

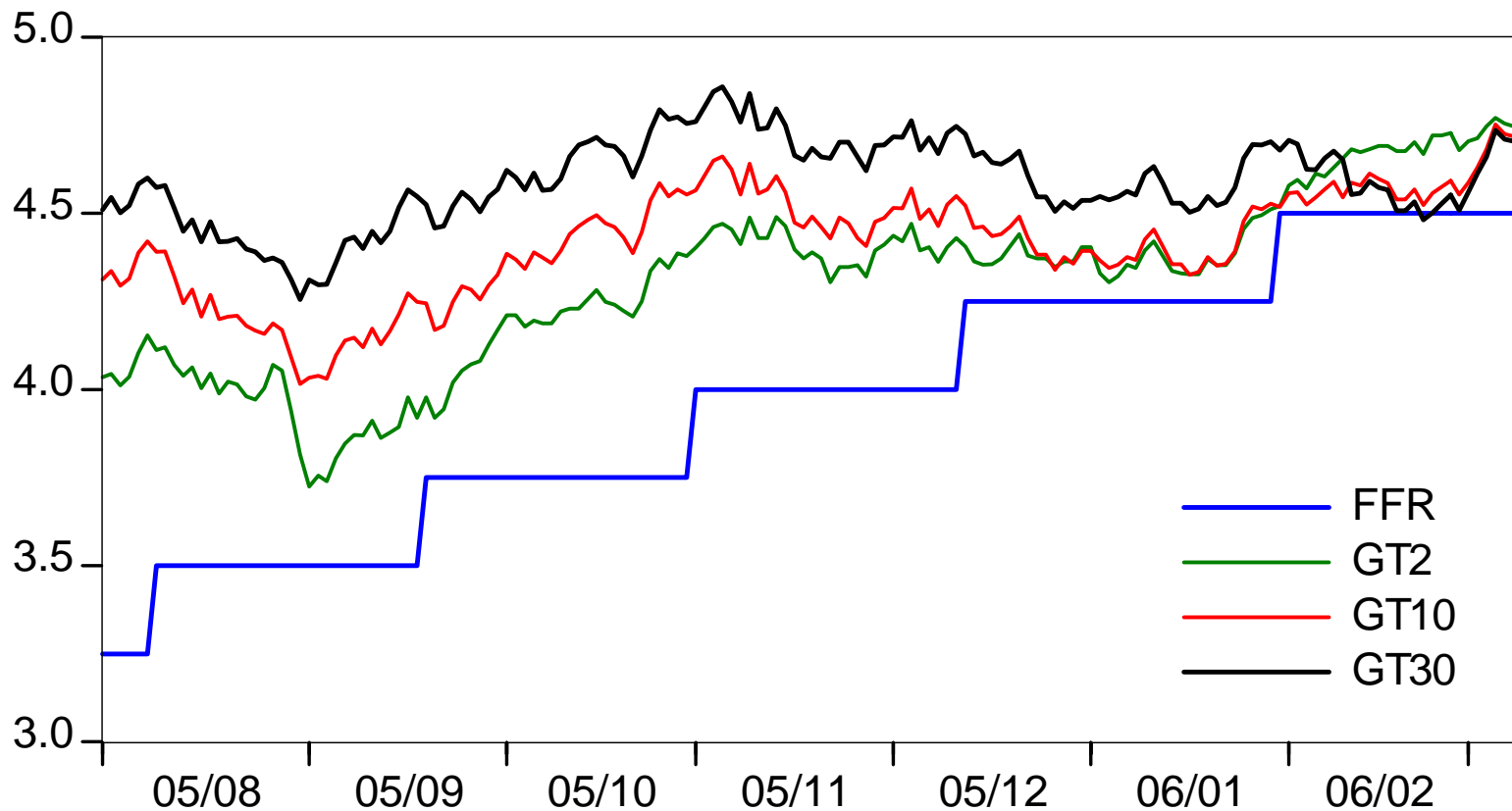
Applying Macroeconomics in the global financial market

Beat the market with FED

Kao Yi-Cheng

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Where are market opportunities?



What is the FFR?

- ◆ **Federal Funds Rate (FFR)**

An overnight interest rate that the FOMC sets a target for it to conduct the monetary policy.

- ◆ **Federal Open Market Committee (FOMC)**

Holds 8 times per year and consists of 7 governors and 5 presidents of the Federal Reserve Banks.

- ◆ **The Goal of FOMC**

Stable Price and Sustainable Growth

Why does the FFR matter?

- ◆ **Useful to anchor inflation expectation**

The market inflation expectation over last two decades is successfully anchored by the FOMC through changing FFR target.

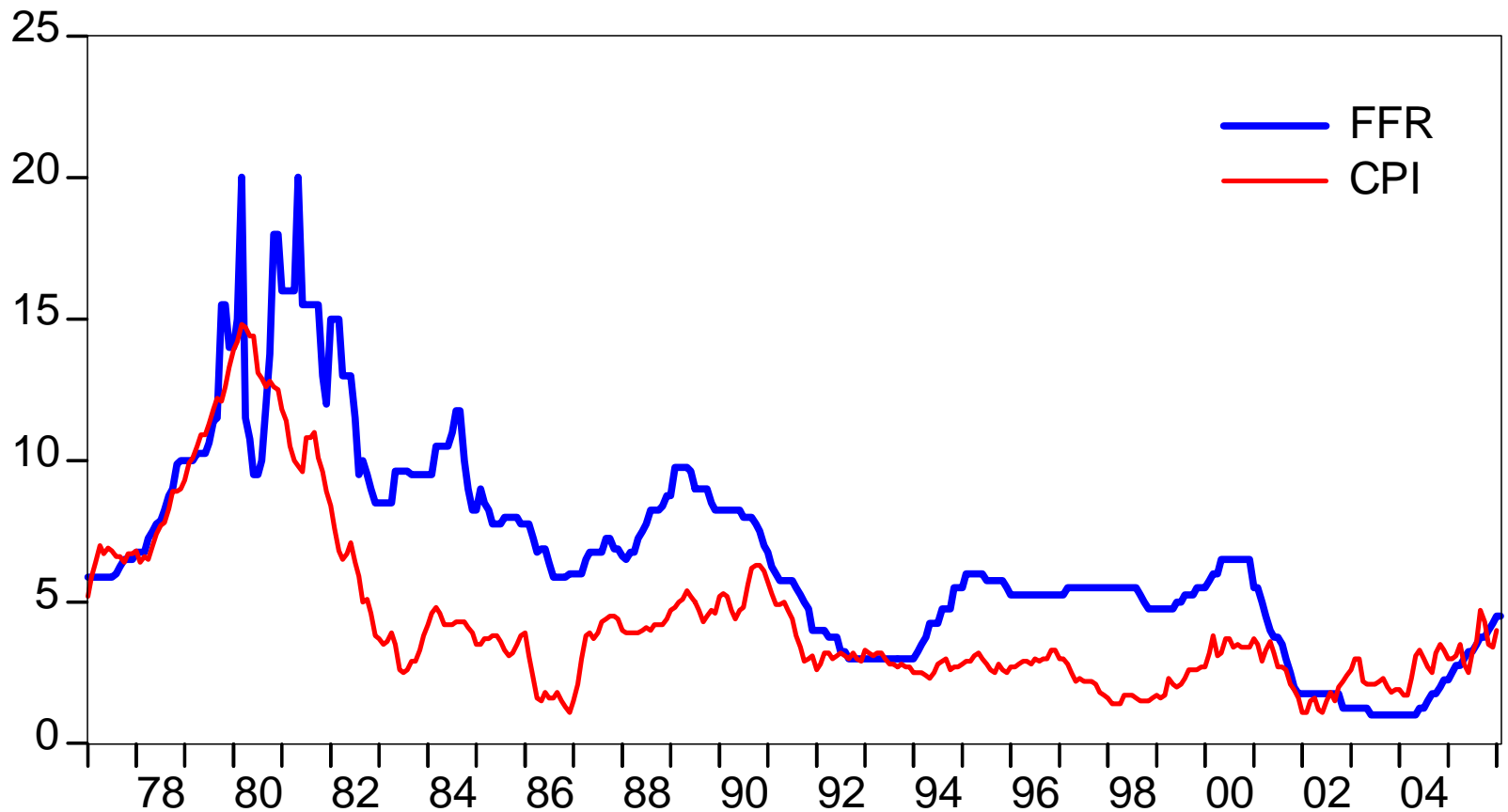
- ◆ **benchmark rate in the bond market**

Normally, the actual FFR and expectations about it determine the level of yield curve in the treasury bond market.

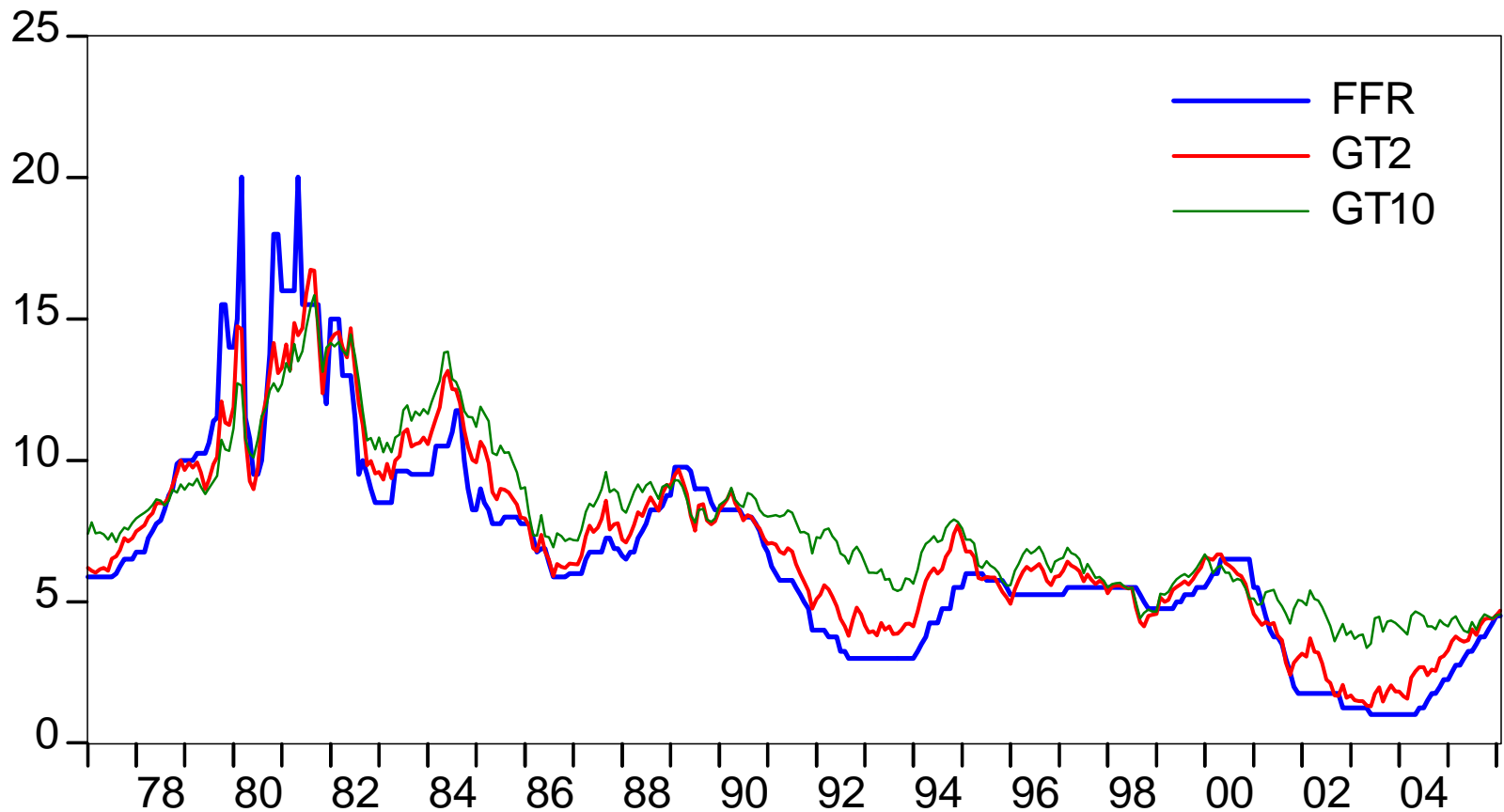
- ◆ **Crucial to foreign exchange market**

Interest rate difference between central banks is a main theme in the FX market, particularly last year.

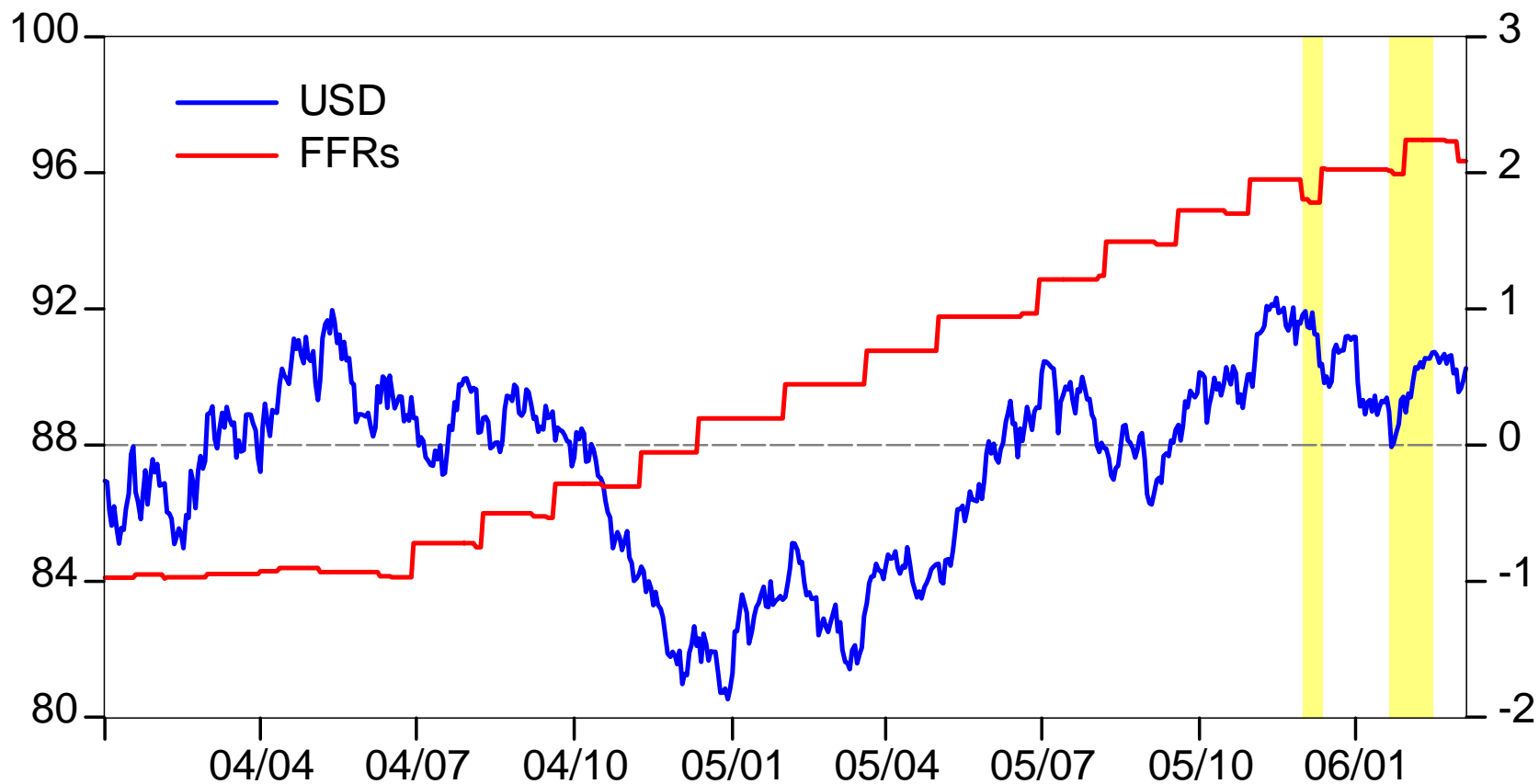
Inflation is anchored by FFR



Benchmark in the bond market



Interest rate difference and USD



Is the FFR predictable?

- ◆ John Taylor (1993) proposed a simple rule:

$$r = p + 0.5y + 0.5(p - 2) + 2$$

Where r is the FFR,

p is the inflation rate,

y is the percent deviation of real GDP trend.

That is, $y = 100(Y - Y^*) / Y^*$,

Y is real GDP, and

Y^* is trend real GDP.

Taylor found the rule works well!

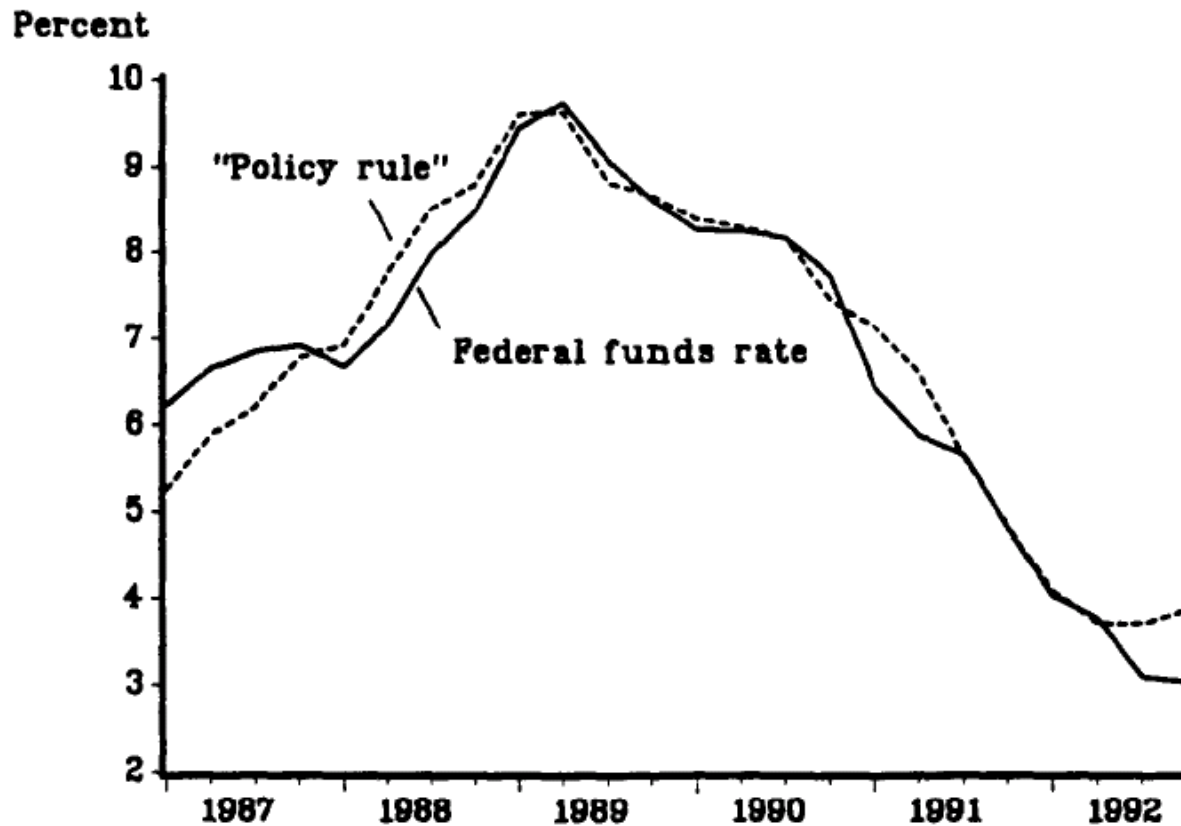
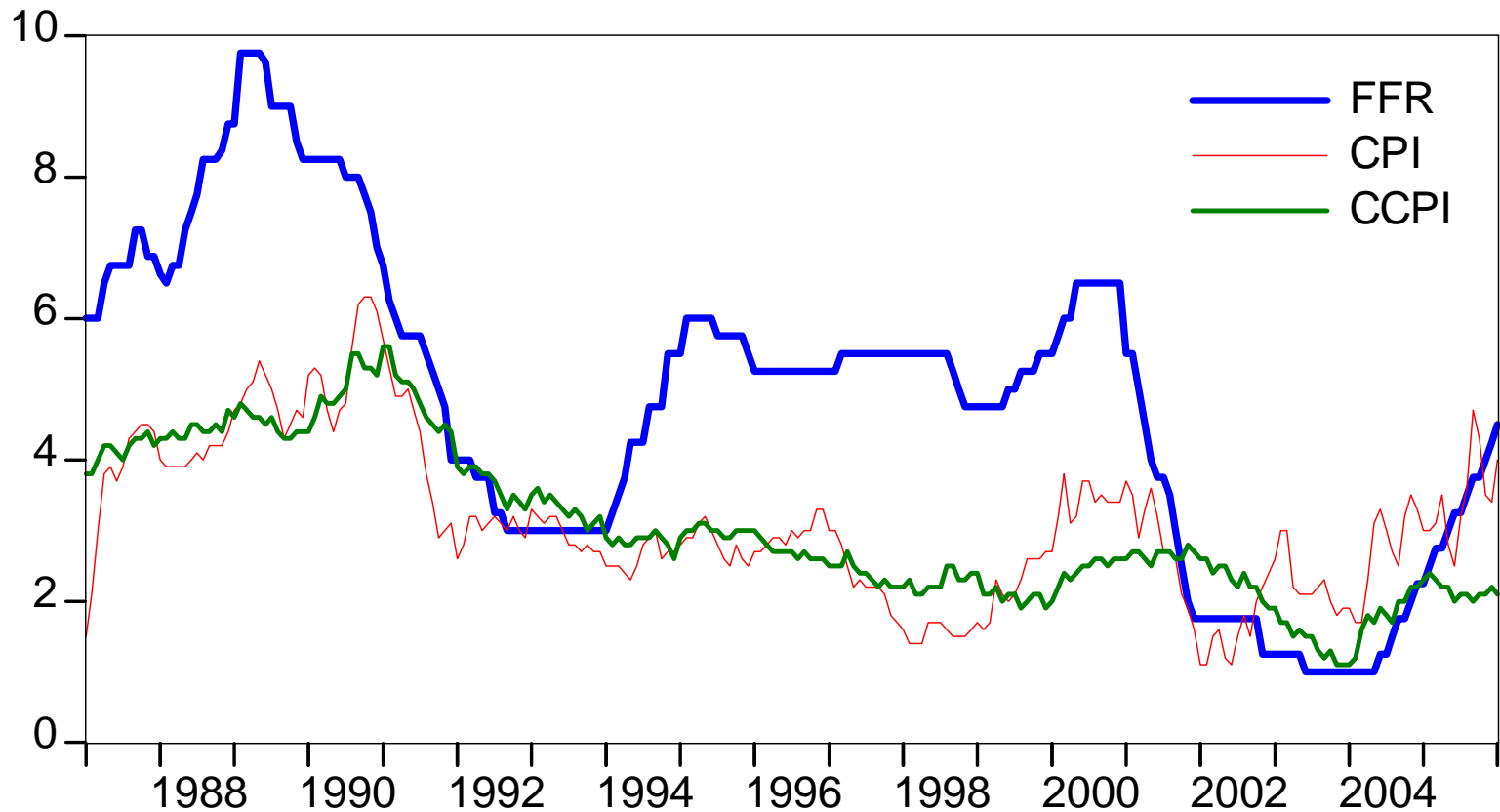


Figure 1. Federal funds rate and example policy rule.

Problems in practice...

- ◆ **Is 2% of CPI growth rate a suitable target?**
- ◆ **What is the level of equilibrium real rate?**
- ◆ **GDP is a lag quarterly data and usually revised.**

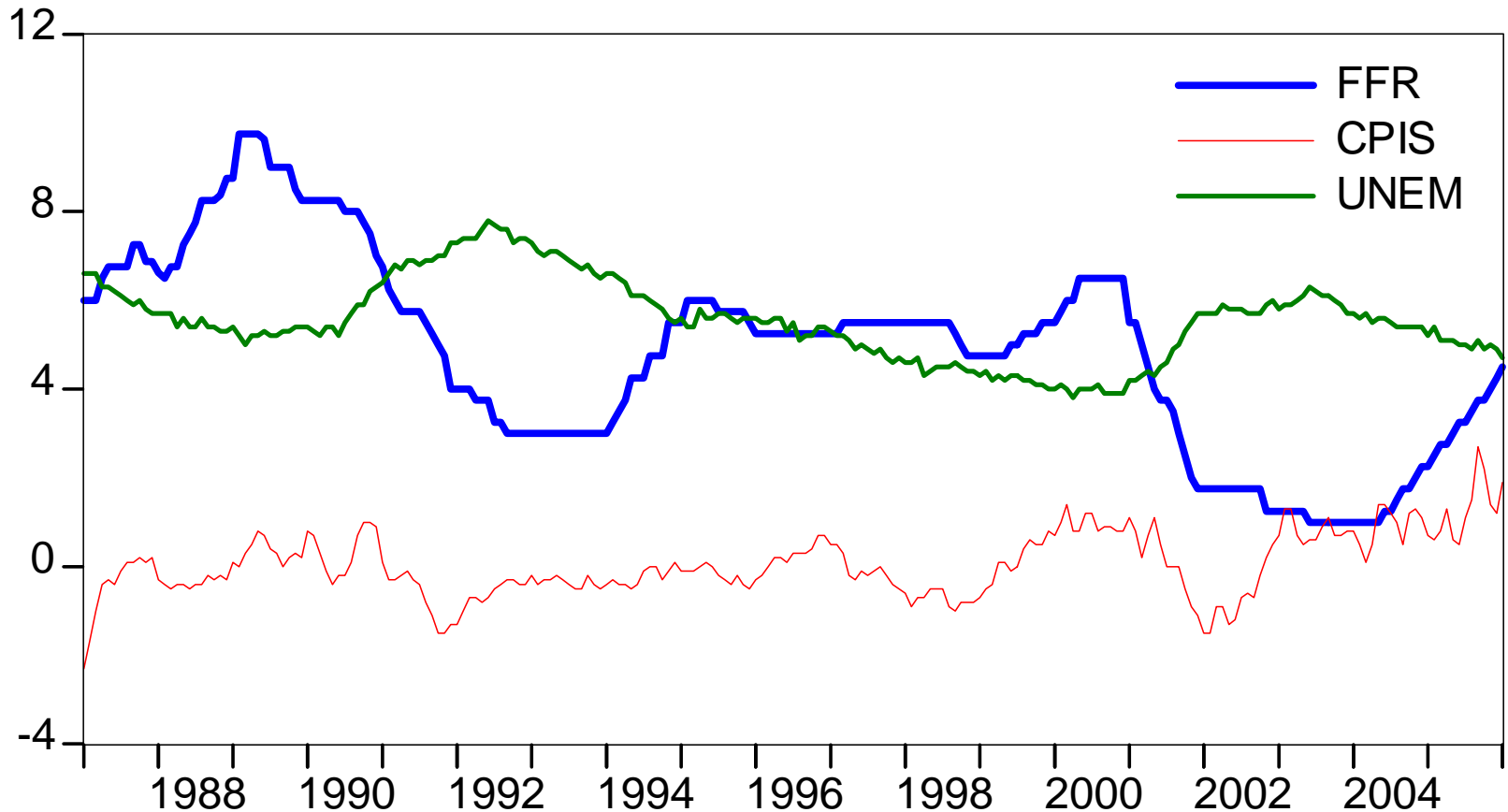
Core CPI is also crucial



Searching a proxy for GDP

- ◆ Unemployment rate is a good proxy for GDP to state the current state of the economy since
 - (1) It is not revised,
 - (2) It is regularly reported every month,
 - (3) FED use it to predict inflation pressure,
 - (4) It has been discussed extensively in the literature.

Do you see the key point?



Our Modified Taylor Rule

- ◆ We proposed a modified Taylor-type rule:

$$r = i^* + p(\diamond) + b(u - u^*)$$

Where r is the FFR,

i^* is the equilibrium real interest rate (Wicksell, 1898),

$p(\diamond)$ is a function of price indices,

b is a coefficient,

u is the actual unemployment rate,

u^* is the non-accelerating inflation rate of unemployment (NAIRU).

Difficulties to estimate i^* and u^*

- ◆ We rearrange our modified Taylor rule as

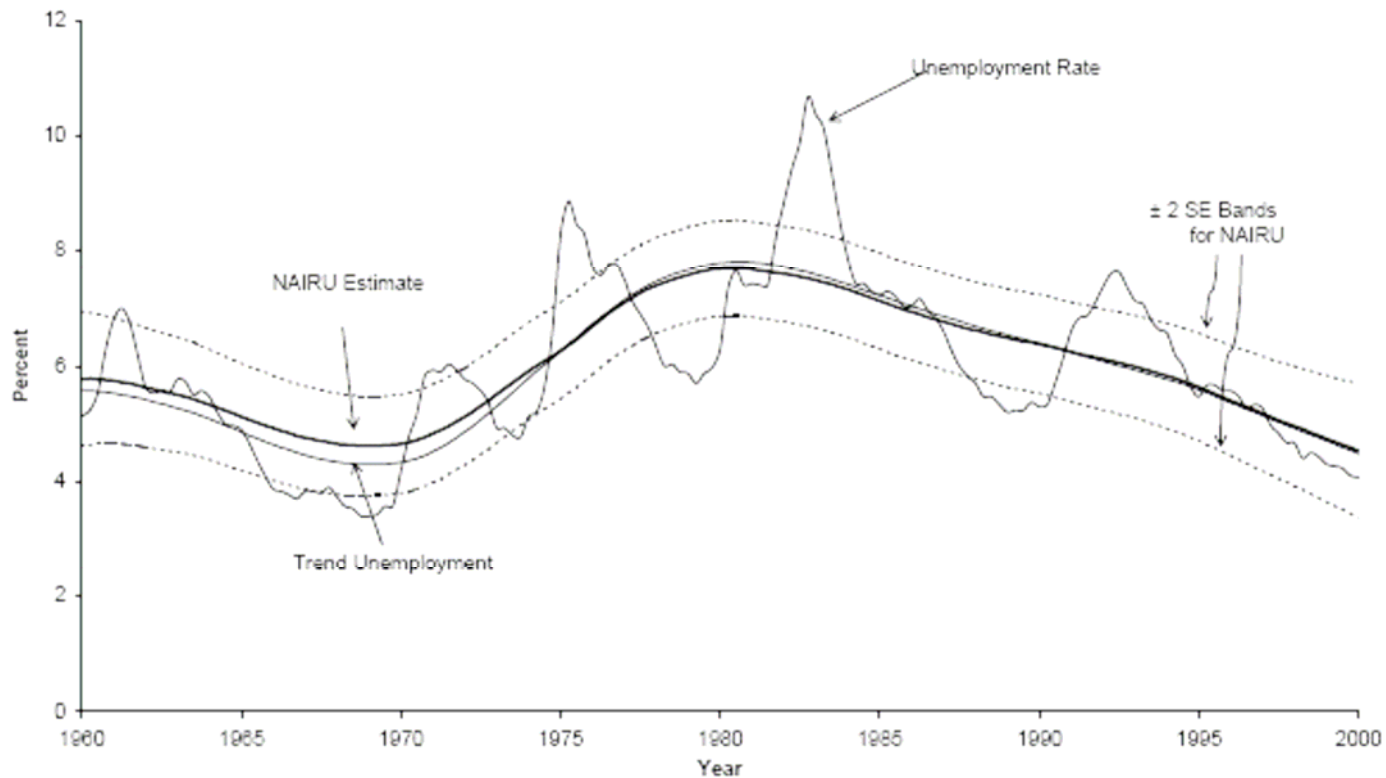
$$r = i^* - \mathbf{b}(u^*) + p(\diamond) + \mathbf{b}(u).$$

Let $i^* - \mathbf{b}(u^*) = \mathbf{a}(\diamond)$ and obtain

$$r = \mathbf{a}(\diamond) + p(\diamond) + \mathbf{b}(u).$$

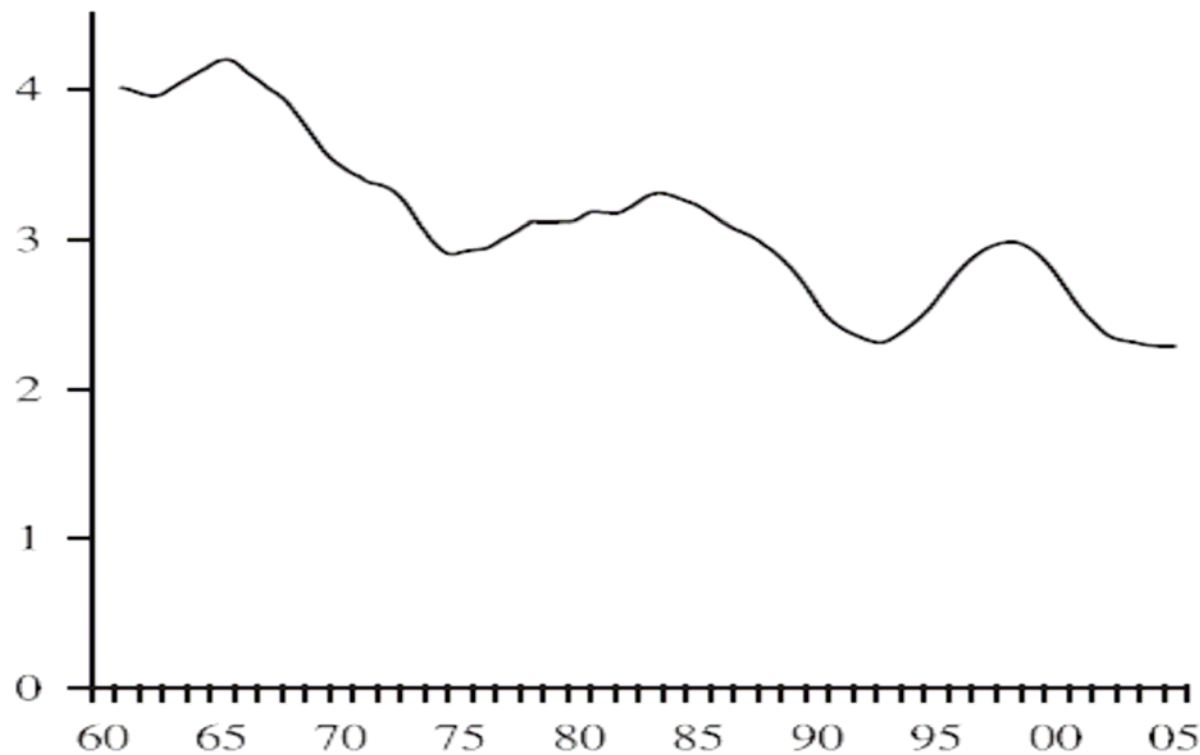
Notice that $\mathbf{a}(\diamond)$ is not a constant term since i^* and u^* are determined by real factors of the economy, such as time preference rate, risk attitude, labor productivity and supply shocks, etc.

NAIRU is dropping after 1980



For example, Ball and Mankiw(2002), Staiger, Stock and Watson(2001)

Implied i^* is more volatile



Wu (2005) estimate it by the model of Laubach and Williams (2003)

Some ways to resolve them

- ◆ **Hodrick-Prescott filter**

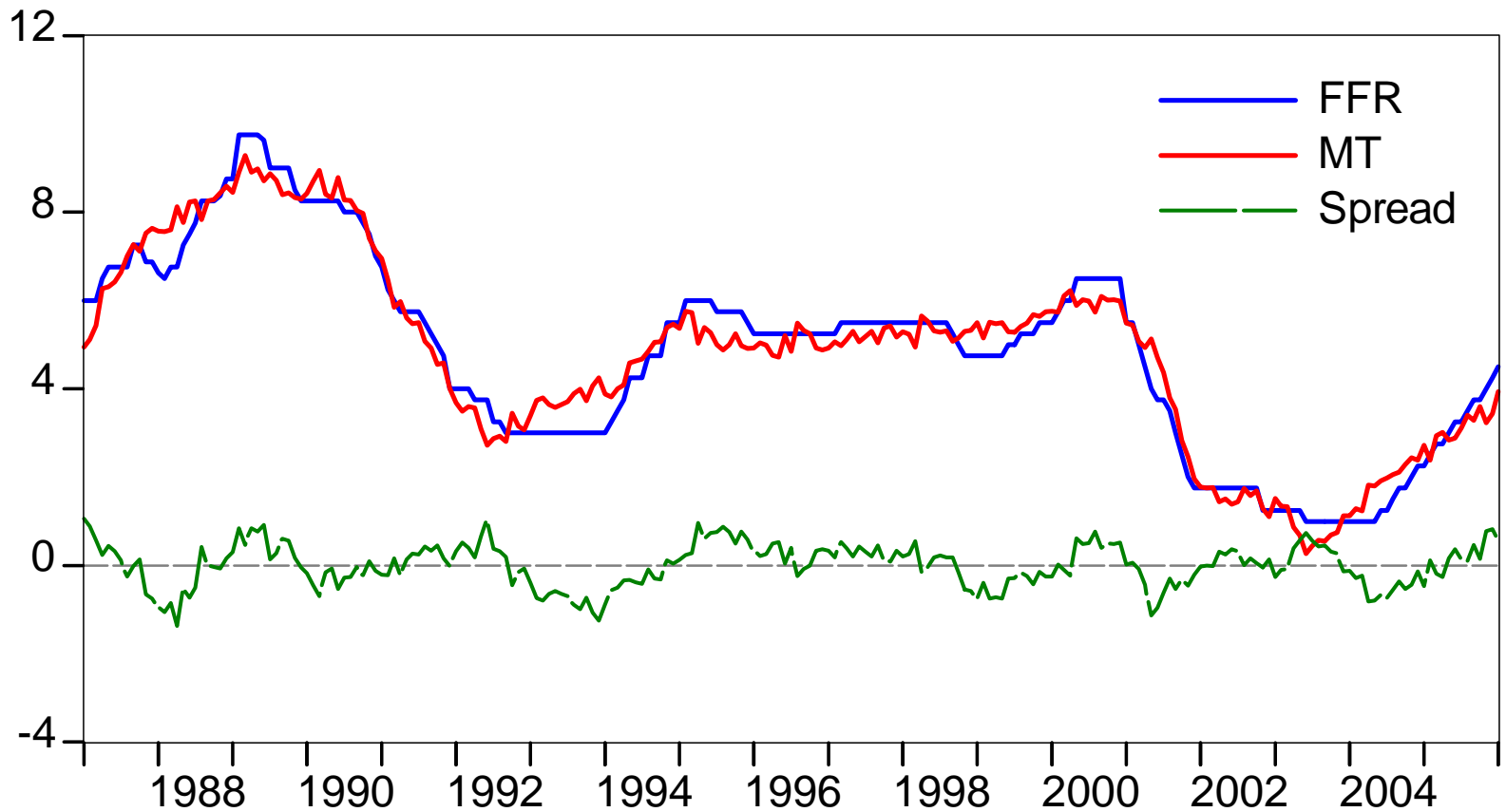
A generalization of a linear time trend that allows the slope of the trend to change gradually over time.

- ◆ **Calibration approach**

Find out the fixed point as the equilibrium path and calibrate the model to match the real world data.

- ◆ **Econometric methods**

Our best result so far



Conclusion and extension

- ◆ **FOMC will raise FFR to 5% this year**

A declining unemployment rate will be a key point as well as oil prices.

- ◆ **AFTER 5%, FFR is data-dependant**

There are many uncertainties in the second half of this year. We think 5% of FFR is optimal.

- ◆ **Inflation and unemployment forecasts**