

Introduction to Economic Fluctuations

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Introduction

So far we have studied the economy in the long-run. We have studied:

- The closed economy model.
- Monetary System.
- Inflation in the long-run.
- Unemployment in the long-run.
- Economic Growth.

The **long-run** is about the **average level**, or the **trend**, of the economy variables such as output, inflation, and unemployment.

We will now switch gears and study the economy in the **short-run**:

The **short-run** is about:

- **Temporary departures** from the trend in these variables.
- **Fluctuations** in the economy.
- **Booms** and **recessions**.

Introduction

We refer to short-run fluctuations as **business cycle**.

- This might be a bit misleading, as the business cycle is not a regular cycle.
- They are **irregular** and **unpredictable**.

Our goal in this last part of the course is to try to understand:

- What **causes** short-run fluctuations.
- What **model** should we use to explain them.
- What policymakers can do to **stabilize** the economy and avoid recessions.

In this lecture we will examine the **data that describes the short-run fluctuations**.

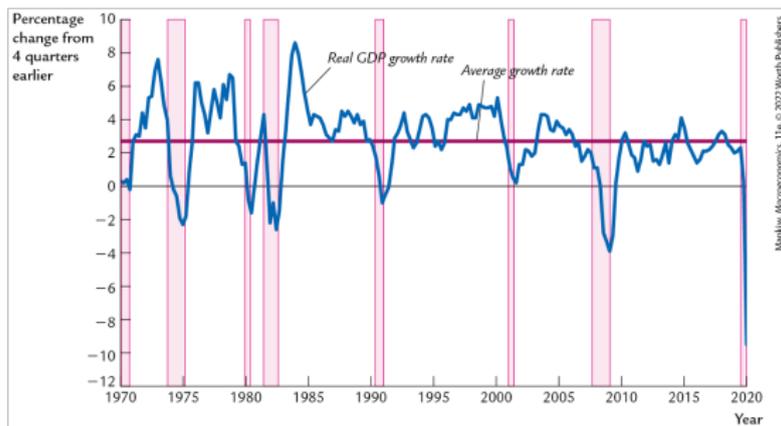
In the next lectures:

- **Build** the **IS-LM model** to explain these fluctuations.
- **Use** the **IS-LM model** to derive the **aggregate demand curve**.
- Combine the aggregate demand curve with the aggregate supply curve to **understand the effects of shocks in the economy**.

GDP and its components

So far, we often assumed that GDP grows at a constant rate.

However, in reality, **GDP fluctuates** around its trend and the **growth rate is far from constant**.



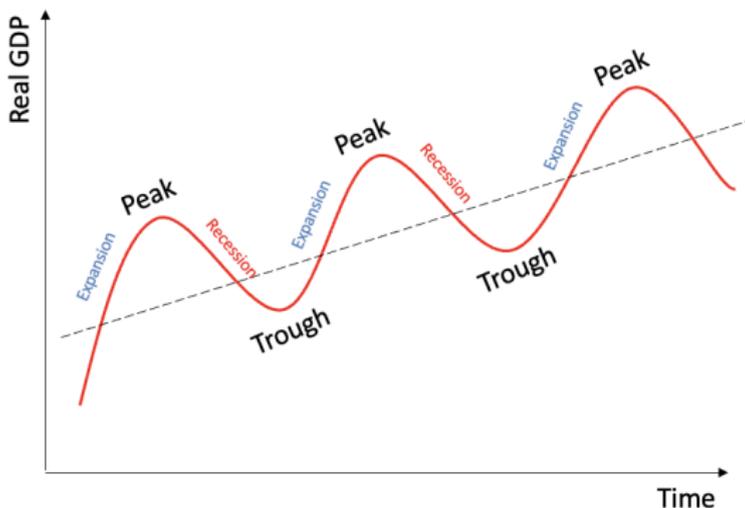
The average growth rate of GDP in the US is around 3% per year. However, the growth rate fluctuates a lot around this average.

The shaded areas in the figure represent **recessions**! How do we define a **recession**?

Recessions

The official arbiter of when recessions begin and end is the National Bureau of Economic Research (NBER).

The starting date of a recession is the **peak** of the business cycle, and the ending date is the **trough**.



Recessions

The NBER's Business Cycle Dating Committee chooses the peak and trough dates.

Is there a specific rule they follow?

- An old rule of thumb says that a recession is a period of **two consecutive quarters** of **negative GDP growth**.
- This rule doesn't always hold, though!
- In reality, the dating committee **looks at a variety of indicators**, such as GDP and employment, and uses its **judgment** to **determine the dates**.

Procyclical and Countercyclical Variables

We can classify each variable in the economy as **procyclical** or **countercyclical**, based on how **it moves with respect to GDP**.

Procyclical Variables:

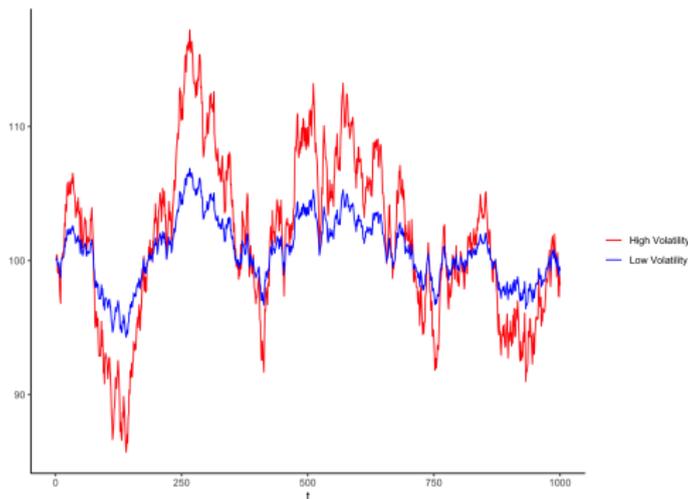
- We say that a variable is procyclical when it moves **together** with GDP.
- When GDP goes **up**, the variable goes **up**.
- When GDP goes **down**, the variable goes **down**.
- GDP and procyclical variables are **positively** correlated.

Countercyclical Variables:

- We say that a variable is countercyclical when it moves in the **opposite direction** of the GDP.
- When GDP goes **up**, the variable goes **down**.
- When GDP goes **down**, the variable goes **up**.
- GDP and countercyclical variables are **negatively** correlated.

Volatility

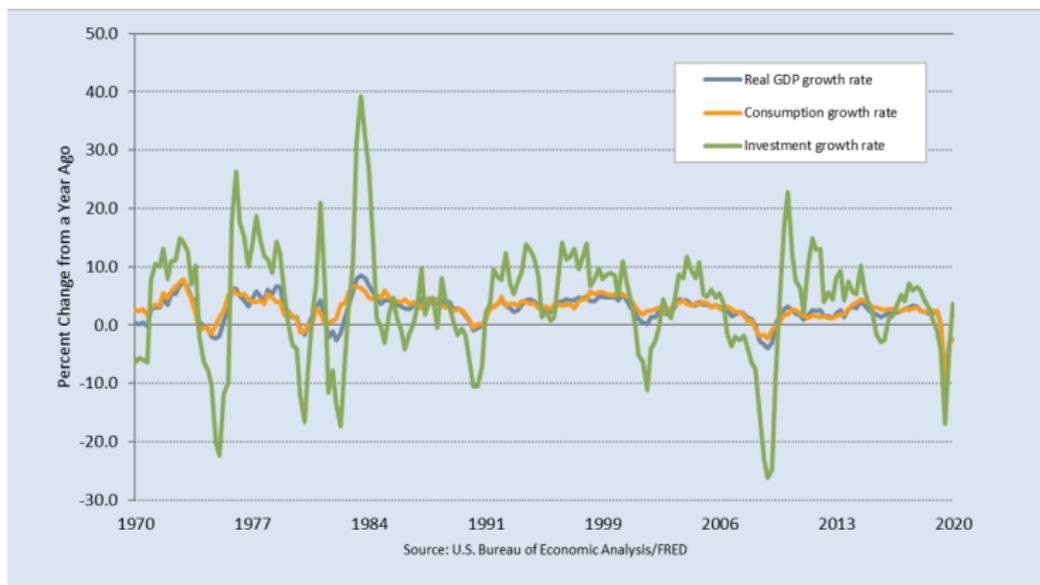
- It's a measure of **dispersion** of the variable.
- It quantifies how much a variable tends to fluctuate or move around its average over time.
- High volatility means, intuitively, the variable **changes a lot**.
- It can be measured by the **standard deviation** of the variable.



Consumption and Investment in the short-run

How does **consumption** and **investment** behave in the **short-run**?

They also fluctuate! How does it compare to fluctuations on GDP?



Let's characterize the behavior of consumption, investment and unemployment in the short-run!

Consumption and Investment in the short-run

Consumption:

- **Procyclical**.
- **Less volatile** than GDP.
- How do you remember this?
 - If your income is reduced in a recession, you have less money to spend buying things (**Procyclical**)
 - However, you still need to **eat**, so you can't adjust your consumption in the same proportion your income was reduced (**Less volatile**).

Investment:

- **Procyclical**.
- **More volatile** than GDP.
- How do you remember this? If your income is reduced in a recession, you will save less!
- What about the volatility? (Next slide!)

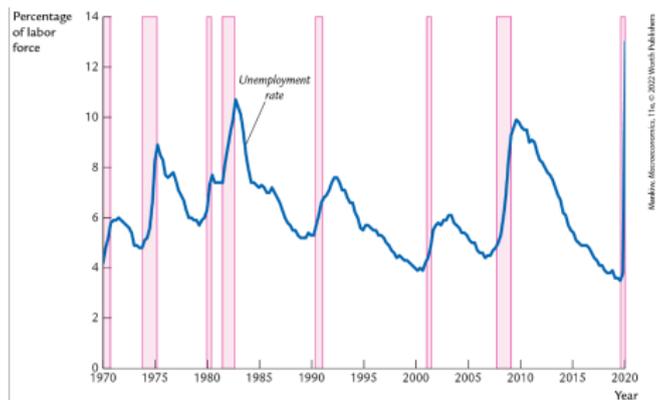
Consumption and Investment in the short-run

Consider the following **example**:

- Say your **income is 100 dollars**, you **need 80 dollars** to survive and spend 10 dollars on insomnia cookies.
- Consider you don't need insomnia cookies to survive (I need. Life is sad without coffee and insomnia cookies). **You save** $100 - 80 - 10 = 10$ dollars.
- In a recession, say your **income goes down by 20%**. You now **receive 80 dollars**. You need 80 dollars to survive, no more money to spend on insomnia cookies **nor to save!**
- Your consumption goes down by $(90 - 80)/90 \approx 11.1\%$. **Less than the 20% decrease in your income.**
- Savings (=investment) goes down by 100%. **More than the decrease in your income.**

Unemployment and Okun's Law

What happens to **unemployment** in the **short-run**?



The shaded areas represent recessions in the last figure.

During **economic downturns**, **jobs are harder to find**:

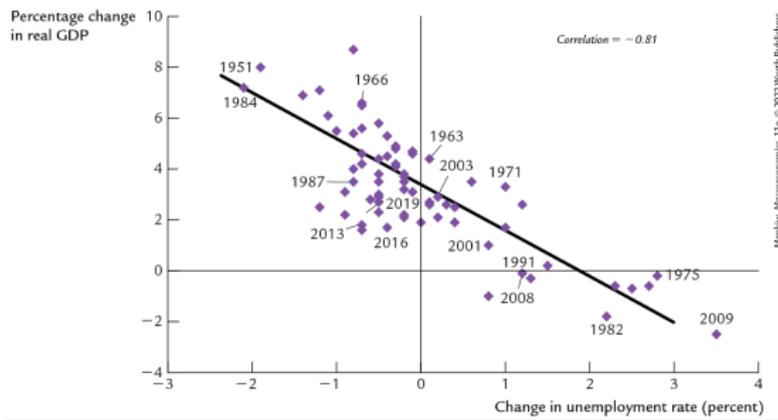
- **Unemployment** goes up.
- Job vacancies go down.

Unemployment and Okun's Law

The negative relationship between GDP and unemployment is known as **Okun's Law**.

- It is named after the economist Arthur Okun, who first proposed it.
- Fun fact: he also studied at Columbia University!

How does Okun's Law work for the US?



Unemployment and Okun's Law

The last plot shows: the relationship between the **change** in the unemployment rate and the **percentage change** in **real GDP**.

Each point in the plot represents a year.

If we want to find the line that best fits the data, we would find that:

$$\text{Percentage change in Real GDP} = 3\% - 2 \times \text{Change in Unemployment}$$

$$\frac{\Delta Y}{Y} = 3\% - 2 \times \Delta u$$

This is the **Okun's Law** for the US.

Let's see how to apply it!

Unemployment and Okun's Law

Example: Suppose the unemployment rate increases from 2% to 4%. What is the percentage change in Real GDP? *Answer:* -1%

Be careful when applying this law!

- Change in unemployment is in **percentage points**! If unemployment goes from 2% to 4%, the change is 2 percentage points.
- Percentage change in Real GDP is in **percentage (growth rate)**! If Real GDP goes from 100 to 98, the percentage change is -2%.
- This equation is an **approximation** and **changes** from country to country.

Unemployment and Okun's Law

Okun's law is a **short-run phenomenon!**

Recall that in the long-run, growth in GDP:

- Is determined by **technological progress!**
- **Not associated** with any long-run trend in the rate of **unemployment.**

In contrast, **short-run movements in GDP** are strongly **correlated** (negatively) with **unemployment!**

- Unemployment is **countercyclical!**

How the Short Run and the Long Run Differ

We want to develop a **theory** that **explains** the **short-run** fluctuations in the economy.

We need **different models** for **different time horizons**.

The **classical** economy **theory** we saw before is a **good tool** to understand the **long-run**, but **fails** to explain the **short-run**. Why?

In the long run, **prices are flexible!**

- They can respond to changes in supply and demand.

In the short run, **prices are sticky**.

- If prices are sticky, then quantities must adjust to changes in supply and demand.
- Nominal variables (e.g. prices) will impact real variables (e.g. quantities).

How the Short Run and the Long Run Differ

Suppose the Fed suddenly reduces the money supply by 5%.

According to the **classical model**:

- All prices will fall by 5%.
- Output, unemployment, and other real variables remain the same.
- Changes in the money supply **do not cause fluctuations in output and employment**.

In the **short run**:

- Many **prices are sticky** and don't respond immediately to changes in Monetary policy.
- Since prices don't adjust quickly, **real variables** such as output and employment must **adjust instead**.

The **classical dichotomy no longer holds**: **nominal variables** can **affect real variables**.