

4. The Macroeconomy

4.1 National Income Statistics

Syllabus 4.1 >

- meaning of national income
- measurement of national income (GDP, GNI, NNI)
- adjustment of measures from market prices to basic prices
- adjustment of measures from gross values to net values

National Income

- **National Income**: a country's **total output**
 - measured **each year**, and compared both in the short run and long run
- **National Income Statistics**: **measures** of a country's economic activity in terms of **output, income and expenditure**

Measurement of National Income

- The results of the three approaches should be the same
- **Output**: **value added** along the supply chain
 - $GDP = P \times Q$
 - **value-added**: the **increase in the value** of goods or services as a result of the production process
 - value added = selling price - cost price
 - avoids **double-counting**
 - Only payments for G&S are included: transfer payments not counted
- **Income**: adding up total income
 - $GDP = Wages + Rent + Interest + Profit$
 - Only receipts for G&S are included
 - e.g. transfer payments, private transfers, shadow economy (income not registered) are not included
- **Expenditure**: adding up total expenditure
 - $GDP = C + I + G + (X-M)$

Gross Domestic Products (GDP)

- assess what is **produced, earned and spent** in a country
 - GDP defines its scope according to **location**
- the **market value** of all officially recognized **final** goods and services produced **within** a country in a given period

Gross National Income (GNI)

- measures the country's income **generated by its citizens** wherever they produce it
 - GNI defines its scope according to **ownership**
- $GNI = GDP + \text{net property income from abroad}$
 - **add**: income generated by residents from abroad
 - **deduct**: income generated by foreigners from the country

Drawbacks of national income measurement

- no **standard of living**: e.g., income distribution, pollution, tax rates, purchasing power
- no **assessment of true values**: public and merit goods have higher social benefits
- no **informal economy**: subsistence farming and black markets are not included
- the calculation is **inaccurate**: we ask people to take data using surveys
- takes **time**: may not be timely effective

Market prices and basic prices

$$\text{Market Price} = \text{Basic Price} + \text{Taxes} - \text{Subsidies}$$

- **Market price**: the amount charged to the consumers
- **Basic price**: the amount receivable by the producers

Gross values and net values

$$\text{Net Value} = \text{Gross Value} - \text{Depreciation}$$

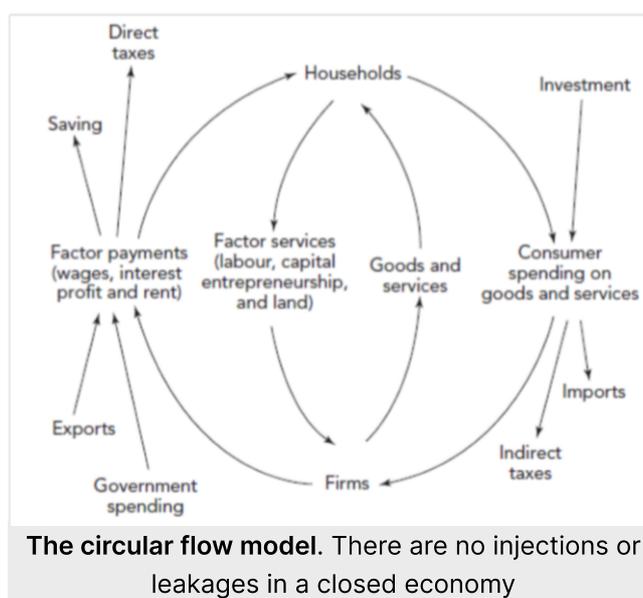
- **Depreciation**: the fall in the value of capital due to wear and tear
- **Net National Income (NNI)**: calculated by GNI - Depreciation

4.2 Circular Flow of Income

Syllabus 4.2

- circular flow of income in a closed economy and an open economy: the flow of income between households, firms, and government and the international economy
- injections and leakages
- equilibrium and disequilibrium

The circular flow model



- **Closed economy**: consisting of only households and firms, with no injections or leakages
 - **Income** flows clockwise; **Factor** flows anti-clockwise
 - The flow **must balance** in a closed system

- **Households**
 - Demand for the produced goods and services in **product markets**
 - Supply the factors of production (e.g., labors) in **resource markets**
- **Firms**
 - Demand the factors of production in **resource markets**
 - Supply the produced goods and services in **product markets**
- **Open economy**: consisting of households, firms, government, and the international economy

Injections and leakages

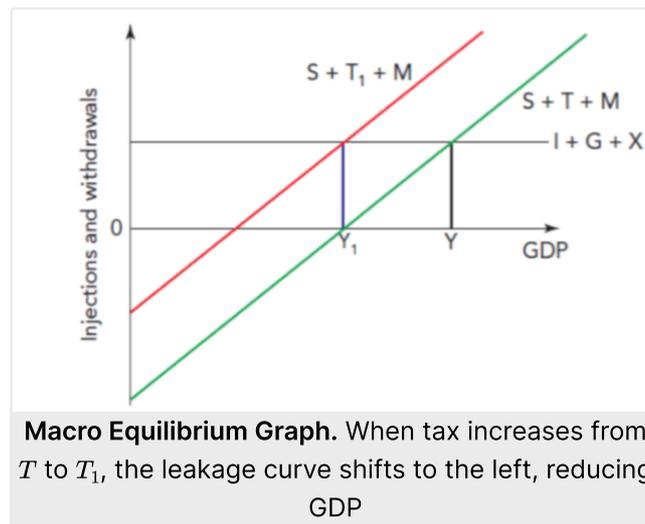
- **Injections**: the money **flows in** the circular flow
 - **investment, government spending and exports**
 - come from **non-consumption expenditures**
- **Leakages**: the money **flows out** of the circular flow
 - **savings, imports, taxes**
 - come from **non-consumption use of income**
- Injections and leakages are interconnected: savings may enter financial markets, and firms borrow from financial markets for investments

Equilibrium and disequilibrium

- The **macroeconomic equilibrium** is achieved when total injection equals total expenditure; in this case, income would remain unchanged

$$\text{Total Injection} = \text{Total Expenditure} \rightarrow \text{Equilibrium}$$

- **injections > leakages**: extra spending in the economy \rightarrow higher GDP
- **leakages > injections**: spending leaves the economy \rightarrow lower GDP



- The economy would adjust itself back to equilibrium automatically
 - if injections > leakages \rightarrow income rises \rightarrow households tend to save more \rightarrow increasing leakages and leading to equilibrium again
 - extra savings \rightarrow more investment, high government spending \rightarrow higher taxes, high exports \rightarrow more income \rightarrow more imports

4.3 Aggregate Demand and Aggregate Supply Analysis

- definition, components, determinants, shape, and shifters of Aggregate Demand (AD)
- definition, determinants, and shifters of Aggregate Supply (AS)
 - shape of the AS curve in the short run and long run
- distinction between a movement along and a shift in AD and AS
- equilibrium in the AD/AS model, and the effects of shifts on the determination of the level of real output, the price level, and employment

Aggregate Demand

- The **total amount** of **effective demand** in the economy
 - The total amount of G&S demanded in the economy at different price levels, over a time period
 - Equal to the sum of **consumer expenditure, investment, government spending, and net exports**

$$AD = C + I + G + (X-M)$$

AD components and shifters

1. **Consumer Expenditure (Consumption)**: spending by households on goods and services to satisfy their needs and wants
 - **Disposable income** (affected by **fiscal policies**)
 - **Savings** (affected by **monetary policies**)
 - **Confidence & Wealth** → people spend more when they feel they are wealthier
 - **Indebtedness** (debt they have from the past)
2. **Investment**: private sector spending by firms on capital goods
 - **Fiscal policies** → affects profit after taxes
 - **Monetary policies** → affects borrowing to finance investments
 - **Confidence**
 - **Technology Level** → advances in tech leads to more productive capital, so firms may want to buy
 - **Indebtedness**
3. **Government Spending**: expenditure by the government on goods and services
 - **Political priorities**, e.g., campaigns
 - **Economic priorities**: e.g., covering budget deficit using **fiscal policies**
4. **Net exports**: the difference between the value of exports and imports
 - **National income of trading partners**
 - **Protectionism**
 - **Exchange rates**

AD shape → Why downward-sloping?

1. **The wealth effect**: increase in price level → decrease the amounts of G&S that households can buy; also, the purchasing power of **assets** will fall → consumer expenditure decrease
2. **The exchange rate effect**: increase in price level → exports become more expensive as cost of production increases & import becomes more price competitive → net exports decrease
3. **The interest rate effect**: increase in price level → increase in the interest rate → consumption and investment decrease

Aggregate Supply

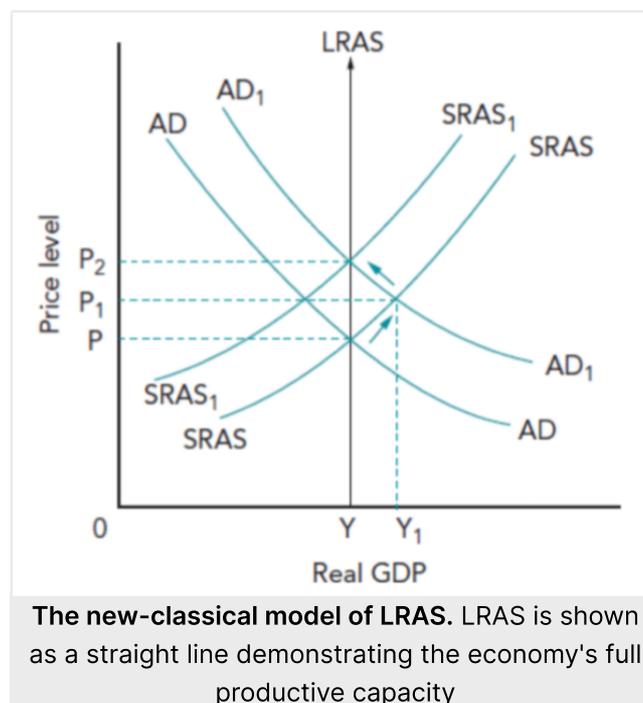
- The total amount of G&S supplied in the economy at different price levels, over a time period

Short-Run Aggregate Supply (SRAS)

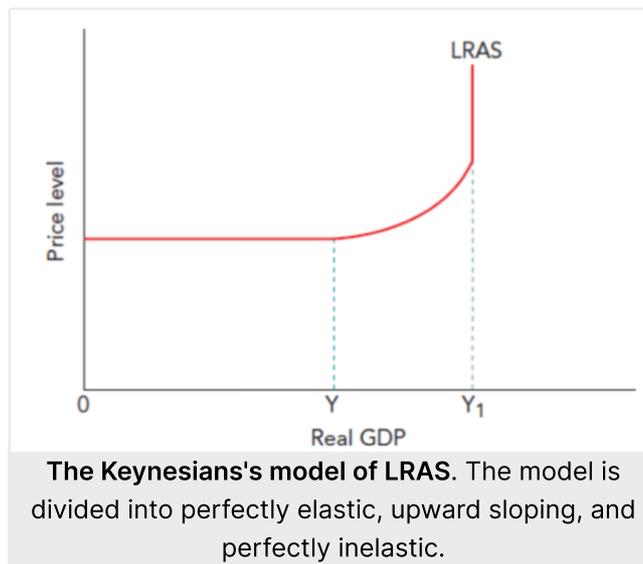
- **Short-run:** prices of factors of production had **no time to change**
- **SRAS:** an **upward-sloping** curve
 1. **The profit effect:** as the price level increases, the prices of FOPs would not change immediately; therefore, firms have more profits and they would like to produce more
 2. **The cost effect:** average costs increase as production increases (e.g., firms need to recruit more workers); therefore, to cover the costs, firms would have to charge higher prices
 3. **The misinterpretation effect:** firms may confuse change in the prices level with change in relative prices; they may think that rise in price = own products becoming more popular, and therefore would like to produce more
- **Shifters:** availability of factors & cost of production
 1. **Change in price of FoPs:** a rise in wage rates not matched by increase in productivity; raw material costs
 2. **Change in taxes on firms**
 3. **Change in factor productivity/quality of resources**
 4. **Change in quantity of resources:** ****Supply shocks**** → negatively or positively impacts the quantity of resources available
- In short run, the **actual output** of an economy might exceed its **potential output** by producing over-time, but it would be adjusted as time progresses

Long-Run Aggregate Supply (LRAS) → New Classical

- **Long-run:** the state of technology and the availability of FOPs are changes
- **LRAS:** a vertical line showing the **full-employment level of output** (the full capacity)
- **Shifters:** the **quantity and quality** of factors of production
 - e.g, more labors with higher net immigration, more productivity with better capital



Long-Run Aggregate Supply (LRAS) → Keynesians



- **Perfectly elastic:** firms can attract more resources without raising their prices, because there are many **spare capacities**
- **Upward slopping:** the economy is near its productive capacity, so firms begin competing for resources with higher prices
- **Perfectly inelastic:** the economy is at its productive capacity, so no more could be produced

Macro-equilibrium and disequilibrium

Aggregate Demand = Short Run Aggregate Supply → Macroequilibrium

- **Macro-equilibrium** does not happen necessarily at full employment
 - Aggregate Demand = Short Run Aggregate Supply = Long Run Aggregate Supply → Long-run equilibrium
- An economy would **automatically adjust to Long-Run Equilibrium**
 - AD increases → price level increases → cost of production increases → SRAS increases
 - **New-classical:** adjustment happens **rapidly**
 - **Keynesians:** adjustment happens **slowly**, may settle down before reaching to full capacity

4.4 Economic Growth

Syllabus 4.4 ▾

- meaning and measurement of economic growth
- distinction between growth in nominal GDP and real GDP
- causes and consequences of economic growth

Economic Growth

- An **increase in the output** of an economy
- **Potential Economic Growth** =: an expansion of the productive capacity of an economy
 - shown by an **outward shift** of the PPC
- **Actual Economic growth:** aggregate output increases in the short run
 - measured by the **rate of change of Real GDP**
 - shown by a **right shift** of the SRAS curve

Nominal and real GDP

- **Nominal GDP**: prices operating in the year in which output is produced
 - Increase in nominal GDP \neq Economic growth: due to inflation, the output might even decrease.
- **Real GDP**: nominal GDP adjusted for inflation

$$\text{Real GDP} = \text{Nomial GDP} \times \text{GDP deflator}$$

- whereas the GDP deflator is calculated by

$$\text{GDP deflator} = \frac{\text{Price index in base year}}{\text{Price index in current year}}$$

Causes for economic growth

1. **Increase in the quantity of resources**
2. ****Increase in the quality of resources**

Consequences for economic growth

- **Benefits**: standards of living (as more resources), higher employment, higher tax revenue, better technology; overall, better quality and quantity of resources
- **Costs**: pollution, depletion of resources, increasing wealth gap, inflation

4.5 Unemployment

Syllabus 4.5

- meaning of unemployment
- measures of unemployment, with reference to possible difficulties
- causes and types of unemployment: frictional, structural, cyclical, seasonal and technological
- consequences of unemployment

Unemployment

- Unemployment occurs when people who are **willing and able to work cannot find a job**
 - a 1 million fewer unemployed workers does not mean 1 million more people in work \rightarrow they might enter higher education/become ill, so that they are not willing and able to work any more
- **Working population**: people who are of **working age**, typically between 16 and 64 years old, either economically active or inactive
 - **economically active**: people who are of working age and are either employed or unemployed but **actively seeking employment**
 - **economically inactive**: people who are of working age but are not engaged in or seeking employment, due to education, retirement, home responsibilities, etc.
- **Labor force**: people who are of **working age**, and are **either employed or actively looking for work**; synonymous with economically active

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

- **Labor force participation rate (LFPR)**: the percentage of the working-age population that is part of the labor force

$$\text{LFPR} = \left(\frac{\text{Labor Force}}{\text{Working Population}} \right) \times 100\%$$

- **Employment Rate**: the percentage of **working-age population** who are in work

$$\text{Employment Rate} = \left(\frac{\text{Employed}}{\text{Working Population}} \right) \times 100\%$$

- **Unemployment rate:** the percentage of the **labor force** that is not currently employed but **actively seeking employment**

$$\text{Unemployment Rate} = \left(\frac{\text{Unemployed}}{\text{Labor Force}} \right) \times 100\%$$

- **Level of unemployment:** the **total number** of workers who are unemployed
- **Underemployment:** people who are employed but are working **fewer hours than they would like**, or in positions **that do not utilize their skills fully**
- **Discouraged Workers:** people who are **not currently looking for work** because they believe **no jobs are available for them** or there are **none for which they would qualify**
- **Long-term unemployment rate:** the share of the unemployed who have been unemployed for a long period (e.g., 27 weeks in the United States)

Measures of Unemployment

- Two methods: **Claimant Count** and **Labor Force Survey**

Claimant Count

- Measures the number of people **claiming unemployment-related benefits**
 - it is **cheap and timely** as it is based on administrative records
- **Limitations**
 1. **Eligibility Criteria:** not all unemployed individuals are eligible for unemployment benefits; eligibility criteria can exclude part-time workers, self-employed entrepreneurs whose business fails (because they are not paid into the unemployment insurance system), returning to the workforce (such as women after childbirth if they have not been employed recently), and recent graduates (if they haven't previously worked or paid into an unemployment insurance system)
 2. **Disincentives to Claim:** some unemployed might not claim benefits due to stigma, lack of information, or perceived effort versus benefit, leading to under-reporting
 3. **Incentives to Claim:** individuals might claim benefits while engaged in informal work or not actively seeking employment, leading to over-reporting

Labor Force Survey

- **Household survey** that collects information on individuals' employment status through a **representative sample**; it defines unemployment using the ILO's definition
 - they have a **broader coverage** and conform to **international standards**
- **Limitations**
 1. **Sampling Errors:** the LFS is based on a subset, rather than all, of the population, leading to potential sampling errors
 2. **Subjectivity:** what constitutes "actively seeking work" can vary among respondents
 3. **Timeliness:** the LFS is usually conducted quarterly or monthly, leading to a lag in data availability
 4. **Cost and Resources:** conducting extensive surveys is more resource-intensive and costly than the claimant count

Causes of Unemployment

- **Frictional Unemployment:** when workers are between jobs

- **Voluntary Unemployment:** workers are not willing to accept jobs at the current wage rate and working conditions, affected by the **level of unemployment benefits**
- **Search Unemployment:** workers do not accept the first jobs on offer, but spend some time looking for a better-paid job
- **Casual Unemployment:** workers who are out of work between periods of employment, e.g., actors
- **Seasonal Unemployment:** demand for workers fluctuates according to the time of the year
- **Structure Unemployment:** due to changes in the structure of the economy, when the pattern of demand and supply changes over time
 - **Regional Unemployment:** declining industries may be concentrated in a particular area or area of the country
 - **Technological Unemployment:** people are out of work due to the introduction of labor-saving techniques
 - **International Unemployment:** when workers lose their jobs because demand switches from domestic industries to more competitive foreign industries
- **Cyclical Unemployment:** demand-deficient unemployment, arisen due to a lack of aggregate demand

Consequences of Unemployment

- Workers: fall in income, more difficult to get another job the longer they've been out of work, decline in physical and mental well-being
- Firms: greater chance of potential workers, workers not requesting wage rises, but lower demand for their goods and services
- Economy: opportunity cost (state benefits), lower output, less tax revenue

4.6 Price Stability

Syllabus 4.6

- definition of inflation, deflation and disinflation
- measurement of changes in the price level: CPI and possible difficulties
- distinction between money values and real data
- causes of inflation: cost-push and demand-pull
- consequences of inflation

Price Stability

- Price stability occurs when there's a **low and stable** inflation rate
- **Benefits:** predictability & planning → more long-term investment and financial decisions; interest rate stability → less cost of borrowing, more investment and spending; confidence → prices are going to rise in the future, so will stimulate spending
- measures of inflation tend to **overstate** the rate as they don't consider quality improvements and consumers switching to lower-priced products

Inflation, Deflation, Disinflation

- **Inflation:** a **sustained** rise in the **general price level**, measured by the rate of change of the **average price level** in an economy over a period of time
 - **Creeping inflation:** a steady and low increase in the general price level, typically between 1% to 3% annually
 - **Hyperinflation:** an uncontrollable and rapid increase in the general price level, typically over 50% monthly

- **Deflation:** a **sustained** fall in the general price level
 - **Causes:** good deflation → increases in AS; bad inflation → decreases in AD
 - **Consequences:** increased burden of debt, discouraging consumption (deflationary spiral)
- **Disinflation:** the inflation rate falls **but is still positive**

Measurement of Inflation

- Governments typically use the **Consumer Price Index** to measure inflation

Consumer Price Index (CPI)

1. **Select a base year:** usually a year where nothing unusual has occurred; the base year is given a value of 100; the base year is changed regularly
2. **Carry out a survey to find people's spending patterns:** deciding on a basket of goods and services
3. **Attach weights to the different categories:** weights are based on the proportion of total expenditure spent on the different categories
4. **Find out price changes**
5. **Multiply weights by price changes**

Difficulties

1. **The base year:** if the base year has high inflation, it may give the impression that subsequent percentage changes in the price level were unusually low
2. **The survey:** sampling bias, timeliness, generalization, subjective bias (e.g., people don't want others to know their spending on chocolate)
3. **The basket of goods and services:** constantly changing → e.g., if green tea rises in price by more than black tea, consumers may buy green tea; quality and size bias → the price might increase by 4%, but the value brought by quality/size increase might outweigh it

Money Values and Real Data

- **Money Values:** nominal values, the values of the prices operating at the data
- **Real Data:** value adjusted for inflation

$$\text{Real Data} = \text{Money Value} \times \frac{\text{CPI at base year}}{\text{CPI at current year}}$$

Causes of Inflation

- **Cost-push inflation:** occurs when prices are pushed up by **increases in the cost of production**
 - AS curve shifts to the left, pushing up the price level, causing a contraction in AD and Real GDP
 - **Wage-price spiral:** workers gain a wage rise, which causes prices to increase, and then workers seek higher wages to restore their real value
- **Demand-pull inflation:** occurs when prices are pulled up by **increases in aggregate demand** that are **not matched by increases in aggregate supply**
 - some forms of government spending and investment may not be inflationary in the long run as they increase the productive capacity
 - **money supply** is the key cause of higher AD → **monetary inflation**
- There are also links between cost-push inflation and demand-pull inflation

Consequences of Inflation

- **Menu costs:** costs involved in changing prices
- **Shoe leather costs:** costs involved in moving money from one financial institution to another in search of the highest rate of interest
- **Fiscal drag (bracket creep):** income levels corresponding to different tax rates are not adjusted in line with inflation; people are dragged to higher tax brackets
- **Inflationary noise (money illusion):** inflation causes consumers and firms to confuse price signals, making them make wrong decisions