LSE EC1B5 2023/24
Macroeconomics

Handout 1

Introduction to Macroeconomics

Measuring GDP

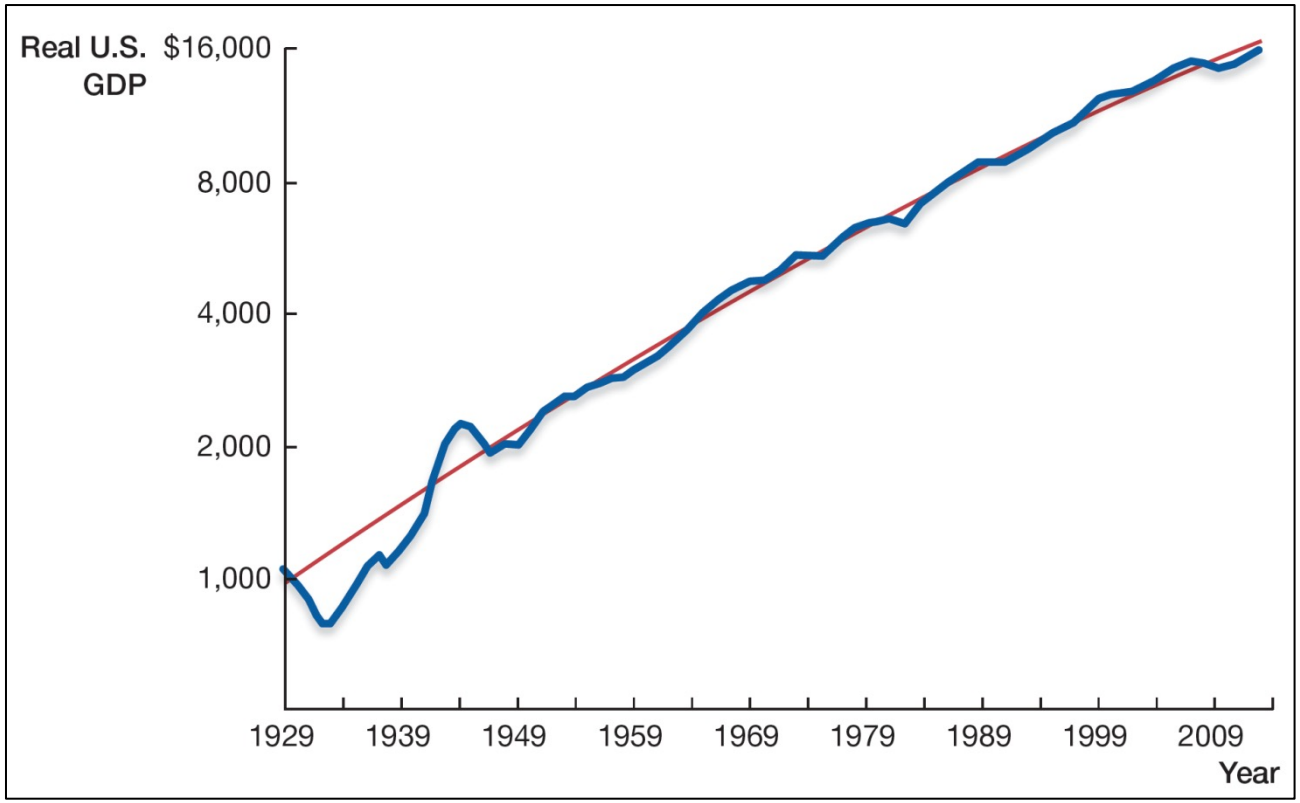
Introduction

- Macroeconomics is the study of the economy as a whole and economy wide phenomena, e.g.
  - Economic growth: annual growth rate of a country's total economic output
  - Inflation: annual percentage increase in the total cost of living
  - Unemployment: the fraction of labor force that is unemployed

Growth and Business Cycles

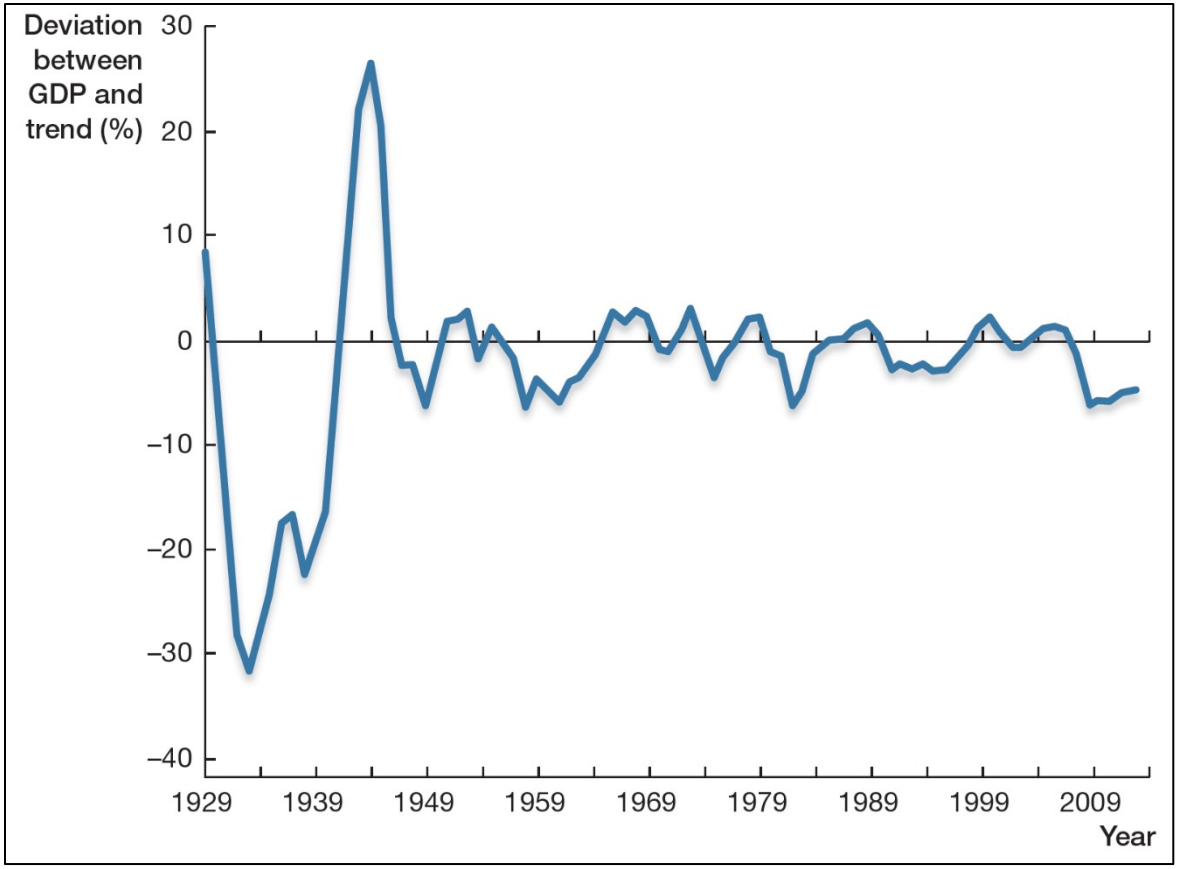
- Gross Domestic Product (GDP): the value of goods and services produced within a country's borders over a particular period of time.
- The time series of GDP can be separated into *trend* and *business cycle* components.
- Stock vs. flows

Economic Growth and Business Cycles



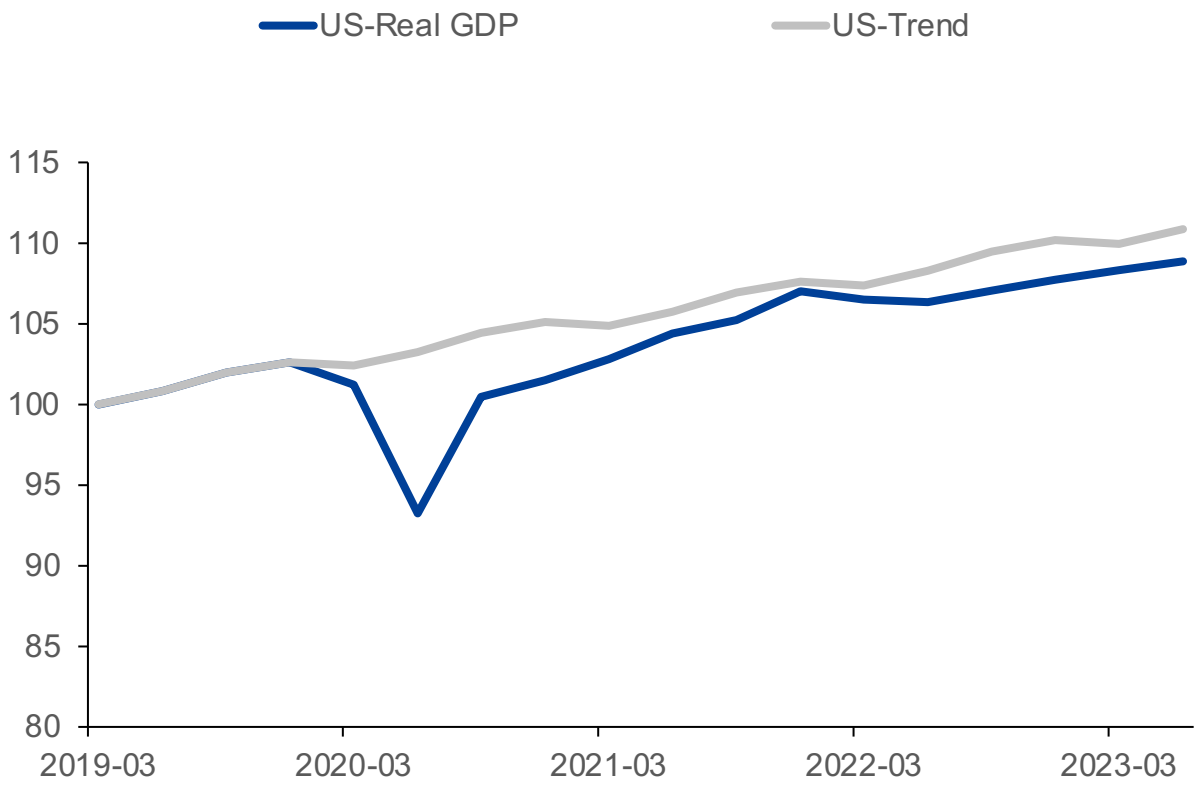
Real U.S. GDP and a Trend Line (1929–2013; billions of 2009 constant dollars).

Business Cycles



Percent Deviation Between U.S. Real GDP and Its Trend Line (1929–2013)

What happened during the pandemic?



Based on average real GDP growth rate of 2.4% between 2016-2019, 2020 Q2 largest loss

What happened during the pandemic?

Based on average real GDP growth rate of 2.4% between 2016-2019

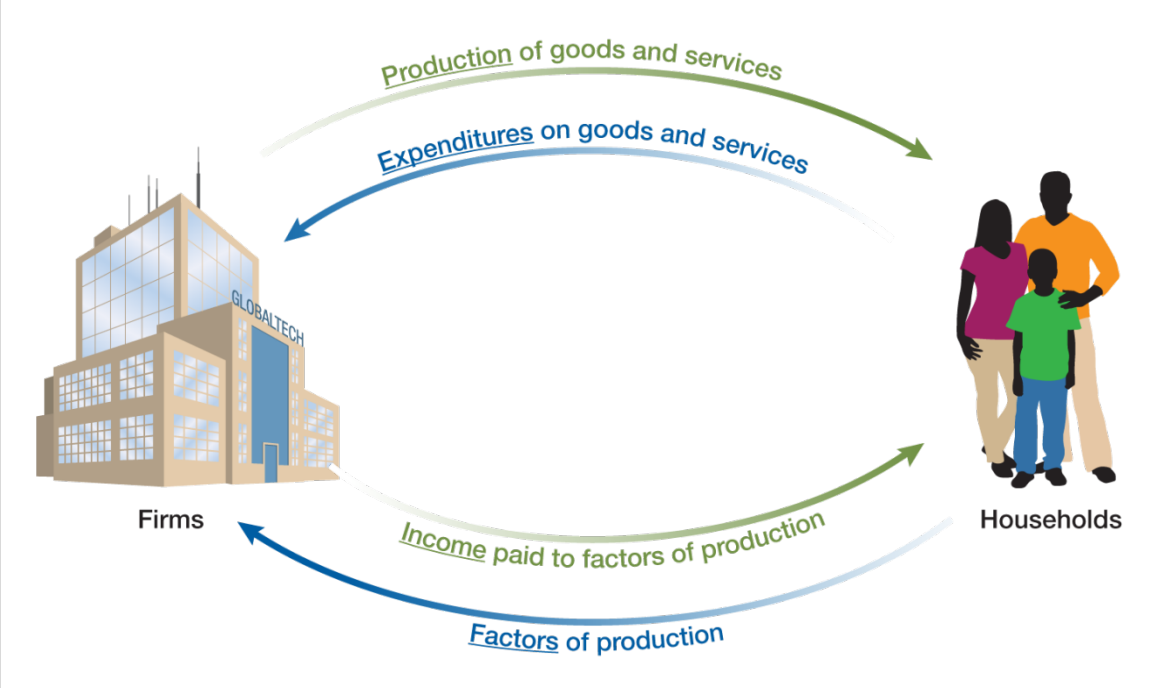
Measuring GDP

Key Idea

GDP can be measured in three different ways, and in principle these three methods should all yield the same answer:

Production = Expenditure = Income.

National Income Accounts: Production = Expenditure = Income



Circular Flow Diagram

Hypothetical Example

Penville is a small country with one employer, Bic Pen, which produces 10 million pens a year. The market price of a pen is $2.

Penville has 100,000 citizens who are the workers in the factories.

Bic Pen owns the inputs and its own machines so only needs to hire workers.

1. The Production Approach in Penville

To determine the market value of production, we multiply the quantity of pens produced by the market price of each pen:

Production = (10 million pens) × ($2.00 / pen) = $20 million

2. The Expenditure Approach in Penville

We add up the sales of pens to households, firms, government, and the foreign sector, including unsold inventories:

Expenditure = (10 million pens) × ($2.00 / pen) = $20 million

Inventory is ‘purchased’ by the firm

3. The Income Approach in Penville

We add up payments to labor and payments to capital:

$$Income = \$X + (\$20 \text{ million} - \$X) = \$20 \text{ million}$$

where X is payments to labor

Aggregate Accounting Identity for Penville

Production = *Expenditure* = *Income*

$20 million = $20 million = $20 million

Measuring GDP in the real world

Each of these approaches is used to measure **gross domestic product**, or **GDP**.

GDP

The market value of the final goods and services produced **within the borders** of a country during a particular **time period**.

Production Approach

Production-based accounting **sums** up each firm's **value added**, which is the firm's sales revenue minus the firm's purchases of intermediate products from other firms.

Expenditure Approach

Expenditure-based accounting sums up the purchases of goods and services by different groups or categories.

There are five main categories.

$$Y = C + I + G + X - M$$

Expenditure Approach – consumption

1. Consumption goods and consumption services bought by domestic households (C)

Expenditure Approach – investment

2. New physical capital (investment) bought by domestic households and domestic firms (*I*)

3. Government expenditures on goods and services (G)

Expenditure Approach – Export

4. Exports of goods and services produced domestically and sold abroad (X)

Expenditure Approach – Import

5. Imports of goods and services produced abroad and sold domestically (*M*)

Income Approach

Income-based accounting sums up income received by labor and the owners of physical capital (e.g. house, machine) or financial capital (stocks and bonds).

Note: many people receive both types of income

Example: an example with intermediary steps

Calculate the contribution of producing this tin of coffee to domestic GDP

- Factory buys beans from farmers for 2 pounds
- Factory buys tin box for 1 pound
- Factory sells tins of coffee to wholesaler for 8 pounds
- Wholesaler sells to retail chain for 11 pounds
- Retail marketing campaign costs 1 pound
- Retail sells to public for 15 pounds

Example: an example with intermediary steps

	Intermediate goods	Revenue	Value added
Farmer	0	2	2
Tin maker	0	1	1
Factory	3	8	5
Wholesaler	8	11	3
Retailer	11	15	4
sum of value added			15

Production (value-added) = Expenditure = Income

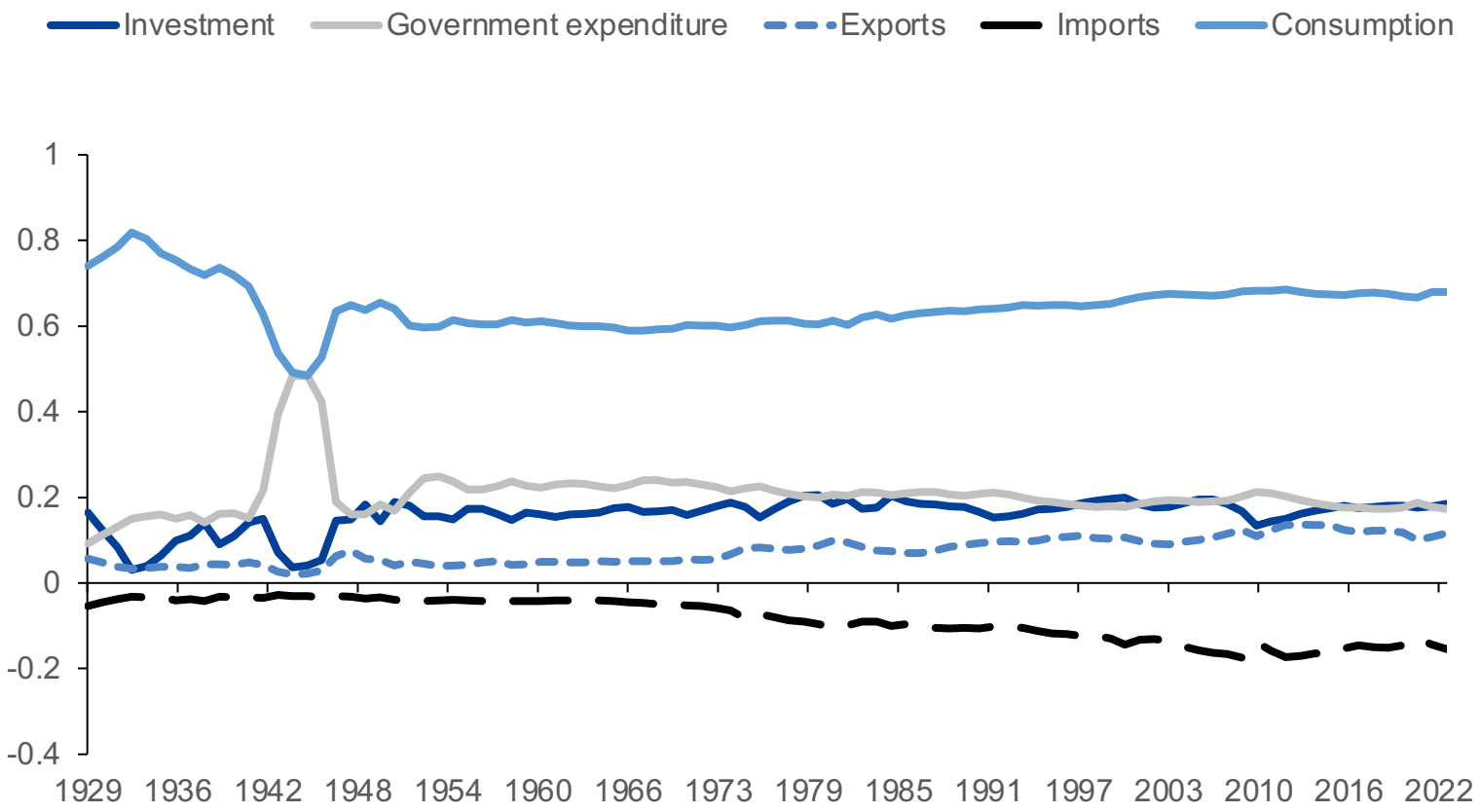
Example: United States

The system of national income accounts used in the United States is called National Income and Product Accounts (NIPA)

2022	Trillions of Dollars	Share of GDP
Gross domestic product	25.74	100.00%
Consumption	17.51	68.02%
+Investment	4.76	18.48%
+Government expenditure	4.45	17.27%
+Exports	3.00	11.63%
-Imports	-3.97	-15.41%

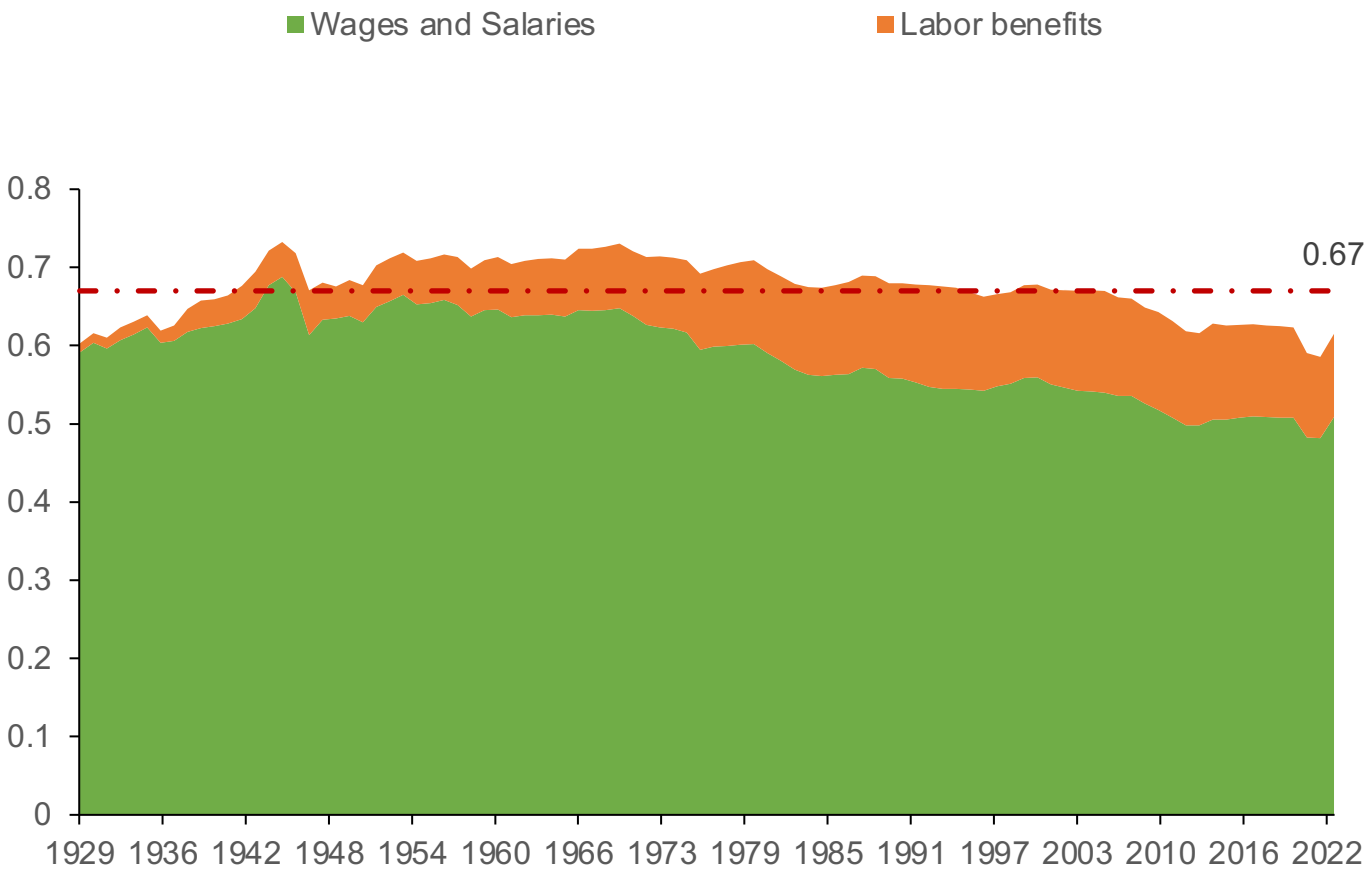
U.S. 2022 GDP and GDP Shares (Expenditure-based Accounting)

Example: United States



U.S. GDP Shares (1929–2022)

Example: United States



Payments to U.S. Labor (% of total income)

Example: United States