西方经济学

Part 5 Macroeconomic Policy

Lecture 5 Expectations and Macroeconomic Policy

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Supplement Readings

(1) M15; S8. [1]

(2) 其他文献：Aggregate Supply and the Short-Run Tradeoff Between Inflation and Unemployment

(3) 其他文献：Alternative Perspectives on Stabilization Policy

[1] M 指代马工程教材，S 指代课外阅读材料沈坤荣教程。

学习目标

(1) 理解理性预期在宏观政策中的作用。
(2) 理解规则和相机抉择假设下，宏观政策效应的差异
(3) 掌握马工程教材精神。

观察与思考

半夜鸡叫

(1) 知乎：2007 年 5 月 30 日 0 点 04 分，财政部公告从 2007 年 5 月 30 日起调整股票交易印花税税率，由 1‰ 调整为 3‰，公共政策发布的半夜鸡叫模式从此确立！市场上从 5 月 22 日开始就有传言，国家多个部委轮番辟谣。

(2) 新华社（2012 年 7 月 8 日）：公共政策该不该搞突然袭击？对于汽车限购这样的涉及公共利益的决策，为什么不能先征集民意？为什么要搞“半夜鸡叫”？

(3) 新华时评（2013 年 8 月 6 日）：热点信息发布为何常常“半夜鸡叫”？

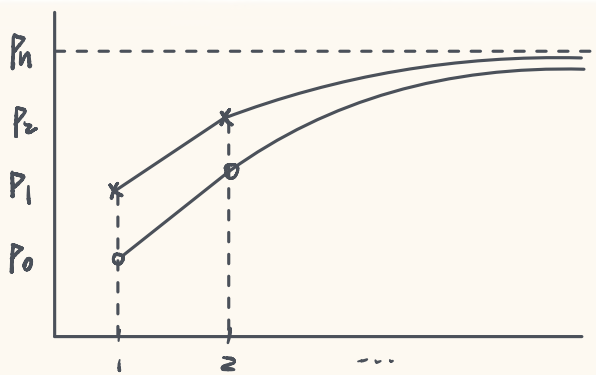
(4) 人民网（2014 年 3 月 28 日）：出台公共政策能不“半夜鸡叫”么？

(5) 新华社（2016 年 4 月 20 日）：热点信息发布别搞“半夜鸡叫”！本来可以选择在白天发布的信息，一些部门为了避开公众视线，也把发布时间拖到凌晨。难道拖到半夜就能躲过公众的关注吗？“半夜鸡叫”式的新闻发布，会让政府的公信力大打折扣。越是群众关注的焦点，越要尽早发声，尽快发布。

(6) 网易（2018 年 6 月 28 日）：凌晨，又一次半夜鸡叫！中国股市最缺的不是钱，是“德”！

(7) 新浪财经（2020 年 2 月 3 日）：央行放水救不起 A 股，期待今晚半夜鸡叫！

Outline



$P_t^e = P_{t-1}$ 存在系统误差：预期始终低于实际

$P_t^e = P_t$ 理性预期

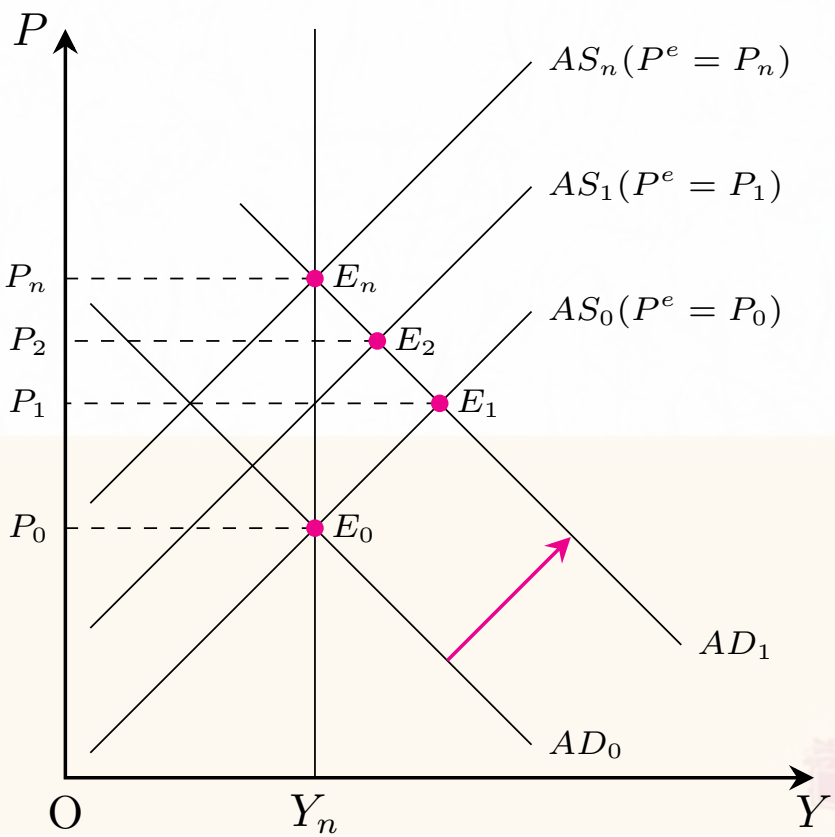
Rational Expectations and Policy Ineffectiveness

Adaptive expectations are given by $P_t^e = P_{t-1}^e + \lambda(P_{t-1} - P_{t-1}^e)$. 适应性预期

Rational expectations assume that 理性预期

(1) People inside a model know the model; 知晓模型

(2) People optimally use all the available information to forecast the future such that "outcomes do not differ systematically (i.e., regularly or predictably) from what people expected them to be." 最佳利用所有信息去预测 无随机情况时，没有系统性偏差



Proposition 1 (Policy Ineffectiveness)

Under the assumption of rational expectations, policies expected by people have no effect on output. 理性预期下政策无效性

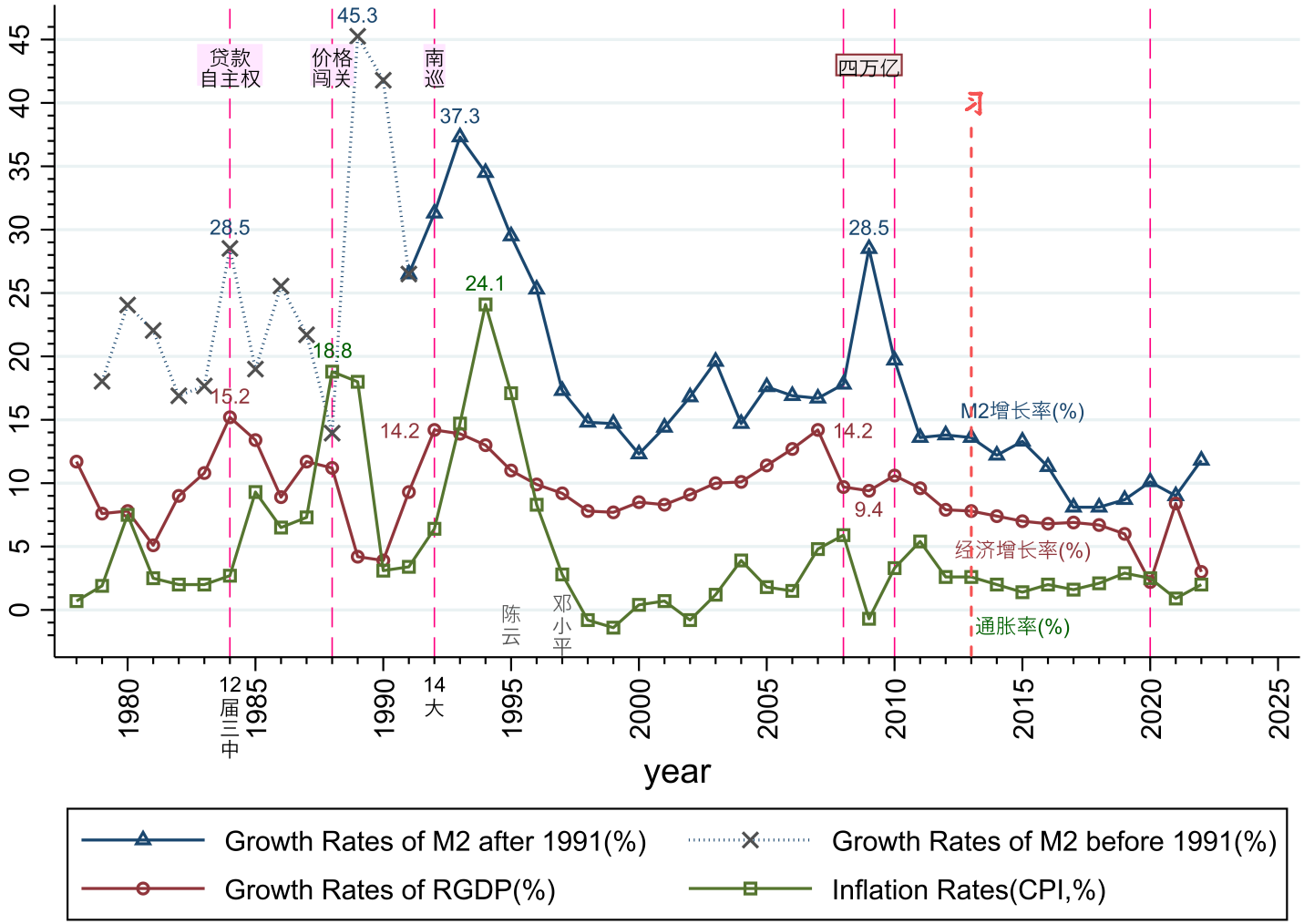
Proposition 2 (Lucas Critique) 卢卡斯批判

Under the assumption of rational expectations, forecasts based only on historical information are invalid. 理性预测假设下，基于历史信息的预测是无效的

Example 1 (观察与思考)

什么是半夜鸡叫效应?

Rational Expectations and Policy Ineffectiveness



Disinflation with Pain 有痛消胀

Traditional Approach to Disinflation

失业与通胀的短期平衡

The Phillips curve is

$$\pi_t = \pi_t^e - \beta(u_t - u_n).$$

Suppose that an economy is initially in full employment, but with high inflation $\widetilde{\pi}$. Suppose the government plans to lower the inflation from $\widetilde{\pi}$ to π^* during T years. Given π_t^e, π_t falls at the cost of high u_t. Pain caused by disinflation can be measured by the sacrifice ratio. [2] In terms of output lost, the sacrifice ratio is defined as the number of percentage points of one year's real potential GDP that must be forgone to reduce inflation by 1 percentage point.

产出下降

$$\text{Sacrifice Ratio } (SR_Y) = \frac{\text{Output Lost}}{\text{Decrease in inflation}} = \frac{\sum_{t=1}^{T}(\ln \overline{Y} - \ln Y_t)}{\widetilde{\pi} - \pi^*}.$$

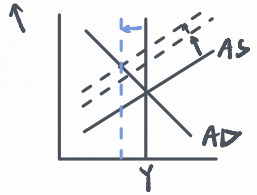
In terms of unemployment tolerated, it is defined as the number of percentage points of one year's cyclical unemployment that must be tolerated to reduce inflation by 1 percentage point.

周期性失业

$$\text{Sacrifice Ratio } (SR_u) = \frac{\text{Cyclical Unemployment Tolerated}}{\text{Decrease in inflation}} = \frac{\sum_{t=1}^{T}(u_t - u_n)}{\widetilde{\pi} - \pi^*}.$$

[2] Another measure is the misery index, defined as $u + \pi$ (Dornbusch, 2018, ch6).

Case Study: The Volcker Disinflation



During the Volcker disinflation, $\widetilde{\pi} = 9.3\%$, $\pi^* = 3.2\%$. Cyclical unemployment can be translated into the output loss by means of Okun's law: $\ln Y_t - \ln \overline{Y} = -o_k(u_t - u_n)$, where $o_k \approx 2$.

$$\sum_{t=1982}^{1985} (\ln Y_t - \ln \overline{Y}) = -o_k \sum_{t=1982}^{1985} (u_t - u_n) = -2 \times 10.0 = -20$$

$$SR_Y = \frac{\sum_{t=1982}^{1985} (\ln \overline{Y} - \ln Y_t)}{\widetilde{\pi} - \pi^*} = \frac{20}{9.3 - 3.2} \approx 3.2787$$

$$SR_u = \frac{\sum_{t=1982}^{1985} (u_t - u_n)}{\widetilde{\pi} - \pi^*} = \frac{10}{9.3 - 3.2} \approx 1.6393$$

Year	π_t	u_t	u_n	$u_t - u_n$
1981	9.3			
1982		9.7	6.0	3.7
1983		9.6	6.0	3.6
1984		7.5	6.0	1.5
1985	3.2	7.2	6.0	1.2
Total				10

Okun (1978) and Gordon and King (1982) indicate $SR_Y = 5$ or $SR_u = 2.5$. Reducing inflation by 1 percentage point requires the output loss of 5% of one year's potential GDP or about 2.5 percentage points of cyclical unemployment. Volcker reduced inflation at a smaller cost than many economists had predicted.

Disinflation without Pain

Rational Expectations Approach to Disinflation 理性预期方法消胀

The central bank makes a credible announcement that the money supply will decrease immediately and the inflation target is $\pi_t = \pi^*$. The public will form $\pi_t^e = \pi^*$. According to the Phillips curve,

$$\pi_t = \pi_t^e - \beta(u_t - u_n).$$

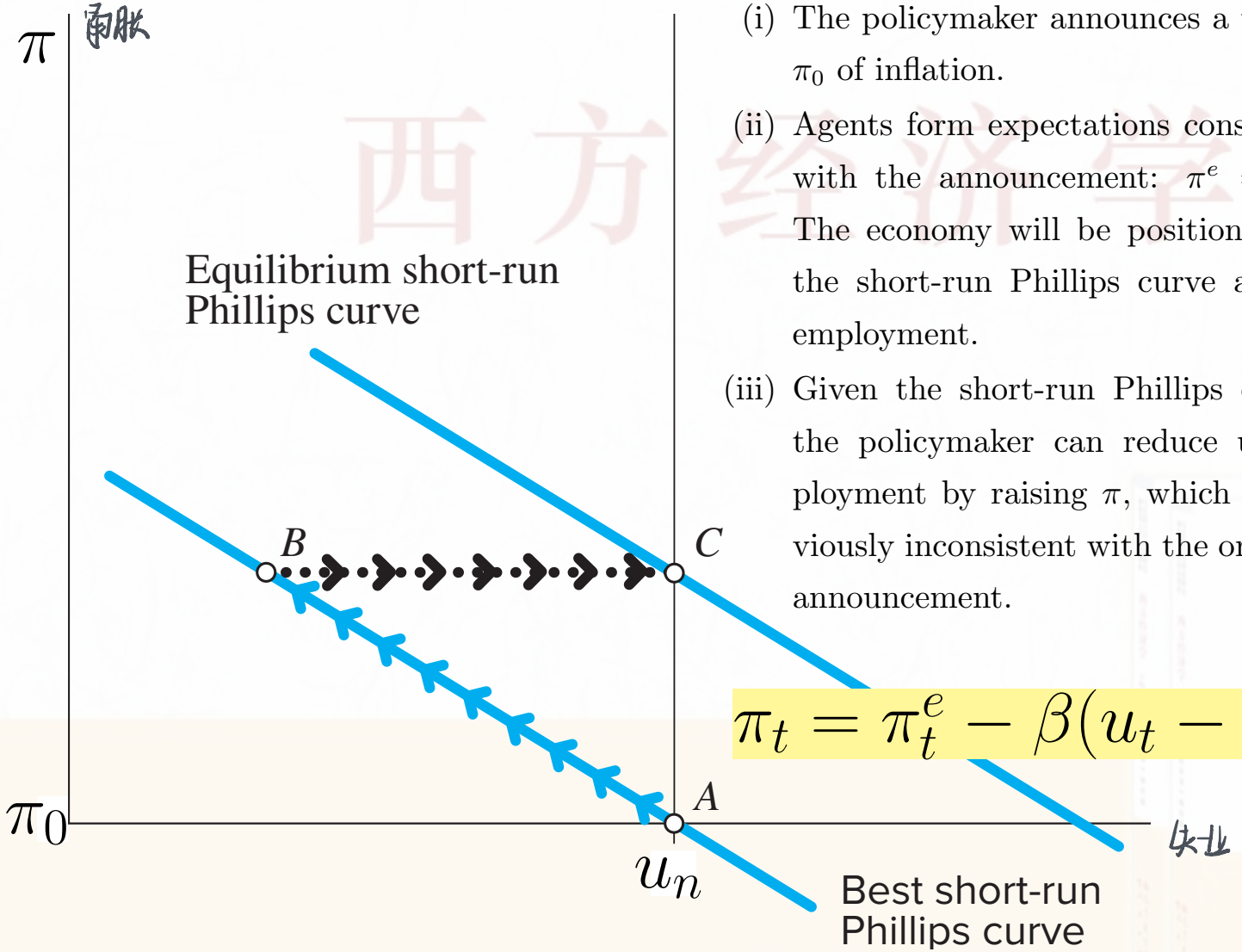
As a result, $\pi_t = \pi^*$ while $u_t = u_n$. The essential ingredient of successful disinflation is the credibility of monetary policy.

Case 1 Zimbabwe's inflation hit about 100% a day in 2008. The hyperinflation stopped by April 2009 because it is legal for everyone to use U.S. dollars. (See ch22 of Dornbusch [2018, 13th ed.]) 津巴布韦币

Case 2 Forward guidance (See wiki, FED)

How to Establish Credibility: Discretion or Rules?

Dynamic/Time Inconsistency



(i) The policymaker announces a target π_0 of inflation.

(ii) Agents form expectations consistent with the announcement: $\pi^e = \pi_0$. The economy will be positioned on the short-run Phillips curve at full employment.

(iii) Given the short-run Phillips curve, the policymaker can reduce unemployment by raising π, which is obviously inconsistent with the original announcement.

$$\pi_t = \pi_t^e - \beta(u_t - u_n)$$

See Dornbusch (2018)

How to Establish Credibility: Discretion or Rules?

Commitment to a Rule

In order to establish the credibility of monetary policy, the central bank is advised to follow a set of prespecified and publicly announced rules. Such an example is the *Taylor rule*, [3] given by

$$i_t = \pi_t + r^* + \theta_\pi(\pi_t - \pi^*) + \theta_Y \frac{Y_t - \overline{Y}}{\overline{Y}},$$

where $\theta_\pi > 0$ and $\theta_Y > 0$ are coefficients; i_t is the nominal interest rate controlled by the central bank; π_t is the rate of inflation; π^* is the target rate of inflation; r^* is the natural rate of real interest; Y_t is the level of output; and $\overline{Y}$ is the natural level of output.

Proposition 3 (The Taylor Principle)

The central bank should respond to an increase in inflation with an even greater increase in the nominal interest rate. That is, $\frac{\partial i_t}{\partial \pi_t} > 1$.

Go to FRED to see the difference between effective federal funds rate and the rate implied by the Taylor rule.

[3] John Taylor (1993, p.202) suggests a simple formula for monetary policy rule:

$$\text{The nominal Fed funds rate } i_t = \pi_t + 0.02 + 0.5 \times (\pi_t - 0.02) + 0.5 \times \left(Y_t - \overline{Y}\right)/\overline{Y}.$$

Optimal Discretion vs. Optimal Rule

Time Inconsistency and the Tradeoff Between Inflation and Unemployment

The Phillips curve implies

$$\pi_t - \pi_t^e = -\beta(u_t - u_n) \Rightarrow u_t = u_n - \frac{1}{\beta}(\pi_t - \pi_t^e).$$

The central bank likes low unemployment and stable prices. Assume the loss function of the central bank is

中央银行的损失函数

$$L(u_t, \pi_t) = u_t + \gamma \pi_t^2,$$

where $\gamma \geq 0$ measures the central bank's relative dislikeness between u and π. The central bank minimizes the loss function by choosing π. Substituting for u_t gives

$$\min_{\pi_t} \left[u_n - \frac{1}{\beta}(\pi_t - \pi_t^e) \right] + \gamma \pi_t^2.$$

Optimal Discretion 相机行事

Under discretion, the economy works as follows.

(1) The central bank makes an announcement of inflation.

(2) The central bank believes agents have formed expectations. Given the expectations, the central bank chooses the actual level of inflation to minimize the loss function.

(3) Agents know the central bank may deviate from the announcement.

(4) Based on expected and actual inflation, unemployment is determined.

The central bank's optimal choice of π_t is a solution to the following problem.

$$\min_{\pi_t}\left[u_n-\frac{1}{\beta}(\pi_t-\overline{\pi}_t^e)\right]+\gamma\pi_t^2 \Rightarrow \pi_t=\frac{1}{2\beta\gamma}.$$

Rational agents know the central bank chooses $\pi_t=\frac{1}{2\beta\gamma}$ whatever the announcement is.

Thus, their expectation of inflation is $\pi_t^e=\frac{1}{2\beta\gamma}$. Under discretion, $\pi_t|_{Discretion}=\frac{1}{2\beta\gamma}$, $u_t=u_n$, and the minimized loss is $u_n+\gamma\left(\frac{1}{2\beta\gamma}\right)^2$.

Optimal Rule 教条式

Under a rule, the economy works as follows.

(1) The policymaker announces a target π_t of inflation.

(2) Agents form expectations consistent with the announcement: $\pi_t^e = \pi_t$.

(3) The central bank is committed to π_t.

(4) Based on expected and actual inflation, unemployment is determined.

The optimal announcement is a solution to the following problem.

$$\min_{\pi_t} u_n + \gamma \pi_t^2 \Rightarrow \pi_t = 0.$$

Under a rule, $\pi_t|_{Rule} = 0$, $u_t = u_n$, and the minimized loss is u_n.

Proposition 4

最小损失更小

The optimal rule is better than the optimal discretion. *For a central banker who fervently dislikes inflation ($\gamma \to +\infty$), the optimal discretion is equivalent to the optimal rule.*

厌恶通货膨胀

Outline

疑难重点

(1) 理解适应性预期和理性预期的概念。
(2) 什么是 Lucas critique?
(3) 什么是 policy ineffectiveness?
(4) 什么是 time inconsistency?
(5) 消除通胀乎有痛苦吗？有没有无痛消胀？什么是牺牲率？什么是前瞻性指引?
(6) 为什么要建立货币政策的可信性？如何建立？什么是 Taylor rule?
(7) 什么是 Optimal rule? 什么是 Optimal discretion? 什么条件下两者等价?

马工程教材疑难重点

1 (E2, p.248)

根据马工程教材观点，应当如何评析西方经济学中“相机抉择”和“规则”的争论?

2 (E2, p.248)

根据马工程教材观点，应当如何评析西方经济学的宏观经济政策主张?