

Business Cycles: Main Problems and Facts

Week 02

Vivaldo Mendes

Instituto Universitário de Lisboa (ISCTE-IUL)

vivaldo.mendes@iscte-iul.pt

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1. A Word of Caution

What is the Nature of Macroeconomics?

- Macroeconomics is a discipline that studies the behavior of the economy as a whole.
- “The economy as a whole” is a very complex system.
- We need to make *simplifications (theories)* to understand it.
- We need *facts* to confirm our theories.
- We need *data* to test our theories.
- We need *mathematics* to express our theories.
- We need *computers* to do the calculations.
- We need *honesty* to interpret and display the results.

A Remarkable Example of Bad Economics

The President of the US, Donald Trump, has recently said the following about the EU trade balance:

...

“They don’t take our cars, they don’t take our farm products, they take almost nothing, and we take everything from them—millions of cars, tremendous amounts of food and farm products.”

Here , also here

...

“The European Union was formed to screw the United States—that’s the purpose of it, and they’ve done a good job of it. But now I’m president.” *Here*

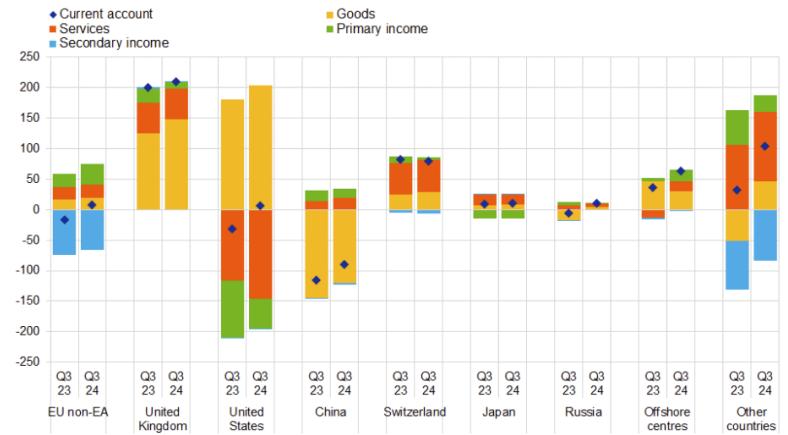
Facts

Unfortunately, the facts do not support the Donald Trump's statements.

...

Geographical breakdown of the euro area current account balance

(four-quarter moving sums in EUR billions; non-seasonally adjusted)



Source: ECB.

More facts

- No, the UE was not created to “*screw the United States*”
- It was created to screw the ...

...

old Soviet Union

- ... by the impulse of the US with their *Marshall Plan*
- ... and the *adherence* of the destroyed European countries

...

... and everybody knows this historical fact!

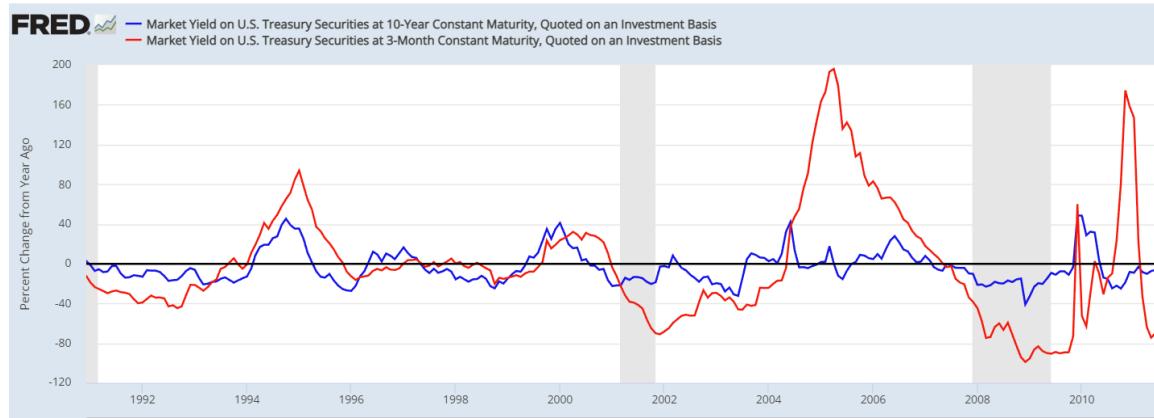
2. The Purpose of Macroeconomics

Testing your intuition

- What is more volatile: *short-term* or *long-term* interest rates?
- U.S. Treasury Securities Market Yields:
 - ▶ 10-Year Maturity
 - ▶ 3-Month Maturity



Testing your intuition



The answer is: _____

Main Macroeconomic Variables

- Real GDP (Gross Domestic Product) and its components
- Unemployment, employment, and participation rates
- Inflation rate and interest rates
- Public budgets and public debt

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Excellent sources of macroeconomic data:

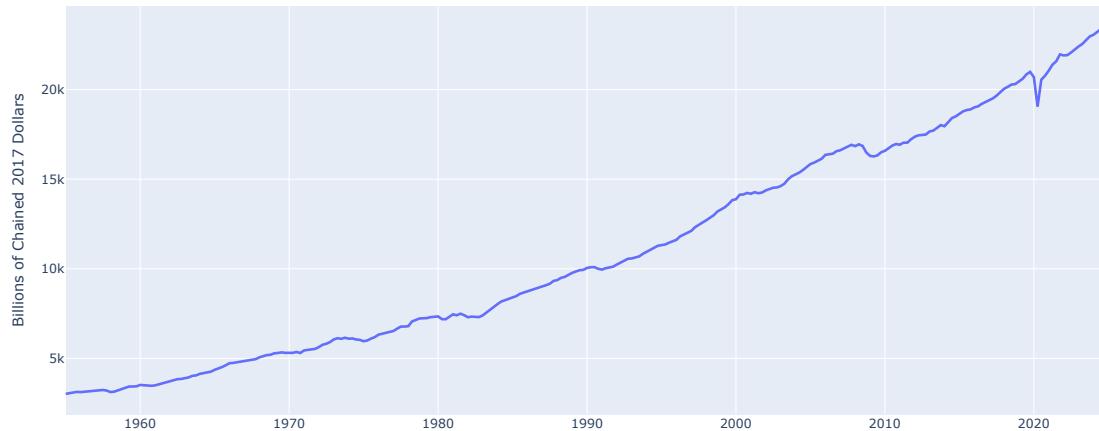
- For the US economy go here: *FRED Economic Data*
- For the EU economy go here: *EUROSTAT Data*
- For World economic data: *TED Data*

Real GDP

- The next figure shows the evolution of Real GDP for the US economy.

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Real GDP : USA (1955-2024)



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- **How helpful is a figure like this one?**

Real GDP vs Potential GDP

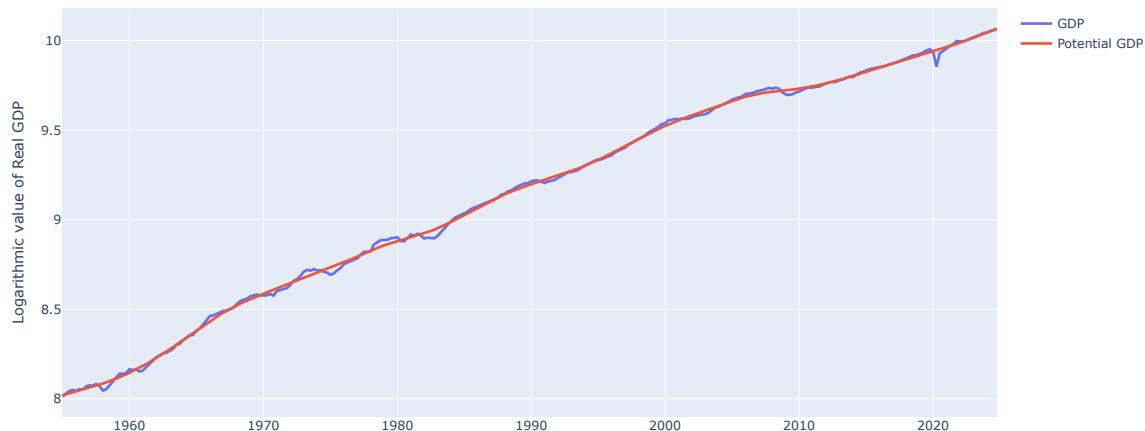
The previous figure does not provide much information by itself.

- In which periods GDP grew at higher rates?
- In what periods the US economy was performing above/below its potential GDP level?
- This raises to the surface another crucial aggregate:
 - **Potential Real GDP**

Real GDP vs Potential GDP: USA (1955-2024)

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Real GDP vs Potential Real GDP: USA (1955-2024)



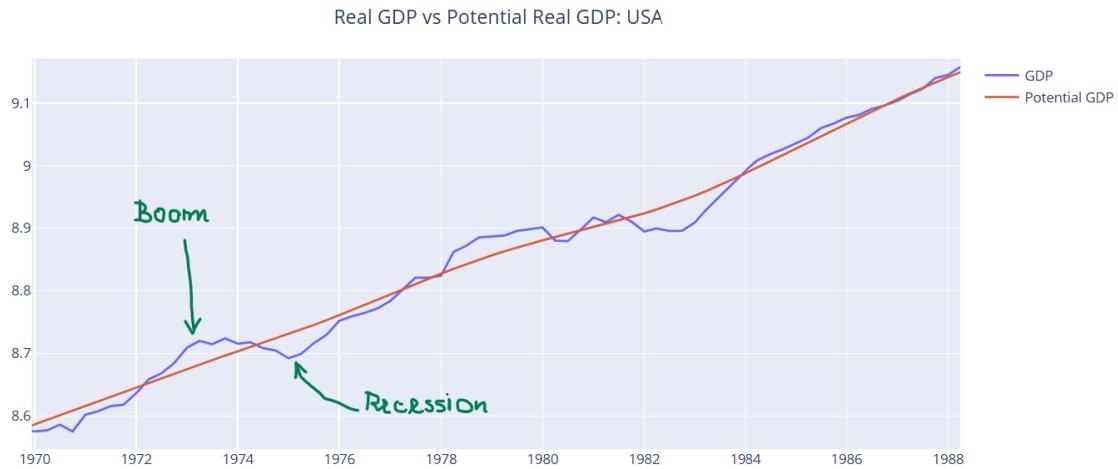
Data source: *FRED Economic Data*

Real GDP vs Potential Real GDP: USA

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A closer view: we can zoom in *between 1970 and 1988*

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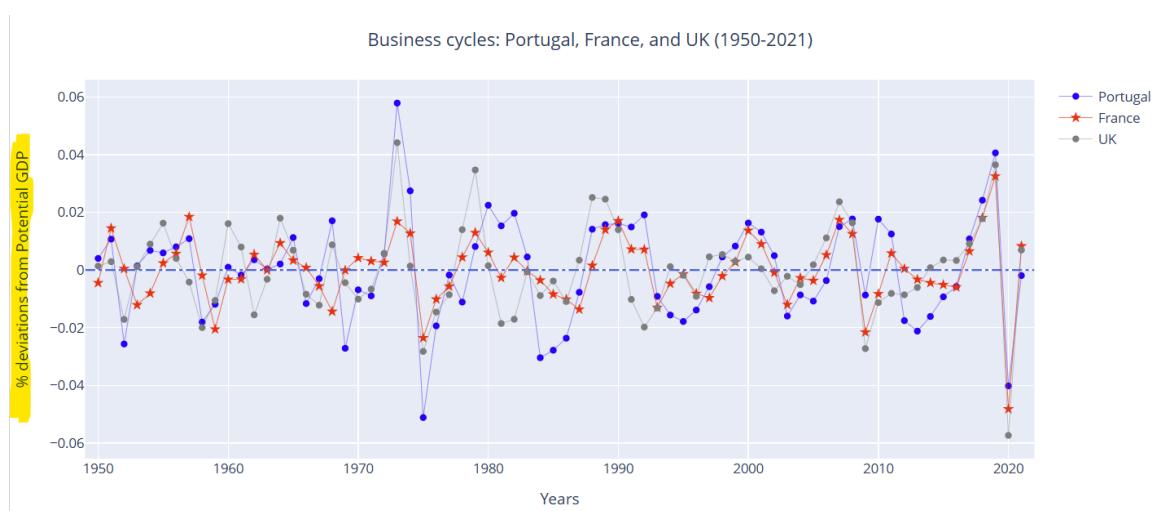


Business cycles

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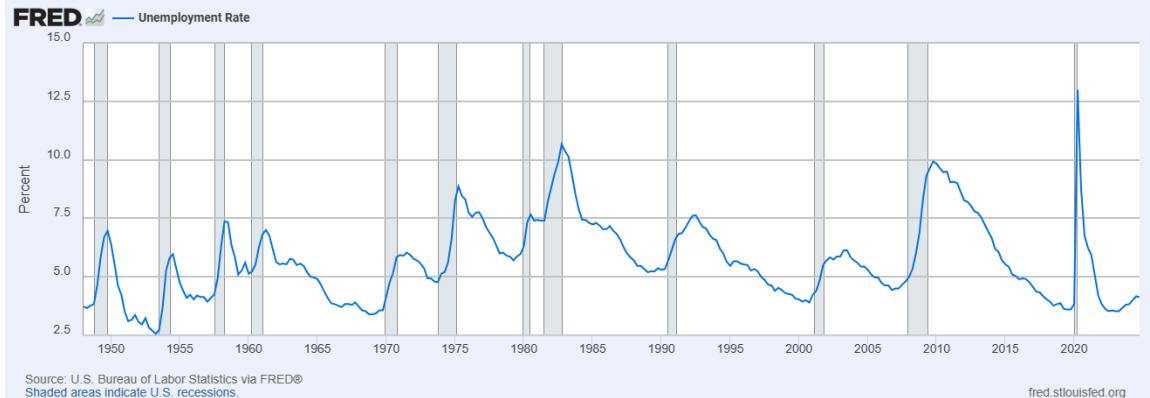
Percentage deviations of real GDP from Potential GDP

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The Unemployment Rate: USA 1947-2024

The % of the labor force that does not have a job ... but is looking for one.



Source: FRED Economic Data

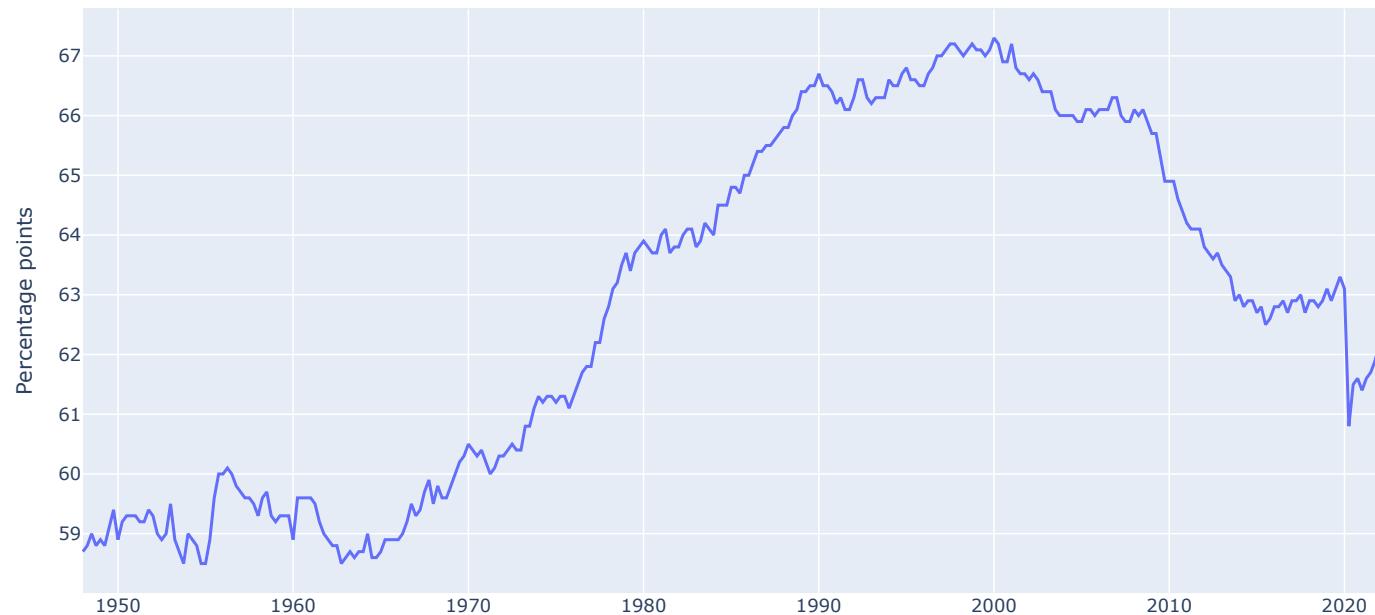
The Participation rate

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Total labour force divided by the total working-age population [15,65].

...

Participation Rate in the USA: 1948-2024



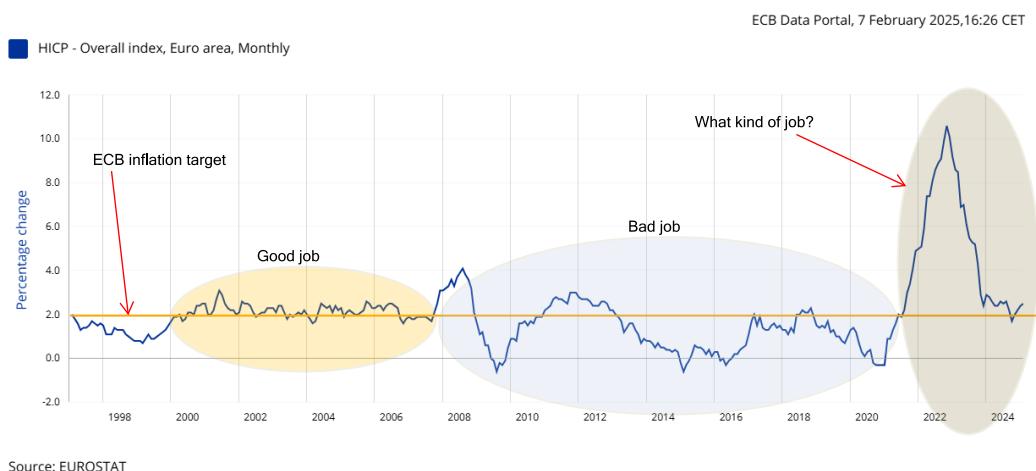
Source: FRED Economic Data

Inflation in the Euro Zone (EZ): 1997-2025

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The inflation rate is, normally, taken as the percentage change in the CPI (Consumer Price Index). Central banks have a target level: 2% per year.

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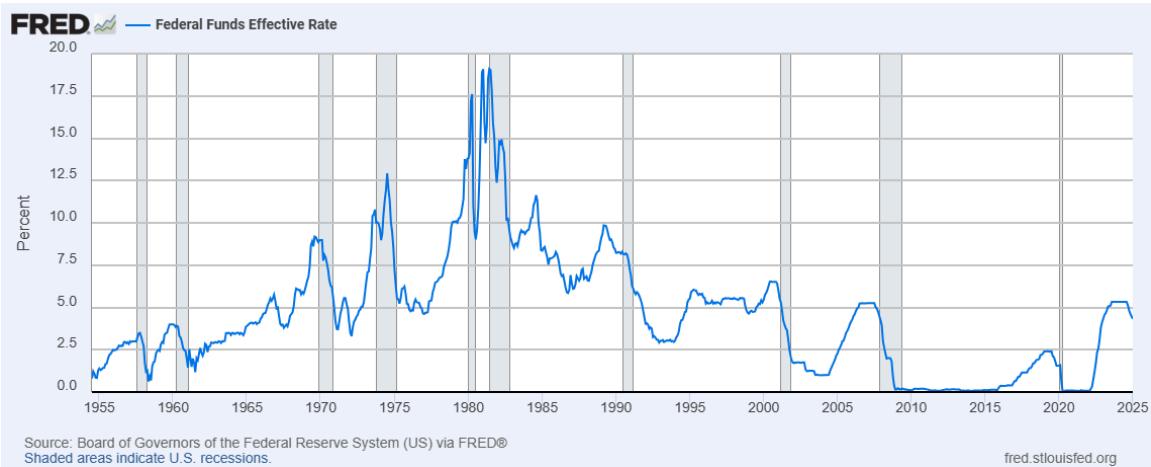


The Interest Rate in the USA (FFR)

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The Federal Funds Rate (FFR) is the most important **short-term** interest rate in the US. Source: FRED Economic Data

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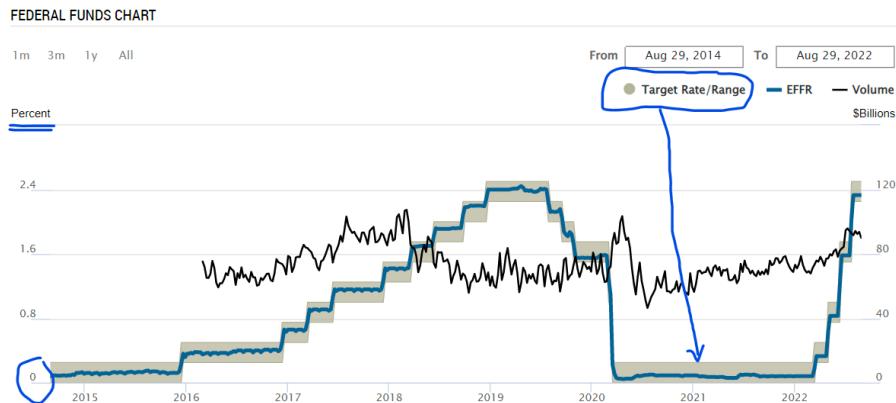


Target Interest Rate in the USA

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The US central bank (The Federal Reserve Board, or simply *Fed*) sets the **target rate range** for trading in the federal funds market.

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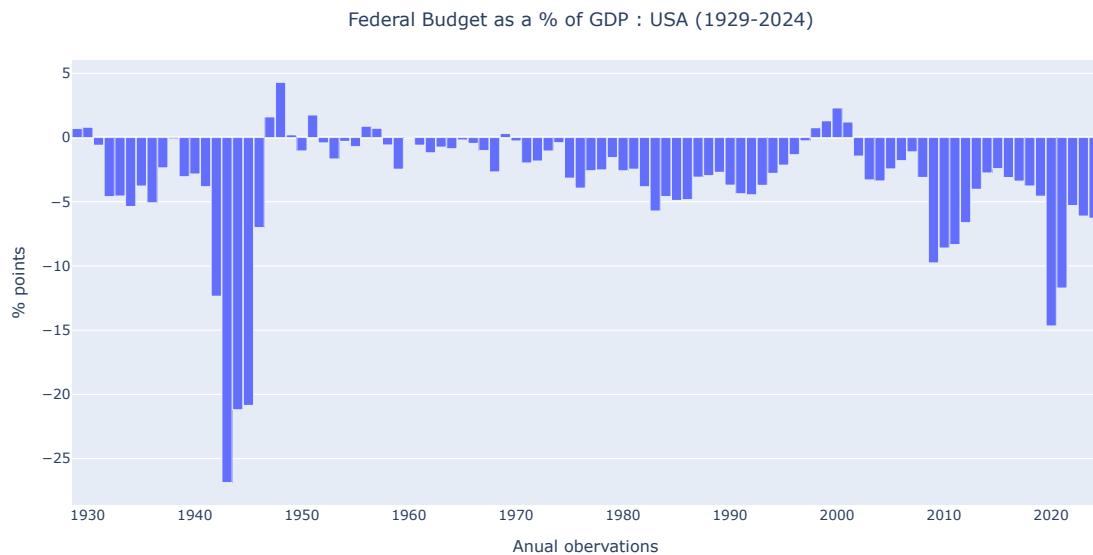
Source: *FRB of New York*

Public deficits in the USA

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Systematic deficits and highly volatile. Source *Fred data*

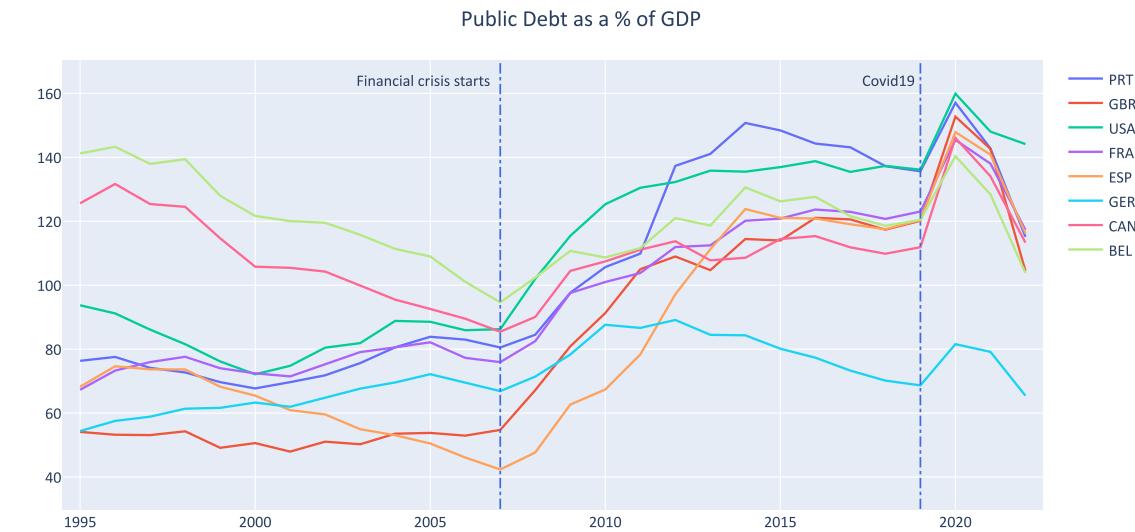
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The Size of Public debt

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Shocks and the size of public debt. From *OECD data: government debt*

...



3. The Economy is Very Volatile

What is Macroeconomic Policy?

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- It is the intervention of public institutions (the Government and the Central bank) in the functioning of the economy.
- ...
- Why is it necessary? For several reasons:
- ...
- The economy may be hit by **exogenous shocks** that have dramatic impacts on the entire economy (Covid, war in Ukraine, a large increase in oil prices, etc.)
- ...
- Some sectors have to be regulated because they are prone to **market failures** (natural monopolies, collusion, externalities)
- ...
- Some private agents may **behave dishonestly** (moral hazard) and may lead to a dramatic collapse of an entire sector in the economy (e.g., bank runs)
- ...
- The economy is very volatile ... even in the short term

The Summer 2021's Big Problem: DEFLATION

- Everybody was concerned about deflation (negative inflation rates)
- One FT's editorial applauded the move by the ECB to review its policy strategy in July 2021
- Keep interest rates at 0% or even negative if necessary

ECB's new strategy is a welcome update

Dovish shift marks break with the traditional stance of the Bundesbank



Christine Lagarde said new, unconventional tools such as QE will remain part of the ECB's armoury © Chris Ratcliffe/Bloomberg

The editorial board JULY 8 2021

38  

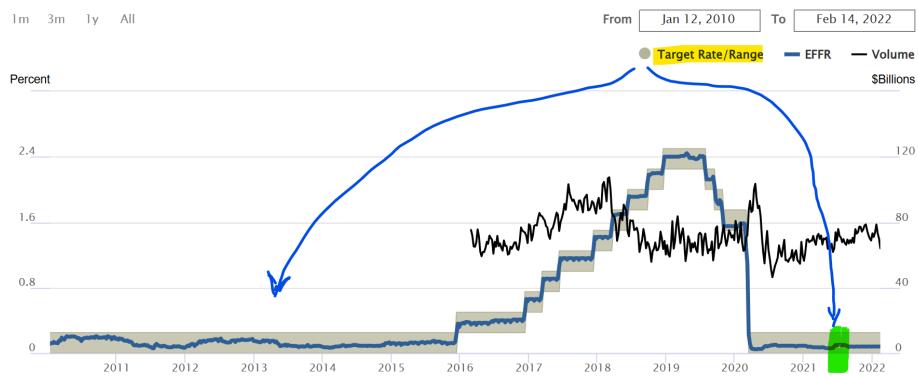
The Zero Lower Bound (ZLB)

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In the US, the fear of deflation was so strong that the Fed kept the interest rate at 0% for a long time.

...

FEDERAL FUNDS CHART



In Europe, interest rates were **negative**.

Negative Interest Rates in Europe

The inconceivable become reality in the summer of 2021. *Euribor*

...

| 7/28/2021 | |
|-------------------|----------|
| Euribor 1 week | -0.565 % |
| Euribor 1 month | -0.558 % |
| Euribor 3 months | -0.547 % |
| Euribor 6 months | -0.524 % |
| Euribor 12 months | -0.498 % |

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Summer 2022's Big Problem: **PACY INFLATION**

- Suddenly, in 12 months, inflation increased around 6 or 7 percentage points in most Western economies
- Central banks were forced to increase interest rates very aggressively
- Another FT's editorial applauded the courage of central banks in July 2022

• Opinion **The FT View** (+ Add to myFT)

A pivotal moment for central banks

Jackson Hole is a time to reflect on where policymakers made mistakes

THE EDITORIAL BOARD

+ Add to myFT



Last month US inflation reached 8.5 per cent. Eurozone inflation hit 8.9 per cent. Citigroup now forecasts UK inflation will hit 18.6 per cent in January — nine times the Bank of England's 2 per cent target © FT montage/Getty Images/Reuters/Bloomberg

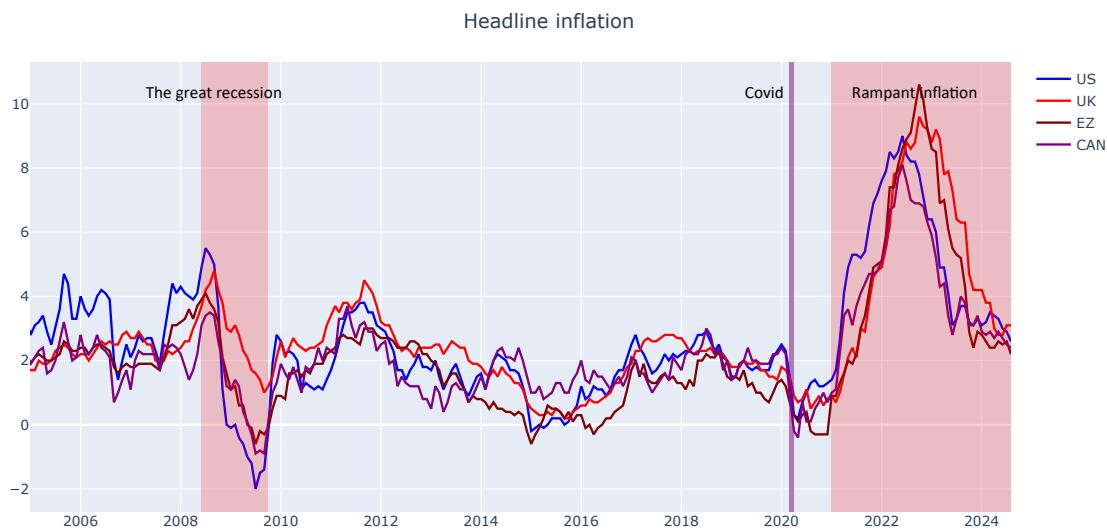
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89

Galloping Inflation

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In the summer of 2022 inflation seemed to be getting out of control.

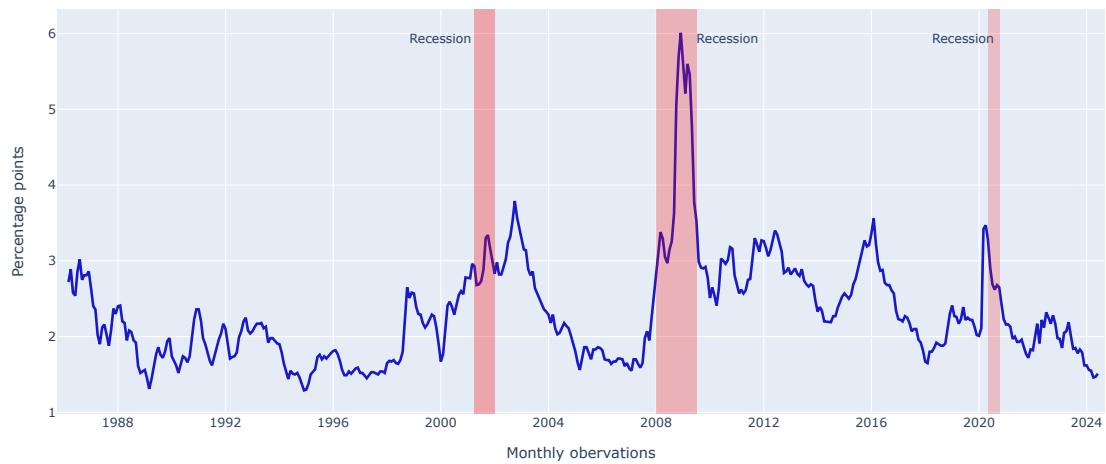
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Financial Crisis and Spread Volatility

Financial crisis lead to large jumps in spreads in the financial markets.

The risk premium (or financial friction) in the USA

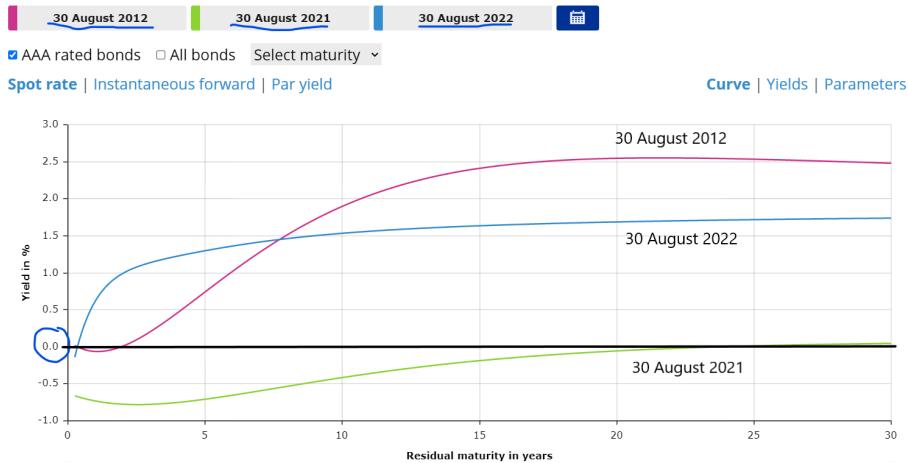


Source: *FRED Economic Data*

Macroeconomic Instability and Yields

Instability leads to large and abrupt changes in the yields of financial assets.

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Source: *European Central Bank*

4. Types of Variables

Business Cycle Variables

From the business cycles, we can obtain information about the relationships among different variables using the following statistical concepts:

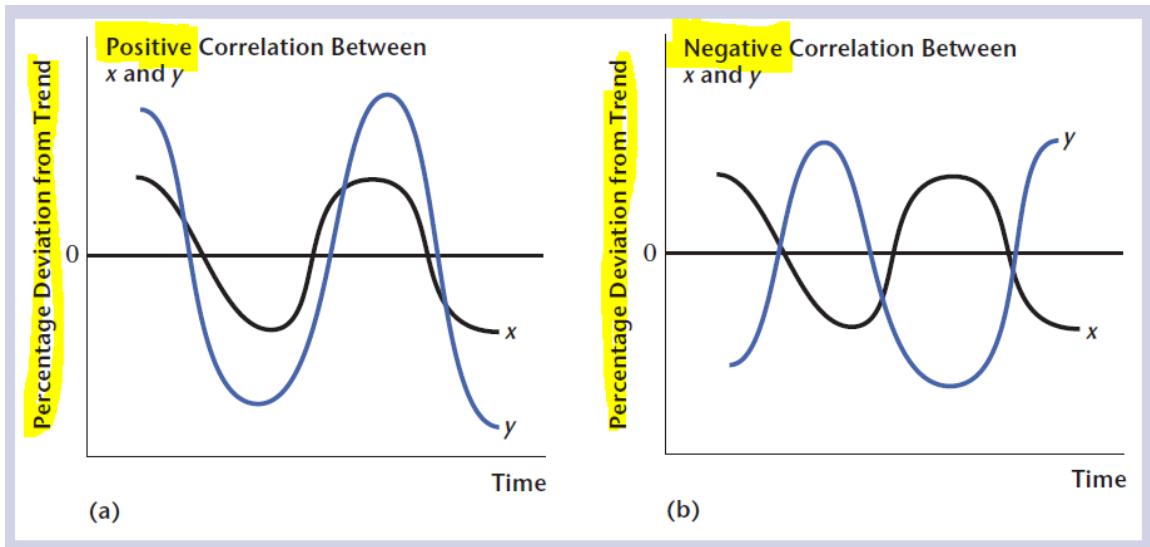
- Cross-correlation
 - Pro-cyclical variables
 - Counter-cyclical variables
 - Acyclical variables
- Turning points
 - Leading variables
 - Lagging variables
 - Coincident variables
- Standard deviation: Volatility
- Auto-correlation: Persistence

Pro-cyclical and counter-cyclical variables

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A variable is pro-cyclical if it moves in the same direction as the business cycle.

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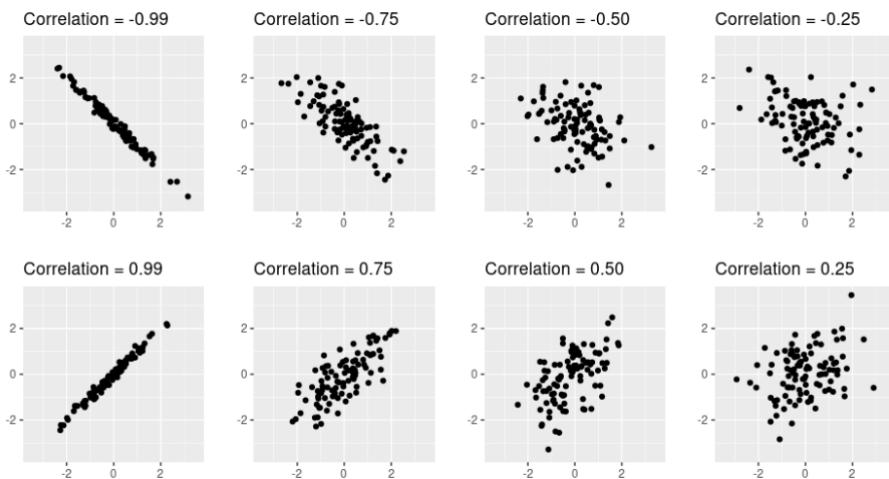
- GDP is the reference variable in the business cycle.

Recall: Cross-Correlation Plots

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Time series plots are very bad for detecting the type of correlation. Use the cross-correlation plots.

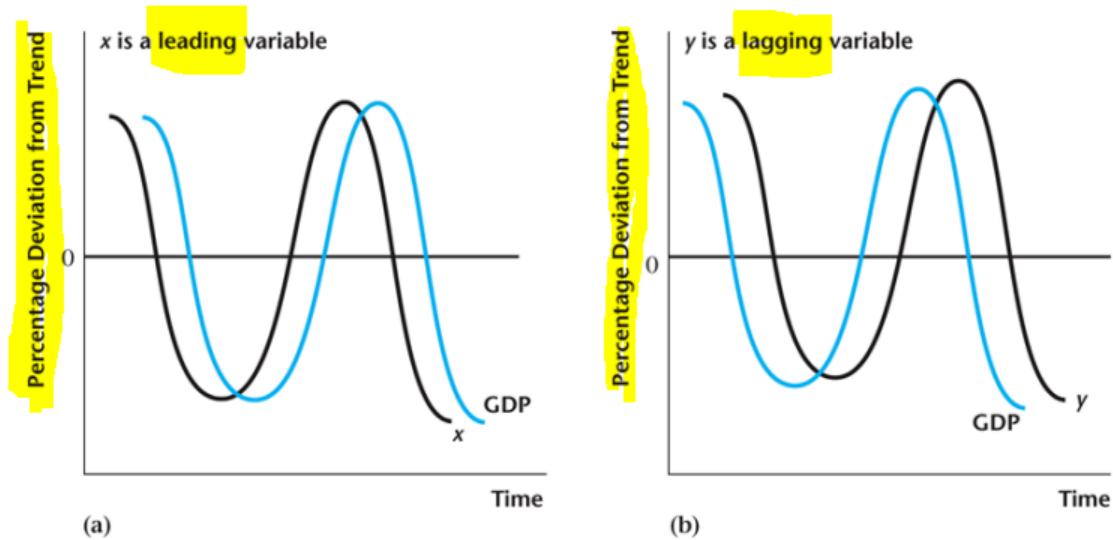
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Leading and Lagging Variables

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A variable is leading if it changes before the change of the business cycle.



- GDP is the reference variable in the business cycle.

Summary 1

Table related to cyclical and volatility

Table 3.1 Correlation Coefficients and Variability of Percentage Deviations from Trend

| | Correlation Coefficient | Standard Deviation (% of S.D. of GDP) |
|----------------------------|-------------------------|---------------------------------------|
| Consumption | 0.77 | 77 |
| Investment | 0.80 | 301 |
| Employment | 0.78 | 65 |
| Average Labor Productivity | 0.77 | 63 |

Stephen D. Williamson, *Macroeconomics*, 6th Edition, 2018, Pearson. In “*Chapter 3: Business Cycle Measurement*”

Summary 2

Table related to leading/lagging variables

Table 3.2 Summary of Business Cycle Facts

| | Cyclical | Lead/Lag | Variation Relative to GDP |
|----------------------------|-------------|------------|------------------------------|
| Consumption | Procyclical | Coincident | Smaller |
| Investment | Procyclical | Coincident | Larger |
| Employment | Procyclical | Lagging | Smaller |
| Real Wage | Procyclical | ? | ? |
| Average Labor Productivity | Procyclical | Coincident | Smaller |

Stephen D. Williamson, *Macroeconomics*, 6th Edition, 2018, Pearson. In “*Chapter3: Business Cycle Measurement*”

5. Readings

Readings

- This is an introduction to business cycles. ***There is no compulsory readings***.
- However, if you want to get some further information about ***business cycles***, a good bibliographical reference is “*Chapter3: Business Cycle Measurement*” in the textbook:
 - Stephen D. Williamson (2018). *Macroeconomics*, 6th Edition, Pearson.
- If you need more information about ***macroeconomics in general***, you can check the materials available here: modernmacro.org

Bibliography