

Basic macroeconomic variables

EC 235 | Fall 2023

Required readings:

- Blanchard, ch. 2.
 - Up to Section 2–4.

The study of macroeconomics revolves around a few basic variables (measures):

1. Gross Domestic Product (GDP);
2. Unemployment rate;
3. Inflation rate.

In addition to their *own* effects in the overall performance of an economy, these 3 variables also share relevant *relationships*, namely:

1. Okun's law;
2. Phillips curve.

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National Income, 1929-1932

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The present *Bulletin* contains revisions of the estimates published in *Bulletin 49*, released on January 26, 1934, and presents the final results of a study made by the Department of Commerce in cooperation with the National Bureau of Economic Research. The study was undertaken in response to a request for national income estimates for 1929-31 by the United States Senate and the findings are given in detail in Senate Document No. 124, 73rd Congress, 2nd Session, entitled *National Income, 1929-32*. The study was planned and supervised by Dr. Simon Kuznets, who was assisted by Miss Lillian Epstein and Miss Elizabeth Jenks of the National Bureau of Economic Research, and by Messrs. Robert F. Martin and Robert R. Nathan of the United States Department of Commerce.

An economy's Gross Domestic Product (GDP) is defined as the sum (in money value) of all *final* goods and services produced in an economy in a given period.

- The most important word in this entire definition is *final*.

This implies that *intermediate* goods are excluded from the final calculation of GDP.

With the basic definition in mind, the next important distinction is between *nominal* and *real* GDP.

Year	Quantity Produced	Price/unit (\$)	GDP
2019	100	10,000	
2020	120	12,000	
2021	110	12,500	
2022	125	14,000	

The *key* difference between real and nominal measures (GDP is only one of them) regards taking *prices* into account.

Given that the real economy has more than one good/service, calculating *real* GDP requires *averaging* the total output a country produces in a given period.

The *price* of goods and services are the natural choice for *weighting* this average output.

[A look at the data](#)

Board time.

Understanding GDP in full is not possible without looking at *growth rates*.

How to tell whether an economy has grown or not over time?

- The growth rate (%) of a variable between two periods is calculated by:

$$\text{Growth rate} = \frac{\text{Value in the last period} - \text{Value in the initial period}}{\text{Value in the initial period}} \times 100$$

A second look at the data

While GDP is the most important variable measuring an economy's *size* and *performance*, it **must not** be evaluated in isolation.

An individual is considered **unemployed** if they are:

- not currently employed;
- actively looking for a job in the previous four weeks.

[Official US unemployment data](#)

Furthermore, the labor force is the sum of *employed* and *unemployed* individuals:

$$\text{Labor force} = \text{Employed} + \text{Unemployed}$$

Thus, the *unemployment rate* (u) is the ratio between the number of unemployed individuals (U) and the total labor force (L):

$$u = \frac{U}{L}$$

Those who are not currently employed and *not* actively looking for a job are considered *not in the labor force*.

Lastly, the *labor force participation rate* is the ratio between the labor force and the total population of working age.

Why should we care about unemployment?

Inflation denotes a *sustained* increase in the general price level of an economy.

The *inflation rate* is the growth rate of the price level over time.

Conversely, if the price level *decreases* over time, the economy experiences a *deflationary* process.

Three measures of inflation are worth investigating:

- The GDP deflator;
- The Consumer Price Index (CPI);
- The *Core* CPI.

The *GDP deflator* is a price index measuring the average prices of *all* final goods and services included in the economy.

It is the ratio of Nominal GDP to Real GDP in a given year.

[Official US data](#)

As the GDP deflator includes *all* goods and services produced in a given year, it includes several goods and services that us, final consumers, actually *do not care* about.

Thus, the *Consumer Price Index* (CPI) attempts to represent the consumption basket of a typical urban consumer.

The US Bureau of Labor Statistics (BLS) calculates the CPI, through the Consumer Expenditure Survey (CES).

- Consumer expenditures are divided into 8 groups, including *food and beverages, housing, apparel, transportation, medical care, recreation, education and communication, and other goods and services* (including tobacco, personal services, etc.)

Official US data

The CPI's *Core* Index excludes *food* and *energy* prices, which tend to be the most *volatile* components of the CPI measure.

Official US data

Why should we care about inflation?

Aggregate output, unemployment, and inflation cannot be completely understood without their *interdependence*.

Although we will explore some of their relationships in more detail later, it is worth spending a few minutes introducing them right now.

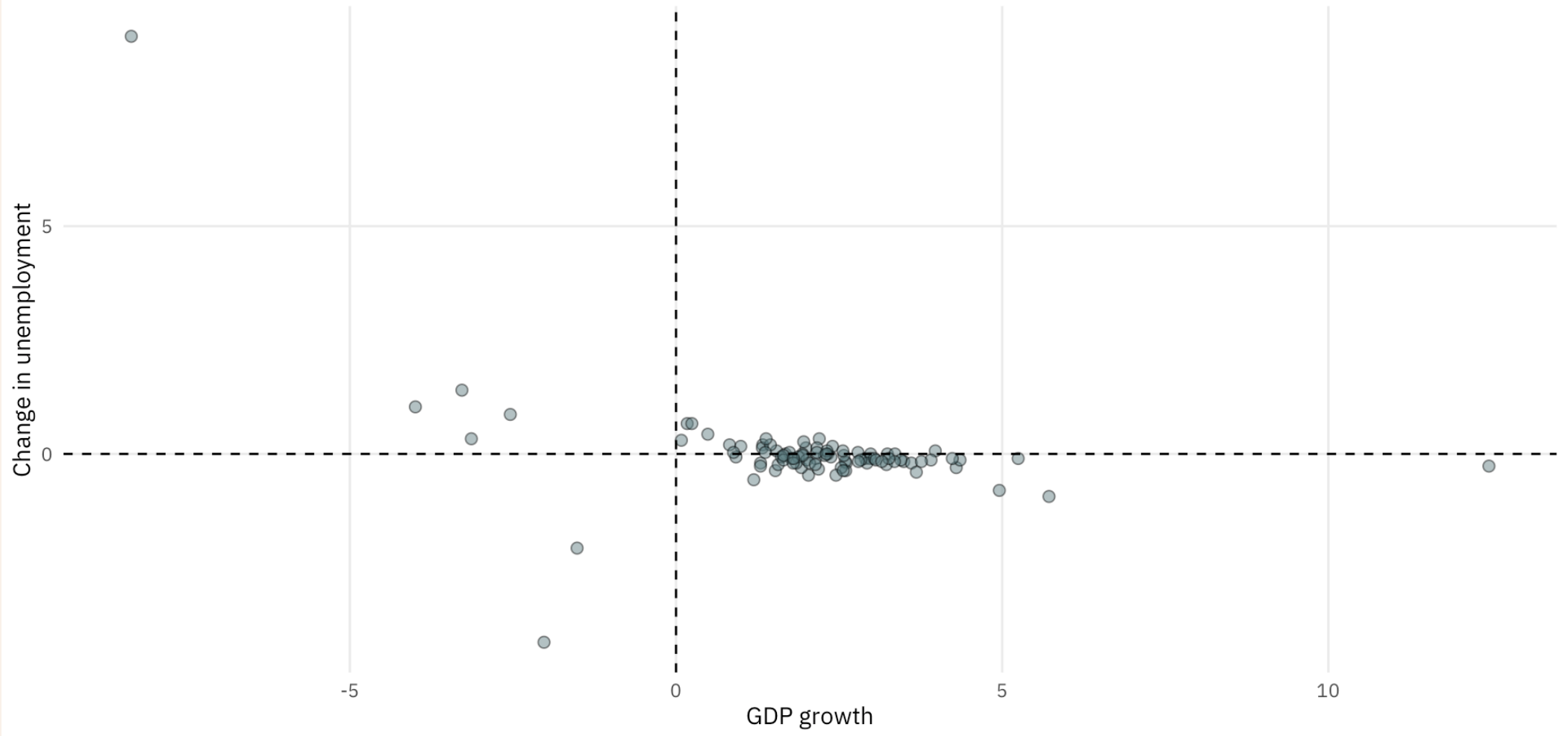
First, output and unemployment can be analyzed together through *Okun's law*.

- It states that, if output growth is *high*, unemployment will *decrease*.

Second, unemployment and inflation are related through the *Phillips curve*.

- When unemployment becomes very *low*, the economy is likely to overheat, and that this will lead to *upward* pressure on inflation.

Okun's law, United States: 2000Q1–2023Q2



Phillips curve, United States: 2000Q1–2023Q2

