta)k_t$$

证明

$$\begin{aligned}\frac{K_{t+1}}{L_t} &= \frac{L_{t+1}}{L_t} \frac{K_{t+1}}{L_{t+1}} = sA_t F(K_t/L_t, 1) + (1-\delta) \frac{K_t}{L_t} \\ k_{t+1} &= \frac{sA_t f(k_t) + (1-\delta)k_t}{1+n}\end{aligned}$$

8.2 Steady State

- Steady state means no growth in per capita terms

$$k_{t+1} = k_t = k^*$$

- Plug the steady state condition into the fundamental equation, we have

$$\text{positive force} \rightarrow sAf(k^*) = (n+\delta)k^* \leftarrow \text{negative force}$$

- 经济学上，左侧是人均储蓄，是对人均资本“好”的量。右侧是对人均资本的“阻碍”力量，包括资本的折旧和人口的增长。
- 从上式来看，这两个方程最终会有交点的。因为左边的式子满足稻田条件，斜率从正无穷变到 0，而右侧的斜率为正的常数。 $k=0$ 时，两侧都为 0。从而还会有第二个交点。体现在图上就如下

Figure 7.13 Determination of the Steady State Quantity of Capital per Worker

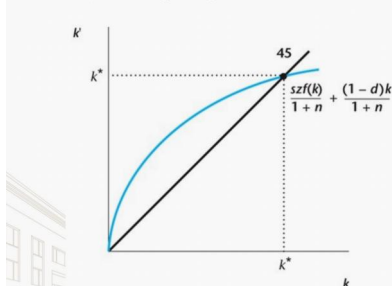
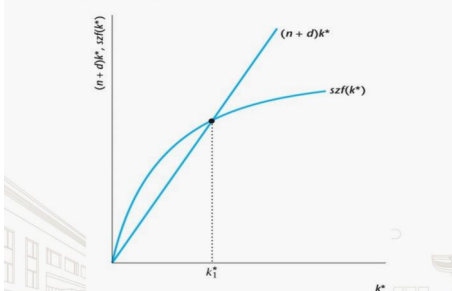


Figure 7.14 Determination of the Steady State Quantity of Capital per Worker



- 稳态是否是稳定的？也就是，在稳态附近变动的时候，是否还会回归到稳态？
- 如右图，在稳态左侧如前讨论。在稳态右侧时（很富裕的时候），由于资本太多了，储蓄虽然也很多，但是折旧和人口增长损耗的更多。由于此时的人均资本增长的速率小于损耗的速率（positive force < negative force），从而人均资本会变少直到稳态。
- 从而解释了为什么穷国增长要快于富国，穷国和富国的唯一区别就是 k 的初始落在哪里。If two countries are initially rich and poor, but identical in all other respects, they will converge in the long run to the same level and rate of growth of per-capita income
- 最终会有

$$k^* = \frac{sAf(k^*)}{n+\delta}$$

$$c^* = (1-s)y^* = (1-s)Af(k^*)$$

- Cobb-Douglas 情形下：

$$k^* = \left(\frac{sA}{n+\delta} \right)^{\frac{1}{1-\alpha}}$$

$$y^* = A \left(\frac{sA}{n+\delta} \right)^{\frac{\alpha}{1-\alpha}}$$

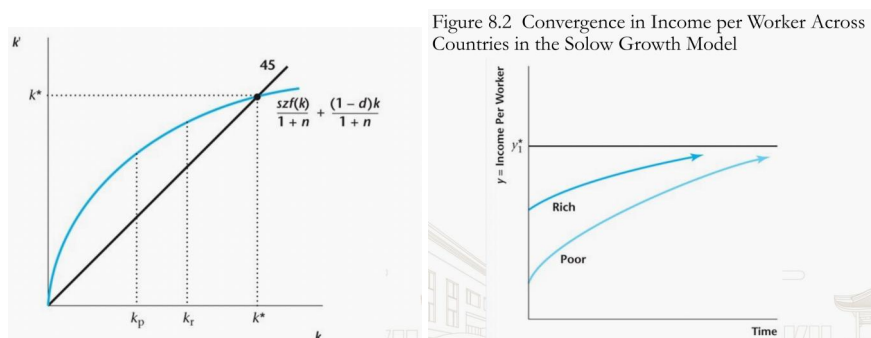


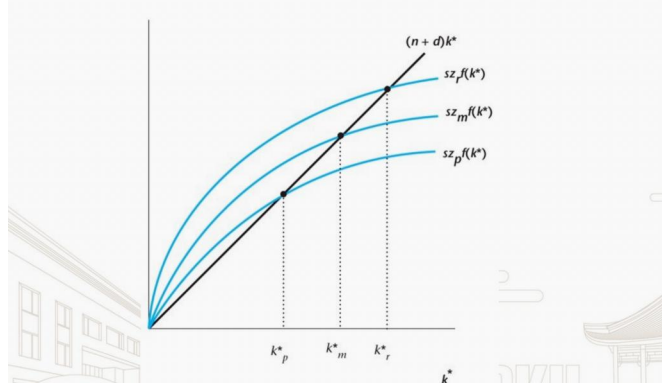
Figure 8.2 Convergence in Income per Worker Across Countries in the Solow Growth Model

- 穷国和富国为什么还不一样呢？可能其他参数不同，趋向的稳态也是不一样的。
- 为什么不学习科技呢？Perhaps there can be persistent differences in total factor productivity across countries.

Why?

- Learning by doing –it takes time for technological change to spread. (学习需要实践)
- Barriers to adoption of technology –market power, unions, trade barriers. (贸易战/科技限制)
- Inefficient allocation of factors of production within countries –corruption, inefficient regulation (制度限制, 分配不公, 腐败)

Figure 8.4 Differences in Total Factor Productivity Can Explain Disparity in Income per Worker Across Countries



- 促进资本要素/劳动要素增长长期来看不能提高上限，要更多的考虑 A 中的要素，比如科技。
- 我提高 s 是不是也能提高效果啊！衡量经济水平的时候，也不能只考虑 GDP，也不能让人们只干活不消费啊！这也是我们下面要讨论的——让消费最大。

Figure 7.15 Effect of an Increase in the Savings Rate on the Steady State Quantity of Capital per Worker

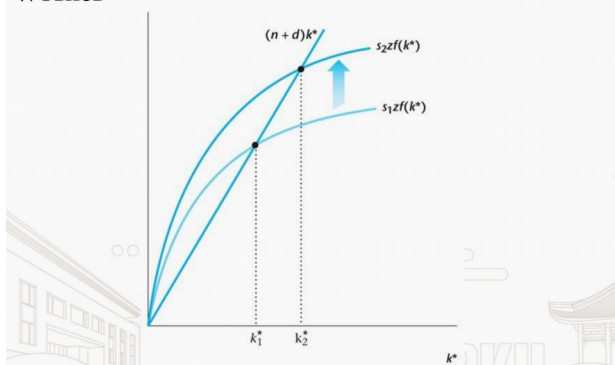
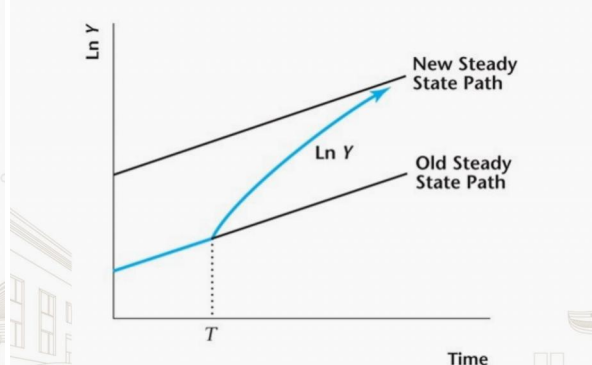


Figure 7.16 Effect of an Increase in the Savings Rate at Time T



第九章

黄金法则储蓄率

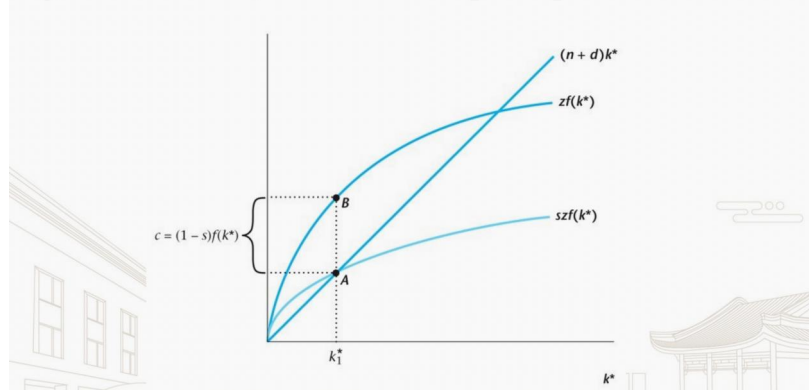
- 最大化人均消费的储蓄率称为黄金法则储蓄率。

$$\max_s c = \max_s (1-s)y^*$$

- 在 Cobb-Douglas 情况下

$$\max_s c = \max_s (1-s)A \left(\frac{sA}{n+\delta} \right)^{\frac{\alpha}{1-\alpha}}$$

Figure 7.17 Steady State Consumption per Worker



- 当然可以对上式求导求解。简单的算法：
- 我们有两个等式，首先观察到 $\max(1-s)y = \max(y - sy) = \max[y - (n+d)k]$
- 所以只需要最大化 y 和 $(n+d)k$ 的距离，如上图所示。也就是下面第一个式子的偏导数的含义。
- 同时在稳态的情况下，都有 $sy = (n+\delta) * k$ 成立

$$1. \frac{\partial y}{\partial k} = n + \delta, \quad 2. sy = (n + \delta) * k$$

- 对于 Cobb-Douglas 来说，可以容易的在第一个式子两边乘 k 后得到 $\alpha Ak^\alpha = sy = sAk^\alpha \Rightarrow s = \alpha$
- 从下图来看，人口增长只会达到更差的稳态，但是 A 的增长会达到更好的稳态。

Figure 7.19 Steady State Effects of an Increase in the Labor Force Growth Rate

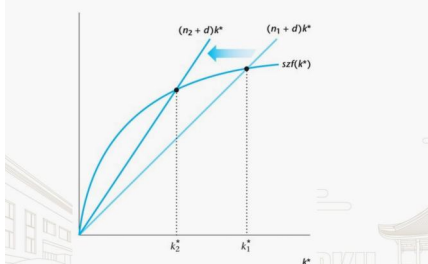
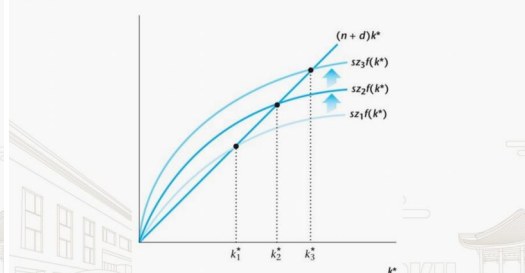


Figure 7.20 Increases in Total Factor Productivity in the Solow Growth Model



第十章

增长会计

- 最想提升的 A 是难以衡量的，被称为 Solow Residual
- The Solow residual captures the technology, or total factor productivity (TFP): $A = \frac{Y}{K^\alpha L^{1-\alpha}}$
- An approach that uses the production function and measurements of aggregate inputs and outputs to attribute economic growth to:
 1. growth in factor inputs, K and L;
 2. growth in total factor productivity, A.
- Growth accounting formula:

$$\gamma_Y = \gamma_A + \alpha \gamma_K + (1 - \alpha) \gamma_L$$

证明 Take natural log of both sides of the production function:

$$\ln Y = \ln A + \alpha \ln K + (1 - \alpha) \ln L$$

化次方为加法，更好计算。Differentiation operator d:

$$d \ln Y_{t+1} = \ln Y_{t+1} - \ln Y_t = \ln(1 + \gamma_Y) \approx \gamma_Y = \frac{Y_{t+1} - Y_t}{Y_t}$$

第十一章

如何扩大内需?

11.1 如何扩大内需（尤其是家庭消费)?

供给侧:

$$Y = AK^{\alpha}L^{1-\alpha}$$

需求侧:

$$Y = C + I + G + NX, \quad C = (1 - s)Y$$

1. 储蓄率 s

(a). 预防性储蓄动机 (precautionary savings motive)

- 为什么拿到钱不敢花呢? 担心花出去钱之后失去收入来源, 没有保障。
- 有大笔开支的地方, 譬如上学等等。
- 国企改革给个人带来了很大的经济风险: 铁饭碗没了!

(b). 竞争性储蓄动机 (competitive savings motive)

- 丈母娘经济学: 总有男的结婚很困难, 为了提高婚姻市场上的竞争力, 就想准备房产/彩礼等等, 来结个婚。研究发现男孩的家庭做的储蓄要比女生多的多。

2. 收入 Income

(a). 劳动收入 (labor income)

- 扩大劳动性收入占总收入的比重!

(b). 资本/财产收入 (capital income)

- 不平等的一个要素: 资本回报率增速超过劳动回报率增速。

(c). 转移性收入 (transfer income)

- 三次分配、共同富裕, 改革进入到了深水区!
- 企业自愿捐赠/慈善

11.2 Policy and Practice

11.2.1 消费券的中国实践

- 北大专家团队依据微信支付城市交易抽样数据分析发现, 地方政府使用消费券效果好, 数字技术能够提高政府发放效率。
- 林毅夫表示, 消费券发放有利于保家庭、保企业, 倡导应尽快出台消费券发放政策, 鼓励各地政府加大消费券发放金额。
- 零售业和餐饮业的核销率最高

11.2.2 Economic Impact Payment in the U.S.

- 住宿、燃气、水电费……疫情期间的美国人也受到了很大的影响
- CARES(The Coronavirus Aid,Relief,and Economic Security Act): 中低收入群体现金补贴。大人 \$ 1200, 有孩子再加 600。发的是 EIP(Economic Impact Payment) 支票。
- 第一次发钱, 74% 的钱都被花掉了, 储蓄率只有 14%, 第二次和第三次大部分都是被拿去还债了。

第十二章

跨期决策模型

12.1 The Relationship Between Consumption and Saving

定义 12.1 (Disposable income)

Disposable income: Y , is the income available to spend, or total (gross) income minus taxes

定义 12.2 (Saving)

S , is the difference between the amount of income a person has to spend and her current spending, C

$$S = Y - C$$

- 跨期决策：我把多少钱留在当下花，多少钱留给未来花？

12.2 Intertemporal Choice and Consumption

- Irving Fisher developed the basic theory of consumption by using microeconomic analysis to explain intertemporal choice—the decisions about spending today versus spending tomorrow
- 1. Defines an intertemporal budget constraint, which is how much a person can consume today versus tomorrow, given a consumer's total resources(跨期预算约束，负债就要作为负数加上)
- 2. Describes consumer preferences for spending today versus spending tomorrow(消费延迟性满足对不同的人是有很大差异的)
- 3. Shows how consumers optimize (maximize their happiness) given the budget constraint and their preferences

12.2.1 The Intertemporal Budget Constraint 跨期预算约束

- 跨期当然要至少两期
- Denote Y_1 as an income today in constant dollars, Y_2 as an expected income tomorrow, W as initial wealth (assets), C_1 as consumption in the first period, and r as the real interest rate.
- Consumption in the second period is:

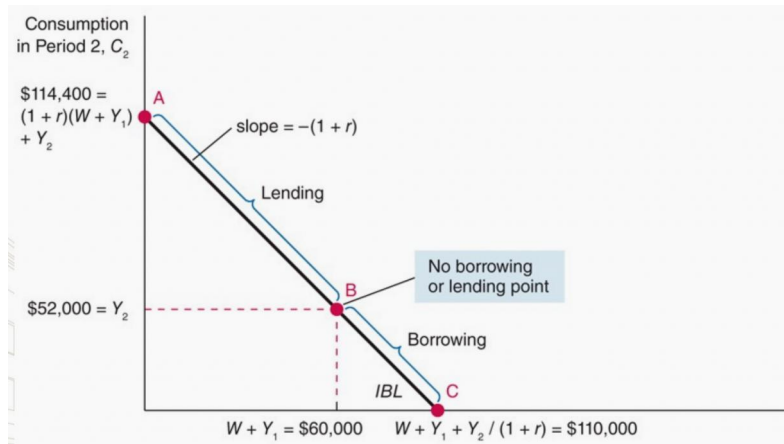
$$C_2 = (1 + r)(W + Y_1 C_1) + Y_2$$

- this represents a person's intertemporal budget constraint
- r 是钱的时间价值，是利率。
- 发现没有了 S ， S 演变成了第二期的消费，最大化效用函数只在乎第一期和第二期的消费多少，储蓄 S 本身不带来任何效益的提升。
- C_2 和 C_1 之间是一个线性关系，可以画出图来

定义 12.3 (Intertemporal budget line (IBL))

The intertemporal budget line (IBL) is the line connecting those points that satisfy the intertemporal budget constraint

- The IBL shows the tradeoff between current consumption and future consumption: the more you spend today, the less you have available to spend tomorrow.



- 斜率的含义是，第一期的 1 变成了第二期的 $1+r$ ，反之同理
- A 的含义是极端的情况：全都留给明天。C 的含义是全都现在花光，并且透支了以后的消费：把未来的收入借来了，未来收入的贴现值为 $\frac{Y_2}{1+r}$
- B 是不借不存的情况。No borrowing or lending point.

The Intertemporal Budget Constraint in Terms of Present Discounted Value

- The intertemporal budget constraint can also be shown by rearranging terms in the above equation to put all consumption on the right-hand side (Both sides of the equation shows the concept of present value):

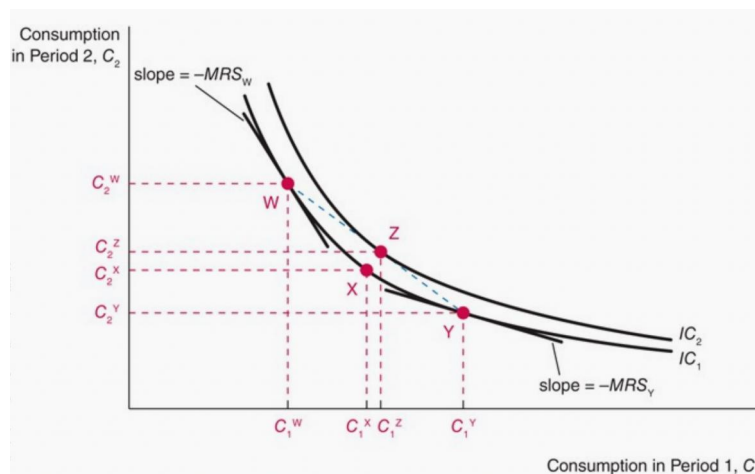
$$C_1 + \frac{C_2}{1+r} = W + Y_1 + \frac{Y_2}{1+r}$$

12.2.2 Preferences

- Given a budget constraint, preferences show which combinations of spending today and spending tomorrow

定义 12.4 (Indifference curves)

Indifference curves (ICs, 无差别曲线) show those combinations of C_1 and C_2 that would give us the same level of overall happiness (utility 效用 or welfare 福利)



- 无差异曲线向原点凸出是由效用函数特性决定的。

1. The farther an indifference curve is from the origin, the higher its utility
2. Indifference curves slope down
3. Indifference curves are bowed in toward the origin, i.e., they show convexity (凸性)(每个商品的效用函数都会满足边际效用递减)
4. 无差异曲线不能相交，用反证法容易证明。(参见中微)

定义 12.5 (MRS)

The MRS is the negative of the slope of the indifference curve at any given point

$$MRS = -\frac{\Delta C_2}{\Delta C_1}$$



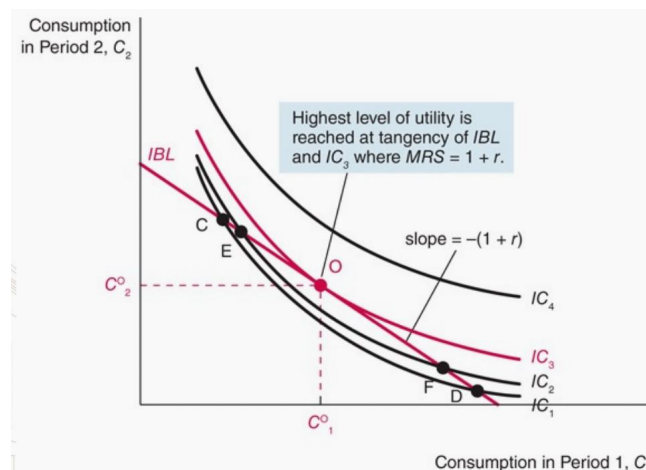
笔记 Why does the indifference curve have a convex shape?

- Because consumers prefer to smooth consumption over time (and thus become increasingly averse to giving up consumption in period 2), the marginal rate of substitution becomes smaller as second-period consumption falls
- 第一期的消费越多，提供的边际效用就越低
- 第二期的消费越少，提供的边际效用就越高
- 因此，随着第一期消费的增加（沿着 x 轴往右），消费者愿意为额外一单位的第一期消费放弃的第二期消费就越少（斜率的绝对值越来越小）

12.2.3 Optimization

- The optimum indifference curve given the budget constraint is the IC that is tangent (at point O) to the intertemporal budget line, i.e., IC3
- $O = (C_1^O, C_2^O)$
- At Point O, the slope of the indifference curve (or the negative of the marginal rate of substitution) equals the slope of the intertemporal budget line, i.e., $-MRS = -(1+r)$, so that:

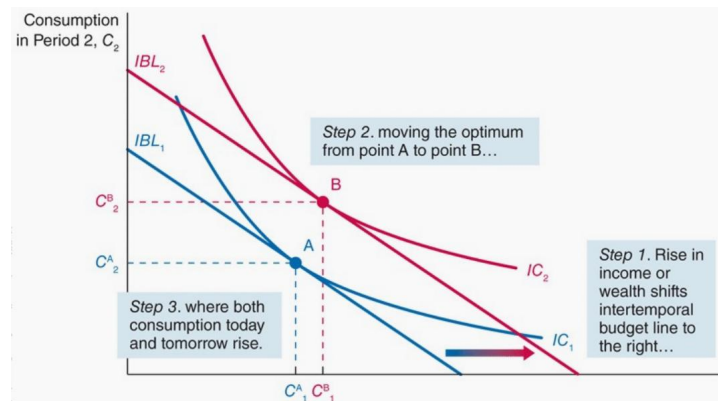
$$MRS = 1 + r$$



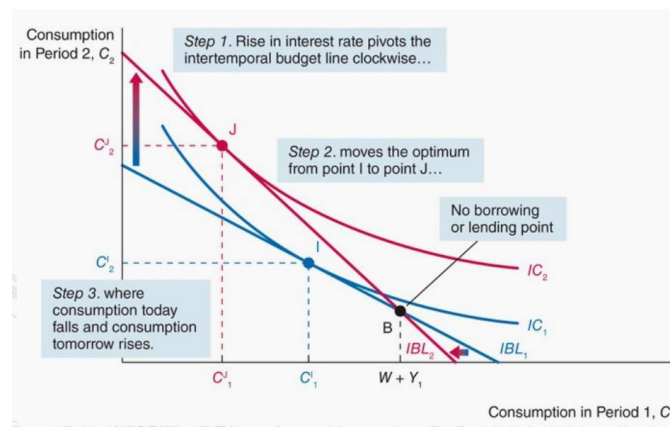
- 经济学含义就是：主观的替代率恰好和客观的替代率相等！如果主观的替代率 > 客观的替代率，那么主观上就是认为此时存钱带来的效益更高。相反的也是一样的。

12.3 Response of Consumption to Income

- Rise in current (period 1) income or Rise in future (period 2) income:
 - The IBL shifts to the right so that the optimal point is at a higher IC with both higher C_1 and C_2



1. Consumption rises when the present value of lifetime resources increases, regardless of its source(有资源就行! 不管什么时候)
2. Consumption smoothing: Consumers spread out any increase in consumption over today and tomorrow, even if the increase stems solely from an increase in current income(一生的资源都会合理的调配来平滑化!)
 - An increase in the interest rate, which leads to a steeper IBL, results in an optimal level of consumption at a higher indifference curve with an increase in consumption in period 1, C_1 , and a decrease in consumption in period 2, C_2



Two effects of an interest rate change

1. Income effect: the change in consumption due to changes in income
 - For savers, the income effect increases consumption in both periods when interest rates rise
2. Substitution effect: the change in consumption that occurs from the change in the relative price of consumption in the two periods
 - The substitution effect from higher interest rates leads to less consumption in period 1, but more consumption in period 2
3. Evidence supports that the substitution effect outweighs the income effect, so that a rise in interest rates lowers today's consumption (increases saving), but boosts future consumption
 - 对于负债的人来说, 利率的上升会带来负向的收入效应, 带来了总财富的减少, 从而会降低效应。第一期的消费一定会减少, 第二期的消费如何变就不一定了。

第十三章

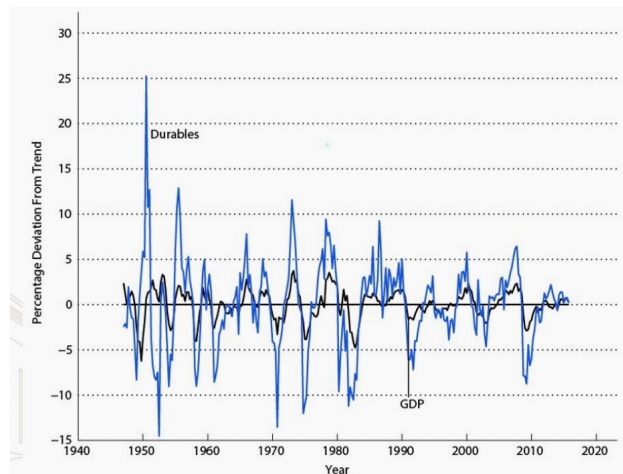
消费的不平等

13.1 持久收入假说 The Permanent Income Hypothesis

- 大家不喜欢今天吃五顿明天吃一顿，想每天都吃三顿。
- Milton Friedman argued that consumption smoothing (消费平滑) was a key feature of consumption behavior
- He developed the permanent income hypothesis, which asserted that consumption depends on permanent income—the level of income that is expected to persist over a long period of time (a consumer's lifetime resources)
- This hypothesis contradicts the Keynesian consumption function, where consumption depended on current income

13.1.1 Observed Consumption-Smoothing Behavior

- Aggregate consumption of non-durables(损耗品) and services is smooth relative to aggregate income, but the consumption of durables is more volatile than income.
- This is because durables consumption is economically more like investment than consumption



- Friedman divided income into two components:

$$Y = Y^P + Y^T$$

- where Y^P is permanent income and Y^T is transitory income (暂时收入, the component of income that does not persist for a long period of time)
- The permanent income hypothesis indicates that consumption is proportional to permanent income so that the consumption function: $C = cY^P$
- where c is a constant (or mpc out of permanent income)

13.1.2 Relationship of the Permanent Income Hypothesis and Intertemporal Choice

- The permanent income hypothesis reaches a similar conclusion as intertemporal choice theory:
 - A rise in permanent income that rises income for a very long time (both period 1 and period 2) also raises lifetime resources by a lot, so consumption will also rise significantly
 - On the other hand, if the increase in income is transitory (only period 1 or period 2), then lifetime resources will only change by a little and consumption will change minimally

13.2 凯恩斯消费理论 The Keynesian Theory of Consumption

13.2.1 The Keynesian Theory of Consumption

1. When disposable income rises, households spend more
2. The marginal propensity to consume, the increase in consumption expenditure from an additional dollar of disposable income ($\Delta C/\Delta Y$), is between zero and one
3. The average propensity to consume, the ratio of consumption to income (C/Y), falls as income rises
4. 基于富人和穷人的区别观察出来的。穷人一拿到钱就得养家糊口花掉，而富人的基本消费已经得到很好的满足了，再增加收入的时候，也会去投资/储蓄。
5. This also implies that the average propensity to save (the saving rate), which is the ratio of saving to disposable income (S/Y), should rise with income because: $\frac{S}{Y} = \frac{Y-C}{Y} = 1 - \frac{C}{Y}$
6. 论证了“有为政府”，政府还可以通过税收/二次分配的政策，富人征税补贴给穷人会扩大内需：富人的边际消费倾向低，穷人的边际消费倾向高。不平等非常严重的话，内需也会很难扩大。一方面储蓄率非常高，另一方面消费又非常低，出现了这种看似矛盾的现象。
7. Keynes's consumption function is a linear relationship between consumption expenditure and disposable income:

$$C = \bar{C} + mpc \times Y$$

- where $0 < mpc < 1$ and $\bar{C}$ is a constant referred to as autonomous consumption expenditure (自主消费支出)(也就是吃饭睡觉的必需品)

The consumption function satisfies Keynes' conjectures:

1. Because $mpc > 0$, as Y rises, C also rises
2. Because $0 < mpc < 1$, C rises by less than \$1 when Y rises by \$1
3. Dividing both side of the consumption function by Y so that:

$$\frac{C}{Y} = \frac{\bar{C} + mpcY}{Y} = \frac{\bar{C}}{Y} + mpc$$

so that as Y rises, $\bar{C}/Y$ falls and thus the average propensity to consume, C/Y , also falls

13.2.2 The Relationship of the Keynesian Consumption Function to Intertemporal Choice

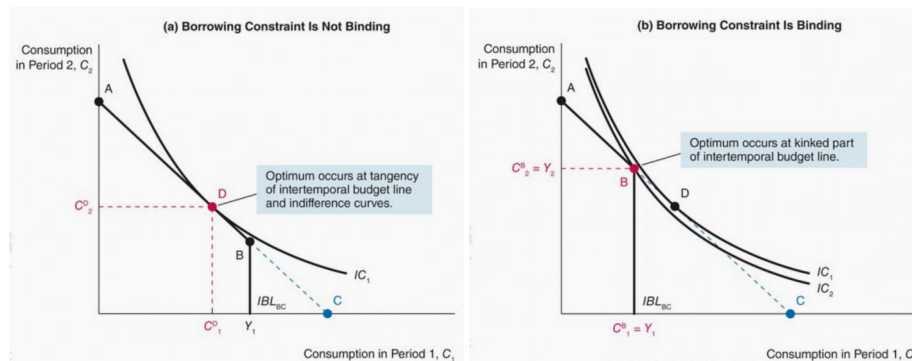
- Keynes's consumption function indicates that consumption is solely related to current income and so it does not display consumption smoothing(静态模型，没有任何跨期的决策。今天收入多就消费多，收入少就消费少，没有消费平滑的特征)
- Thus, his consumption function is consistent with the theory of intertemporal choice for borrowing-constrained households, but not for households without a binding borrowing constraint (存在借贷约束的家庭，现实中想要像跨期模型中一样借钱是很难的，因为很多家庭没有抵押物等等。也就是无法通过借贷来平滑各期消费，从而预算线会发生改变)

Borrowing Constraints

- Assume the consumer faces a borrowing constraint (or a liquidity constraint) so that she cannot spend more than her current income:

$$C_1 \leq Y_1$$

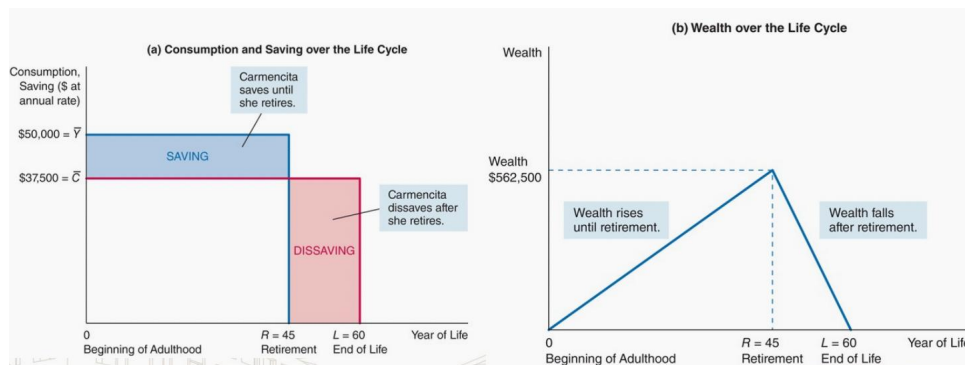
- The resulting intertemporal budget line (IBL_{BC}) becomes vertical at the point where $C_1 = Y_1$ (point B), so that an angle, or kink, occurs



- If the borrowing constraint is not binding as the consumer has no need to borrow, then any increase in lifetime resources, regardless of its source, boosts consumption in both periods
- If the borrowing constraint is binding, the slope of the indifference curve at the optimal point (point B) is steeper than $-(1+r)$, i.e., $MRS > -(1+r)$, then consumption is driven completely by current income, and so $C_1 = Y_1$ and $C_2 = Y_2$

13.3 生命周期假说 The Life-Cycle Hypothesis

- The hypothesis indicates that people tend to smooth consumption over their life cycle



- When people retire and are no longer earning, they dissave with the amount of negative saving equal to their consumption
- As people grow older before retirement, their wealth grows, and then after retirement their wealth declines
- 不留遗产的情况下，希望在死之前钱刚好花完！

13.4 Longevity Risk 长寿风险

- A longevity risk is any potential risk attached to the increasing life expectancy of pensioners and policy holders, which can eventually result in higher pay-out ratios than expected for many pension funds and insurance companies
- 养老基金/保险公司都因为长寿而发愁。

13.5 Pay-as-you-go Social Security

- Taxes on the working population pay for social security transfers to the retired each period.

- 我们国家可能事实上也在用这种，利用当期向年轻人征的税，来给老年人发放养老金。
- The young pay social security taxes t , the old receive social security benefits b .
- The population grows according to the following equation. Each period, there are N' young and N old alive.

$$N' = (1 + n)N$$

- The government balances its budget, Total social security benefits must equal total taxes on the young.

$$Nb = N't, \quad t = \frac{b}{1 + n}$$

- Pay-as-you-go is beneficial only if the population growth rate exceeds the real interest rate.
- The interpretation is that the population growth rate is the implied rate of return for an individual from the social security system, so social security is only worthwhile if the return exceeds what could be obtained in private credit markets.
- Essentially a mandated savings program where assets are acquired by the young, with these assets sold in retirement.

第十四章

张维迎老师讲宏观经济学

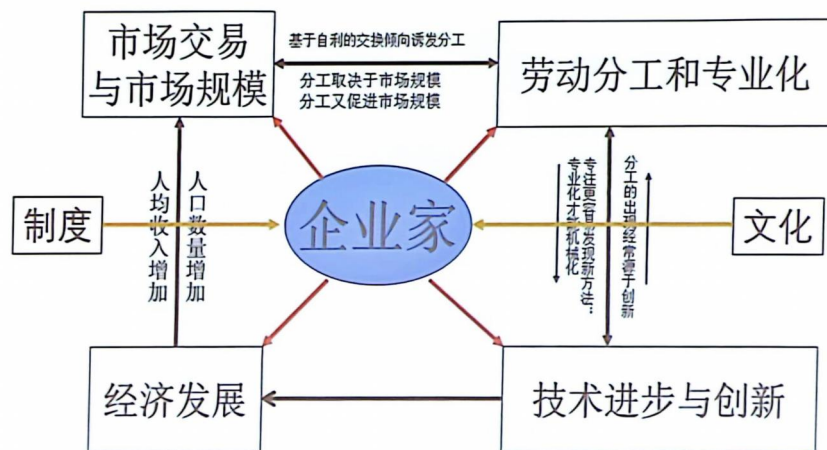
- 宏观经济一般是长期波动的，这比较正常。中国最近的四十年中，GDP 增长率呈现出一种趋势性的下降，而非波动。
- 中国过去的增长是套利性的增长，给定技术，市场由企业家发现机会来实现经济增长。08 年之后，套利性增长越来越难，创新是增长的第一要素。

14.1 如何思考经济增长？

- 新古典增长理论（Solow 模型），总供给理论
- 凯恩斯主义经济学，总需求理论
- 经济学家解释过去 Solow 模型，揭示未来在用凯恩斯主义，但两种都有问题，都只在意数字
- 谁投资比投资多少更重要，企业家精神比宏观经济政策更重要，创新需要稳定预期，法治保证企业家的创新。

14.2 斯密-熊彼得经济增长模型

斯密-熊彼得经济增长模型



- 实现专业化才能实现更快的增长。
- 这里的贸易讲的是比较优势，跟凯恩斯的贸易不一样。
- 经济增长意味着经济结构的变化，一定意味着新的东西出现。总量和结构不能分开。产能过剩：同比例增长一定会过剩！意味着生产的不是人们想要的。
- 市场不是天然存在的，市场是企业家创造的。不是因为需要火车，才有了火车，不是因为需要人工智能，才有了人工智能。生产创造需求。
- 熊彼得：企业家对应创新对应经济增长。产能过剩是企业家的失职，不能只在数量上衡量，而应该从结构上衡量。
- 中国经济改革开放后的经济迅速增长，是企业家精神蓬勃带来的，释放了许多年的产能。

- 现在担心经济增长过低，08 年之前都在担心经济过热。当时企业发展的冲动比较大。2008 年金融危机之后，开始担心经济过冷。

14.3 为什么不理解市场?

- 经济学是研究市场的理论，但大部分经济学家不能理解市场如何运作。将企业家排除在模型之外。
- 马路上的钱不捡！均衡下真的钱早就被人捡走了。经济学家都在假定均衡，但是现实中往往在不均衡之中。
- 风险：概率分布。不确定性：没有概率分布。未定性（indeterminacy）：未来是什么依赖于人们的选择。不确定性意味着有一个独立于选择的一决定的、客观的未来，有待于我们去发现。未定性意味着有一个主观的未知世界，有待我们创造。

14.4 未定性与想象力

- 世界不注定是这样，而是因为有些人想象如此，才有了如此的世界。
- 不是对未来的预测，而是对未来的蓝图。不是有待发现的东西，而是有待创造的东西。需要去引导而非适应。非被动而是主动。
- 想象力创造世界！

14.5 企业家决策

- 什么使得企业家不同？他们的追求和决策的心智模式。
- 企业家决策不是科学决策
 - 企业家决策不同于管理决策，管理决策可以归于科学决策。
 - 科学决策基于数据和计算，
 - 依靠的是硬知识、唯一正确答案
 - 多数人是正确的。
 - 企业家决策不是科学决策，想象力和判断
 - 软知识更为重要
 - 没有唯一正确答案
 - 多数人是错的！
 - 这是由于未来的不确定性和未定性
 - 知识的本质：主观的过去的的数据不是唯一依据，尤其是对于创新来说，数据提供的信息有限。企业家精神来源于想象力而非数据。
- 企业家不是给定约束条件下求解，而是改变约束条件
 - 把一般人认为不可能的事情做成。普通人看来，企业家就像一群疯子。对于企业家来说，消费者偏好、生产技术和资源都不是给定的，而是可以改变的。
 - 自信，甚至过度自信。成王败寇企业家
- 企业家追求的不仅仅是赚钱。甚至主要不是为了赚钱。
 - 熊彼得认为，企业家有三个非金钱动机：
 - 建立自己的王国
 - 证明自己比别人强
 - 对创造性的享受
 - 改变世界，在历史上留下自己的名声，留下遗产。
 - 乔布斯：你为什么想创业？想赚钱？你最好做别的吧

- 利润是什么？利润是实现目标的手段。
- 企业家精神是最好的反垄断法！企业家是为他人提供保险的人！
- 对于利益冲突而言，认知冲突才是主要的。

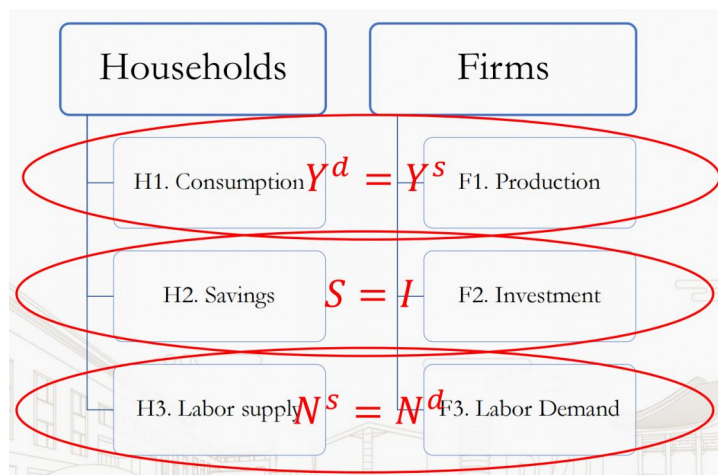
第十五章

Market Clearance

15.1 What Is A Firm

- $Y = AF(K, N)$
- A simplified, idealized benchmark. Three ingredients: technology, capital, and labor.
- 是给定条件下的模型刻画。在这种情况下是没有长期增长的，最终都会达到稳态。只有提高 A 才能实现长期经济增长。
- No entrepreneurship, no management and organizational analysis. No agency problem, no financing frictions, no uncertainty. No asymmetric information, no transaction costs, no market structure
- 不考虑企业家精神、组织方式，协调成本等等。

15.2 市场出清



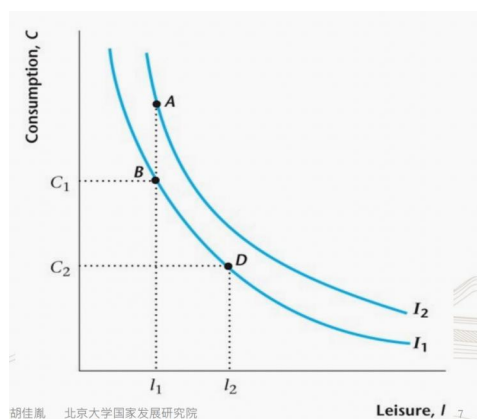
- 从而有了市场出清
- 又上到下分别对应商品市场，资本市场，劳动力市场

15.3 Labor supply

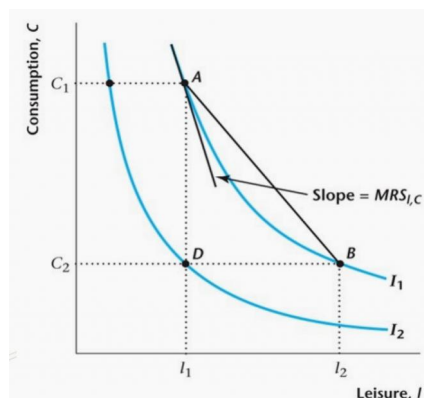
15.3.1 Representative Consumer

- Consumer's preferences over consumption and leisure as represented by indifference curves. (闲暇时间是有机成本)
- Consumer's budget constraint. (约束条件)
- Consumer's optimization problem: making him or herself as well off as possible given his or her budget constraint

15.3.2 Representative Consumer's Indifference Curve



- An indifference curve slopes downward (more is preferred to less)
- An indifference curve is convex (the consumer has a preference for diversity in his or her consumption bundle)



- $MRS_{l,C}$: marginal rate of substitution between consumption C and leisure L
- The amount of consumption you give up to increase an additional unit of leisure

$$MRS_{l,C} = -\frac{\Delta C}{\Delta L}$$

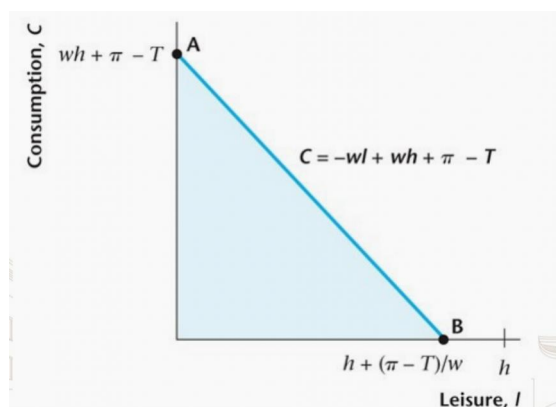
15.3.3 The Consumer's Budget Constraint

- The consumer's time constraint is: $l + N^S = h$
- Consumption is equal to total wage income plus dividend income minus tax (π 是作为企业主获得的收入, T 可以正负):

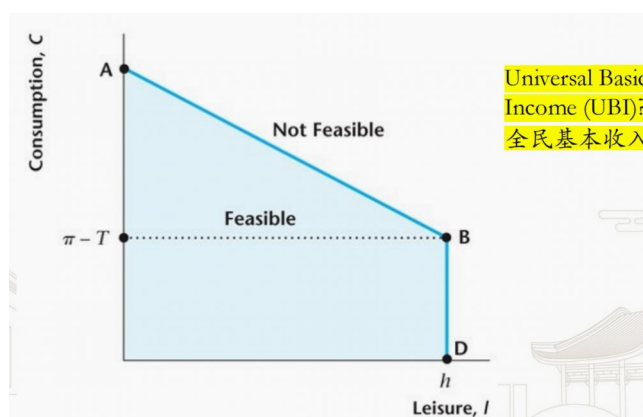
$$C = wN^S + \pi - T$$

$$C + wl = wh + \pi - T$$

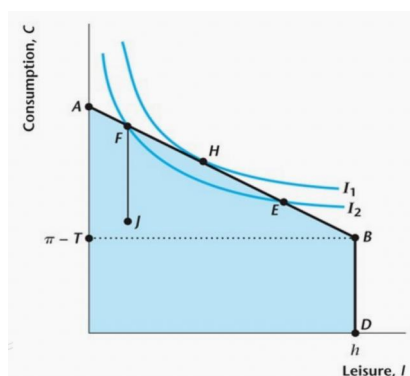
- 拥有的整体财富是 $wh + \pi - T$, $C + wl$ 是总消费力, wl 是对于闲暇的消费。
- 新的预算线: Representative Consumer's Budget Constraint when $T > \pi$, 这种情况下是把欠的税给还掉了才去工作。



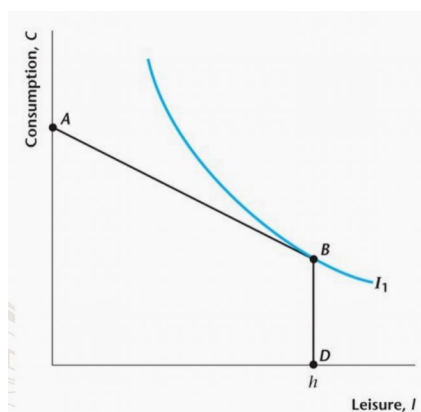
- Representative Consumer's Budget Constraint when $T < \pi$, 全民发给基本收入后来避免对效用的扭曲。



15.3.4 Consumer Optimization

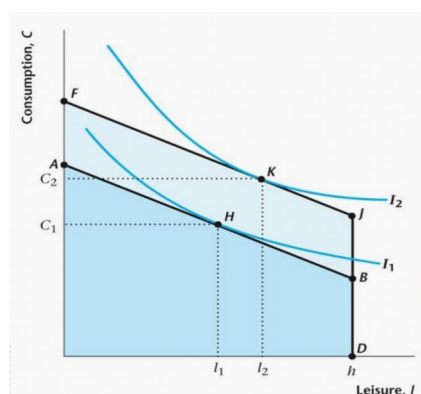


- The consumer chooses the consumption bundle that is on his or her highest indifference curve, while satisfying his or her budget constraint
- The marginal rate of substitution of leisure for consumption equals the real wage.



- 刚好在躺在家里的時候最大化的情況如上，最優的選擇下就不工作了。

15.3.5 Real Dividends or Taxes Change for the Consumer



- Assume that consumption and leisure are both normal goods.
- An increase in dividends or a decrease in taxes (i.e., $\pi - T$ increases) will then cause the consumer to increase consumption and reduce the quantity of labor supplied (increase leisure)

15.4 An Increase in the Market Real Wage Rate

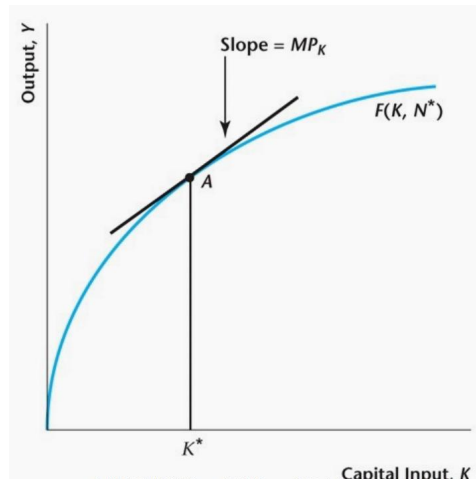
- This has both income and substitution effects.
- Substitution effect the price of leisure rises, so the consumer substitutes from leisure to consumption.
- Conclusion: Consumption must rise, but leisure may rise or fall.

第十六章

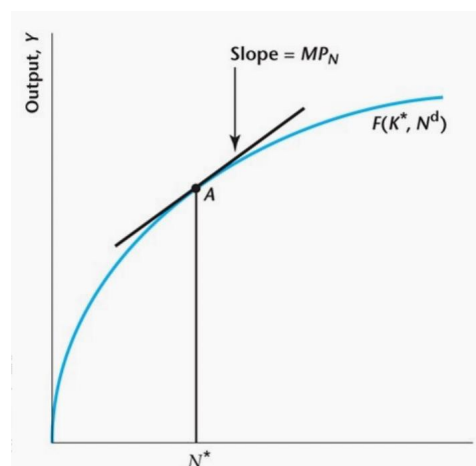
Production

16.1 The Representative Firm

- Profit maximization given the following production function $Y = AF(K, N^d)$
- Properties
 1. Constant returns to scale(CRS)
 2. Output increases with increases in either the labor input or the capital input.
 3. The marginal product of capital (labor) decreases as the capital (labor) input increases.
 4. The marginal product of labor (capital) increases as the quantity of the capital (labor) input increases.
- Production Function, Fixing the Quantity of Labor and Varying the Quantity of Capital



- VS. Production Function, Fixing the Quantity of Capital and Varying the Quantity of Labor



第十七章

Investment Decision

- The firm invests to the point where the marginal benefit from investment equals the marginal cost.

定义 17.1 (Marginal Cost Of Investment)

The marginal cost of investment is 1, as the firm gives up one unit of current profits for each unit it invests, so:

$$MC(I) = 1$$

(也就是当下投资的边际成本是 1)

- Marginal Benefit of Investment: 如同消费者跨期决策。用 r 做一个折现:

定义 17.2 (Marginal Benefit of Investment)

The marginal benefit of investment is the marginal product of future capital plus the quantity of capital that will be left in the future after depreciation, all discounted back to the present:

$$MB(I) = \frac{MP'_K + 1 - \delta}{1 + r}$$

直观的理解是，当前的一单位投资变成了未来的资本。而这部分资本在未来的贡献有两部分，一部分是 MPK' ，也就是未来资本增加一单位带来的边际产出；另一部分是资本本身，这部分资本到了未来时，会被折旧为 $1 - \delta$ 。考虑到资本的时间价值，要用折现因子折现到当下。

- 容易看出，投资的边际成本是常数，投资的边际产出是减函数（ MP'_K 单调递减，也就是边际产出递减），从而肯定会有交点。交点处要满足：

$$MPK' - \delta = r$$

- The firm's optimal investment rule, obtained by equating the marginal benefit and marginal cost of investment:
- 直观的理解就是，投资什么时候变得完全没有价值呢？得到的刚好等于市场利率 r 的时候。

推论 17.1

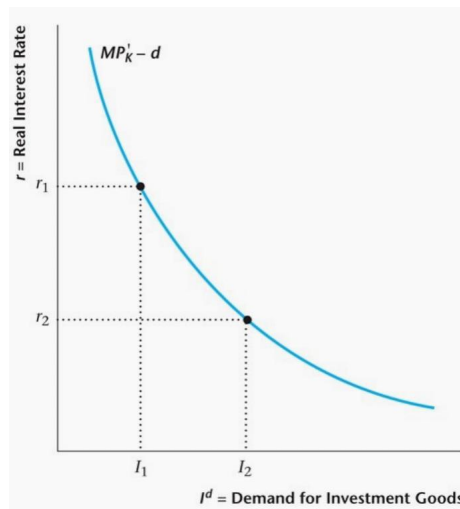
这个公式是一个经济学中的基本等式，被称为投资的边际等式。它可以从两个不同的角度进行解释。

第一种解释是，这个等式描述了一个生产者如何进行投资决策。在这个解释中， MPK' 是生产者从投资中获得的额外产出，也就是每额外投入一单位资本所获得的额外产出； δ 是资本的折旧率，表示资本每年会因为使用而损失一定的价值； r 是利率，表示在资本市场上融资的成本。这个等式告诉生产者，如果他们想要通过投资来获得额外的产出，那么投资所带来的额外产出必须要超过资本的折旧率和资本融资的成本。

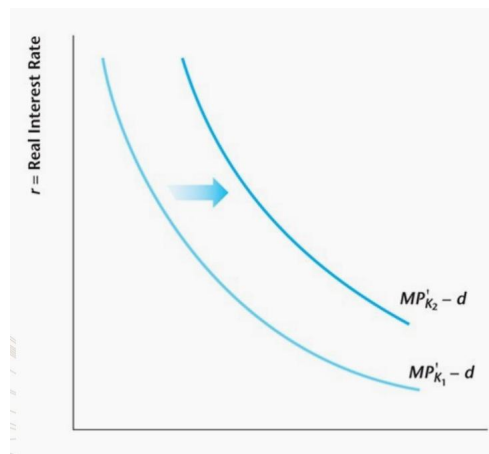
第二种解释是，这个等式描述了一个经济系统中的资源配置问题。在这个解释中， MPK' 表示资本的边际社会产出，也就是整个经济系统中每额外投入一单位资本所能带来的额外产出； δ 仍然是资本的折旧率； r 表示整个经济系统中的利率。这个等式告诉我们，一个经济系统中的资源配置应该是基于资本的边际社会产出和资本的折旧率来进行的，而资本的边际社会产出应该要高于资本的折旧率和整个经济系统中的利率。如果这个等式不成立，那么就意味着经济系统中的资源配置不够有效率，因为资源没有被分配到能够产生最大社会价值的用途上。

——GPT4

- 从图像上来看：



- 资本存量低的时候，资本的边际产出高，会更想追加投资，所以 K 减少的时候，相同横坐标下会有更高的产出。
- The Optimal Investment Schedule Shifts to the Right if K Decreases or A 's Expected to Increase
- 说白了这条曲线是 $MP_K^i - \delta = AF'_k(K, L) - \delta$ ，关于 K 递减，关于 A 递增， K 和 A 的改变当然会引起相应的改变。



- 不想让资本在金融市场空转，就得降低相关行业的回报率。

17.1 Investment with Asymmetric Information and the Financial Crisis

- 民企相对于国企来说，资质的异质性更大，信用风险难以衡量，从而产生了信息不对称。Asymmetric information: Lenders cannot distinguish good from bad firms
- 二手车/闲鱼上还没用的二手商品为何会折价如此严重？因为存在着风险/信息不对称，如果是翻新机/有暗伤等等，就有先验的理论
- 逆向选择：卖东西的人总是有更多的信息，真的知道自己的价值。市场达成均衡的时候是 7.5 万，如果真的是好车，值 10 万块，出 7.5 万肯定不卖。但是是坏车，值 5 万，出 7.5 万就会卖。从而市场上都会充斥着劣质商品，劣币驱逐良币。借贷市场上也是如此。

定义 17.3 (Default Premium)

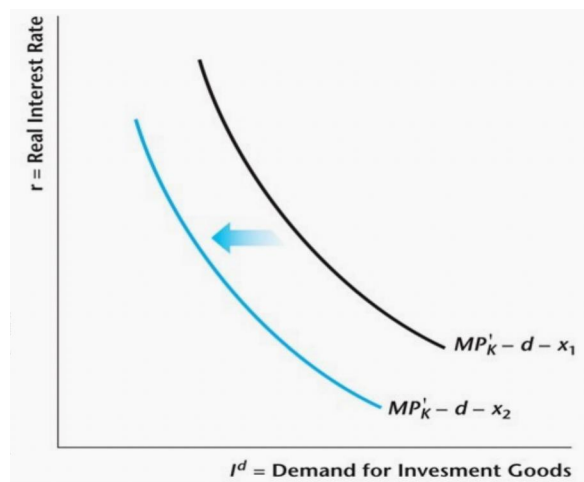
$$r^I - r = x$$

where x is a default premium to compensate for borrowers who default. x is an interest rate spread that reflects the severity of the asymmetric information problem.

违约溢价：更高的利息其实是对风险的定价。银行无法判别真正资质，从而只有一个均等的利率。For firms that borrow to invest:

$$MP'_K - d - x = r$$

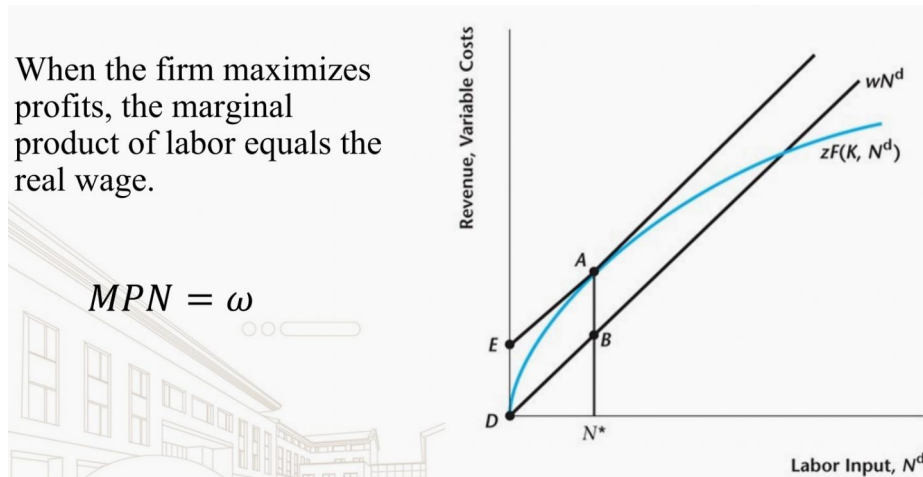
也就是风险的存在使得利率抬高，投资难度增大。也可以衡量经济危机的危机程度。



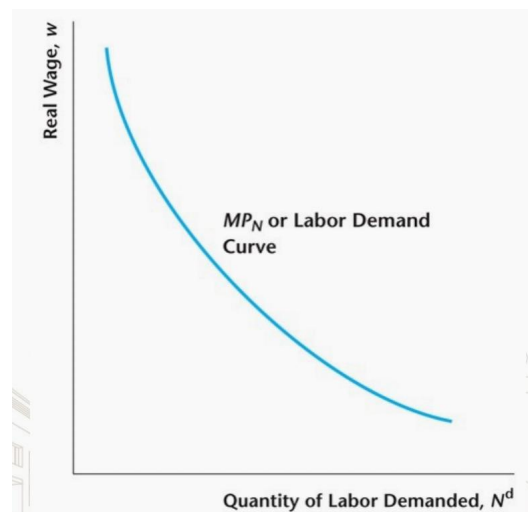
第十八章

Labor Demand

- MPL 单调递减，资本增加会增加相同情况下的 MPL
- When the firm maximizes profits, the marginal product of labor equals the real wage.



- 从而，MPN 就是企业的劳动力需求曲线。Labor Demand Curve.



第十九章

Real Intertemporal Model

- 把之前的融合起来。知道两期之后可以通过世代交叠的方式进行下去。
- 消费者的跨期决策 + 公司的跨期决策!

1. Consumer's current-period budget constraint: (S 是储蓄, h 总时间, l 是闲暇时光, π 是企业利润, T 是政府收税)

$$C + S^P = w(h - l) + \pi - T$$

2. Consumer's future-period budget constraint:

$$C' = w'(h - l') + \pi' - T' + (1 + r)S^P$$

19.1 Consumer's Problem

19.1.1 Consumer's Lifetime Budget Constraint

$$C + \frac{C'}{1 + r} = w(h - l) + \pi - T + \frac{w'(h - l') + \pi' - T'}{1 + r}$$

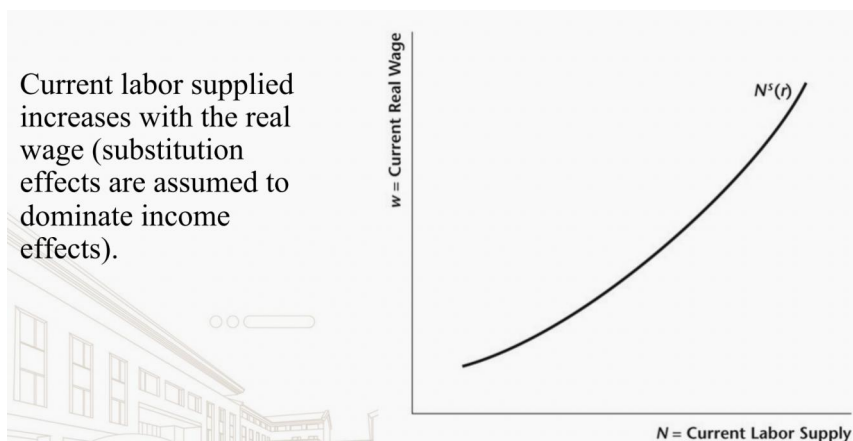
- 花钱和收入要一致!

19.1.2 Marginal Conditions for the Consumer

1. Current Period: $MRS_{l,C} = w$
2. Future Period: $MRS_{l',C'} = w'$
3. Intertemporal Choice: $MRS_{C,C'} = 1 + r$
 - 主客观统一: 多消费就是放弃未来消费品, 存钱就是放弃现在的消费品。最终主观的替代率与市场均衡相等。

19.2 变化分析: Labor Supply

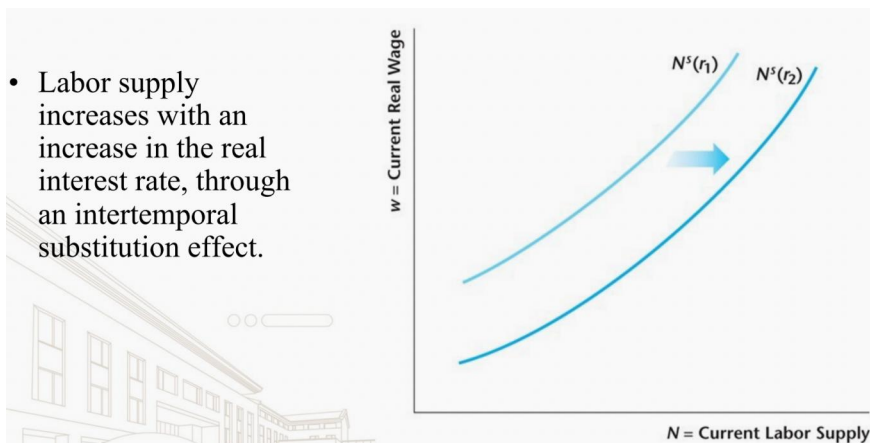
19.2.1 w 上升, L 怎么变?



- 在这里假设了替代效应是主导的。工资上升,更有钱了,就想去多一些闲暇。这个是收入效应。但是工资上升,去闲暇意味着放弃了更高的工资,换句话说,闲暇变贵了,就想去少一些闲暇。这个是替代效应。【在市场上替代效应似乎确实是主导的:工资高了总有人想去干……】

19.2.2 r 上升, L 怎么变?

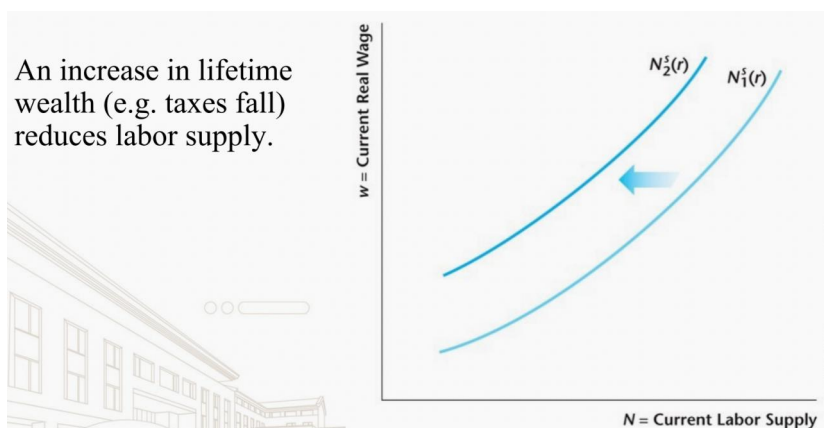
- Labor supply increases with an increase in the real interest rate, through an intertemporal substitution effect.



- 消费者决策时, l 和 C 的边际替代率是保持不变等于 w 的。 $\frac{U'_l}{U'_c} = w$ 。利率越高,就更想将收入留到未来去消费,当前消费就会减少。当前消费减少时,边际效用变高,而为了保持上述等式,闲暇的边际效用也要提高,也就意味着闲暇减少,意味着劳动供给增多。

19.2.3 总财富增加/譬如 T 下降, L 怎么变?

An increase in lifetime wealth (e.g. taxes fall) reduces labor supply.

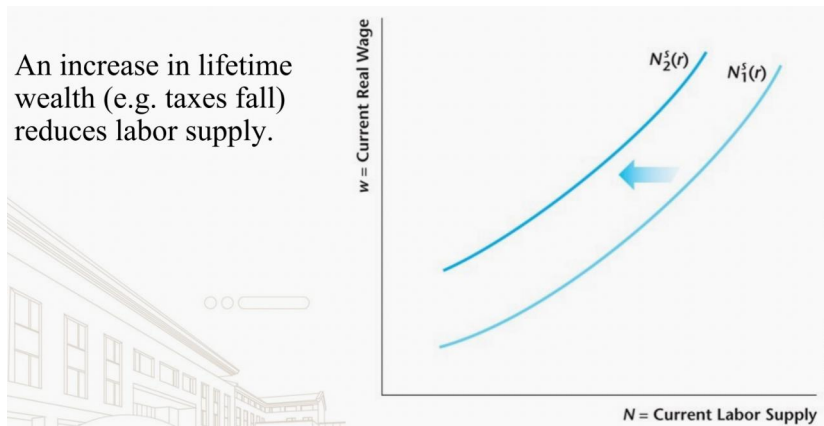


- 总财富增加,只是按照比例变化,不会扭曲个人的效用。此时不是工资增加,工资增加是工作时间的边际产出提高,从而闲暇的机会成本提高而存在替代效应。此时不存在替代效应,只有收入效应,从而想要更多的闲暇,降低了劳动力供给。

19.3 变化分析: The Current Demand for Consumption Goods

19.3.1 收入增加, 当前消费需求怎么变?

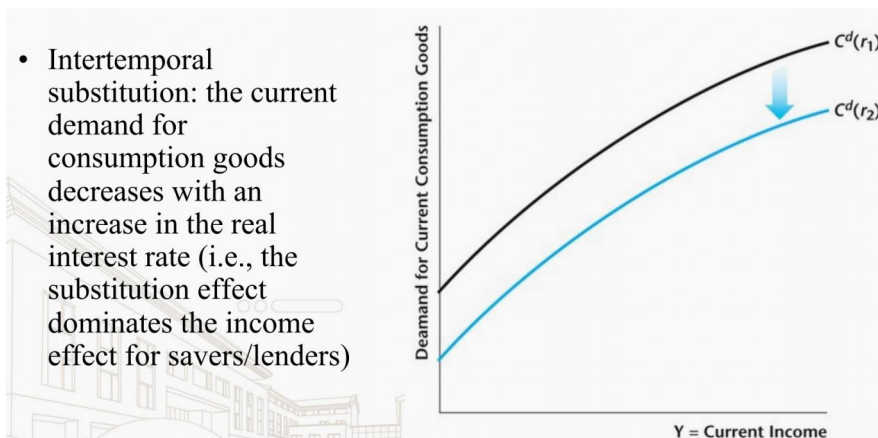
An increase in lifetime wealth (e.g. taxes fall) reduces labor supply.



- MPC 就是多了一份收入后, 有多少想拿去消费。
- Positive but diminishing

19.3.2 r 上升, 当前消费需求怎么变?

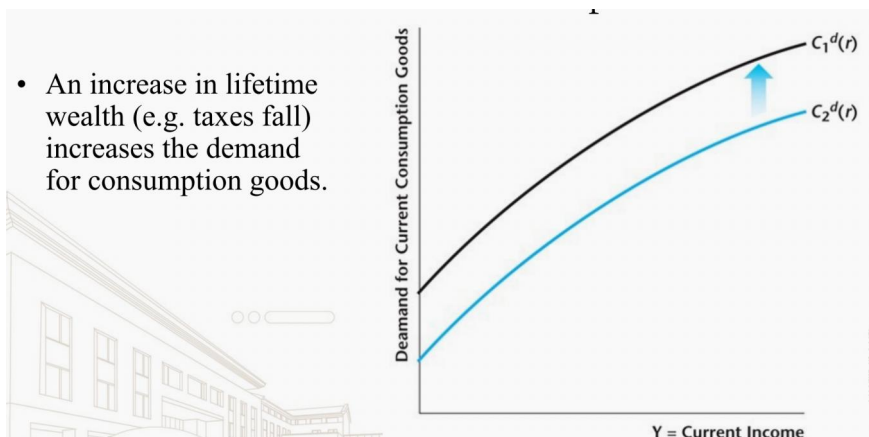
- Intertemporal substitution: the current demand for consumption goods decreases with an increase in the real interest rate (i.e., the substitution effect dominates the income effect for savers/lenders)



- 分析同上

19.3.3 总财富上升, 当前消费需求怎么变?

- An increase in lifetime wealth (e.g. taxes fall) increases the demand for consumption goods.



- 还是只有收入效应，从而会增加消费。

19.4 Producer's Problem

19.4.1 Firm's Current and Future Production Technology

$$Y = AF(K, L), \quad Y' = A'F(K', L')$$

19.4.2 Evolution of the Firm's Capital Stock

$$K' = (1 - \delta)K + I$$

19.4.3 Firm's Current and Future Profits

$$\pi = Y - wN - I$$

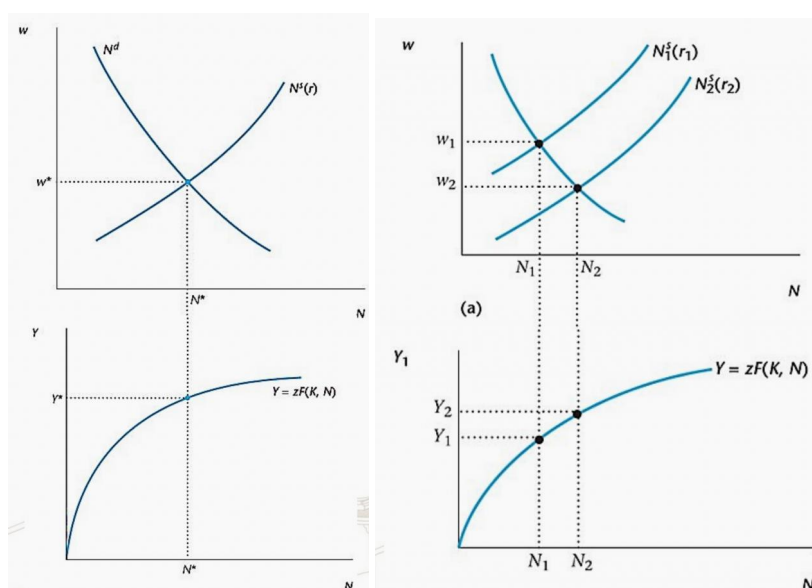
$$\pi' = Y' - w'N' + (1 - \delta)K'$$

19.4.4 The Firm Maximizes the Present Value of Profits

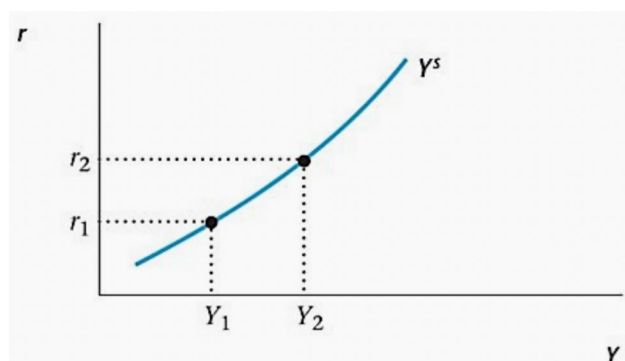
$$V = \pi + \frac{\pi'}{1 + r}$$

19.5 供给曲线 The Supply Curve

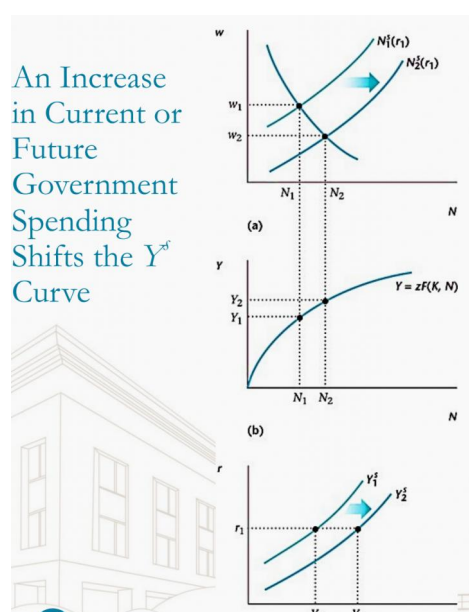
- Determination of Equilibrium in the Labor Market Given the Real Interest Rate r
- When the Real Interest Rate r Increases, Labor Supply Increases as well



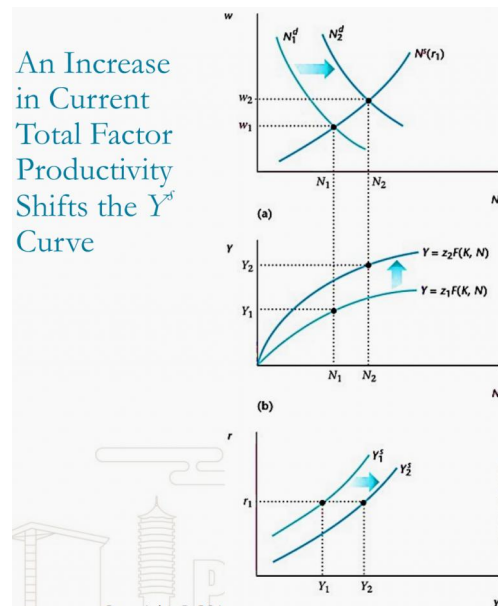
供给曲线



政府支出、全要素生产力变动带来的影响



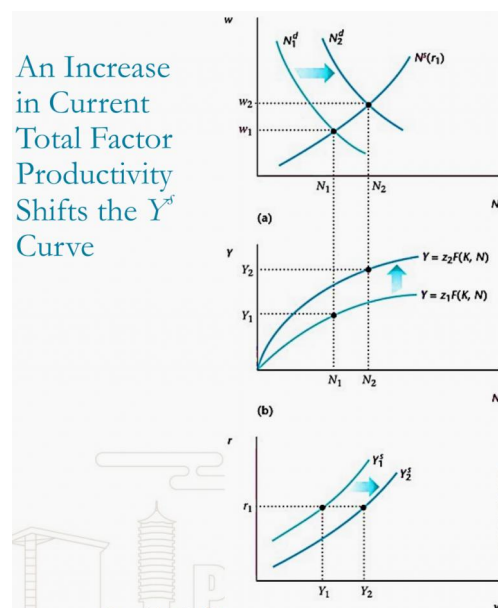
- 政府支出增加，要保持收支平衡，政府就要加税。就是税收增加。此时就是财富直接减少了，从而会带来更多的工作，同样的 w 下，会有更多的劳动力供给，就有上述变化。
- 第三幅图中，作为参数的改变，只是移动曲线



- 也就是当期 A 提高了，劳动力的边际产出提高了，同样会扩大就业，工资、产出都会提高。

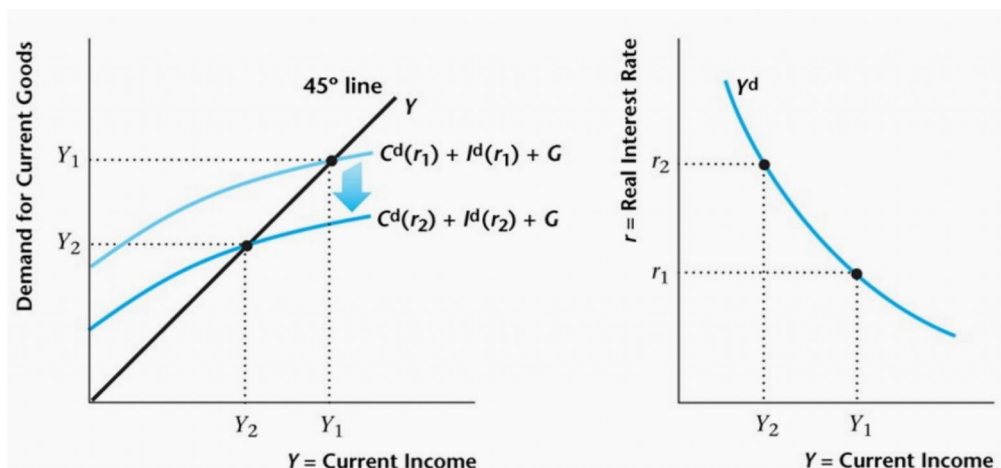
19.6 需求曲线 The Demand Curve

- The Demand for Current Goods
- 把所有的需求都纳入进来：所有的消费（内需）



- 横轴是总收入，纵轴是总需求，都是 GDP。所以和 45 度线得到的交点就是真实情况（均衡）。

19.7 Construction of the Output Demand Curve

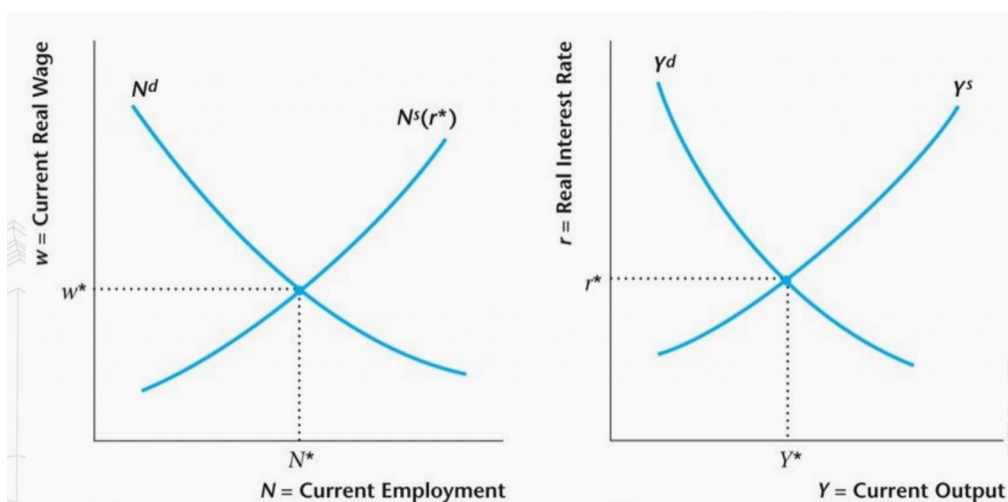


- 利率上升的时候，当期消费和当期投资都会减少，从而反映在第一幅图里面就是曲线的下移（因为 r 不出现在里面）。左边 r 的每次变动，都会形成一个新的总支出和总需求，从而得到了一个向下倾斜的总需求曲线。

19.8 What Shifts the Output Demand Curve to the Right?

- A decrease in the present value of taxes.
- An increase in future income.
- An increase in future total factor productivity.(如前分析，企业投资意愿增加)
- A decrease in the current capital stock.(资本边际产出增加，更愿意投资)

19.9 The Complete Real Intertemporal Model

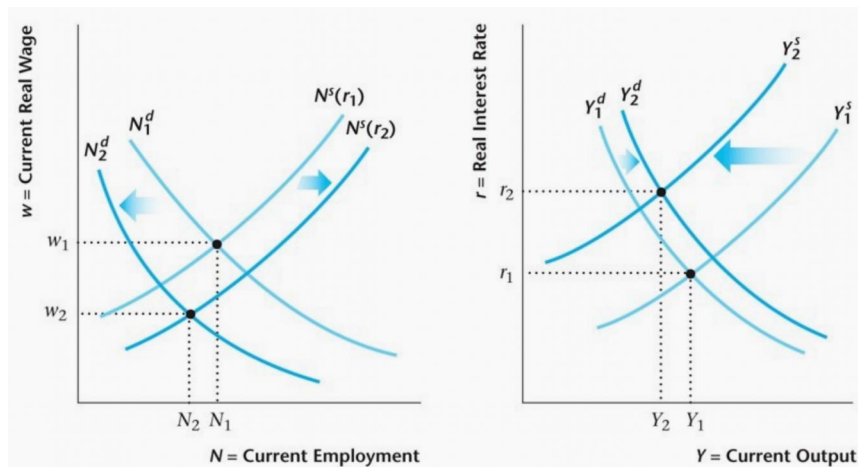


第二十章

Comparative Analyses

20.1 A Decrease in the Current Capital Stock, K

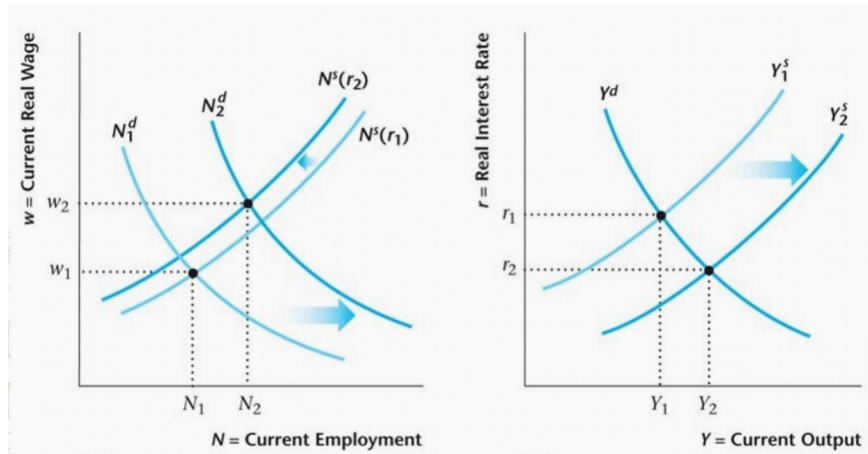
- This could arise due to a war or natural disaster. Output may rise or fall, depending on how large the output demand effect is relative to the output supply effect. The real interest rate rises, the real wage falls, employment may rise or fall



- 分析直接的影响:
 - 由于企业在 $MPL = w$ 情况下左移, 在 K 下降的情况下, MPL 降低了, 为了保持上述等式不变, 从而减少劳动力的需求。劳动力需求曲线先发生左移, 需要的劳动力更少了。
 - 产量当然会减少, 从而 Y^s 会左移。从消费者的视角来看, 由于 MPK 边际产出递减, K 少了很多时, 边际产出会很高, 从而会增加 I , 表现在图中就是 Y_1^s, Y_1^d 的交点移动到 Y_2^s, Y_2^d 的交点, 抬高 r 降低 I 最终达到平衡。
- 分析间接影响
 - r 提高, 当前的劳动需求会提高, 从而会让 N^s 上移。

20.2 Current Total Factor Productivity Increases

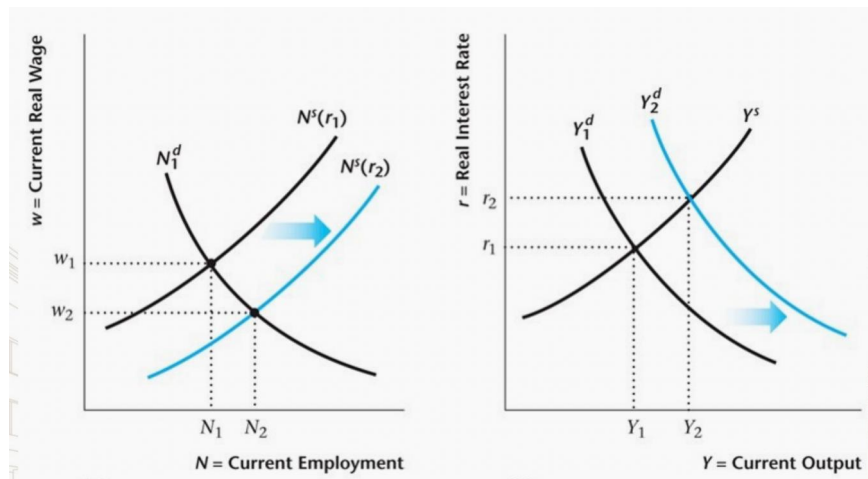
- Real interest rate falls, consumption and investment rise, employment rises, real wage rises.
- Productivity shocks are a potential explanation for business cycles



- A 的提高会有更大的劳动力需求。
- 投资是个跨期决策，只有未来的变动才会影响到投资。当下看到的时候已经来不及了！所以 Y^d 自身曲线不移动。
- 总供给本来会向右平移，然后生产过剩、需求不足，从而会增加需求、降低生产，最终达到图 2 的第二个交点。
- 此时利率下降，会减少当前的劳动力供给。从而有了图 1 中 $N^s(r_1)$ 移动到 $N^s(r_2)$

20.3 Total Factor Productivity Expected to Increase in Future –A News Shock

- Output demand curve shifts right.
- Real interest rate rises, investment increases, consumption may rise or fall, employment rises, real wage falls, output rises
- Important in explaining investment boom in the 1990s in the United States.



- 未来生产力的提高，不会影响到当前的劳动力需求的变动的。所以图 1 中不变。但是投资会提高，有了图 2 中的移动
- 先有总投资上升，然后供需不匹配，带动利率上升降低投资。利率上升后，有更多的劳动力供给。分析同前。

20.4 Credit Market Frictions and the Financial Crisis

- 股票市场往往能反应投资信心。 One feature of the financial crisis was more severe credit market frictions – asymmetric information and limited commitment
- More severe credit market frictions reduce the demand for goods by consumers, and increase labor supply.
- Output demand curve shifts to the left, output supply curve to the right.
- Real interest rate falls, output could rise or fall (but demand effect should be stronger).

第二十一章

经济周期的现实和历史

- 更好的讲法是波动，指的是经济的短期波动。事实上没有什么周期。
- 凯恩斯说，要让政府采取行动来让市场回归到均衡状态，也就是说市场需要一个政府。
- 李嘉图认为，政府的政策是无用的（李嘉图等价）。政府不从事生产，人们是理性的，政府要实现收支平衡，没有免费的午餐！

历史和现实

大萧条

- The Great Depression (大萧条): 1929-1933
- The Great Recession (大衰退): 2007-2009
- The Great Lockdown (大封锁): 2020-
- 如何去断定国家陷入了衰退呢（进入了某个经济周期）？许多指数会联动，譬如股票（道琼斯指数）
- The worst economic contraction was the Great Depression of the 1930s. Real GDP fell nearly 30% from the peak in August 1929 to the trough in March 1933. The unemployment rate rose from 3% to nearly 25%. Thousands of banks failed, the stock market collapsed, many farmers went bankrupt, and international trade was halted
- 强度会很高，GDP 直降 30%！冲击面会很广，不仅仅局限在股票、银行的金融体系内，对实体经济也有巨大的冲击。
- There were really two business cycles in the Great Depression. A contraction from August 1929 to March 1933, followed by an expansion that peaked in May 1937. By May 1937, output had nearly returned to its 1929 peak, but the unemployment rate was high (14%). In 1939 the unemployment rate was over 17%.
- 1937 的这次萧条其实是在二战解决的，美国的战时生产带动了国内经济，失业率降了 2%，GDP 几乎翻倍了。The Great Depression ended with the start of World War II.

Post-World War II business cycles in the U.S

- From 1945 to 1970 there were five mild contractions
- A very long expansion (106 months, from February 1961 to December 1969) made some economists think the business cycle was dead. But the OPEC oil shock of 1973 caused a sharp recession(不能用 GDP deflator 来计算！要用 CPI), with real GDP declining 3%, the unemployment rate rising to 9%, and inflation rising to over 10%. The 1981-1982 recession was also severe, with the unemployment rate over 11%, but inflation declining from 11% to less than 4%. The 1990-1991 and 2001 recessions were mild and short, but the recoveries were slow and erratic.
- From 1982 to 2001, only one brief recession, July 1990 to March 1991, not very severe. Volatility of many macroeconomic variables declined sharply. So, Long Boom was the first part of the period known as the Great Moderation (大稳定/大缓和).

The Great Recession (大衰退): 2007-2009

- The longest and deepest recession since the Great Depression began in December 2007
 - Began with a housing crisis –sub-prime mortgage crisis (次贷危机)
 - Followed by a financial crisis (金融危机) that rivaled that of the Great Depression

-
- Unemployment rose above 10% for the first time since 1982
 - Fed reduced interest rates to near zero (零利率). Sluggish economic growth even after the recession ended in 2009.

第二十二章

经济周期的定义和刻画

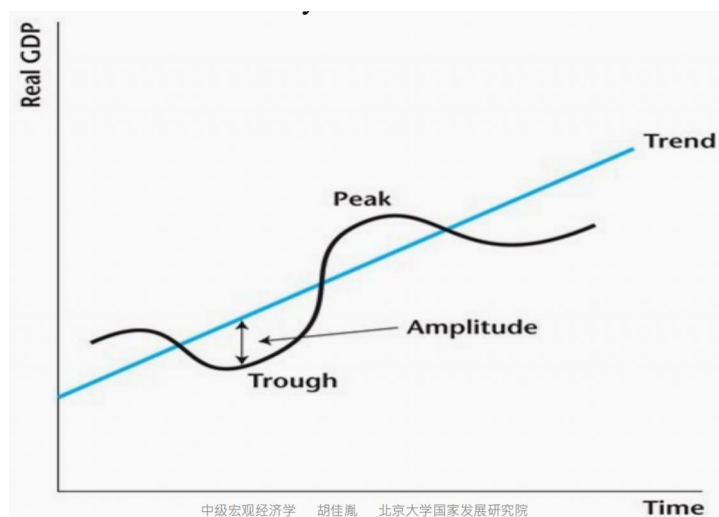
22.1 What is a Business Cycle?

定义 22.1 (Business Cycle)

The time series of GDP can be separated into trend (趋势) and business cycle (周期) components.

Business Cycles are fluctuations about trend in real GDP (经济周期是真实 GDP 围绕长期增长趋势的波动)

- The turning points in the deviations of real GDP from trend are peaks (波峰) and troughs (波谷)
- Persistent positive deviations from trend are booms (繁荣)
- Persistent negative deviations from trend are recessions (衰退)



- 从波谷到波峰称作扩张，反之称为收缩 (contraction)。
- 但是现实中很难界定。因为曲线难以预测和拟合。



笔记

- NBER Business Cycle Dating
- U.S. research on cycles began in 1920 at the National Bureau of Economic Research (NBER)
- The NBER's Business Cycle Dating Committee maintains a chronology (年表) of US business cycles.
- The chronology identifies the dates of peaks and troughs that frame economic recessions and expansions.
- A recession (衰退期) is the period between a peak of economic activity and its subsequent trough, or lowest point. Between trough and peak, the economy is in an expansion (扩张期). Expansion is the normal state of the economy; most recessions are brief. However, the time that it takes for the economy to return to its previous peak level of activity or its previous trend path may be quite extended.
- The NBER's definition emphasizes that a recession involves a significant decline in economic activity that is spread across the economy and lasts more than a few months.
- Three criteria (somewhat interchangeable)
 - Depth 深度-冲击力
 - Diffusion 广度-扩散面
 - Duration 长度-持续性

- 其实三个指标很难同时满足，会经过讨论得出。According to the NBER chronology, the most recent peak occurred in February 2020. The most recent trough occurred in April 2020.
- In the case of the February 2020 peak in economic activity, the committee concluded that the subsequent drop in activity had been so great and so widely diffused throughout the economy that, even if it proved to be quite brief, the downturn should be classified as a recession.



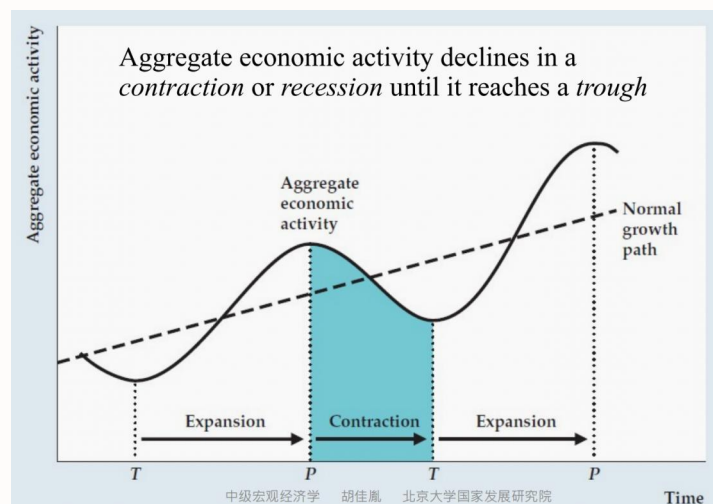
- 虽然短，但是强度足够大！

22.2 Five Points about Business Cycles

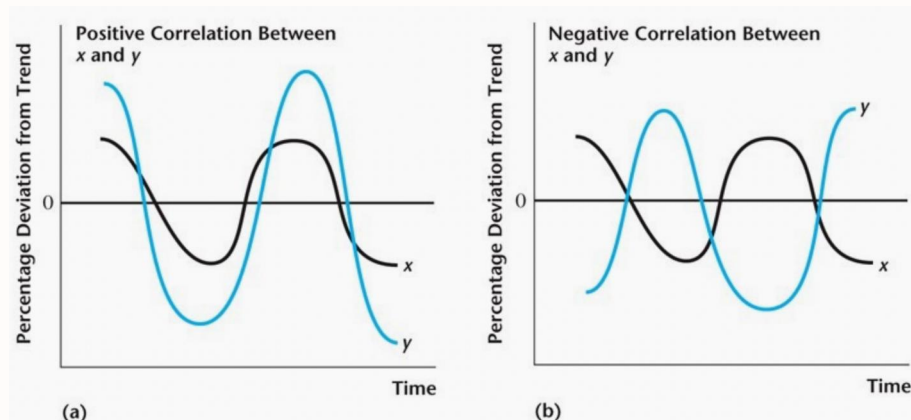
命题 22.1 (Five Points about Business Cycles)

Burns and Mitchell (Measuring Business Cycles, 1946) makes five main points about business cycles:

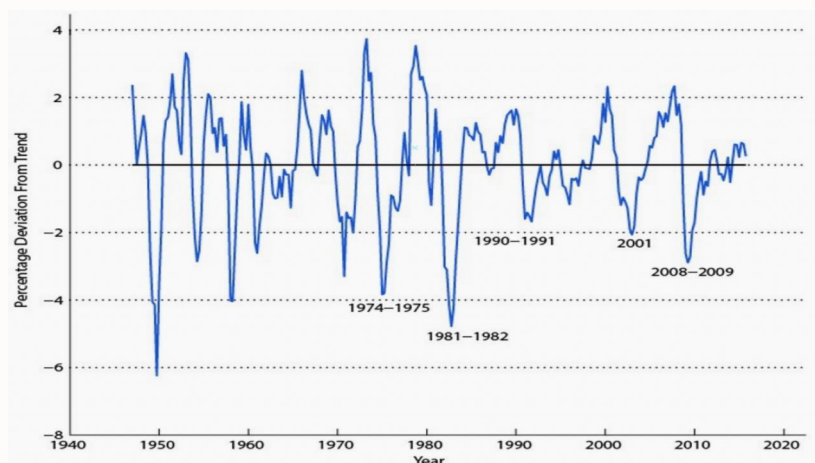
1. Business cycles are fluctuations of aggregate economic activity, not a specific variable(一定是总体的经济活动的改变，而非特定的经济方面)
 - The NBER determination of the months of peaks and troughs is based on a range of monthly measures of aggregate real economic activity
 - In recent decades, the two measures NBER has put the most weight on are real personal income less transfers and nonfarm payroll employment.
2. There are expansions (扩张期) and contractions (收缩期)



- After a trough, activity increases in an expansion or boom until it reaches a peak . A particularly severe recession is called a depression
 - The sequence from one peak to the next, or from one trough to the next, is a business cycle.
 - Peaks and troughs are turning points. Turning points are officially designated by the NBER Business Cycle Dating Committee.
3. Economic variables show comovement (联动)—they have regular and predictable patterns of behavior over the course of the business cycle(变动是一起出现的，只有一个变量在动的话，影响也没有那么广泛)
- If the deviations from trend in a macroeconomic variable are positively correlated with the deviations from trend in real GDP, then that variable is procyclical (顺周期).
 - 如果真实 GDP 在向上偏离长期趋势的时候，这个变量也是向上偏离的，就称为顺周期
 - 比如投资，就业等等。
 - If the deviations from trend in a macroeconomic variable are negatively correlated with the deviations from trend in real GDP, then that variable is countercyclical (逆周期).
 - 如果经济形势好的时候，这个变量变得比较小，差的时候变得比较大，就是逆周期的
 - 比如失业率等等。
 - If a macroeconomic variable is neither procyclical nor countercyclical, it is acyclical (非周期性的).



4. The business cycle is recurrent (反复出现), but not periodic (定期的)
- Recurrent means the pattern of contraction–trough–expansion–peak occurs again and again
 - Not being periodic means that it doesn't occur at regular, predictable intervals
 - Deviations From Trend in Real GDP are Irregular. 也就是波动是无规律的。



5. The business cycle is persistent (持续性)(复苏不容易，而是长期的)

- Declines are followed by further declines; growth is followed by more growth
- Because of persistence, forecasting turning points is quite important

22.3 The Cyclical Behavior of Economic Variables: Direction, Timing, & Volatility

22.3.1 Direction

- What direction does a variable move relative to aggregate economic activity?
 - Procyclical: in the same direction
 - Countercyclical: in the opposite direction
 - Acyclical: with no clear pattern
- Countercyclical: unemployment

22.3.2 Timing

- What is the timing of a variable's movements relative to aggregate economic activity?
 - Leading: in advance
 - Coincident: at the same time
 - Lagging: after
- Coincident: industrial production, consumption, business fixed investment, employment
- Leading: residential investment, inventory investment, average labor productivity, money growth, stock prices
- Lagging: inflation, nominal interest rates(特别是名义利率是个经济指标，政府用来应对危机的手段)
- 比如储蓄就是滞后性的变量，经济衰退后，储蓄会减少。但是经济衰退时储蓄却不会减少太多。

22.3.3 Volatility

- What is the volatility of a variable's movements relative to aggregate economic activity?
 - More volatile: larger relative variation
 - As volatile: same relative variation
 - Less volatile: smaller relative variation
- Investment spending is more volatile than consumption(投资波动最大，这是一个存量，投资是在未来发挥作用，从而对经济环境十分敏感。如果预料到未来有一个经济的衰退期，会大幅减少投资，从而有更高的波动率)
- Durable goods production is more volatile than nondurable goods and services(耐用品也相当于一种投资，不耐用更像消费)

22.3.4 Correlation Coefficients and Variability of Percentage Deviations from Trend

	Correlation Coefficient	Standard Deviation (% of S.D. of GDP)
Consumption	0.77	77
Investment	0.80	301
Employment	0.78	65
Average Labor Productivity	0.77	63

	Cyclical	Lead/Lag	Variation Relative to GDP
Consumption	Procyclical	Coincident	Smaller
Investment	Procyclical	Coincident	Larger
Employment	Procyclical	Lagging	Smaller
Real Wage	Procyclical	?	?
Average Labor Productivity	Procyclical	Coincident	Smaller

22.4 Can Leading Variables Help Predict Recessions?

- Problems with the leading indicators
 - Data are available promptly, but often revised later, so the index may give misleading signals
 - Structural changes in the economy necessitate periodic revision of the index
 - The index provides little information on the timing of the recession or its severity
 - The index has given a number of false warnings
 - In real time, the index sometimes gave no warning of recessions
- Because recessions may be caused by sudden shocks, the search for a good index of leading indicators may be fruitless

22.5 The Seasonal Cycle and the Business Cycle

- Most economic data are seasonally adjusted to remove regular seasonal movements
- Economic theory suggests that even if demand changes over the seasons, production needn't
 - Firms could instead produce steadily through the year, building up inventories of goods in the first three quarters of the year and selling them off in the fourth quarter
- But Barsky and Miron find that this doesn't happen; production and sales tend to move together
 - There is little production smoothing
- If the seasonal cycle is like the business cycle, and the seasonal cycle represents desirable responses to various factors (Christmas, the weather) for which government intervention is inappropriate, should government intervention be used to smooth out the business cycle?
- Some economists challenge the need for the Fed to change the money supply over the seasons
- But the case for seasonal monetary policy is based on preventing bank panics (as occurred frequently from 1890 to 1910) and reducing transactions costs (which arise because people expend effort to reduce money balances when interest rates rise)

第二十三章

经济周期理论 (Business Cycle Theories)

23.1 What Explains Business Cycle Fluctuations?

- Two key questions about business cycles
 - What are the underlying economic causes? What should government policymakers do about them?
- Two major business cycle theories
 - Classical theory: Real business cycle (RBC) model
 - Keynesian theory: New Keynesian (NK) model
- 他们争论的是经济危机是如何诞生的，以及如何应对。
- Classical theory: prices adjust rapidly
 - So recessions are short-lived. No need for government intervention.
 - 市场总会让价格达到新的均衡，衰退只是暂时的！政府是个守夜人的作用，小政府即可。界定清楚产权、完善司法体系就可以了。
- Keynesian theory: prices (and wages) adjust slowly
 - Adjustment may take several years. So the government can fight recessions by taking action to shift the aggregate demand curve
 - 比如说粘性价格，早期签订的合同难以调整。从而难以短期调整。
 - 政府要积极帮助市场来回到正轨！

23.2 Real Business Cycle Model 真实经济周期模型

命题 23.1

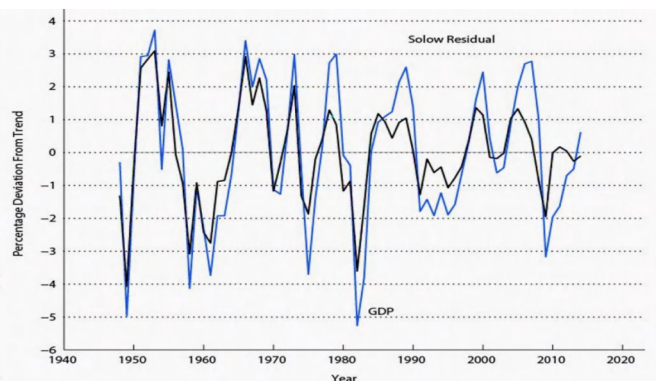
- Real shocks to the economy are the primary cause of business cycles
 - Examples of real shocks:
 - 比如福特流水线生产，改进了技术，就会通过 Shocks to the production function，来让经济实现增长
 - 劳动力结构/数量发生了改变，譬如移民/老龄化等等。Shocks to the size of the labor force
 - Shocks to the real quantity of government purchases
 - 消费者的预期发生了改变，Shocks to the spending and saving decisions of consumers
- There is no role for the government in smoothing business cycles –cycles are just optimal responses to the technology shocks. 有波动是正常的，去干预总会降低效率！

23.2.1 Productivity Shocks in RBC Model

- The largest role is played by shocks to the production function, which RBC theorists call productivity shocks
 - Development of new products or production techniques
 - Introduction of new management techniques
 - Changes in the quality of capital or labor
 - Changes in the availability of raw materials or energy
 - Unusually good or bad weather

- Changes in government regulations affecting production
- 按照 RBC 的理论, solow 残值应该和 GDP 处于正向关系之中。

- Most economic booms result from beneficial productivity shocks; most recessions are caused by adverse productivity shocks
- RBC theorists measure productivity shocks as the **Solow residual**



23.2.2 Does the Solow residual measure technology shocks?

- The Solow residual is strongly procyclical in U.S. data
 - This accords with RBC theory, which says the cycle is driven by productivity shocks
- But should the Solow residual be interpreted as a measure of technology?
 - If it's a measure of technology, it should not be related to factors that don't directly affect scientific and technological progress, like government purchases or monetary policy
 - But statistical studies show a correlation between these

23.2.3 劳动力利用率和囤积现象 Labor Utilization and Hoarding

- 经济形势好的时候, 大家都忙, 没空摸鱼! 经济形势不好的时候, 大家都没事干, 都在摸鱼。
- Measured productivity can vary even if the actual technology doesn't change. Capital and labor are used more intensively at times; more intensive use of inputs leads to higher output. Utilization is procyclical, so the measured Solow residual is more procyclical than is the true productivity.
- 也就是说旧有物资/结构的利用率提高的时候, solow 残值也归结为科学技术的进步。这是 K 和 L 的变动, 但是没有衡量出来, 所以高估了科学技术的进步。

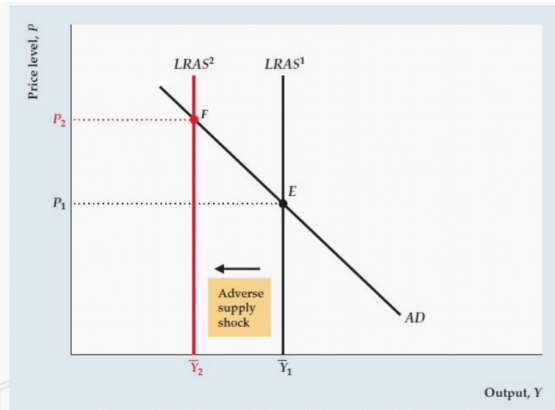
定义 23.1 (Labor hoarding)

Labor hoarding: firms keep workers in recessions to avoid incurring hiring and firing costs.

- Hoarded labor doesn't work as hard, or performs maintenance
- The lower productivity of hoarded labor doesn't reflect technological change, just the rate of utilization

Labor hoarding explains why labor productivity is procyclical in the data without assuming that recessions and expansions are caused by productivity shocks. Changes in the measured Solow residual don't necessarily reflect changes in technology

- The RBC theory is consistent with many business cycle facts
 - The theory correctly predicts procyclical employment, real wages, and average labor productivity
- The theory predicts countercyclical movements of the price level, which seems to be inconsistent with the data



- 如何解释长期的失业率存在呢？劳动力市场始终没有出清，供过于求。为何？

23.2.4 Unemployment in the Classical Model

- In the classical model there is no unemployment; people who aren't working are voluntarily not in the labor force
- In reality measured unemployment is never zero, and it is the problem of unemployment in recessions that concerns policymakers the most
- Classical economists have a more sophisticated version of the model to account for unemployment
- Workers and jobs have different requirements, so there is a matching problem and incurs search-and-matching costs. It takes time to match workers to jobs, so there is always some unemployment.
- Unemployment rises in recessions because productivity shocks cause increased mismatches between workers and jobs
- A shock that increases mismatching raises frictional unemployment (摩擦性失业) and may also cause structural unemployment (结构性失业) if the types of skills needed by employers change
- 摩擦性失业是在说，由于市场摩擦的存在，尽管有均衡可以达成，但是需要时间。结构性失业是在说，要求的技能是很新的，但是失业的人没有相关的技能，总量上是对等的，但是结构上是不匹配的，总有人找不到工作也总有公司招不到人。
- The worker match theory can't explain all unemployment
 - Many workers are laid off temporarily; there's no mismatch, just a change in the timing of work
 - 有了很多中介平台等减少摩擦后，并没有明显改善。摩擦性失业不行啊！
 - If recessions were times of increased mismatch, there should be a rise in help-wanted ads in recessions, but in fact they fall)
 - 照理说，衰退的时候如果是 mismatch，也应当看到很多企业的招聘广告！事实上都在裁员。结构性失业不行啊！

第二十四章

Keynesian Business Cycle Theory

24.1 Keynesian Business Cycle Theory

命题 24.1

- Keynesians think aggregate demand shocks are the primary source of business cycle fluctuations. 就是总需求不足！企业卖不出去东西了，裁员，形成恶性循环。
- Examples of aggregate demand shocks:
 - Changes in fiscal policies such as government spending and tax cuts (企业卖不出去了，政府就应该帮着采购)
 - Changes in desired investment arising from changes in the expected future marginal product of capital
 - Changes in consumer confidence that affect desired saving
 - Changes in money demand or supply
 - Self-fulfilling waves of optimism and pessimism
- RBC 认为，经济周期主要来源于供给端，也就是生产率的改变。而凯恩斯认为，经济周期主要来源于需求端。
- The Keynesian theory fits certain business cycle facts:
 - Employment fluctuates in the same direction as output
 - Money is procyclical and leading; Inflation is procyclical and lagging
 - Investment and durable goods spending is procyclical and volatile
- Keynes believed in “animal spirits,” (动物精神) waves of pessimism and optimism, as a key source of business cycles

24.2 Macroeconomic Stabilization

- Keynesians favor government actions to stabilize the economy
- Recessions are undesirable because the unemployed are hurt
- The government could increase the money supply and increase government purchases to restore general equilibrium

第二十五章

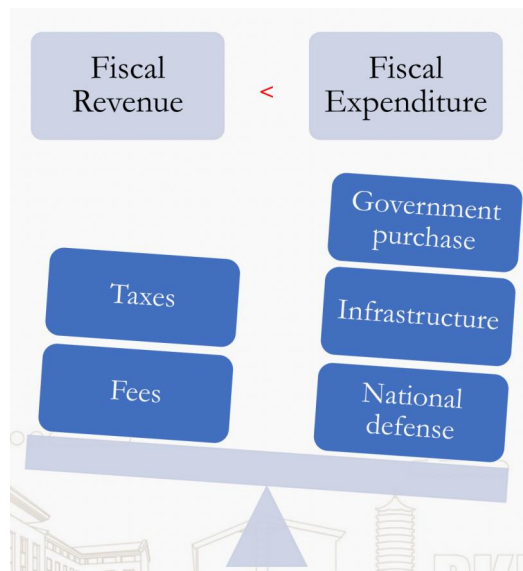
政府的财政政策

25.1 政府的财政政策

定义 25.1 (政府预算)

包括政府的收入和支出，收入包括费用、收税。支出包括政府购买、基础设施建色号、国防、转移支付等等。

25.1.1 Fiscal deficit 财政赤字：收小于支



当然还会有财政平衡 (Fiscal balance) (动态的眼光理解)、财政盈余 (Fiscal surplus)

25.1.2 Is a tax cut policy effective in boosting the economy? 降税政策能刺激经济吗?

- Ronald Reagan made tax cuts the centerpiece of his 1980 campaign for the presidency.
- The Economic Recovery Tax Act (ERTA), enacted on August 13, 1981, was the biggest tax cut in American history, slashing revenues by 2.9% of GDP
- The 2017 tax cut: despite former President Trump's repeated claim that his cut was the biggest, the Tax Cuts and Jobs Act clocked in at just 0.6% of GDP
- Adjusted for inflation, the TCJA is the fourth largest tax cut in history, behind the tax cuts in 2013, 2010, and 1981

第二十六章

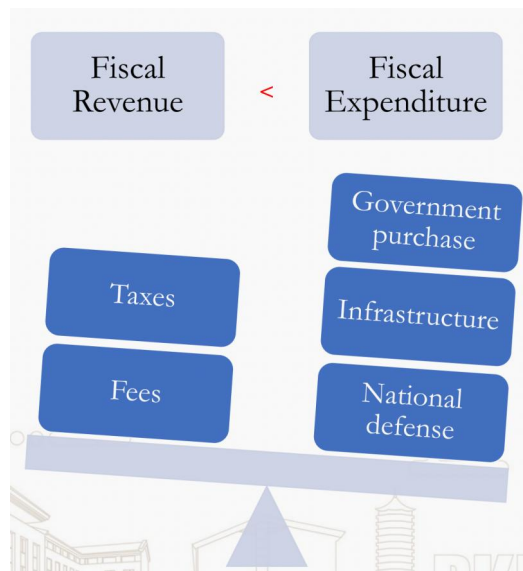
政府的财政政策

26.1 政府的财政政策

定义 26.1 (政府预算)

包括政府的收入和支出，收入包括费用、收税。支出包括政府购买、基础设施建色号、国防、转移支付等等。

26.1.1 Fiscal deficit 财政赤字：收小于支



当然还会有财政平衡 (Fiscal balance) (动态的眼光理解)、财政盈余 (Fiscal surplus)

26.1.2 Is a tax cut policy effective in boosting the economy? 降税政策能刺激经济吗?

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26.2 考虑政府预算的跨期决策

26.2.1 Dynamic Budget Constraints with Taxes

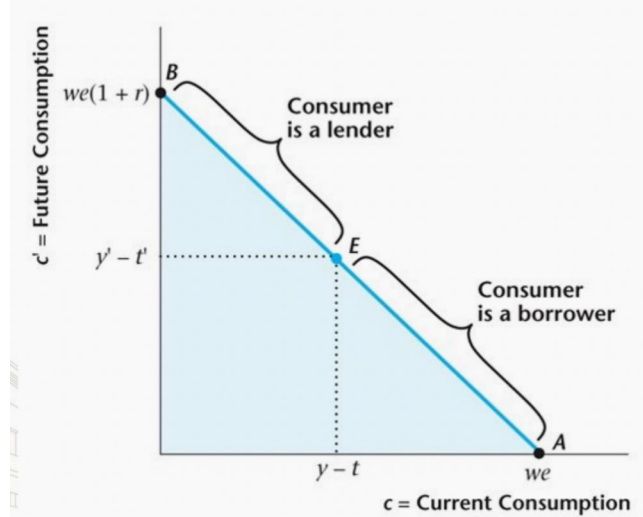
- The consumer's current-period budget constraint: $c + s = y_t$
- The consumer's future-period budget constraint: $c' = y'_{t'} + (1 + r)s$

- 这是在表示定额税，如果是比例税，预算约束是 $(1-t)y$ 。第二期世界毁灭，不会储蓄。

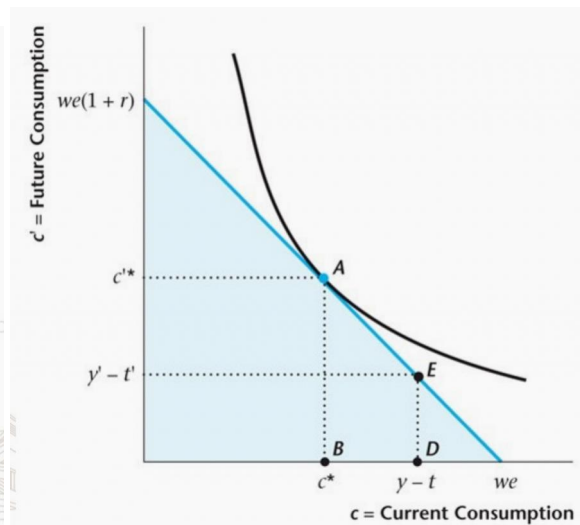
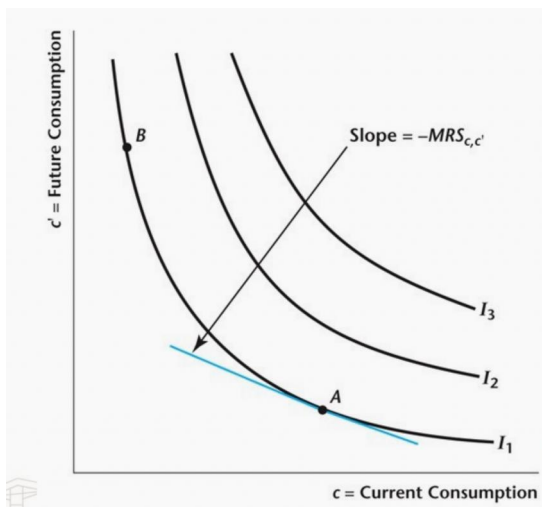
- Solve the future-period budget constraint for s : $s = \frac{c' + y' + t'}{1+r}$, 得到跨期约束线

$$c + \frac{c'}{1+r} = y - t + \frac{y' - t'}{1+r}$$

- 储蓄和借贷都是一种配置工具，是跨期调度的手段，其本身没有财富属性。



- Optimization: Marginal condition that holds when the consumer is optimizing: $MRS_{c,c'} = 1+r$
- 无差异曲线上的点代表着相同的效用，是在效用不变的情况下的消费配置。MRS 代表额外增加一单位当前消费，要减少的第二期消费是多少。



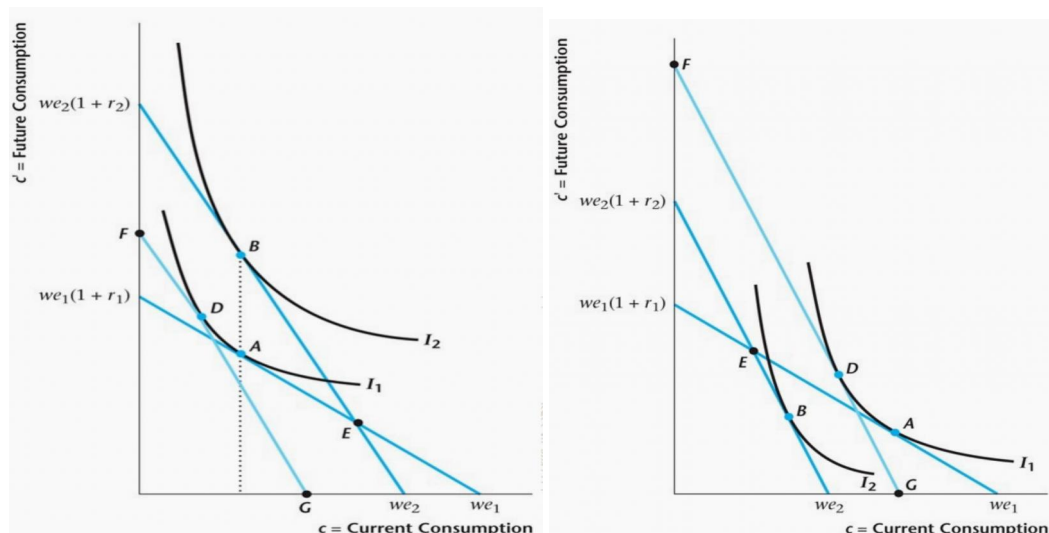
- 右图是消费者借贷的情况。
- 推导无差异曲线的表达式：

$$\Delta U = 0 \Rightarrow dU(c, c') = MU_c dc + MU_{c'} dc' = 0 \Rightarrow MRS_{c,c'} = \frac{dc'}{dc} = -\frac{MU_c}{MU_{c'}}$$

- 何时最大化？相切的时候。直观上理解就是：如果不是相切，总可以多消费/储蓄都可以提高效用。
- 数学推导: $U(c, c') + \lambda(y - t + \frac{y' - t'}{1+r} - c - \frac{c'}{1+r})$, 用一阶级条件即可

26.2.2 An Increase in the Market Real Interest Rate

- An increase in the market real interest rate decreases the relative price of future consumption goods in terms of current consumption goods –this has income and substitution effects for the consumer.



- An Increase in the Real Interest Rate for a Lender(左图)
 1. Current consumption: ambiguous change
 2. Current savings: ambiguous change (需要衡量替代和收入哪个更强)
 3. Future consumption increases(绝对的!)
- An Increase in the Real Interest Rate for a Borrower(右图)
 1. Current consumption decreases
 2. Current savings increases
 3. Future consumption: ambiguous change

26.2.3 Government Budget Constraints

- Government Budget Constraints
- 也假定政府在做跨期的决策, 通过储蓄和借贷的方式来调配资源。并不强求每一期收支相抵。
- The government's current-period budget constraint: $G = T + B$
- The government's future-period budget constraint: $G' + (1 + r)B = T'$
- 也是有限制的! 不能借新债还旧债, 不然就会有庞氏骗局。此时假定只有两期, 所以最后一期一定要全都还上。

$$G + \frac{G'}{1+r} = T + \frac{T'}{1+r}$$

- 我现在减掉的税, 未来肯定要你还的!
- 这就是李嘉图等价的核心, 如果人们是理性的, 知道政府减税肯定意味着将来的增税。从而人们在减税和加税的时候, 应该不想改变自己的做法。

定义 26.2 (Credit Market Equilibrium Condition)

- Total private savings is equal to the quantity of government bonds issued in the current period. $S^p = B$
- 政府能够有财政赤字, 政府施政才能有一定的弹性空间, 这样才能应对危机, 逆风而行。所以要给政府留出来扩大赤字的空间。

定义 26.3 (Income-Expenditure Identity)

- Credit market equilibrium implies that the income-expenditure identity holds

$$Y = C + G$$

- 这个可以推出来。

$$c + s = y - t \Rightarrow C + S = Y - T$$

- 又有 $G = T + B = T + S^p \Rightarrow Y = C + G$

26.3 Ricardian Equivalence

26.3.1 对于消费者的分析

定义 26.4 (Ricardian Equivalence)

- The timing of taxation does not matter for the consumer as long as the government keeps a balanced budget
- Today's tax cut will lead to a tax increase tomorrow
- Therefore, a tax cut policy should have no effect on the real economy
- Households will save today's tax rebate to pay for tomorrow's tax increase; no change on consumption and real interest rate

- Key equation: the consumer's lifetime tax burden is equal to the consumer's share of the present value of government spending

$$t + \frac{t'}{1+r} = \frac{1}{N} \left(G + \frac{G'}{1+r} \right)$$

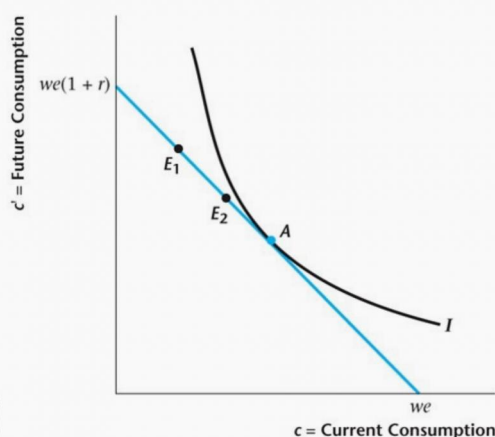
- Then, substitute in the consumer's budget constraint –taxes do not matter in equilibrium for the consumer's lifetime wealth, just the present value of government spending.

$$c + \frac{c'}{1+r} = y + \frac{y'}{1+r} - \frac{1}{N} \left(G + \frac{G'}{1+r} \right)$$

- 已经运用政府要保持预算平衡这个条件，将政府的预算约束和家庭的预算约束结合在一起了。如果政府的预算约束不变，改变各期的税收是不会影响家庭的预算约束的。

Ricardian Equivalence with a Cut in Current Taxes for a Borrower

- Current taxes decrease
- Future taxes increase
- The endowment point shifts from E_1 to E_2
- The optimal consumption choice is still point A



- 减税也不会影响！只是改变了当期和未来的比例而已。政府支出只要不变，为了维持收支平衡，当期减税就意味着未来增税。

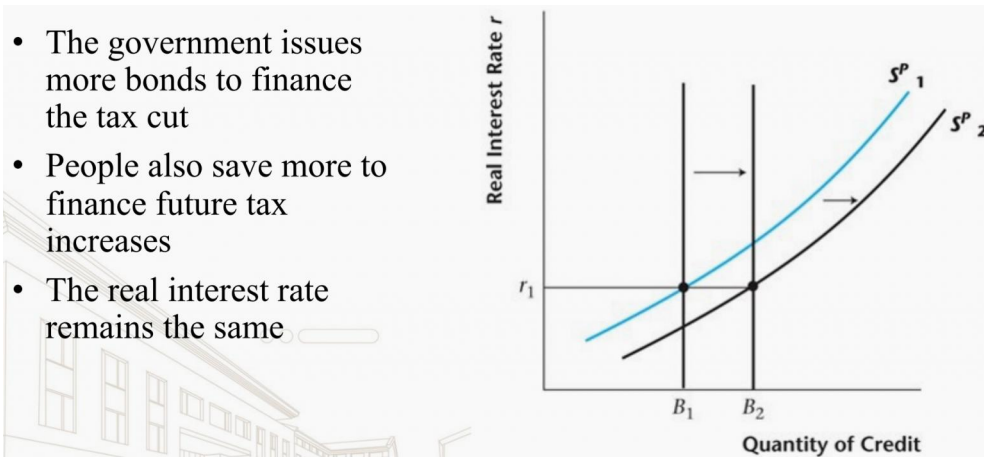
$$c + s = y - t + \Delta t$$

$$c' = y' + (1+r)s - t' - (1+r)\Delta t'$$

- 从第一个式子解出的 s 代入第二个式子，那么改变 DBC 得到的 IBC 还是不会改变， Δt 会被消去。

- 所以只改变了第一期的储蓄，第一期的储蓄会增加 Δt ，用来偿还第二期的税收，但是不会改变最优选择时的两期消费量。

26.3.2 Ricardian Equivalence and Credit Market Equilibrium



- 所以还是不会改变利率。

26.4 Fiscal policy

- 如果按照李嘉图等价来说，政府干预经济没有任何意义，那么为什么还要继续干预呢？

26.4.1 The effect of lower taxes

- Keynesians believe that a reduction of (lump-sum) taxes is expansionary, just like an increase in government purchases.
- Keynesians reject Ricardian equivalence, believing that the reduction in taxes increases consumption spending, reducing desired national saving and shifting the IS curve(投资储蓄线) up
- The only difference between lower taxes and increased government purchases is that when taxes are lower, consumption increases as a percentage of full-employment output, whereas when government purchases increase, government purchases become a larger percentage of full-employment output
- 李嘉图等价很重要一点是：每个人可以自由的储蓄和借贷，现实生活中存在着借贷约束，借钱很难！借贷中间存在着信息不对称，在信息不对称的情况下就会有风险溢价，所以借钱更难。
- 政府的减税政策有效，是因为 τ_a 近似的减少了借贷约束。

26.4.2 Why Might Ricardian Equivalence Fail in Practice?

- Redistributive effects of taxes: tax changes affect the wealth of different consumers differently.(税收的转移支付作用)
- Intergenerational redistribution: debt issued by the government today (代际消费不同，年轻人比老年人更爱消费) is paid off by future generations
- Taxes are not lump sum; they cause distortions. (不是定额税而是比例税，从而会有变形：特朗普降低税率，但是美国是累进税，富人面临的边际税率更高，如果统一下调税率，其实富人获得的好处是更大的)(起征点上调，其实富人也在收益，因为其面临的边际税率也高)
- Credit market frictions

第二十七章

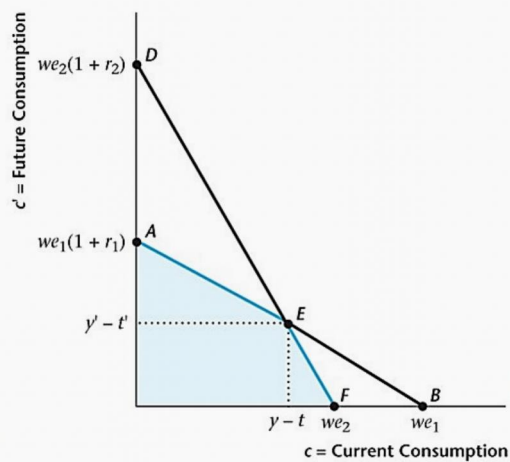
信贷市场约束

27.1 Credit Market Imperfections and Consumption

- Assume that lenders can lend at a lower interest rate than the one faced by borrowers
- The government borrows and lends at the interest rate that lenders face
- This implies that Ricardian equivalence does not hold, in general.

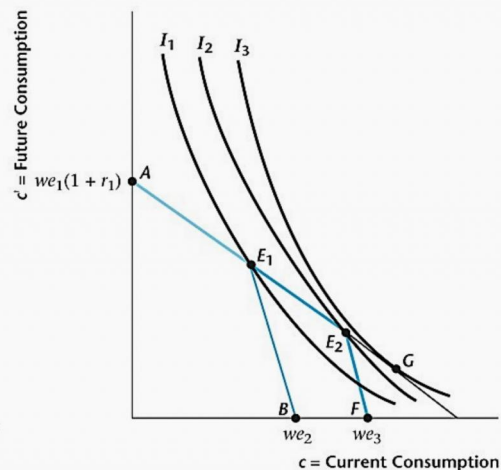
A Consumer Facing Different Lending and Borrowing Rates

- Lending rate: r_1
- Borrowing rate: r_2
- The actual budget line faced by the household is in blue
- Borrowers and constrained consumers will be affected



Effects of a Tax Cut for a Constrained Consumer with Different Borrowing and Lending Rates

- A tax cut shifts the kink point from E_1 to E_2
- The new equilibrium point is on a higher indifference curve (I_2)
- If the borrowing rate is as low as the lending rate r_1 , then the optimal consumption choice is G , which generates the highest utility (I_3)



27.1.1 Effects of a Tax Cut with Credit Market Imperfections

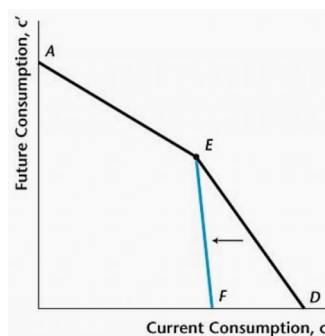
- Suppose a consumer initially is credit constrained –that is, he or she borrows zero
- For such a consumer, the entire tax cut will be spent on current consumption
- This is very different from the case with no credit market imperfections, where the consumer will save the entire tax cut to pay higher future taxes.

定义 27.1 (Credit Market Imperfections and the Financial Crisis)

- Two key credit market frictions: asymmetric information and limited commitment.
- Asymmetric information: Would-be borrowers know more about their characteristics than do lenders.
- Limited Commitment: Borrowers may choose to default – lender can overcome limited commitment with collateral(借款人无法真实的承诺将来一定还钱，所以就可以有抵押物来)

**27.1.2 Asymmetric Information in Credit Markets**

- Lending carried out through banks.
- Deposit rate at banks is r_1 , loan rate is r_2 .
- Fraction a of borrowers never defaults, fraction $1-a$ always defaults – bank cannot tell the good borrowers from the bad ones
- All good borrowers identical, borrow L .
- Bad borrowers mimic the good ones
- Zero profits for the bank implies: $r_2 = \frac{1+r_1}{a}$
- Therefore, there is a default premium ($r_2 > r_1$) when $a < 1$. The default premium increases as a decreases.
- Asymmetric Information in the Credit Market and the Effect of a Decrease in Creditworthy Borrowers:

**27.1.3 Effect of a Decrease in the Fraction of Creditworthy Borrowers**

- Default premium increases –even good borrowers face higher loan rates.
- Budget constraint shifts in.
- Consumption falls for all borrowers.
- Matches observations from the current financial crisis –increase in credit market uncertainty, reduction in lending, decrease in consumption expenditures.

第二十八章

财政乘数 Fiscal Multiplier

定义 28.1 (Fiscal Multiplier)

The fiscal multiplier is defined as the ratio of the increase in Y to the increase in the government budget

$$Fiscal_{multiplier} = \frac{\Delta Y}{\Delta G} = \frac{\Delta Y}{\Delta - T}$$

i.e., When the fiscal spending (or revenue) increases (or decreases) by one unit, how many units of increase in output will be induced

28.1 The Keynesian View

定义 28.2 (Expenditure multiplier & Tax multiplier)

The expenditure multiplier is the change in equilibrium output given a change in government purchases:

$$\frac{\Delta Y}{\Delta G} = \frac{1}{1 - mpc}$$

The tax multiplier is the change in equilibrium output given a change in taxes : $\frac{\Delta Y}{\Delta T}$

It is always less in absolute value than the expenditure multiplier because the initial change in spending occurs through consumption expenditure

- 模型的推导如下:

$$\Delta C = (mpc + mpc^2 + mpc^3 + \dots)\Delta G = \frac{mpc}{1 - mpc}\Delta G$$

$$\text{支出乘数中: } \Delta Y = \Delta G + \Delta C = \frac{1}{1 - mpc}\Delta G \quad \text{税收乘数中: } \Delta Y = \Delta C = \frac{mpc}{1 - mpc}\Delta G$$

- 所以税收乘数绝对值要小一点, 因为 $mpc < 1$
- Some economists argue that the expenditure multiplier may be smaller because:
 1. Real interest rates may rise when government purchases rise, resulting in crowding out on investment, consumption spending, and net exports (挤出效应, 政府支出增加会提高利率, 事实上 Y 增长会回撤一点)
 2. If households and businesses anticipate that larger government deficits will lead to higher taxes in the future, then they will reduce their spending to pay for the anticipated tax increases(李嘉图等价)

28.1.1 Fiscal Multipliers –The Intertemporal View

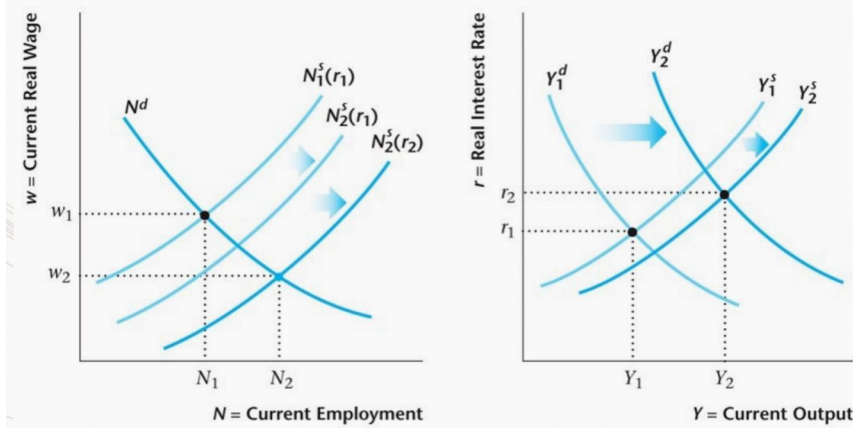
- Question: What is the rightward shift in the output demand curve due to an increase in G ?
- Answer: The curve shifts to the right one-for-one with the increase in G .
- The demand multiplier is one: $\frac{Y_2^d - Y_1^d}{G_2 - G_1} = 1$

28.1.2 Equilibrium Effects of an Increase in G

- Output increases, real interest rate increases, real wage falls, consumption and investment decrease, employment rises.
- Government spending crowds out both consumption and investment

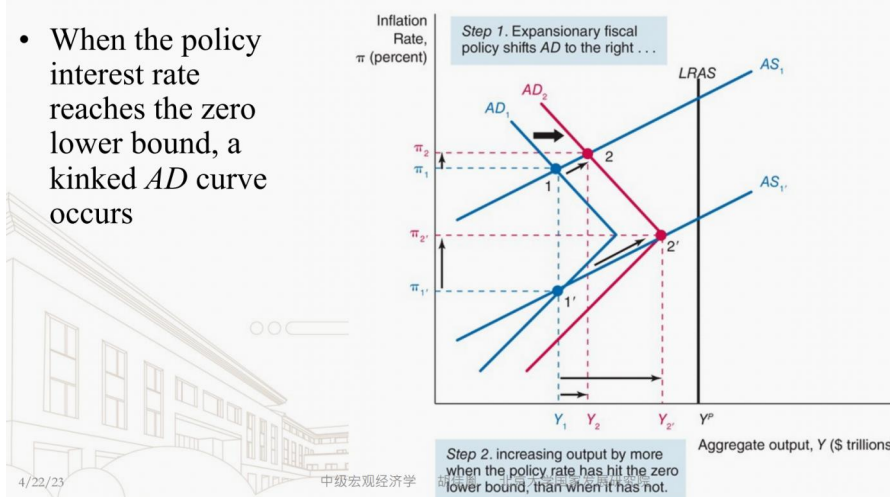
- The total multiplier –the ratio of the equilibrium increase in Y , to the increase in G –must be less than 1

A Temporary Increase in Government Purchases



Fiscal Multipliers at the Zero Lower Bound

- When the policy interest rate reaches the zero lower bound, a kinked AD curve occurs



- 面临着利率降低到 0 的约束：假设如果征收负利率，当然有钱就不会存银行，不存是一个零利率的情况，从而政策再降利率就没用了。

Two cases for the effects of expansionary fiscal policy on aggregate output depends:

1. Initially, the short-run AS curve intersects the AD curve where the policy rate is above zero

$$G \uparrow \Rightarrow \pi \uparrow \Rightarrow r \uparrow \Rightarrow I \downarrow \Rightarrow Y \uparrow \text{ by less}$$

2. Initially, the short-run AS curve intersects the AD curve where the policy rate has hit the zero lower bound

$$G \uparrow \Rightarrow \pi \uparrow \Rightarrow \text{policy rate fixed at zero} \Rightarrow r \downarrow \Rightarrow I \uparrow \Rightarrow Y \uparrow \text{ by more}$$

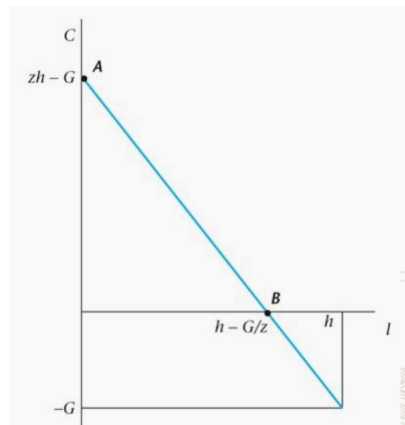
- 极端情况下，政府支出乘数会很大。在零利率下限的情况下，由于名义利率等于真实利率加通胀率，政府支出增加的时候会提高通胀率，名义利率不变，那么真实利率还会下降。此时政府乘数会很大。

第二十九章

拉弗曲线

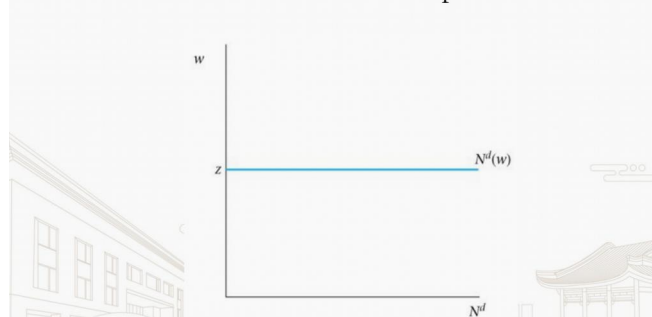
29.1 A Simplified Model with a Proportional Income Tax: 比例税

- Production Function Without Capital: Labor is the only input, but there is still constant returns to scale (linear production function). $Y = zN$, z 是全要素生产力。
- Production Possibilities Frontier: $C = z(h - l) - G$, 是整个经济体消费的约束，工作时长是 $h-l$ ，总收入是 $Y = zN = z(h - l)$ ，总支出是 $C + G$ （不考虑投资和进出口）



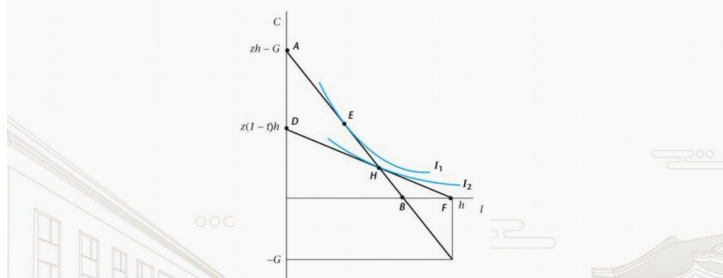
- B 点就是必须工作的时间（来维持消费是正的）
- Consumer's Budget Constraint: $C = w(1 - t)(h - l) + \pi$ (π 也可以认为政府的补贴，可以认为政府和企业都是空壳子，如果有正的收益，都应该归还给消费者)
- Profits for the Firm: $\pi = Y - wN^d = (z - w)N^d$, w 是相对工资，计价物还不是 money。
- The Consumer's Budget Constraint in Equilibrium: $C = z(1 - t)(h - l)$

The Labor Demand Curve in the Simplified Model



- 完全弹性：如果高于 z 就一个也不雇佣，如果低于 z 就全都雇佣。

Competitive Equilibrium in the Simplified Model with a Proportional Tax on Labor Income



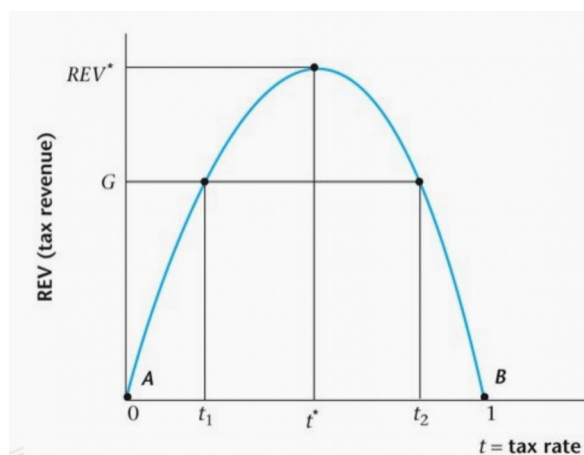
- 从 E 到 H 就是对税率提高的反抗！比例税会带来激励上的扭曲，而定额税不会带来激励扭曲。
- 比例税会让生产可能性边界的斜率更平缓，从而会扭曲激励。

29.2 A Laffer Curve

- 政府收税是税率乘税基。Revenue for the Government Given the Tax Rate t . $REV = tz[h - l(t)]$, $l(t)$ 表示闲暇是税率的函数，且 $l(t)$ 是 t 的增函数。

$$REV = tz[h - l(t)]$$

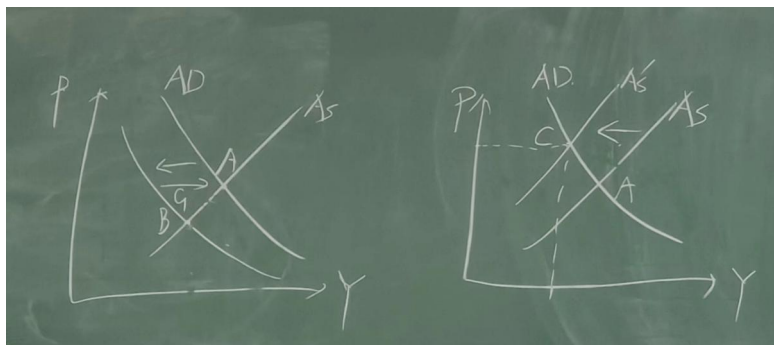
- When t increases, $l(t)$ will increase. 如果提高税率，大家反而更乐意劳 ($l(t)$ 递减)，那就税率越高越好了。
- At some point, increasing tax rate would reduce tax revenue



- 人们更在意右半部分：更反直觉的。

29.3 Government Spending, Taxes, and the Macroeconomy

- Application: Supply-side economics: Congress reduced tax rates twice in the 1980s.
- Supply-side economists promoted the tax rate reductions, arguing that labor supply, saving, and investment would all increase substantially



- 左图是凯恩斯主义坚持的，总需求不足，需要政府增大投入来拉回去。右图是供给侧的经济学家坚持的，总供给突然减少，然后进入了滞胀，价格上升产出减少，此时应该采取减税政策，降低企业负担增加产出。

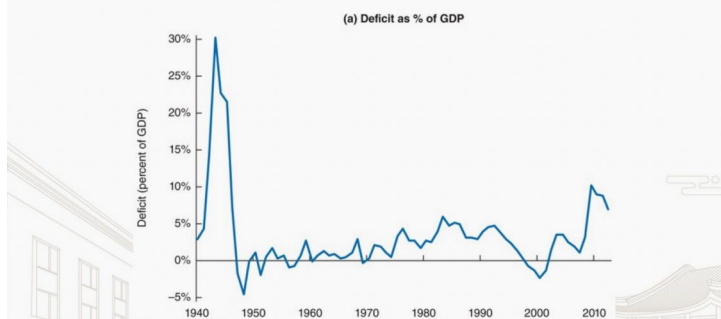
第三十章

政府债务

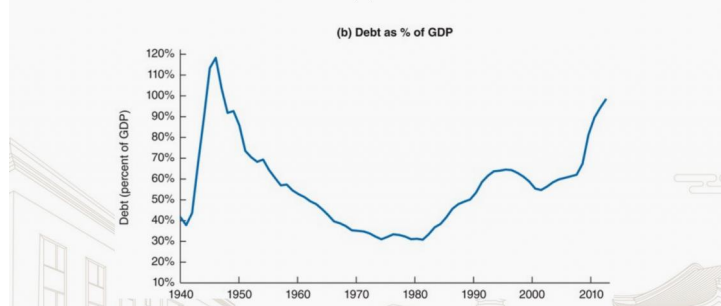
30.1 Size of the Government Debt

- In most countries, the government runs a deficit, so that the amount of worldwide government has been growing over time
- Growth of U.S. government debt over time: The United States finances its government deficits primarily by selling bonds, so that is a correlation between budget deficits and the stock of government debt as a percentage of GDP
- The debt-to-GDP ratio, the amount of debt relative to nominal GDP, reached 99% by 2012

U.S. Federal Deficit and the Size of U.S. Government Debt Relative to GDP, 1940-2013 (a)



U.S. Federal Deficit and the Size of U.S. Government Debt Relative to GDP, 1940-2013 (b)



30.2 Policy and Practice: Social Security and Medicare/Medicaid

- Spending on Social Security (an entitlement program) is projected to rise from 4.9% of GDP in 2013 to 5.9% in 2050 because:
 1. Today's retirees live longer
 2. The increase in the number of retirees due to the baby boom following World War II
 3. The dependency ratio: the ratio of retirees to workers—declines as U.S. birth rates have declined
- Types of proposed solutions are:
 1. Investing Social Security Trust funds in high-return assets
 2. Raising Social Security taxes on workers
 3. Cutting retirement benefits
- 中国即将进入深度老龄化，但是中国是未富先老。

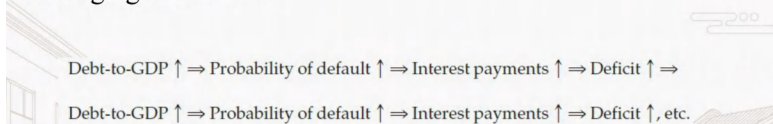
30.3 International Comparison: The Size of Government Debt

- The amount of U.S. government debt as a percentage of GDP is high and rising, but how does it compare to that of other countries?
- In 2011, many countries, particularly Japan and Greece, had much higher debt-to-GDP ratios in excess of 100%, while other countries, such as Australia and Luxembourg, had low debt-to-GDP ratios of less than 50%
- 中国政府的主权债很少，但是内债/地方债务非常多。

30.4 Sovereign Debt Crises

- A sovereign debt crisis is a collapse in the market for country's government debt

The crisis can occur if the debt-to-GDP ratio rises to the point where investors become concerned about the probability of default by the sovereign government:



- 陷入了死循环!
- Economic contraction in many European countries during the financial crisis of 2007-2009 led to surges in government deficits and the debt-to-GDP ratios
- The sovereign debt crisis spread to Ireland, Portugal, Spain, and Italy (from Greece)

30.5 Fiscal Policy and the Economy in the Long Run

- Why High Government Debt Is Not a Burden
 1. Spending in government capital like highways and schools, and human capital like education, will increase the economy's future productivity, so that additional tax revenues will go toward paying down the government debt
 2. Because government debt is financed by government bonds, bond holders will eventually be repaid with future tax payments
- Why High Government Debt Is a Burden

命题 30.1

1. Reduction in national saving

– Because national saving (NS) based the uses-of-saving identity is:

$$NS = (Y - T - C) + (T - G) = I + NX$$

Private saving Gov't saving

- Crowding out occurs when a reduction in national saving as a result of budget deficits means lower private investment (I)
2. Value of government capital investment
 - Most government spending is for government consumption like on medical care and military personnel, not capital stock (没有生产力)
 - Government investment even in capital is viewed as wasteful spending and unproductive
 3. Indebtedness to foreigners

- National saving can lower net exports (in addition to investment) and thus increase U.S. indebtedness to foreigners
 - The largest holders of U.S. government debt are now the Chinese
4. Redistribution effects
- Because the people paying taxes may not be the same people who hold government bonds, so that rising government debt involves a transfer of wealth in the future to government bondholders, who tend to be richer(持有政府债券的更多是机构投资者、更有钱的人，政府的欠债就实现了代际转移和人群转移)
5. Debt intolerance
- The fear of debt repudiation—failure of paying it back—may rise as government debt gets very large(借新债还旧债，市场不信不买了)
 - Some countries may experience debt intolerance with a high likelihood of default even at low debt-to-GDP ratios
6. Negative incentive effects
- Raising taxes to pay down the debt involves distortions, such as a lower incentive to work due to higher income tax, and few capital stock investment due to a higher capital gains tax (增税填债扭曲偏好)
 - Tax wedges—the difference between what people earn before and after taxes—reduce the efficiency and economic growth over time

第三十一章

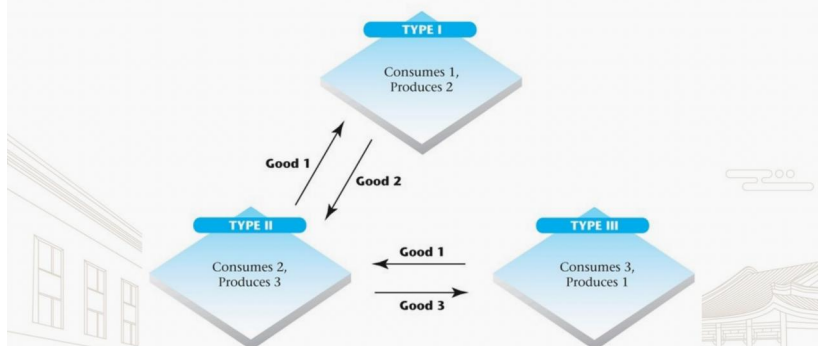
货币和通货膨胀

31.1 什么是货币？

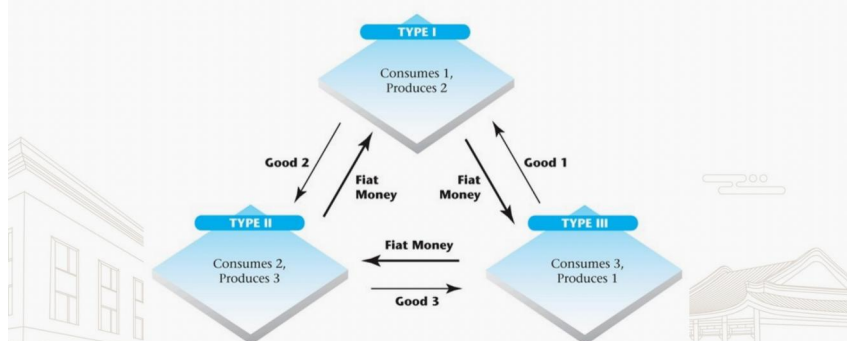
- Medium of exchange 交易媒介
- Store of value 价值贮藏
- Unit of account 计价单位/价值尺度
- Various forms of money
 - Commodity money 商品货币
 - Circulating private bank notes 银行票据
 - Commodity-backed paper currency 商品支撑的纸质货币
 - Fiat money 法定货币
 - Transactions deposits at banks 用于交易的银行存款

The Double-Coincidence (双重巧合/双向需求) Problem and the Role of Money

Good 1 as a Commodity Money in the Absence-of-Double-Coincidence Economy



Fiat Money in the Absence-of-Double-Coincidence Economy



- 以物易物很难支撑三角关系，图 1 展示以商品 1 作为计价单位。

31.2 Money Facilitates Transactions

- Barter exchange (以物易物) is difficult in highly-developed, specialized economies.
- Economic exchange requires search costs (搜寻成本), and these costs are high when economic agents are specialized in consumption and production, and can only trade a good or service for another good or service
- Search costs are reduced dramatically if everyone accepts money in exchange for goods and services.

31.3 Measures of Money

定义 31.1 (M0,M1,M2)

- Monetary Base, M0 (基础货币) = currency in circulation (流通中货币) + bank reserves (银行准备金)
- 也就是只包括法定货币, 中央银行发行的和中央银行账户上的 money, 没有考虑货币在银行体系中被创造的过程, 这是最基础最原始的货币
- M1 = M0 + transactions deposits (交易性存款) + travelers' checks (旅行支票) + demand deposits (活期存款)
- 开始考虑到银行在货币体系中创造出的货币, 整体可以理解为活期存款, 银行创造出的活期存款
- M2 = M1 + savings deposits (定期/储蓄存款) + retail money market funds (零售货币基金)
- 货币基金规模在近年来提高了很多, 因为一些金融科技公司的创新 (余额宝等), 这是最广义的货币。

31.4 Money Multiplier 货币乘数

- Fractional reserve banking system (部分准备金银行制度)
- 完全准备金指的是, 银行把所有的金额都放在央行的准备金账户上。此时银行不能发放任何贷款, 所有钱都放在了准备金账户, 银行此时只是一个保险柜的功能, 不发生任何的货币创造。
 - For each unit of deposits, banks will store r units (reserves, 准备金) and lend out the rest $(1-r)$ units
 - The loans end up as banks' new deposits and boost another round of lending
- r represents the required reserve ratio (最低准备金率)
- Banks can keep excess reserves (超额准备金)

定义 31.2 (货币乘数)

Given initial cash M_0 , rM_0 becomes reserves, $(1-r)M_0$ becomes the first batch of loans, which end up as new deposits and lead to new reserves and new loans. The process goes on and on……

The money multiplier is given by: $\frac{1}{r}$

$$M_0 + (1-r)M_0 + (1-r)^2M_0 + \dots = \frac{M_0}{r}$$

M_0 投入会最终有 $\frac{1}{r}M_0$ 的货币产出。

这有前提: 银行没有超额准备金。

- 央行如果下调准备金率, 就会有更多的贷款和资金。

第三十二章

通胀和货币数量论

32.1 The Inflation

定义 32.1 (The Inflation Rate)

The Inflation Rate

$$\pi = \frac{P' - P}{P}$$

- The price changes from P to P'
- The price level is measured as CPI or GDP deflator
- The growth rate of the price level is called inflation

命题 32.1 (The Fisher Relation)

$$1 + r = \frac{1 + R}{1 + \pi}$$

- r is the real interest rate
- R is the nominal interest rate
- The Fisher relation connects the interest rates and inflation
- The Approximate Fisher Relation:

$$r \approx R - \pi$$

- log-difference, $\ln(1 + x) \approx x$ when x is small

32.2 Quantity Theory of Money

$$MV = PQ$$

- 通胀是一个货币现象!
- M: Money supply, V: Money velocity(货币换手率, 同样的货币经过了多少次交易? 一般观测不到).
- P: Price, Q: Quantity, P*Q actually represents the nominal GDP
- Log-difference

$$\gamma_M + \gamma_V = \pi + \gamma_Q$$

- 一般来说没有巨大革新, 货币换手率是常数。从而名义变量只能影响名义变量, 货币中性成立指的是通货膨胀能够完全的吸收货币供应量的变化, 价格变动足够灵活。但是如果价格变动不够灵活, γ_M 的影响也会影响到 γ_Q

32.3 案例: 金圆券

第三十三章

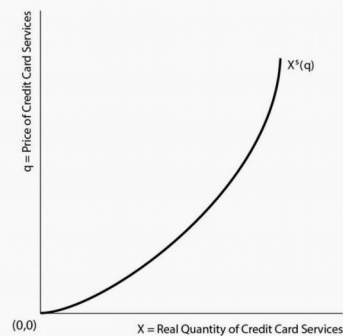
货币需求模型

33.1 支付手段和货币需求 Means of Payment and the Demand for Money

- Assume all goods must be purchased with currency or credit cards
- “Credit cards” can be assumed to stand in, more broadly, for debt cards and checks, for example – all alternative means of payment supplied by the financial system.
- Goods purchased at price P , no matter what means of payment is used.

Banks and Alternative Means of Payment

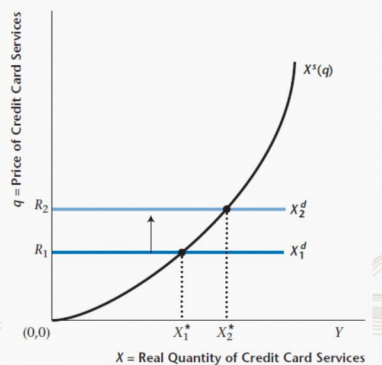
- Using a credit card costs q per unit of goods purchased.
- Credit supply (by banks) is given by $X^s(q)$, which is increasing in q .
- Supplying credit card services is costly for banks.



- Demand for Credit Card Services
- Quantity of goods purchased with credit card services: $X^d(q)$
- 假设信用卡需要一定的使用成本，但是货币存银行也有利率，如果利率大于使用成本，就用信用卡。
- Goods purchased with currency: $Y - X^d(q)$
- If $P(1+R) > P(1+q)$, then all goods are purchased with credit cards.
- If $P(1+R) < P(1+q)$, then all goods are purchased with credit cards.

Figure 12.5 Increase in the Nominal Interest Rate and the Market for Credit Card Services

- The nominal interest rate is the opportunity cost of using currency in transactions
- An increase in the nominal interest rate induces more demand for credit card services



33.2 Demand for Money

$$M^d = P(Y - X^*(R))$$

- Here, $X^*(R)$ is the equilibrium quantity of credit card services (increasing function of R).
- Therefore, more simply:

$$M^d = PL(Y, R)$$

- Increasing in real income – more currency required as volume of transactions increases
- Decreasing in the nominal interest rate – higher R implies greater use of credit in transactions, and less use of currency.
- Nominal Money Demand: Substitute using the approximate Fisher relation:

$$M^d = PL(Y, r + \pi)$$

- For our experiments, suppose inflation rate is zero (harmless):

$$M^d = PL(Y, r)$$

Figure 12.6 The Nominal Money Demand Curve in the Monetary Intertemporal Model

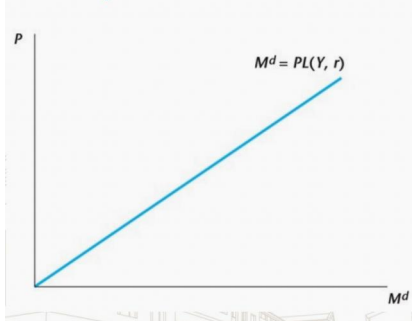


Figure 12.7 Increase in Current Real Income and the Nominal Money Demand Curve

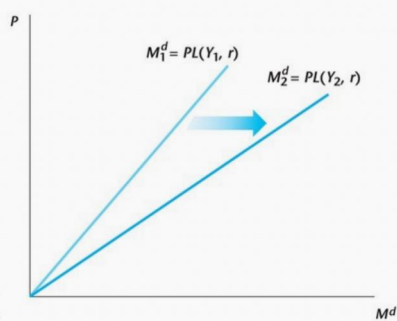
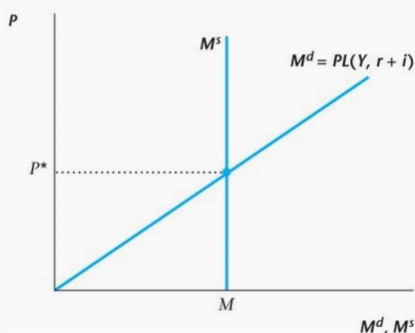
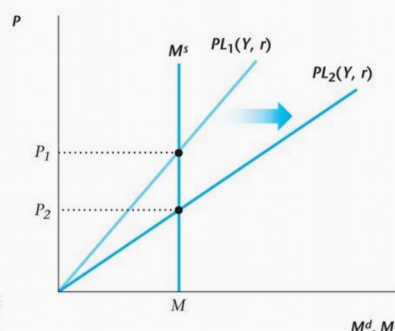
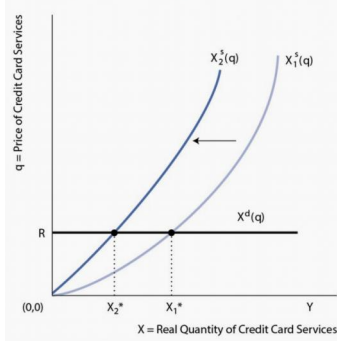


Figure 12.8 The Current Money Market in the Monetary Intertemporal Model

- Money supply is determined by the central bank and is fixed (unless the monetary policy is to expand money supply)
- The market-clearing in the money market determines the equilibrium price level



A Shrinking Supply of Credit Card Services Shifts the Demand for Money to the Right



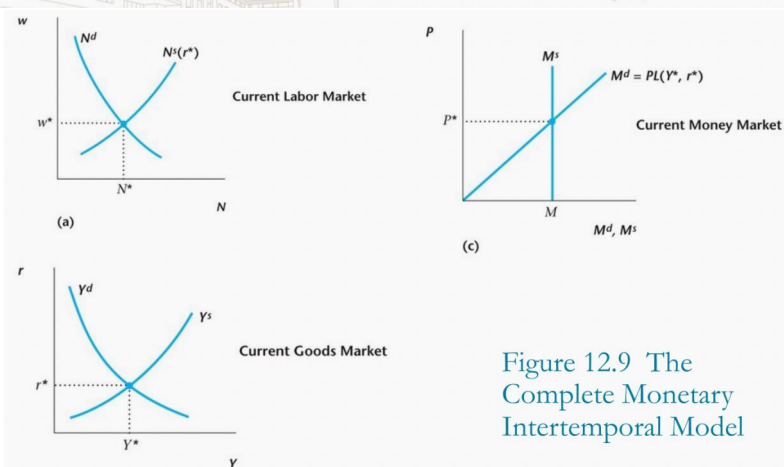
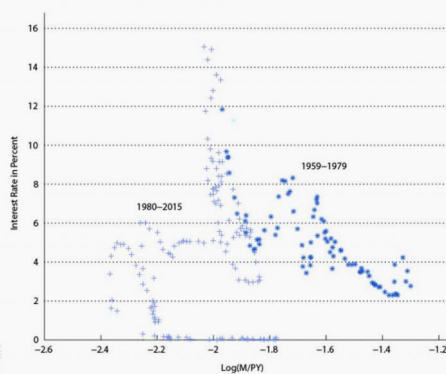
- 比如信用卡服务突然涨价了，就会减少信用卡的使用
- 大家现在需要更多的货币在手上，但是货币供应量是固定的，要让大家手上持有更多的货币，价格就必须

下跌，大家真实的货币持有量才会上升。

Sources of Shifts in the Demand for Money

- New information technologies.
- Changes in government regulations.
- Changes in the perceived riskiness of banks.
- Changes in hour-to-hour, day-to-day, week-to-week circumstances in the banking system.

Figure 12.14 Instability in Money Demand



第三十四章

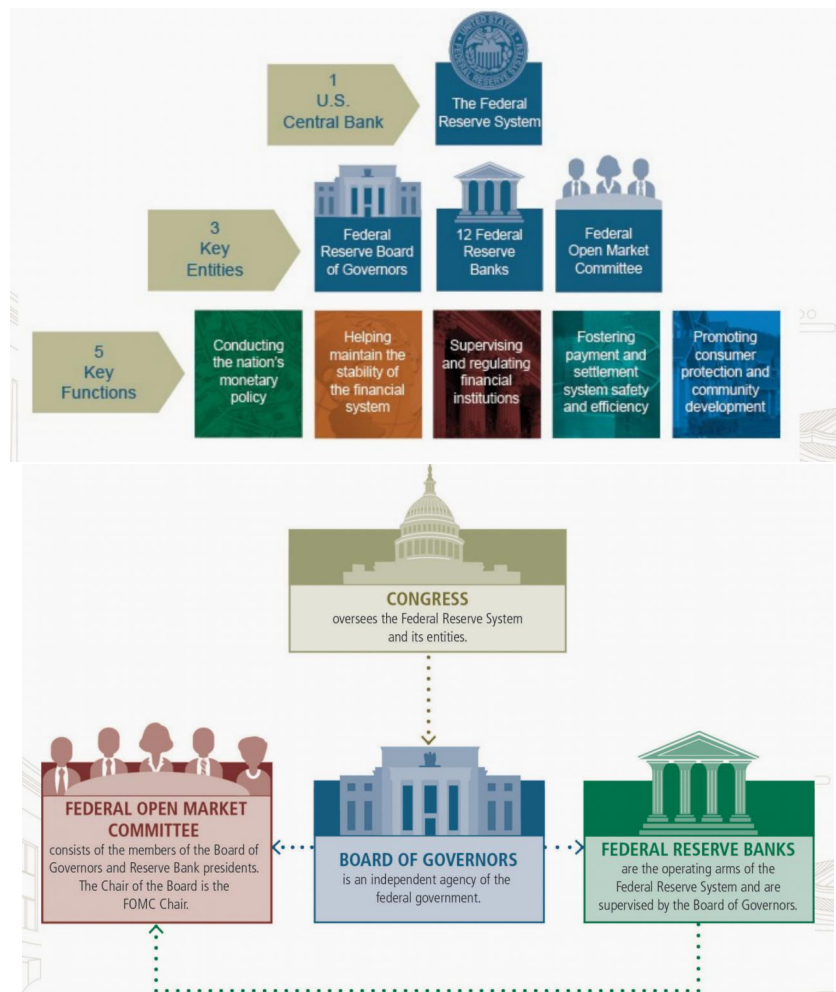
What is a central bank?

34.1 The Definition of a Central Bank

定义 34.1

- A central bank is a public institution that manages the currency of a country or group of countries and controls the money supply –literally, the amount of money in circulation.(欧央行的定义，控制的是流通中货币：MO)
- The main objective of many central banks is price stability.(主要目标：通胀率稳定在 2%（美联储的目标）)
- In some countries, central banks are also required by law to act in support of full employment（美联储的双重目标，新古典和凯恩斯主义有分歧，货币政策是否能影响真实变量?）

- 中国比较特殊，先有的中国人民银行再有的其他国有银行，再逐渐放宽到民营资本。最初的人民银行承担了央行和商业银行的双重职能。1984 年才成为专门的人民银行。
- 而美国先有商业银行再到美联储。
- 美联储加息：抛售国债回笼货币，提高利率。



34.2 5 general functions(Fed)

- The Federal Reserve performs five general functions to promote the effective operation of the U.S. economy and, more generally, the public interest.
- 1. conducts the nation's monetary policy to promote maximum employment, stable prices, and moderate long-term interest rates in the U.S. economy;
- 2. promotes the stability of the financial system and seeks to minimize and contain systemic risks through active monitoring and engagement in the U.S. and abroad;
- 3. promotes the safety and soundness of individual financial institutions and monitors their impact on the financial system as a whole;
- 4. fosters payment and settlement system safety and efficiency through services to the banking industry and the U.S. government that facilitate U.S.- dollar transactions and payments
- 5. promotes consumer protection and community development through consumer-focused supervision and examination, research and analysis of emerging consumer issues and trends, community economic development activities, and the administration of consumer laws and regulations.

第三十五章

银行理论

35.1 Why do we need banks?

- 硅谷银行破产了！是不是放松监管太多了！没承担风险！

- **Benchmark:** Financial markets without intermediaries
 - E.g., loanable funds market
 - Two types of market participants: borrowers/debtors and lenders/creditors

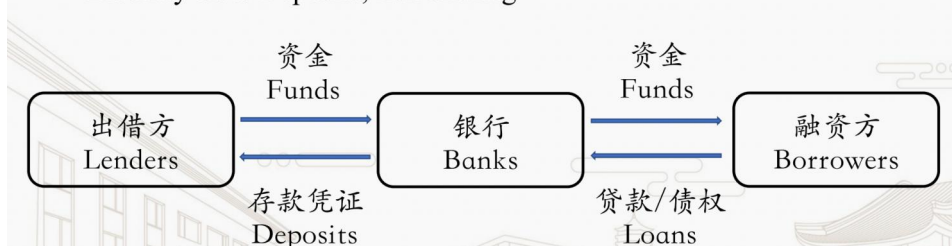


- 之前在跨期模型中，没有涉及到金融体系，是假设有一个完备的金融体系，没有任何搜寻成本也没有任何交易摩擦。但是 08 年的金融危机让宏观经济学发生了很大的范式改变。

35.1.1 The Value of Banks

- 银行是一个债权融资的工具！银行的负债端是居民的存款，存折取钱是要给的。银行的资产是银行发放的贷款。这个过程中发生了一个债权的转换。
- 减小了摩擦，储户委托给银行帮助管理资产，执行贷款调查等等，降低了成本
- 戴蒙德：银行的负债端创造出流动性的资产。很多项目是长期投资，直接向人借钱可能不给，回报周期很长，此时不能提供流动性。有银行存在的话，银行可以协调各方的利益，起到保险的作用（大数定律）

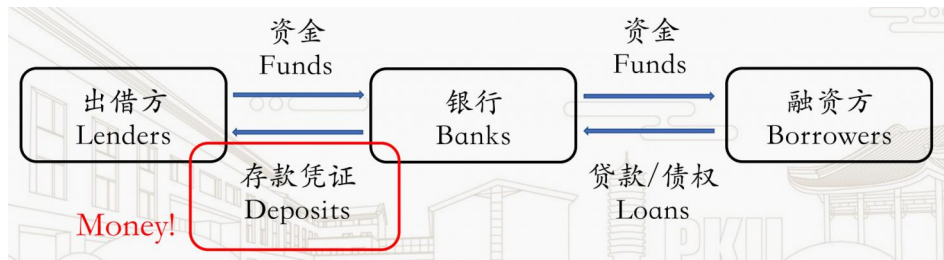
- **Banks:** Financial intermediaries between lenders and borrowers
 - Asset side: Loans, delegated monitoring
 - Liability side: Deposits, risk-sharing



35.1.2 银行的三大功能

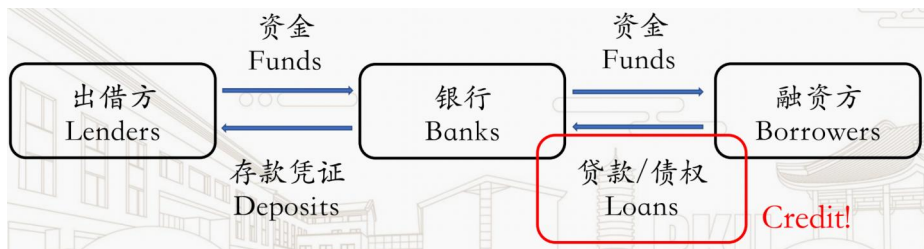
1. 流动性转换 (Liquidity transformation)

- 负债端：银行通过放贷创造出存款等流动性支付手段



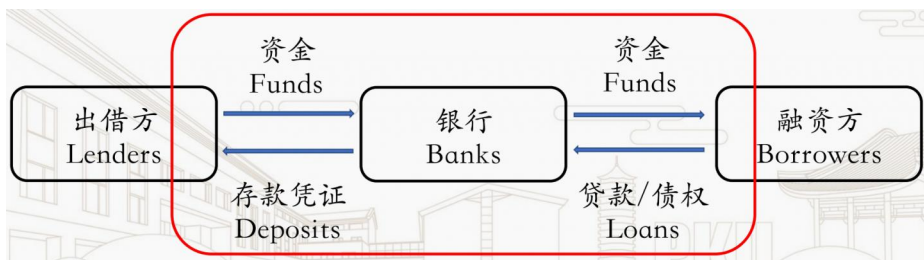
2. 信用转换 (Credit transformation)

- 资产端：银行的放贷功能
- 出借方换取的是银行的存款凭证，获得的不是融资方的负债而是银行的负债，而银行获取了融资方的贷款和债权。底层的债权性质发生了改变。



3. 期限转换 (Maturity transformation)

- 银行用短期的负债（存款）来支撑长期的投资（贷款）
- 储户随时都可以取，但是投资的回报是长期的。用长期的流动性差的资产偿还短期的负债。



35.2 银行的不稳定性从何处来？——期限错配和银行挤兑

- 没有讨论信用转换的潜在风险：违约风险转嫁给了银行。违约银行就会有坏账。这部分很直观，暂时不讨论。假设没有坏账风险，哪怕持有的都是优质资产，依然还是会有风险

35.2.1 期限错配 Maturity Mismatch

1. 现代银行体系是部分准备金银行制度 (fractional banking)

- 例如，当准备金率是 10% 时，储户的存款只有 10% 作为准备金存放在银行或央行账户中，剩下的 90% 都作为贷款发放出去了

2. 银行的期限转换功能与期限错配风险是一个硬币的正反两面

- 银行资产负债表中的“短债长投”风险，而长期资产很难在短时间内变现
- 一旦储户需要提前支取现金，那么银行就需要低价变卖资产

3. 提前取现的人越多，银行资产折损越严重，甚至出现资不抵债

- 这时候储户越晚取款，就会承担越多的亏损风险
- 每个个体最优的选择只有一个：提前取现，挤兑银行

命题 35.1 (银行挤兑 Bank Runs)

“自我实现的预言”self-fulfilling prophecy: 如果储户认为银行要倒闭了, 那么他们就会产生恐慌情绪并争先恐后地去银行取款, 从而导致银行挤兑的发生

35.3 战略互补 Strategic Complementarity

1. 简单版解释: 囚徒困境。本来可以合作获得双赢, 但自利动机最终导致双输
2. 专业版解释: 战略互补。其他人做某件事会增强你做同一件事的动力。给定其他储户都去提前取款, 银行注定倒闭, 那么你提前取款所获得的收益会比你不提前取款的收益更大
3. 生活版解释: “卷”

命题 35.2

太阳黑子均衡 (Sunspot Equilibria):

- 战略互补的行为特性带来了多重均衡
- 一种均衡是好的: 所有人都不去挤兑银行, 银行体系正常运转 (不稳定的, 一旦有偏移, 所有人都会怀疑然后去挤兑了)
- 另一种均衡是不好的: 所有人都得去提前取款, 银行被挤兑破产
- 高阶信念带来不稳定性: “你猜我猜你猜我怎么做”
- 大家依靠随机的太阳黑子信号来决定如何行动; 动物精神 (animal spirit) (比如大家都觉得太阳黑子意味着行情不好! 就去挤兑了: 毫不相干的事情也可能带来不稳定性。)

35.4 The Diamond-Dybvig Banking Model

35.4.1 Basic setup

- Basic setup:
 1. Three periods, 0, 1, and 2. Consumers born in period 0 and endowed with one unit of wealth
 2. Consumers can invest in a long-term project in period 0, which returns $R > 1$ units per unit of investment in period 2 for sure
 3. The long-term project returns only the principal if interrupted in period 1 (模型的基础设定模拟了人生的投资决策, 最优选择是做时间的朋友, 价值投资)
- Consumer types:
 1. Two types of consumers: impatient (consume in period 1) and patient (consume in period 2) (也可以用 $c_1 + c_2$, 但是如果 1 期消费要贴现, 最佳决策就要 $c_1 = 0$)
 2. Impatient consumer: only value consumption in period 1
 3. Patient consumer: indifferent between consumption in period 1 and 2
- $U_i = U(c_1), U_p = U(c_2)$
- 突发事件打破原定计划: 生病、失业等意外, 急需用钱, 也有可能是短视、恐慌、从众等认知和情绪因素导致只看眼前
- Asymmetric information:
 1. Consumers do not know their types until period 1. A fraction t of consumers are revealed to be early consumers
 2. Early consumers will consume whatever they have in period 1
 3. One consumer's type cannot be observed by anyone else

4. 我们只了解自己，而无法观测到其他人的真实类型，我们每个人都有可能面临意外事件，都有急需用钱的风险，急需用钱的总量可控，经济整体无风险（no aggregate risk）。

35.4.2 Maximize the aggregate utility

$$\max U = tU(c_1) + (1-t)U(c_2)$$

- 有无贴现因子都一样。
- 预算约束 $(1-t)c_2 = (1-tc_1)R$
- 由于长期投资收益更高，会把满足无耐心群体后的所有钱都投入第二期。R 是把第一期增益到第二期。

$$\max U = tU(c_1) + (1-t)U(c_2), \quad c_2 = \frac{1-tc_1}{1-t}R$$

- 拉格朗日乘子法得到一阶条件： $tU'(c_1) + (1-t)U'(c_2)(\frac{-t}{1-t}R) = 0$

$$U'(c_1^*) = U'(c_2^*)R \quad c_2^* > c_1^* \Leftrightarrow U'(c_1^*) > U'(c_2^*)$$

- 这是由于边际效用递减。

35.4.3 Autarky Equilibrium

- In the autarky (自给自足) equilibrium, impatient consumer will interrupt the long-term project and get back the one unit of wealth in period 1, when their types are revealed;
- Patient consumer will wait until period 2 to consume

$$c_1^{Autarky} = 1, \quad c_2^{Autarky} = R$$

- We assume $U'(1) > U'(R)R$, therefore c_1^* is larger than one (这样假设才有意思，银行来帮助改善：消费平滑)
- Risk-sharing (风险共担)

35.4.4 Risk Sharing

- Can the market achieve the first-best allocation?
 - Yes, an efficient economic arrangement is for consumers to set up a bank in order to share risk.
 - The bank is owned by all consumers; At the end of the day, banks will be liquidated, and all remaining assets will go to households who own the bank.
 - 第一期更像是债权，而第二期更像是股权。等到第二期就有更多钱了！

35.4.5 Demand Deposits

- The bank offers a demand-deposit (活期存款) contract:
- Consumers deposit one unit of wealth in period 0 and withdraw in later periods. If a consumer withdraws money in period 1, he/she gets $x > 1$, which is the short-term deposit (gross) interest rate. The bank will be liquidated in period 2, and patient consumers receive the remaining bank assets

$$c_1 = x, \quad (1-t)c_2 = (1-tx)R \Rightarrow tc_1 + \frac{(1-t)c_2}{R} = 1$$

- 是否是均衡？是否是唯一均衡？

35.4.6 Bank Runs 银行挤兑

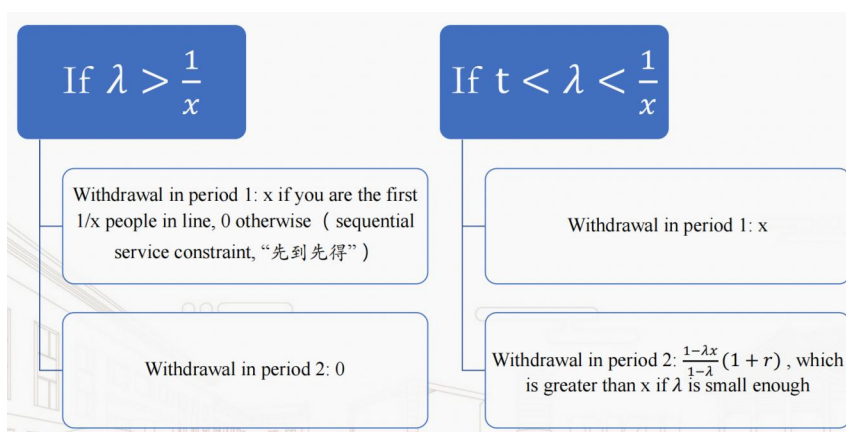
- If people think a bank won't be able to give them their money, they may panic and rush to withdraw their money, causing a bank run. The possibility of a bank run exists because the optimal deposit contract offers an early consumer

more than one unit of consumption (the essence of risk-sharing!).(银行承诺给第一期取钱的人 $c_1^* > 1$ ，意味着如果所有人都来取钱，银行是无法偿还 c_1^* 的)

- A patient consumer knows that, if everyone runs to the bank and requests withdrawal, there will not be enough to go around. If a depositor gets to the bank too late, he or she gets nothing.
- 战略互补!
- 有 $\lambda > t$ 比例的人在 1 期取钱，银行无法区分是否耐心只能都给，一期只有 1 单位资产，那么在 $\lambda = \frac{1}{x}$ 时银行就破产了。

35.4.7 Multiple Equilibria 多重均衡

- Should a patient consumer wait? It depends on what he/she thinks other patient consumers will do (higher-order beliefs 高阶信念)



- Multiple equilibria emerge from the strategic complementarity (战略互补) in patient depositors' withdrawal behavior
- The good equilibrium: If other patient depositors decide to wait until the second period, I, as a patient depositor, will do so as well since $c_2 = c_2^* > c_1^* = x$.
- The bad equilibrium: If other patient depositors decide to withdraw in period 1, I will as well, since nothing will be left for the second period

35.5 存款保险和金融稳定政策

35.5.1 Temporary Suspension 暂时中止

- The bank can suspend deposit withdrawal as long as the upper limit of early withdrawal in period 1 under the optimal case ($\lambda = t$) is reached
- Example: Temporary Suspension of Convertibility (暂停兑换), Bank holiday (银行休假)
- 现实挑战：信息不透明带来的更大恐慌；信任程度，公信力

35.5.2 Deposit Insurance 存款保险

- All deposits are insured; so that depositors know their funds are safe, and there will be no need to withdraw their money. Patient depositors can receive c_2^* in period 2 no matter what happens in period 1
- The bad equilibrium is eliminated: **Strategic complementarity in early withdrawal of deposits no longer exist!**
- The “Bazooka” Theory: If you have a bazooka in your pocket and people know it, you probably won't have to use it.

35.5.3 挑战：道德风险

- 道德风险指受到保险保障的经济主体会进行高风险的行为：银行的行为都有存款保险兜底了，那我玩的野也行啊！再怎么样也是无风险资产。道德风险是信息不对称情况下保险公司面临的典型问题
- “大而不能倒”、“兜底”的弊端。市场纪律失灵，整体风险加大，保险负担变沉。存款保险有上限！高净值客户要发挥自己的市场监督作用。

第三十六章

货币非中性 Money Non-Neutrality

36.1 Real-Wage Rigidity

- In the classical model, money is neutral since prices adjust quickly
 - So, movements in aggregate demand have no effect on output; only prices will change
 - The classical dichotomy holds: “real affects real, nominal affects nominal”
- In the Keynesian model, money is non-neutral since prices cannot adjust in the short run
 - The inflation will absorb some but not all changes in money supply

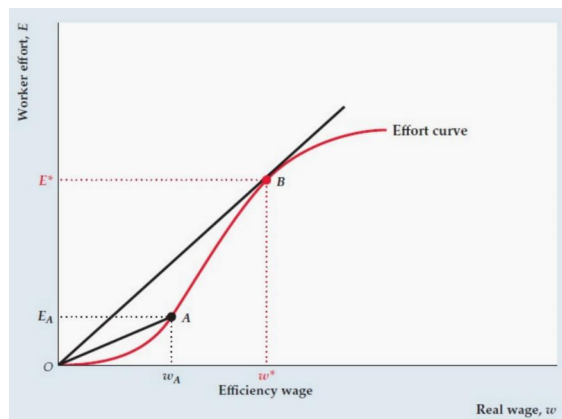
定义 36.1 (wage rigidity)

In the classical model, unemployment is due to mismatches between workers and firms. Keynesians are skeptical, believing that recessions lead to substantial cyclical employment. To get a model in which unemployment persists, Keynesian theory posits that the real wage is slow to adjust to equilibrate the labor market.

Some reasons:

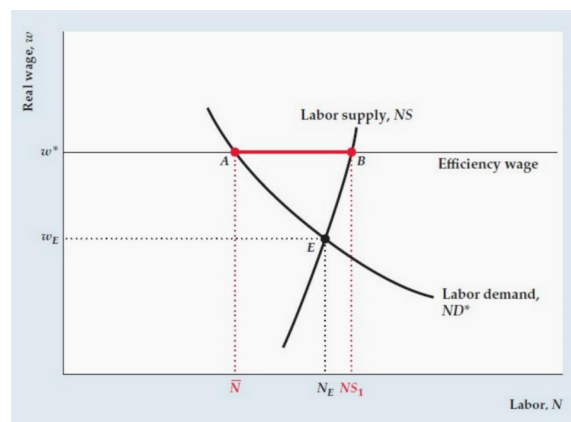
1. the minimum wage and labor unions prevent wages from being reduced.
 - But most U.S. workers aren't minimum wage workers, nor are they in unions
 - The minimum wage would explain why the nominal wage is rigid, but not why the real wage is rigid
 - This might be a better explanation in Europe, where unions are far more powerful
2. a firm may want to pay high wages to get a stable labor force and avoid turnover costs—costs of hiring and training new workers
3. A third reason is that workers' productivity may depend on the wages they're paid—the efficiency wage model
 - 胡萝卜政策：存在信息不对称，雇主不知道雇员的情况。提供高于市场的工资，gift exchange motive 让员工更加珍视自己的工作（会增加摸鱼的机会成本）
 - Workers who feel well treated will work harder and more efficiently (the “carrot”); this is Akerlof's gift exchange motive. Workers who are well paid won't risk losing their jobs by shirking (the “stick”)
 - Both the gift exchange motive and shirking model imply that a worker's effort depends on the real wage

36.2 The Efficiency Wage Model



- The effort curve, plotting effort against the real wage, is S-shaped
- At low levels of the real wage, workers make hardly any effort
- Effort rises as the real wage increases
- As the real wage becomes very high, effort flattens out as it reaches the maximum possible level
- To maximize profit, firms choose the real wage that gets the most effort from workers for each dollar of real wages paid
- This occurs at point B, where a line from the origin is just tangent to the effort curve
- The wage rate at point B is called the **efficiency wage**
- The real wage is rigid, as long as the effort curve doesn't change
- 政府领域的一种应用：高薪养廉。

36.3 Employment and Unemployment in the Efficiency Wage Model



- The labor supply curve is upward sloping, while the labor demand curve is the marginal product of labor when the effort level is determined by the efficiency wage
- The difference between labor supply and labor demand is the amount of unemployment
- The fact that there's unemployment puts no downward pressure on the real wage, since firms know that if they reduce the real wage, effort will decline
- 从而员工的价格比较刚性。工资水平变动慢，更支持了价格粘性。
- the theory implies that the real wage is completely rigid, whereas the data suggests that the real wage moves over time and over the business cycle
- It is possible to jazz up the model to allow for the efficiency wage to change over time. Workers would be less likely to shirk and would work harder during a recession if the probability of losing their jobs increased
- This would cause the effort curve to rise and may cause the efficiency wage to decline
- This would lead to a lower real wage rate in recessions, which is consistent with the data

36.4 Price Stickiness

定义 36.2

- Price stickiness is the tendency of prices to adjust slowly to changes in the economy
- The data suggest that money is not neutral, so Keynesians reject the classical model (without misperceptions)
- Keynesians developed the idea of price stickiness to explain why money isn't neutral. An alternative version of the Keynesian model assumes that nominal wages are sticky, rather than prices; that model also suggests

that money isn't neutral.



36.5 Sources of Price Stickiness: Monopolistic competition and menu costs

36.5.1 Monopolistic competition 垄断竞争

- If markets had perfect competition, the market would force prices to adjust rapidly; sellers are price takers, because they must accept the market price
- In many markets, sellers have some degree of monopoly; they are price setters under monopolistic competition
- Keynesians suggest that many markets are characterized by monopolistic competition
- 垄断才能定价！为了价格是粘性的，还要有一些障碍。企业不能灵活的变动价格。
- In monopolistically competitive markets, sellers do three things:
 - They set prices in nominal terms and maintain those prices for some period
 - They adjust output to meet the demand at their fixed nominal price
 - 此时为了达成均衡，只能按照需求来决定产量。买方需要多少就生产多少。demand-determined 均衡！
 - They readjust prices from time to time when costs or demand change significantly(有多粘性呢？可以调整，但是有门槛限制，外部冲击小幅波动不会影响)

36.5.2 Menu costs and price stickiness 菜单成本和价格黏性

- The term menu costs comes from the costs faced by a restaurant when it changes prices—it must print new menus
 - Even small costs like these may prevent sellers from changing prices often(在强竞争环境下，价格变动一些就完蛋啦！)
 - Since competition isn't perfect, having the wrong price temporarily won't affect the seller's profits much
 - The firm will change prices when demand or costs of production change enough to warrant the price change
1. Empirical evidence on price stickiness I: 直接证据
 - Industrial prices seem to be changed more often in competitive industries, less often in more monopolistic industries (Carlton study)
 - The main reason for price stickiness was managers' fear that if they raised their prices, they'd lose customers to rivals
 2. Empirical evidence on price stickiness II: 反转
 - But catalog prices also don't seem to change much from one issue to the next and often change by only small amounts, suggesting that while prices are sticky, menu costs may not be the reason (Kashyap)(违反了菜单成本的推论：小的价格变动不会让菜单发生改变。现实中也有很多小的价格变动)
 - Price stickiness may not be pervasive, as prices change on average every 4.3 months (Bils-Klenow)（足够频繁了！价格粘性似乎是一个过时的假设了。随着电子定价系统和电商的发展，价格水平变化变得更加频繁，更符合古典经济学家的假设，为何还没回归中性？）
 3. Empirical evidence on price stickiness III: 反转之反转
 - But some of the measured price stickiness is because of sales; when you look at price changes excluding sales, prices change on average every 11 months (Nakamura-Steinsson)(大部分价格的变动都是季度促销等等，似乎真实价格 11 个月才变一次)
 - Relative prices may respond quickly to supply or demand shocks for a particular good, but the price level may change slowly to changes in monetary policy (Boivin-Giannoni-Mihov), so in our macroeconomic model, the

assumption of price stickiness is useful

- 哪怕价格都能灵活调整了，价格粘性依旧成立，但那个灵活调整是对货币政策无关的事情的反应，更多是微观上的企业的销售行为，而不是宏观的变动。所以宏观层面上价格粘性依旧是成立的。

第三十七章

新凯恩斯模型 The New Keynesian Model

37.1 Assumptions

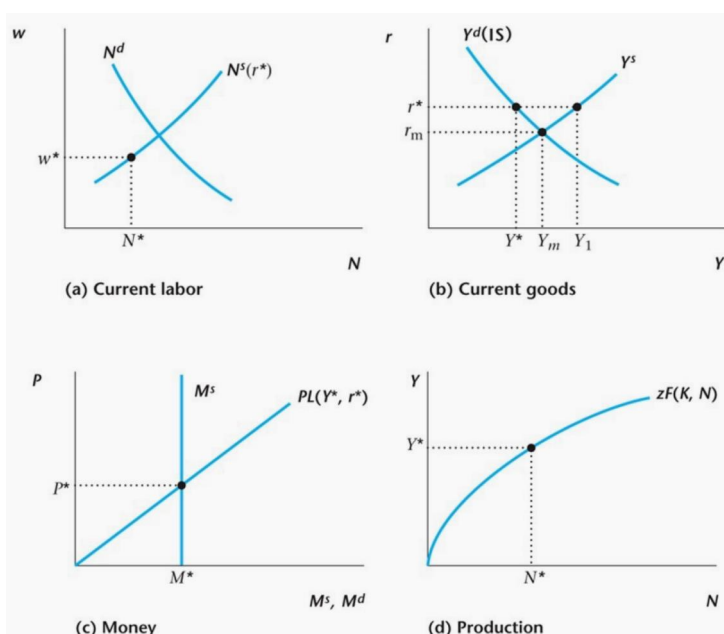
1. Monopolistic competition: Firms have some monopoly power and set the price
2. Sticky prices: The prices do not adjust instantaneously(价格不会即时调整)
3. Demand-determined output: Firms sell as much output as is demanded in the short run at a fixed price. (价格水平不能反应均衡的时候假定生产按照需求来。)

37.2 The New Keynesian Model

- 跟着假定环环相扣的改变:Employment determined as the quantity of labor required to produce the quantity of output demanded at the fixed price of goods.
- Monetary policy target: A fixed target for the interest rate r , supported by setting the money supply appropriately.
- 由于价格无法灵活变动，设定通货膨胀率为 0，从而调整名义利率就是在调整实际利率。
- Since firms have some monopoly power, they price goods at a markup over their marginal cost of production:(不会轻易变动价格，所以目标是最大化后面的好多期的利润)

$$P = (1 + \eta)MC$$

- If demand turns out to be larger at that price than the firm planned, the firm will still meet the demand at that price, since it earns additional profits due to the markup
- Since the firm is paying an efficiency wage, it can hire more workers at that wage to produce more goods when necessary



- The central bank's interest rate target (r^*) determines output, from the output demand curve (Y^*).
- Then, the interest rate and output determine money demand, and the central bank must supply enough money so that the money market clears given r and Y .

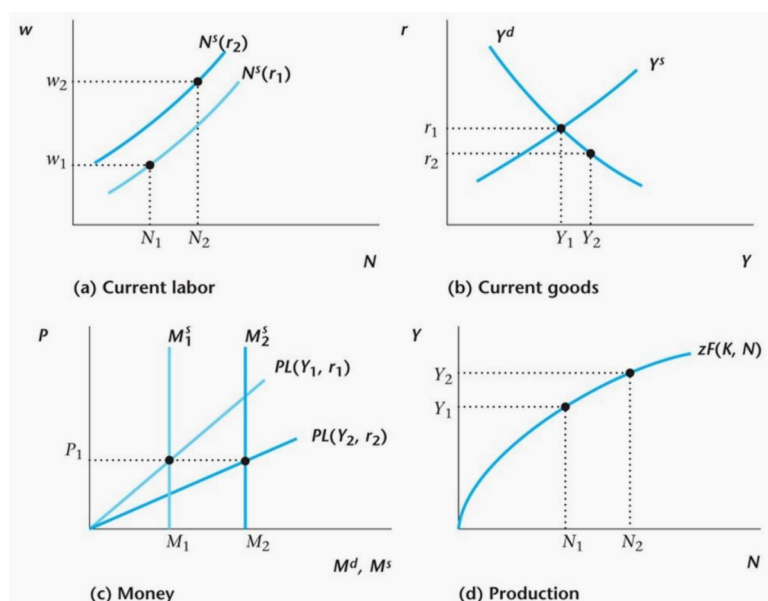
- Then, in the labor market, employment is determined by whatever labor input is required to produce the required amount of output.
- In equilibrium, the firm is not supplying the quantity of goods it would like to, and labor demand need not be equal to labor supply

37.3 Two Key Concepts

- The output gap is the difference between equilibrium output Y^m (if prices were flexible) and actual output Y^* (央行还要实现充分就业，要让产出更多才有更多就业。存在产出缺口，经济在其发展潜力之下运行。此时应该采取刺激的财政政策增加产出，填补产出缺口)
- The natural rate of interest is the equilibrium rate of interest if prices were flexible (r_m) (自然利率)
- 但是我们观测不到 Y_m 和 r_m ，只能通过试探性的政策。

37.4 The Nonneutrality of Money in the New Keynesian Model

- A reduction in the central bank's interest rate target, supported by an increase in the money supply, acts to increase aggregate output and employment.
- The demand for output rises at the fixed price of goods, and firms accommodate the increase in demand by hiring more workers.
- Consumption, investment, and real wage, increase



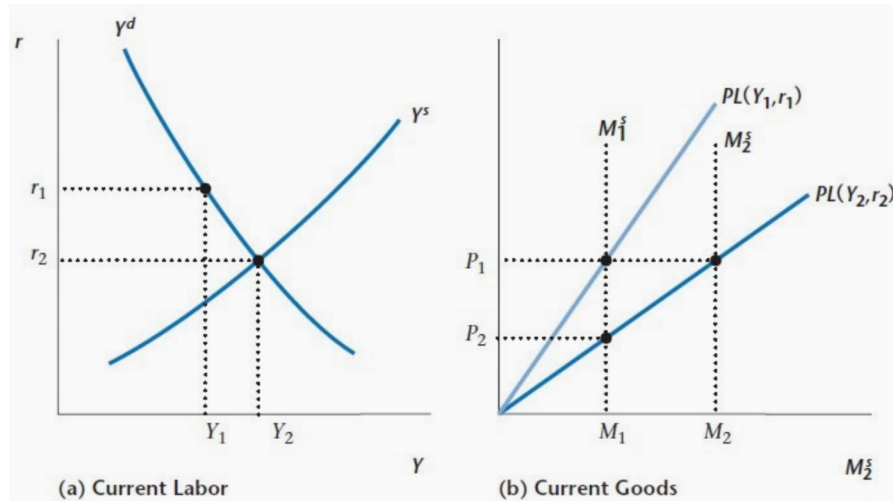
- 降息和增发货币是组合拳！此处是从降息开始的，也可以从增发货币开始来分析。要多发货币还要保持价格水平不变的话，就必须降息！

37.5 Principles of New Keynesian Stabilization Policy

- Private markets cannot work efficiently on their own.
- Prices (and/or wages) do not move quickly enough to clear all markets in short run
- Fiscal and/or monetary policy decisions can be made quickly enough, and policy actions work quickly enough that the government can improve economic efficiency by smoothing out business cycles

37.6 Monetary policy stabilization

- There is initially a negative output gap, $Y_1 - Y_2$. The central bank lowers its interest rate target from r_1 to r_2 , and the output gap is eliminated.
- The real interest rate is lowered to the natural rate



37.7 The IS-LM Model

37.7.1 investment-savings (IS) curve

- The investment-savings (IS) curve plots the (r, Y) combinations for which the following three equations hold:
 1. Consumption function: $C = C^d(r, Y, Y')$
 2. Investment demand function: $I = I^d(r, A', K)$
 3. Aggregate resource constraint: $Y = C + I + G$
- This is the demand side in both the neoclassical and New Keynesian model.

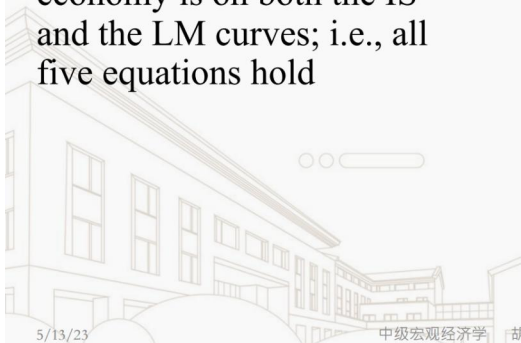
37.7.2 liquidity-money (LM) curve

- The liquidity-money (LM) curve plots the (r, Y) combinations for which the money market is in equilibrium, taking the price level P and money supply M as given
- $M^d = PL(Y, r + \pi)$
- $r \approx R - \pi$

37.7.3 aggregate demand (AD) curve

The AD-AS Model

The **aggregate demand (AD) curve** plots the (r, Y) combinations where the economy is on both the IS and the LM curves; i.e., all five equations hold



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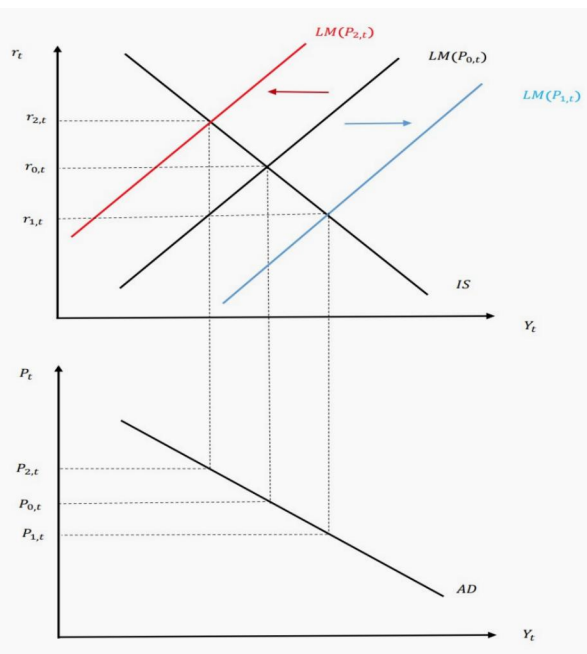
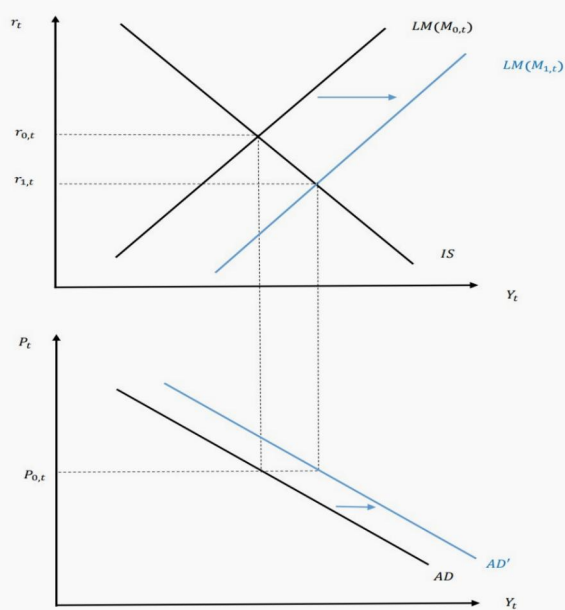
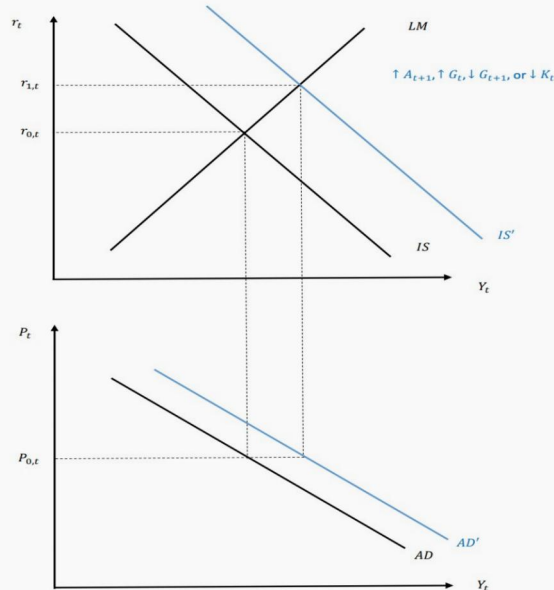
Figure 23.7: Shift of the AD Curve: Increase in M_t 

Figure 23.8: Shift of the AD Curve: IS Shock



- 价格水平的变动带来的是 AD 线上的点的移动，其他的来说 LM 和 IS 右移都会让 AD 右移。

第三十八章

政府赤字和通胀 Government Deficits and Inflation

38.1 Deficits and Inflation

- Inflation results when aggregate demand rises more quickly than aggregate supply
- Budget deficits could be related to inflation, but we usually think of expansionary fiscal policy as leading to a one-time jump in the price level, not a sustained inflation
- The only way for a sustained inflation to occur is for there to be sustained growth in the money supply
- 所以短期可以看到向上倾斜的供给曲线。名义工资不变的情况下，通胀会降低企业的用工成本（工资粘性强于消费品价格粘性）

38.2 Can government deficits lead to ongoing increases in the money supply?

- Yes, if spending is financed by printing money
 - The revenue that a government raises by printing money is called seigniorage（铸币税）
- Usually, governments don't just buy things directly with newly printed money, they do so indirectly
 - The Treasury borrows by issuing government bonds
 - The central bank buys the bonds with newly printed money

38.2.1 The deficit and the money supply

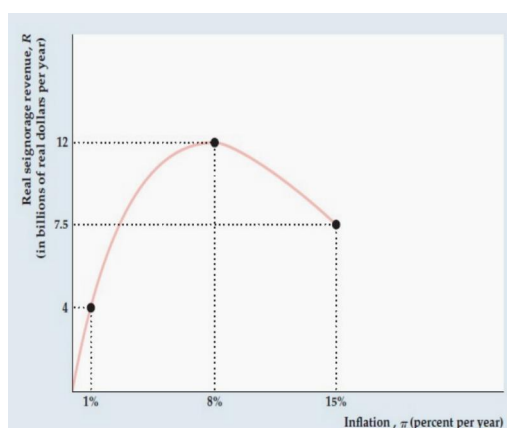
- The relationship between the deficit and the increase in the monetary base is
$$\text{deficit} = \Delta B = \Delta B^P + \Delta B^{cb} = \Delta B^P + \Delta BASE$$
- ΔB is the increase in government debt, which is divided into government debt held by the public ΔB^P and government debt held by the central bank ΔB^{cb}
- Changes in ΔB^{cb} equal changes in the monetary base, $\Delta BASE$. In an all-currency economy, the change in the monetary base is equal to the change in the money supply
- Developed countries rarely use seigniorage, because it doesn't raise much revenue. But war-torn or developing countries are unable to raise sufficient tax revenue to cover government spending and may not be able to borrow from the public

38.2.2 Real seigniorage collection and inflation

- The real revenue the government gets from seigniorage is closely related to the inflation rate
- Real seigniorage revenue R is $\frac{\Delta M}{P}$, where ΔM is the newly printed money supply and P is the new price level
- The growth rate of money supply is $\frac{\Delta M}{M}$, which is also the inflation rate π (recall the quantity theory of money)
- Therefore, $R = \pi \times (M/P)$, where M/P is the real money balance (i.e., the purchasing power of the money held by households)
- Seigniorage is called the inflation tax, because the government's seigniorage revenue equals the inflation rate times real money balances. The inflation tax is paid by everyone who holds money

38.2.3 Will a rise in money growth increase seigniorage revenue?

- As the money growth rate rises, inflation rises, but people may hold less real balances
- Whether seigniorage rises or falls depends on whether inflation rises more or less than the decline in real money holdings
- If governments raise money supply too rapidly, they may cause hyperinflation, but get less seigniorage revenue than they would get with less money growth
- 大家都不想拿央行印的钱了，拿了钱就得交铸币税。税基减少了，自然也少了税。



38.3 央行独立性 Central Bank Independence

38.3.1 The Conduct of Monetary Policy: Rules Versus Discretion 遵循规则还是相机决策?

- Monetarists and classical macroeconomists advocate the use of rules
- Rules make monetary policy automatic, as they require the central bank to set policy based on a set of simple, prespecified, and publicly announced rules
- 保护声誉！就算现在不遵守规则会带来更大的收益，也会继续遵循规则来保持信誉、公开透明。这样可以同时避免动态不一致。
- The rule should be simple; there shouldn't be much leeway for exceptions
- The rule should specify something under the Fed's control, like growth of the monetary base, not something like fixing the unemployment rate at 4%, over which the Fed has little control
- The rule may also permit the Fed to respond to the state of the economy
- Most Keynesian economists support discretion
- Discretion means the central bank looks at all the information about the economy and uses its judgment as to the best course of policy
- Discretion gives the central bank the freedom to stimulate or contract the economy when needed; it is thus called activist
- Since discretion gives the central bank leeway to act, while rules constrain its behavior, why would anyone suggest that the central bank follow rules?

38.3.2 Rules, commitment, and credibility 规则、承诺和可信度

- How does a central bank gain credibility?
- One way to get credibility is by building a reputation for following through on its promises, even if it's costly in the short run

- Another, less costly, way is to follow a rule that is enforced by some outside agency
- Keynesians argue that there may be a trade-off between credibility and flexibility
 - To be credible, a rule must be nearly impossible to change
 - But if a rule can't be changed, what happens in a crisis situation?
 - For example, if a rule is based on economic relationships that change suddenly, then the lack of flexibility may be very costly
- So a rule may create unacceptable risks

38.4 The Taylor Rule 泰勒规则

- John Taylor of Stanford University introduced a rule that allows the Fed to take economic conditions into account
- The rule is

$$R = \pi + 0.02 + 0.5y + 0.5(\pi - 0.02)$$

- where R is the nominal fed funds rate, π is the inflation rate over the last 4 quarters, $y = (Y\bar{Y})/\bar{Y}$, the percentage deviation of output from full-employment output
- 这个地方的 0.02 是健康的通胀率，是想要达到的。
- The rule works by having the real fed funds rate $R\pi$ respond to:
 1. y , the difference between output and full-employment output
 2. $\pi - 0.02$ the difference between inflation and its target of 2 percent
- If either π or y increase, the real fed funds rate is increased, causing monetary policy to tighten (and vice-versa)

38.5 Other ways to achieve central bank credibility besides targeting money growth or inflation

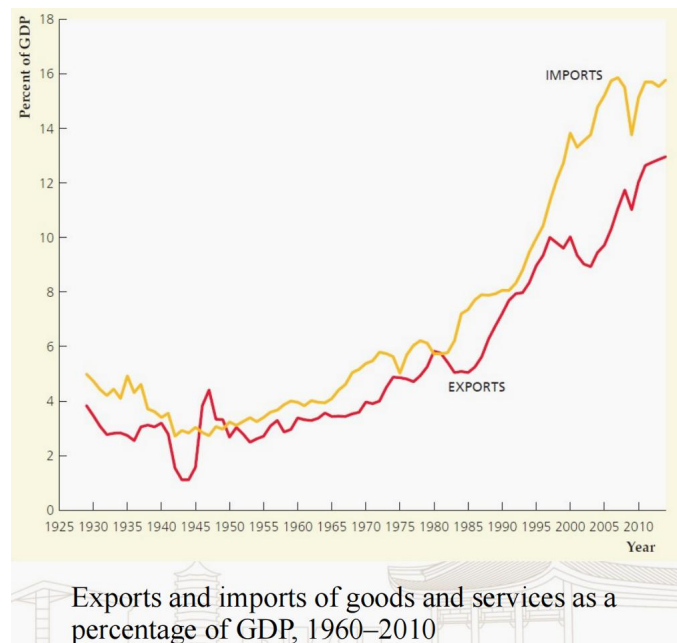
- Increasing the central bank's reputation as an inflation fighter
 - The central bank could improve its reputation by establishing inflation goals and meeting them
 - Appointing someone who has a well-known reputation for being tough in fighting inflation may help establish credibility for the central bank
 - For example, in 1979 the appointment of Paul Volcker to be chairman of the Fed was designed to convince people that President Carter was serious about stopping inflation
- Increasing central bank independence
 - If the executive and legislative branches of government can't interfere with the central bank, people are more likely to believe that the central bank is committed to keeping inflation low and won't cause a political business cycle
 - Looking at evidence across countries, Alesina and Summers showed that the more independent the central bank, the lower the inflation rate from 1955 to 1988; also, the long-run level of unemployment is no higher in those countries

第三十九章

全球化

39.1 Globalization

- 各个国家的生产和分工愈发依存彼此。有更多的国际贸易和投资
- 各国由于比较优势的原因，分工愈发明确。
- 经济学家更关注的是怎么把蛋糕做大，但是没怎么考虑如何瓜分蛋糕。为啥 x 国就要从事低端行业，y 国就要从事高端行业？越来越多的人反思用怎样的比较优势来发展。
- 从整体来看全球化的进程，在过去的几十年间是在加速推进的过程，国际资本流动增加
- 出口相对于 GDP（占比）呈现上升趋势。进出口数值反映该国家的流量：有多需要国际贸易？以美国为例，进口的大部分时间都大于出口。



- **全球化的好处**：增加了货物和服务的多样性，参与全球化的国家的公民的消费多样性提升。（除了商品的交换）思维和想法的沟通扩散更加简单。（进口电脑拆电脑看看怎么组的，产生后发优势）
- **全球化的成本**：扩大开放会导致某些部门的失业，带来社会不稳定；部分行业可能会受到外部冲击，本国企业难以发展。（产生幼稚产业保护论：贸然开放各个领域将会扼杀国内萌芽期的企业，要保护婴儿。有的人认为被保护的企业没有动力发展自身：我躺着也能挣钱！反正外国进不来，我躺平啦哈哈！）
- 有人认为会产生**磁吸效应**，全球化会让国与国的差距缩小，但是国内的差距会更大。譬如我国东南沿海便利出口，就会导致东南迅速发展，西北的人口流失到东南，东南会产生更大的价值。这些流动的劳动力在东南创造价值，但是孩子和养老都在西北，就需要转移支付：分配的问题，整个蛋糕做大了，一些地方利益受损了但是做出了贡献，需要得到补偿。逆全球化的呼声：跨国公司通过避税方法逃避了所在国的税收。注册在免税区等等。
- 大部分经济学家认为全球化利大于弊。

第四十章

Balance of International Payments 国际收支平衡

40.1 U.S. Current Account Deficit

U.S. current account deficit is large: Current account balance as a percent of GDP, 1960Q1–2015Q1



- 经常账户可以理解为是净出口，美国经常账户常年逆差，中国经常账户常年顺差。
- 为什么美国经常账户逆差这么大？伯南克提出是其他国家的储蓄过剩导致的。
 - 并不是其他国家的產品好。而是说发展中国家的储蓄太多，国内金融市场不能满足需要，很多国家会去购买美国国债来避险。相当于把钱借给了美国。
 - 把美国的无风险利率压低了，影响到美元的币值：大家都想持有美元，美元币值上升，带来其他国家的币值相对贬值，更有利于出口。
 - 很受到美国经济学家支持。

40.2 Balance of Payments Accounting

定义 40.1 (The current account 经常账户)

- Net exports of goods and services (NX)
- Net income from abroad (NFP)
- Net unilateral transfers (NUT)

Sum of net exports of goods and services, net income from abroad, and net unilateral transfers is the current account balance:

$$CA = NX + NFP + NUT$$

Positive current account balance implies current account surplus, Negative current account balance implies current account deficit

- 除了经常账户，还有金融/资本账户

定义 40.2 (The financial/capital account 金融账户/资本账户)

- The financial account records trades in existing assets, either real (e.g., houses) or financial (e.g., stocks and bonds)
- When home country sells assets to a foreign country, there is a capital inflow (资本流入) for the home country and an increase in the financial account balance
- When assets are purchased from a foreign country, there is a capital outflow (资本流出) from the home country and a decrease in the financial account balance

40.3 Balance of Payments

- 官方储备资产的转账是由国家央行进行的
- 官方储备资产是进行国际支付的手段，主要包括：外国政府证券、银行存款、IMF 的特别提款权，黄金等等
- 央行用自己的流通货币来买卖官方储备资产。我国有强制结汇的政策，外币要兑换成人民币才能变成自己的收入，从而有了很大的外汇储备。
- 国际收支盈余就会带来官方储备资产的净增长，反之亦然，赤字会带来外汇储备的减少。
- $\text{Current account balance (CA)} + \text{financial account balance (FA)} = 0$
- 净外国资产持有量是国家的外国资产减去外国债务。
- 持有外国资产的净增长与国家的经常账户的增加值相等。（经常账户增加，资本账户赤字，资本流出，外国资产净增长（比如外流资本买了国外的国债））
- Foreign direct investment (FDI) (外商直接投资): a foreign firm buys or builds capital goods:
 - FDI causes an increase in financial account balance
 - 喜欢 FDI，而不喜欢热钱。热钱会放大经济周期。
- Portfolio investment (资产组合投资): foreigners acquire home country's securities; also increases financial account balance

40.4 Application: The United States as international debtor

- 美国的债务负担非常大！已经成为世界上的最大债务国了。但是比上美国的 GDP 好像也还行，40% 左右。尽管有很大的外国债务负担，美国有很多对国外的投资
- 债务水平本身不重要，国家财富才是重要的：是否这些债务支撑了一些有价值的东西？债务上涨且财富上升了，没啥问题。但是美国的国家财富增长好像不如债务增长大，引起了许多担忧。

第四十一章

Exchange Rates 汇率

41.1 汇率

- 名义汇率就是当下能用自己的货币换取多少其他货币。
- The spot rate (现货价格) is the rate at which one currency can be traded for another immediately
- The forward rate (远期价格) is the rate at which one currency can be traded for another at a fixed date in the future (for example, 90, 180, or 360 days from now)
- A pattern of rising forward rates suggests that people expect the spot rate to be rising in the future

Exchange Rate Against U.S. Dollar				
Country	Spot	90-day forward	180-day forward	360-day forward
Great Britain (pounds per U.S. dollar)	0.6366	0.6359	0.6363	0.6368
Switzerland (francs per U.S. dollar)	0.9356	0.9327	0.9289	0.9195
Japan (yen per U.S. dollar)	122.50	122.20	122.03	121.40

- 从上图来看，90 天后英镑相对于美元会升值还是贬值？英镑相对于美元是升值了，1 刀能换的英镑更少了。

定义 41.1 (Real Exchange Rates 真实汇率)

- 真实汇率指的是：一单位本国商品能换多少外国商品？
- 涉及的不是币值，而是购买力的变动
- Suppose the nominal exchange rate is 120 yen per dollar, and it costs 1200 yen to buy a hamburger in Tokyo compared to 2 dollars in New York. The price of a U.S. hamburger relative to a Japanese hamburger is 0.2 Japanese hamburgers per U.S. hamburger

$$e = \frac{e_{nom} \times P}{P_{For}}$$

- e 是真实汇率，真实汇率等于名义汇率乘当地价格水平除以外国的价格水平。
- 理论推导中我们可以假定只生产一种产品。现实中生产很多产品，就用价格指数来衡量价格水平。
- 真实汇率上升代表着本国相对价格水平的上升。

41.2 Appreciation and depreciation 货币升值和贬值

- 在浮动汇率制中 (flexible-exchange-rate system)，名义利率下降，就说货币贬值了 (货币走弱)。名义利率上升，就是货币升值了 (货币走强)
- 浮动汇率制是一件很近的事，布雷顿森林体系下还是固定汇率制。
- In a fixed-exchange-rate system, a weakening of the currency is called a devaluation (低估值), a strengthening is called a revaluation.
- 广场协议就是强制日元升值走强，减少出口。
- We also use the terms real appreciation and real depreciation to refer to changes in the real exchange rate

41.3 Purchasing Power Parity 购买力平价

- 什么是货币的真实价值？我们常常说货币升值贬值，怎么测算真实？
- 先理想的假定没有任何交易成本、没有任何的壁垒，在这种情况下真实汇率应该是 $e=1$ ，不然会存在套利机会，人们总会去买更便宜的。
- 此时会有：

$$P = \frac{P_{For}}{e_{nom}}$$

- This means that similar goods have the same price in terms of the same currency, a concept known as purchasing power parity, or PPP

Big Mac 指数

- 为了测量 PPP 是否成立，经济学人周期性的测量不同国家麦当劳 bigmac 的价格

Country	Dollar price of a Big Mac
United States	\$4.79
Argentina	3.25
Brazil	5.21
Canada	4.64
China	2.77
Euro area	4.26
Great Britain	4.37
India	1.89
Japan	3.14
Mexico	3.35
Russia	1.36
South Korea	3.78
Switzerland	7.54

- 这张图是把当时的价格和当时的名义汇率算出了以美元为计价单位，汉堡包的价格。很明显 PPP 不成立。俄罗斯好便宜。The hamburger price data forecast movements in exchange rates.
- 汉堡价格理论上会收敛。便宜的会升值，贵的会贬值。
- 根据经验，长期来说 PPP 会成立，短期不成立。
- 购买力平价不成立的原因有：国家生产货物的不同，部分货物并不进行贸易，交通费用，法定交易壁垒等等。
- 我们在 $e = \frac{e_{nom} \times P}{P_{For}}$ 两边取对数，就有

$$\frac{\Delta e}{e} = \frac{\Delta e_{nom}}{e_{nom}} + \frac{\Delta P}{P} - \frac{\Delta P_{For}}{P_{For}}$$

- 重新调整就有

$$\frac{\Delta e_{nom}}{e_{nom}} = \frac{\Delta e}{e} + \pi_{For} - \pi$$

- 名义汇率的升值，可能是由于真实汇率的上升或者相对更低的通货膨胀率。
- 当真实汇率不变的时候（没有要求 $e=1$ ），得到的就是 relative purchasing power parity（相对购买力平价），名义汇率的变化只反映了通货膨胀的变化。高通胀的国家往往带来汇率的下降，该国家的货币贬值。

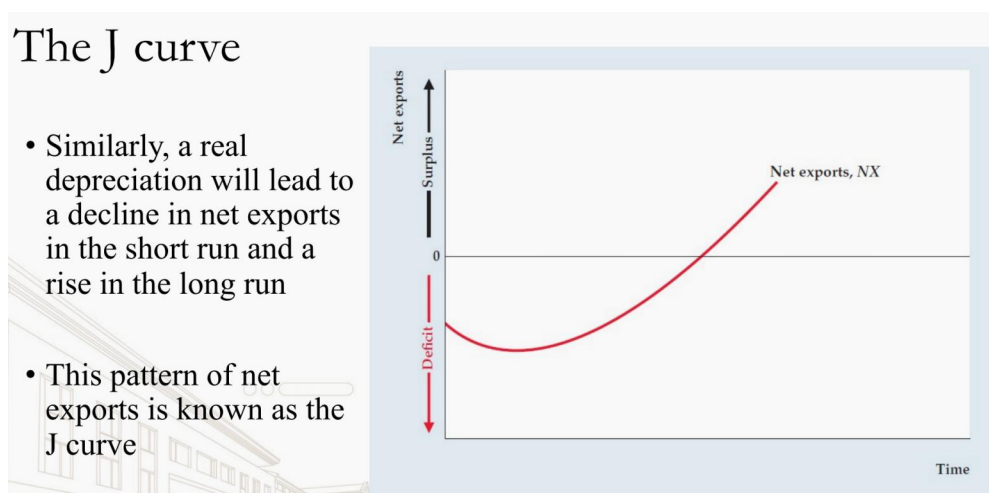
41.4 The real exchange rate and net exports 真实汇率和净出口

- 真实汇率也通常称为贸易条件，其代表了本国商品可以换取多少国外商品。真实汇率的提升代表着以同样的本国货物，可以换到更多的国外货物。

- 真实汇率上升的时候，本国的商品更贵，外国的商品更便宜，从而出口难进口易。从而真实汇率上升会让净出口下降，经常账户更容易出现赤字。反过来说，真实汇率下降也会利于出口。

41.5 The J curve

- 短期中的进出口的订单已经谈好了，价格引起的供需调整还没发生调整。短期出现了真实汇率的上升，进出口量还没发生变化，在统计的时候已经用了更低的本国价格，所以算出来的净出口反倒增长。
- 长期来看，进口变便宜了出口变贵了，净出口应该减少。



41.6 How Exchange Rates Are Determined

- 什么力量决定了汇率的升降？
- 在浮动汇率制下，货币的价值是由供需双方决定的。人们更想要美元的时候，美元就会升值。为什么人们更想要美元？经常账户上，人们更想购买美国的服务。资本账户上，人们也更想要美国的资产，资本也会流入。想要购买这些，就需要在外汇市场上卖掉本币购买美元再进行交易，带来美元需求量的上升，美元升值。
- Factors that increase demand for U.S. exports and assets will increase demand for dollars and reduce supply of dollars, shifting the demand curve to the right and the supply curve to the left and increasing the nominal exchange rate
- For example, an increase in the quality of U.S. goods relative to foreign goods will lead to an appreciation of the dollar

41.6.1 Effects of changes in output (income)

- 本国的产出（收入）增加的时候，就会提高货物的需求，其中也包括了外贸需求的增加，净出口会减少。从而需要卖掉本币购买外币，降低了汇率。
- The opposite occurs if foreign output (income) rises, Domestic net exports rise, The exchange rate appreciates.

41.6.2 Effects of changes in real interest rates

- 本国利率上升，外国利率不变的时候，外国人就会想购买本国资产（比如本国国债），本国货币就会走强，吸收了更多其他国家货币的价值，汇率上升，本国货币价值上升。
- 进而带来了本国净出口的减少。相反，外国利率上升，本国净出口就会上升，汇率下降。

第四十二章

Exchange Rate Regimes 汇率体系

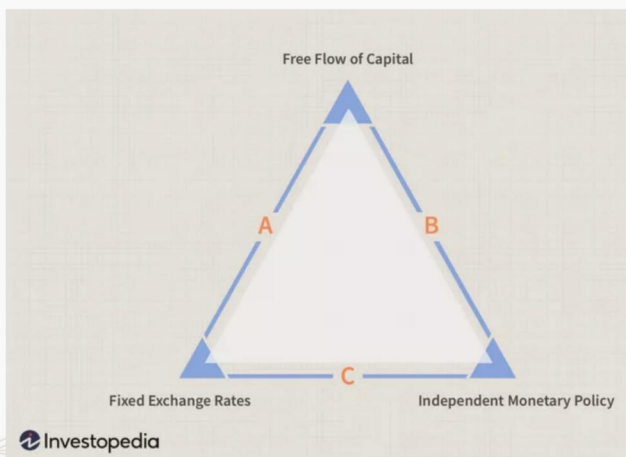
42.1 Exchange Rate Regimes 汇率体系

- Under a flexible-exchange-rate system or floating-exchange-rate system（浮动汇率体系），exchange rates are determined by supply and demand and may change every day; this is the current system for major currencies
- In the past, many currencies operated under a fixed-exchange-rate system（固定汇率体系），in which exchange rates were determined by governments

42.2 The Mundell-Fleming Trilemma

- The “impossible trinity”: A country cannot achieve all three goals when establishing and monitoring its international monetary policy agreements:

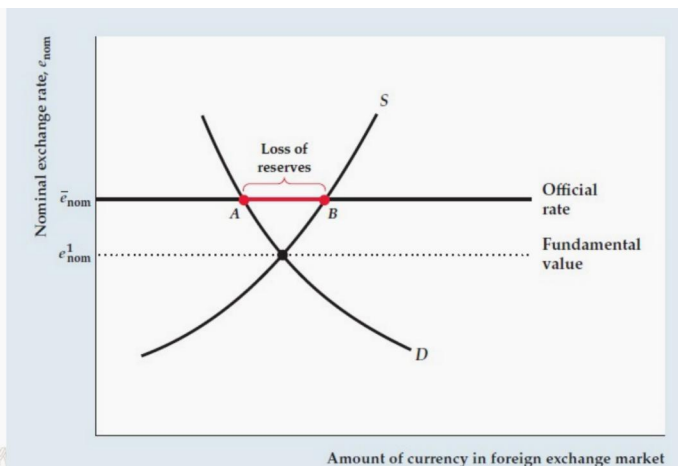
1. Setting a **fixed currency exchange rate**
2. Allowing **capital to flow freely**
3. Making **independent monetary policies**



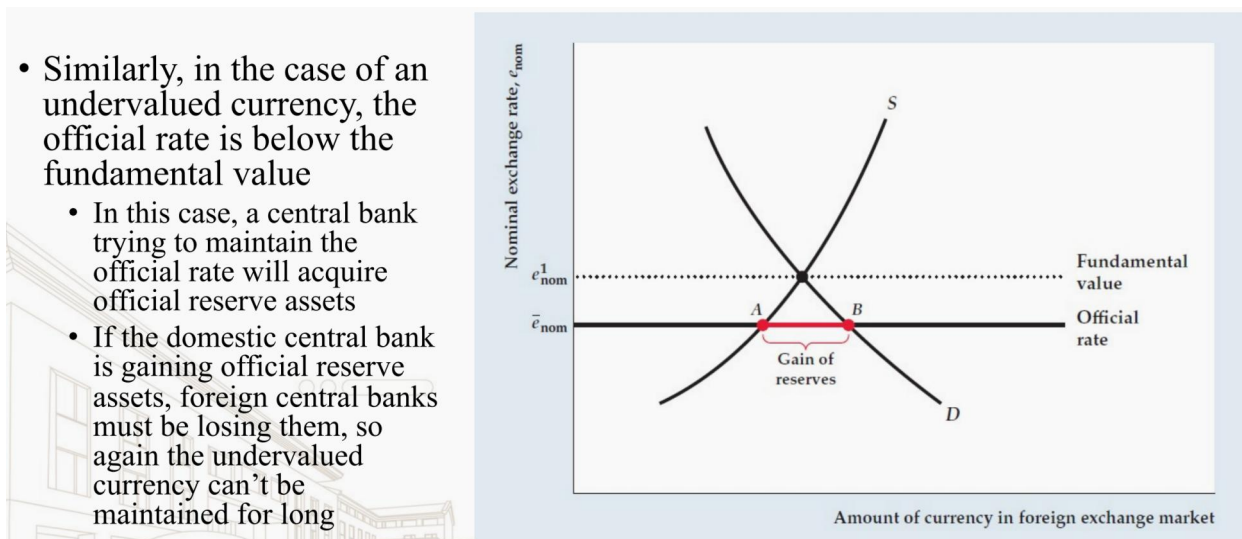
42.3 Fixed Exchange Rates 固定汇率制

- 如果国家规定了固定汇率，如果和市场供需相违背会怎样？
- An Overvalued Exchange Rate: 固定的汇率高于真实汇率，可以做空！借高位货币然后抛售，价格下去后买入低位货币还。政府为了维持固定的高汇率，就要动用外汇储备维持本币价格。

- When the official rate is above its fundamental value, the currency is said to be overvalued
- The country could devalue the currency, reducing the official rate to the fundamental value



- 如果官方储备不够了，就只能放弃维护官方固定汇率，本币就会真的大幅贬值。怎么办呢？只能设碍。（有固定汇率制度，且开放的资本流动，就会损失掉独立的货币政策）
- 希望维持固定汇率且有独立的货币政策时，就要放弃资本的自由流动，更像是我国的做法：资本管制。资本账户并不完全开放，限制本币的交易。这样可以有更稳定的币值和独立的货币政策，避免了游资的攻击波动。但是完全的资本管制，就会本币不可转换。资本管制会限制本币的流通性。
- 如果固定汇率低于市场均衡汇率，币值低估，该国就会积累很多外汇储备。币值低估了，人们就想买入该货币等待其回归到高位，需求量超过供应量。



42.4 Monetary Policy and the Fixed Exchange Rate

- 货币政策提高了货币的供应量，就会带来市场上的币值下降，但是固定汇率制下，就会带来货币币值的高估。带来了 **overvalued currency**。此时就要小心！过高估值的货币无法在资本账户长期开放的情况下长期维持的。
- 扩张性的货币政策此时难以为继，想要独立的货币政策就必须要有资本管制
- So under fixed exchange rates, monetary policy can't be used for macroeconomic stabilization

42.5 Fixed versus Flexible Exchange Rates

- 浮动汇率制度可能会带来外汇交易的不确定性。
- 固定汇率制度可以约束国家的货币政策，无法随意增发货币，增发货币就会迎来做空抛售，央行就会损失很多外汇储备。
- A country can't maintain an overvalued currency forever, as it will run out of official reserve assets

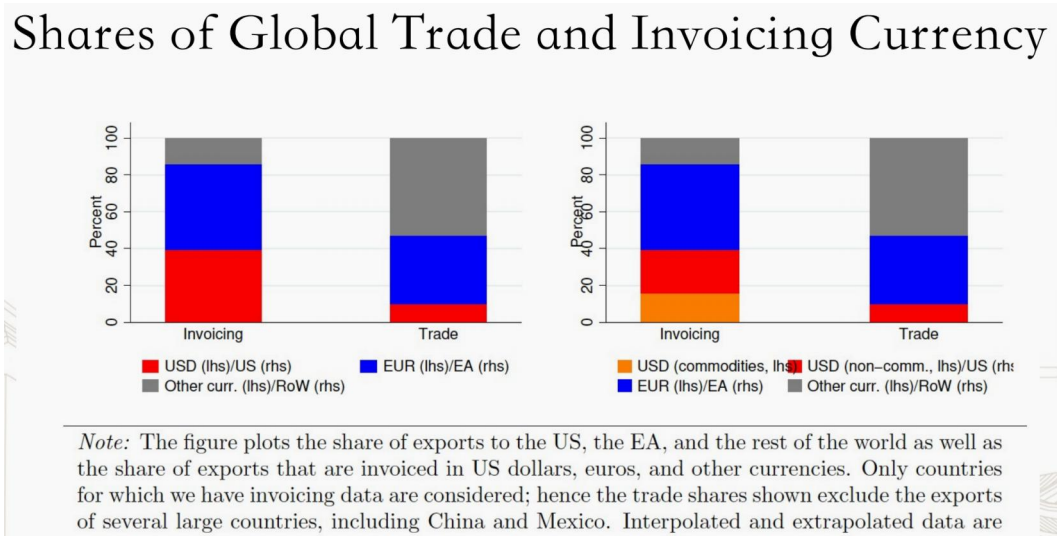
第四十三章

人民币国际化

- 为何说国际化的货币是重要的？
- 美国霸权地位很大一部分来源于美元霸权。美元走强就会带来本国的资本外流，美国的通胀风险也会蔓延到其他国家。如果可以用本币来发行外债，就意味着这个国家可以对其他国家输出通胀，铸币税向所有持有这种资产的人征收。
- 美元霸权也意味着很大的外部风险，美元加息我国也要跟着加息，不然就会资本外流。
- 香港是离岸人民币的中心
- 熊猫债/点心债：熊猫债是指境外发行主体在中国发行的、以人民币作为计价单位的债券；点心债是中外资机构在香港发行的离岸人民币债券
- This bond is similar with the Japanese Samurai Bond（武士债）or the American Yankee Bond（扬基债）
- 货币联盟：不同国家发行统一货币。比如欧元区。坏处就是只能有一个货币政策，升值就得所有的升值，但是各个国家发展状况不同，所以很难维持统一的货币政策。

43.1 最优货币区

- 详见 PPT，没空讲了 qwq



第四十四章

影子银行 Shadow Banking

44.1 何为影子银行

定义 44.1

Financial Stability Board (FSB) 定义: The “shadow banking system” can broadly be described as “credit intermediation involving entities and activities (fully or partially) outside the regular banking system.”

- 做的是类似于银行的信用中介的行为，做的事情就是三大转换的功能
 - 但是不是受到央行监管的银行来做，没有银行牌照。可能在常规的市场活动以外来操作
 - 在美国常常依赖于养老金、房贷公司、对冲基金等等。
 - Aspects of shadow banking contributed to the financial crisis
 - Commercial paper and money market funds (MMFs)
 - Subprime mortgage CDOs and subprime RMBS
 - Broker-dealer (or investment banks) activities and repos
 - 我国的融资方式大部分都是银行，很少是企业在直接金融融资，金融市场没那么发达。这取决于对债权人的保护力度如何。普通法系（英美法系）对个人保护更强（判例为主），而大陆法系（德国、我国等）更多是条文法，保护没那么强，金融市场不完善。
- 08 年金融危机雷曼倒了，大家都不知道购买的货币基金是不是大量持有雷曼的债券，货币基金本来做了期限错配，大家都去挤兑了。本来它的抗风险能力就不如银行。大公司也依赖于短期融资进行短期运营，大公司也融不到钱，就会出现流动性衰竭的问题。
- 硅谷银行是没有信用风险的，但是在降息风潮中，长期的资产贬值的幅度超过短期（久期问题）。

Role of Banks and Shadow Banks

1. Credit transformation

- E.g., Bank loans -> Entrusted loans（委托贷款/信托计划，借给合规的公司，合规公司做委托贷款借给其他企业）
- 绕开监管。

2. Liquidity transformation（流动性转换）

- E.g., Bank deposits -> Wealth-management products (WMPs)
- 存款是受到监管和保障的，通过吸引储户购买理财产品来绕开监管，事实上是有风险的。（现在的理财产品大部分都是不保本的，资管新规出台打击了很多负债表外的资产，理财产品不能刚性兑付保本了。打击了影子银行）

3. Maturity transformation（期限转换）

- E.g., Maturity mismatch -> (Shadow) bank runs
- 期限转换和银行挤兑是一体两面的，有存款保险的时候可以降低战略互补性，减少坏的均衡。影子银行可以绕开监管，但是同时同时也失去了保障：存款保障和央行的最后付款人等等，所以还是会面对银行挤兑的风险
- 金融创新始终有，影子银行一直存在，怎么规避风险？全都纳入金融监管中！保证不发生系统性金融风险。
- 审慎的宏观政策、加强金融监管。

44.2 Lender of Last Resort 最后借款人

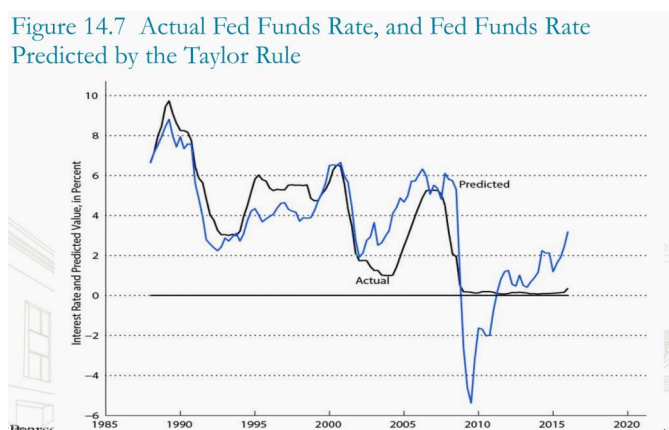
- 央行作为最后借款人，为银行提供流动性。DD 模型下没有信用风险、只有期限风险，此时存款保险公司不需要赔付，有个空架子就可以了，没有讲到央行的作用，银行投资可以在最后得到充分回报。但是现在还有替代存款保险的方式：央行作为最后付款人。
- Liquidity crisis (流动性危机) vs. Solvency (偿付能力危机)
- DD 模型是一个理想化模型，雷曼兄弟倒闭就能看出信息不对称很严重。我们不知道金融机构持有的是优质资产还是有毒资产，就连央行可能都不知道。
- The central bank takes a loss if it cannot distinguish between a liquidity crisis and a solvency crisis or if the bank is too big to fail

44.3 Bagehot's rule 白芝浩规则

- To avert panic, central banks should lend early and freely (i.e. without limit), to solvent (有偿还能力、不应该破产，否则就会变成僵尸企业) firms, against good collateral, and at 'high rates.'
- 在金融危机时，银行应当慷慨放贷，但只放给经营稳健、拥有优质抵押品的公司，而且要以足够高的、能吓走非急用钱者的利率来放贷。（只向流动性差而不是资不抵债的银行放贷。）

44.4 流动性陷阱和非常规货币政策 Liquidity Trap and Unconventional Monetary Policies

- 08 年发现传统货币政策工具箱用完了。利率都已经降到 0 了，也没法继续降下去了。
- 在流动性陷阱之中，只能用非常规的货币政策：
 - 量化宽松：购买长期债券或者私有资产。释放流动性给金融机构，金融机构再把流动性传导给市场。
 - 负的名义利率：降低利率到“有效下界”，收取银行费用。



- 蓝线是根据泰勒准则推算出的，应该有的利率。事实上降到 0 就不行了。此时没招刺激经济了。
 - 配套的财政政策让真实利率降低。
 - 量化宽松了很久，低利率很久。
 - 我国发放了很多美元债，借钱是划算的！因为低利率鼓励借钱。
 - 利率持续很低，储蓄存款的钱怎么发挥更大的作用？对于很多投资者来说，特别是养老金等等，感觉收益是不够的，要有一些新的资产组合。最有代表性的其实是日元，日本很早就有负利率了。日元的低迷带来了国际赚钱的策略：赚取国家之间的利差（carry-trade，套息交易）。日元借钱便宜，借了日元去买美国资产，后来卖了美国资产去还日元。

第四十五章

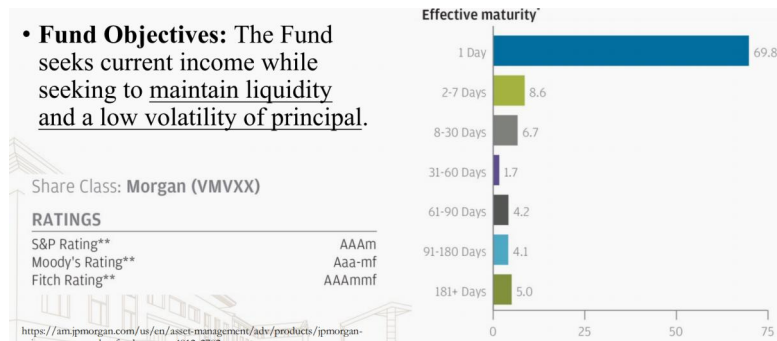
货币基金 Money Market Funds

45.1 Money Market Funds (MMFs)

- 典型的影子银行。按照监管规定，只能投资货币资产。投资短期的、高流动性的资产。(t-bills, 商业票据等)
- These securities tend to have short-term maturities (within one year)(避免出现期限错配)
- 投资者随时赎回货币基金。
- 1972 年出现了第一家 MMF，Q 法案规定银行利率的上限。市场利率已经很高了，商业银行还受到利率的上限。MMF 应运而生，可以躲避利率管制的限制，同时也给支付的功能（开支票），也就是存款的替代品。

45.2 Example: JPMorgan Prime MMF

- 余额宝之前是最大的货币基金。MMF 的特殊地位：纳入 M2 的计算



- 美国证券交易委员会的 Rule 2a-7，授予货币市场基金关键豁免，允许它们保持稳定的资产净值 (NAV)，而不是使用浮动资产净值。In 2008, the Reserve MMF failed to maintain a stable value of \$1 and broke the buck.
- 引发了当时的 shadow bank runs. 大家都觉得货币基金不行了，去挤兑了。联邦不得不进行干预，为这些股份提供全额担保。

45.3 MMF Reforms

45.3.1 2010 改革

- 得改革啊！人为设定了成本计价的准则，导致了先发优势存在：早发现价值下降的人赎回了现金可以 1:1，去的晚的就没了。
- 改革要求进一步减少资产的期限，并要求资产更能保值。(tightening the maturity and credit quality standards and imposing new liquidity requirements.) 从而缩小期限错配和信用危机。
- 会计准则的固定定价变成了浮动定价，现在价格都波动了，都没有稳定性了，不像存款的性质了，更像是投资行为。业界很担心，带来了 2014 改革。

45.3.2 2014 改革

- 赎回大笔资金要额外的费用，赎回的门槛有限定。(liquidity fees and redemption gates)

- 最终的规则还包括加强多元化、信息披露和参加压力测试的要求，并且货币市场基金和类似的私募基金的定期更新自己的报告。
- 21 年改革进一步减少发生挤兑的可能性。

第四十六章

金融科技

46.1 金融科技和影子银行 FinTech & Shadow Banking

- 很多金融科技公司就是在做影子银行的事情。很多非银行机构在发展金融创新：P2P（游离在监管体系之外），用科技手段在互联网平台上的对接。加密货币的发展，区块链，大科技公司参与信贷发放等等。
- 往往低门槛，且监管宽松。大学生往往很难申到信用卡，花呗和白条却很简单。
- 金融科技贷款可以有一些替代性的凭证来判断是否发放贷款：将来能赚多少？能不能还？

46.2 FinTech Disruption: Roles of Banks

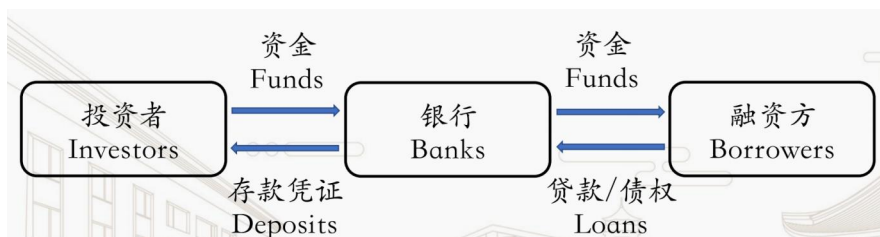
1. Liquidity transformation
 - E.g., demand deposits. T+0 money market funds (MMFs)
2. Credit transformation
 - E.g., bank loans, FinTech lending & Big Tech credit e.g., P2P, mortgage, consumer credit, business loans
3. Maturity transformation
 - E.g., maturity mismatch, bank runs. runs on MMFs and P2Ps

46.3 金融科技与传统银行 FinTech & Traditional Banks

- 利率上限：政府设置存款利率上限（实行工业化过程中不能以高利率放贷给国有企业，降低融资成本推进建设，从而设置存款利率上限）。后面会起到金融抑制的作用，从而存款利率小于市场真实利率。
- 金融科技帮助绕开存款利率限制，为大众提供真实的市场利率，提供类似于银行的作用。形成了有利竞争，是有必要的，倒逼银行改革。
- 银行受益于利率上限，压低了吸收资金的成本。银行没有动力提高利率上限，甚至会抵制。
- 数字化支付手段就可以代替很多银行网点，这个 app 一下子相当于在全国各地建立了网点，有能力和大银行抗衡，创造出了银行的替代品。余额宝渗透率更高的城市，存款更会搬家，银行面临的竞争压力更大。其更多是普惠的，给家庭影响更大。

46.4 金融科技与金融市场 FinTech & Financial Markets

- 金融市场（financial markets）对接资金供给和需求的双方
 - 区别于银行等金融中介（financial intermediation）
 - 是企业直接融资的渠道，也是个人直接参与金融交易的场所





- 金融市场包括：
 - 股票市场 (equity/stock market)
 - 债券市场 (bond market)
 - 基金市场 (mutual funds, pension funds, hedge funds...)
 - 期权期货等衍生品市场 (financial derivatives, e.g., options and futures)
 - 商品市场 (commodity market)
 - 外汇市场 (foreign exchange market)
 - 保险市场 (insurance market)
- 其中与个人投资者最为相关的是股票市场与基金市场，因而这两个市场受数字普惠金融的影响也最为显著
- 数字金融将数字技术与金融服务相结合，通过科技创新降低了金融市场的投资和交易成本，拓展了金融市场的普及范围和运行机制
- 数字金融平台的兴起拓宽了个人投资者购买金融产品、参与金融市场的渠道，但同时也暗含着虚假宣传、夸大宣传、和金融诈骗的风险
- 数字金融平台的算法歧视取代了人为歧视。另外，平台通过对不同等级不同类型的客户设置不同的规则，有可能会导导致中小投资者的交易困难和财富损失。
- 数字技术的应用与普及让市场交易方式转型升级
 - 互联网、个人电脑 -> 线下到线上
 - 移动互联网、智能手机 -> 有线到无线
 - 大数据、人工智能、区块链 -> 单向到交互
- 数字金融降低了获取交易信息的成本
 - 如何有激励去挖掘信息？The Grossman-Stiglitz Paradox. 信息越充分越普及，价格的有效性越高 -> 没有人能从市场中赚钱，但是，信息并不是从天而降的，信息的搜集需要成本。如果信息不带来额外的收益，搜集信息的动机从何而来？
- 过度自信与知识幻觉
 - 有相当多的文献指出，当人们得到更多的信息来作为预测或评估的基础时，他们对预测准确性的信心往往比那些预测的准确性增长得更快
 - 事实上，由于信息过载 (information overload)，实际预测能力可能会随着信息的增加而下降