Monetary Economics (EPOS)

Lecture 4

Rethinking stabilization policies: Good policies or good luck?

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“The policy problem is to choose a time path for the instrument i_t to engineer time paths of the target variables x_t and π_t that maximize the objective function (2.7), subject to the constraints on behavior implied by (2.1) and (2.2). This formulation is in many ways in the tradition of the classic Jan Tinbergen (1952)/Henri Theil (1961) (TT) targets and instruments problem. As with TT, the combination of quadratic loss and linear constraints yields a certainty equivalent decision rule for the path of the instrument. The optimal feedback rule, in general, relates the instrument to the state of the economy.”

Clarida, Galì, and Gertler (1999)

In this class

- The Great Moderation
- Good policies or good luck?
- The 1980s as a turning point for macro–policies
- The reconciliation between practice and theory
- The New Keynesian approach
- Pre– and post–Volcker policies: Taylor pricinple
- Optimal monetary policy
- Continuity and innovations

People in this class

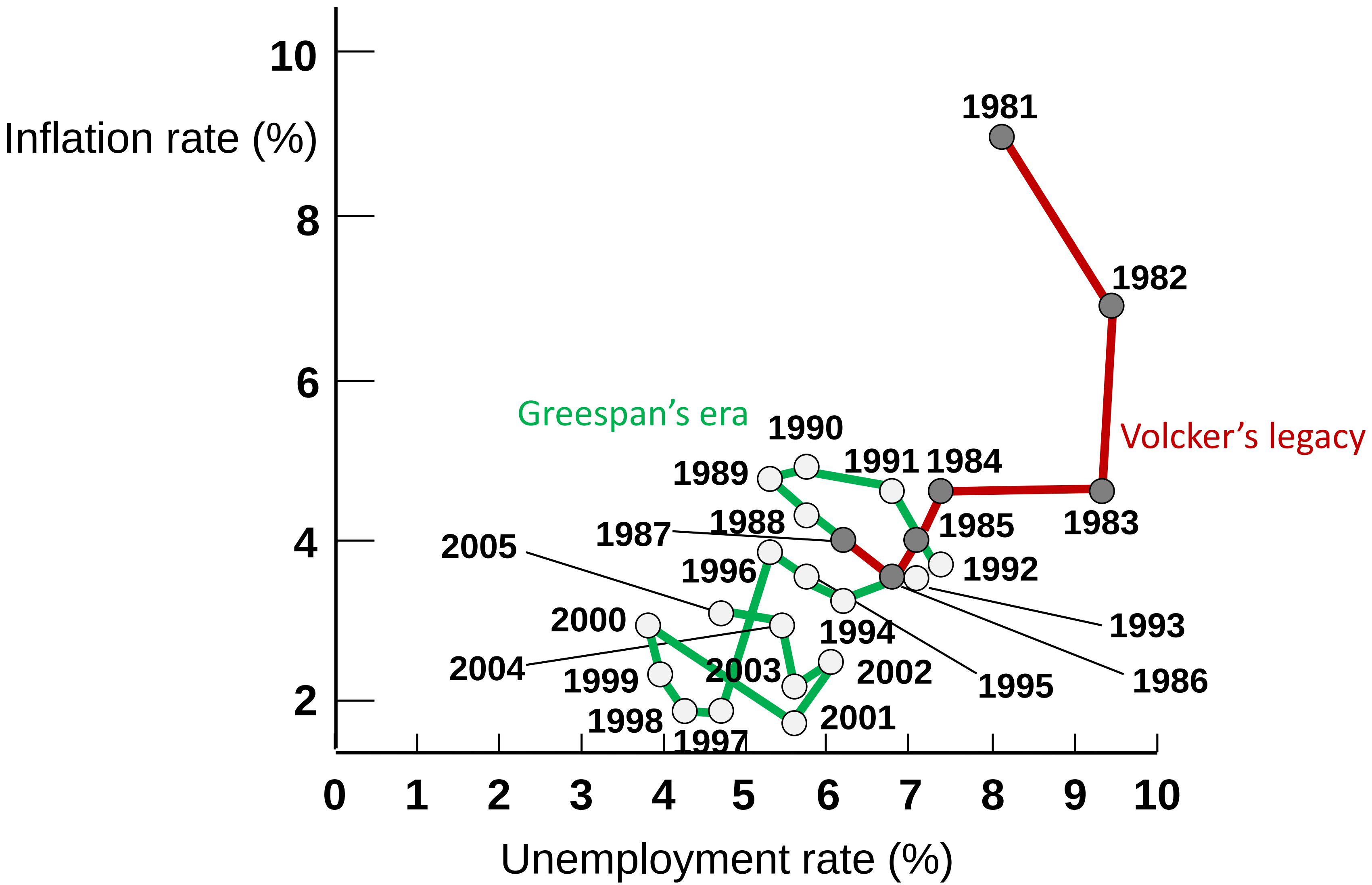
US monetary policy and the Fed

- The Federal Reserve System was founded in 1913
- The Fed as a sort of laboratory:
  - How quickly should it react to economic change?
  - How much money should be supplied?
- In short
  - Treasury supremacy and the parenthesis of the interwar disaster (unable to find a rule)
  - Wrong policies after the recession 1960s (operation twist)?
  - Fuelled inflation in the 1970s
  - In the 1980s: Disinflation and Great Moderation

The 1980s as a turning point for macro–policies

- The 1980s represented a cornerstone for the conduct and understanding of macroeconomic policy. This occurred for two reasons:
  - The beginning of a new era where monetary policy has acquired a position of supremacy over other macroeconomic policies
  - The current conduct of monetary policy is inspired by many principles that have emerged since then. This might be labeled the New Keynesian era

The Great Moderation



Great Moderation

- Reagan nominated Alan Greenspan as a successor to Paul Volcker as chairman of the Board of Governors of the Fed in 1987, he was chairman since 2006
- His name is associated with the Great Moderation
  1. Easily predictable policies (sequence of easy and tightening money)
  2. Low inflation
  3. Modest business cycles

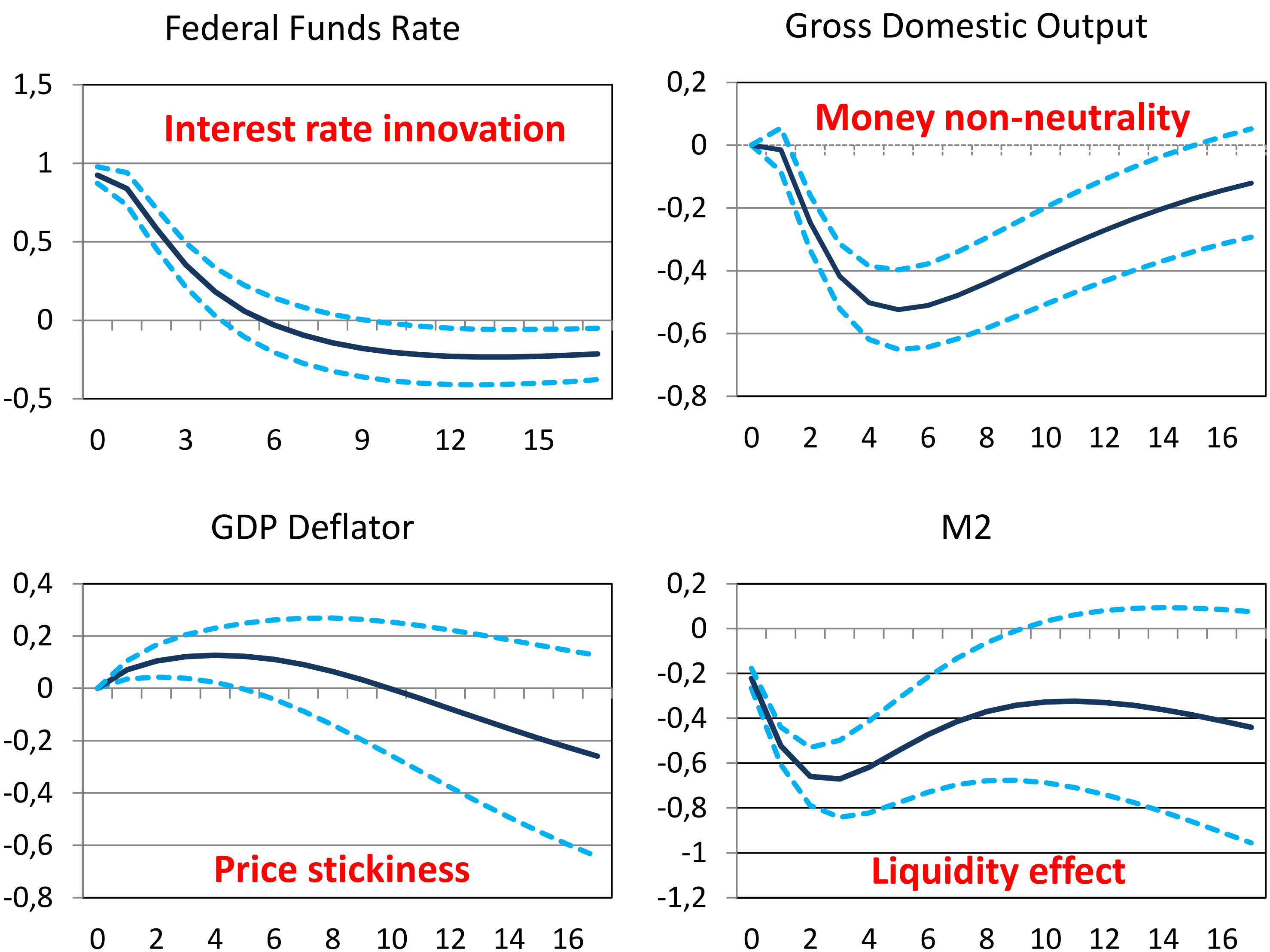
Good policies or good luck?

- Two main explanations of the Great Moderation (drop in the volatility of US output fluctuations):
  - shift in the monetary policy regime (Clarida et al., 1999)
  - drop in the volatility of shocks (Stock and Watson, 2003)
- We can roughly refer to the former as "good policies" and the latter as the "good luck" story

The reconciliation between practice and theory

- The Chicago School was a clear epochal, methodological advance for economic theory
- However, the impact of the theory of rational expectations on the practical conduct of monetary and fiscal policy by policymakers was not immediate
- This theory and its developments were only gradually absorbed through a slow process of adapting the new ideas to the pragmatic needs and practices of economic policy

Monetary policy non-neutrality



Legend: Estimated dynamic response to a monetary shock (based on Christiano *et al.*, 1999).

The New Keynesian approach

- Main ingredients
  - Consumption smoothing (Euler equation)
  - Monopolistic competition and prices stickiness (Rotemberg/Calvo)
- Two-equation framework:

$$\begin{cases} x = x^e - \sigma\left(i - \pi^e - r^N\right) + g & \text{IS curve (Euler equation)} \\ \pi = \beta\pi^e + \lambda x + \varepsilon & \text{Phillips curve (pricing)} \end{cases}$$

- Monetary policy closes the model

Inter–temporal consumption theory

- Diminishing marginal utility of consumption provides an incentive for consumption smoothing over time
- Through the capital market, consumers can save or borrow and thus separate consumption from current income
  - The discounted value of disposable lifetime income (human wealth) plus the initial stock of financial wealth represents the consumer's lifetime budget constraint
  - In optimum the consumer is indifferent between consuming an extra unit today and saving that extra unit in order to consume it tomorrow
  - Current consumption will be proportional with wealth – not income

Euler equation

Inter–temporal utility

$U = u(C) + \beta\, u(C^e)$

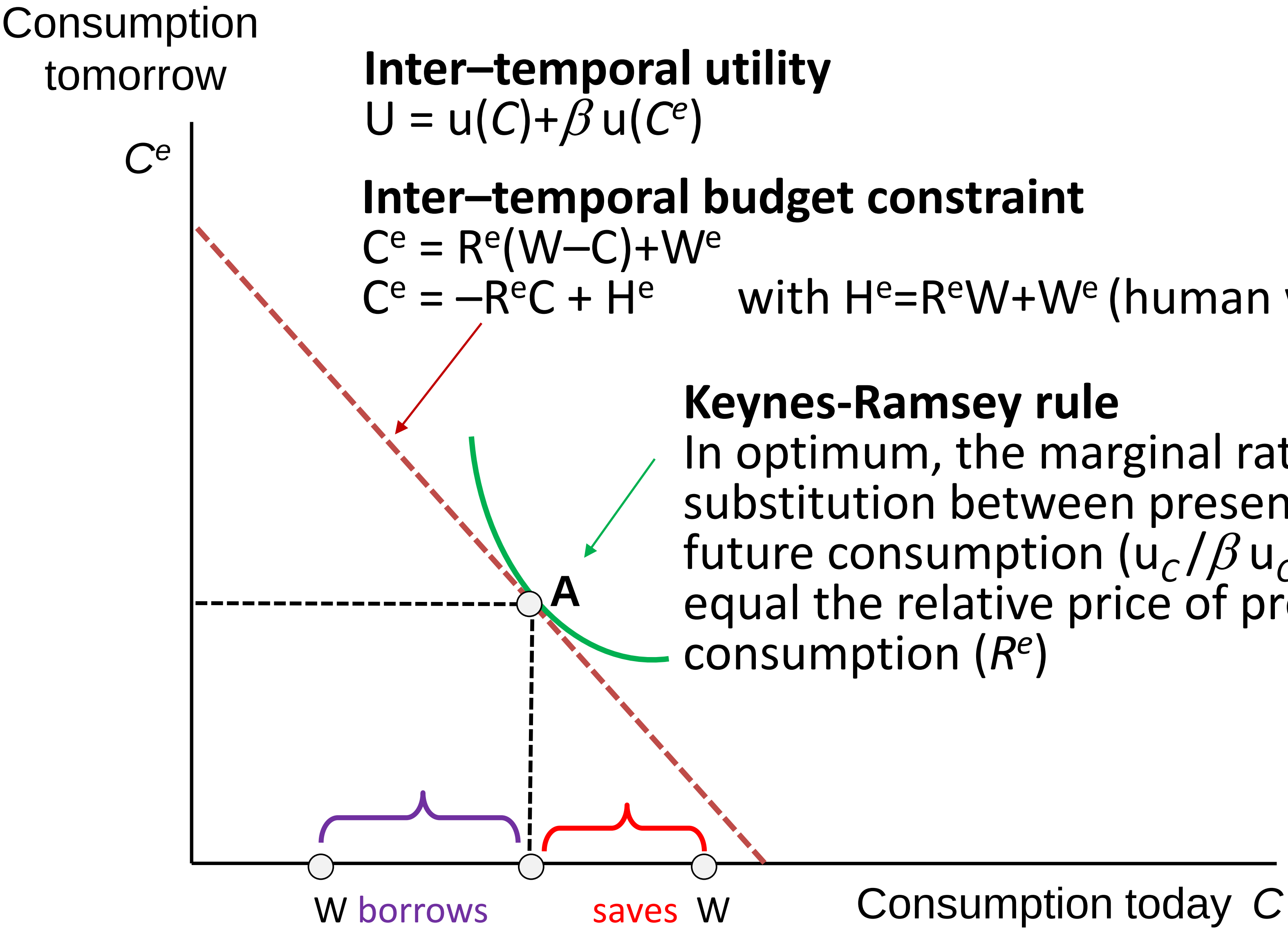
Inter–temporal budget constraint

$C^e = R^e(W - C) + W^e$

$C^e = -R^eC + H^e$ with $H^e = R^eW + W^e$ (human wealth)

Keynes-Ramsey rule

In optimum, the marginal rate of substitution between present and future consumption ($u_C / \beta\, u_{C^e}$) must equal the relative price of present consumption (R^e)



Consumption smoothing

- Log linearization of the Euler equation around the steady state (we use $Y=C+G$) leads to

$$x = x^e - \sigma\left(i - \pi^e - r^N\right) + g$$

- Consumption is smoother than income at given interest rate. It faces diminishing returns in any period, then consumers have an incentive to allocate temporary increases in income to all periods
- New Keynesian IS differs from the old fashion one (IS/LM), the transmission occurs from *r*→*S*→*I* (Fischer) instead of *r*→*I*→*S* (Keynes)

Price setting

- Firms set price to apply a mark up on marginal cost (maximize profits). Thus, under flexible price

$$P = \mu MC$$

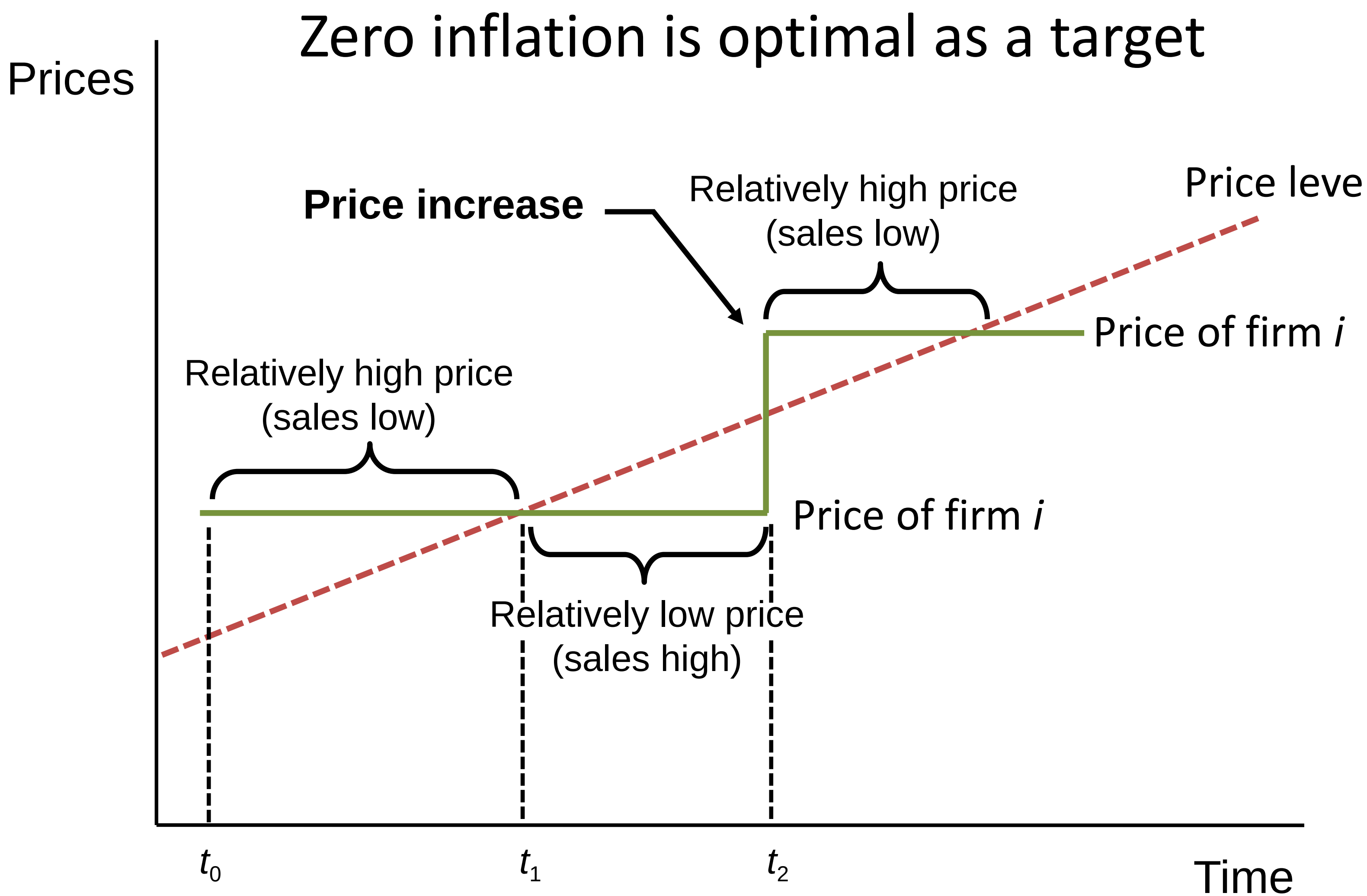
- But if they knows, they could be not able to reset prices in the future the optimal price today should be optimal tomorrow too, so

$$P = \mu\left(MC + \beta MC^{e}\right)$$

- Current MC is a function of the current output gap, future MCs are captured by future prices. Thus

$$\pi = \beta\pi^{e} + \lambda x$$

Distortions associated with nominal rigidities



Policy transmission mechanism

- The New Keynesian policy transmission mechanism can easily be described by the following relationship:

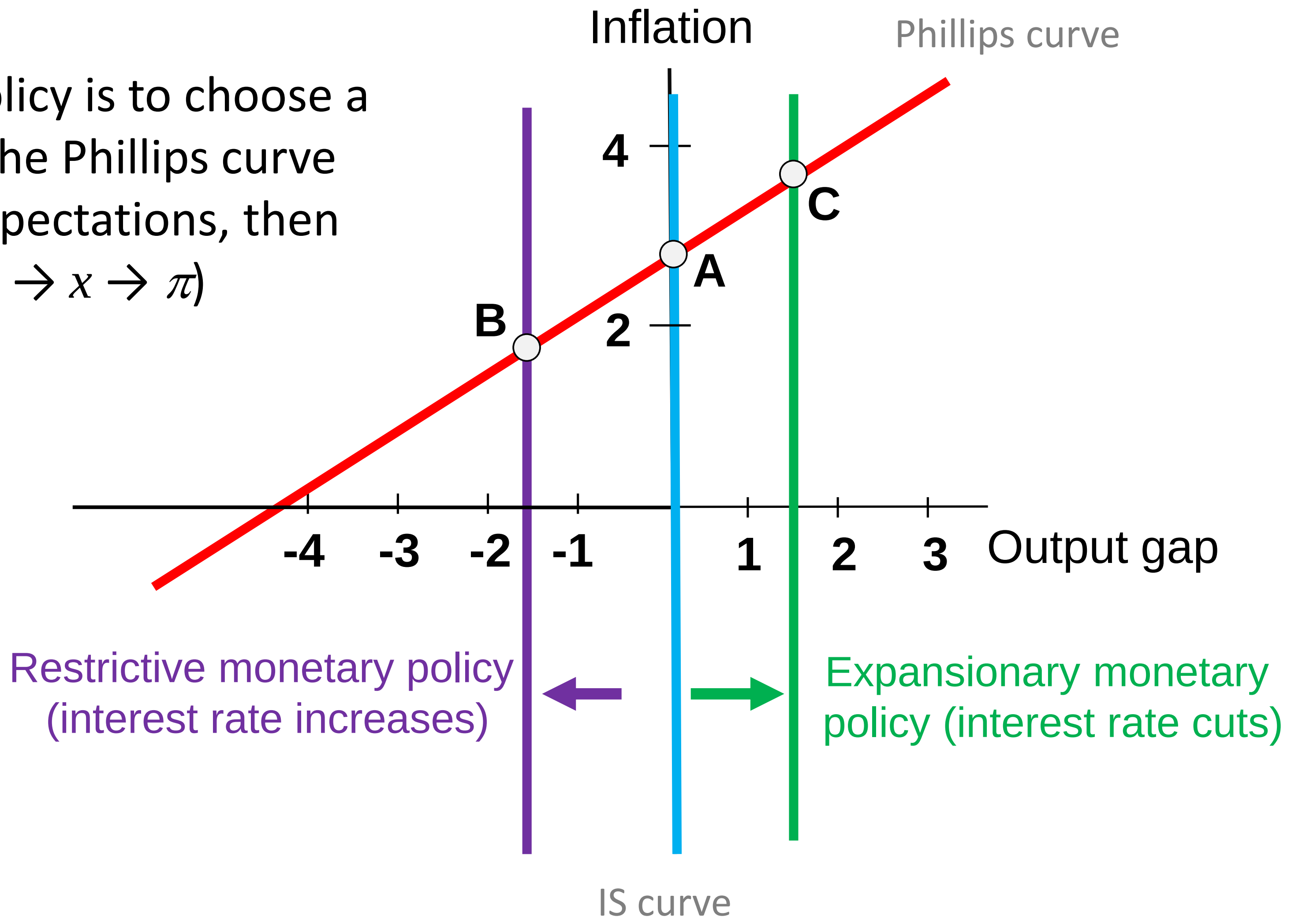
$$i \Rightarrow by\ \text{IS curve} \Rightarrow x \Rightarrow by\ \text{Phillips curve} \Rightarrow \pi$$

- Remember

$$\begin{cases} x = x^e - \sigma\left(i - \pi^e - r^N\right) + g & \text{IS curve} \\ \pi = \beta\pi^e + \lambda x + \varepsilon & \text{Phillips curve} \end{cases}$$

Transmission mechanism

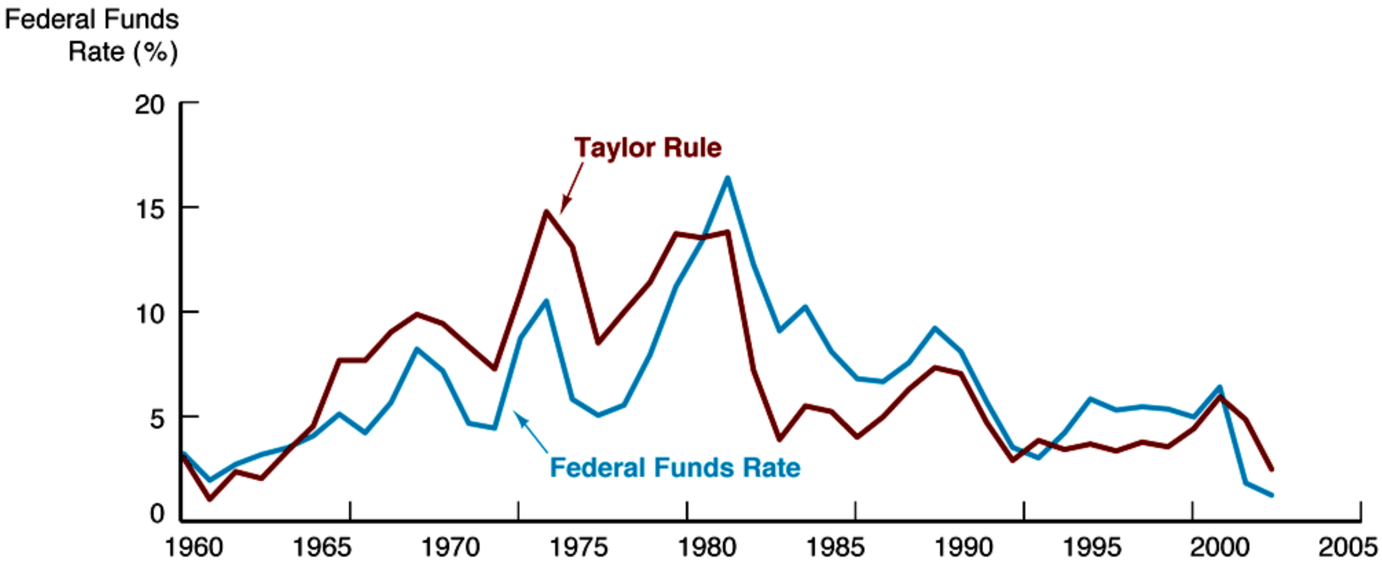
Monetary policy is to choose a point along the Phillips curve (given the expectations, then one-by-one $i \rightarrow x \rightarrow \pi$)



How to specify monetary policy?

- Instrumental rules, e.g. monetary policy feedback rule (Taylor rule):

$$i = a_{\pi}\pi + \alpha_{y}x$$



The Taylor rule

- Two-equation framework augment with a Taylor rule:

$$\begin{cases} \pi = \beta\pi^e + \lambda x + \varepsilon \\ x = x^e - \sigma\left(i - \pi^e - r^N\right) + g \\ i = r^N + \alpha_\pi \pi + \alpha_x x + \varepsilon_i \end{cases}$$

Pre– and post–Volcker policies

- Goodfriend's "inflation scares"
- The transition from the Great Inflation to the Great Moderation represented an important change in the policy regime Clarida *et al*. (2000)
  - Before October 1979, US monetary policy had been so weakly counter–inflationary that it made the economy move inside what is technically called the "indeterminacy region"
  - After, this does no longer occurred

The Taylor Principle

- Taylor principle: To stabilize inflation, central banks must raise nominal interest rates by more than any rise in expected inflation, so that *r* rises when π rises
- Schematically, if a central bank allows *r* to fall when inflation expectations rises, then inflation rises:

$$\begin{cases} x = x^e - \sigma\left(i - \pi^e - r^N\right) + g \\ \pi = \beta\pi^e + \lambda x + \varepsilon \end{cases}$$

An alternative: Optimal monetary policy

- In the tradition of Tinbergen and Theil targets and instruments problem
- The policy problem is to choose a time path for the instrument to engineer time paths of the target variables that maximize an objective function, subject to the constraints on behavior
  - The optimal feedback rule generally relates the instrument to the state of the economy
  - LQ problem yields a certainty equivalent decision rule for the path of the instrument

Supply shock (discretion)

- Optimal policy solves:

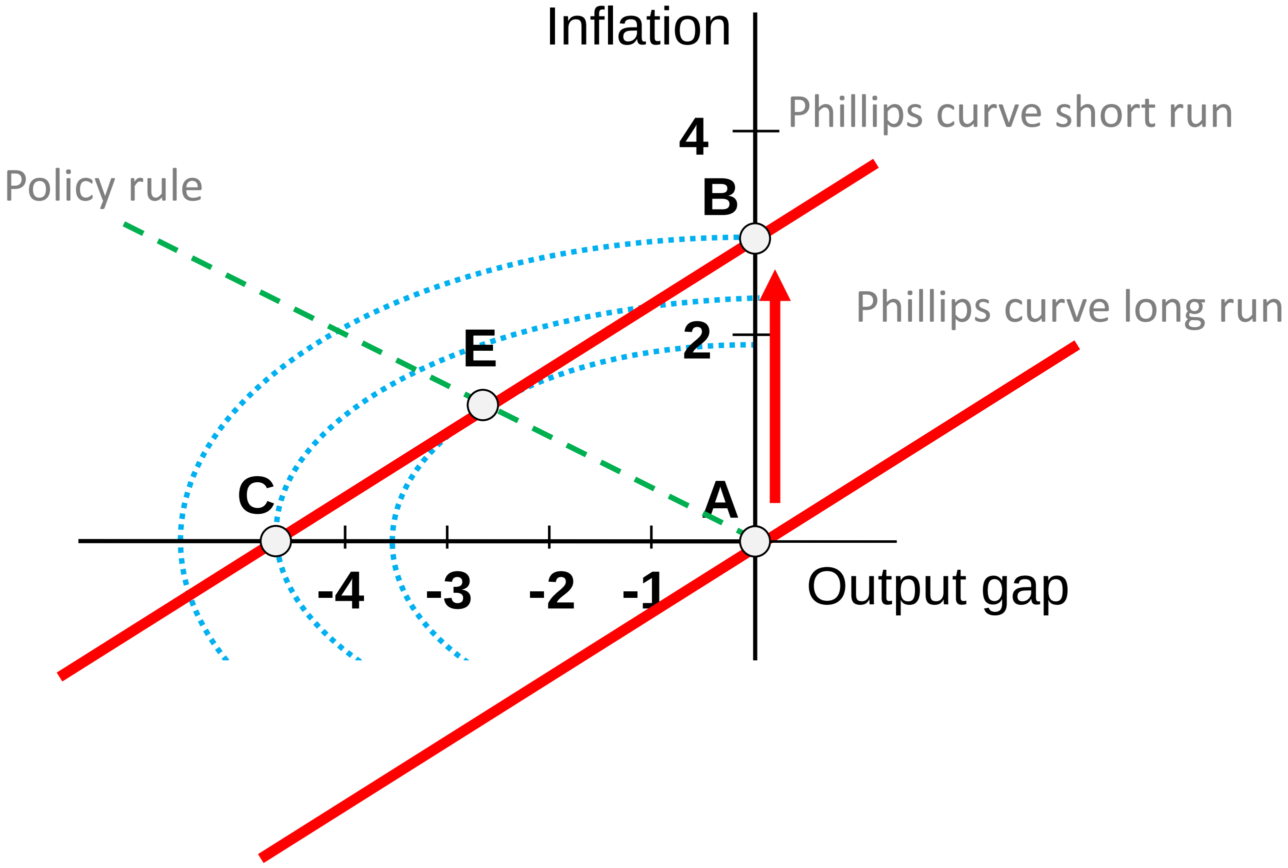
$$\max L = -\frac{1}{2}\left(\pi^2 + \alpha x^2\right) + \mathit{future}...$$

$$s.t.\quad \pi = \beta\pi^e + \lambda x + \varepsilon$$

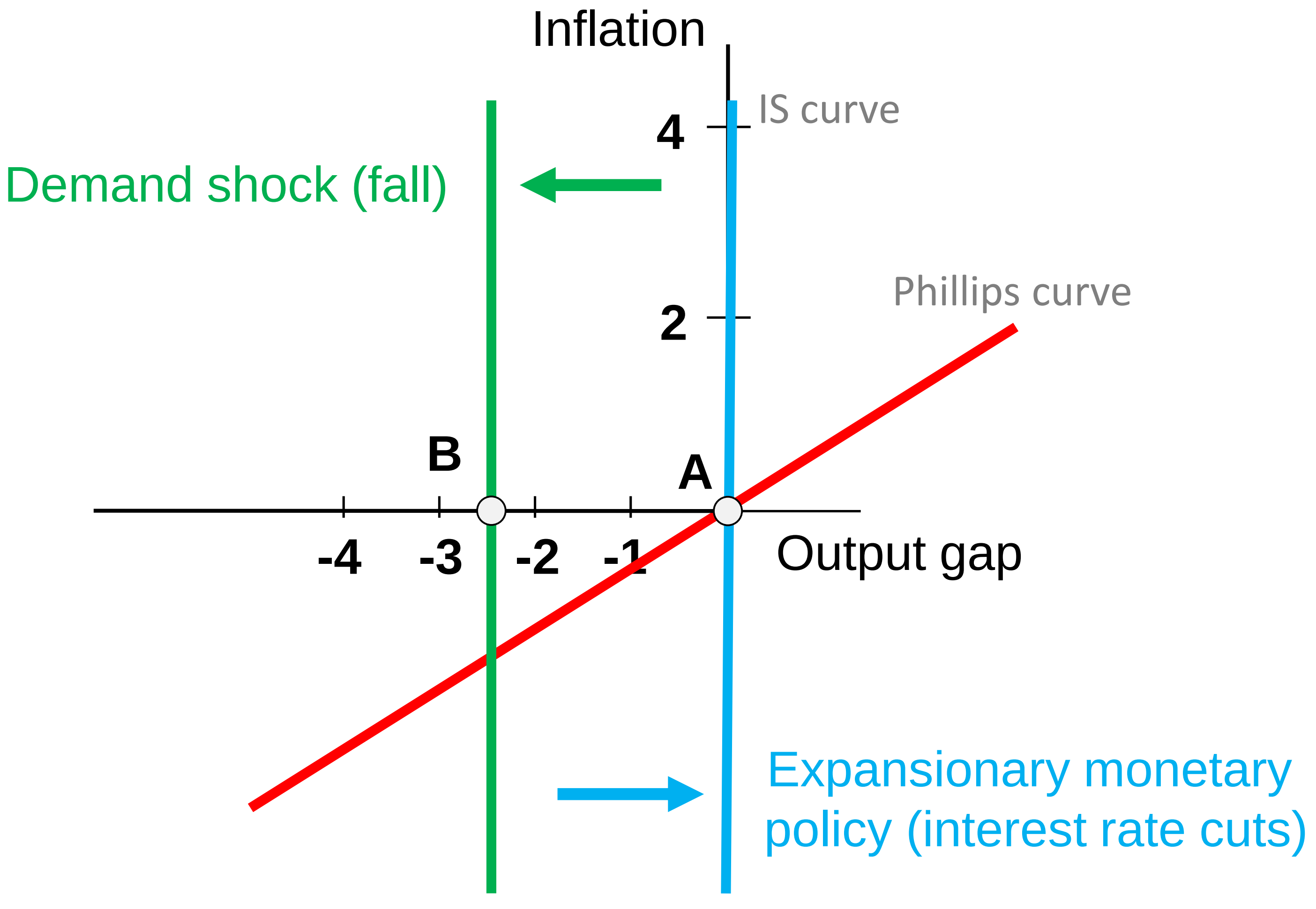
- It requires to "lean against the wind":

$$\pi = -\frac{\alpha}{\lambda} x$$

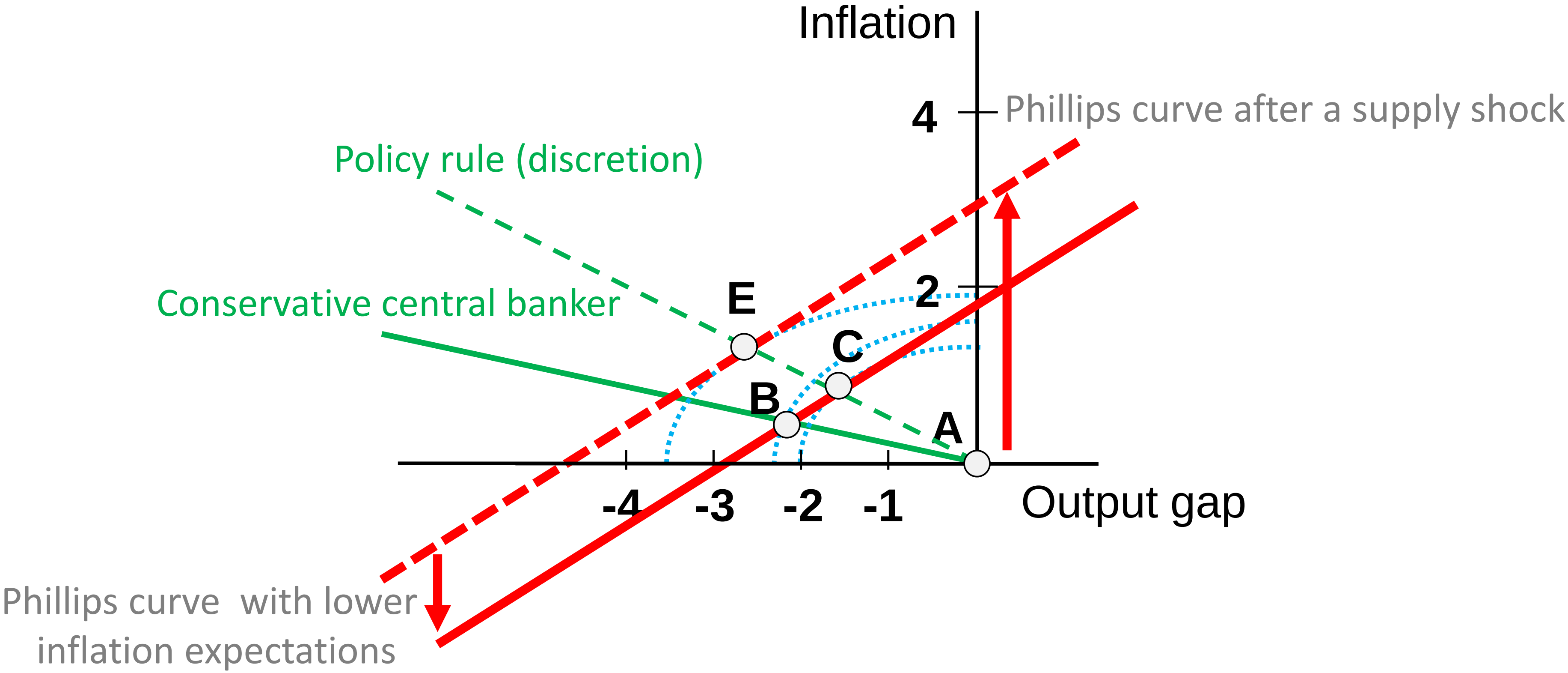
Supply shock (discretion)



Demand shock



Conservative central banker and persistence



Lesson: in forward-looking models, it's important to manage expectations

Inflation bias

- Optimal policy solves:

$$\max L = -\frac{1}{2}\left(\pi^2 + \alpha\left(x+k\right)^2\right) + future...$$

$$s.t.\;\; \pi = \beta\pi^e + \lambda x + \varepsilon \;\text{ and }\; \varepsilon = \rho_\varepsilon \varepsilon_{-1} + e_\varepsilon \;\text{ AR(1)}$$

- It requires to "lean against the wind":

$$\pi = -\frac{\alpha}{\lambda}\left(x+k\right)$$

- It follows

$$\pi = \frac{\alpha}{\alpha\left(1-\beta\rho_\varepsilon\right)+\lambda^2} e_\varepsilon + \frac{\alpha}{\lambda} k$$

Commitment solution

- Optimal policy maximizes:

$$\mathcal{L} = -\frac{1}{2}\left(\pi^2 + \alpha\left(x+k\right)^2\right) - \Lambda\left(\beta\pi^e + \lambda x + \varepsilon - \pi\right) +$$

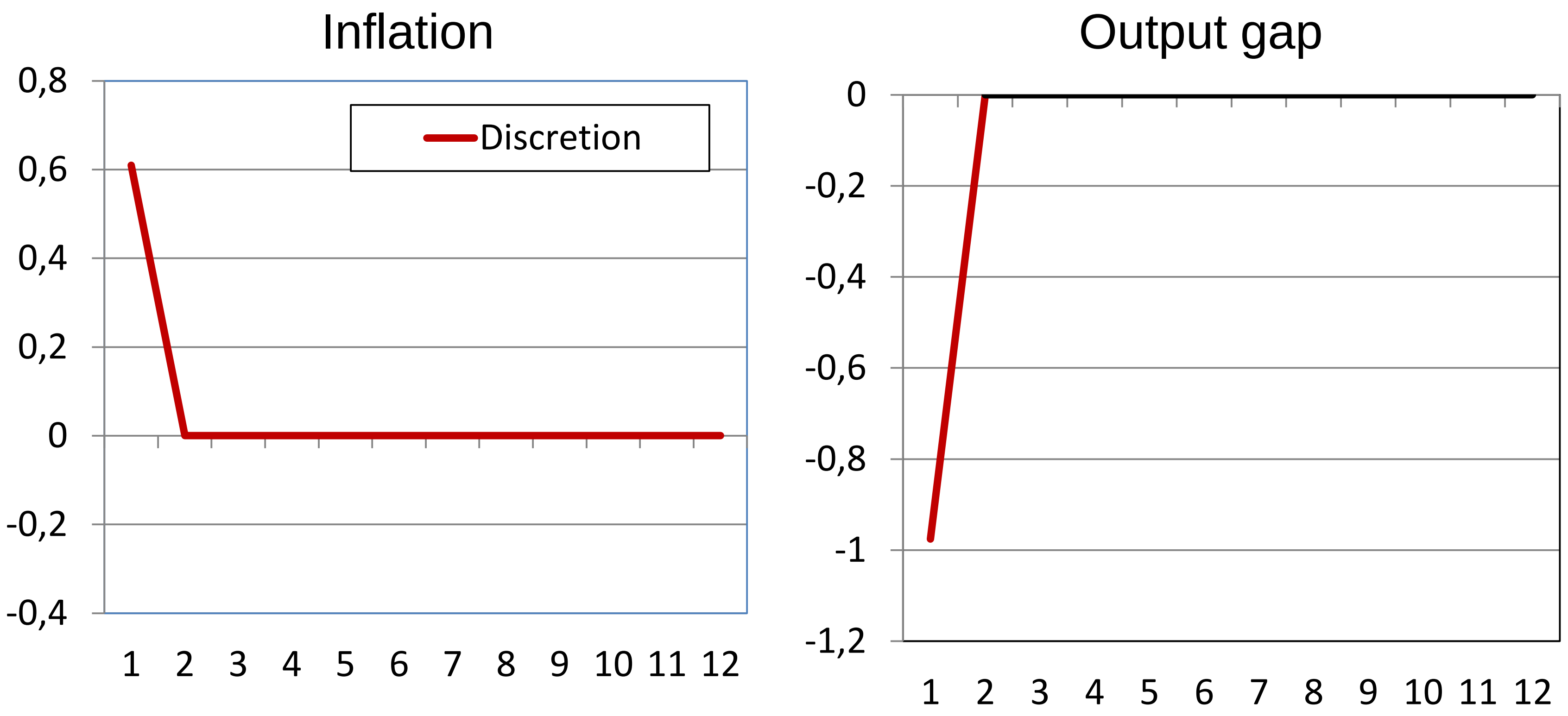
$$-\frac{\Lambda_{-1}}{\beta}\left(\beta\pi + \lambda x_{-1} + \varepsilon_{-1} - \pi_{-1}\right) + \ldots$$

$$s.t.\quad \pi = \beta\pi^e + \lambda x + \varepsilon$$

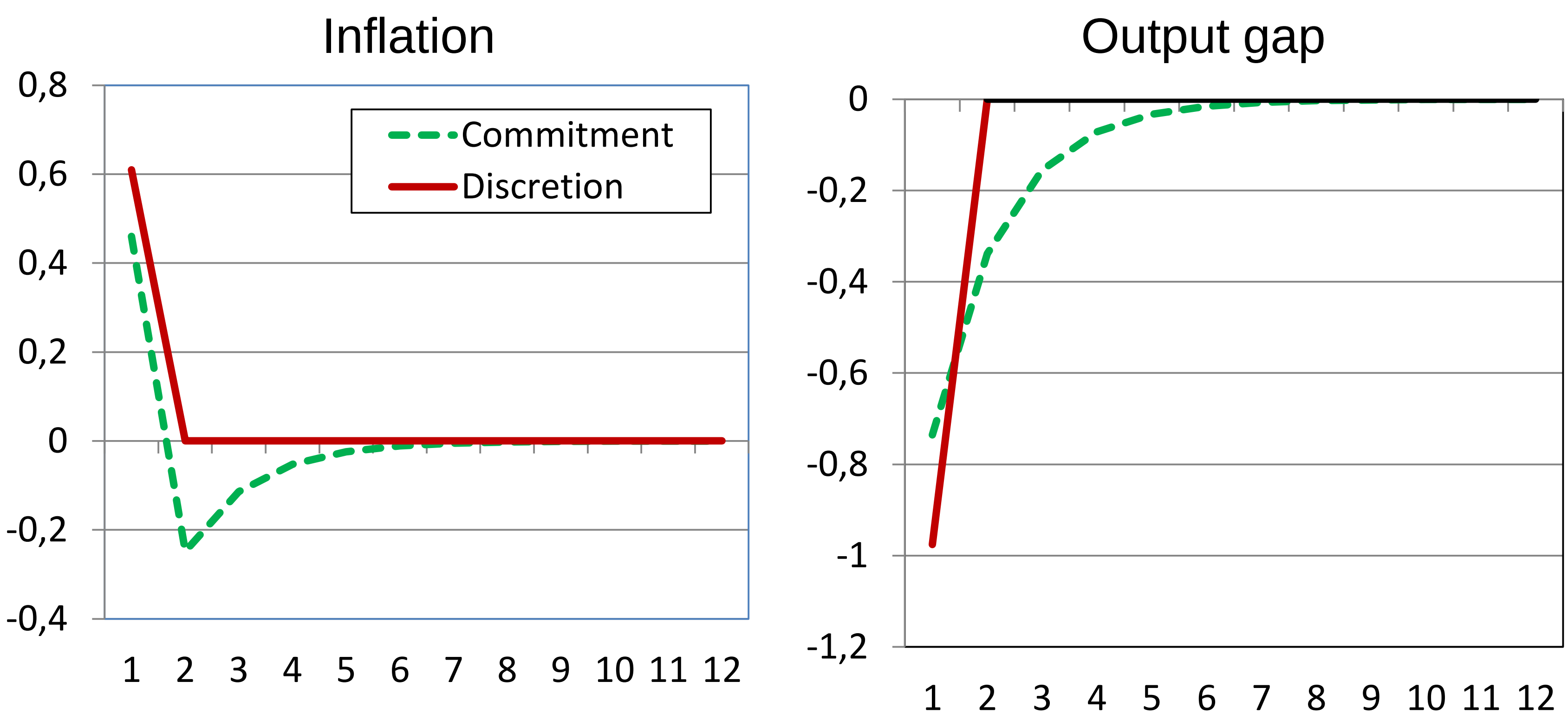
- It requires (inertial rule):

$$\pi = -\frac{\alpha}{\lambda}\left(x - x_{-1}\right)$$

Timeless commitment vs. discretion



Timeless commitment vs. discretion



stabilization bias

Continuity and innovations

- After Lucas, almost no economic school can ignore the fact that private sector behavior depends on people's expectations of what the policymaker is going to do
  – The theory of rational expectations
  – Game theory (New Theory of economic Policy)
- The global financial crisis that began in 2007 and the Great Recession that followed have prompted an intense debate on the DSGE New Keynesian approach