BUSINESS CYCLES: MAIN PROBLEMS & FACTS

Week 2

Vivaldo Mendes
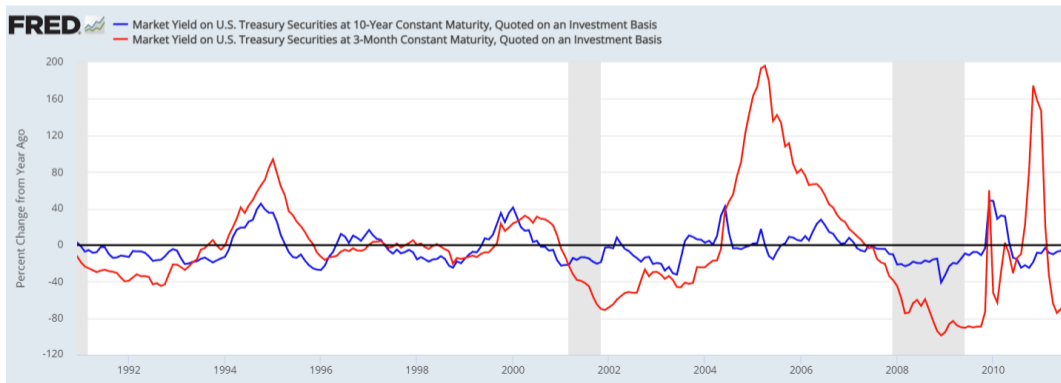Instituto Universitário de Lisboa – ISCTE-IUL

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1. The Purpose of Macroeconomics

TESTING YOUR INTUITION

- What is more volatile?
- 10-Year vs 3-Month Maturities (U.S. Treasury Securities Market Yield).
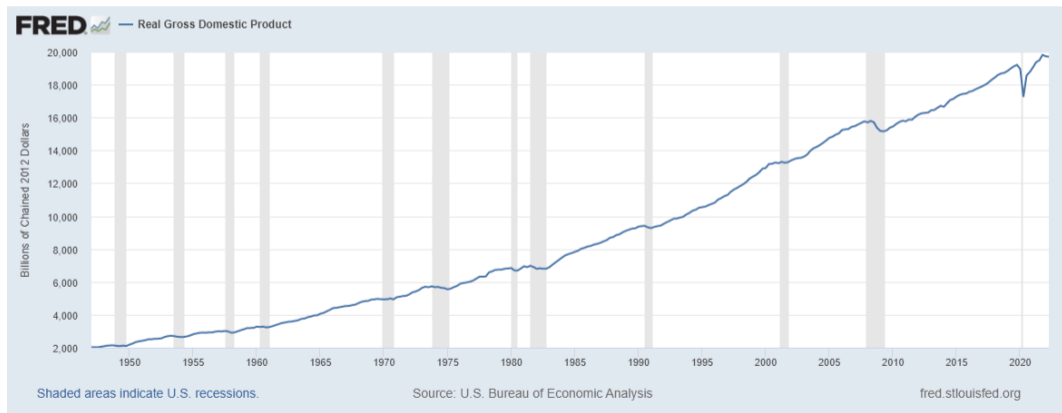
MAIN MACROECONOMIC VARIABLES

- Macroeconomic models focus in particular on four crucial economic data series:
  - Real GDP (Gross Domestic Product) and its components
  - Unemployment rate and hours of work
  - Inflation rate and interest rates
  - Public budgets and debt

- For the US go here: FRED Economic Data

- For the EU go here: EUROSTAT: Your Key to Economic Indicators

- For the world go here: CONFERENCE BOARD: Total Economy Database

- We will make extensive use of the FRED data and Total Economy Database

Real GDP

Next week, we will define with rigor what "Real GDP" is all about. This figure exposes the evolution of Real GDP for the US economy, for 1947-2021.

FRED — Real Gross Domestic Product

Shaded areas indicate U.S. recessions.   Source: U.S. Bureau of Economic Analysis   fred.stlouisfed.org
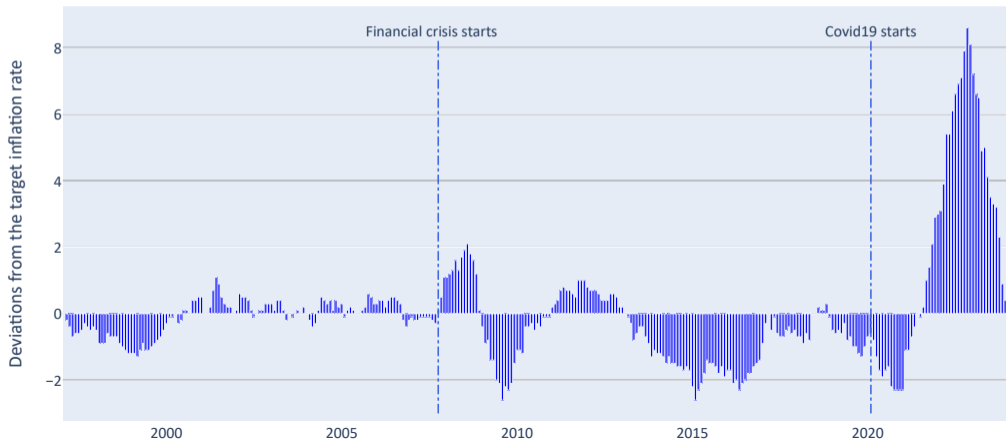
The Unemployment Rate (US)

The unemployment rate measures the percentage of workers looking for work, but who do not have jobs, at a particular point in time.
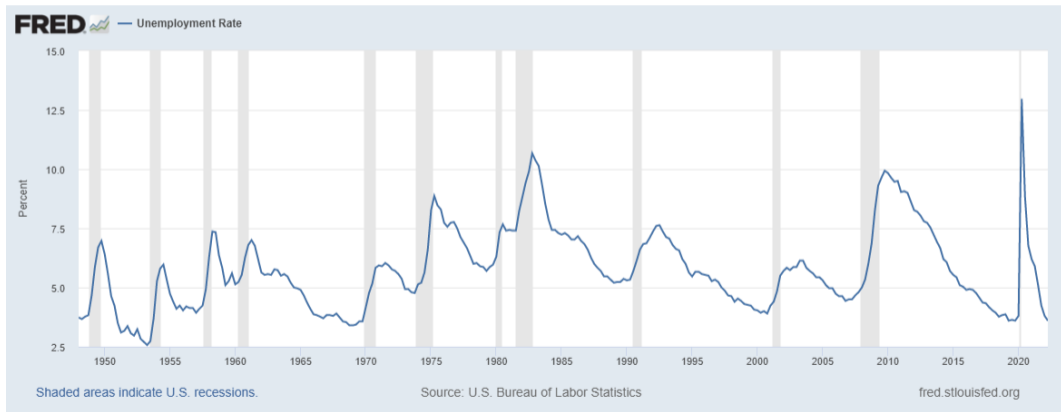
# The Inflation Rate (Euro Area)

The ECB job of controlling inflation has not been very good since 2007.

Euro Area inflation minus 2% (the target value for inflation)

The Interest Rate (US)

The federal funds rate is the rate banks trade money (dollars) with each other overnight. The effective federal funds rate is determined by the market but is highly influenced by the Federal Reserve.
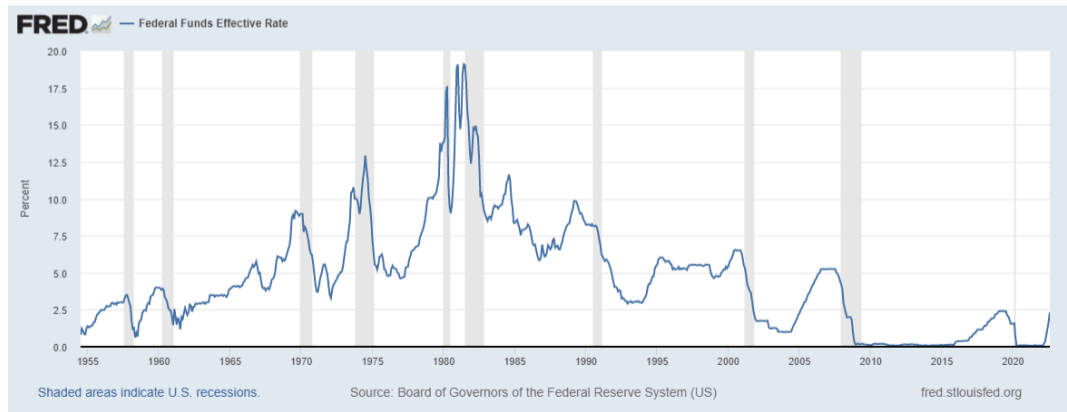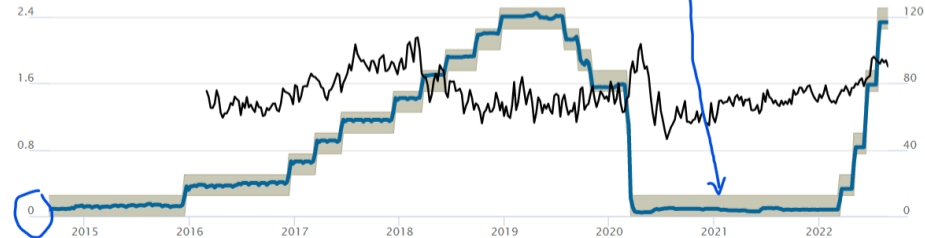
THE TARGET INTEREST RATE (US)

The Federal Open Market Committee (FOMC) establishes the target rate, or range, for trading in the federal funds market. See FRB of New York
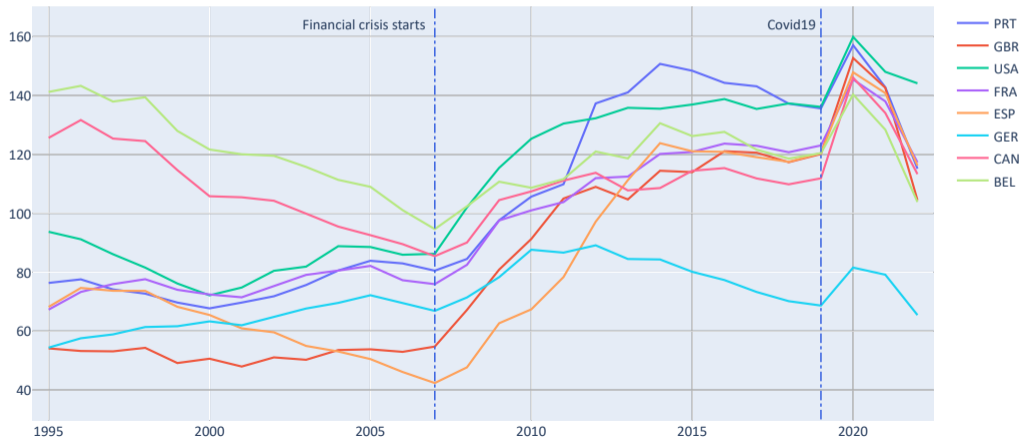
THE SIZE OF PUBLIC DEBT

Shocks and the size of public debt. See OECD Data: General government debt

Public Debt as a % of GDP

2. The Economy is Very Volatile

The Economy is Very Volatile: I

Summer of 2021: we were extremely concerned about DEFLATION. One FT's editorial applauded the ECB's move to review its policy strategy July 2021.

Opinion The FT View (+ Add to myFT)

ECB's new strategy is a welcome update

Dovish shift marks break with the traditional stance of the Bundesbank

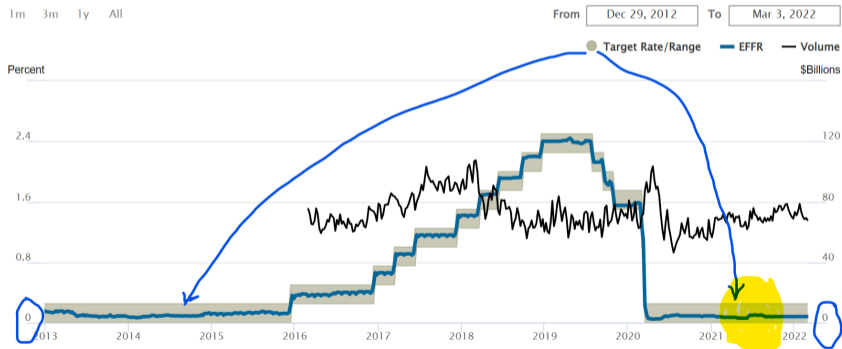THE EDITORIAL BOARD (+ Add to myFT)

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

The Economy is Very Volatile: I

Summer of 2021: we were extremely concerned about DEFLATION. Interest rates were at the Zero Lower Bound (ZLB).

The Economy is Very Volatile: II

Summer of 2022: we were extremely concerned about ramping INFLATION. A FT's editorial supports aggressive central banks' dramatic increases in interest rates.

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

The editorial board AUGUST 22 2022

The Economy is Very Volatile: II

Inflation was gaining momentum in late 2021, but the Fed kept waiting with rates at the ZLB.

Inflation and the Fed funds rate (FFR) for the USA (2000--2022)
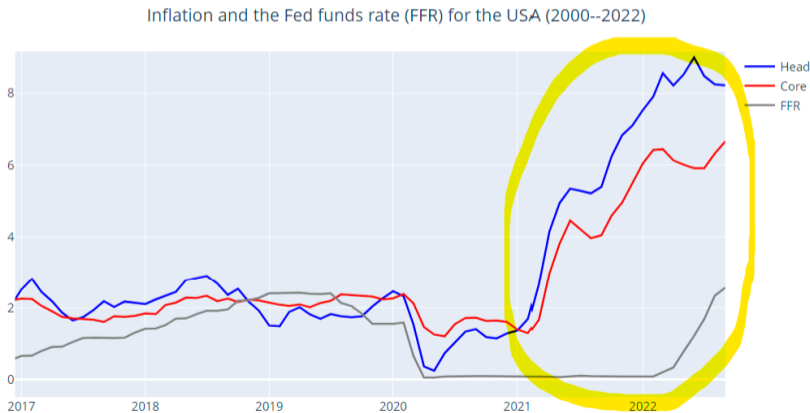
REDUCE INFLATION: HOW COSTLY IS IT?

If inflation increases above 2%, central banks increase interest rates, which may lead to a recession and higher unemployment. Cost: lost GDP, jobs destroyed.

Inflation (CPI) versus Fed Funds Rate (FFR): USA (1960.Q1--2023.Q4)
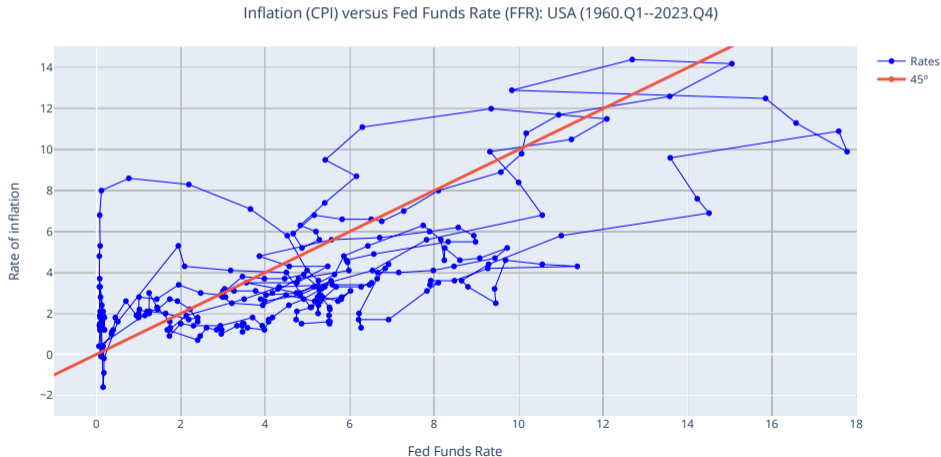
FINANCIAL CRISES AND SPREADS

Financial crisis lead to large and unexpected increases in spreads in the financial markets. Source: FRED

Moody's Baa Corporate Bond Yield Relative to Yield on 10-Year Treasury Constant Maturity
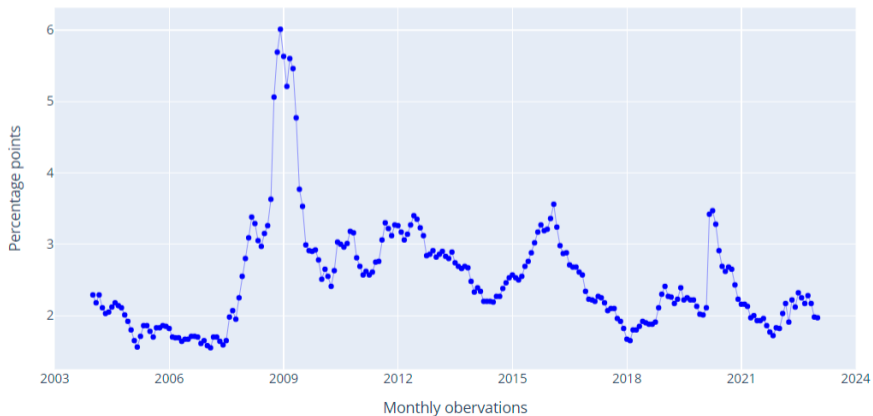
Macroeconomic Instability and Yields

Macroeconomic instability leads to large and abrupt changes in the yields of financial assets. Source: European Central Bank
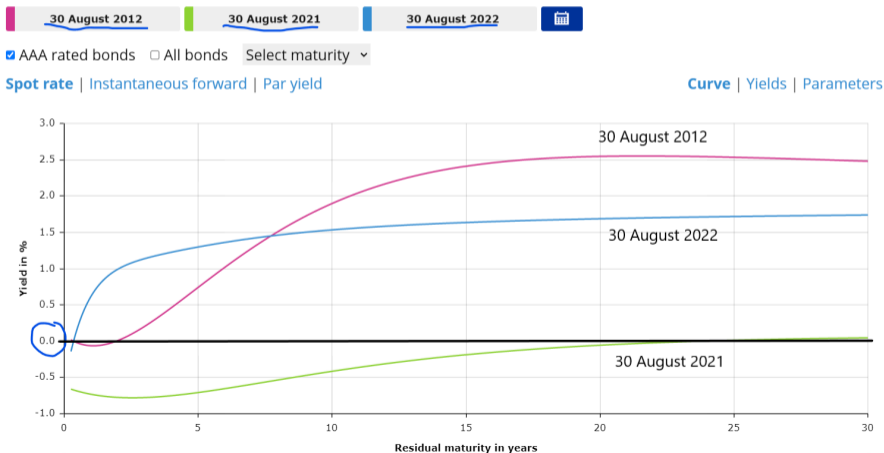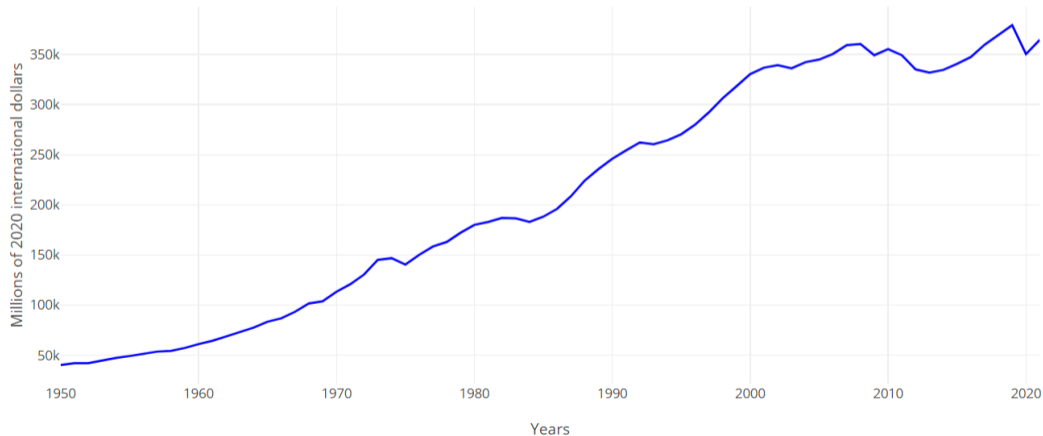
3. Business Cycles: Main Idea

Real GDP: Portugal (1950–2021)

Data: "The Total Economy Database"
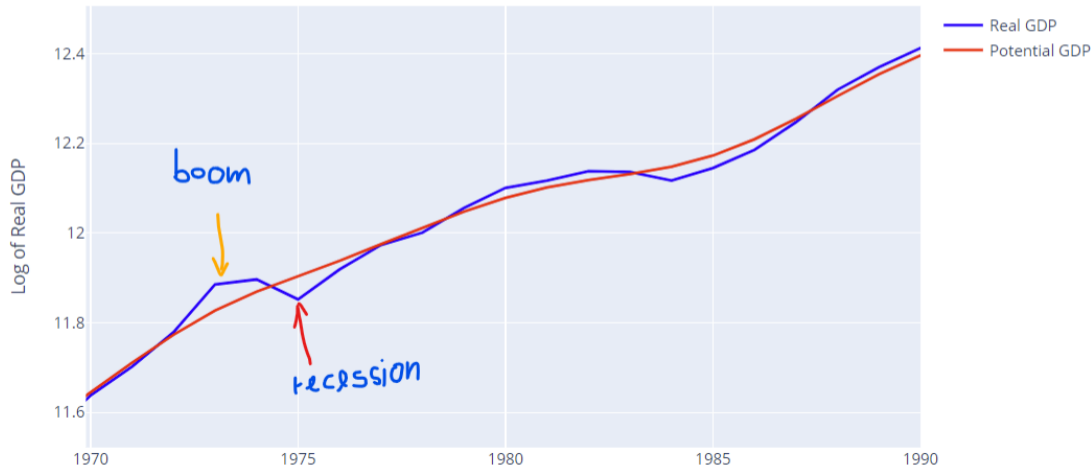

Real GDP: Portugal (1950-2021)

Real GDP vs Potential Real 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**.
- **Business cycles** consist of short-term variations in macroeconomic activity and comprise booms & recessions.
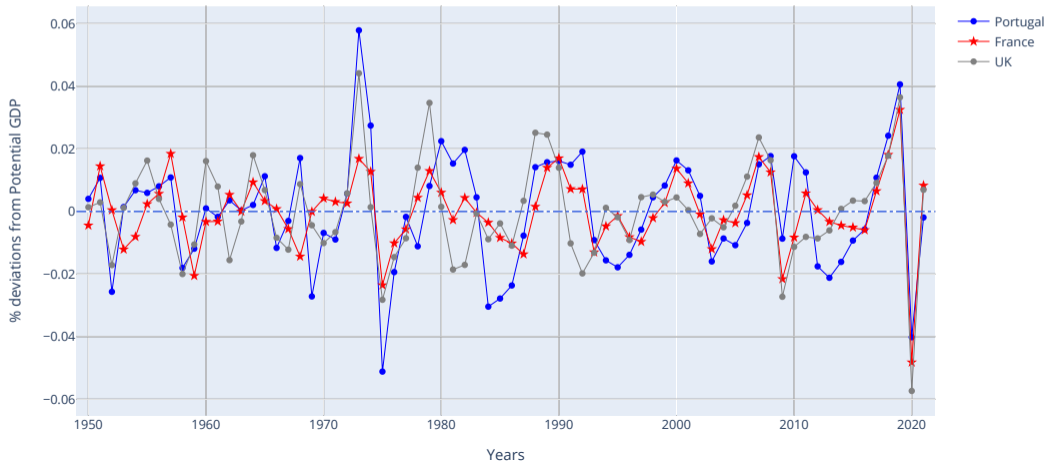
REAL GDP vs POTENTIAL GDP in PORTUGAL

Data: "The Total Economy Database". If your variable has a trend, apply logs

BUSINESS CYCLES:PORTUGAL, FRANCE & UK

Look at the y-axis label: "% deviations from Potential GDP"
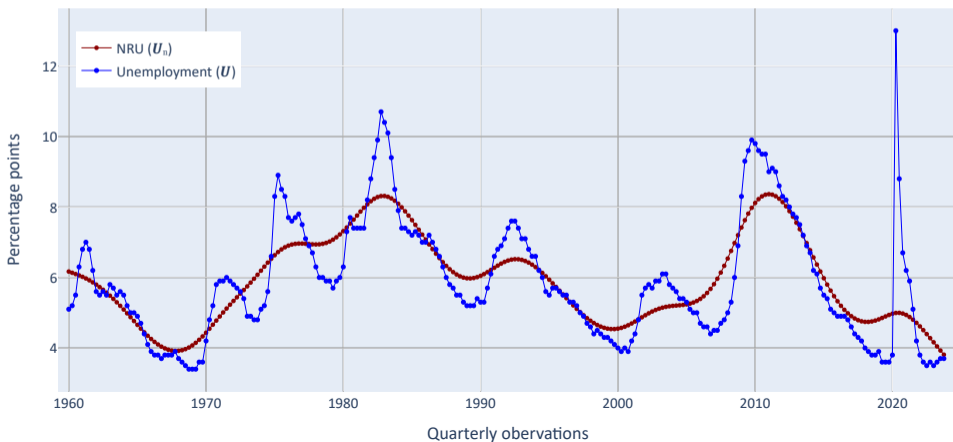

Business cycles: Portugal, France, and UK (1950-2021)

Unemployment vs Natural Unemployment

The natural rate of unemployment is usually given by the long term trend of the unemployment rate.
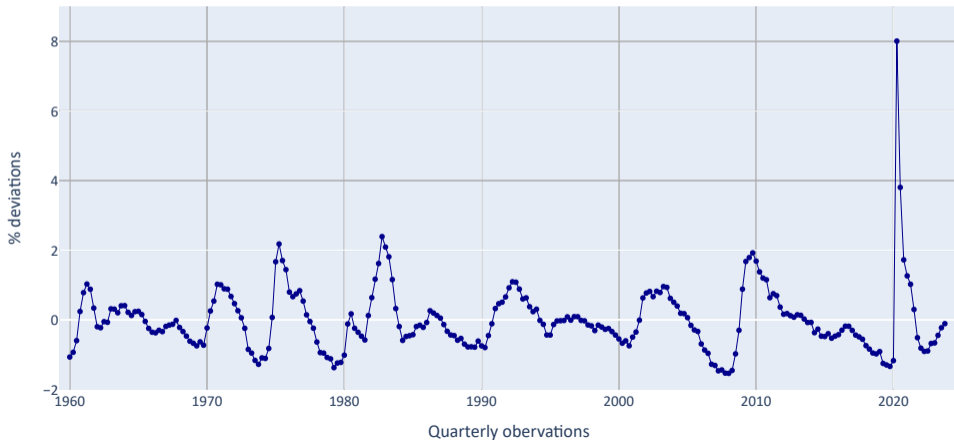

Unemployment vs the Natural Rate of Unemployment (trend) in the US: 1960Q1-2023Q4

CYCLICAL UNEMPLOYMENT

Cyclical unemployment $(U - U_n)$ is caused by recessions and booms.

Cyclical unemployment in the US: 1960Q1-2023Q4

A Definition

Business cycles are the recurrent short-run movements around a smooth long-run trend, measured as percentage deviations from this trend, in endogenous economic variables, like production, investment, consumption, employment, price level, real wage, average labor productivity, money supply, among others.

4. Types of Variables

Business Cycles: Types of 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

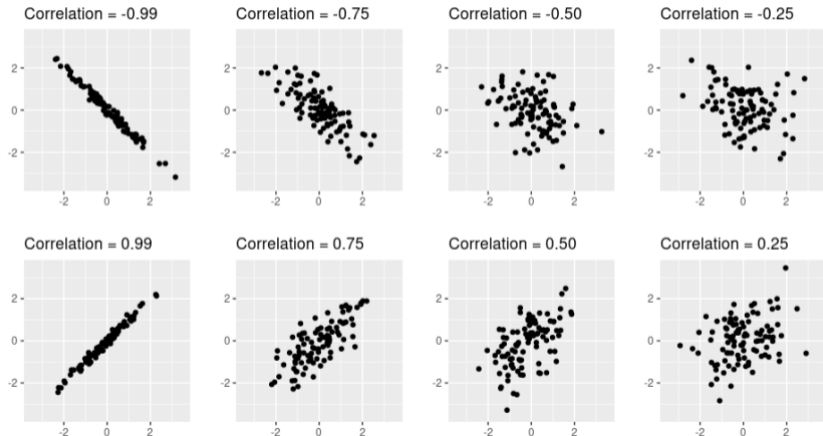- Standard deviation: Volatity

- Auto-correlation: Persistence

PROCYCLICAL, COUNTERCYCLICAL, ACYCLICAL

A variable is **pro-cyclical** if its cycles are positively correlated with GDP. Counter-cyclical if ....
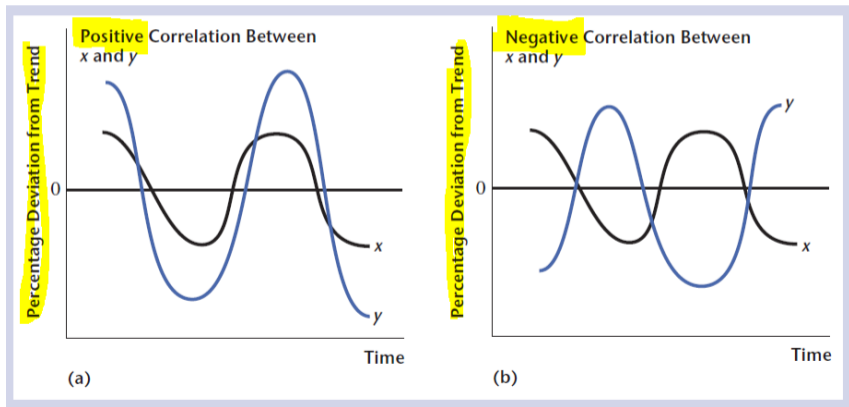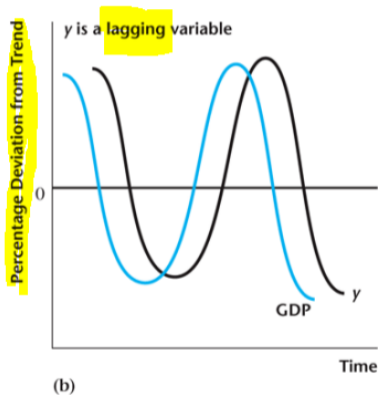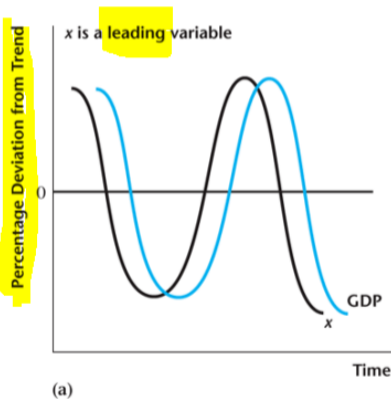
Remember: Cross-Correlation Plots

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

LEADING VS LAGGING VARIABLES

A **leading** variable: its turning points precede those og GDP.

Summary 1

Table from textbook by Stephen D. Williamson, *Macroeconomics*, 6th Edition, 2018, Pearson: *"Chapter3: Business Cycle Measurement"*

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

Summary 2

Table from textbook by Stephen D. Williamson, *Macroeconomics*, 6th Edition, 2018, Pearson: *"Chapter3: Business Cycle Measurement"*

Table 3.2 Summary of Business Cycle Facts

	Cyclicality	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

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.