CREi

Centre de Recerca
en Economia Internacional

Fundació
Catalunya
La Pedrera

Bojos per l'Economia!

Prof. Davide Debortoli

Monetary and Fiscal Policies

Today's Lecture

Main Questions:

1) What can policymakers do to affect the macroeconomy?
2) What are the risks associated with these Policies?

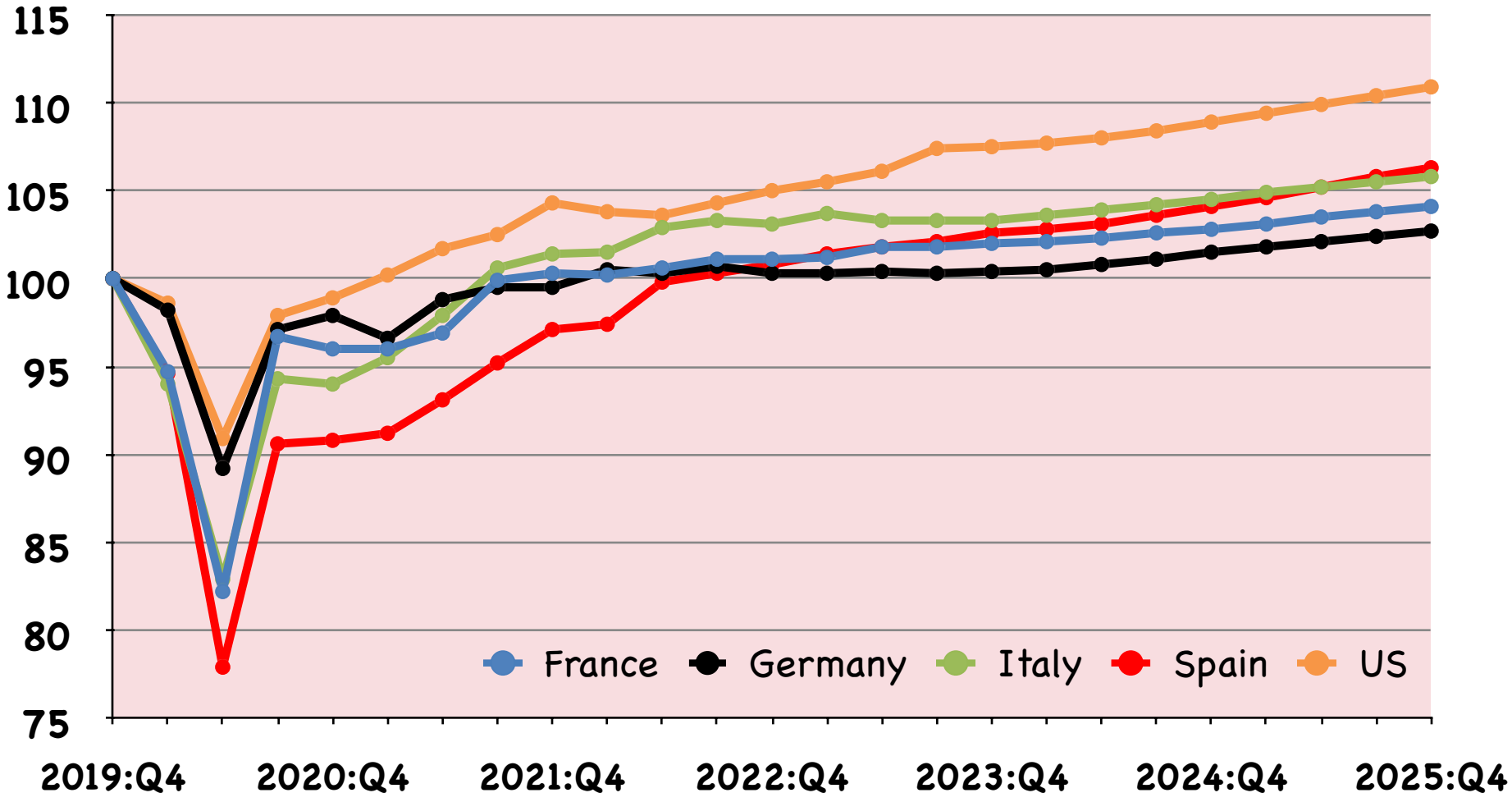
Two Parts:

- **Part I:** Monetary Policy
- **Part II:** Fiscal Policy

Introduction:
Key Macroeconomic Indicators

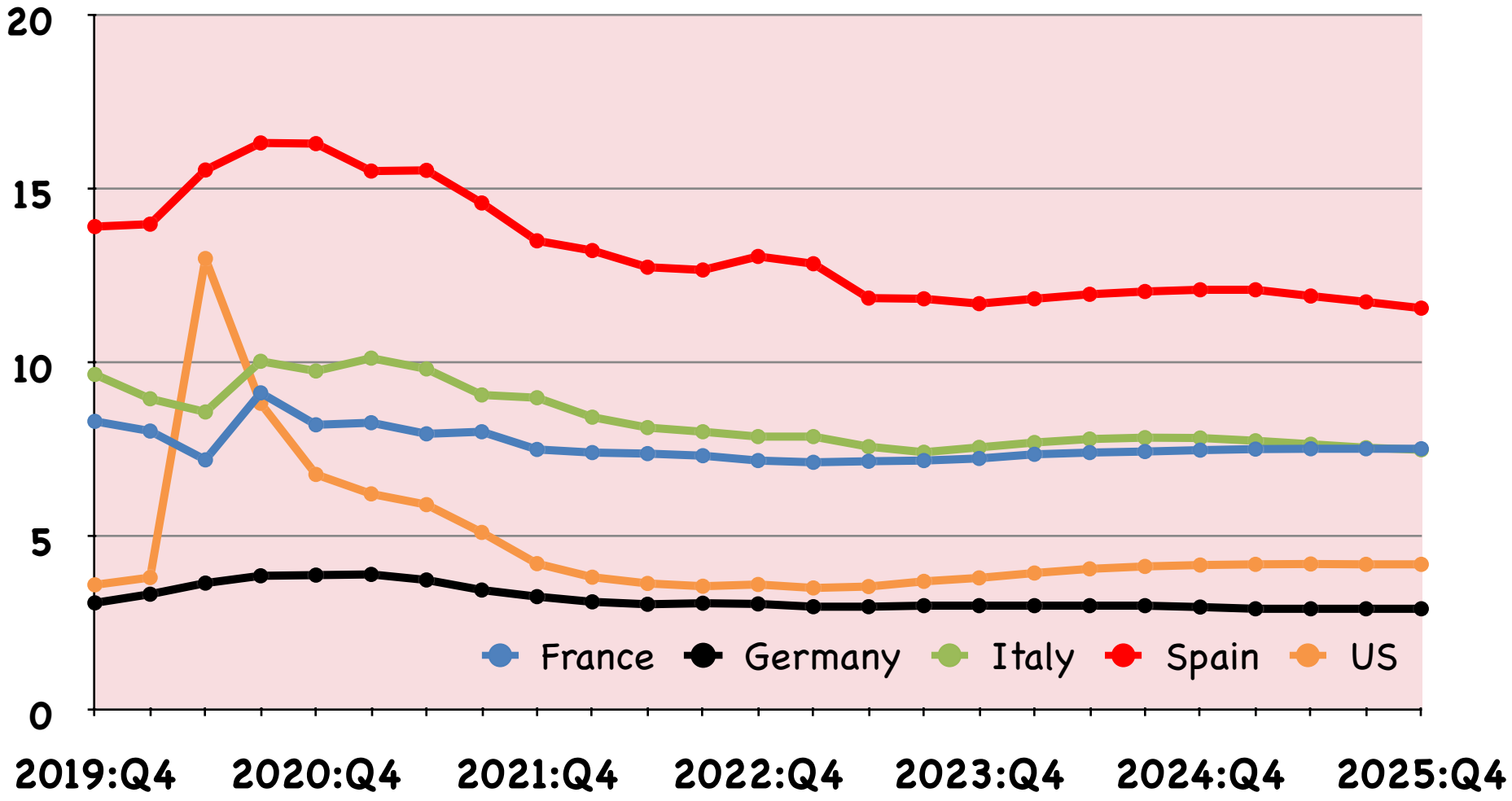
Output (Gross Domestic Product)

Real Gross Domestic Product (GDP) in Selected Countries
[Index: 2019:Q4=100]



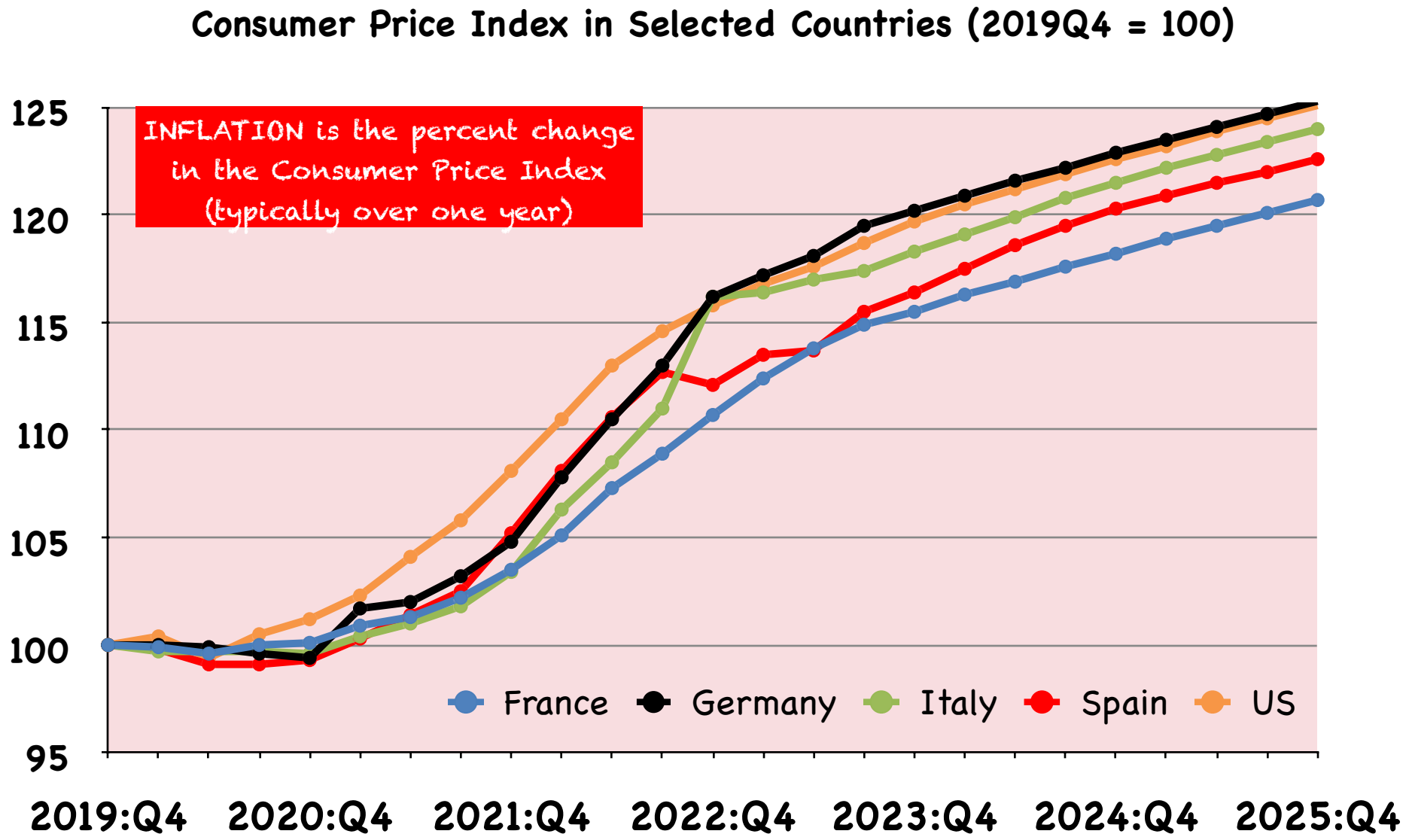
Source: OECD Economic Outlook, Nov. 2023

Unemployment Rate



Source: OECD Economic Outlook, Nov. 2023

Consumer Price Index and Inflation



Source: OECD Economic Outlook, Nov. 2023

Part I:
Monetary Policy

Outline

- **Monetary Policy: Basic Concepts**
- The Key Question
- The Costs of Inflation

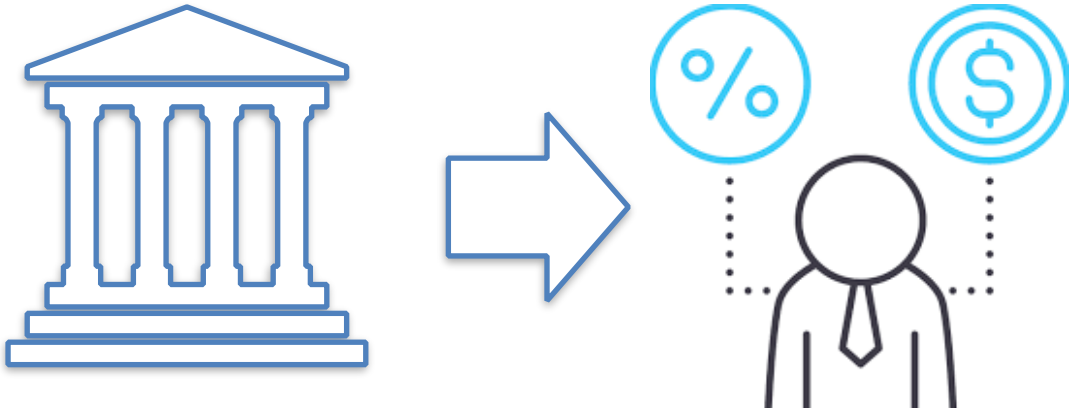
Monetary Policy: Basic Concepts

Monetary policy is governed by a **Central Bank**, the authority managing the **money supply** (coins, notes, deposits, etc.) in an economy

Example:

money supply↑

Monetary Policy: Basic Concepts



Monetary policy is governed by a **Central Bank**, the authority managing the **money supply** (coins, notes, deposits, etc.) in an economy

The money supply affects the **interest rates** at which households and firms lend and borrow.

IN PRACTICE central banks choose a TARGET for the INTEREST rate

Example:

money supply ↑ ⇒ interest rate ↓

Monetary Policy: Basic Concepts

Monetary policy is governed by a **Central Bank**, the authority managing the **money supply** (coins, notes, deposits, etc.) in an economy

The money supply affects the **interest rates** at which households and firms lend and borrow.

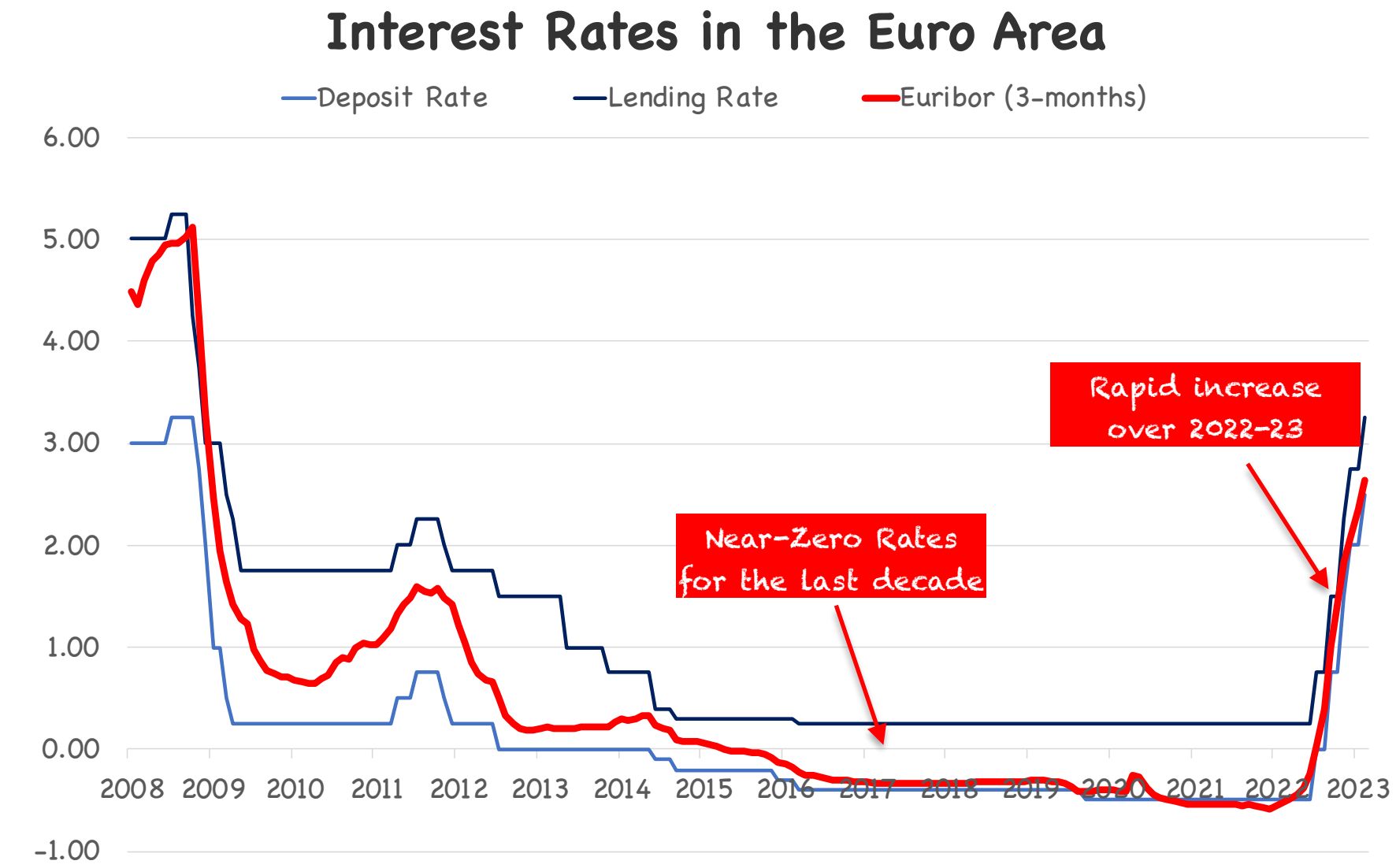
IN PRACTICE central banks choose a TARGET for the INTEREST rate

Household consumption and investment decisions determine **aggregate output and prices**

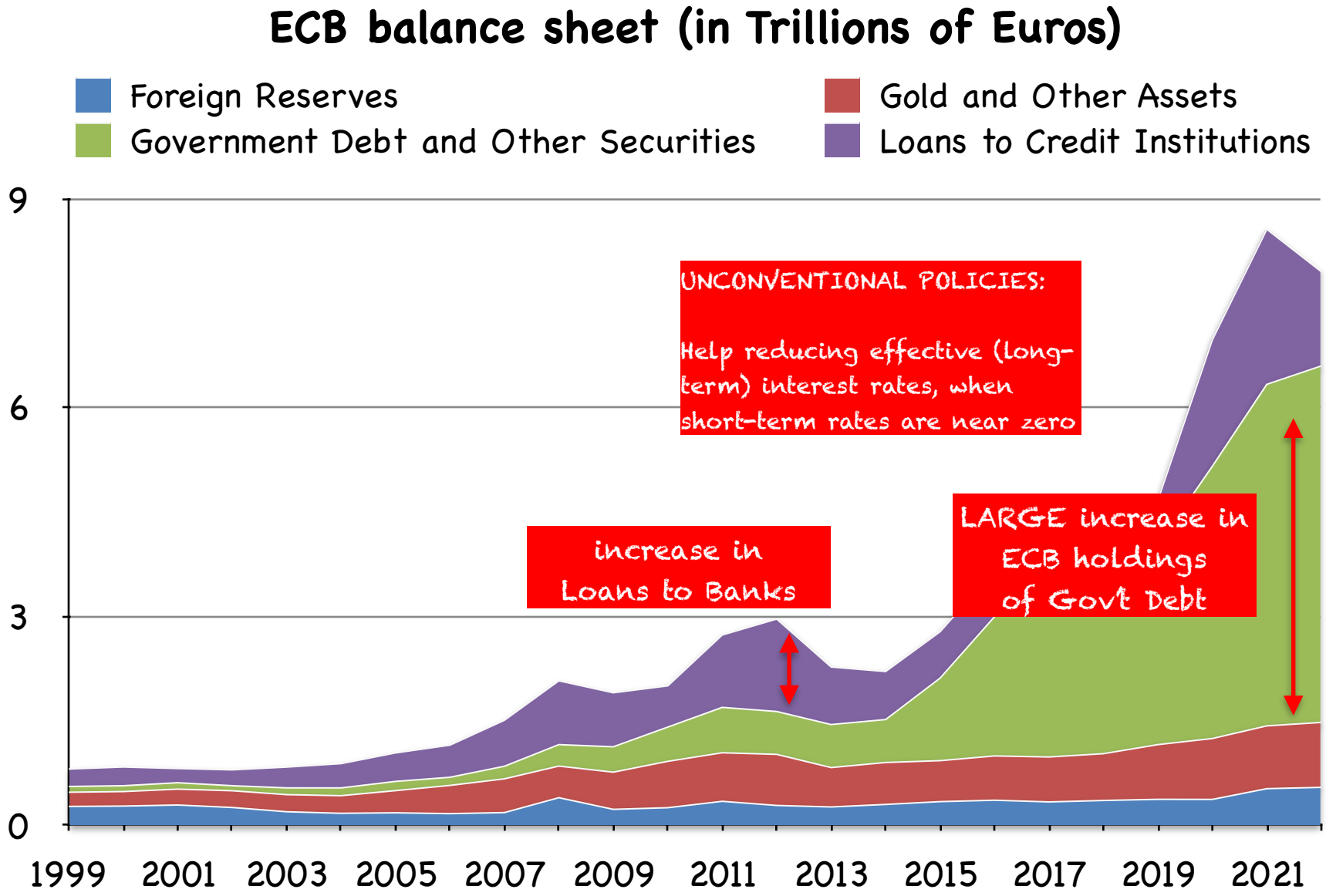
Example:

money supply ↑ ⇒ interest rate ↓ ⇒ output ↑ inflation ↑

"Conventional" Monetary Policy



"Uncoventional" Monetary Policy



Outline

- Monetary Policy: Basic Concepts
- **The Key Question**
- The Costs of Inflation

The Key Question

Inflation

π

(growth in prices, salaries, etc.)

Unemployment

u

(measure of economic activity)

What is the relationship between inflation and economic activity?

This relationship determines:

- the economic/employment cost of reducing inflation
- how much inflation is needed to stimulate economic activity

Inflation and Unemployment: The Origins

United Kingdom (1861 – 1913), Phillips (1958)

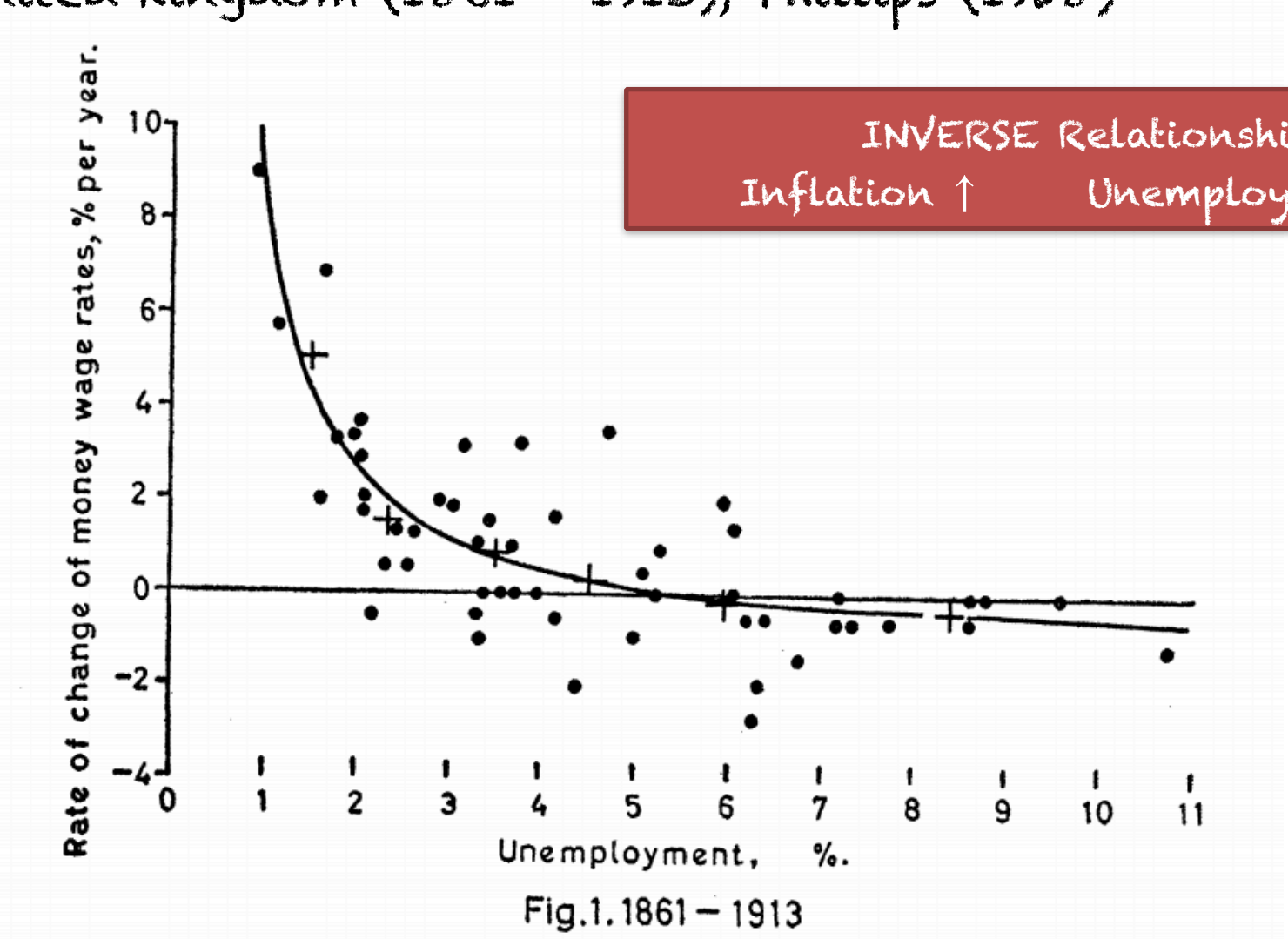


Fig.1. 1861 – 1913

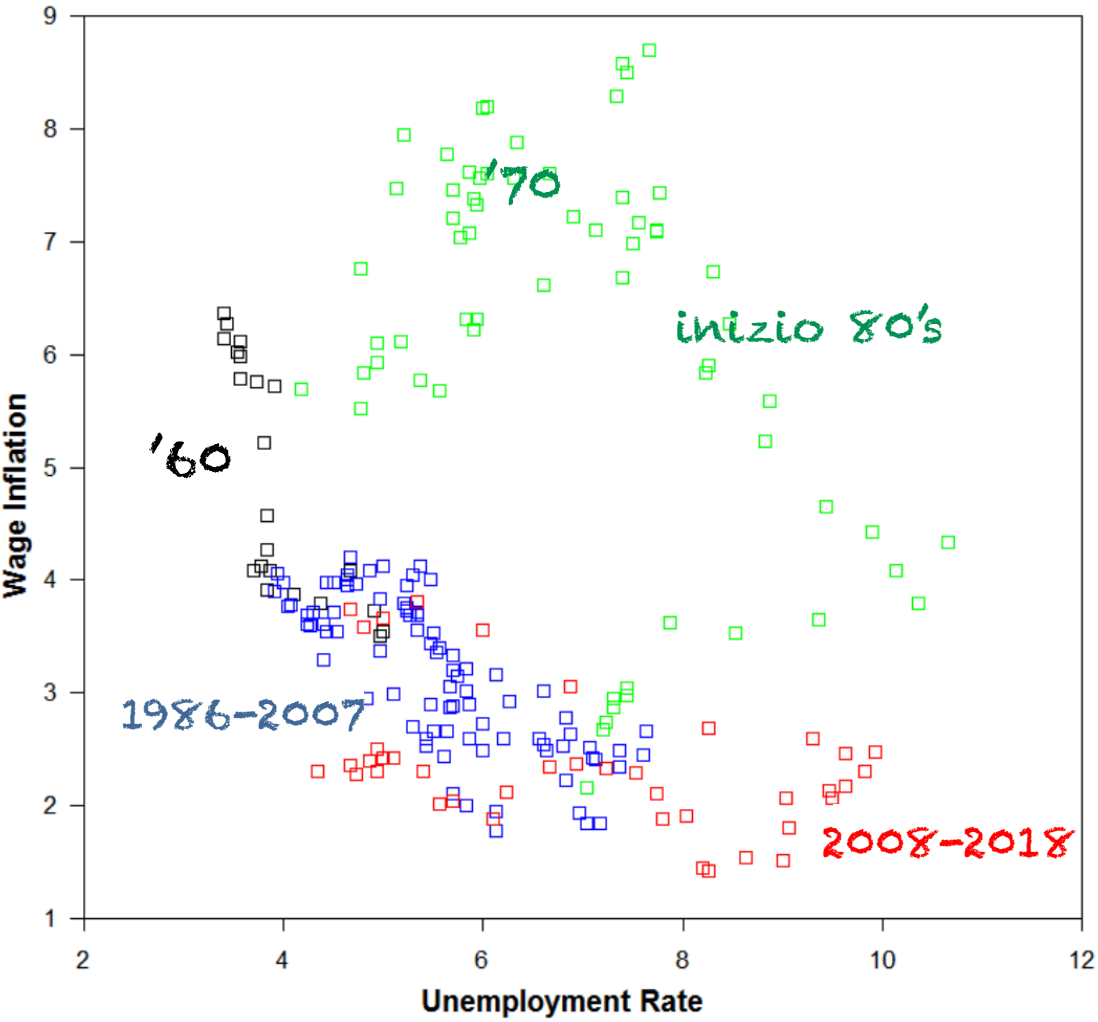
INVERSE Relationship

Inflation ↑ Unemployment ↓

Fonte: Phillips, William (1958): "The Relation between Unemployment and the Rate of Change of Money Wage Rates in the United Kingdom, 1861-1957," Economica, 1958, 25 (100), pp. 283-299.

Inflation and Unemployment: Recent Evidence

United States, 1964-2018 [J. Galí e L. Gambetti (2019)]



1960's e 1986-2007 (Great Moderation)

Inverse Relationship ($u \uparrow \Leftrightarrow \pi \downarrow$)

'70s-'80s (Inflation-Disinflation)

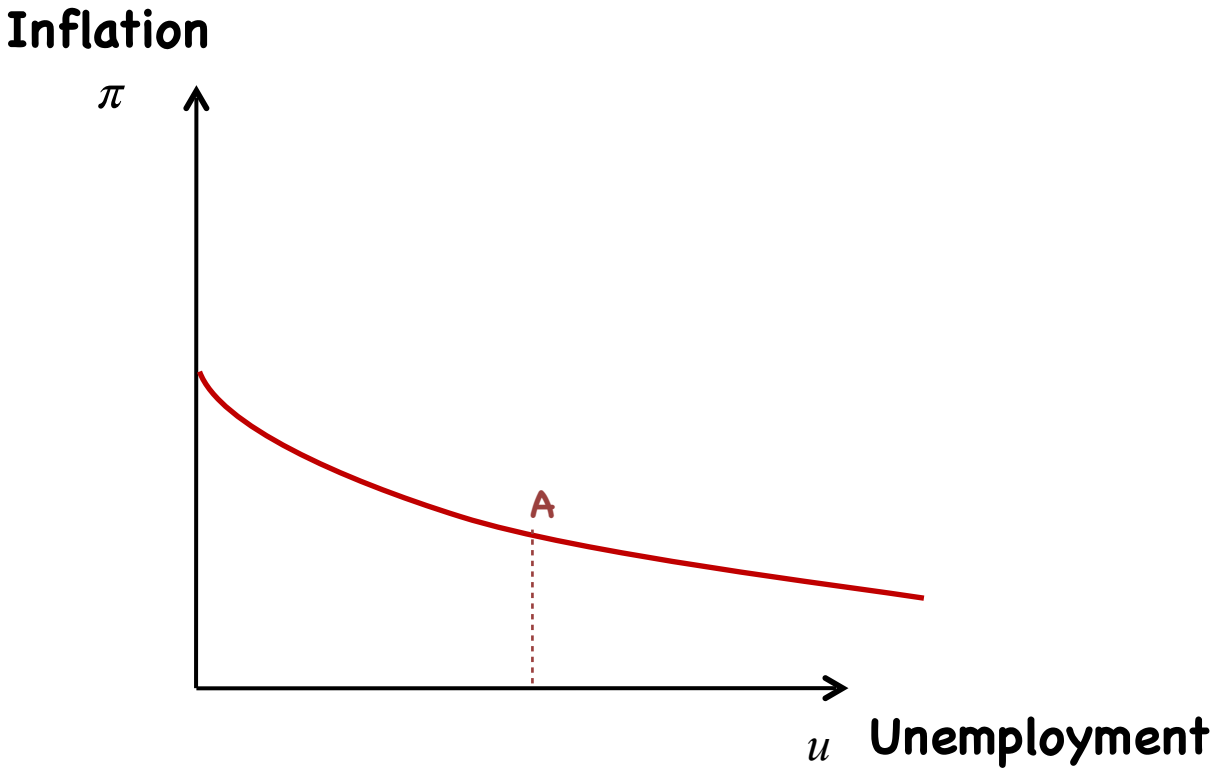
Unstable Relationship ($u \nLeftrightarrow \pi$)

2008- (Financial Crisis and Recovery)

Weak Relationship ($u \uparrow \uparrow \Leftrightarrow \pi =$)

The Slope of the Phillips Curve: Implications

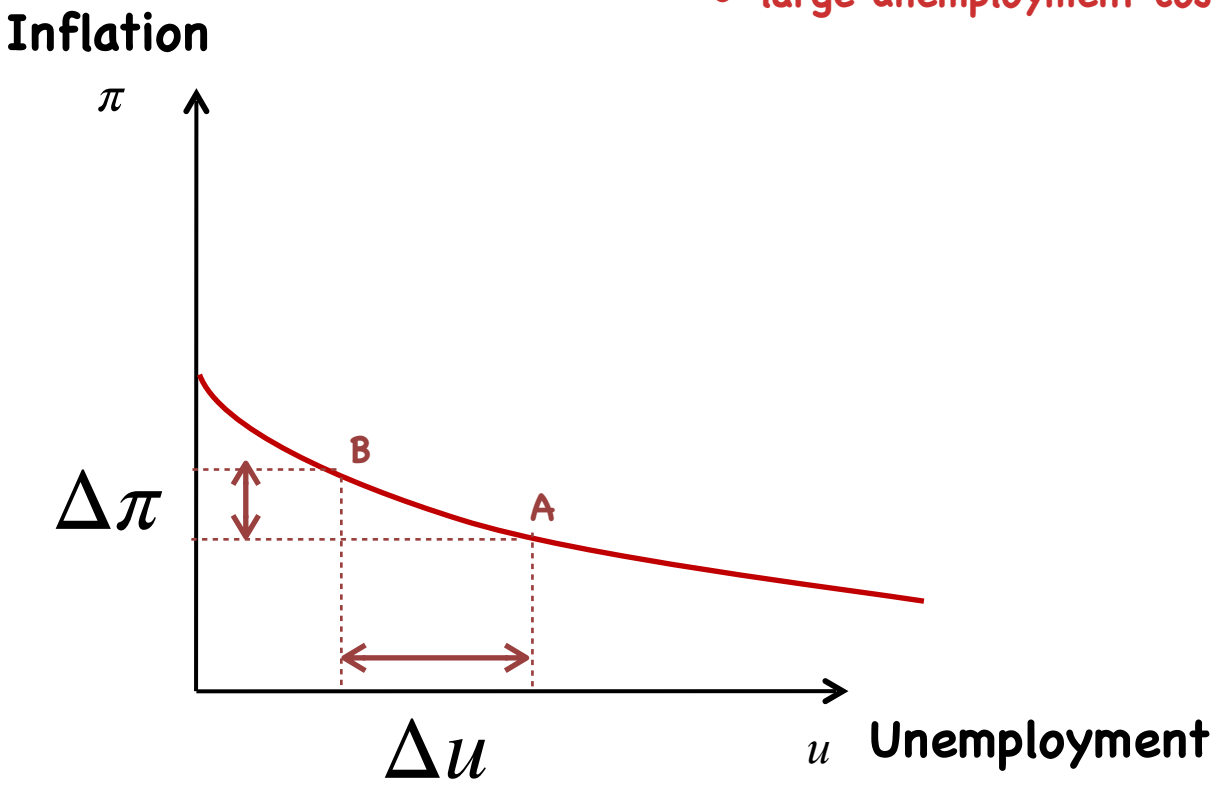
CASE 1: Weak Relationship (flat Phillips curve)



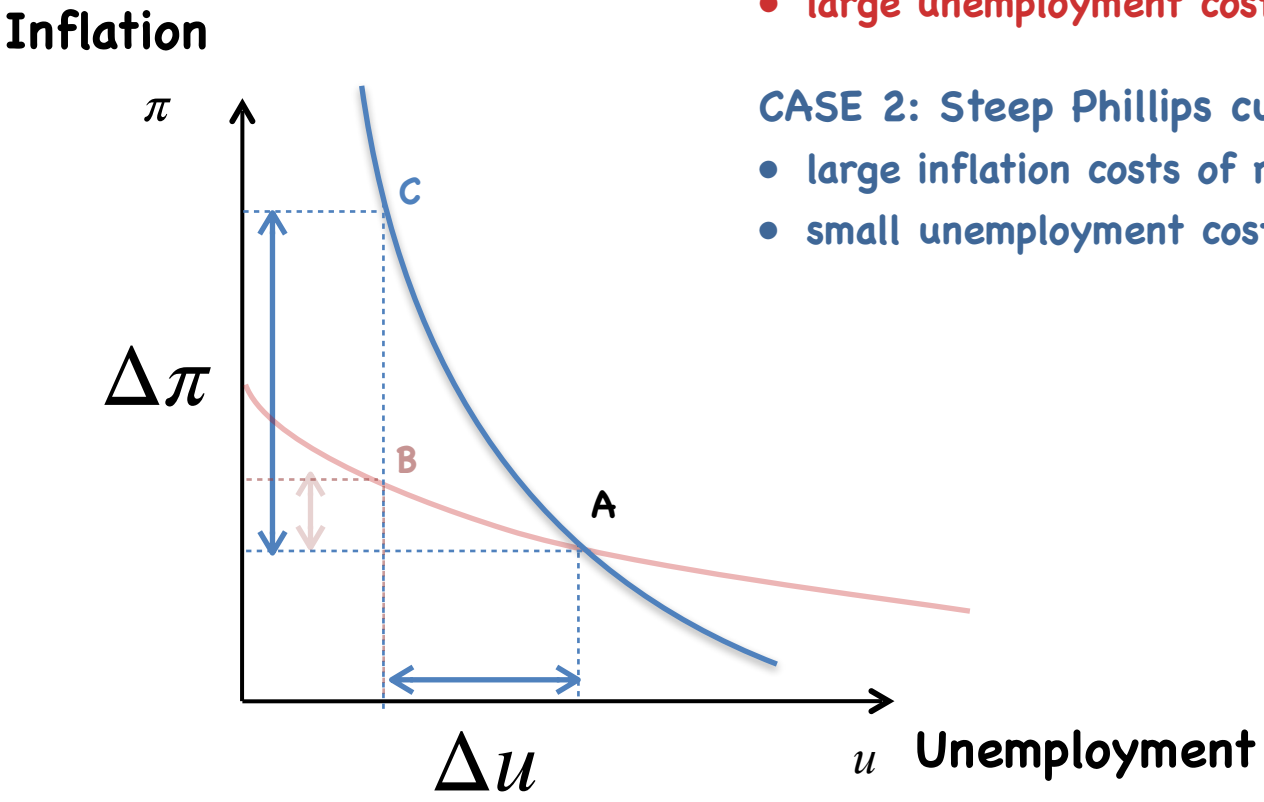
The Slope of the Phillips Curve: Implications

CASE 1: Flat Phillips curve

- small inflation costs of reducing unemployment
- large unemployment costs of reducing inflation



The Slope of the Phillips Curve: Implications



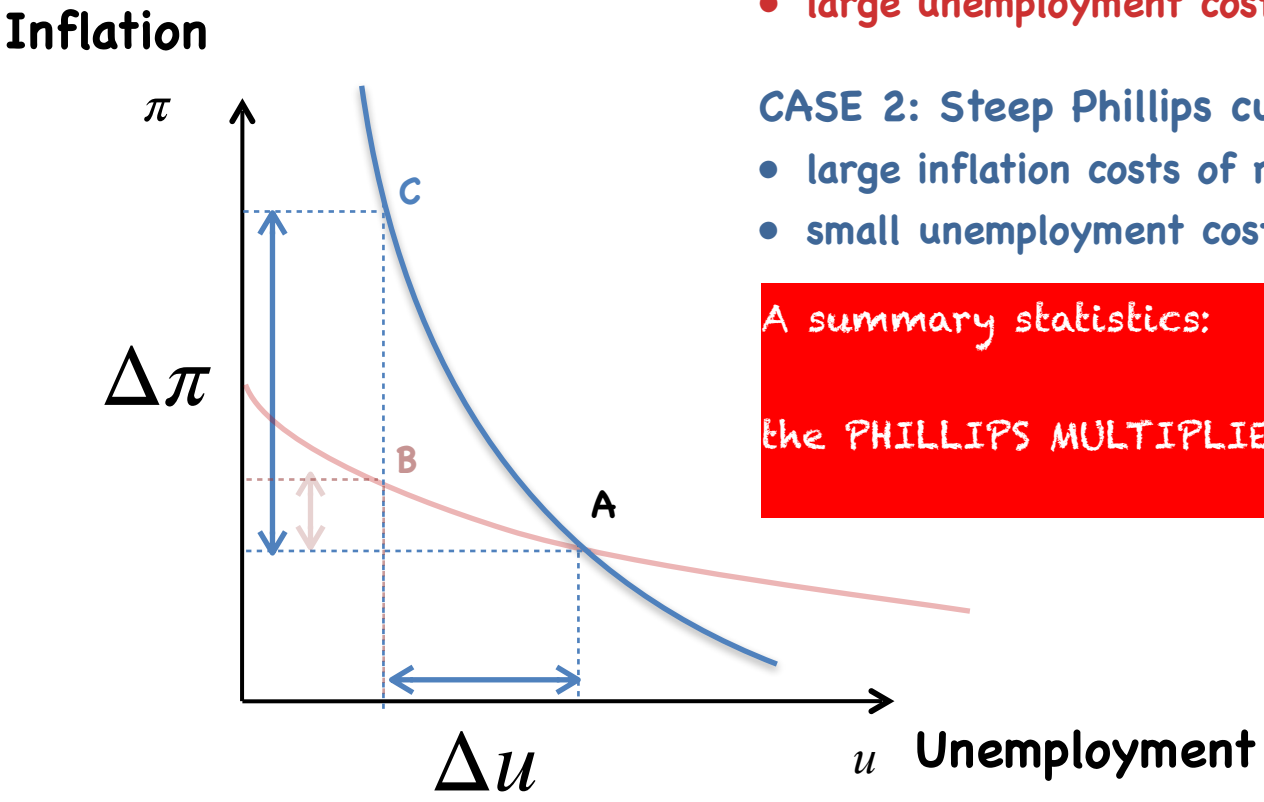
CASE 1: Flat Phillips curve

- small inflation costs of reducing unemployment
- large unemployment costs of reducing inflation

CASE 2: Steep Phillips curve

- large inflation costs of reducing unemployment
- small unemployment costs of reducing inflation

The Slope of the Phillips Curve: Implications



CASE 1: Flat Phillips curve

- small inflation costs of reducing unemployment
- large unemployment costs of reducing inflation

CASE 2: Steep Phillips curve

- large inflation costs of reducing unemployment
- small unemployment costs of reducing inflation

A summary statistics:

the PHILLIPS MULTIPLIER $\mathcal{P} \equiv \dfrac{\Delta\pi}{\Delta u}$

Taking Stock

- Understanding the relationship between inflation and unemployment is crucial to determine the effectiveness of monetary policy

- Such a relationship can be summarized by a simple statistics: **the Phillips multiplier** $\frac{\Delta\pi}{\Delta u}$

- Measuring the **size of the Phillips multiplier** has very important policy implications

Exercise

Consider an economy where the Phillips multiplier $\mathscr{P} = \Delta\pi/\Delta u = -0.5$ and suppose the central bank wants to reduce inflation by 2%.

What would be the consequence of this policy on the unemployment rate?

Activity:
We want to estimate the Phillips Multiplier for member countries of the Euro Area.

Instructions:

Step 1: Fill in column **C**

Step 2: Fill in column D

Step3: Fill in column E

Step4: Calculate Multiplier

COUNTRY NAME

	A	B	C	D	E
	Inflation	**Unemployment**	**Inflation - Average**	**Unemployment-Average**	**C x D**
2000-2004	4.5	7.1	4.5-6.5 = -2.0	7.1-8 = -0.9	-2.0 x -0.9 = 1.8
2005-2009	4.0	7.5	...	...	...
2010-2014	2.1	10.2	...	...	...
2015-2019	2.2	8.3	...	...	...
2020-2022	3.1	6.8	...	...	...
AVERAGE	**6.5**	**8.0**			
VARIANCE		**1.5**			
				PHILLIPS MULTIPLIER	=average(column E) / variance(unempl.)

https://forms.gle/FrkzyuX1uGD8EG4C9

Exercise

Suppose the Phillips multiplier $\mathscr{P} = \Delta\pi/\Delta u = -0.5$ and suppose the central bank wants to reduce inflation by 2%.

What would be the change in the unemployment rate?

Answer:

Since $\mathscr{P} = \Delta\pi/\Delta u = 0.5$, the change in the unemployment rate is

$$\Delta u = \frac{1}{\mathscr{P}} \times \Delta\pi = -\frac{1}{0.5} \times (-2\%) = 4\,\%$$

My Current Research

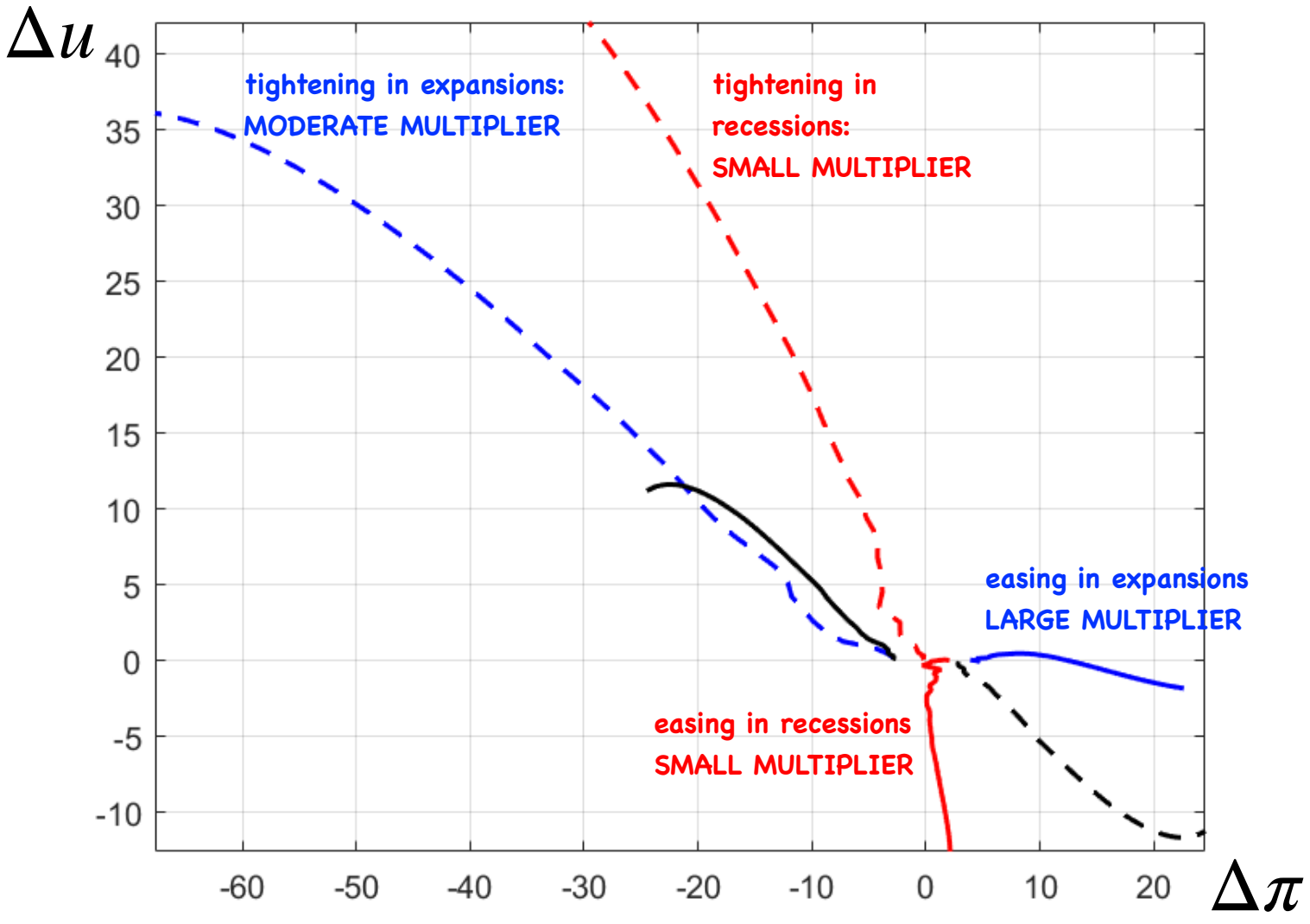
- **The question:** How Big is the "Phillips Multiplier" ?

  i.e. the change in inflation **caused by a change in interest rates** that leads to a reduction in the unemployment rate by 1 percentage point?

- **The main challenge:** Correlation or Causation?
  - from the data we can measure the **correlation** between inflation and unemployment
  - but this does not mean that monetary policy can **cause** a change in inflation and unemployment

- **Main Idea:**
  - Calculate the response of on unemployment and inflation to monetary policy "surprises" i.e $\frac{\Delta\pi}{\Delta\epsilon^m}$ and $\frac{\Delta u}{\Delta\epsilon^m}$ and obtain the Phillips Multiplier $\mathcal{P} \equiv \frac{\Delta\pi}{\Delta u}$
  - distinguish the effects of monetary easing vs tightening, in expansions and recessions, for U.S. data 1973-2019.

Main Result



BOTTOM LINE: THE EFFECTIVENESS OF MONETARY POLICY
during expansions, not very costly to reduce inflation
during recessions, not very costly to stimulate economic activity

Outline

- Monetary Policy: Basic Concepts
- The Key Question
- **The Costs of Inflation**

What are the Costs of Inflation?

- **Uneven adjustments of prices and wages**
  … nominal wages lose purchasing power

- **Tax Distortions**
  tax brackets adjusted very infrequently (once per year)
  … inflation implies many people pay higher tax rates

- **Money Illusion**
  … nominal income increase while real income decreases

- **High Uncertainty**
  … difficult to forecast future prices

Hyperinflation: Some Episodes

Zimbabwe (2008-2009): **98%** per day

or **80,000,000,000%** monthly

Hyperinflation in Zimbabwe began shortly after the destruction of productive capacity in Zimbabwe's civil war and confiscation of white-owned farmland.

Hyperinflation: Some Episodes

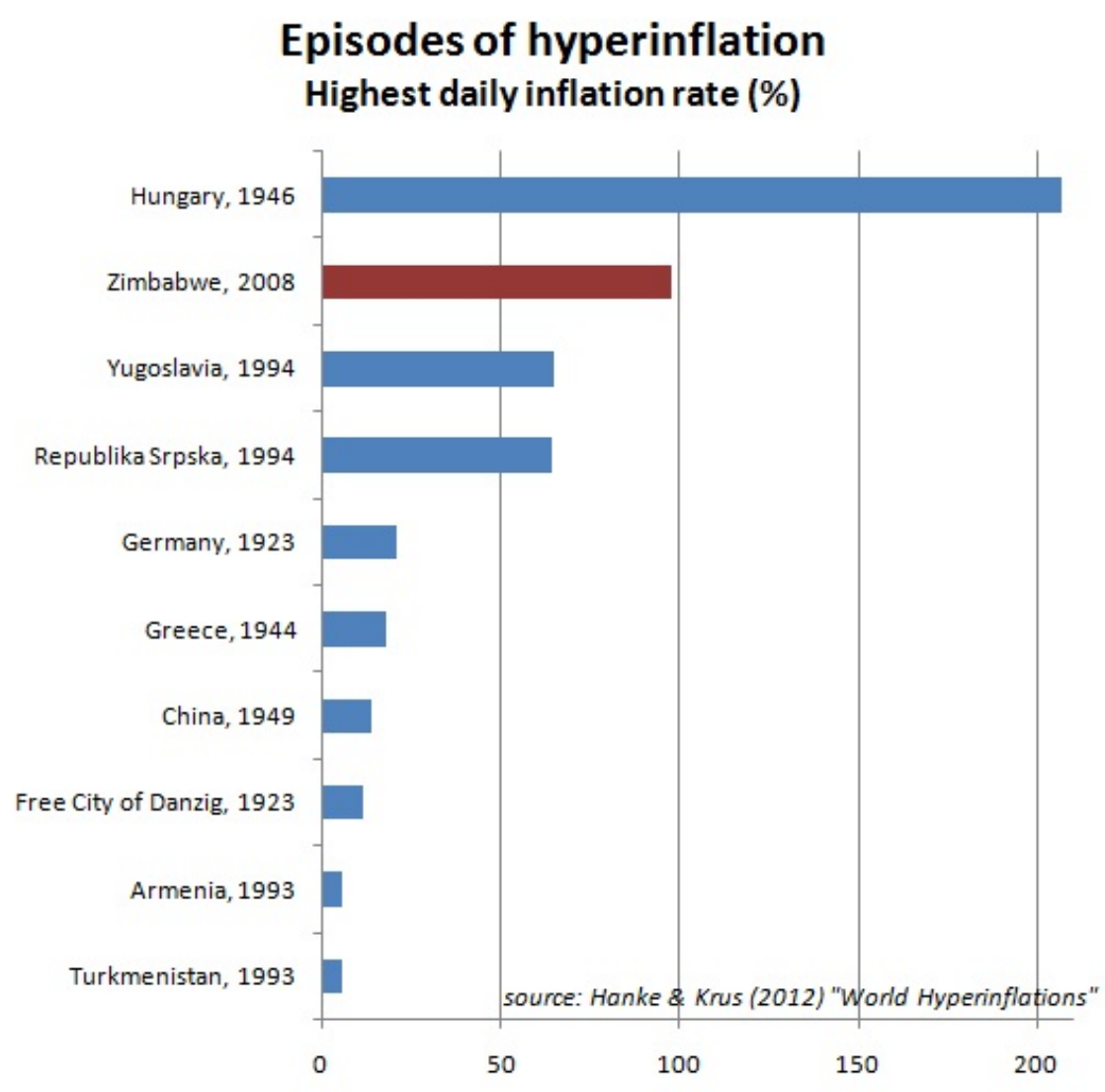
Hungary (1945-1956): **207%** per day (i.e. prices double every 15hrs)

or **4×10^{16}%** monthly

One hundred million trillion pengö

World War II and its aftermath caused enormous costs.
The national bank was under government control, and the issue of money was proportional to the budget demands.

Hyperinflation: Some Episodes



Part II:
Fiscal Stimulus and Debt Sustainability

Outline

- **A Fiscal Stimulus: How Does it Work?**
- How Much Can We Spend? Is Debt Sustainable?

Fiscal Stimulus: How Does It Work?

Production / Income Private Consumption Public Spending

$$Y = C + G$$

Fiscal Stimulus: How Does It Work?

Production / Income Private Consumption Public Spending

$$Y = C + G$$

Main Question: How Large is the Fiscal Multiplier $\frac{\Delta Y}{\Delta G}$?

i.e. If G increases by 1€, but how much does Y increase?

The Fiscal Multiplier: What Do We Know?

- **In large (closed) economies (Keynesian theory)**
  - Fiscal policy stimulates consumption, and thus output
  - … the fiscal multiplier ($\Delta Y/\Delta G$) is large (greater than 1)

- **In small (open) economies**
  - A fiscal expansion increases imports from abroad
  - … the fiscal multiplier could be small (say positive, but below 1)

- **What if people are forward looking (e.g. anticipate higher taxes / interest rates) ?**
  - … the fiscal multiplier can be negative!
  - … in that case Austerity could be expansionary

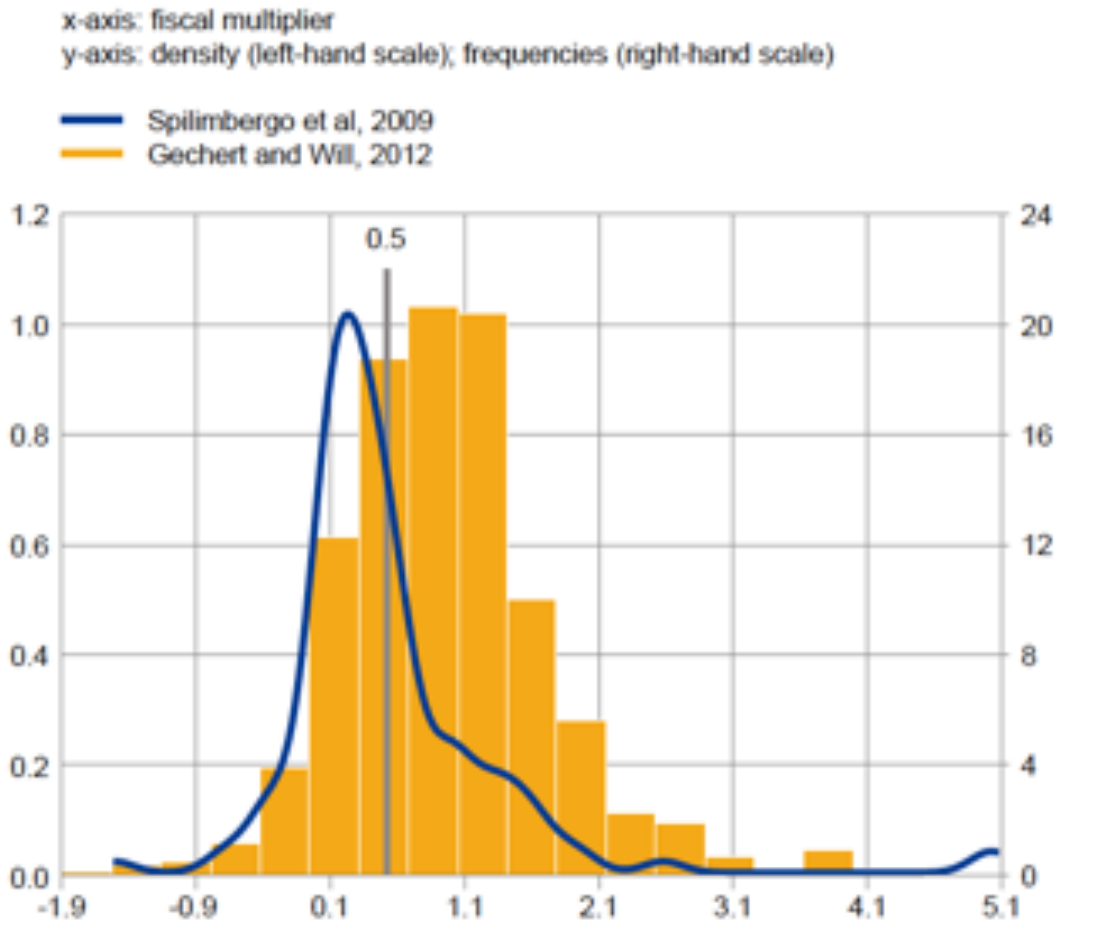
EMERGING CONSENSUS

A single "magic" number does not exists …

e.g. it depends on type of fiscal measures, type of expenditures, economic conditions, etc.

Estimates of the Fiscal Multiplier

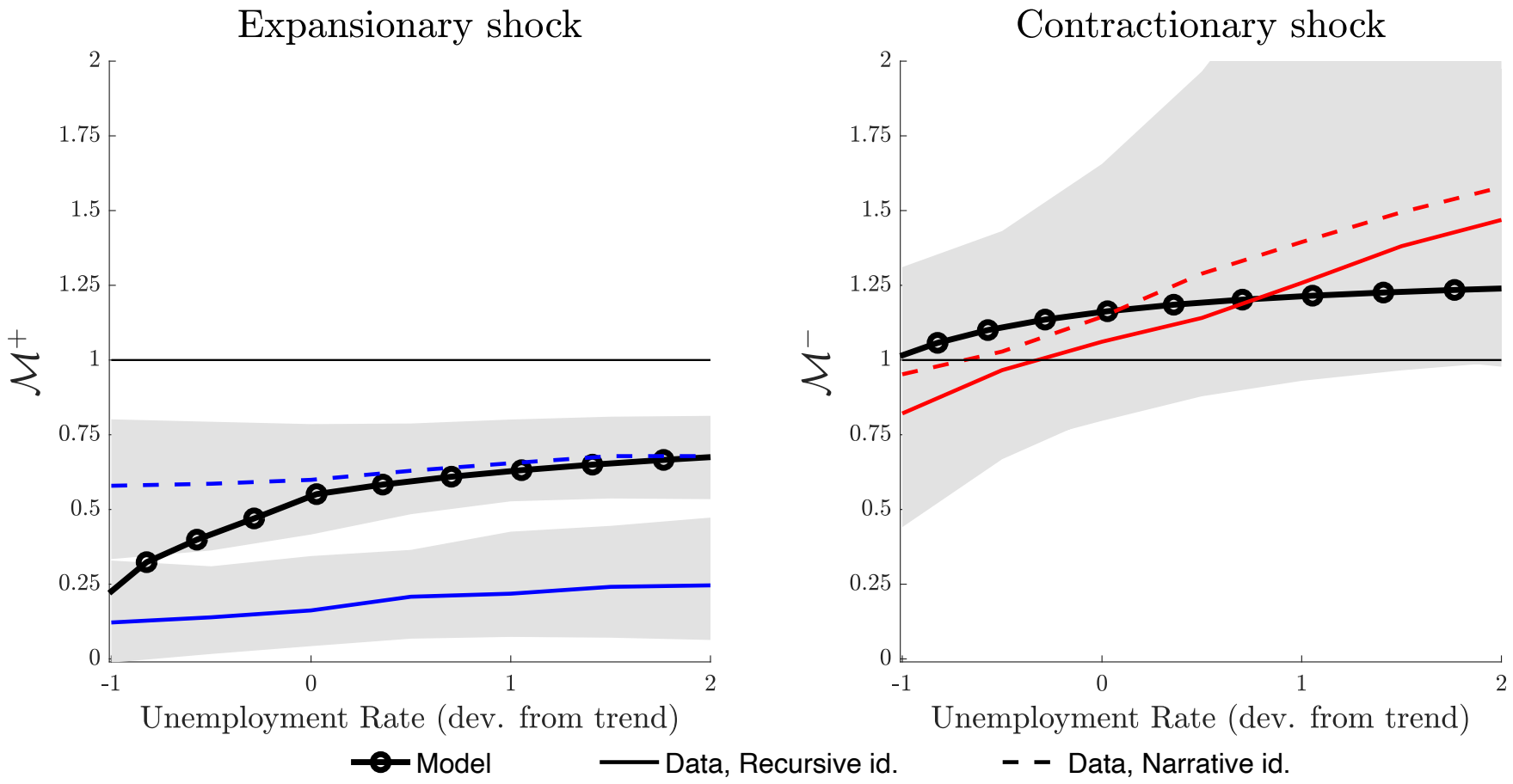
Distribution of fiscal multipliers



Source: Andrés and Doménech (2013).

Evidence on Fiscal Multiplier

From Barnichon, Debortoli, Matthes (2020)



Outline

- How Does a Fiscal Stimulus Work?
- **How Much Can We Spend? Is Debt Sustainable?**

Debt Dynamics

the Debt/GDP ratio

Debt Dynamics

$$b_t = (1 + r - g)b_{t-1} + d_t$$

Examples:

Debt Dynamics

the Debt/GDP ratio

Debt Dynamics

$$b_t = (1 + r - g)b_{t-1} + d_t$$

Different cases

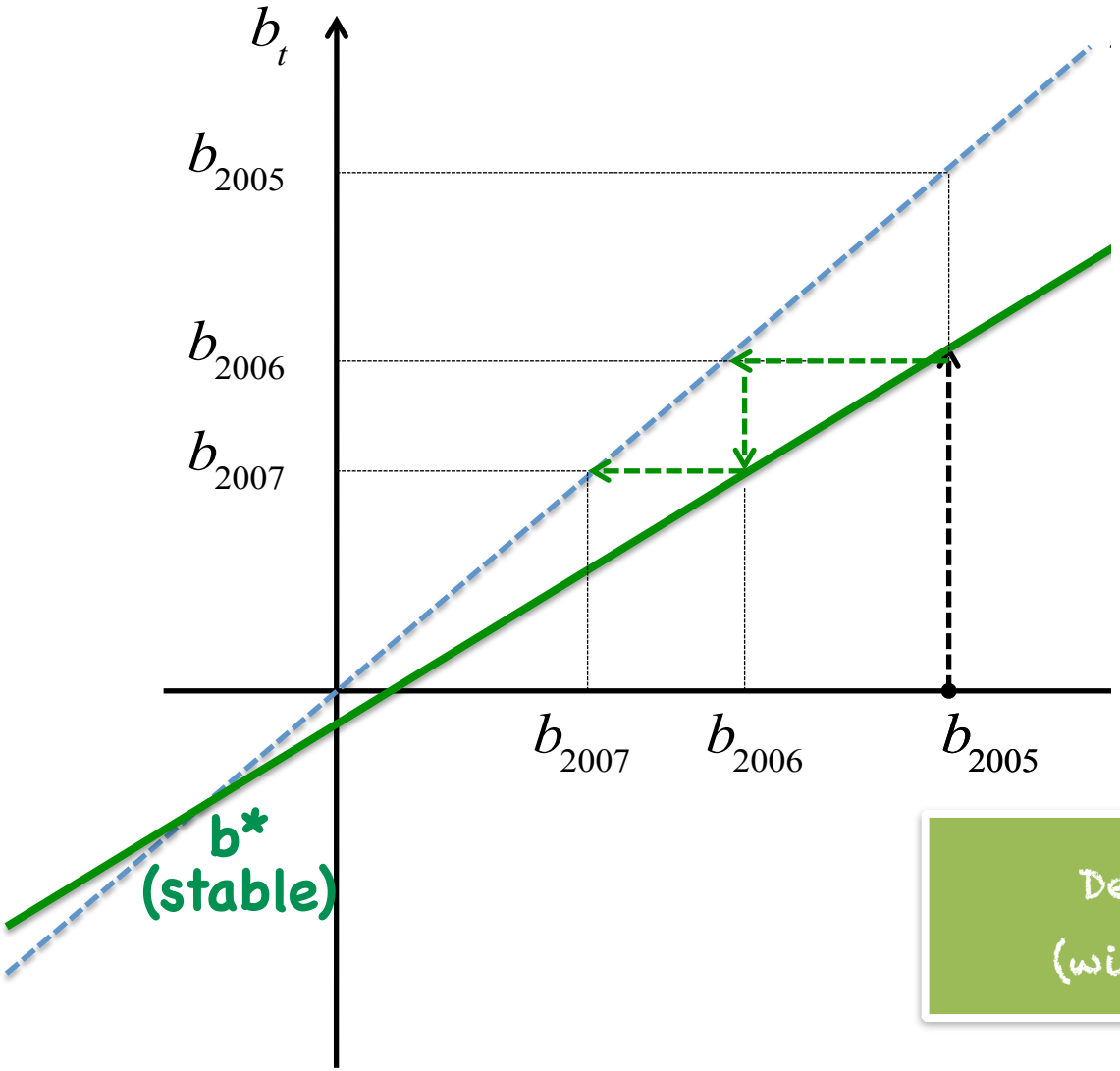
1) High growth (g>r): Debt is **STABLE**

⇒ does not matter if gov't runs deficits (d>0) or surpluses (d<0)

2) Low growth (g<r): Debt is **UNSTABLE**

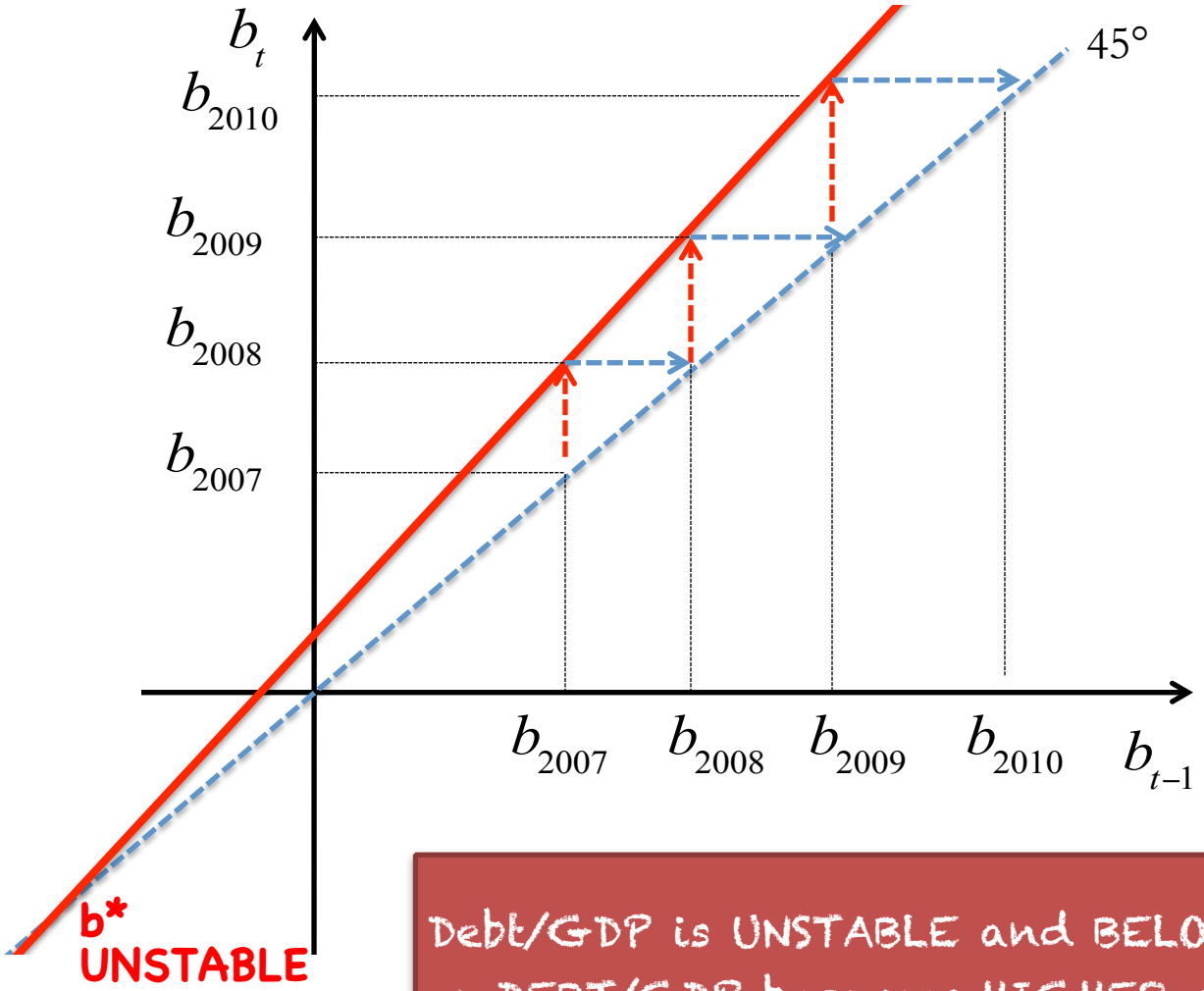
⇒ keeps **INCREASING,** unless gov't runs large surpluses (d<0)

Case 1: g>r (Spain before 2007)



Debt/GDP is STABLE
(will converges to b*)

Case 2: g<r (Spain after 2007)



Debt/GDP is UNSTABLE and BELOW current level
→ DEBT/GDP becomes HIGHER and HIGHER

(How) Should Debt be Repaid?

Two main possibilities

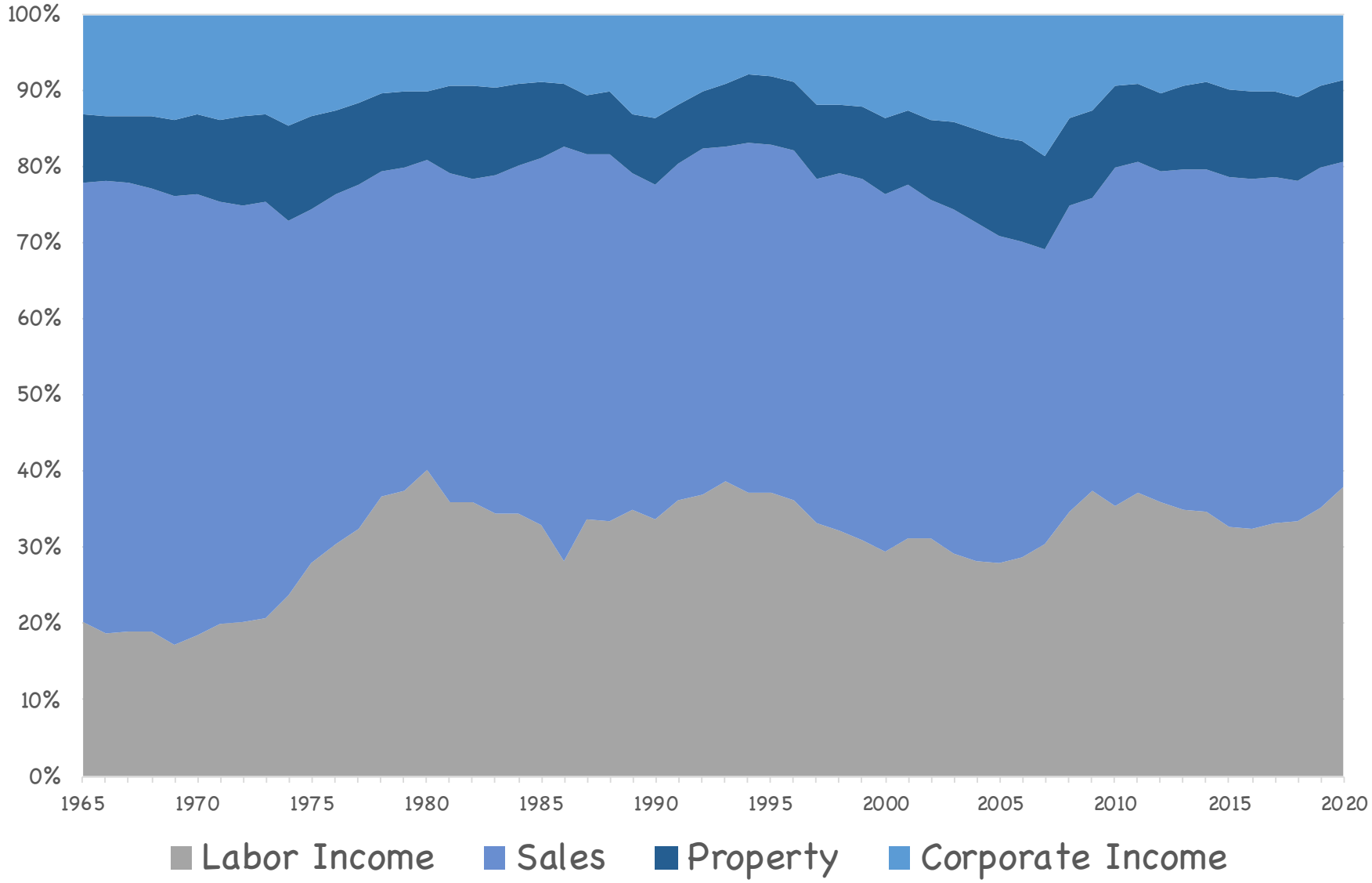
1) **Fiscal Austerity** (lower gov't Spending or higher taxes)

Who bears the main costs: mainly (poor) workers / consumers

2) **Repudiation / Monetization (nominal debt not repaid)**

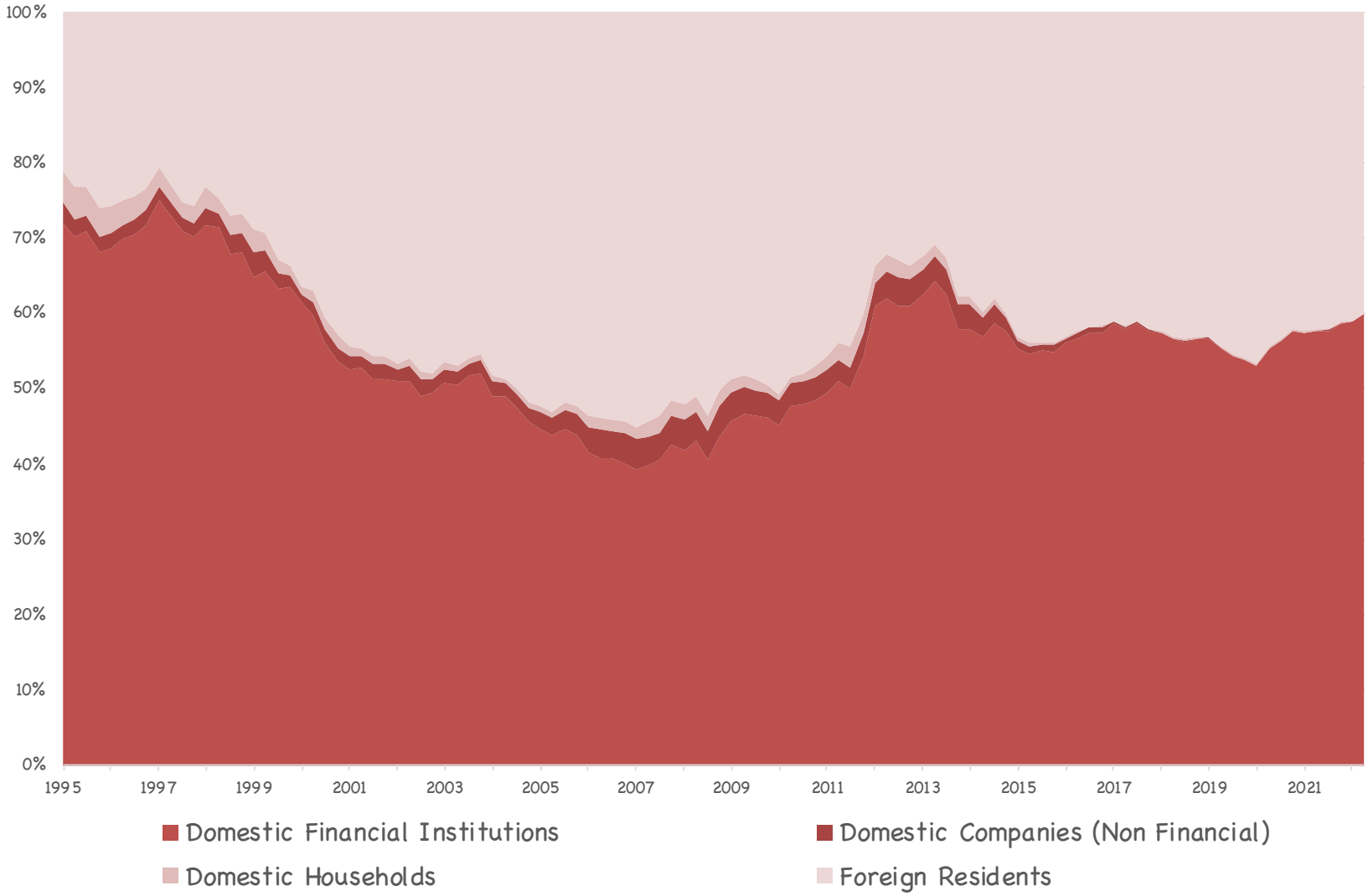
Who bears the main costs: holders of debt or money (rich or poor?)

Tax revenues by type in Spain

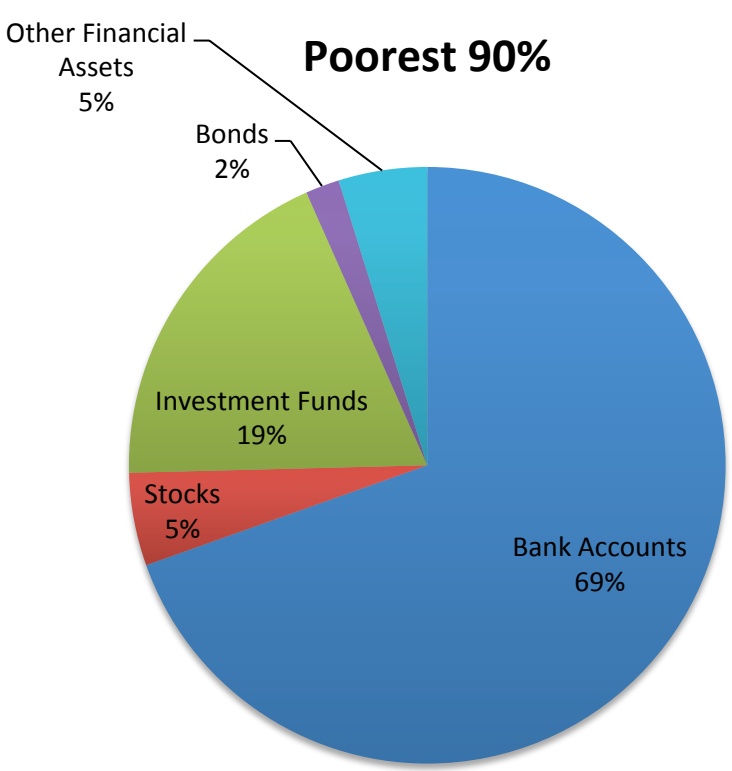


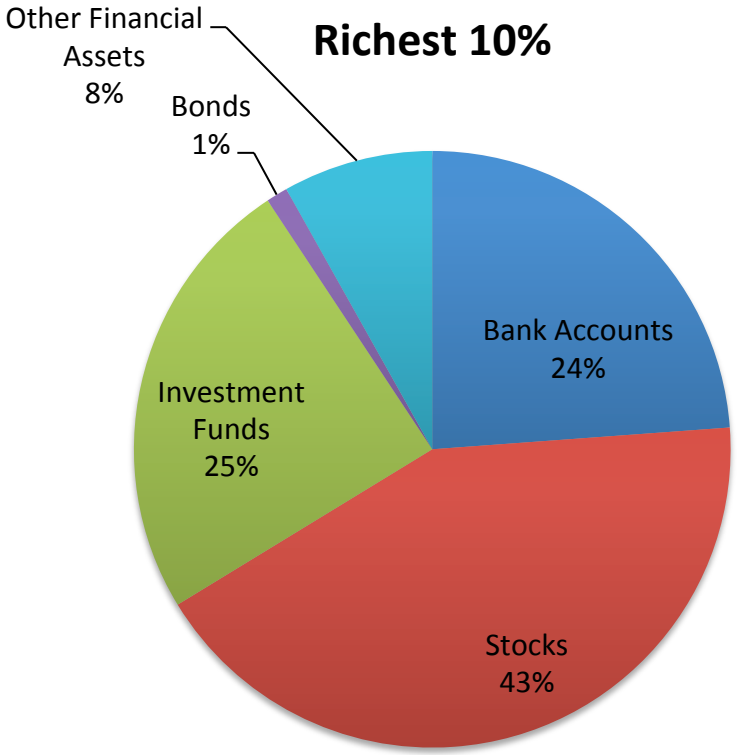
Who Holds the Spanish Debt?

A large share is held domestically (... limited scope for default)



Wealth and Asset Composition in Spain





If Spanish government defaults

→ domestic banks go bankrupt (hold large fraction of debt)

→ mainly affect "poor" people (large share of wealth as deposits)

Who was holding the Greek Debt?

A large share was held by foreigners (... default more likely)