Macroeconomics & well-being III

Principles of Macroeconomics // Spring 2025

Prof. Santetti

marcio.santetti@emerson.edu

Readings

Recommended readings

Required readings:

- *Macroeconomics in Context*, 4th ed.
  - → Chapter 4, section 4.

Recommended reading:

🔗 What are PPP adjustments and why do we need them? *(Our World in Data)*

Words of the day

- "Domestic" vs. "National";

- "Real" vs. "Nominal";

- Big Mac;

- Growth rates.

GDP: Shapes and forms

GDP: Shapes and forms

Suppose a "*toy*" economy, with **no** government and **no** interactions with the foreign sector, that only produces **apples**:

A "Toy" ECONOMY

YEAR	QUANTITY SOLD	CURRENT PRICE ($)
2015	200	1.00
2016	200	1.50
2017	230	1.30

- Let us compute its *GDP* for each **year**.

GDP: Shapes and forms

Simply looking at **current (market)** prices can be **misleading**.

- *Why*?

- **Inflation** creates **distortions** in assessing whether *production/income* have actually changed or not over time.

Inflation is a sustained increase in an economy's price level.

GDP: Shapes and forms

To that end, we introduce an important **distinction**:

- **Nominal** GDP: the dollar value of all final goods and services produced in a year *in that year's prices*;
- **Real** GDP: a measure reflecting the *actual value* of goods and services produced, by removing the effect of changes in prices over time.

When analyzing economic indicators, we usually pay attention to **real** measures.

→ This way, **real** values refer to the same statistic after it has been **adjusted for inflation**.

🔗 U.S. Real GDP over time

GDP: Shapes and forms

Back to the "*toy*" economy example:

A "TOY" ECONOMY

YEAR	QUANTITY SOLD	CURRENT PRICE ($)
2015	200	1.00
2016	200	1.50
2017	230	1.30

- How do we obtain the **Real** (i.e., *adjusted for inflation*) **GDP** for each year?

GDP: Shapes and forms

There are major issues when using *base-year prices* to compute Real GDP:

1. **Conditional** on the chosen year/period;
2. **Less reliable** over time, as prices and spending **patterns** change more and more.

The U.S. BEA uses a "*chained-dollar*" approach to compute its Real GDP.

- Although more complex, it preserves the intuition behind adjusting for inflation.
- See Ch. 4's *Appendix* for more info.

GDP: Shapes and forms

As any economy produces an *overwhelming* amount of goods and services every year, **how are all prices accounted for**?

The U.S. uses the **GDP deflator** to transform **Nominal** into **Real** GDP.

> *The **GDP deflator** is a price* **index** *for measuring the general level of prices and defined as the* ratio *of **nominal** GDP to **real** GDP.*

🔗 U.S. BEA page for GDP deflator

GDP: Shapes and forms

Recall the *Domestic* part of GDP.

- What about a country's *citizens/businesses* operating **abroad**?

In order to account for *citizenship* rather than *location*, one can replace **Domestic** with **National**.

Therefore, we can define:

- **Gross National Product** (GNP);
- **Gross National Income** (GNI).

GDP: Shapes and forms

🔗 U.S. Gross National Product over time

🔗 U.S. Gross National Income over time

What about comparing countries?

What about comparing countries?

It is common practice *comparing* different economies for diverse purposes.

In terms of GDP, there are a few ways of doing so:

- **GDP *per capita***;

- **GDP in terms of Purchasing Power Parity (PPP)**.

What about comparing countries?

A country may have a **higher GDP** (GNP) than another, but that may be because it has a **larger population** than the other.

In order to control for this factor, *per capita* measures are helpful.

For the case of GDP, for instance:

$$\text{GDP per capita} = \frac{\text{Nominal or Real GDP}}{\text{Population}}$$

🔗 An overview of GDP per capita over time

In terms of **income**, **Gross National Income (GNI)** *per capita* is one of the main indicators of **living standards**.

What about comparing countries?

By now, we know that GDP (and its *close cousins*) are measured in terms of **local currencies**.

- But what if we want to make cross-country comparisons, **without** relying on population sizes?

We need to bring these statistics into a *common currency*.

- One option are **exchange rates**.

The **exchange rate** *is the value of one currency in terms of another currency.*

What about comparing countries?

In terms of **living standards**, a more **meaningful** comparison between two or more economies involves *cross-country differences in purchasing power*.

In short, controlling for **price differentials** allows us to more meaningfully compare GDP (and its relatives) between countries.

Thus we arrive to GDP in terms of **Purchasing Power Parity (PPP)**.

The **purchasing power parity conversion factor** takes the *relative prices* between countries into account and allows for comparisons on how many currency units one has to spend **to buy the same amount of goods and services** in another country.

What about comparing countries?

> *"Purchasing power parity exchange rates, PPPs, are international multilateral price indexes that measure, for the various components of GDP, the amount of local currency required to purchase the same real amount in that country relative to a numeraire, which is typically the United States."* (Deaton & Aten, 2015).

🔗 `GDP price levels relative to the U.S., 1990 to 2022`

What about Big Macs?

🔗 The Economist's *Big Mac Index*

Making better sense of numbers

Making better sense of numbers

Plain numbers, without **context**, are usually *meaningless.*

Regarding **macroeconomic statistics**, this is no different.

As seen before, the U.S. economy's current **Gross Domestic Product** is of US$ *29.37 trillion*.

- So what?

A *first step* to make better sense of such numbers is to look at this measure's **historical trajectory**.

🔗 U.S. Gross Domestic Product over time

Making better sense of numbers

Looking at economic measures **in levels** shows the overall long-run process of economic growth.

But if we would like to know what was the **growth rate** over time, we need to compute these rates from the data in levels.

$$\text{Growth rate (\%)} = \frac{\text{Final Period - Initial Period}}{\text{Initial Period}} \times 100$$

U.S. ECONOMY's GDP, 2020–2023

YEAR	REAL GDP	GROWTH RATE (%)
2020	20,234.074	N/A
2021	21,407.693	
2022	21,822.037	
2023	22,376.907	

Next time: GDP and well being?