

“Deficits and Inflation: U.S. Inflation Surges Since the Fed’s Birth, 1914–2025”

Gauti B. Eggertsson

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Overview

1. The map and the territory: Inflation surges since 1914-2025.
2. What is the cause: Demand-Supply?
 - **Question about mechanism not cause**
 - Today questions: Fed can always raise rates (unlike ZLB). *Why did it not do it?*
 - ***Inflation is always and everywhere a monetary phenomena***, regardless of sources
3. Does raising interest rate reduce inflation?
4. Revisiting the Fiscal Theory of the Price Level
5. Historical Narrative of the 6 inflation surges in US Economic history. Address **WHY** question.



Precise definition can sometimes be hard!



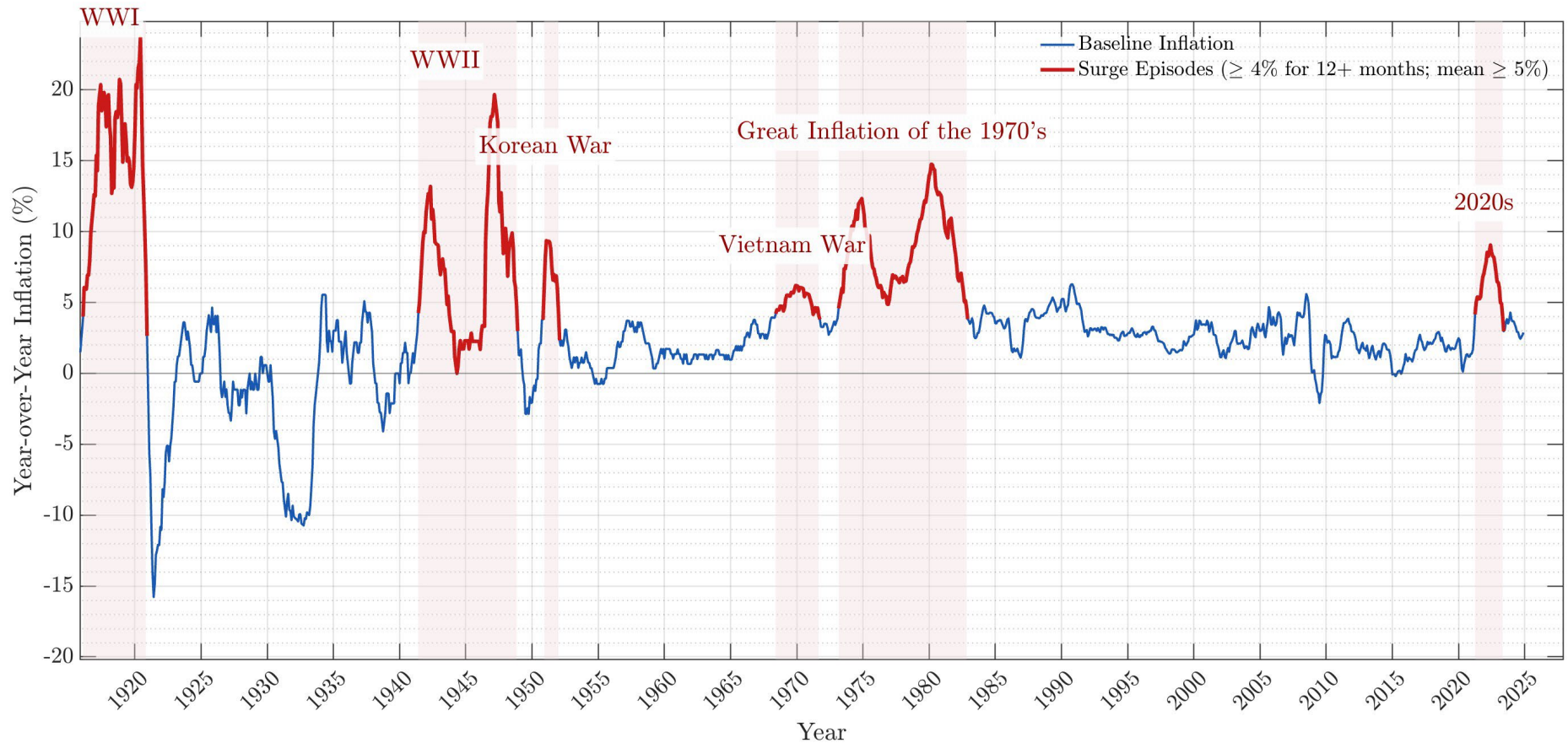
I shall not today attempt further to define the kinds of material I understand to be embraced within that shorthand description, and perhaps I could never succeed in intelligibly doing so. But I know it when I see it...

-Justice Potter Stewart
Jacobellis v. Ohio

What is an
inflation
surge?

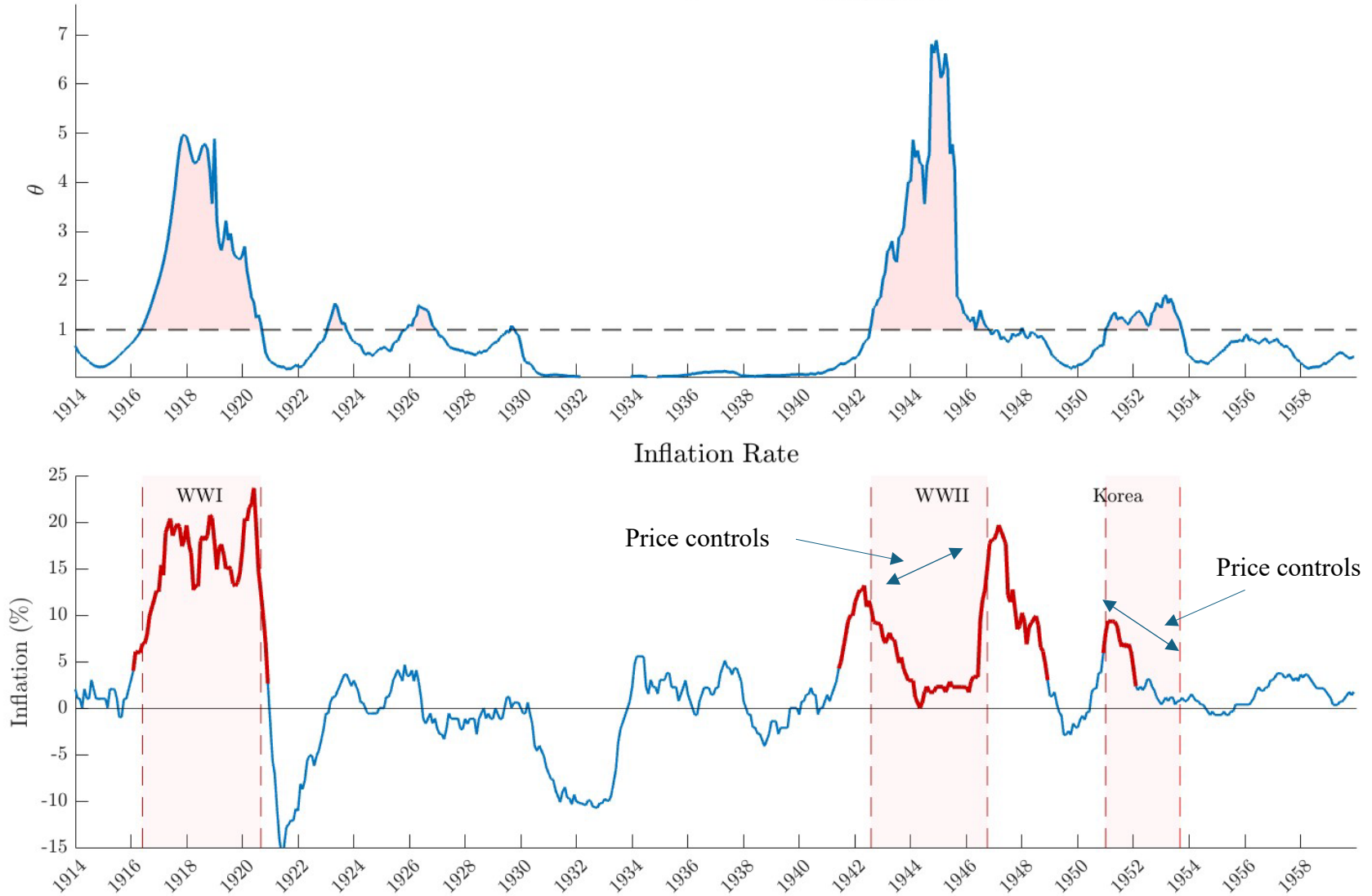
- Continuous increase in year-on-year CPI inflation exceeding 4% over a period of more than 12 months with an average at least over 5%

Six Major U.S. Inflation Surges since the birth of the Federal Reserve (1914–Present)



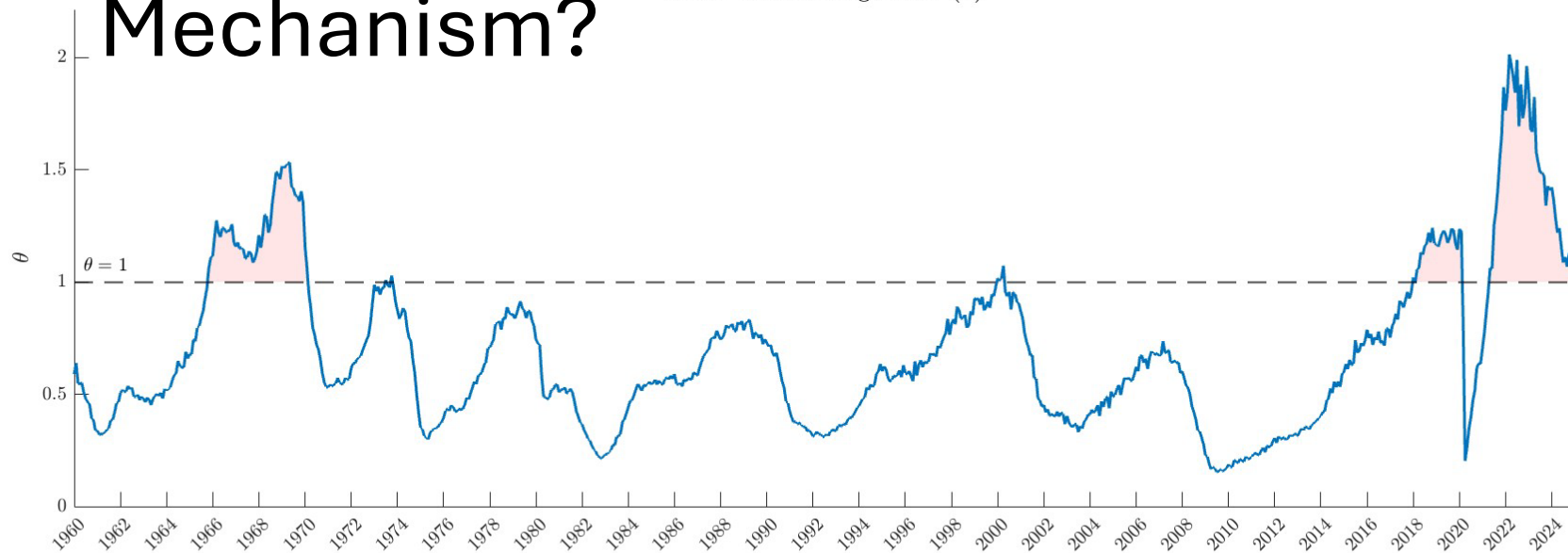
Mechanism?

$$\text{Labor Market Tightness} = \frac{\text{vacancies}}{\text{unemployment}}$$

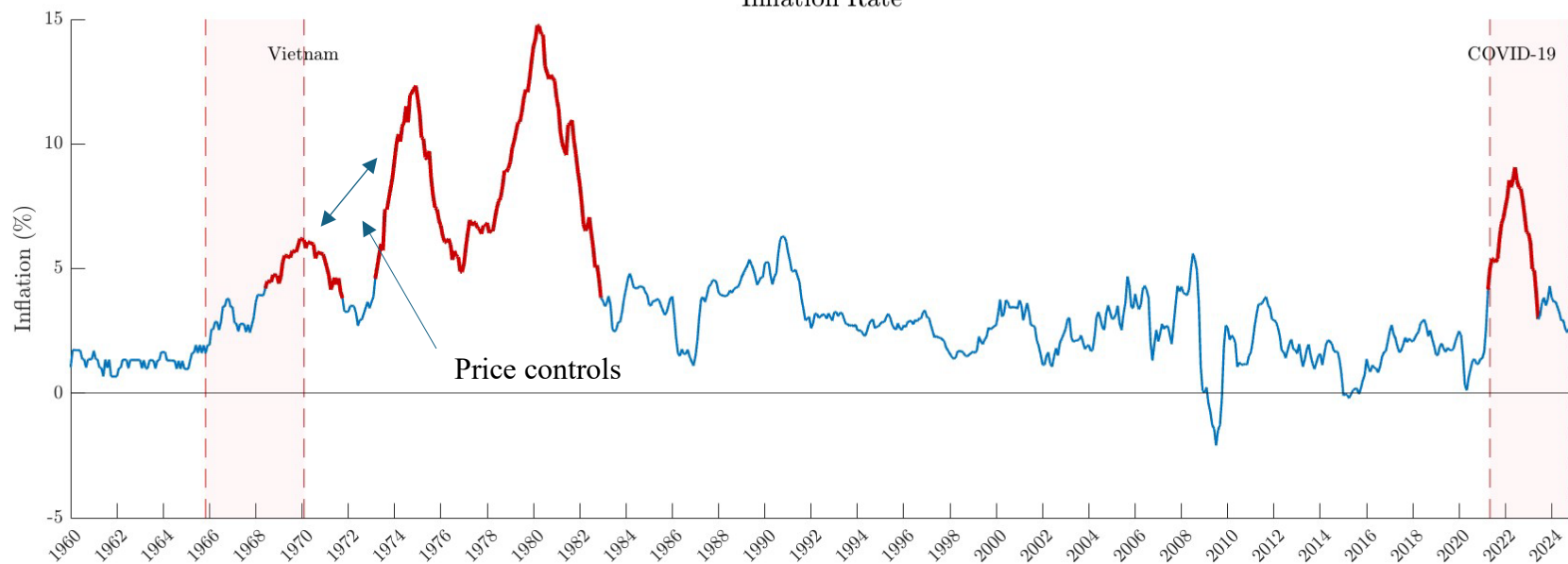


Mechanism?

Labor Market Tightness (θ)



Inflation Rate



1970's special

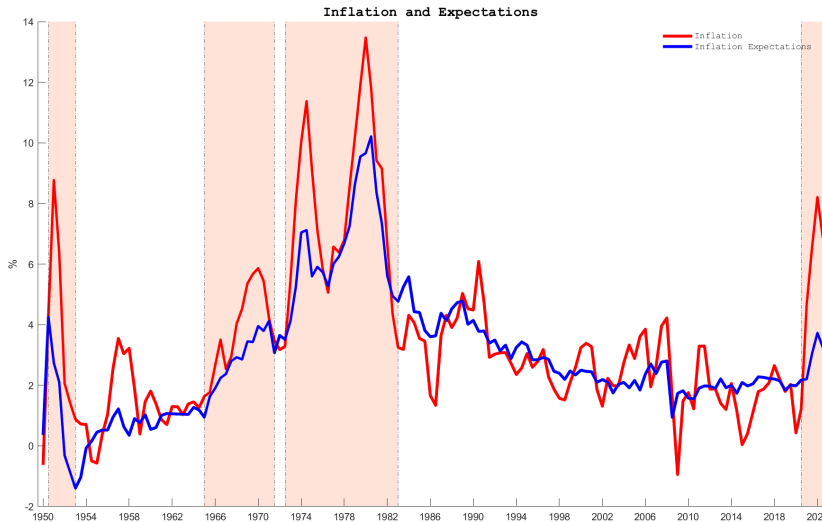
- Out of 6 inflation surges the only one not associated with labor market tightness

$$\theta^{average} = 0.6$$

- Expectations became completely unanchored
- Why did the Fed not raise rates more aggressively?
- Will get back to what may have been behind this
- Unfortunate background in 2020s:

We always fighting the last war

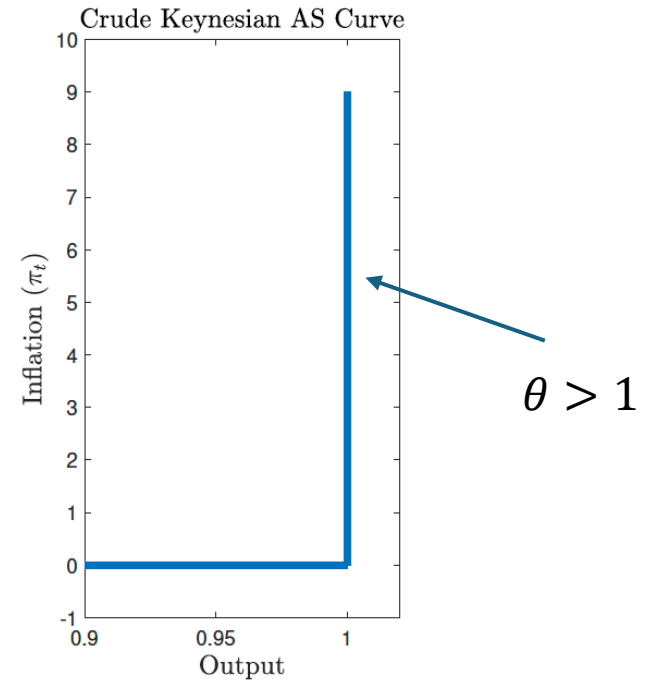
2020s: Fed stuck in 1970s mindset?



Great Inflation caused by runup in expectations. Stable now!

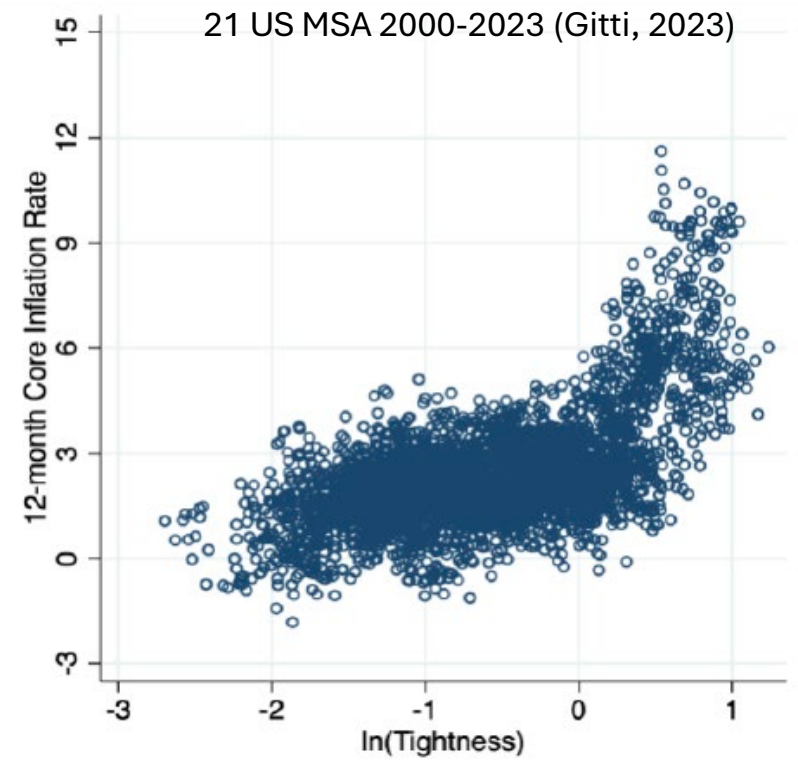
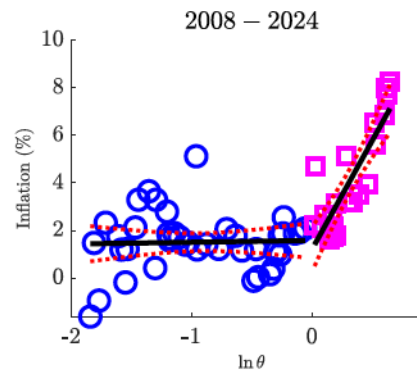
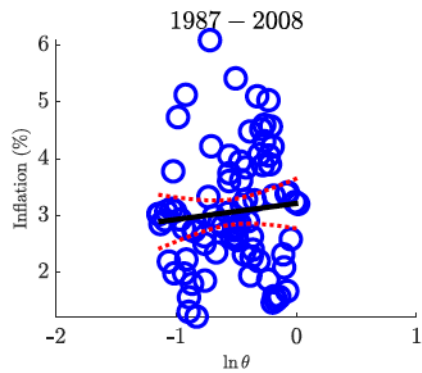
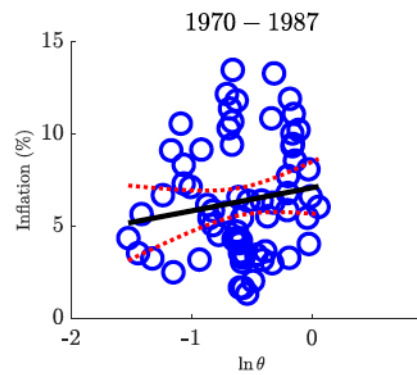
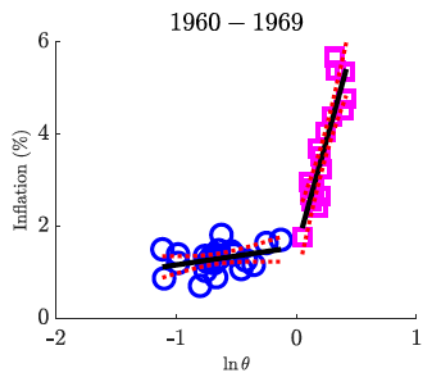
$$\pi_t = \kappa x_t + \beta E_t \pi_{t+1} + s_t$$

$$u \uparrow 1\% \longrightarrow \pi \downarrow 0.34\%$$



Forgotten because it had not happened since in late 1960s: Phillips curve CANNOT be forever flat. You will run out of workers!

Inflation and labor market tightness (v/u) , $\theta^* = \frac{v^*}{u^*} \approx 1$



Today: Different question

- INV-L NK Phillips curve explains mechanism through which inflation surge materialized
- But WHY?



Agree with Friedman:

"Inflation is always and everywhere a monetary phenomenon."

Question: Why did the Fed not just increase the interest rate and prevent the 6 inflation surges since 1914?

Surprise pause?

Are we sure that increasing interest rate reduces inflation?

As far as I am concerned: **Yes**

Surprising number of people in the profession say they are not sure! Start talking about money, government debt, fiscal theory of the price level, substitution and income effects, etc.

So, let's just go through the basic logic

Does increase interest rate reduce inflation?

$$\hat{l}_t = \hat{r}_t + E_t \hat{\pi}_{t+1} \qquad \hat{l}_t = \phi_\pi \hat{\pi}_t$$

Cochrane's Claims:

- 1) NK logic $\neq$ old-Keynesian ‘raise rates $\rightarrow$ lower demand $\rightarrow$ lower inflation’
- 2) Taylor principle $\rightarrow$ Off-equilibrium / not observed in data
- 3) Equilibrium determined by threat to “blow up the world/economy”

These two equations are from Chapter 2 in Woodford (2003)

$\rightarrow$ Elegant illustration of indeterminacy result of Sargent and Wallace.

Let's move to Woodford's Chapter 3

Claim Old and new work the same

$$\hat{Y}_t = E_t \hat{Y}_{t+1} - \sigma (\hat{i}_t - E_t \pi_{t+1}) + \underbrace{d_t}_{\text{demand shock}}$$

$$\pi_t = \kappa \hat{Y}_t + \underbrace{s_t}_{\text{supply \setminus trade-off shock}}$$

$$\hat{i}_t = \phi_\pi \pi_t + \phi_y \hat{Y}_t$$

$$\phi_\pi + \frac{\phi_y}{\kappa} > 1$$

$$\hat{Y}_t = -\sigma \hat{i}_t + d_t$$

$$\pi_t = \kappa \hat{Y}_t + s_t$$

1) NK logic $\neq$ old-Keynesian ‘raise rates $\rightarrow$ lower demand $\rightarrow$ lower inflation’

NK logic

$$\hat{Y}_t = -\sigma \hat{i}_t + d_t \quad \checkmark$$

$\downarrow$ Lower demand $\uparrow$ raise rates

$$\pi_t = \kappa \hat{Y}_t + s_t \quad \checkmark$$

$\downarrow$ lower inflation $\downarrow$ lower demand

2) Taylor principle $\rightarrow$ Off-equilibrium / not observed in data

NK EQ
interest rates

$$\hat{i}_t = \underbrace{\frac{\phi_\pi}{1 + \sigma(\kappa\phi_\pi + \phi_y)}}_{>0} s_t + \underbrace{\frac{\kappa\phi_\pi + \phi_y}{1 + \sigma(\kappa\phi_\pi + \phi_y)}}_{>0} d_t \quad \checkmark$$

3) Equilibrium determined by threatened to “blow up the world/economy”

Deserves a special page $\longrightarrow$

3) Equilibrium determined by threatened to “blow up the world/economy”

What are we solving? We are forwarding an equation so we obtain

$$\pi_t = \left(\frac{1 + \sigma\kappa}{1 + \sigma(\kappa\phi_\pi + \phi_y)} \right)^T E_t \pi_{t+T} + \frac{(1 + \sigma\phi_y)s_t + \kappa d_t}{1 + \sigma(\kappa\phi_\pi + \phi_y)}$$

$T \rightarrow \infty$ $\downarrow$ $\uparrow$

zero Bounded

The coefficients (ϕ_π, ϕ_y) do not represent any “threat” to blow anybody up.

Reduced form coefficient in an ad hoc reaction function

→ weights output vs inflation deviation.

Nice property of (ϕ_π, ϕ_y) if UNIQUE BOUNDED EQUILIBRIA. Why UNIQUE?

Why BOUNDED: Makes no sense to think inflation increases at increasing exponential rate **FOREVER. AND POPS UP FOR NO REASON SPONTANEOUSLY**

No example in history of homo sapiens of spontaneous emergence of hyperinflation that increases exponentially FOREVER

What is the role of fiscal policy?

- Revisiting Leeper's Fiscal Theory of the Price Level.
- Propose an alternative way of characterize FTPL which nests it, but you do not switch discretely between “fiscal dominance” and “monetary dominance”.
- Instead: Inflation is always and everywhere a monetary phenomenon.
- But! Fiscal authorities can exhort **STRONG** impact on the central bank to serve its aim.

Leeper's (1991) classic result

$$\hat{Y}_t = E_t \hat{Y}_{t+1} - \sigma (\hat{i}_t - E_t \pi_{t+1})$$

$$\pi_t = \kappa \hat{Y}_t$$

$$\hat{i}_t = \phi_\pi \pi_t$$

$$\hat{v}_t = \beta^{-1} \hat{v}_{t-1} - \beta^{-1} \pi_t + \hat{i}_t - \beta^{-1} \hat{T}_t$$

$$\hat{T}_t = \phi_\tau \hat{v}_t + \varepsilon_t$$

Active Monetary / Passive Fiscal (unique):

$$\boxed{\phi_\pi > 1 \quad \text{and} \quad \phi_\tau > \frac{r}{1+r}}$$

Can also have

- i) Indeterminacy
- ii) non-existence

Passive Monetary / Active Fiscal (unique, FTPL):

$$\boxed{\phi_\pi \leq 1 \quad \text{and} \quad \phi_\tau < \frac{r}{1+r}}$$

Leeper's (1991) classic result

(a) **Active Monetary / Passive Fiscal** ($\phi_\pi > 1$, $\phi_\tau > \frac{r}{1+r}$)

$$\pi_t = 0, \quad \hat{i}_t = 0, \quad \hat{v}_t = \frac{1+r}{1+(1+r)\phi_\tau} \hat{v}_{t-1} - \frac{1+r}{1+(1+r)\phi_\tau} \varepsilon_t, \quad \hat{T}_t = \phi_\tau \hat{v}_t + \varepsilon_t.$$

(b) **Passive Monetary / Active Fiscal** ($\phi_\pi \leq 1$, $\phi_\tau < \frac{r}{1+r}$)

$$\hat{Y}_t = \frac{(1+(1+r)\phi_\tau) \frac{1+\sigma\kappa\phi_\pi}{1+\sigma\kappa} - (1+r)}{\kappa(\phi_\pi - (1+r))} (\hat{v}_{t-1} - \varepsilon_t),$$

$$\pi_t = \kappa \hat{Y}_t,$$

$$\hat{i}_t = \phi_\pi \pi_t,$$

$$\hat{v}_t = \frac{1+\sigma\kappa\phi_\pi}{1+\sigma\kappa} (\hat{v}_{t-1} - \varepsilon_t),$$

$$\hat{T}_t = \phi_\tau \hat{v}_t + \varepsilon_t.$$

Bottomline:

1. Under **Active Fiscal Policy** – then fiscal policy influences inflation and output.
2. Under **Active Monetary Policy** no effect

Do we need to pick “either or”?

- Present a model which leads to a solution where fiscal policy can have a little effect or a lot depending on only one parameter ϕ_v
 - Case a) and b) are special cases--> Always existence and unique bounded solution.
 - Assume: Real debt follows the same equilibrium dynamics as under FTPL.
 - Monetary policy, however, may or may not be pressured to take debt into account.
- Motivation: Explains inflation surges

An alternative model nesting both policy regimes

$$\hat{Y}_t = E_t \hat{Y}_{t+1} - \sigma (\hat{i}_t - E_t \pi_{t+1})$$

$$\pi_t = \kappa \hat{Y}_t$$

$$\hat{i}_t = \tilde{\phi}_\pi \pi_t - \tilde{\phi}_v \hat{v}_t$$

$$\hat{v}_t = \frac{1 + \sigma \kappa \phi_\pi}{1 + \sigma \kappa} (\hat{v}_{t-1} - \varepsilon_t)$$

Monetary Policy is ALWAYS ACTIVE

$$\tilde{\phi}_\pi > 1$$

$$\tilde{\phi}_v$$

How important is Fiscal Policy?
Does it prevent Monetary Policy
from eliminating an inflation surge?
Depends on how much it affects
interest rate!

Equivalence Result

- Get FTPL dynamics for all variables for any $\tilde{\phi}_\pi$ if

$$\tilde{\phi}_v = \frac{(\tilde{\phi}_\pi - \phi_\pi) \left[(1 + (1 + r)\phi_\tau)(1 + \sigma\kappa\phi_\pi) - (1 + r)(1 + \sigma\kappa) \right]}{(1 + \sigma\kappa\phi_\pi)(\phi_\pi - (1 + r))}.$$

Bottomline: Inflation is always and everywhere a monetary phenomenon

Question: How big role do we give fiscal policy?

$$\tilde{\phi}_v$$

Determinacy issues are a complete sideshow!

Fundamental issue is power of fiscal policy makers over interest rates!

Markov Perfect Equilibrium

$$E_t \sum_{t=0}^{\infty} \beta^t u(C_t) + g(F_t)$$

$$U_t \approx - \sum_{t=0}^{\infty} \beta^t \{ \pi_t^2 + \lambda_y \hat{Y}_t^2 + \lambda_T \hat{T}_t^2 \}$$

—————→ Same equivalence result

λ_T Plays the same role as $\tilde{\phi}_v$ before

There is no correct theory

There are only **useful theories**

&

Less **useful theories**

Question: How useful are different theories to explain the 6 inflation surges since 1914?

WWI Inflation Surge



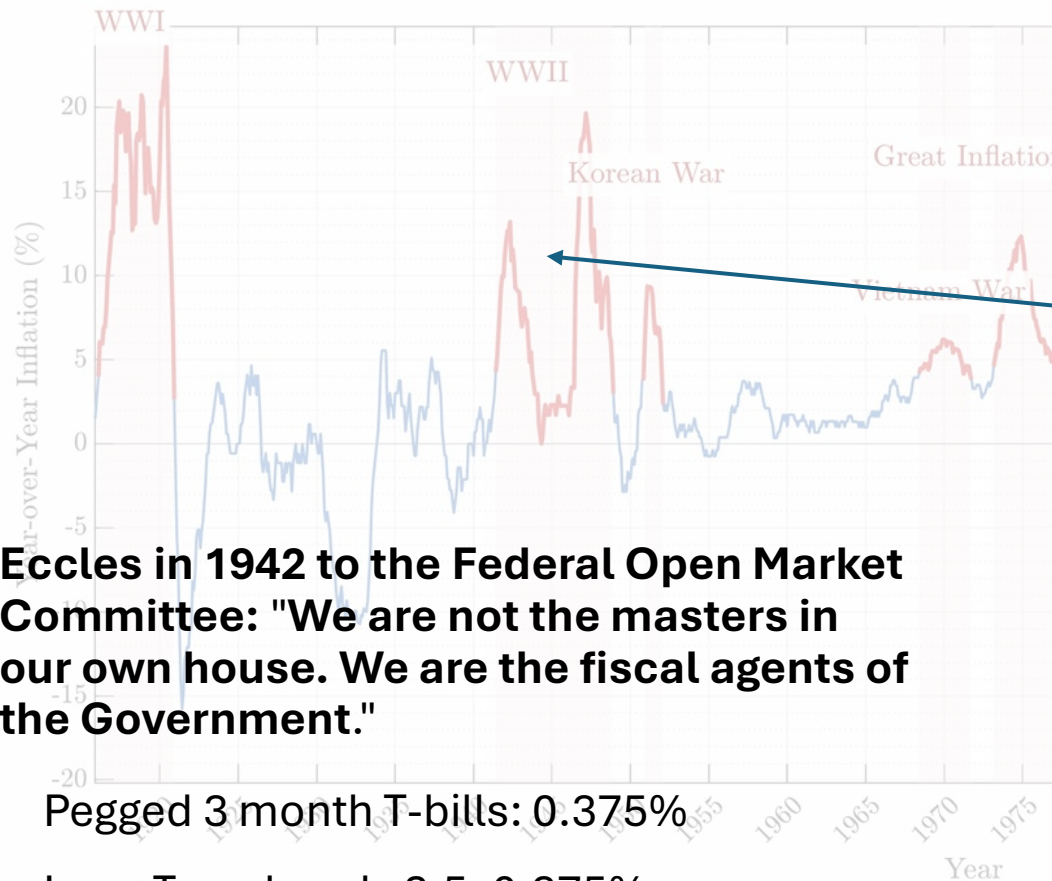
“Printed” reserves that he lent to banks at very low rates conditional on that they buy treasuries: Direct monetization of debt



William McAdoo: Secretary of the Treasury AND Chairman of the Federal Reserve Board 1914-1918

Deficits/GDP: 11%, 1918, 17%, 1919

WWII Inflation Surge



Eccles in 1942 to the Federal Open Market Committee: "We are not the masters in our own house. We are the fiscal agents of the Government."

Pegged 3 month T-bills: 0.375%

Long Term bonds 2.5: 0.375%

Lasted until 1951



Deficits/GDP 1942-1946: 15%, 28%, 23%, 24%, 7%

Korean War

Treasury-Fed Accord March 1951
Fed could start raising rates
Inflation Surge over by END OF YEAR



Raised rates: Surge over by end of 1951!



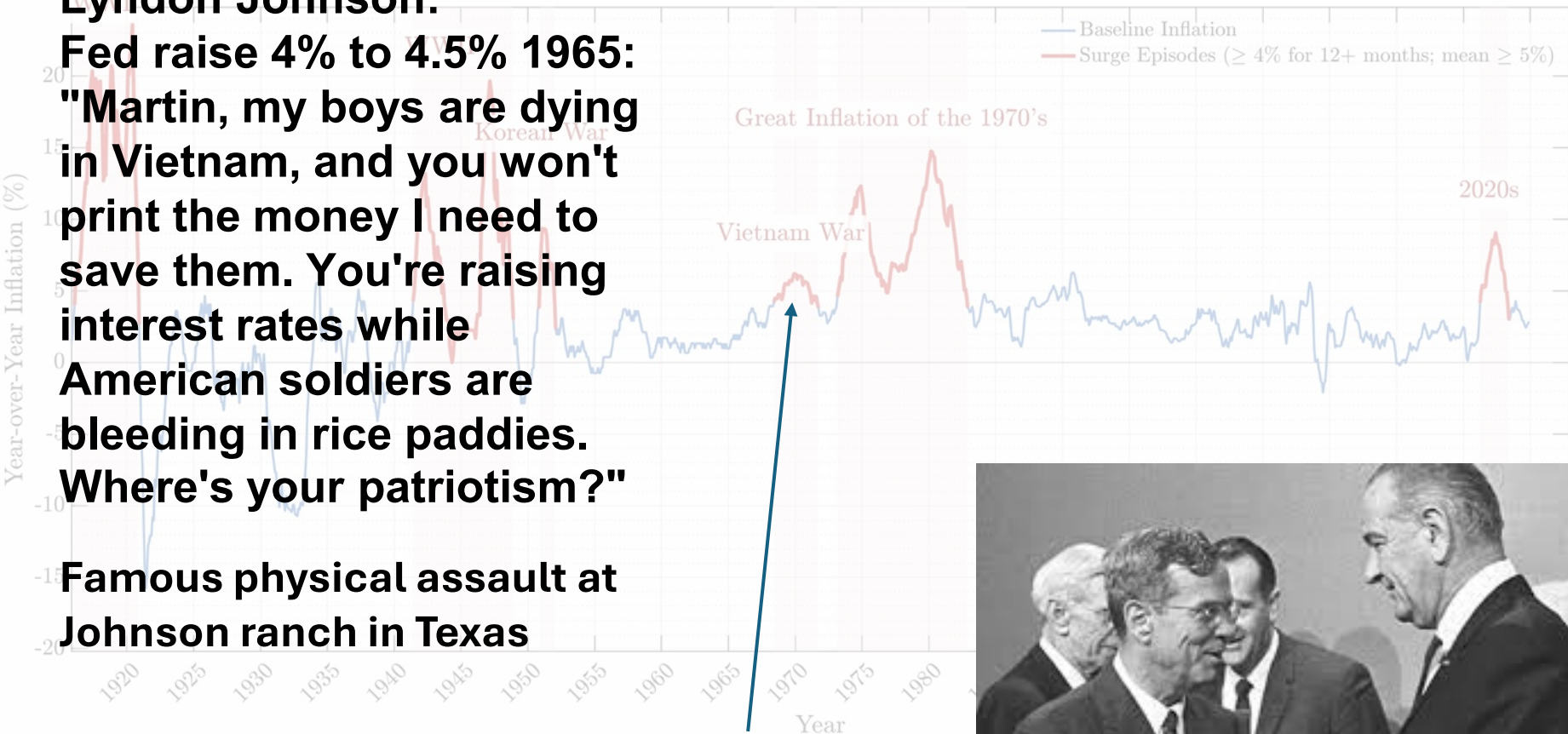
Chairman Martin

The surge of 1960's

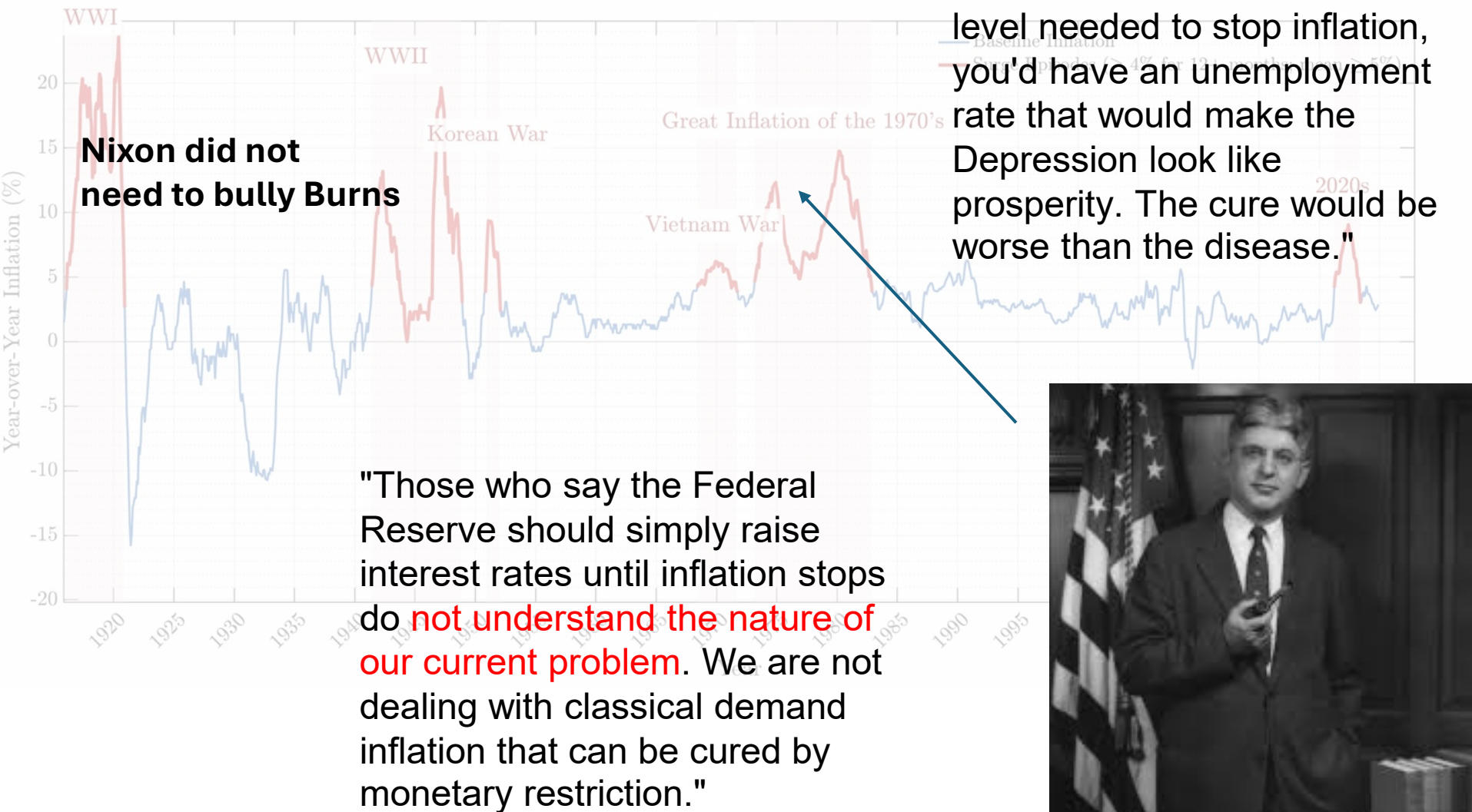
Lyndon Johnson:
Fed raise 4% to 4.5% 1965:
"Martin, my boys are dying
in Vietnam, and you won't
print the money I need to
save them. You're raising
interest rates while
American soldiers are
bleeding in rice paddies.
Where's your patriotism?"

Famous physical assault at
Johnson ranch in Texas

Martin's later confession - "To my everlasting
shame, I finally gave in"

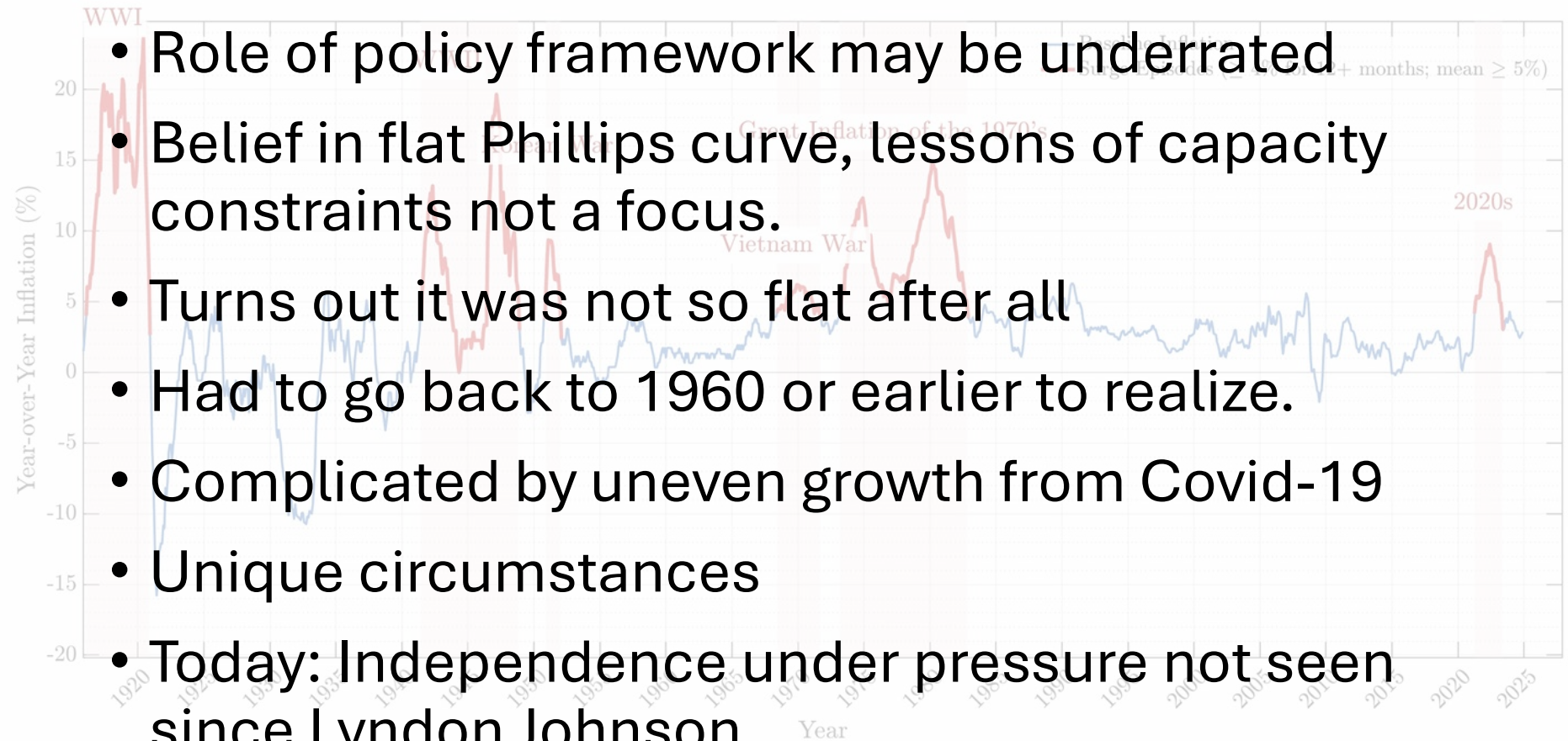


The Great Inflation



The 2020s

- Role of policy framework may be underrated
- Belief in flat Phillips curve, lessons of capacity constraints not a focus.
- Turns out it was not so flat after all
- Had to go back to 1960 or earlier to realize.
- Complicated by uneven growth from Covid-19
- Unique circumstances
- Today: Independence under pressure not seen since Lyndon Johnson



Conclusion

- 5 out of 6 Inflation surges labor market at capacity. → 1970 exception. 2020s not as direct political pressure
- In 4 cases Fed could clearly have prevented inflation it by raising rates. Did not do so due to political pressures. Can be modeled directly in objective function or reaction function.

Two exceptions:

- 2020s is more complex (new policy framework, labor market misreading, QE constraints).
- 70's special as Fed Chairman did not see it as his job to reign in inflation.
- Monetary and fiscal policy interaction extremely important: Mostly about Central Bank **INDEPENDENCE**.
- Fiscal Theories of Price Level: He who best explains wins.