Freshman Economics

INSTRUCTOR: ERMIYAS ABEBE

INTRODUCTION TO ECONOMICS

UNIT 6-PART 1

Fundamental Concepts of Macroeconomics

Content

Chapter 6 Part 1
Fundamental Concepts of Macroeconomics

- Goals of macroeconomics
- The National Income Accounting
- **Approaches to measure NI**

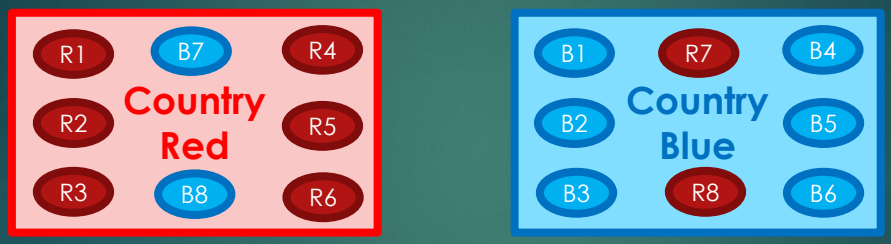
Goals of macroeconomics

- To achieve high economic growth
- To reduce unemployment
- To attain stable prices
- To reduce budget deficit and balance of payment (BoP) deficit
- To ensure fair distribution of income

The National Income Accounting

- National Income Accounting (NIA) is an accounting record of the level of economic activities of an economy.
- It is a measure of an aggregate output, income and expenditure in an economy.

Approaches to measure national income (GDP/GNP)



- GDP of Country **Red** = OUTPUT of (**R1+R2+R3+R4+R5+R6+B7+B8**)
- GNP of Country **Red** = OUTPUT of (**R1+R2+R3+R4+R5+R6+R7+R8**)
- GDP of Country **Blue** = OUTPUT of (**B1+B2+B3+B4+B5+B6+R7+R8**)
- GNP of Country **Red** = OUTPUT of (**B1+B2+B3+B4+B5+B6+B7+B8**)

Gross Domestic Product (GDP):

- It is the total value of **currently** produced **final goods and services** that are produced **within a country's boundary** during a **given period of time, usually one year.**
- It measures the current production only.
- It takes in to account final goods and services only
  - We do not include the intermediate products in our GDP calculations.
  - Intermediate goods are goods that are completely used up in the production of other products in the same period that they themselves are produced.
- It measures the values of final goods and services produced within the boundary/territory of a country **irrespective of who owns that output**.

Double Counting





So count the final product; which is ONE CAR

4 tyres + **1 car**

Will make total produced tyres 8 while we have 4; Which is the case of double counting the tyres

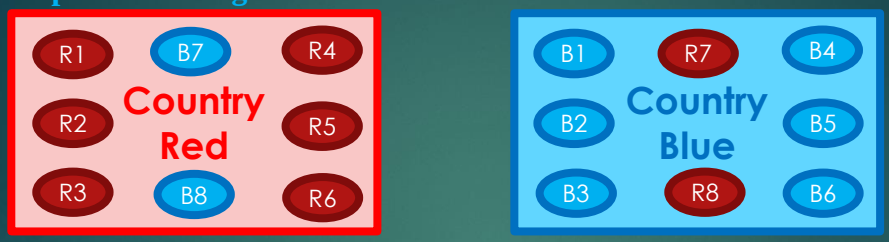
Cont…

- In measuring GDP, we take the market values of goods and services (GDP $=\sum P_iQ_i$), where:
  - P_i = series of prices of outputs produced in different sectors of an economy in certain period
  - Q_i = the quantity of various final goods and services produced in an economy

Gross National Product (GNP):

- Is the total value of final goods and services **currently produced** by **domestically owned factors of production** in a **given period of time, usually one year**, **irrespective of their geographical locations**.
- GDP and GNP are related as follows: GNP=GDP + NFI
- NFI denotes Net Factor Income received from abroad which is equal to factor income received from abroad by a country‘s citizens less factor income paid for foreigners to abroad.
- Thus, NFI could be negative, positive or zero depending on the amount of factor income received by the two parties.

NFI= **factor income received from abroad by a country‘s citizens** less **factor income paid for foreigners to abroad**



- NFI of Country **Red** = OUTPUT(Income paid) of **(R7+R8)-(B7+B8)**
- NFI of Country **Blue** = OUTPUT(Income Paid) of **(B7+B8)-(R7+R8)**

GNP=GDP+NFI

- GDP of Country **Red** = OUTPUT of (**R1+R2+R3+R4+R5+R6+B7+B8**)
- GNP of Country **Red** = OUTPUT of (**R1+R2+R3+R4+R5+R6+R7+R8**)
- NFI of Country **Red** = OUTPUT(Income paid) of **(R7+R8)-(B7+B8)**

Proof of GNP=GDP+NFI= OUTPUT of (**R1+R2+R3+R4+R5+R6+R7+R8**)

- *GDP+NFI*= (**R1+R2+R3+R4+R5+R6+(~~B7+B8~~)**) + **(R7+R8)-(~~B7+B8~~)**
- *GDP+NFI*=(**R1+R2+R3+R4+R5+R6+R7+R8**)

GNP=GDP+NFI

GNP=GDP+NFI
NFI could be positive, negative or zero

- If NFI >0, then GNP > GDP
- If NFI< 0, then GNP < GDP
- If NFI =0, then GNP =GDP

INTRODUCTION TO ECONOMICS
UNIT 6

PART-2

Approaches to Measure GDP/GNP

1. Product/Value Added Approach

Approaches to measure GDP/GNP

- Basically, there are three approaches to measure GDP/GNP.
- These are:

1. Product/value added approach
2. Expenditure approach
3. Income approach

Product
→10 liters of Oil
10,000 birr



Expenditure
→Households: 7,000
→Government: 2,000
→Export: 1,000
→Import: 2,000
=12,000-20000
=10,000

Income
→Workers: 1,500
→Capital Owners: 2,000
→Land Owners: 1,500
→Business Owners: 5,000
=10,000

1. Product Approach

- GDP is calculated by adding the market value of final goods and services currently produced by each sector of the economy.
- There are two possible ways of avoiding double counting.

1. Taking only the value of final goods and services
2. Taking the sum of the valued added by all firms at each stage of production

❑ Taking only the value of final goods and services.

- Agriculture and allied activities = 9,309
  - Agriculture = 7,000
  - Forestry = 1,000
  - Fishing = 1,309
- Industry = 147,413
  - Mining & quarrying = 9,842
  - Large & medium scale manufacturing = 91,852
  - Electricity & water = 13,717
  - Construction = 32,002
- Service = 357,872
  - Banking insurance and real estate = 121,704
  - Public administration & defense = 36,605
  - Health = 20,000
  - Education = 32,509
  - Domestic & other services = 147,054
- Net factor income from abroad = 87,348

GDP = 9,309 + 147,413 + 357,872

GDP = 514,594 million

GNP = GDP + NFI

GNP = 514,594 + 87,348

GNP = 601,942 million

❑ Taking the sum of the valued added by all firms at each stage of production

Stages of production	Values of output (in birr)	Cost of intermediate inputs	Value added
Farmer	500	0	500
Oil factory	2000	500	1500
Retailers	2500	2000	500

So in GDP calculation we take final value at retail = 2500

or we take summation of values added = 2500

INTRODUCTION TO ECONOMICS
UNIT 6

PART-3

Approaches to Measure GDP/GNP

2. Expenditure Approach

Product
→10 liters of Oil
10,000 birr



Expenditure
→Households: 7,000
→Government: 2,000
→Export: 1,000
→Import: 2,000
=12,000-20000
=10,000

Income
→Workers: 1,500
→Capital Owners: 2,000
→Land Owners: 1,500
→Business Owners: 5,000
=10,000

2. Expenditure Approach

- GDP is measured by adding all expenditures on final goods and services produced in the country by all sectors of the economy.
- GDP = C + I + G + NE
  - C: Personal consumption of households
  - I: Gross private domestic investment
  - G: Government purchases of goods and services
  - NE: Net exports

C: Personal consumption expenditure

- Expenditures by households on goods (durable and non-durable) and services.
  - ✓ Durable consumer goods: automobiles, refrigerators, video recorders, etc
  - ✓ Non-durable consumer goods: clothes, shoes, pens, and services.

I: Gross private domestic investment

- All spending of firms on plants, equipment, and inventories, and the spending of households on new houses.
- Investment (Capital Creation) is broken down into three categories:

1. **Residential investment:** the spending of households on the construction of new houses
2. **Business fixed investment:** the spending of firms on buildings and equipment for business use
3. **Inventory investment:** the change in inventories of firms

Note!

- **Gross private domestic investment** differs from **net private domestic investment**
- Gross includes both replacement and added investment whereas the Net refers only to added investment.
- ***Replacement*** means the production of all investment goods, which replace machinery, equipment and buildings used up in the production process.
- In short, ***net private domestic investment*** = ***gross private domestic investment*** minus ***depreciation***.

G: Government purchases

- All government spending on finished products and direct purchases of resources less (minus) government transfer payments (because they do not reflect current production although they are part of government expenditure)
- Transfer payments are excluded from GDP, as these are mere redistribution of income from taxpayers to the recipients of transfer payments.

e.g. old age pension, unemployment benefit, subsidies, etc

NE: Net exports

- Refer to total value of exports less total value of imports.

Note!

- Net export (EX-IM) is different from the terms of trade (EX/IM)

Example: GDP at current market price measured using expenditure approach for a hypothetical economy.

Types of Expenditure	Amount (in million Birr)
1. Personal consumption expenditure	**4500**
Durable consumer goods	1500
Non-durable consumer goods	2000
Services	1000
2. Gross private domestic investment	**600**
Business fixed investment	250
Construction Expenditure	300
Increases in inventories	50
3. Government expenditure on goods and services	**250**
Federal government	100
State government	150
4. Net export	**-50**
Exports	150
Imports	200
GDP at current market price	**5300**

INTRODUCTION TO ECONOMICS
UNIT 6

PART-4

Approaches to Measure GDP/GNP

3. Income Approach

Product
→10 liters of Oil
10,000 birr



Expenditure
→Households: 7,000
→Government: 2,000
→Export: 1,000
→Import: 2,000
=12,000-20000
=10,000

Income
→Workers: 1,500
→Capital Owners: 2,000
→Land Owners: 1,500
→Business Owners: 5,000
=10,000

3. Income Approach

- GDP is calculated by adding all the incomes accruing to all factors of production used in producing the national output.
  - ✓ Land-Rent
  - ✓ Labor-Wage & Salary
  - ✓ Capital-Interest
  - ✓ Management-Profit
- GDP is the sum incomes to owners of factors of production **plus** some other claims on the value of output (depreciation and indirect business tax) **less** subsidies and transfer payments

Note!

- Transfer payments:
  - Payments which are made to the recipients who have not contributed to the production of current goods and services in exchange for these payments
  - Are excluded from national income, as these are mere redistribution of income from taxpayers to the recipients of transfer payments.

e.g. old age pension, unemployment benefit, subsidies, etc

GDP =

- Compensation of employees (wages & salaries)

  + Rental Income

  + Interest Income

  + Profits (proprietors' profit plus corporate profit)

  + Indirect business taxes

  + Depreciation

  - Subsidies

  - Transfer payments

Example: GDP at current market price measured using income approach for a hypothetical economy.

Items		Value (In millions of Birr)
Compensation of Employees		(plus) 45623.71
Rental Income		(plus) 1249.32
Proprietor's Income		(plus) 10561.21
Corporate Profits		(plus) 16960.33
Net interest		(plus) 5189.73
Depreciation		(plus) 503.84
Indirect Business Taxes		(plus) 476.51
Subsidy		(minus) 11368.95
Gross Domestic Product		**69,195.70**
(plus) NFI	**Income from abroad**	(plus) 2036.20
	Payments to abroad	(minus) 11231.90
Gross National Product(Income)		**60,000.00**

INTRODUCTION TO ECONOMICS UNIT 6

Part-5

Other Income Accounts

1. **Net National Product (NNP)**
2. **National Income (NI)**
3. **Personal Income (PI)**
4. **Personal Disposable Income (PDI)**

Previous Part: Income Approach to GDP/GNI

Items		Value (In millions of Birr)
Compensation of Employees		(plus) 45623.71
Rental Income		(plus) 1249.32
Proprietor's Income		(plus) 10561.21
Corporate Profits		(plus) 16960.33
Net interest		(plus) 5189.73
Depreciation		(plus) 503.84
Indirect Business Taxes		(plus) 476.51
Subsidy		(minus) 11368.95
Gross Domestic Product		**69,195.70**
(plus) NFI	**Income from abroad**	(plus) 2036.20
	Payments to abroad	(minus) 11231.90
Gross National Product(Income)		**60,000.00**

1. Net National Product (NNP)

- GNP fails to take into account capital consumption allowance, which is necessary to replace the capital goods used up in that year's production.

Net National product (NNP) =Gross National product (GNP) – Capital consumption allowance (D)

Net National Product (NNP)

Items		Value (In millions of Birr)
Compensation of Employees		(plus) 45623.71
Rental Income		(plus) 1249.32
Proprietor's Income		(plus) 10561.21
Corporate Profits		(plus) 16960.33
Net interest		(plus) 5189.73
~~**Depreciation**~~		~~(plus) 503.84~~
Indirect Business Taxes		(plus) 476.51
Subsidy		(minus) 11368.95
Gross Domestic Product		**69,195.70**
(plus) NFI	**Income from abroad**	(plus) 2036.20
	Payments to abroad	(minus) 11231.90
Gross National Product(Income)		**60,000.00**
Net National product (NNP)		**59,496.16**

2. National Income (NI)

- National income is the income earned by economic resource (input) suppliers for their contributions of land, labour, capital and entrepreneurial ability, which are involved in the given year's production activity.
- From NNP, indirect business tax, which is collected by the government, does not reflect the productive contributions of economic resources because government contributes nothing.

National Income (NI) = Net National Product (NNP)– Indirect Business Tax (IBT)

National Income (NI)

Items		Value (In millions of Birr)
Compensation of Employees		(plus) 45623.71
Rental Income		(plus) 1249.32
Proprietor's Income		(plus) 10561.21
Corporate Profits		(plus) 16960.33
Net interest		(plus) 5189.73
~~**Depreciation**~~		~~(plus) 503.84~~
~~**Indirect Business Taxes**~~		~~(plus) 476.51~~
Subsidy		(minus) 11368.95
Gross Domestic Product		**69,195.70**
(plus) NFI	**Income from abroad**	(plus) 2036.20
	Payments to abroad	(minus) 11231.90
Gross National Product(Income)		**60,000.00**
Net National product (NNP)		**59,496.16**
National income (NI)		**59,019.65**

3. Personal Income (PI)

- It refers to income earned by persons or households.
- Persons in the economy may not earn all the income earned as national income.

PI = NI

– [social security contribution + corporate income tax + retained corporate profit]

+ [Public transfer payments (e.g. Subsidy) + net interest on government bond]

4. Personal Disposable Income

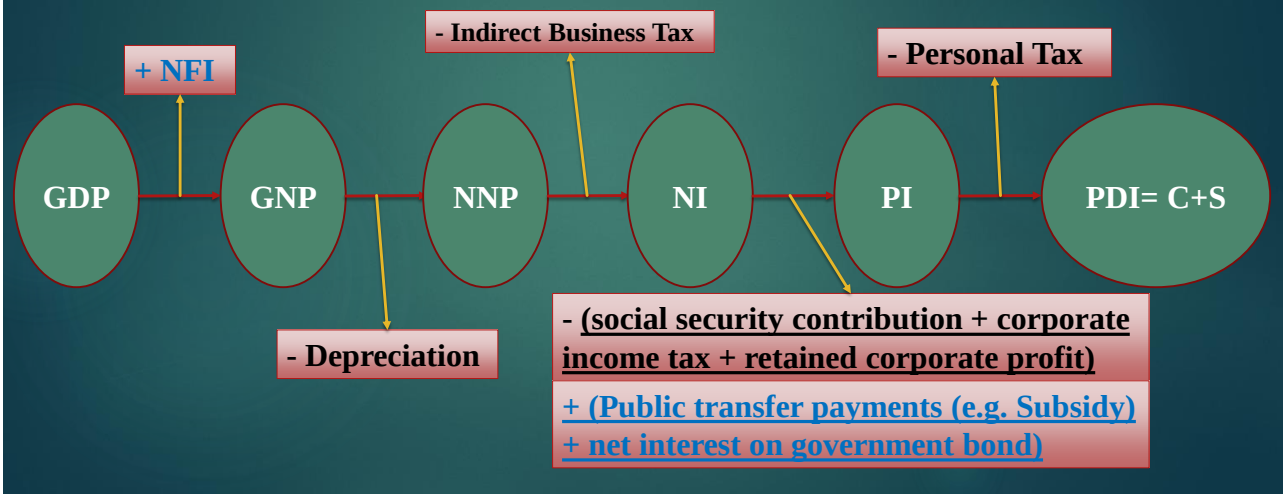
- it is personal income less personal tax payments.

DI = PI – Personal taxes

DI = C + S

where, C = personal consumption expenditure, S = Personal saving

Connection of All Income Accounts



INTRODUCTION TO ECONOMICS
UNIT 6
Part-6
Nominal Vs Real GDP

Nominal GDP

- Is the value of all final goods and services produced in a given year when valued at the **prices of that year**.
- Given that GDP= PXQ, any change that can happen in the country ‘s GDP is due to changes in price, quantity or both.
- For example, if prices are doubled over one year, then GDP will also double even though exactly the same goods and services are produced as the year before.
- Hence, GDP that is **not adjusted for inflation** is called **Nominal GDP**.

Real GDP

- Real GDP is the value of final goods and services produced in a given year when valued at the prices of a reference base year.
- By comparing the value of production in the two years at the same prices, we reveal the change in output.
- Hence, to be able to make reasonable comparisons of GDP overtime we **adjust for inflation**.

Example: Nominal and Real GDP Calculations

Year	Product	Quantity Produced	Price	Nominal GDP	Real GDP
2013 (Base Year)	X	20	5	(20x5)+(8x50) =500	(20x5)+(8x50) =500
	Y	8	50		
2014	X	25	20	(25x20)+(10x100) =1,500	(25x5)+(10x50) =625
	Y	10	100		

INTRODUCTION TO ECONOMICS UNIT 6

Part-7

The GDP Deflator and the Consumer Price Index(CPI)

The GDP Deflator

- The calculation of real GDP gives us a useful measure of inflation known as the GDP deflator.
- It reflects what's happening to the overall level of prices in the economy.
- The GDP deflator is the ratio of nominal GDP in a given year to real GDP of that year.

$$\text{GDP Deflator} = \frac{\text{Nominal GDP}}{\text{Real GDP}} * 100$$

From Part-6 Example: we have Nominal and Real GDP Values. Now lets calculate GDP Deflator.

Year	Nominal GDP	Real GDP	GDP Deflator $\left(\frac{\text{Nominal GDP}}{\text{Real GDP}} * 100\right)$
2013 (Base Year)	500	500	$\left(\frac{500}{500} * 100\right) = 100$
2014	1,500	625	$\left(\frac{1500}{625} * 100\right) = 240$

- For 2013 (base year), as both the real and nominal GDP values are exactly the same, the GDP deflator in the base year is always 100.
- For 2014, GDP Deflator of 240 shows the price in 2018 was 140% higher than the price in base year

The Consumer Price Index (CPI)

- CPI is an indicator that measures the average change in prices paid by consumers for a representative basket of goods and services.
- It compares the current and base year ***cost of a basket of goods*** of fixed composition.
- The CPI is the ratio of today's cost to the base year cost.
- Given base year quantities q'_0 and base year prices p'_0, cost of the basket in the base year is $\sum(p'_0 * q'_0)$,
- Given today's price (p_t), the cost of a basket of the same quantities q'_0 at today's prices is $\sum(p'_t * q'_0)$.

$$\text{CPI} = \frac{\text{Today's Cost}}{\text{Base Year Cost}} = \frac{\sum(p'_0 * q'0)}{\sum(p'_t * q'0)}$$

The CPI versus the GDP Deflator

SN	GDP Deflator	CPI
1	• Measures the prices of all goods and services produced (an increase in the price of goods bought by firms or the government will show up in the GDP deflator)	• Measures the prices of only the goods and services bought by consumers.
2	• Includes only those goods produced domestically (Imported goods are not part of GDP and do not show up in the GDP deflator)	• Includes both domestically produced and imported goods
3	• Assigns changing weights (allows the basket of goods to change over time as the composition of GDP changes)	• Assigns fixed weights to the prices of different goods (it is computed using a fixed basket of goods)

INTRODUCTION TO ECONOMICS
UNIT 6

Part-8

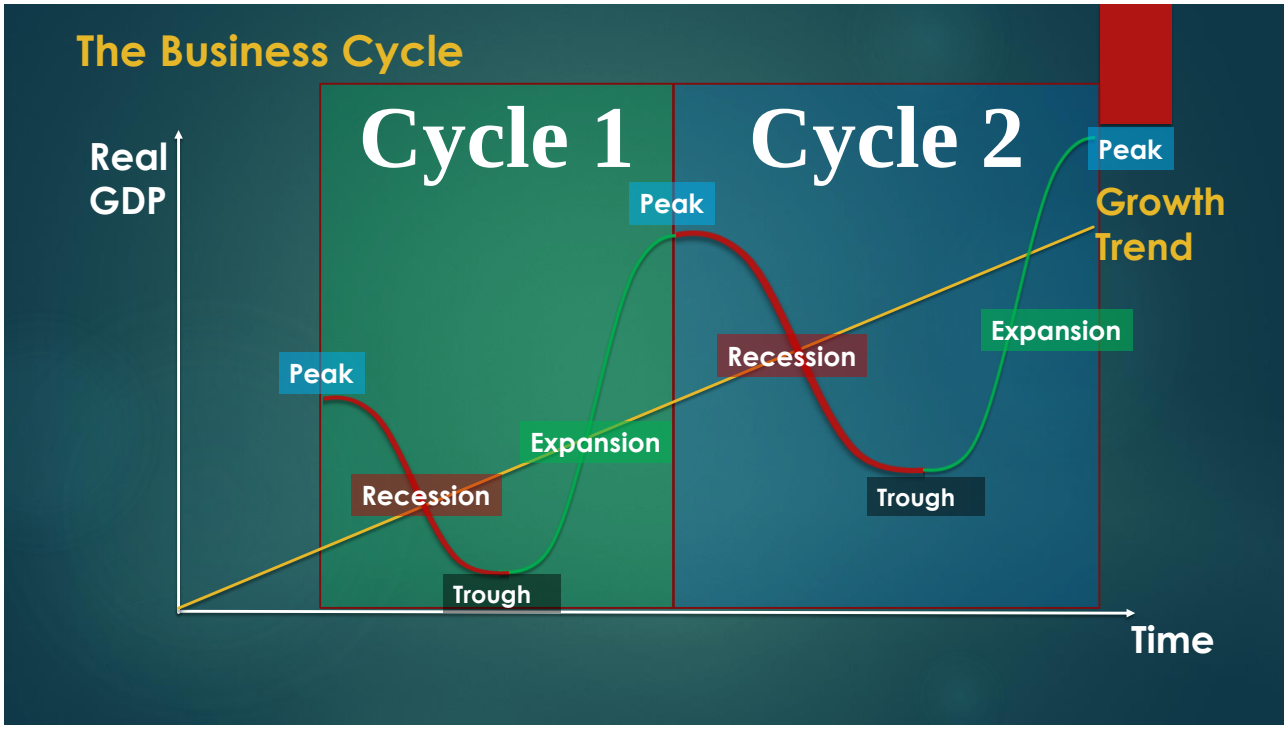
The Business Cycle

The Business Cycle

- **Business cycle** refers to the recurrent ups and downs in the level of economic activity.
- A business cycle is a fluctuation in overall economic activity, which is characterized by the simultaneous expansion or contraction of output in most sectors.
- Countries usually experience ups and downs in the level of total output and employment over time.
- With the fluctuation in the overall economic activity, the level of unemployment also moves up and down.
- We can identify four phases in the business cycle; **Boom/peak, Recession/contraction, Trough/Depression, and Recovery/Expansion**

Note!

- One business cycle includes the point from one peak to the next peak or from one trough to the next.
- A business cycle is a short-term fluctuation in economic activities.
- The trend path of GDP is the path GDP would take if factors of production were fully employed.
- Business cycles may vary in duration and intensity.



Boom/peak

- Highest level of output in the business cycle.
- End of economic expansion and the beginning of recession.
- In this phase, the economy‘s output is growing faster than its long-term (potential) trend and is therefore unsustainable.
- Due to very high degree of utilization of resources, unemployment level is low; business is good; and it is a period of prosperity.

Recession/contraction

- Level of economic performance generally declines.
- Total output declines, national income falls, and business generally decline.
- Unemployment problem rises.
- This period can cause hardship on business and citizens.

Trough/Depression:

- When the recession becomes particularly severe, we say the economy reaches depression or trough. The lowest point in a business cycle.
- End of a recession and the beginning of economic recovery/expansion.
- During this period, there is an excessive amount of unemployment and idle productive capacity.

Recovery/Expansion:

- The economy starts to grow or recover, i.e. there is an option of economic activity between a trough and a peak.
- More and more resources are employed in the production process; output increases, unemployment level diminishes and national income rises.
- When this expansion of the economy reaches its maximum, the economy once again comes to another boom or peak