

# **Macroeconomics**

---

**Nur Haiza Nordin  
Nur Naddia Nordin  
Nik Noorhazila Nik Mud**

Macroeconomics Copyright © 2019 by Nur Haiza Nordin, Nur Naddia Nordin and Nik Noorhazila Nik Mud.

All rights reserved. Without limiting the rights under copyright reserved above, no part of this publication may be produced, stored in or introduced into a retrieval system, or transmitted, in any form or any means (electronic, mechanical, photocopying, recording or otherwise), without the prior written permission of the copyright owner and the above publisher of this book.

For information contact: [haiza@umk.edu.my](mailto:haiza@umk.edu.my)

ISBN: 978-967-15348-4-7

Second Edition : February 2020

Published by:  
Ipro Publication  
No 32-2 Jalan Reko Sentral 4,  
Reko Sentral 43000 Kajang, Selangor.  
Tel: 019-5834090  
Email: [ipro.pbn@gmail.com](mailto:ipro.pbn@gmail.com)

Printed By:  
Corner Printing Sdn Bhd

---

## Table of Contents

Chapter 1:	Introduction to macroeconomics	1
Chapter 2:	Measuring National Output	17
Chapter 3:	Aggregate Expenditure and Equilibrium	33
Chapter 4:	Fiscal Policy	79
Chapter 5:	The Money Supply and the Federal Reserve System	87
Chapter 6:	Money Demand and the Interest Rate Equilibrium	113
Chapter 7:	Inflation	121
Chapter 8:	Aggregate Demand in Goods and Money Market	131
Chapter 9:	Aggregate Supply and the Equilibrium Price Level	141
Chapter 10:	International Trade	149
Chapter 11:	The Balance of Payment and Exchange Rate	165

---

## **Preface**

Macroeconomics was created to provide the learners with the syllabus of basic macroeconomics. Hence this module serves as a useful reference for student to understand about the concept, theory and calculation in macroeconomics. This module aims to make the learning macroeconomics interesting, easy and applicable to daily life. It presents the contents in a simple way to student. It introduces the concept and theories economics to the students using engaging examples. In studying economics, we truly believe in the importance of understanding and applying the concept acquired rather than memorizing and regurgitating facts. We hope you will enjoy this book.



# Chapter

# 1

## Introduction to Macroeconomics

### Learning Outcomes

1. **Understand the concept of macroeconomic**
2. **Understand and identify the macroeconomic objectives**
3. **Understand various types of economics goals**
4. **Differentiate between microeconomics and macroeconomics**
5. **Understand of concept for economic growth, unemployment and inflation**

## 1.0 Introduction

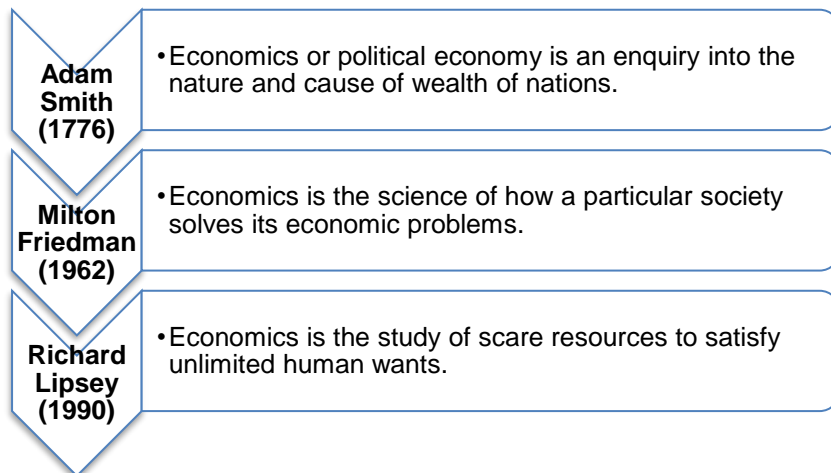
Economics is one of the most important aspects to be explored and understood by people. The nature of human beings is to have unlimited wants or desires, such as cloths, gadgets, cars, houses, properties, entertainments and so on. They will strive to full fill their unlimited wants, in order to gain maximum satisfaction in life.

However, economics is an entity that faces the obstacle of limited resources or limited factors of production. Even though society is blessed with the different functions and benefits of resources, such as land, labour, capital, entrepreneur and natural resources, society will still encounter the problem of scare resources.

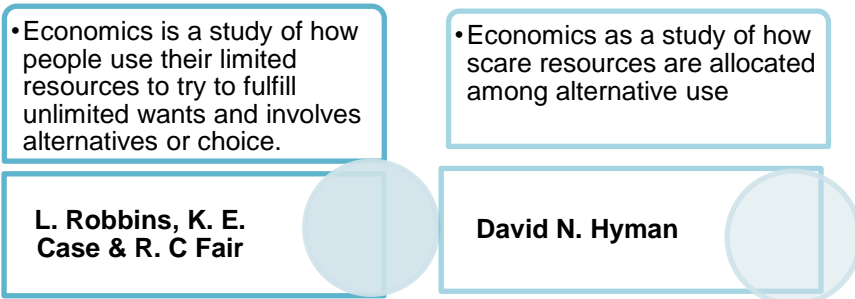
### 1.1 Definition of Economics

Economy means people who manage a household. There are some quotations from famous economists:

#### 1.1.1 Definition from Economist

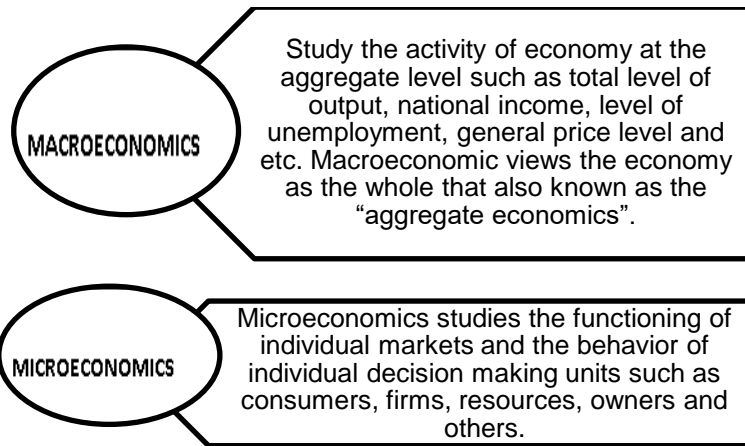


### 1.1.2 Definition from text Books



Generally, economics is a study of how people and society organize scarce and limited resources to produce goods and services to satisfy unlimited human wants. Society is divided into four main groups namely households, firms, governments and foreign sectors. Resources are also known as factor of productions. They are inputs that are used to produce goods and services in the economy. There are four factors of production used in the production process (land, labour, capital and entrepreneur).

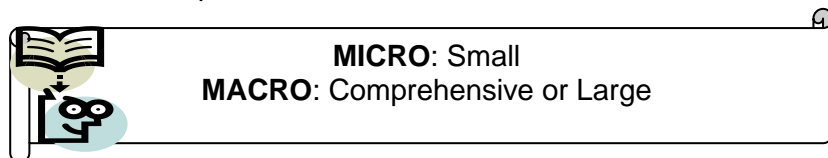
The studies of economics can be divided into microeconomics and macroeconomics. The term micro means something small while macro indicates something that is comprehensive or large. In general microeconomics studies the functioning the individual markets and the behavior of individual decision making units such as consumers, firm, resources, owner and other. Macroeconomics study the activity of economics at the aggregate level such as total level of output, national income, level of employment and unemployment, general price level and so on.



## 1.2 Comparison between Microeconomics and Macroeconomics

Macroeconomics and Microeconomics both deals with the decision of households and firms.

1. Microeconomics focused the individual decision and macroeconomics focused the aggregate decision. Aggregates are the sum of behaviour of all individuals in the economy.
2. In microeconomic study about demand and supply of individuals goods but in macroeconomics study about the aggregate demand and aggregate supply.
3. If microeconomics studies on how a price level for one particular goods is determine, the macroeconomics study about the general price level of all goods and services in the economy.
4. When microeconomics looks at the most optimum level of production of one firm, the macroeconomic will measure the total production of all goods and services in the economy as the national output.





### 1.3 Macroeconomic objectives:

- Full employment or reducing the unemployment rate. Unemployment rate = the percentage of people in the labor force who are without jobs and are actively seeking jobs.
- Control inflation or maintaining price: inflation = an increase in the general price level in the economy. Inflation will reduce the value of money or the purchasing power of money.
- Achieving a steady rate of economic growth: rate of economic growth = the % increase in the real output over a 12 month period.
- Better quality of life = an increase in the amount of goods and services as well as a better living environment (less pollution, more green, less flood, less crime).
- A balance in the balance of payment: to maintain the external value of the country's currency and economic stability.

### 1.4 Concern of Macroeconomics

In macroeconomics, there are three important or major concerns, which are output growth, unemployment and inflation.

#### 1.4.1 Output Growth

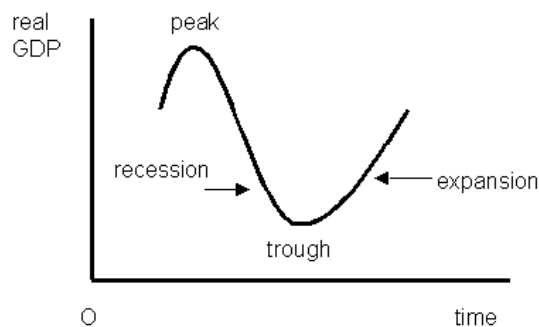
Output growth is referred to as an increase in the aggregate output-total quantity of goods and services produced in an economy throughout a given period. The common measure for aggregate output is Gross Domestic Product (GDP). GDP in fixed prices (adjusted for price changes through the years) is referred to as real GDP. Therefore, output growth or the growth rate for a typical year is measured as:

$$\text{Growth Rate} = \frac{\text{real GDP}_{\text{year 2}} - \text{real GDP}_{\text{year 1}}}{\text{real GDP}_{\text{year 1}}} \times 100$$

Another common measure of aggregate output is Gross National Product (GNP). Thus, the output growth can be measured by calculating the percentage change in GNP. To obtain the output growth on average for each individual in the economy, GDP per capita for aggregate output per individual can be used. Output growth per capita, will be the percentage in GDP per capita.

- There are two general areas of concern of output growth:
- i. The short run fluctuation in economics performance
  - ii. The long run economic growth.

The short run fluctuations refer to the short term ups (increase) and downs (decrease) of aggregate output in the economy. Technically, these are known as “expansion” (output growth) and “recession” (output decrease) in the economy. Repeating periods of expansion and recession make up a “business cycle”. In the business cycle economic growth is measured by the aggregate output and unemployment rate. There are four phases in the business cycle: peak, recession, trough and recovery.



**Figure 1.1: Phase of business cycle**

**Figures 1.1** show the phase of business cycle. Expansion is the period in a business cycle where it moves from through to a peak, where at this time output and employment is increase. Contraction is the period in the business cycle when it moves from a peak to a through during which output and employment is decline.

- i. **Peak**  
The highest point of a business cycle, where the business is producing at full capacity and the economy is at full employment.
- ii. **Recession**  
A period during which aggregate output declines.
- iii. **Trough**  
The lowest point of a business cycle, where the business is producing at full capacity and the economy is at full employment.

**iv. Recovery**

A period during which aggregate output expands. Increases in consumption, then will results to increases in employment level, output, income, wages, price and profit.

**Table 1.1: Comparison of Growth Rates for selected Countries for the Year 2018**

Country	GDP per capita (in million US\$)	GNI per capita (in million US\$ )
China	8826.99	16760
Indonesia	3846.86	11900
Korea, Rep.	29742.84	38340
Malaysia	9951.54	28660
Philippines	2988.95	10030
Singapore	57714.29	90570
Thailand	6595.00	17040
United States	59531.66	60200

(Sources: World Development Indicators)

Table 1.1 illustrates the output growth of different countries. The productivity differences among the factor that influence the country GDP growth, whereas productivity refers to the amount of goods and services produced from each hour of labour or capital. Countries with higher productivity on a relative basis will tend to have higher growth rates compared to countries with lower productivity.

**Economic growth:** Positive economic growth will increase the country's standard of living and welfare.

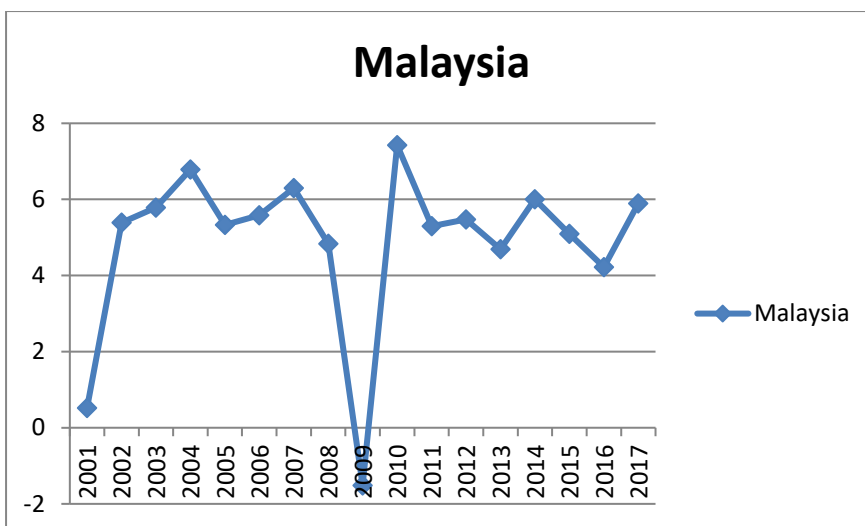


Figure 1.2: GDP growth (annual %) for Malaysia

### 1.4.2 Unemployment

Unemployment refers to a situation whereby a member of labour force is without a job but actively seeking a job. From the production possibility frontier (PPF) analysis point of view, unemployment implies that resources are not fully utilized, causing the economy to produce at a lower combination of outputs.

Unemployment exists when there are people who are willing and able to work but unable to find suitable jobs at certain level of wage rate. The total labor force includes those who are employed and also unemployed. It only includes those people who are actively seeking for jobs and currently employed.

$$\text{Labor force} = \text{Number of employed} + \text{Number of unemployed}$$

The rate of unemployment is measured as follows:

$$\text{Unemployment Rate} = \frac{\text{Number of unemployed}}{\text{Total labour force}} \times 100$$

or

$$\text{Unemployment Rate} = \frac{\text{Number of unemployed}}{\text{Number of employed} + \text{Number of unemployed}} \times 100$$

**Table 1.2: Unemployment rate from 2010 to 2017**

Country Name	2010	2011	2012	2013	2014	2015	2016	2017
China	4.2	4.34	4.47	4.54	4.593	4.605	4.649	4.675
Indonesia	5.61	5.15	4.47	4.34	4.05	4.51	4.12	4.283
Korea, Rep.	3.72	3.41	3.22	3.12	3.53	3.63	3.71	3.755
Malaysia	3.25	3.09	3.02	3.11	2.87	3.1	3.44	3.415
Philippines	3.61	3.59	3.5	3.5	3.6	3.04	2.71	2.784
Singapore	3.17	2.96	2.88	2.79	2.8	1.69	1.8	2.024
Thailand	0.62	0.66	0.58	0.49	0.58	0.6	0.937	1.083
United Kingdom	7.79	8.04	7.89	7.53	6.11	5.3	4.81	4.322
United States	9.63	8.95	8.07	7.38	6.17	5.28	4.87	4.438

Note: Unemployment, total (% of total labor force) (modeled ILO estimate)  
(Sources: World Development Indicators)

Table 1.2 show the unemployment rate for various countries. Focusing on Malaysia, Table indicates that over the years, we can see that the unemployment rate of Malaysia was around 2.9 to 3.4 per cent in the period 2010 to 2017. Throughout the 1990's, rapid growth of the Malaysia economy, spurred by the export-oriented manufacturing sector, contributed to low unemployment in Malaysia as compared to other developed countries (i.e United States or United Kingdom)

#### 1.4.2.1 Consequence of Unemployment

Why is there so much concern about unemployment, especially among workers? Unemployment has several undesirable consequences, including economic losses for society and individual hardship for the unemployed.

##### i. **Economic loss for society**

Economics is the study of how people use scarce resources to satisfy unlimited material wants and needs. If more resources are available and put into use, a greater number of wants and need can be satisfied. If resources are unemployed, some wants and needs that might have been satisfied are not. Thus, unemployment intensifies the scarcity problem.

Each year the economy produces a certain amount of goods and services. With unemployment, output is less than it could be and substantial amount of goods and services that could have been produced are lost.

**ii. Individual Hardships**

In addition to its effect on the society, unemployment causes hardships for people who would like to be working but are not. Unemployment intensifies an individual struggle with scarcity. When people are out of the job, they are usually forced to alter their spending habits and lifestyle and in some cases make dramatic changes, such as moving into a cheaper house or liquidating assets.

**1.4.2.2 Types of Unemployment**

**i. Frictional/Normal Unemployment**

This is a temporary unemployment. Those people who just graduate and start searching for jobs and those who quit from jobs and looking for new jobs are included in frictional unemployment. They need some time to search for new jobs that are suitable to their needs and qualifications. So, they are temporarily unemployed in the limited period of time.

**ii. Structural Unemployment**

This unemployment occurs when there is a change in the structure of an economy. Therefore the skills of workers are no longer suitable with the jobs available. When there is a mismatch between skills of workers and skills required at the work place, there will be structural unemployment.

**iii. Cyclical Unemployment**

This unemployment is caused by a decrease in aggregate demand due to a change in business cycle. When an economy is under recession, the demand for products decreases and therefore, the demand for workers also decreases. Many people become unemployed because of this economic condition.

**iv. Seasonal Unemployment**

Seasonal unemployment occurs when certain products cannot be produced during a certain season. Therefore, many people are temporarily unemployed during this season. For example, during monsoon season fishermen, rubber-tappers and farmers will be temporarily unemployed.

Full employment is the basic economic goal to be achieved in an economy. It is different from “zero” unemployment, because a certain degree of unemployment is seen to be inevitable and even desirable, at this stage, due to normal functioning of the economy.

The natural rate of unemployment is around which the unemployment rate fluctuates. This rate usually changes from year to year and it can be taken as the sum of frictional, structural and seasonal unemployment. The deviation of unemployment from its natural rate is therefore called cyclical unemployment.

#### **1.4.2.3 Effects of Unemployment**

- i. Output produced is less than potential output**  
When there is higher unemployment rate, output produced by the country cannot achieve the maximum or potential output national income and standard of living may decrease. The production process is not utilizing all the resources available.
- ii. Social Problems**  
Unemployment can cause a lot of social problems to the society. Unemployed people may involve in illegal activities, taking drugs and others to overcome their stress to cope with financial problems.
- iii. Individual effects**  
If unemployment persists for a long period, individual will lose their job skills and causing a loss in human capital. It will lead them to radical social and political activities by increasing crime rates.

#### **1.4.2.4 Role of government to Control Unemployment**

- i. Fiscal Policy**  
To control unemployment problem, government can impose expansionary fiscal policy. This is using two tools of fiscal policy, which are reducing tax rate and raising the government expenditure. In other words, the government should adopt a deficit budget. When this is done, the aggregate spending may increase. Therefore, the production of output can be increased. Demand for workers may increase and the unemployment problem can be reduced.
- ii. Monetary Policy**  
Bank Negara should implement an expansionary monetary policy. This policy will increase money supply and total spending in the country. To reduce unemployment, government might use the following tools of monetary policy:

**a. Reduce discount rate**

Loans given to commercial banks by Bank Negara will increase. This will increase aggregate spending and therefore, the number of workers employed in the production.

**b. Reduce interest rate**

When interest rate is reduced, the cost of borrowing on loans given to customers will also decrease. This will encourage investment by business sector. This means production can be increased and level of employment will also increase. The unemployment rate may decrease.

**c. Government buys securities in open market operation**

This will increase money supply in the market. The money available in the public's hands will increase spending and also production. Demand for workers may also increase.

**d. Reduce required reserve ratio**

When required reserve ratio is reduced, the credit creation may increase as well as the money supply. Aggregate spending may increase. Production and employment of workers can be increased.

**iii. Direct Controls**

Government may also reduce unemployment problems using direct regulations. This includes:

- a. Provide information about jobs available to reduce frictional unemployment.
- b. Encourage people to have new skills required by the job market through the creation of more training centers.
- c. Revise the education system so that people gain knowledge and skills compatible with the needs in the job market.
- d. Provide information about the job vacancies through employment agencies.
- e. Public training programmes, which train workers with skills that suit the current structure of the economy, to ease the transition of workers from declining to growing industries. This reduces the duration of (frictional and structural unemployment).
- f. Unemployment insurance, which partially protects workers income when they become unemployed.



Government will pay to the unemployed who are laid off because their previous employers no longer needed their skills. This is seen as reducing the hardship of unemployment and thus increase the duration of (structural) unemployment.

### **1.4.3 Inflation**

#### **1.4.3.1 Concept of Inflation**

Inflation is one of the major economic problems and there are several causes of inflation. Basically, many people know that inflation means increase in prices of products why are people concerned so much when the inflation rate is high? The reason is that there is lots of effects of inflation can impose on us. Because of the bad impacts of inflation, there are policies that need to be implemented to control it.

#### **1.4.3.2 Definition of Inflation**

Inflation is a sustained increase in the general price level. When prices of goods and services increase, the general price level will increase. Thus this will shows the inflation rate occurs. A higher inflation rate in the economy because of the higher general prices level indicates.

There are three price indexes are used as measurements of inflation or overall change in price levels. There are as follows:

**i. GDP deflator**

Nominal GDP/Real GDP which is an average of current year expressed as a percentage of base year prices.

**ii. Consumer Price Index (CPI)**

Price index computed in a given period using a basket of goods purchased by a typical consumer.

**iii. Producer Price Index (PPI)**

Measure price changes for products at all stages in the production process: (i) Finished goods stage; (ii) Intermediate material stages and (iii) Crude material stage.

Table 1.3 below shows the percentage change in consumer price index for selected countries for year 2010 and 2016.

**Table 1.3: Inflation rate from 2010 to 2017**

Country	Inflation Rate (%)							
	2010	2011	2012	2013	2014	2015	2016	2017
China	3.33	5.41	2.64	2.63	2.00	1.44	2.00	1.59
Indonesia	5.13	5.36	4.28	6.41	6.39	6.36	3.53	3.80
Korea, Rep.	2.94	4.03	2.19	1.30	1.27	0.71	0.97	1.94
Malaysia	1.71	3.20	1.65	2.10	3.17	2.08	2.13	3.87
Philippines	3.79	4.65	3.17	3.00	4.10	1.43	1.77	2.85
Singapore	2.80	5.25	4.53	2.38	1.01	-0.50	-0.50	0.57
Thailand	3.25	3.81	3.02	2.18	1.90	-0.90	0.19	0.66
United States	3.29	4.48	2.82	2.55	1.46	0.05	0.64	2.13

(Source: World Development Indicators)

#### 1.4.3.4 Effects of Inflation

##### i. Unequal income distribution

###### a. Fixed income group vs flexible income group.

When general price level increases, the real income for fixed income group earners such as government workers will decrease. The purchasing power of money for these groups of people is decreasing. They are able to buy less quantity of goods and services for the same fix amount of income earned. For flexible income group, such as businessman, will earn higher income with higher inflation, since entrepreneur are more profitable with higher prices of goods and services. Therefore, there will be unequal distribution of income between these two groups of income earners.

###### b. Borrowers and creditors

Creditors will get less value of money when they get back their money in the future. When there is higher inflation, the real value of money or its purchasing power of money decreases. But for the borrowers, they will pay back their loan with the money that has lower value or lower purchasing power. Therefore, here the borrowers are the gainers and creditors are the losers due to inflation.

##### ii. An increase in investment and production

Businessman will get higher profit when inflation occurs. From the undistributed profit, they reinvest to produce larger goods and services.

**iii. The amount of saving will decrease**

Purchasing power of money will be reduced when inflation occurs. Thus, people do not put their money in saving and people will choose other forms of assets.

**iv. Deficit in balance of trade**

Deficit in balance of trade because of the export higher than import. Demand for export will increase because of the value of our money depreciates.

#### **1.4.3.5 Role of government to Control Inflation**

**i. Fiscal Policy**

Since inflation is caused by excess spending therefore the solution to control this problem is to reduce spending. Through fiscal policy, government can reduce its spending or increase tax or both actions taken simultaneously. In other words, the government should plan for a surplus budget. When government reduces its purchases on goods and services, there will be less pressure on price level.

If government increases tax, the money available for spending will decrease. Therefore, consumers reduce their spending on goods and services. Therefore, inflation can be controlled using fiscal policy. Two major tools of fiscal policy are government expenditures and tax policy. Both tools are used to reduce spending and therefore the inflation problem.

**ii. Monetary Policy**

Government should implement contractionary a monetary policy to reduce inflation problem, so that, money supply will decrease. Therefore, the aggregate spending and general price level can be reduced. The tools of monetary policy to control inflation include the following: Increase discount rate; Increase interest rate; selling government securities in open market operation; Increase required reserve ratio and Increase special deposits by commercial banks.

**iii. Direct Controls**

Government can impose many regulations, which directly control the price levels. For example, price of certain products are under government control. The production capacity should also be increased in order to fulfill the increase in the aggregate demand. Government can also control the wage rate so that it is parallel with an increase in

workers' productivity. Therefore, cost of production will not increase and price of product is under control.

In addition, government can control exports and imports. Spending on local products should be encouraged. Incentives and grants should be given to producers to increase production. Strict legal action could be taken on sellers who raise price unreasonably.

### **TUTORIAL 1**

1. Define the macroeconomics. States the differences between microeconomics and macroeconomics.
2. Discuss five macroeconomics objectives. Explain and give example what will happen to the economy if the country not achieve the macroeconomics objective.
3. Explain the business cycle. Briefly explain four phase of this business cycle.
4. Define the inflation and how inflation will effects to the economy?
5. Using fiscal policy, briefly explain how government can control the inflation and unemployment?
6. List and describe the THREE (3) types of unemployment.

# Chapter

# 2

## Measuring National Product

### Learning Outcomes

- 1. Understand the concept of national income; GDP, GNP**
- 2. Understand how to calculate national income using expenditure approach, income approach and product approach**

## 2.1 DEFINITION OF NATIONAL INCOME

National income can be defined as the total income received by all economic agents in the economy based on the goods and services produced in the economy in the certain period of time.

### CONCEPT OF NATIONAL INCOME

#### i. Gross Domestic Product (GDP)

- a. Total money value of all final goods and services produced within a country in the given period of time.
- b. Can be measure at current price or constant price. GDP not includes goods and services produced by Malaysia citizen working overseas as well as intermediate goods.
- c. Example: The output produces by foreign workers in Malaysia such as by Thailand will be included in the GDP accounting.

#### ii. Gross National Product (GNP)

- a. GNP can be defined as a total market value of all final goods and services produced by the residents of a country during a given period of time and add for the net factor income from abroad (factor income received minus factor income payment).
- b. The total amount of income earned by nationals of the country regardless of where there are.
- c. Example: income earned by Malaysia residents that work at UK and etc are calculated in the GNP.

**GNP = GDP + (factor income receive from abroad – factor income paid abroad)**

#### iii. Market Price and Factor Cost

**Market price:** Refers to the current price in the market through the forces of demand and supply

**Factor cost:** The real price earned by producer or sellers

**GDP at factor cost = GDP at market price – indirect taxes + subsidies**

**iv. Net National Product (NNP)/ National Income**

Net national product is defined as the market value of the net output of final goods and services produced by a nation during a year. NNP is the GNP minus the value of capital consumption and depreciation during the year. NNP also refer to the national income at the market price.

**NNP:** the market value of the net output of goods and services produced by a nation in a year.

**v. Personal Income (PI)**

Personal income is the income that is actually received by individuals and households in economy in a year. PI can be spent, used to pay taxes or to saves.

$$\text{PI} = \text{National Income} + \text{transfer payment} - \text{corporate income taxes} - \text{retained earnings} - \text{social security contributions} - \text{insurance premium}$$

DPI can obtain by deducting the personal income by the personal income taxes.

$$\text{DPI} = \text{Personal Income} - \text{Personal Income Tax}$$

Three approaches to calculate national income:

- i. Expenditure approach
- ii. Product approach
- iii. Income approach

### **2.2.1 Expenditure Approach**

Total spending of final goods and services in a year. According to this method, national income expenditure comes from four economic sectors.

**i. Personal consumption (C)**

Expenditure by households, individuals and firms on goods and services in a year such as on durable goods, non-durable goods and also services.

**ii. Investments (I)**

Purchase of new capital goods by firms for use in production and also changes in the firm's inventories for example inventory, housing, plant and equipment.

**iii. Government spending (G)**

Expenditures for final goods and services made by federal, state and local governments. Types of expenditure will divide into expenditure for goods and services for public services and expenditure for social capital such as hospital, school and highways.

**iv. Net Exports (X – M)**

Exports are foreign countries' purchases of goods and services produced by domestic firms, while imports are households' spending of some of their income on goods and services produced in the rest of the world. Net export is total export minus total import. If  $X > M$  there will be a surplus in net export, when  $M > X$  there will be a shortage in net export.



**Table 2.1: National Income Calculated using Expenditure approach.**

ITEMS	Sign	Value
Consumption expenditure (C)	+	
Government Expenditure(G)	+	
Private Investment (I)	+	
Change in stock (I)	+ / -	
Export of goods and service (X)	+	
Imports of goods and services (M)	-	
<b>GROSS DOMESTIC PRODUCT AT MARKET PRICE</b>		<b>XXXX</b>
Factor income receive from abroad	+	
Factor income paid abroad	-	
<b>GOSS NATIONAL PRODUCT AT MARKET PRICE</b>		<b>XXXX</b>
Indirect Taxes	-	
Subsidies	+	
<b>GROSS NATIONAL PRODUCT AT FACTOR COST</b>		<b>XXXX</b>
Depreciation	-	
Capital consumption	-	
<b>NATIONAL INCOME</b>		<b>XXXX</b>
Transfer payment	+	
Social security contribution	-	
Retained earnings	-	
Corporate taxes	-	
<b>PERSONAL INCOME</b>		<b>XXXX</b>
Personal Income tax	-	
<b>DISPOSABLE PERSONAL INCOME</b>		<b>XXXX</b>
<b>GDP MARKET PRICE</b>		<b>XXXX</b>
Indirect Taxes	-	
Subsidies	+	
<b>GDP FACTOR COST</b>		<b>XXXX</b>

### **2.2.2 Income Approach**

Total national income at the GDP from the sum of income received from the production of output.

**i. Wages and Salaries.**

Also as a compensation of the employees which paid to households by firm and government. The compensation also include contribution that employers make to social insurance and the employees' pension fund.

**ii. Net Interest**

Interest that households receive on savings deposits and corporate bonds minus the interest household pay on their borrowing.

**iii. Rental Income**

Income received by household and businesses that supply property resources.

**iv. Profits**

The earnings of the owners of corporations. Divided into distributed profit (dividends), undistributed profit (retained earnings) and corporate income taxes.

The following are formula for calculating national income and disposable personal income.

**Table 2.2: National Income Calculated using Income approach.**

<b>ITEMS</b>	<b>Sign</b>	<b>Value</b>
Income from employment (salaries and wages)	+	
Income from self employment	+	
Income from rent, dividend and interest	+	
Companies profit (distributed and undistributed)	+	
<b>GROSS DOMESTIC INCOME</b>		<b>XXXX</b>
Factor income receive from abroad	+	
Factor income paid abroad	-	
<b>GOSS NATIONAL PRODUCT</b>		<b>XXXX</b>
Depreciation	-	
<b>NATIONAL INCOME</b>		<b>XXXX</b>
Transfer payment	+	
Social security contribution	-	
Undistributed profit	-	
Corporate taxes	-	
<b>PERSONAL INCOME</b>		<b>XXXX</b>
Personal Income tax	-	
<b>DISPOSABLE PERSONAL INCOME</b>		<b>XXXX</b>

### 2.2.3 Product Approach

Adding all the net value of all goods and services produced in a country by sectors of economy in a year. The sectors are divided to:

- i. Primary Sector; Mining, Agriculture, Forestry and Fishing.
- ii. Secondary Sector; Manufacturing and Constructions.
- iii. Tertiary Sector; Electricity, Gas and Water, Finance, Insurance, Retail Trade, Transport, Communication, Government services and etc.

**Table 2.3: National Income Calculated using Product Approach**

ITEMS	Sign	Value
Agriculture, Forestry, Fishing	+	
Manufacturing	+	
Construction	+	
Electricity, Gas and Water	+	
Government services	+	
Others	+	
<b>GROSS DOMESTIC PRODUCT AT MARKET PRICE</b>		<b>XXXX</b>
Factor income receive from abroad	+	
Factor income paid abroad	-	
<b>GOSS NATIONAL PRODUCT AT MARKET PRICE</b>		<b>XXXX</b>
Indirect Taxes	-	
Subsidies	+	
<b>GROSS NATIONAL PRODUCT AT FACTOR COST</b>		<b>XXXX</b>
Depreciation	-	
<b>NATIONAL INCOME</b>		<b>XXXX</b>
Transfer payment	+	
Social security contribution	-	
Retained earnings	-	
Corporate taxes	-	
<b>PERSONAL INCOME</b>		<b>XXXX</b>
Personal Income tax	-	
<b>DISPOSABLE PERSONAL INCOME</b>		<b>XXXX</b>
<b>GDP MARKET PRICE</b>		<b>XXXX</b>
Indirect Taxes	-	
Subsidies	+	
<b>GDP FACTOR COST</b>		<b>XXXX</b>

## 2.3 Uses of National Income

It represents the total currency value of goods and services produced over a specific time period. Economy use national income to describe the size of the economy of a nation.

### i. To measure the economic growth

Calculation of the national income for one time can be compare calculation for the other time. National income can be shows either it growing stagnant or declining. If real national income increases, the country is said as satisfactory rate of economic growth.

$$\text{Real NI} = \frac{\text{Real GNP}_{\text{this year}} - \text{Real GNP}_{\text{previous year}}}{\text{Real GNP}_{\text{previous year}}} \times 100$$

When there are positive economic growths, there is increase the amount of goods and services in the country, and individuals can enjoys the goods and services in their life. The continuing the economic growth over the year show that the positive effect to country's development.

### ii. To indicate the standard of living

Standard of living reflect to the individuals welfare and measured the total consumption of goods and services by household and it can be measured at GDP per capita. The more goods and services that can be consumed, the higher their standard of living is and the better their life will be. The standard of living can be measure based on the per capita income (PCI).

$$\text{PCI} = \frac{\text{GNP}}{\text{POPULATION}}$$

### iii. Distribution of Income

The distribution of income among the different factors of production such as rent, wages, interest and profit and also income from different sectors. The distribution of income should be equal between rich and poor people.

### iv. Government Planning

Government can planning the policy for short term and long term from the highest sectors of economy contribute to economic growth for Malaysia Plan for every five year period.

#### **v. Economic Policy**

National Income statistics is very useful to the economist to develop the policy that will encourage the economic growth. National income estimates are the most comprehensive measures of aggregate economic activity in an economy. By using this statistics, future economies policies for development nation can be formulated.

#### **vi. Public sector**

Total calculation of national income include the total expenditure for final goods and services in a year period and this are relative to the performance of public and private sectors. This pattern of the expenditure can be shows the types of economy of the country.

#### **vii. Inflationary and deflationary gaps**

From the calculation of the national income, it is helps to know the purchasing power of money and will help government implement the policy for inflation or recession which to stable the value of money.

### **2.4 Difficulties in Measure National Income**

Measuring national income accounting include the large amount of data collection and calculation for goods and services for the large region.

#### **i. Double counting**

Means that include the value of intermediate goods in the calculation of the national income. In calculation of national income it just include the value of final goods.

#### **ii. Lack of data**

Some activities in the economy are not record in the national data. For example the illegal activities and some productive goods and services produced are used for personal consumption. For example farmer will consume rice and vegetable they produced as the household consumption. There are no proper records of the value of these items and that will make the national income as understated.

#### **iii. False information**

Some people avoid paying taxes, thus they do not disclose their income or underestimate their income.

#### **iv. Allowance and depreciation**

Depreciation of machine used in the production is difficult to be estimated. If the depreciation is over estimated, it will make the national income figure is understated.

**v. Illiteracy**

Some product are product by household and not record for the productive activities. They used their production for the self consumption and the amount of the production are small.

**2.5 Nominal National Income and Real National Income**

Nominal GDP- use current prices of economy's production of goods and services.

Real GDP- use constant base-year prices of economy production of goods and services.

Real GDP is best measured of the economy's production of goods and services because it does not effects the changes in price.

**2.6 GDP Deflator.**

$$GDP\ deflator = \frac{Nominal\ GDP}{Real\ GDP} \times 100$$

Year	Fish Ball		Chicken sausage	
	Price (RM)	Quantity	Price (RM)	Quantity
2016	0.20	100	0.50	40
2017	0.40	150	0.75	80
2018	0.60	200	1.00	120

Calculating Nominal GDP

$$2016 = (0.20 \times 100) + (0.50 \times 40) = RM40$$

$$2017 = (0.40 \times 150) + (0.75 \times 80) = RM120$$

$$2018 = (0.60 \times 200) + (1.00 \times 120) = RM240$$

### **Calculating Real GDP**

$$2016 = (0.20 \times 100) + (0.50 \times 40) = \text{RM}40$$

$$2017 = (0.20 \times 150) + (0.50 \times 40) = \text{RM}70$$

$$2018 = (0.20 \times 200) + (0.50 \times 120) = \text{RM}100$$

### **Calculating the GDP Deflator**

$$2016 = (\text{RM}40/\text{RM}40) \times 100 = 100$$

$$2017 = (\text{RM}120/\text{RM}70) \times 100 = 171$$

$$2018 = (\text{RM}240/\text{RM}100) \times 100 = 240$$



## TUTORIAL 2

1. Define Gross Domestic Product (GDP) and Gross National Product (GNP).
2. What is the difference between GDP and GNP? Give examples to explain.
3. Which of the following included in this year's GDP? Explain why each is included.
  - a. Dr Naddia grows vegetables and fruits for home consumption.
  - b. The income of a general practitioner.
  - c. Government pays out Cost of Living Aid (COLA).
  - d. The purchase of leather by a shoe manufacture.
4. Suppose that the information in the following table is for a simple economy that produces the following goods and services.

Product	Year 2017		Year 2018		Year 2019	
	Price (RM)	Quantity	Price (RM)	Quantity	Price (RM)	Quantity
A	1	180	1	200	1.25	200
B	90	75	90	100	100	120
C	0.6	6.75	0.5	600	0.5	630

- a. Calculate nominal GDP for years 2017, 2018 and 2019.
- b. Calculate real GDP for year 2018 using year 2017 as a base year. What is GDP deflator?
- c. Calculate real GDP for year 2019 using year 2018 as a base year. What is GDP deflator? What was economic growth rate in 2019?

5. Using the data below, calculate GDP by using expenditure approach:

Item	Year 2017 RM (million)	Year 2018 RM (million)
Factor income paid abroad	700	450
Import of goods and services	2500	3000
Corporate taxes	790	900
Retained earnings	670	590
Depreciation	1000	1200
Export of goods and services	3200	4500
Subsidies	2300	3790
Private Investment	9000	8900
Personal Income tax	450	600
Social security contribution	900	900
Change in stock	2000	-350
Transfer payment	1000	1200
Indirect business tax	500	650
Public Investment	9300	7800
Consumption	3100	8000
Government expenditure	5500	5600
Factor income receive from abroad	4500	3200

Calculate the

- a) Gross domestic product at market price
- b) Gross National product at market price
- c) Gross National product at factor cost
- d) National Income
- e) Personal Income
- f) Disposable personal Income
- g) Gross domestic product at factor cost

6. The table contains a random selection of items from the national account of a country

Item	Year 2017 RM (million)	Year 2018 RM (million)
Business taxes	2,000	2,300
Indirect Taxes	800	700
Factor income received from abroad	6,450	8,000
Finance, insurance, real estate and business services	15,000	17,200
Mining and quarrying	25,000	19,800
Transport, storage and communication	9,700	10,600
Wholesale and retail trade, accommodation and restaurants	7,000	8,000
Manufacturing	12,500	18,900
Capital consumption allowances/ depreciation	1,500	2,500
Factor income paid abroad	2,400	4,400
Subsidies	3,440	3,440
Personal income taxes	1,350	2,350
Social security contribution	450	350
Construction	20,000	17,000
Electricity and gas	13,000	8,000
Agriculture	11,400	9,400
Transfer payment	1,200	2,200
Retained earning	1,500	2,700

Calculate the:

- a) Gross domestic product at market price
- b) Gross domestic product at factor cost
- c) Gross national product at market price
- d) Gross national product at factor cost
- e) National income
- f) Personal income
- g) Disposable income

7. The table contains a random selection of items from the national account of a country.

ITEM	Year 2016 RM (MILLION)	Year 2016 RM (MILLION)
Salaries	10,800	11,700
Personal Income tax	1,100	1,700
Undistributed profit	1,200	900
Social security contribution	1,000	700
Transfer payment	1,500	1,920
Corporates Taxes	1,100	1,400
Distributed profit	1,400	1,400
Factor income receive from abroad	2,300	2,300
Factor income payment abroad	1,200	1,200
Income from rent	19,000	17,000
Dividend	7,900	9,200
Income from self-employment	14,000	18,000
Depreciation	800	900

Calculate the:

- a) Gross domestic product/income
- b) Gross national product
- c) National income
- d) Personal Income
- e) Disposable income

## Aggregate Expenditure and Equilibrium

### Learning Outcomes

- 1. Understand the concept of aggregate demand and aggregate supply**
- 2. Understand and identify the determinant of AD and AS**
- 3. Calculate the national income using Keynesian economics**
- 4. Understand the flow of economy, two sector, three sectors and four sectors**
- 5. Approach to calculate national income using expenditure approach, leakage-injection approach and multiplier approach**
- 6. Understand about inflationary and deflationary gap**

### **3.1 THE MACROECONOMIC LONG RUN AND SHORT RUN**

#### **3.1.1 The Macroeconomic Long Run**

The macroeconomic long run may be a time outline that's sufficiently long for the real wage rate to have balanced to attain full business: real GDP break even with to potential GDP, unemployment is at common rate, the price level is proportional to the quantity of money, and the inflation rate equals the money growth rate minus the real GDP growth rate.

#### **3.1.2 The Macroeconomic Short Run**

The macroeconomic short run is a period during which some money prices are sticky so that real GDP might be below, above, or at potential GDP and the unemployment rate might be below, above or at the natural unemployment rate.

Aggregate supply and aggregate demand model is study the behaviour of real GDP and the price level in the short run. It also explains how the economy adjusts the eventually restore long run equilibrium and full employment.

### **3.2 Aggregate supply**

Aggregate supply is total value of output produced.

To study aggregate supply in different states of the labor market, two time frame for the aggregate supply:

- i. Long-run aggregate supply
- ii. Short-run aggregate supply

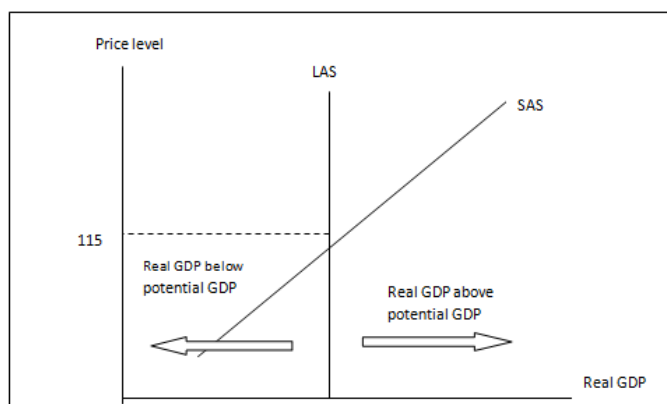
Long run aggregate supply

- Relationship between the quantity of real GDP supplied
- Real GDP equals the potential GDP.
- Supply curve is vertical because potential GDP is independent of the price level because of:
  - the movement along the LAS curve is accompanied by the change in two sets of price;
  - the price of goods and services-the price level and the price of the factors of production, most notably the money wage rate.

### Short run aggregate supply

- Relationship between the quantity of real GDP supplied and the price level when the money wage rate, the price of other resources and potential GDP remain constant.

Figure below show the long run and short run aggregate supply. The short run aggregate supply curve, SAS and the short run aggregate supply schedule show the relationship between the quantity of real GDP supplied and the price level when the money wage rate, other factor prices and potential GDP remain the same. A rise in the price level brings an increase in the quantity or real GDP supplied: the short run aggregate supply curve sloped upward. At the price level that makes the given money wage rate equal the full employment equilibrium real wage rate, the quantity of real GDP supplied equals potential GDP and the SAS curve intersect the LAS curve. Here, that price level is 115. At price level higher than 115, the quantity of real GDP supplied exceeds potential GDP, at price level below 115, the quantity of real GDP supplied is less than potential GDP.



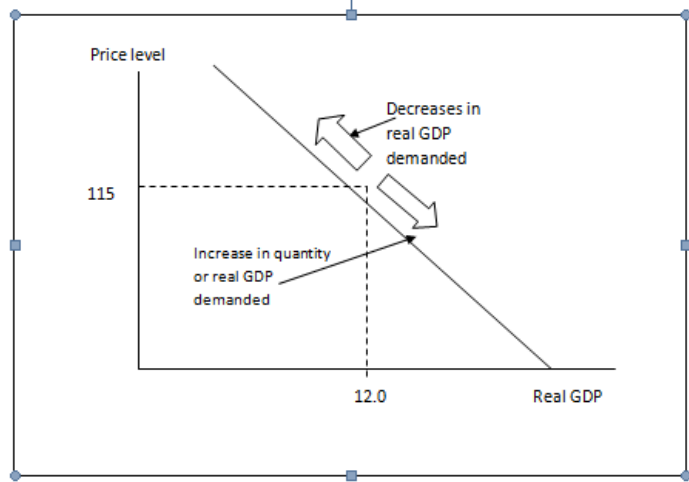
	PRICE LEVEL	REAL GDP SUPPLIED
A	105	11.0
B	110	11.5
C	115	12.0
D	120	12.5
E	125	13.0

### 3.3 Aggregate demand

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

The real GDP is the total amount of final goods and services produced that people, business, government and foreigners plan to buy depends on the factors of production. Some of the main ones are price level, expectations, fiscal policy and monetary policy and the world economy.

#### 3.3.1 The Aggregate Demand Curve



AD curve shows the relationship between the quantity of real GDP demanded and the price level. When the price level is 115, the quantity of real GDP demanded is \$12 trillion. A change in price level, when all other influence on aggregate buying plan remain same, brings a change in quantity of real GDP demanded and a movement along the AD curve.

### 3.4 Keynesian Economics

There are two approaches to determine national income equilibrium.



### 3.4.1 Aggregate Demand and Aggregate Supply Approach (AD = AS)

#### Aggregate Demand:

Aggregate demand is the sum of various sectors demands for current output of the economy. The sectors include households, business, government and the foreign buyers for domestic products. The curve for the aggregate demand is downward sloping.

#### Why Aggregate Demand Downward sloping.

**a. Income Distribution Effect.**

The changes the price is very crucial. The lower the price level will change the income distribution, which the purchasing power increases. When people consume a large proportion from their income, they tend to contribute to the expansion of the aggregate demand, but when the price level rises, aggregate demand would tend to shrink.

**b. Real Balance Effect**

People generally do not spend all of their income, a part of it they save. Usually they keep these savings in form of liquid assets like deposits in banks, investment in gold, unit trust, bonds and equities that easy to change with money. This will affect the purchasing power. If the price move up, the real value of the consumption will fall, at the same time the purchasing power is decrease. A household will decide not to spend much money to buy goods and services but put more proportion of their income on saving, the aggregate demand will decrease. When the price level fall, people will increase their consumption and reduce the saving to buy the goods and services at lower price and at this time the aggregate demand will expand.

#### Determinants of Aggregate Demand

**a. Private Consumption**

Private consumption comes out of disposable income of the households. If they decide to save more of this income, consumption will be reduced and vice versa. If the taxes on commodities or personal incomes are reduced, private consumption may rise or vice versa. This factor make an aggregate demand slope downward also shift.

**b. Private Investment**

Investment spending that is the purchasing of capital goods is a major determinant of aggregate demand. An increase in

- private investment would shift the aggregate demand curve to the right and vice versa.
- c. **Public Investment**  
Public Investment is also important variable used for directing the economy to achieving national goals. Increase in public investment will increase the aggregate demand and vice versa.
  - d. **Net Expenditure on Exports**  
The increase in foreign spending on domestic exports minus payments from imports would increase aggregate demand while a reduction would decrease it.

### **Aggregate Supply:**

AS can be defined as the total real output that various sectors of an economy would be willing to produce at different price levels. These sectors include business firms, government, and the foreign sellers of goods and services the country imports. The aggregate supply curve show the positive relationship between price and output level.

### **Determinants of Aggregate Supply**

- a. **Input Price**  
The proportion of wages and salaries in business is very high in the modern economy. The higher cost of production will pull up the price and make the wages and salaries are lag behind the productivity of the workers. The reduction in the wages will reduce per unit cost and help increase in the production and the supply curve will shift downward to the right. A rise in wage rates will reduce output and shift the curve upward to the left.
- b. **Price of Imported Resources**  
Most of the economies import workers, money and materials from abroad to keep the production process keep going and expanding. If the price of the imported resources used per unit output rise, the aggregate output would decrease, the supply curve would shift upward to the left, otherwise will happen if the price fall.
- c. **Productivity**  
Productivity is a measure of efficiency in resource use. An economy must obtain as much real output per unit by using the limited sources as possible, given the advance technology. The country must improve the technology over time through the R&D (replacing the old machines, improve the management, job training and etc). Improvement in productivity will reduce the cost

of production and shifts the aggregate supply curve downward to the right.

### 3.4.2 Leakage – Injection Approach

Leakage is a withdrawal from the income expenditure stream. Leakage includes savings, taxes and imports. Injection is an expenditure spending. Injection includes investments, government expenditure and exports. The equilibrium occurs when the leakages equal to injections.

#### Consumption and Saving

Income is divided into two parts that is consumption and saving.

$$\begin{array}{l} Y = C + S \\ C = Y - S \\ S = Y - C \end{array}$$

#### The Concept of Consumption

##### CONSUMPTION THEORY

Consumption refers to the purchase of goods and services by individuals or households which are produced by firms. Keynes consumption function gives that consumption is the function of disposable income  $Y_d$ . In other words, the total consumption that household make depends on their total consumption. If the disposable income is high, then they will able to make more consumption. Disposable income is the income receive after deduct with the tax.

The consumption expenditure can be defined as the expenditure made by household on the national output. Keynes consumption function gives that consumption is a function of disposable income,  $Y_d$ :

$$C = f(Y_d) \text{ where } Y_d \text{ is the disposable income}$$

In other words, the total consumption that household make depends on their total disposable income. If their  $Y_d$  is high, then they will be able to make more consumption. Previously,  $Y_d$  has been defined as the actual amount of income that household has in order to use for consumption. It is the total income that they received after deducting the income tax.

$$Y_d = Y - T$$

However, there is no tax in 2-sector economy. Therefore

$$Y_d = Y - 0$$

$$Y_d = Y$$

This means consumption can be written as a function of total income received (Y); since the total disposable income (Y<sub>d</sub>) of household is just the same as the amount of income they received (Y) when they do not have to pay for any income tax.

### **Average Propensity to Consume (APC)**

The average propensity to consume (APC) defines the relationship between the total income and total consumption. APC is the ratio of total consumption to total income. APC is defining as a fraction of the total income spent on consumption as a whole.

$$APC = \frac{\text{Total Consumption (C)}}{\text{Total Income (Y)}}$$

**APC:** Ratio of total consumption to total income

### **Example:**

$$Y = \text{RM } 400, C = \text{RM } 380$$

$$APC = C/Y$$

$$380/400 = 0.95$$

This means that when the NI is RM400m, household will use 95% of the income as their consumption. The APC will not be constant. It changes with income level.

### **MARGINAL PROPENSITY TO CONSUME (MPC)**

The marginal propensity to consume (MPC) defines the relationship between a change in total income and a change in total consumption.

$$MPC = \frac{\text{Change in Total Consumption } (\Delta C)}{\text{Change in Total Income } (\Delta Y)}$$



**MPC:** Ratio of change in total consumption to the change in total income

**Example:**

Original level:  $Y_0 = 100, C_0 = 110$

New level:  $Y_1 = 200, C_1 = 200$

$$MPC = \frac{C_1 - C_0}{Y_1 - Y_0} = \frac{200 - 110}{200 - 100} = \frac{90}{100} = 0.9$$

0.9 means that the consumption will change by 90% of the changes in income. Here, when income changes by RM100 (from 100 to 200), consumption will change by 90% of it, which is RM90. Notice that the MPC is also measuring the slope of the consumption function.  $\Delta C$  represent the vertical distance and the  $\Delta Y$  is the horizontal distance. Thus the ratio of  $\Delta C$  to  $\Delta Y$  also represents the slope of the function. Since the consumption is linear, this make the slope of the function is also constant at all level of changes and we shall have a constant MPC.

### CONSUMPTION SCHEDULE

Indicates the various amount of households plan to consume at the level of disposable income.

**Table 3.1: Table Disposable income, consumption, APC and MPC**

Disposable Income (Yd)	Consumption (C)	APC = $\frac{C}{Yd}$	MPC = $\frac{\Delta C}{\Delta Y}$
0	500	-	-
1000	1250	1.25	0.75
2000	2000	1.00	0.75
3000	2750	0.92	0.75
4000	3500	0.88	0.75
5000	4250	0.85	0.75
6000	5000	0.83	0.75

$$APC = \frac{C}{Y} = \frac{2750}{3000} = 0.92$$

$$MPC = \frac{\Delta C}{\Delta Y} = \frac{3500 - 2750}{4000 - 3000} = 0.75$$

## CONSUMPTION FUNCTION

Consumption function refers to the relationship between the consumption level and income level. The general equation for a linear consumption function as below:

		$C = a + b Y_d$
Where:		
C	=	consumption expenditure
a*	=	autonomous consumption
b	=	MPC
Y <sub>d</sub>	=	Disposable income
a*	=	does not depend on income (it is the consumption level when the income level is zero)

Based on the above table, the consumption function can be written as:

$$C = 500 + 0.75 Y_d$$

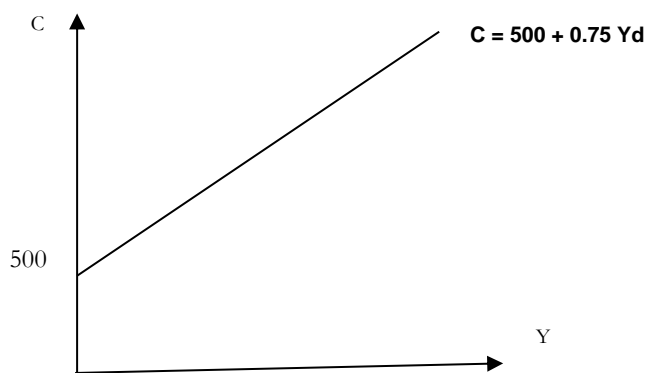
## GRAPH OF CONSUMPTION FUNCTION

Based on the consumption function, know that

$$C = 500 + 0.75 Y_d$$

↑                      ↑  
Intercept              Slope

The consumption graph will be:



### 3.4.2.3 The Concept of Saving

#### SAVINGS THEORY

Saving is part of income received by households that is not used for consumption. Keynes argue that savings is divided into autonomous savings and induced savings. Autonomous savings refers to parts of savings that does not depend on the income level and occurs when the autonomous consumption exist. Induced savings is a part of the income and it depends on the quantum of the savings. The higher the income, the higher the amount of savings and otherwise will be happen if there is lower the income, so the saving will be at lower rate.

#### AVERAGE PROPENSITY TO SAVE (APS)

The average propensity to save (APS) defines the relationship between the total income and total savings. APS is the ratio of total savings to total income. APS is defining as a fraction of the total income that is saved.

$$APS = \frac{\text{Total Saving } (S)}{\text{Total Income } (Y)}$$



**APS:** Ratio of total saving to total income

#### MARGINAL PROPENSITY TO SAVE (MPS)

The marginal propensity to save (MPS) defines the relationship between a change in total income and a change in total savings.

$$MPS = \frac{\text{Change in Total Saving } (\Delta S)}{\text{Change in Total Income } (\Delta Y)}$$



**MPS:** Ratio of change in total saving to the change in total income

## SAVING SCHEDULE

Indicates the various amount of households plan to save at the various level of disposable income.

**Table 3.2: Disposable income, consumption, saving, APS and MPS**

Disposable Income (Y <sub>d</sub> )	Consumption (C)	Saving (S)	APS = $\frac{S}{Y_d}$	MPS = $\frac{\Delta S}{\Delta Y}$
0	500	- 500	-	-
1000	1250	- 250	- 0.25	0.25
2000	2000	0	0	0.25
3000	2750	250	0.08	0.25
4000	3500	500	0.12	0.25
5000	4250	750	0.15	0.25
6000	5000	1000	0.17	0.25

$$\text{APS} = \frac{S}{Y} = \frac{750}{5000} = 0.15$$

$$\text{MPS} = \frac{\Delta S}{\Delta Y} = \frac{500 - 250}{4000 - 3000} = 0.25$$

Based on the **Table 3.2**, the relationship between consumption and saving can be seen. The sum of APC and APS must be equal to 1. The APC is the difference between one and APS, and can conclude that the higher the APC the lower the APS and vice versa. The sum of MPC and MPS also will be equal to 1. The MPC is the difference between one and MPS and can conclude that the higher the MPC the lower the MPS and vice versa.

<b>APC + APS = 1</b> <b>APC = 1 - APS</b> <b>MPC + MPS = 1</b> <b>MPC = 1 - MPS</b>
--



## SAVING FUNCTION

Savings function refers to the relationship between the savings level and income level. The general equation for a linear savings function shown as below:

$S = -a + (1 - b) Y_d$	
Where:	
S	= savings
- a*	= autonomous savings
1- b	= MPS
Y <sub>d</sub>	= Disposable income
-a*	= does not depend on income (it is the savings when the income level is zero)

Based on the above table, the saving function can be written as:

$$S = -500 + 0.25 Y_d$$

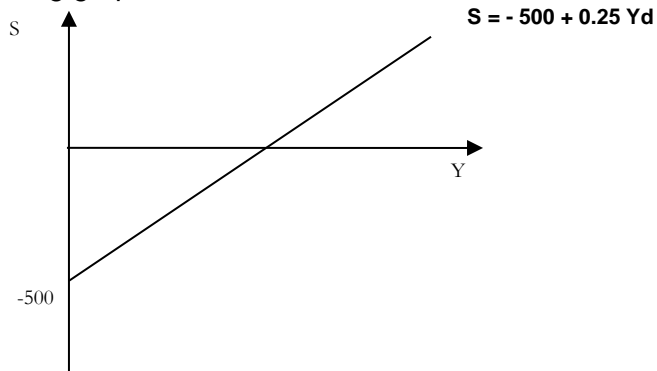
## GRAPH OF SAVINGS FUNCTION

Based on the savings function, know that

$$S = -500 + 0.25 Y_d$$

↑                      ↑  
Intercept              Slope

The saving graph will be:



## **THE DETERMINANTS OF CONSUMPTION AND SAVINGS**

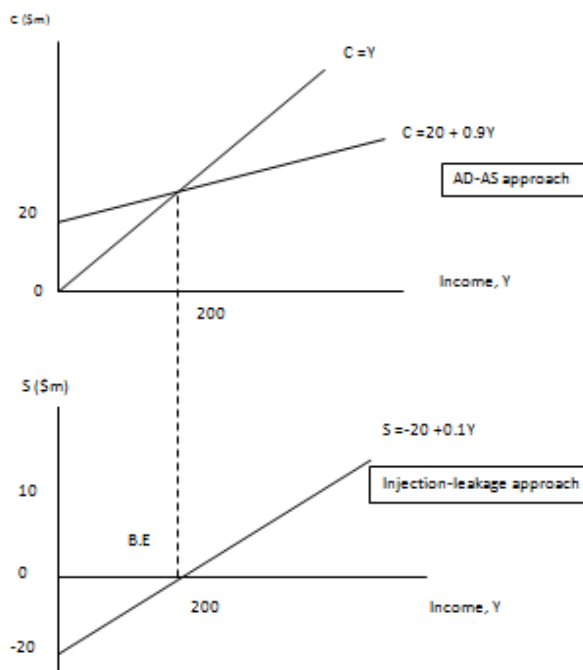
There are various factors that can change the pattern of consumption and savings.

- i. Price and wage levels.**  
A change in the price and wage will affect an individual's propensity to consume. A rise in price will decrease the propensity to consume and a decrease in price will increase the propensity to consume. When there is an increase in the wage levels, this will increase the propensity to consume and if the wage rate decreases, the propensity to consume will decrease.
- ii. Change in taste and fashion.**  
A change in consumer's taste and fashion will affect the propensity to consume although the changes are not significant in the short run.
- iii. Change in the expectation.**  
The consumption and saving will change that is affected by not only the current changes but also response to the expectation of future changes.
- iv. Rate of Interest.**  
The consumer's will reflect to the level of the interest rate. When there is a higher level of interest rate, consumers will save more because the higher the interest rate the more dividend on savings.

## RELATIONSHIP BETWEEN CONSUMPTION AND SAVINGS

The two diagrams below show the consumption and saving function.

**Figure 3.1: Relationship between consumption and saving**



In order to show the relationship between consumption and saving, another line is drawn in the figure above, called a 45<sup>o</sup> line. All points on this line show the value of aggregate demand (values at the horizontal axis) are equal to the value of aggregate supply (values at the horizontal axis). At 45<sup>o</sup> line shows all point where AD=AS.

This is not equilibrium line but it is just line that plots all the points where the total expenditure equals to the total output or AD=AS. This line will make it easier for us to compare between aggregate demand and aggregate supply. Based on the figure above, it can be explained that:

- a. For this economy, the amount of consumption that household planned to do is represented by the consumption function,  $C = 20 + 0.9Y$  and the 45<sup>o</sup> line plots all the points where  $C = Y$  (AD=AS). Therefore when the consumption function intersects with the 45<sup>o</sup> line at point B.E, this point reflects that the amount of planned consumption by household is equal to the income

they receive  $C=Y$ . We can see that saving is equal to 0. This point is known as the break-even point.

$$\text{Break-even point, B.E } Y = C$$

$$\text{or } S = 0$$

The break-even income level is \$200m. This B.E point can also be determine using calculus:

$$C = 20 + 0.9Y,$$

$$S = -20 + 0.1Y \text{ and we are looking for } Y_{B.E}$$

$$\text{B.E: } Y = C$$

$$Y = 20 + 0.9Y$$

$$Y = 20/0.1 = \$200m$$

$$\text{or } \text{B.E: } S = 0$$

$$-20 + 0.1Y = 0$$

$$Y = 20/0.1 = \$200m$$

- b. At all income level less than \$200m, the consumption function is above then the  $45^\circ$  line. This indicates that the consumption made by household exceeds the income received. And that makes the saving function shows negative values at all income levels less than \$200m. At all income levels above than \$200m, the consumption function is lower than the  $45^\circ$  line and this show that the consumption made by some saving and saving is shown as positive at all income levels higher than \$200m.

### 3.5 Determination of Equilibrium

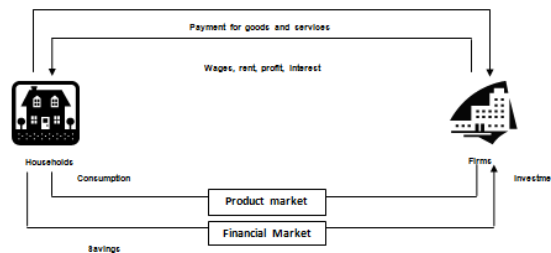
The determination of the equilibrium can be analysis through the table, diagrams and equations. Economy can be divided to three types. That is

- i. A two sectors of economy that made up by firms and households.
- ii. A three sectors of economy that consist of firms, households and governments.
- iii. A four sectors of economy that include of firms, households, governments and foreign sectors.

### 3.5.1 Two Sectors Economy

A two sector economy is an economy that we assume only two agents that is firms and households. There is no government interference and no any international trade in the economy. Recall the circular flow of income in this two sector economy.

**Figure 3.2: Circular flow Diagram for Two Sectors**



The above figure show that, the saving that made by households at financial market will be used as the funds by firms to made investment. Whatever is save by the households will be invested, by assuming that there is no drainage in the economy. This situation show that the total leakage equal to total injection and the aggregate demand is sufficient to buy the aggregate supply. This show the equilibrium condition of Output – Expenditure approach (AD –AS) and Leakage - Injection approach.

#### **Output Expenditure Approach (AD –AS).**

Aggregate demand consists of the expenditure made by households, called the consumption (C) and expenditure made by firms called investments (I). Therefore

$$AD = C + I$$

Aggregate supply consists of national output that denoted by Y.

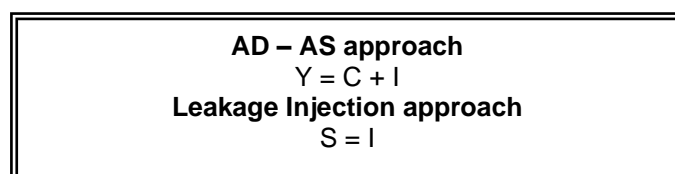
$$AS = Y$$

#### **Leakage - Injection approach**

Saving (S) is also said as leakage and investment (I) has been explained as injection

$$\text{Saving (S) = Leakage}$$

$$\text{Investment (I) = Injection}$$



## Algebra Analysis for Output Expenditure Approach (AD –AS)

Example:

Given the following information:

Autonomous consumption = 100  
 Marginal propensity to consume (MPC) = 0.7  
 Autonomous Investment = 500  
 Consumption function:  $C = 100 + 0.7 Y_d$   
 (In Two sectors economy  $Y_d = Y$ )

**SOLUTION:**

Equilibrium:  $Y = C + I$   
 $Y = 100 + 0.7Y_d + 500$   
 $Y - 0.7Y = 600$   
 $0.3 Y = 600$   
 $Y = 2000$

### GRAPHICAL ANALYSIS

By using the example above, draw the consumption function and investment function on graph:

Based on the consumption function:

$$C = 100 + 0.7 Y_d$$

$\uparrow$                        $\uparrow$   
 Intercept              Slope

Investment:

$$I = 500 \text{ (straight line)}$$

$\uparrow$   
 Intercept

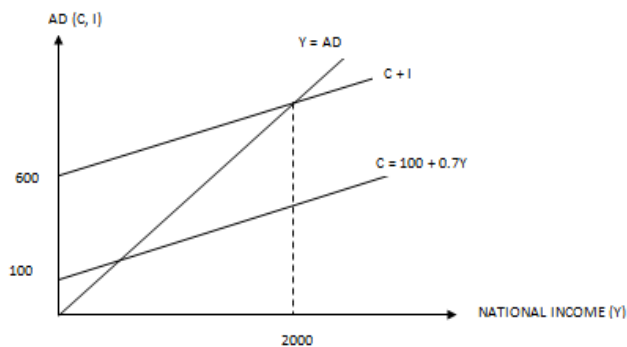


Figure 3.3: AD – AS Approach for Two Sector Economies

In the above figure, the autonomous consumption is RM 200 millions that show the point where the consumption starts. Equilibrium occurs when consumption plus investment and 45 degree line intersect. Thus from the above, the equilibrium is when income equal to RM 2000.

### LEAKAGE - INJECTION APPROACH

In the two sector economy, saving (S) from firms and household are known as leakage and investment (I) has been explained as injection.

**Saving (S) = Leakage**

**Investment (I) = Injection**

### ALGEBRA ANALYSIS FOR LEAKAGE - INJECTION APPROACH

#### EXAMPLE:

Given the following information:

Autonomous consumption = 100

Marginal propensity to consume (MPC) = 0.7

Autonomous Investment = 500

Consumption function:  $C = 100 + 0.7 Y_d$

(In Two sectors economy  $Y_d = Y$ )

#### SOLUTION:

The saving function can be derived from the consumption function:

$$S = -100 + 0.3Y_d$$

Equilibrium:  $S = I$

$$-100 + 0.3Y_d = 500$$

$$0.3 Y = 600$$

$$Y = 2000 \text{ (Equilibrium level)}$$

## GRAPHICAL ANALYSIS

By using the example above, draw the consumption function and investment function on graph:

Based on the consumption function:

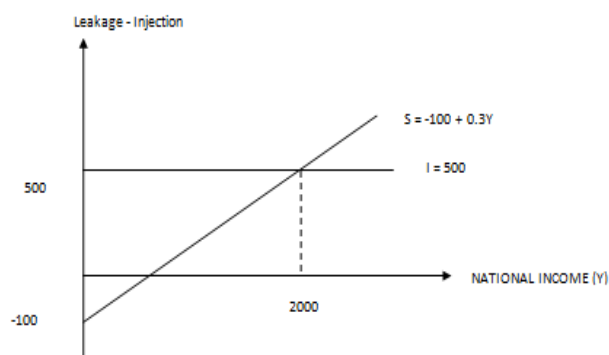
$$S = -100 + 0.3 Y_d$$

$\uparrow$                        $\uparrow$   
 Intercept                      Slope

Investment:

$$I = 500 \text{ (straight line)}$$

$\uparrow$   
 Intercept



**Figure 3.4: Leakage Injection Approach for Two Sector Economies**

In the above figure, equilibrium occurs when saving and investment function intersects. Thus from the above, the equilibrium is when income equal to RM3000.

## CONSUMPTION AND SAVING SCHEDULE

AS (Y)	C	S	I	AD (C + I)	Cases
0	100	-100	500	600	Increase
<b>1000</b>	800	200	500	1400	Increase
<b>2000</b>	1150	350	500	1650	Increase
2000	<b>1500</b>	<b>500</b>	<b>500</b>	<b>2000</b>	<b>Equilibrium</b>
<b>4000</b>	1850	650	500	2350	Decrease
<b>5000</b>	2200	800	500	2700	Decrease

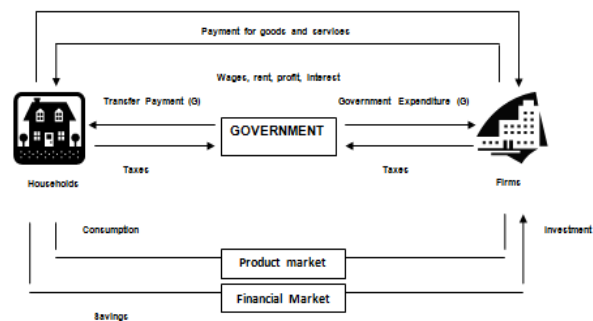


If the national income is less than RM2000 million ( $AD > AS$ ), there is a tendency for national income to increase. This is because the actual income is less than aggregate expenditure or aggregate demand. As a result, firms could increase their output to achieve equilibrium conditions. If the national income is more than RM2000 million ( $AD < AS$ ), national income will decrease since aggregate expenditure is greater. The firms reduce their output when equilibrium income is achieved. Equilibrium income is at RM2000 million when aggregate demand is equal to aggregate supply and injection ( $I$ ) is equal to leakage ( $S$ ).

### 3.6 THREE SECTORS ECONOMY

A three sector economy consists of government, firms and households. Recall the circular flow of income in this three sector economy.

**Figure 3.5: Circular flow Diagram for Two Sectors**



The above figure shows that, Figure shows the flow of taxes from households and firms to government and also the flow of purchases of goods and services by government and transfer payments to households. Government expenditure, are seen as injections and taxes are seen as leakages

#### **Output Expenditure Approach (AD – AS).**

In a three-sector economy, aggregate demand is the sum of households consumption (C), investments by firms (I) and government expenditure (G). Aggregate supply is equal to aggregate output (Y). Therefore:

$$AD = C + I + G$$

Aggregate supply consists of national output that denoted by Y.

$$AS = Y$$

The determination of equilibrium in a three-sector economy is more complicated when compared to a two-sector economy. In a three-sector economy, included two types of taxes. That is:

**i. Autonomous taxes**

Autonomous taxes refer to taxes that are independent of income. Autonomous tax does not relate to income. If the income increases decreases, autonomous taxes remain constant.

**ii. Induced taxes**

Induced taxes refer to taxes that depend on income. Induced tax changes income changes. If income increases, induced taxes will increase and v versa.

**Leakage - Injection approach**

In a three-sector economy, savings and taxes from households and firm; leakages while investments by firms and government expenditure are injection into the spending stream.

Equilibrium is achieved when leakages are equal to injections

$$\text{Injection} = \text{Leakage}$$

$$I + G = S + T$$

<p><b>AD – AS approach</b>  <math>Y = C + I + G</math></p> <p><b>Leakage Injection approach</b>  <math>I + G = S + T</math></p>
---

**ALGEBRA ANALYSIS FOR OUTPUT EXPENDITURE APPROACH (AD – AS)**

**EXAMPLE: EQUILIBRIUM USING THE AUTONOMOUS TAX**

Given the following information:

Consumption function

$$C = 200 + 0.75Y_d \text{ (} Y_d \text{ is disposable income)}$$

Investment is 100

Government spending 50

Taxes 100

**SOLUTION:**

Equilibrium Taxes have an effect on the consumption. Therefore, the equilibrium income is:

$$\begin{aligned}
 Y &= C + I + G \\
 Y &= 200 + 0.75Y_d + 100 + 50 \\
 Y &= 350 + 0.75(Y - T) \\
 Y &= 350 + 0.75(Y - 100) \\
 Y &= 350 + 0.75Y - 75 \\
 Y - 0.75Y &= 275 \\
 0.25Y &= 275 \\
 Y &= 275/0.25 \\
 Y &= 1100 \text{ (Equilibrium of Income)}
 \end{aligned}$$

**EXAMPLE: EQUILIBRIUM USING THE INDUCED TAX**

Given the following information:

Consumption function:

$$C = 200 + 0.75Y_d \text{ (} Y_d \text{ is disposable income)}$$

Investment 100

Government expenditure 50

Taxes is 0.2Y

**SOLUTION:**

The equilibrium income is as follows:

$$\begin{aligned}
 Y &= C + I + G \\
 Y &= 200 + 0.75Y_d + 100 + 50 \\
 Y &= 350 + 0.75(Y - T) \\
 Y &= 350 + 0.75(Y - 0.2Y) \\
 Y &= 350 + 0.75(0.8Y) \\
 Y &= 350 + 0.6Y \\
 Y - 0.6Y &= 350 \\
 0.4Y &= 350 \\
 Y &= 350/0.4 \\
 Y &= 875 \text{ (Equilibrium of Income)}
 \end{aligned}$$

**GRAPHICAL ANALYSIS****EQUILIBRIUM USING THE AUTONOMOUS TAX**

By using the example above, draw the consumption function and investment function on graph:

Consumption function

$$C = 200 + 0.75Y_d \text{ (} Y_d \text{ is disposable income)}$$

Investment is 100

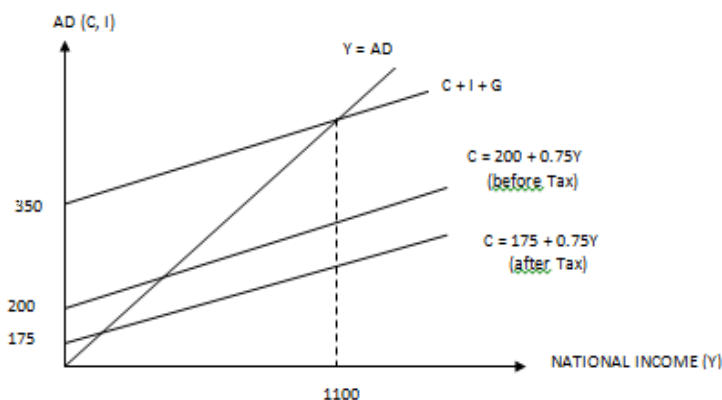
Government spending 50

Taxes 100

Based on the consumption function:

$$C = 200 + 0.75 Y_d$$

$\uparrow$                        $\uparrow$   
 Intercept                  Slope



**Figure 3.6: AD – AS Approach for Three Sector Economies for Autonomous Tax**

In the above figure, equilibrium occurs when consumption plus investment plus government expenditure and 45 degree line intersect. Thus from the above, the equilibrium is when income equal to RM1100.

### EQUILIBRIUM USING THE INDUCED TAX

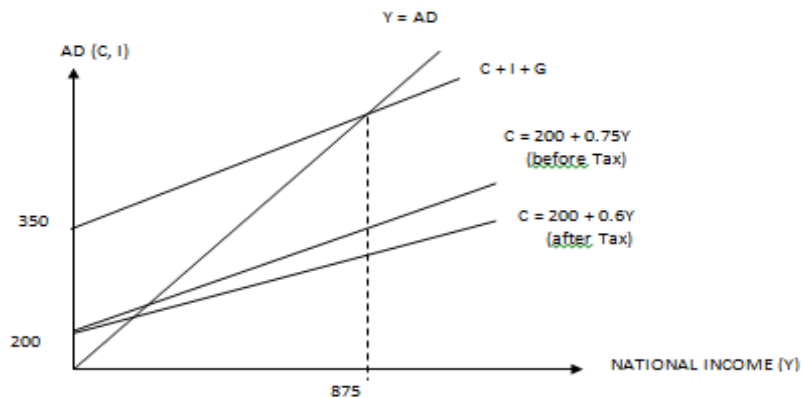
By using the example above, draw the consumption function and investment function on graph:

Consumption function  
 $C = 200 + 0.75Y_d$  ( $Y_d$  is disposable income)  
 Investment is 100  
 Government spending 50  
 Taxes  $0.2Y$

Based on the consumption function:

$$C = 200 + 0.75 Y_d$$

$\uparrow$                        $\uparrow$   
 Intercept                  Slope



**Figure 3.7: AD – AS Approach for Three Sector Economies for Induced Tax**

In the above figure, equilibrium occurs when aggregate demand curve and 45 degree line intersect. Thus from the above, the equilibrium is when income equal to RM1100.

#### **LEAKAGE - INJECTION APPROACH**

In the two sector economy, saving (S) from firms and household are known as leakage and investment (I) has been explained as injection.

**Saving (S) + Taxes (T) = Leakage**

**Investment (I) + Government Spending (G) = Injection**

#### **ALGEBRA ANALYSIS FOR LEAKAGE - INJECTION APPROACH**

##### **EXAMPLE: EQUILIBRIUM USING THE AUTONOMOUS TAX**

Given the following information:

Consumption function

$C = 200 + 0.75Y_d$  ( $Y_d$  is disposable income)

Investment is 100

Government spending 50

Taxes 100

**SOLUTION:**

The saving function can be derived from the consumption function:

$$S = -200 + 0.25Y_d$$

Equilibrium:

$$I+G = S+T$$

$$100+50 = -200+ 0.25Y_d + 100$$

$$150 = - 100 + 0.25(Y - T)$$

$$150 = - 100 + 0.25(Y - 100)$$

$$150 = - 100 + 0.2Y - 25$$

$$150 = - 125 + 0.25Y$$

$$0.25Y = 350$$

$$Y = 1100 \text{ (Equilibrium of Income)}$$

**EXAMPLE: EQUILIBRIUM USING THE INDUCED TAX**

Given the following information:

Consumption function

$$C = 200 + 0.75Y_d \text{ (} Y_d \text{ is disposable income)}$$

Investment is 100

Government spending 50

Taxes 0.2Y

**SOLUTION:**

$$I+G = S+T$$

$$100+50 = -200+ 0.25Y_d + 0.2Y$$

$$150 = -200 + 0.25(Y - 0.2Y) + 0.2Y$$

$$150 = -200 + 0.25(0.8Y) + 0.2Y$$

$$150 = -200 + 0.2Y + 0.2Y$$

$$150 = -200 + 0.4Y$$

$$0.4Y = 350$$

$$Y = 875 \text{ (Equilibrium of Income)}$$

**GRAPHICAL ANALYSIS****EXAMPLE: EQUILIBRIUM USING THE AUTONOMOUS TAX**

By using the example above, draw the consumption function and investment function on graph:

Consumption function

$$C = 200 + 0.75Y_d \text{ (} Y_d \text{ is disposable income)}$$

Investment is 100

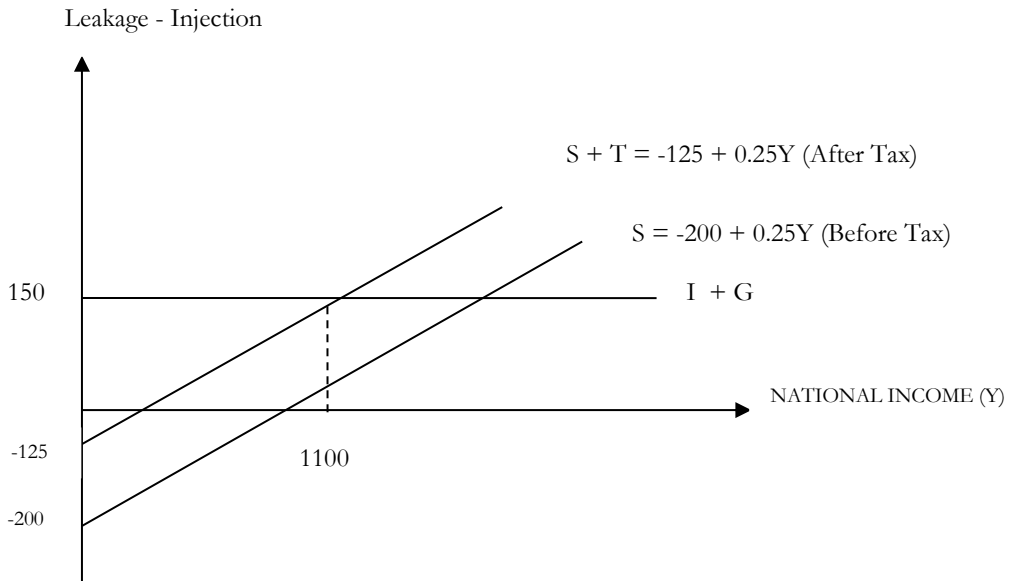
Government spending 50

Taxes 100

Based on the consumption function:

$$S = -200 + 0.25 Y_d$$

$\uparrow$                        $\uparrow$   
 Intercept                  Slope



**Figure 3.8: Leakage Injection Approach for Three Sector Economies by Using Autonomous Tax**

In the above figure, equilibrium occurs when saving plus taxes and investment plus government expenditure function intersects. Thus from the above, the equilibrium is when income equal to RM1100.

**EXAMPLE: EQUILIBRIUM USING THE INDUCED TAX**

By using the example above, draw the consumption function and investment function on graph:

Consumption function

$$C = 200 + 0.75Y_d \text{ (} Y_d \text{ is disposable income)}$$

Investment is 100

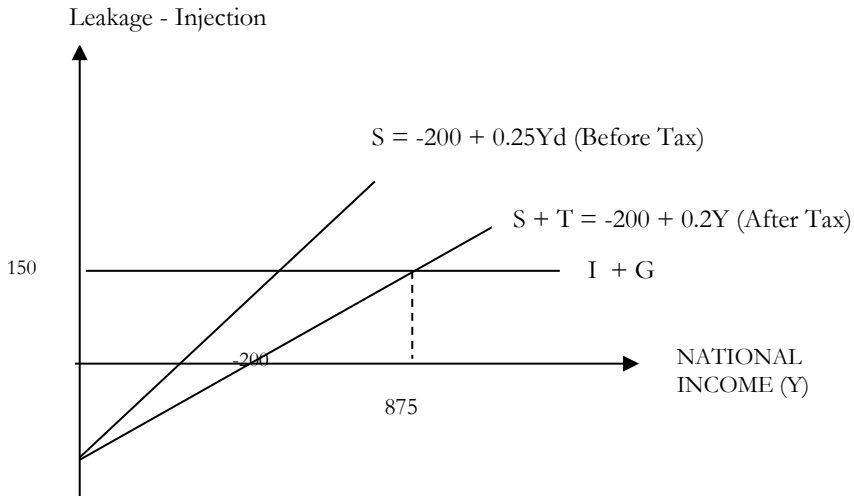
Government spending 50

Taxes 0.2Y

Based on the consumption function:

$$S = -200 + 0.25 Y_d$$

$\uparrow$                        $\uparrow$   
 Intercept                      Slope



**Figure 3.9: Leakage Injection Approach for Three Sector Economies by Using Induced Tax**

In the above figure, equilibrium occurs when saving plus taxes and investment plus government expenditure function intersects. Thus from the above, the equilibrium is when income equal to RM875

### CONSUMPTION AND SAVING SCHEDULE

AS	T	Yd (Y - T)	C	S	I	G	AD (C + I + G)	Cases
100	100	0	200	-200	100	50	350	Increases
300	100	200	350	-150	100	50	500	Increases
600	100	500	575	-75	100	50	725	Increases
900	100	800	800	0	100	50	950	Increases
1100	<b>100</b>	<b>1000</b>	<b>950</b>	<b>50</b>	<b>100</b>	<b>50</b>	<b>1100</b>	<b>Equilibrium</b>
1300	100	1200	1100	100	100	50	1250	Decrease
1500	100	1400	1250	250	100	50	1400	Decrease

The equilibrium is achieved when we compare the aggregate some data (aggregate supply) and aggregate expenditure data (aggregate demand). When both the aggregate supply and demand are the same at one level, this is called the equilibrium income.

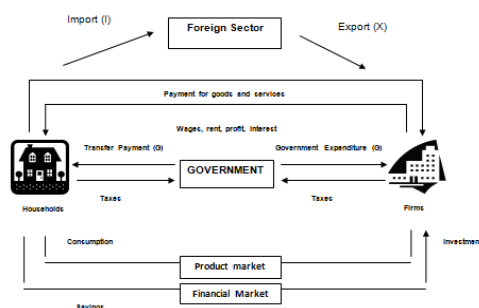


If the national income is less than RM1100 million ( $AD > AS$ ), there is a tendency for the national income to increase. This is because actual income is less than aggregate expenditure or aggregate demand. As a result, firms can increase their output to achieve the equilibrium condition.

If the national income is more than RM1100 million ( $AD < AS$ ), national income will decrease since aggregate expenditure is greater. The firms will reduce their output and equilibrium income will be achieved.

### 3.6 FOUR SECTORS ECONOMY

A four sector economy is an economy that we assume only four agents that is firms and households. There is no government interference and no any international trade in the economy. Recall the circular flow of income in this four sector economy.



**Figure 3.10: Circular flow Diagram for Four Sectors**

The above figure shows that, the flow of exports and imports from and to foreign sectors. An export is an injection and an import is a leakage.

#### **Output Expenditure Approach (AD – AS).**

In a four-sector economy, aggregate demand is the sum of households consumption (C), investment from the firm (I), government expenditure (G) and exports (X) minus imports (M). Aggregate supply is equal to aggregate output (Y). Therefore,

$$AS = Y$$

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

Equilibrium is achieved when aggregate demand is equal to aggregate supply.

$$AS = AD$$

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

### Leakage - Injection approach

In a four-sector economy, savings, taxes and imports are leakages while investments, government expenditure and exports are injections into the spending stream.

Equilibrium is achieved when leakages are equal to injections.

$$\text{Injection} = \text{Leakage}$$

$$I+G+X = S+T+M$$

#### AD – AS approach

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

#### Leakage Injection approach

$$S + T + M = I + G + X$$

### ALGEBRA ANALYSIS FOR OUTPUT EXPENDITURE APPROACH (AD – AS)

#### EXAMPLE:

Given the following information:

Consumption function:  $C = 200 + 0.75Y_d$  ( $Y_d$  is disposable income)

Investment = 100

Government spending = 50

Taxes = 100

Export = 100

Import = 50

The equilibrium income is as follows:

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

#### SOLUTION:

Equilibrium:

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

$$= 200 + 0.75(Y - T) + 100 + 50 + (100 - 50)$$

$$= 400 + 0.75(Y - 100)$$

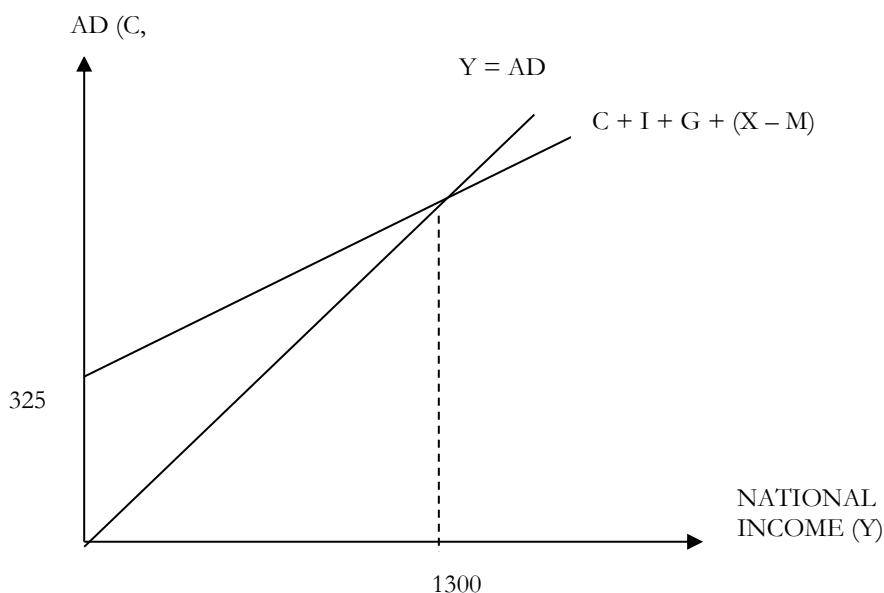
$$= 400 + 0.75Y - 75$$

$$Y - 0.75Y = 325$$

$$0.25Y = 325$$

$$Y = 325 / 0.25$$

$$Y = 1300 \text{ (Equilibrium of Income)}$$



**Figure 3: AD – AS Approach for Two Sector Economies**

In the above figure, the autonomous consumption is RM 200 millions that show the point where the consumption starts. Equilibrium occurs when consumption plus investment and 45 degree line intersect. Thus from the above, the equilibrium is when income equal to RM1300.

### **LEAKAGE - INJECTION APPROACH**

In a four-sector economy, savings, taxes and imports are leakages while investments, government expenditure and exports are injections into spending stream. Equilibrium is achieved when leakages are equal to injections.

$$\text{Injection} = \text{Leakage}$$

$$I + G + X = S + T + M$$

### **ALGEBRA ANALYSIS FOR LEAKAGE - INJECTION APPROACH**

#### **EXAMPLE:**

Given the following information:

Consumption function:  $C = 200 + 0.75Y_d$  ( $Y_d$  is disposable income)

Investment = 100

Government spending = 50

Taxes = 100

Export = 100  
 Import = 50

The equilibrium income is as follows:

$$I+G+X = S+T+M$$

**SOLUTION:**

$$100+50+100 = -200+0.25(Y-100) + 100+50$$

$$250 = -75 + 0.25Y$$

$$0.25Y = 325$$

$$Y = 1300 \text{ (Equilibrium of Income)}$$

**GRAPHICAL ANALYSIS**

By using the example above, draw the consumption function and investment function on graph:

Based on the consumption function:

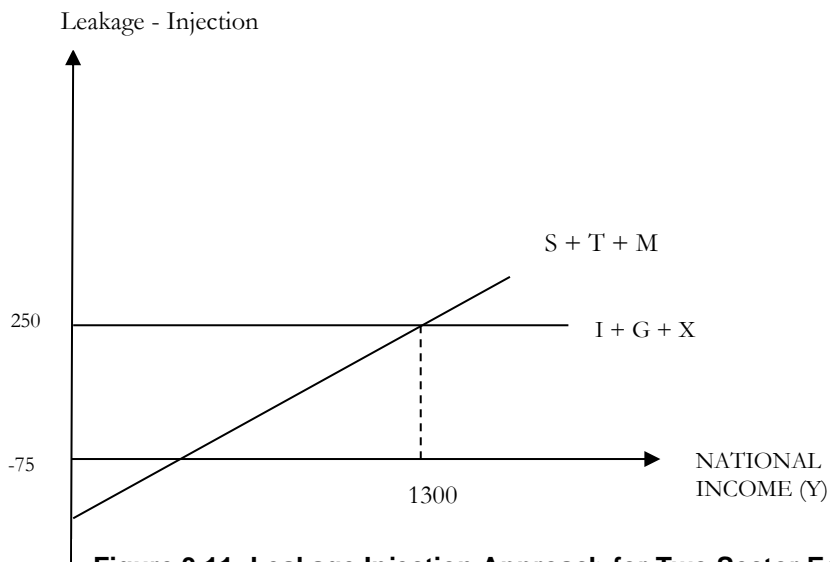
$$S = 200 + 0.75 Y_d$$

↑                      ↑  
 Intercept              Slope

Investment:

$$I = 500 \text{ (straight line)}$$

↑  
 Intercept



**Figure 3.11: Leakage Injection Approach for Two Sector Economies**

In the above figure, equilibrium occurs when saving and investment function intersects. Thus from the above, the equilibrium is when income equal to RM 1300.

### CONSUMPTION AND SAVING SCHEDULE

AS	T	Yd (Y - T)	C	S	I	G	X	M	AD [C + I + G + (X - M)]	Cases
100	100	0	200	-200	100	50	100	50	400	Increases
300	100	200	350	-150	100	50	100	50	550	Increases
600	100	500	575	-75	100	50	100	50	775	Increases
900	100	800	800	0	100	50	100	50	1000	Increases
1100	100	1000	950	50	100	50	100	50	1150	Increases
1300	<b>100</b>	<b>1200</b>	<b>1100</b>	<b>100</b>	<b>100</b>	<b>50</b>	<b>100</b>	<b>50</b>	<b>1300</b>	<b>Equilibrium</b>
1500	100	1400	1250	250	100	50	100	50	1450	Decrease

The table shows the equilibrium level at RM1300 million when the column aggregate supply is equal to aggregate demand (C + I + G + [X - M]). The equilibrium level using the leakage-injection approach can also be determined from the table where I + G + X and S + T + M equals 250 at equilibrium level of RM1300 million.

### 3.7 Multiplier concept

multiplier effect = the process by which an increase in autonomous expenditure leads to a larger increase in GDP.

multiplier = the ratio of the change in equilibrium level of output to a change in some autonomous variable, i.e  $\Delta I$ ,  $\Delta G$  or  $\Delta T_x$

. The formula for the multiplier (K) is

$$K = \frac{\text{Change in Income } (\Delta Y)}{\text{Change in Aggregate Demand } (\Delta AD)}$$

The size of the multiplier depends upon the size of the marginal propensity to consume (MPC). The higher the MPC, the higher the size of the multiplier e lower the MPC, the lower the multiplier. Therefore, K can be found the following formula:

$$K = \frac{1}{1 - MPC}$$

## TYPES OF MULTIPLIER

### i. Investment Multiplier

If there is a change in investment, the multiplier is called an investment multiplier. Investment multiplier refers to the ratio of the change in the equilibrium income to a change in investment. The formula for the investment multiplier ( $K_i$ ) is,

$$K_i = \frac{\text{Change in Income } (\Delta Y)}{\text{Change in Aggregate Investment } (\Delta I)}$$

An investment multiplier can also be derived as follows:

$$K_i = \frac{1}{1 - MPC} = \frac{1}{MPS}$$

### Example:

Given consumption function:

$$C = 200 + 0.75Y$$

$$I = 100$$

$$G = 50$$

$$T = 100$$

What is the equilibrium income level when there is an increase in investment by 50 million?

$$\begin{aligned}\Delta Y &= K_i \times \Delta I \\ &= \frac{1}{1 - MPC} \times \Delta I \\ &= \frac{1}{1 - 0.75} \times 50\end{aligned}$$

$$\Delta Y = 200 \text{ million}$$

$$\begin{aligned}\text{New equilibrium level} &= Y + \Delta Y \\ &= 1100 + 200 \\ &= 1300 \text{ million}\end{aligned}$$

The Investment multiplier:

$$K_i = \frac{1}{1 - MPC} = \frac{1}{1 - 0.75} = 4$$

This brings the meaning that the aggregate income will increase by 4 times the increase in investment.

## ii. Government Expenditure Multiplier

The government expenditure multiplier refers to the ratio of the change in the equilibrium income to a change in government expenditure assuming there is no change in taxes. Government expenditure investment is also known as government spending expenditure. The formula for government expenditure multiplier ( $K_g$ ) is

Government multiplier can also be derived as follows:

$$K_g = \frac{\text{Change in Income } (\Delta Y)}{\text{Change in Government Expenditure } (\Delta G)}$$

$$K_g = \frac{1}{1 - MPC} = \frac{1}{MPS}$$

### Example:

Given consumption function:

$$C = 200 + 0.75Y ; I = 100 ; G = 50 ; T = 100$$

What is the equilibrium income level when there is an increase in investment by 100 million?

$$\begin{aligned}\Delta Y &= K_g \times \Delta G \\ &= \frac{1}{1 - MPC} \times \Delta G \\ &= \frac{1}{1 - 0.75} \times 100\end{aligned}$$

$$\Delta Y = 400 \text{ million}$$

$$\begin{aligned}\text{New equilibrium level} &= Y + \Delta Y \\ &= 1100 + 400 \\ &= 1500 \text{ million}\end{aligned}$$

The Investment multiplier:

$$K_i = \frac{1}{1 - MPC} = \frac{1}{1 - 0.75} = 4$$

This brings the meaning that the aggregate income will increase by 4 times the increase in investment.

## iii. The Balanced-Budget Multiplier

Balanced-budget = government spending and taxes are increased by the same amount, or the government decides to pay for its extra spending by increasing taxes by the same amount.

The balanced-budget multiplier = 1

$$Y = C + I + G = a + b(Y - T) + I + G; \text{ If } \Delta G = \Delta T,$$

and  $I$  is unchanged

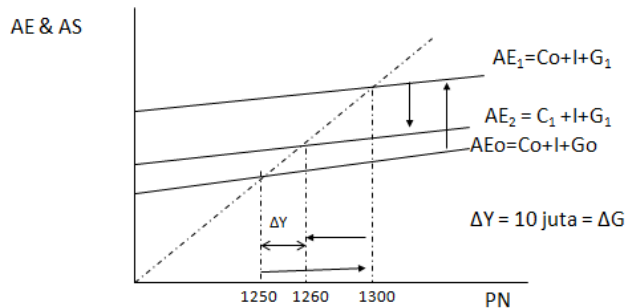
$$\Delta Y = b(\Delta Y - \Delta T) + \Delta G = b \Delta Y - b \Delta T + \Delta G;$$

Substitute  $\Delta T = \Delta G$ , thus

$$\Delta Y - b \Delta Y = \Delta G - b \Delta G; \quad \Delta Y(1 - b) = \Delta G(1 - b)$$

$$\Delta Y / \Delta G = 1 \text{ OR } \Delta Y = \Delta G$$

Suppose  $\Delta G = \Delta T$  (balanced budget): i.e  $G \uparrow 10$  million and  $T \uparrow 10$  million. From example, when  $G \uparrow 10$  million,  $Y \uparrow 50$  million (government multiplier = 5). But if  $T \uparrow 10$  million,  $Y \downarrow 40$  million (multiplier  $T = -4$ ).



### Example

Given: C	=	100 + 0.8Y <sub>d</sub> ,
I	=	RM50 million,
G	=	RM30 million, and
T	=	RM25 million

- a. Calculate National Output.
- b. What is the new equilibrium national output if:
  - i.  $G$  increases by RM10 juta and  $T$  increases by RM5 juta.
  - ii.  $G$  increases by RM10 juta and  $T$  increases by RM10 juta.
  - iii.  $G$  increases by RM10 juta and  $T$  increases by RM12 juta.

### IV. The government spending multiplier

Suppose the government spending increases by  $\Delta G = \text{RM}10$  million. What is the new equilibrium output and the government spending multiplier.

New equilibrium output:

$$Y = C + I + G + \Delta G$$

$$Y = 30 + 0.8Y + 160$$

$$0.2Y = 190 \rightarrow Y = \text{RM}950 \text{ million}$$

$$\text{Multiplier} = \Delta Y / \Delta G = (950 - 900) / (10) = 5$$

$$\text{Multiplier equation : } \Delta Y = \frac{1}{1-b} \times \Delta G$$

$$\Delta Y = (1/0.2) \times 10 = \text{RM}50 \text{ million}$$

$$\text{New equilibrium output } Y = 900 + 50 = \text{RM}950 \text{ million.}$$



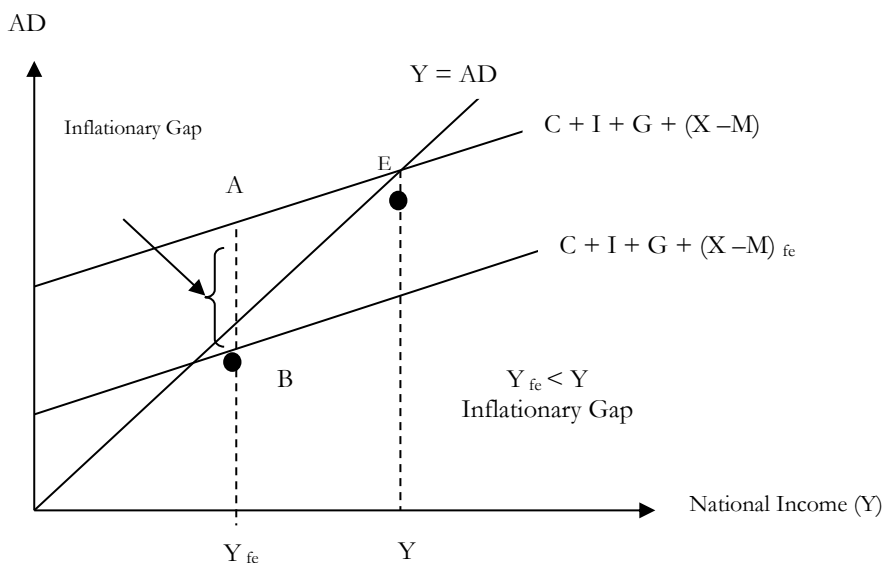
### 3.8 Inflationary gap and Deflationary gap

Inflationary gap and deflationary gap are the situations of disequilibrium.

#### INFLATIONARY GAP

When national income exceeds full employment level, inflationary gap will exist. An inflationary gap may be due to an increase in aggregate expenditure. The inflationary gap is measured as the excess of aggregate expenditure over full employment aggregate supply,  $Y_{fe}$ .

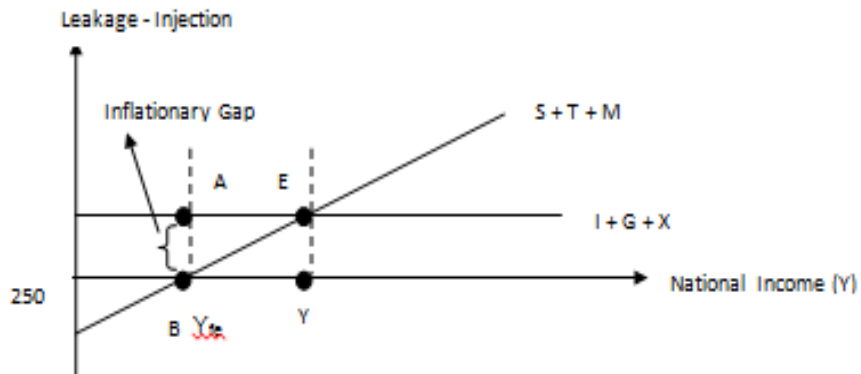
Figure illustrates the inflationary gap. It is the vertical distance between full employment income  $[C + I + G + (X - M)]_i$ , and aggregate expenditure  $[C + I + G + (X - M)]$ . Since the aggregate expenditure schedule is the 45-degree line,  $Y = C + I + G + (X - M)$  at point E which is located to the right and above B which is the point of intersection of the 45-degree line with the full employment line  $Y_{fe}$ , there is an inflationary gap of AB



**Figure 3.12: Inflationary Gap in an AD – AS Approach**

The inflationary gap of AB will increase in general price level. The inflationary gap disappears only when the aggregate money income increases from  $OY_{fe}$  to  $OY$  raising the general level of prices. To reduce the inflationary gap of AB, a contractionary policy can be implemented. The government can practice contractionary fiscal policies by reducing government expenditure and raising taxes. The inflationary gap can also

be demonstrated by way of the leakage-injection approach as seen in figure. The inflationary gap can be closed by increasing withdrawals and decreasing injections.

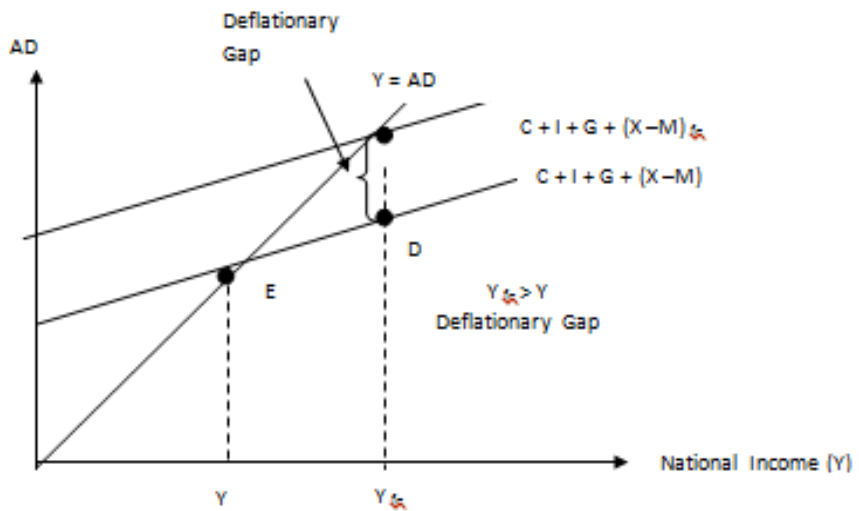


### DEFLATIONARY GAP

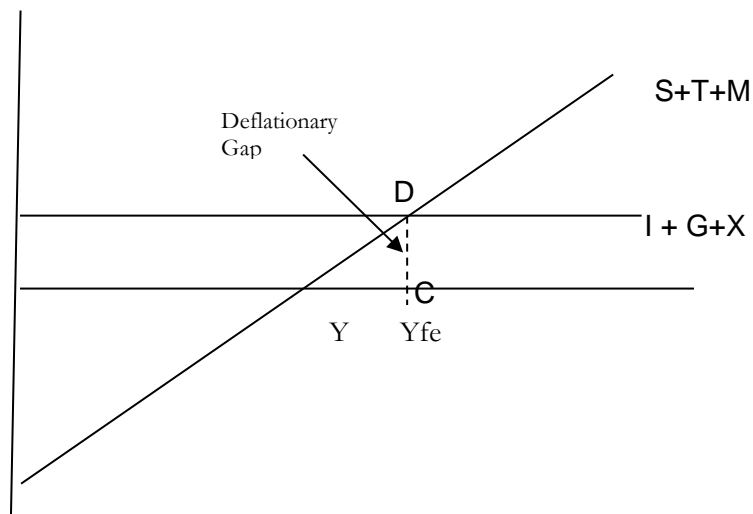
A deflationary gap occurs when national income is not at full employment. In other words, the deflationary gap is a situation in which the nation; income is below the full employment level.

This shows that resources are not fully utilized. The deflationary gap is measured as the difference between aggregate expenditure  $[C + I + G + (X - M)]$  and full employment aggregate supply  $[C + I + G + (X - M)]_{fe}$ .

Figure illustrates the deflationary gap which is the vertical between full employment income  $[C + I + G + (X - M)]_{fe}$ , and aggregate expenditure  $[C + I + G + (X - M)]$ . The deflationary gap is shown as the gap CD in Figure where the equilibrium income level is below the full employment income level.



**Figure 3.13 : Deflationary Gap in an AD – AS Approach**



**Figure 3.14: Deflationary Gap Leakage Injection Approach**

To reduce the deflationary gap CD, expansionary policies can be implemented. The government can practice expansionary fiscal policy through increases the government expenditure and tax cuts. The deflationary gap can also be demonstrated by way of the leakage-injection approach as shown in above figure. The deflationary gap can be, closed by increasing injections and reducing withdrawals.

### TUTORIAL 3

1. Given the three sector economy: in (RM million)

Items	Malaysia
Consumption function	<b><math>C = 500 + 0.6Y_d</math></b>
Taxation	<b>80</b>
Government spending	<b>400</b>
Investment	<b>100</b>

- a. Calculate the equilibrium income level for this economy.
- b. Find the total savings at the equilibrium level of income.
- c. Using multiplier approach, calculate new equilibrium if government spending increases to 600.
- d. Suppose tax is now  $T = 0.4 Y$ :
  - i. Derive the new consumption function.
  - ii. Determine the new equilibrium level of income using leakage injection approach.

2. Assuming country M is a closed economy and of the national saving function is  $S = -250 + 0.4Y$  and Investment is RM 300 Million.

National Income (Y) RM Million	Saving (S) RM Million	Consumption (C) RM Million	Investment (I) RM Million
0			
200			
400			
600			
800			
1000			
1200			
1400			
1600			

- a. Complete the table
- b. From the information, derive the consumption function.
- c. If the government increase the salary of civil servants by RM400 Million. Using multiplier approach, calculate the new equilibrium of national income.
- d. Draw graph to show the equilibrium of national income.

3. Table shows the data on national income in an economy.

National Income (Y) RM Billion	Saving (S) RM Billion	Consumption (C) RM Billion
0		300
1000		700
2000		1400
3000		2100
4000		2700
5000		3500
6000		4200
7000		4900

- a. Complete the table
- b. Calculate the value of autonomous consumption and autonomous saving.
- c. Calculate the marginal propensity to consume (MPC) and marginal propensity to save (MPS).
- d. If the government spending RM500 Billion and investment equal to RM250 Billion. Calculate is the new equilibrium of national income.
- e. Based on the answer in (d).
  - i. Draw the graph for equilibrium national income.
  - ii. If the full employment is RM1500 Billion, is the economy facing the      problem? State your answer.
  - iii. If the full employment is RM5500 Billion, is the economy facing the      problem? State your answer.

4. Answer the questions below based on the information given. All data are in RM million.

Saving function =  $-300 + 0.3Y_d$

Investment = 150

Government expenditure = 400

Tax = 100

Determine the consumption function. Calculate the equilibrium income for the above economy.

6. The following are information regarding an economy in year 2015.

$$C = 200 + 0.6Y_d$$

$$I = 600$$

$$G = 700$$

$$T = 55$$

- a. Calculate the equilibrium of national income using:
  - i. AD = AS approach
  - ii. Leakage= Injection approach
- b. Determine the total consumption at the equilibrium level of national income.
- c. If the full employment income level is RM 5000, is there a recessionary or inflationary gap? Illustrate this situation with a diagram.

### Essay Question

1. In two sector economy, explain the effects of autonomous tax to:
  - a. Consumption function and saving function.
  - b. Equilibrium national income.
2. Differentiate between autonomous investment and induced investment.
3. Explain why MPC and MPS equal to one.
4. With the help of diagrams, explain the inflationary and deflationary gap in an economy.
5. Decreases in aggregate demand (AD) at the full employment level will caused a deflationary gap. Explain this statement with the diagram.
6. By using appropriate diagrams explain how an inflationary gap occurs and suggest ways to overcome this problem.

# **Fiscal Policy**

## **Learning Outcomes**

- 1. Understand about the government policy**
- 2. Understand how implementation of fiscal policy during recession and inflation.**
- 3. Different between expansionary fiscal policy and contractionary fiscal policy.**

#### **4.1 Fiscal Policy**

The changes in government spending ( $\Delta G$ ) and taxes ( $\Delta T_x$ ) that are intended to achieve macroeconomic objective, such as high employment, price stability, and high rate of economic growth.

#### **4.2 Automatic Stabilizers Vs Discretionary Fiscal Policy**

##### **4.2.1 Automatic stabilizers**

Government spending (G) & taxes ( $T_x$ ) that automatically increase or decrease along with the business cycle. (Changes in G &  $T_x$  happen without actions by government).

Automatic Stabilizers: (examples)

- i. Economy expanding -employment increasing, government spending (G) on unemployment insurance payment will automatically decrease.
- ii. Recession-as employment decline, this type of spending will automatically increase.
- iii. Economy is expanding & income are rising- increases in government taxes (income increases)
- iv. Recession, the amount the government collects in taxes will fall.

##### **4.2.2 Discretionary fiscal policy**

Government takes actions to change spending (G) or Taxes to influence the economy's performance.

Because changes in G or  $T_x$  lead to changes in AD, they can affect the level of real GDP, employment, and the price level.

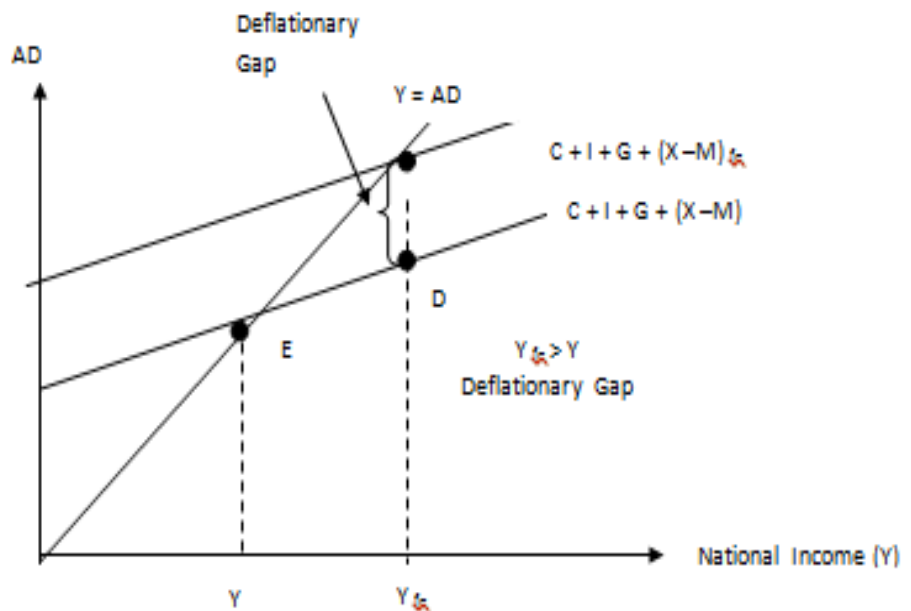
Discretionary Fiscal Policy is divided for two types, which is expansionary and contractionary fiscal policy.

- i. When the economy is in a recession, increases in government spending (G) or decreases in taxes will increase AD. The government use expansionary fiscal policy to eliminate recessionary gap.
- ii. Inflation –real GDP > potential GDP. Decrease in government spending or rising taxes will slow the growth of AD & reduce the inflation rate. The government use contractionary fiscal policy to reduce inflationary gap.



### 4.3 Expansionary Fiscal Policy

Expansionary fiscal policy is tools with government increase in G or decrease Tx. An increase in G will increase AE directly. A cut in Tx has an indirect effect on AE. Decreases the individual income tax will increase Yd & C. Decrease taxes on business income can increase AE by increase business investment (I).



$$\Delta Y / \Delta G = M_G$$

$$\Delta G = \Delta Y / M_G$$

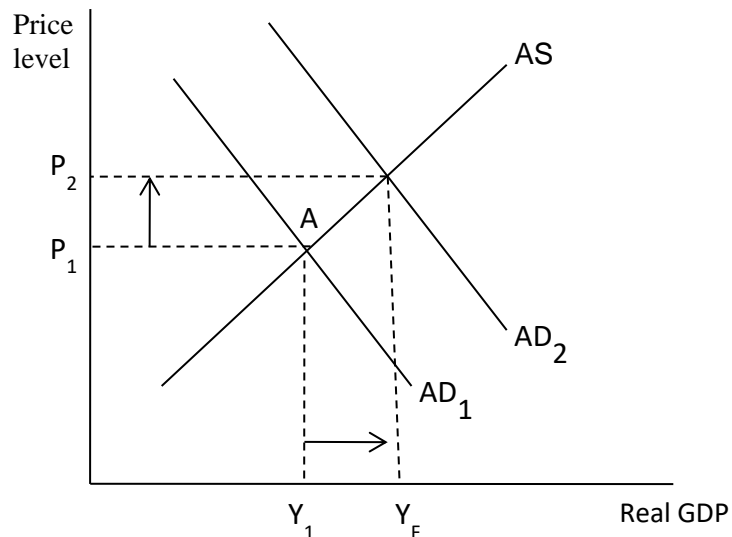
or

$$\Delta Y / \Delta T_x = M_{T_x}$$

$$\Delta T_x = \Delta Y / M_{T_x}$$

Initial equilibrium is at E<sub>1</sub>: AE<sub>1</sub> = C + I + G, real GDP = Y<sub>1</sub>. The economy is in recession. Real GDP C+I+G+ (X-M) or (Y) is below potential real GDP C+I+G+(X-M)<sub>fe</sub> or (Y<sub>fe</sub>). When firms operating with excess capacity, there is a cyclical unemployment. To eliminate recessionary gap, the government increase G or decrease Tx. Expansionary fiscal

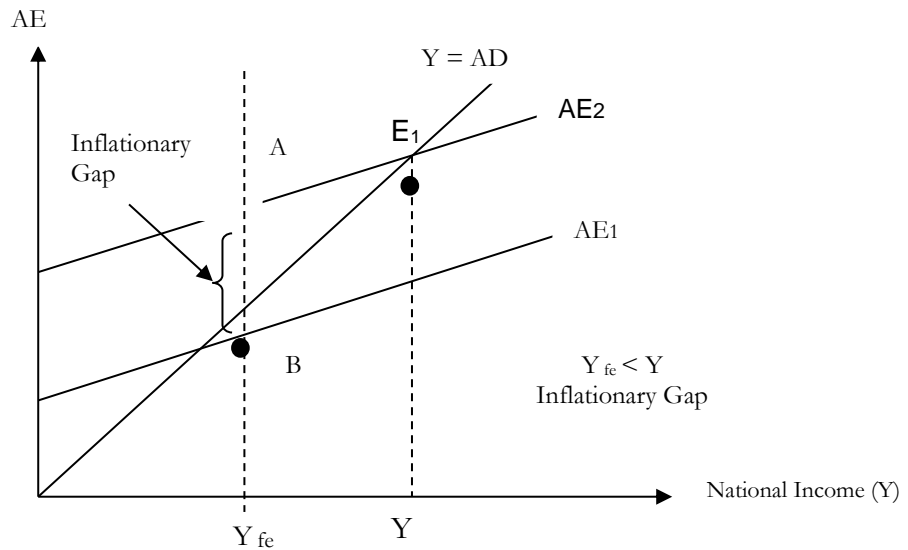
policy will shift AE to  $AE_{fe}$ , real GDP increase from  $Y$  to  $Y_{fe}$ . Thus with increases in production will increase employment rate and decrease in unemployment rate.



The economy begins in recession at point A, with real GDP of  $Y_1$  and a price level of  $P_1$ . An expansionary fiscal policy will cause AD to shift from  $AD_1$  to  $AD_2$ , and real GDP increase from  $Y_1$  to  $Y_F$ .

#### 4.4 Contractionary Fiscal policy

Contractionary fiscal policy involves decreasing  $G$  or increasing  $T_x$ . A decrease in  $G$  will decrease  $AE$  directly. An increase in  $T_x$  has an indirect effect on  $AE$ . Increasing the individual income tax will decrease  $Y_d$  &  $C$ . With increase in tax on business income it will be decreases business investment ( $I$ ) and thus decreases in Aggregate Expenditure ( $AE$ ).



$$\Delta Y / \Delta G = M_G$$

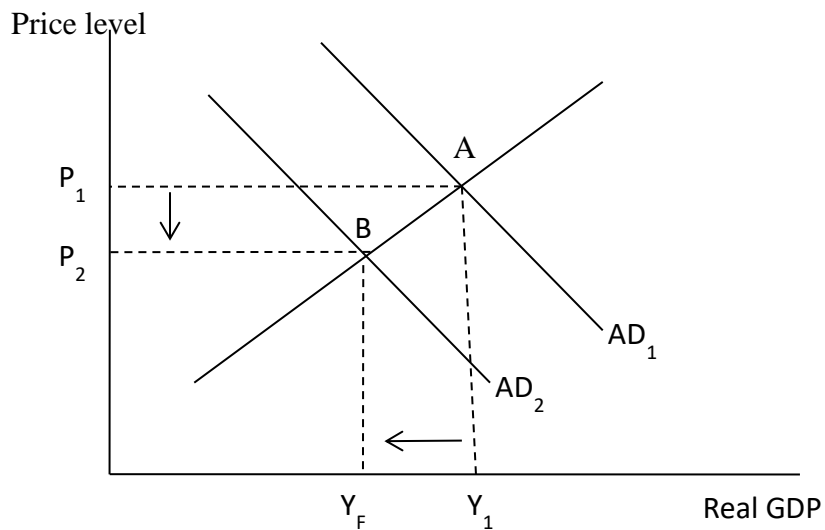
$$\Delta G = \Delta Y / M_G$$

or

$$\Delta Y / \Delta T_x = M_{T_x}$$

$$\Delta T_x = \Delta Y / M_{T_x}$$

The equilibrium of the economy at point  $E_1$ , with real GDP of  $Y$ , which is above potential real GDP of  $Y_{fe}$ . Some firms producing beyond their normal capacity and the unemployment rate very low, wages and prices will be increasing. To bring real GDP ( $Y$ ) back to  $Y_{fe}$  (or to reduce inflationary gap), the government decrease  $G$  or increase  $T_x$ . A contractionary fiscal policy will shift aggregate expenditure from  $AE_2$  to  $AE_1$ , and real GDP falls from  $Y_2$  to  $Y_{fe}$ .



The economy begins at point A with real GDP at  $Y_1$  and the price level at  $P_1$ . Because  $Y_1$  is greater than  $Y_F$ , the economy will experience rising wages and prices. A contractionary fiscal policy (decrease  $G$  or increase  $T_x$ ) will shift aggregate demand from  $AD_1$  to  $AD_2$ . Real GDP falls from  $Y_1$  to  $Y_F$  and price level falls from  $P_1$  to  $P_2$  (point B). Government will use fiscal policy to affect price level and the level of national income ( $Y$ ).

Table below summarizes how fiscal policy affects aggregate demand.

Problem	Type of Policy	Action by Government	Result
Recession	Expansionary	Increase government spending ( $G$ ) or cut taxes ( $T_x$ )	Real GDP and the price level rise.
Rising inflation	Contractionary	Decrease government spending ( $G$ ) or increase taxes ( $T_x$ )	Real GDP and the price level fall.

## TUTORIAL 4

1. Using diagrams, discuss how discretionary fiscal policy combats recession and inflation.
2. Compare and contrasts different types of fiscal policy.
3. Explain how an increase in government spending and tax cuts affect the aggregate demand curve.
4. A reduction in taxes has a smaller multiplier effects than an increases in government spending of an equal amount. Discuss the above statement.
5. Government increases the taxes to increases the total national income. Using a diagram, explain effect of increasing in taxes effect to total national income and price level.

# **The Money Supply and Federal Reserve System**

## **Learning Outcomes**

- 1. Understand the definition of money, characteristic of money and function of money**
- 2. Understand the types of money**
- 3. Understand about the money supply and money demand**
- 4. Understand about the banking system, function of banking system and central bank**
- 5. Understand how money creation**

## **5.1 Money: Definition, Functions and Types**

### **5.1.1 Definition of Money**

- Acceptable as a payment for goods and services.
- Anything that acts as a medium of exchange.
- Our willingness to accept a given item as payment is contingent on our belief that the item will retain its value, or purchasing power, and will continue to be acceptable.

The characteristics of money are: accepted, limited supply, stable value, easy to bring, easy to know, difficult to copy and easy for distribution.

### **5.1.2 Weaknesses of Barter System leads to Monetary System**

Barter system is a way for participants to exchange goods and services directly in order to satisfy wants. However, the process requires too much time in order to exchange goods/services.

Weaknesses of barter system:

- i. Need to have a coincidence of wants for both parties whom want to exchange goods/services.
- ii. Fail to meet the store of value criterion
- iii. Able to trade with small range of goods/services
- iv. Not suitable for a complex society like nowadays. Hence, the complex society need to have money as a medium of exchange

### **5.1.3 Characteristics of money**

To be a good medium of exchange, money has to have some qualities and characteristics, which are:

#### **i. Recognizable**

The item used as money must be generally acceptable where people know that it can be used as a medium of payment and can be exchanged with any goods and services. Money must generally be acknowledged by everyone, even by the children. If the economy is using something as money and not everyone in the country recognizes it, then the item cannot serve the purpose as a mode of payment effectively.

#### **ii. Scarcity**

A medium of exchange should be scarce or limited in supply, but not too scarce. If it is too easy to obtain money, then it will not be acceptable to

be exchange with goods and services. Imagine if we have shells as money. It is abundant and can be collected by anyone at the seashore. Then it would not have any value and could not be used as a medium of exchange. However, it should not be too scarce, such as platinum. If it is too difficult to get money, then the economic activities will be restrained too.

**iii. Stable in value**

Its volume must be easily regulated because too much supply of money will reduce its value. The fall in the value of money will deteriorate people's confidence to hold the money. Gold was once used as money and since it is also demanded for other purposes, like jewelleries, its value could be unstable. It will difficult for people to use money as a mean of payment if its value changes or fluctuates frequently.

**iv. Portable**

The item used as money should be easy to carry. If it too heavy, like gold then it can create problems to carry it in a large amount. Gold is less transportable than paper money.

**v. Divisible and Standardize**

Money should be able to divided into smaller units and smaller units of money must be uniform and accountable.

**vi. Durable**

The item that serves as money must last long and does not deteriorate or decayed easily, otherwise their sizes and quality will differ and so does its value

**5.1.4 Classification of Money**

**i. Commodity Money**

Commodity money used as a payment and it have a value. Examples are foods, cloths, car and etc.

**ii. Fiat money**

Fiat money is issued by the central bank of a country and government has declared to be money. In Malaysia, money is issued by the central bank known as Bank Negara Malaysia. Fiat money includes coins and paper money which are called currency.

**iii. Legal Tender**

Legal tender is paper money had approved by government to be accepted as a means of payment and as a means of settling debts. For



example, in Malaysia, Ringgit Malaysia (RM) is legal tender for any payment. All transactions in Malaysia will be in RM.

**iv. Token Money**

Token money have a lower metallic value than its face value such as coins produced in Malaysia such as 5 sen, 10 sen, 20 sen and 50 sen.

**v. Demand Deposits.**

A demand deposit is money that is transferable by way of cheque. It is generally accepted by the public since the issuing authority is trustworthy. Demand deposits are also known as bank deposits or current accounts. For example, a demand deposit of RM1000 can be used to purchase a washing machine.

### **5.1.5 Function of Money**

Money is an important instrument in any monetary economy in that it performs four specific functions, which overcome the problems of barter trade.

**i. Means of Exchange**

Money as a medium of exchange. You buy goods and services with money. You receive money for selling goods or services. We do not often think about it, but this function of money contributes greatly to economic efficiency. Exchange without money would require swaps of goods for goods-what is called barter. Some barter exist even in a monetary economy.

But barter as the predominant means of trade is inefficient because barter transaction require a double coincident of wants. Suppose that Ms. Jones wants to buy shoes and sell jewelry, while Ms. Smith wants to sell shoes but buy a computer. No trade take place and both must take time to look for trading partners whose buying and selling desires coincide with theirs. In a monetary system, Ms. Jones buys the shoes from Ms. Smith with money. Ms. Smith can then used the money to buy a computer from anyone selling one. Ms. Jones needs only to find someone who wants to buy jewellery.

**ii. Store of Value**

Money can be one of the financial assets because of the store for wealth and it is a way to save for future spending. Corporate

and government bond is not money because they do not perform as the monetary function.

**iii. Unit of Account**

In Malaysia, prices and debt are measured in ringgit (RM) and in US, price and debt measured in dollar and cents. Money is measured with a unit of account with call as price.

**iv. Standard of Deferred Payment**

Money function as a standard benchmark for starting future payments for current purchases such as buying now paying later. By using money as a standard deferred payment is a result of the store value and unit of account.

**5.1.6 Qualities of Money**

- i. Acceptability
- ii. Durability
- iii. Divisibility
- iv. Stability
- v. Relative Scarcity
- vi. Portability

**5.1.7 Types of Money**

Various types of money have been used since its invention. Money today is referred to as fiat money. The word 'fiat' is Latin in origin and means 'let it be done'.

**Types of money are as follows:**

**1. Coins**

Coins are a limited legal tender. Legal tender means it is made legal by government decree, which must be accepted as a medium of exchange and in settlement of debts. However, it is a limited tender as a certain values of coins can only be used in a limited amount. For example, a seller is not obligated to accept a payment of RM100 made with 5 cents coins. Coins is also known as token money because its face value is grater that the metallic content of the coins. It has to be token because if the value of metal used to make a 10 cents coin is equal to a greater than 10 cents, then people will start to dissolve the 10 cent coins into metal as it is more valuable as metal. Or people can used the coins as jewelleries because it is more precious as a metal rather than as a mode of payment. The gold coins used as money before, were also used as jewelleries and this influenced the supply of the coins in the circulation.

## 2. Notes

This paper money is an unlimited legal tender where it can be used without any limit. Legal tender in Malaysia is Ringgit Malaysia and cent. This indicates that a Malaysian seller has the right to decline any payment to him made using other currencies. But coins and notes are known as fiat money as their face value is greater than their own values.

## 3. Current deposits

It is also known as demand deposits, sight deposits, bank deposits and cheque deposits. A demand deposit is money that is transferable by way of cheque. It is generally accepted by the public since the issuing authority is trustworthy. It is considered as money since it possesses the function as a medium of exchange and a store of value. However they are not legal tender like coins and notes. Demand deposits are also known as bank deposits or current accounts. For example, a demand deposit of RM1000 can be used to purchase a washing machine.

## 4. Near money

This consists of saving and fixed deposits at commercial banks. Bank Negara Malaysia and other financial institution and other short term bills. They are known as near money since they are insufficiently liquid to be a medium of exchange but it serves the function of a store of value. In order to use it as a payment, it has to be converted into cash (coins and notes).

## 5.2 Money Supply

Basically, every country has its own supply of money which is used in the making of transactions. The methods used to measure money supply are called M1, M2 and M3.

Money = asset used as medium of exchange.

Having money as a medium of exchange:

- helps to make transactions easier
- allowing the economy to work more efficient
- promote economic growth by increasing production possibilities.

Money supply (Ms) is the most liquid form of wealth:

- it can be spent directly in market place without any additional expense.

The supply of money must be great enough to meet ordinary transaction needs. However, if it is too much in the market, it will become worthless.

M1 consists of the following:

- a. Currency: Includes coins and paper money issued by Bank Negara Malaysia. Also called fiat money.

- b. Checkable Deposits: Checking account balances kept in commercial banks, which are convertible into cash on demand by writing cheque. These are also known as demand deposits.

Therefore,

$$\mathbf{M1 = CURRENCY + CHECKABLE DEPOSITS}$$

**ii. M2: Near Money Plus M1**

M2 is a broader definition of the supply of money because it consists of M1 and near money. Near monies are items that are highly liquid financial assets such as savings accounts, fixed deposits, negotiable certificates of deposits (NCD) in commercial banks and Bank Negara certificates. Near money also called quasi money.

M2 or near monies consist of the following:

- i. M1: Currency and checkable deposits.
- ii. Savings and fixed deposits in commercial banks.
- iii. Negotiable certificate of deposits.
- iv. Repo.
- v. Bank Negara certificates.

Therefore:

$$\mathbf{M2 = M1 + SAVING AND FIXED DEPOSITS IN COMMERCIAL BANKS + NCD + REPO + BNM CERTIFICATE}$$

$$\mathbf{NEAR MONEY (QUASI MONEY) = M2 - M1}$$

**iii. M3: Broad Money**

M3 is the measure of money supply which is the broadest in definition. It consists of the following:

- a. M2 : M1 plus Near Money
- b. Savings and fixed deposits in other financial institutions

The difference between M2 and M3 is the savings and fixed deposits in other financial or banking institutions in Malaysia

merchant banks, Bank Islam Malaysia Berhad, finance companies and discount houses.

Therefore:

<b>M3 = M2 + SAVINGS AND FIXED DEPOSITS IN OTHER BANKING INSTITUTIONS</b>
<b>BROAD NEAR MONEY (QUASI MONEY) = M3 - M1</b>

### Example

The following information is about monetary items for the country.

ITEMS	RM (Million)
Paper money	5500
Negotiable certificates	3600
Fixed and savings deposits in other banking institutions	7900
Fixed and savings deposits in commercial banks	15000
Current deposits in commercial banks	9000
Bank Negara Certificates	12000

- a. If the fiat money is RM8000, calculate the amount of coins.  
 Fiat money = coins + paper money  
 Coins = RM8000 million - RM5500 million = RM2500 million
- b. Calculate M1:  
 M1 = Fiat money + Current deposits  
 M1 = RM8000 million + RM9000 million  
 M1 = RM17,000 million
- c. Calculate M2  
 M2 = M1 + negotiable certificates + fixed and saving deposits in commercial bank + Bank Negara Certificate  
 M2 = RM17000 million + RM3600 million + RM15000 million + RM12000 million  
 M2 = RM47,600 million
- d. Calculate M3:  
 M3 = M2 + fixed and saving deposits in other banking institutions  
 M3 = RM47600 million + RM7900 million  
 M3 = RM55,500 million

- e. Calculate Quasi Money:  

$$\text{Quasi Money} = M2 - M1$$

$$= \text{RM}47600 \text{ million} - \text{RM}17000 \text{ million}$$

$$= \text{RM}30,600 \text{ million}$$
- f. Broad Near Money  

$$\text{Broad Near Money} = M3 - M1$$

$$= \text{RM}55500 \text{ million} - \text{RM}17000 \text{ million}$$

$$= \text{RM}38,500 \text{ million.}$$

### 5.3 Banking System

In this section we will focus on the functions of commercial banks and how they can create money and also the functions of the central bank.

#### CLASSIFICATION OF BANKS

In Malaysia, the financial system can be categorized into three main groups:

- i. Banking institutions.
- ii. Non-bank financial institutions.
- iii. Non-bank financial intermediaries

#### i. Banking Institutions

A banking institution includes all financial institutions that accept current deposits. Banking institutions comprise of:

##### a. Central Bank.

A semi-independent government authority that provides financial and banking services for its country's government and commercial banking system. Central bank also conducts monetary policy.

##### b. Commercial banks.

Financial institution that performs the functions of accepting deposits from the general public and giving loans for investment, with aim to get profit.

#### ii. Non-bank Financial Institutions

Besides the Central Bank and commercial banks, there are also non-bank financial institutions:

##### a. Finance companies

Finance companies provide loans for the purchase of vehicles and also for the purchase of properties. The services provided by finance companies and banking institutions are similar except finance companies do not issue cheque, bank drafts and foreign

exchange. Finance companies in Malaysia are RHB Delta Berhad, Bumiputra Commerce Finance Berhad and Southern Finance Berhad.

**b. Islamic Banks**

Islamic banking is a banking system that is based on Syariah principles. It does not allow the paying and receiving of interest since Islam prohibits riba (interest) and it promotes profit sharing. Islamic banks in Malaysia are Bank Islam Malaysia Berhad, Bank Muamalat Malaysia Berhad and RHB Islamic Bank Berhad.

**c. Merchant Banks**

Merchant banks do not accept deposits from the public. They provide support services and advice to firms, financial management and portfolio management. The merchant banks in Malaysia are Affin Merchant Bank Berhad, AmMerchant Bank Berhad and Public Merchant Bank Berhad.

**d. Discount Houses**

The function of discount houses is to provide short-term loans in the financial market. Discount houses receive loans with lower rates of interest from financial institutions and supply loans to the public at a higher rate of interest and obtain profits. Discount houses in Malaysia are Affin Discount Berhad, Maybank Discount Berhad and CIMB Discount Berhad.

**iii. Non-bank Financial Intermediaries**

Non-bank financial intermediaries comprise the following financial institutions:

**a. Development financial institutions**

Development financial institutions (DFI) are institutions set up by the government to promote investments in the industrial and agriculture sectors. Its main function is to provide loans and financial assistance to firms and also farmers. DFI in Malaysia are Bank Pembangunan Malaysia Berhad, Bank Simpanan Malaysia and Bank Pertanian Malaysia.

**b. Employees Provident Fund**

The Employees Provident Fund (EPF) is designed for the benefit of employees. The employee and employer contribute a certain percentage of the income to EPF each month.

**c. Commercial Banks**

Commercial banks is defined as a financial institution which performs the functions of accepting deposits from the general public and giving loans for investment to earning profit. Commercial bank are owned by the private sectors. There are local and foreign commercial banks in Malaysia such as Affin Bank Berhad, AmBank (M) Berhad and Malayan Banking Berhad and the foreign banks are Citibank Berhad, HSBC Bank (M) Berhad and Standard Chartered Bank (M) Berhad.

**Functions of Commercial Banks**

- i. Accepting deposits
- ii. Providing loans and advances
- iii. Providing other banking services and facilities

**5.4 Central Bank**

A semi-independent government authority that provides financial and banking services for its country's government and commercial banking system. Central bank also conducts monetary policy.

Bank Negara Malaysia (BNM) is the central bank of Malaysia. It was established on 26 January 1959, under the Central Bank of Malaya Ordinance, 1958. BNM is owned and controlled by the government.

**5.4.1 Functions of the Central Bank**

A central bank performs so many functions each of a different nature. The central bank of Malaysia, the BNM, performs the following functions:

- i. To issue currency and keep reserves safeguarding the value of the currency.
- ii. To act as a banker and financial adviser to the government
- iii. To be a banker to other banks
- iv. To promote monetary stability and a financial structure
- v. Be a holder of the country's stock of gold and foreign currency reserves

**5.5 Credit Creation**

A commercial bank earns most of its profit from the interest it earns through the loans and investments it provides to its customers. The commercial bank uses its depositors' money to provide loans. The bank will increase the money supply in the process of granting loans through



credit creation. Credit creation is a process where a small given deposit in a commercial bank will *lead* to an increase in the supply of money. To study how commercial banks create credit in the economy, we need to assume the following assumptions:

- i. Cash ratio is fixed by the central bank and its value is constant.
- ii. Banks do not keep excess cash reserves.
- iii. The public must keep their money in the bank.
- iv. Leakage does not exist. (There are no withdrawals from the banking system.)
- v. Banks' assets are only in the form of cash and loans.
- vi. Liability consists of only deposits only.
- vii. Deposits are in the form of current deposits (only cheque).

## 5.6 Money Creation

A commercial bank earns most of its profit from the interest it earns through the loans and investments it provides to its customers. The commercial bank uses its depositors' money to provide loans. The bank will increase the money supply in the process of granting loans through credit creation. Credit creation is a process where a small given deposit in a commercial bank will *lead* to an increase in the supply of money.

To study how commercial banks create credit in the economy, we need to assume the following assumptions:

- i. Cash ratio is fixed by the central bank and its value is constant.
- ii. Banks do not keep excess cash reserves.
- iii. The public must keep their money in the bank.
- iv. Leakage does not exist. (There are no withdrawals from the banking system.)
- v. Banks' assets are only in the form of cash and loans.
- vi. Liability consists of only deposits only.
- vii. Deposits are in the form of current deposits (only cheque).

### PROCESS OF CREDIT CREATION

Let us assume that Bank XYZ is the only commercial bank in the country. Let us also assume that the bank's legal cash requirement is 10%. (Banks keep 10% of the deposits and lend out 90%). Assume a customer, Mr. Arwin deposits RM1,000 in Bank XYZ. The balance sheet of Bank XYZ will be as follows:

Balance sheet: Bank XYZ

<b>Asset</b>	<b>Liability</b>
Cash (10%) RM100	Deposits RM1000
Loan (90%) RM900	
Total RM1000	Total RM1000

Bank XYZ will loan RM900 to another person, Ms. Catherine, who receives the loan and will return to the bank to deposit the entire amount in the bank in the form of a deposit (assuming no leakages).

Balance sheet: Bank XYZ

Asset	Liability
Cash (10%) RM 90	<b>Deposits</b> <b>RM900</b>
Loan (90%) RM 810	
Total RM 900	<b>Total</b> <b>RM900</b>

Again, the bank will loan out RM810 to another customer, En. Razak, who deposits his money with the same bank.

Asset	Liability
Cash (10%) RM81	<b>Deposits</b> <b>RM810</b>
Loan (90%) RM729	
Total RM810	<b>Total</b> <span style="float: right;"><b>RM810</b></span>

And the process will continue until the total deposits equal RM10000 which is the maximum amount that can be created. This amount is derive by a simple formula, the money multiplier.

Below are some important formulae of credit creation.

$$\text{Cash Ratio} = \frac{\text{Cash Reserve}}{\text{Initial Deposits}} \times 100\%$$

$$\text{Money Multiplier} = \frac{1}{\text{Cash ratio}}$$

$$\text{Total Money Supply} = \frac{1}{\text{Cash ratio}} \times \text{initial deposits}$$

$$\text{Total Reserve} = \frac{1}{\text{Cash ratio}} \times \text{initial reserve}$$

$$\text{Total Credit Creation} = \frac{1}{\text{Cash ratio}} \times \text{initial loan}$$

From the earlier explanation, the money multiplier is 10 ( $1/0.1 = 10$ ) and me total money supplied is RM10,000 ( $10 \times 1000$  ).

#### **LIMITATION TO CREDIT CREATION**

- i. **Cash ratio/legal reserve requirement.**  
An increase in the cash ratio or legal reserve requirement can reduce credit creation. For example, if the cash ratio increases from 10% to 25% the money supply will drop from RM10,000 to RM4000 (see earlier explanation). This can limit credit creation.
- ii. **Clearing house**  
A clearing house can also slow down the process of credit creation as it involves many stages in the clearance of cheque.
- iii. **Collateral security**  
A requirement of collateral security in the form of mortgages, land titles. and insurance policies can reduce credit creation since loans are **not** sanctioned if these securities are not provided.
- iv. **Bank Negara Malaysia monetary control**  
There are various monetary controls which will affect the amount of loans given out and this can limit credit creation.

## 5.7 The Money Multiplier

The multiple by which deposits can increase for every dollar increase in reserves; equal to 1 divided by the required reserve ratio.

$$\text{money multiplier} \equiv \frac{1}{\text{required reserve ratio}}$$

The value of the multiplier depends on the required reserve ratio on deposits. A high required-reserve ratio lowers the value of the multiplier. A low required-reserve ratio raises the value of the multiplier. A decrease in bank required reserve leads to a greater increase in the money supply.

### How CB controls Money Supply?

In Malaysia, the main objective of the monetary policy is to promote the highest sustainable rate of output growth (*domestic price and exchange rate stability*).

### How BNM ensure the stability?

BNM will maintain monetary stability by ensuring the growth of bank credit and Ms are adequate to assist the real growth in the economy without having any inflationary pressures.

## 5.8 Tools to control money supply

- i. Required reserve ratio.
- ii. Discount rate.
- iii. Engaging in open market operations.

### 5.8.1 Changing the required reserve ratio

Required Reserve Ratio (RRR)

All financial institutions (i.e. commercial banks, merchant banks etc) are required to maintain balances of their Reserve Accounts equivalent to a certain proportion of their eligible liabilities.

Example: If the CB wants to increase the Money Supply, it should reduce the required reserve ratio (RRR).

Assumptions:

Required Reserve Ratio decrease from 20% to 10%

Total Reserves is RM100 million.

$$\text{Money Multiplier} = \frac{1}{(0.2)}$$

$$5$$

$$\begin{aligned} \text{Total deposit} &= \text{Reserves} \times \text{Multiplier} \\ &= \text{RM100 million} \times 5 \\ &= \text{RM500} \end{aligned}$$

Money supply M1 = RM500 million in deposits

When RRR = 10%

$$\begin{aligned} \text{Money Multiplier} &= \frac{1}{(0.10)} \\ \text{Total deposit} &= \text{Reserves} \times \text{Multiplier} \\ &= \text{RM100 million} \times 10 \\ &= \text{RM1000} \end{aligned}$$

Money supply M1 = RM1000 million in deposits

### 5.8.2 Changing the discount rate

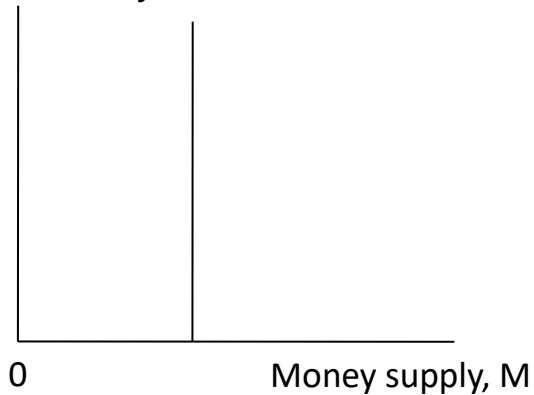
Commercial banks borrow money from the Central Bank and central bank will charge interest rate or called as the discount rate. If CB wants to increase money supply, thus CB shall reduce the discount rate. This will cause the cost of borrowing is cheaper and banks tend to borrow in a large amount. Hence, reserves as well as deposits for the bank will increase. When banks increase their borrowing, the money supply increases. The higher the discount rate, the higher the cost of borrowing and discourages banks from borrowing. Hence, reserve and deposits for the bank will decrease.

### 5.9 Engaging in open market operations (OMO)

- i. Purchase in OMO will increase in reserve and increases in money supply by the total amount equal to money multiplier times the change in reserves.
- ii. *Selling in OMO* will decrease in reserves and a decrease in the supply of money by an amount equal to the money multiplier times the change in reserves.

### The Supply Curve for Money.

Interest rate  
(%)



The money supply does not depend on the interest rate. Thus we can draw the money supply as a vertical line.

## 5.10 Consumer Price Index (CPI)

### 5.10.1 Definition of CPI

The consumer price index (CPI) is also known as the cost of living index because it measures changes in the average price of consumer goods and services.

### 5.10.2 Constructing the Consumer Price Index (CPI)

The construction of the CPI will be discussed step by step below.

#### Step 1: Selection of the Base Year

Assume that base year is year 2015, the reference base year as the benchmark against which other years are compared. The CPI for base year is defined to equal to 100.

#### Step 2: Selection of CPI Basket

Basket of goods and services is the index and the relative importance attached to each of the items and reflect to the consumption by household. In Table 5.1 shows the types of composition of CPI in Malaysia.

**Table 5.1: Composition of the CPI in Malaysia**

Category	Percentage
All groups	100
Food	33.8
Beverages and tobacco	3.1
Clothing and footwear	3.4
Gross rent, fuel and power	22.4
Furniture, furnishings and household equipment's and operations	5.3
Medical care and health expenses	1.8
Transportation and communication	18.8
Recreation, entertainment, education and Cultural services	5.9
Miscellaneous goods and services	5.5

Sources: Department of Statistics, Malaysia

### **Step 3: Prices of Selected Goods**

Price of the basket is valued at a base year price (100) and at the same time the basket will be value at current price. The current year price index can be obtained using the following formula:

$$\text{Current Year Index} = \frac{\text{Current Year Price}}{\text{Base Year Price}} \times 100$$

Based on the above steps, we can construct a simple CPI with the help of table below.

Item	Base Year Price (1)	Current Year Price (2)	Current Year Index $\frac{(2)}{(1)} \times 100$
Food	150	240	$\frac{(240)}{(150)} \times 100$ = 160
Apparel	300	420	$\frac{(420)}{(300)} \times 100$ = 140
Medical Care	250	200	$\frac{(200)}{(250)} \times 100$ = 80
Transportation	160	180	$\frac{(180)}{(160)} \times 100$ = 112.5
Simple CPI = $\frac{\text{sum of all current year index}}{\text{number of items}}$			$\frac{492.5}{4} = 123.1$

All the items shown in table indicate that costs have increased except the cost of medical care which shows a decline. The simple CPI can be calculated using the formula below:

$$\begin{aligned} \text{Simple CPI} &= \frac{\text{Current year index of all items}}{\text{Number of Items}} \\ &= \frac{160+140+80+112.5}{4} \\ &= 123.1 \end{aligned}$$

Therefore, the general price level or costs have increased by 23.1 per cent (123.1-100) from the base year to the current year.

#### Step 4: Weighted

Weighted is the figure used to measure the importance of the item in the basket depending on the amount of money spent by the consumer on each item.



Item	Base Year Price (1)	Current Year Price (2)	Current Year Index $\frac{(2)}{(1)} \times 100$	Weights (4)	Weighted Price Index (3) X (4)
Food	150	240	$\frac{(240)}{(150)} \times 100$ = 160	4	160 X 4 = 640
Apparel	300	420	$\frac{(420)}{(300)} \times 100$ = 140	3	140X3 = 420
Medical Care	250	200	$\frac{(200)}{(250)} \times 100$ = 80	1	80 X 1 = 80
Transportation	160	180	$\frac{(180)}{(160)} \times 100$ = 112.5	2	112.5 X2=225
Weighted CPI = <i>sum of all weight price index</i> <i>total weights</i>			$\frac{492.5}{4}$ = 123.1	10	$\frac{1365}{10}$ = 136.5

The weighted CPI is calculated using the following formula,

$$\begin{aligned} \text{CPI} &= \frac{\text{Weighted Price Index for all items}}{\text{Total weights}} \\ &= \frac{640 + 420 + 80 + 225}{10} \\ &= 136.5 \end{aligned}$$

This results indicates that shows that general price level has increased by 36.5 per cent compared to the base year.

## USES OF THE CONSUMER PRICE INDEX

### i. To Calculate Inflation Rate

The purpose of the CPI is to measure the rate of inflation. The rate of inflation is the percentage change in the price from one year to another.

$$\text{Inflation} = \frac{\text{CPI current year} - \text{CPI previous year}}{\text{CPI previous year}} \times 100\%$$

From the earlier example, the inflation rate will be as shown below assuming he changes from base year to current year.

$$\begin{aligned} \text{Inflation rate} &= \frac{136.50 - 100}{100} \times 100\% \\ &= 36.50\% \end{aligned}$$

The inflation rate is very high which shows the increase in general price level of 36.5 per cent. A higher inflation indicates a higher cost of living.

**ii. To Calculate Changes in the Value of Money**

The CPI is also used to find out any change in the value of money. To calculate the change in the value of money, we use the following formula.

Changes in the value of money=

$$= \left( \frac{100}{136.5} - 1 \right) \times 100\%$$

$$= -26.7\%$$

Therefore, we can say that the value of money has dropped by 26.7 per cent. For example, the value of RM100 in the base year is worth only RM73.30 in the current year.

**iii. To Identify the Distribution of Income**

The CPI can help detect the distribution of income among the people. With this findings, government can decrease the gap between lower income and higher income.

**iv. To Use as a Basis for Future Contracts**

The CPI is used as a basis for future contracts between creditors and debtors. As Debtors gain and creditors lose during inflation. Therefore, the CPI is used to design the interest to be charged.

<b>Index</b>	<b>Formula</b>
Current Year Index	$\frac{\text{Current year price}}{\text{Base year price}} \times 100\%$
Simple CPI	$\frac{\text{Current year index of all items}}{\text{Number of items}}$
Weighted CPI	$\frac{\text{Weighted Price Inde for all items}}{\text{Total weights}}$
Inflation	$\frac{\text{CPI current year} - \text{CPI previous year}}{\text{CPI previous year}} \times 100\%$
Change in value of money	$\left( \frac{\text{Base year index}}{\text{CPI}} - 1 \right) \times 100\%$

**Example:**

The following data shows the price index of three categories of consumer goods in a country.

<b>Commodity</b>	<b>Consumer Price Index</b>
Food	110
Clothing	120
Housing	130

Given that the base year index is 100, calculate a simple consumer price index.

Simple CPI =

$$\frac{110 + 120 + 130}{3} = 120$$

- i. If the weights for food, clothing and housing were given as 8, 4 and 3 respectively, calculate the weighted consumer price index.

$$\text{Weighted CPI} = (110 \times 8) + (120 \times 4) + (130 \times 3)$$

**15**

$$= \frac{1750}{15}$$

**15**

$$= 116.6$$

- ii. Calculate the inflation rate.

$$\text{Inflation rate} = \frac{(116.6 - 100)}{100} \times 100$$

**100**

$$= 16.6\%$$

## **Problems in Constructing the Consumer Price Index (CPI)**

- i. Selection of the base year  
There are some difficulties in selecting a base year. The base year is the year where prices are stable and other factors are constant.
- ii. **Selection of basket of goods**  
Difficulties in constructing CPI occur due to the selection of goods and services to be put into the basket.
- iii. **Prices of the selected goods**  
Some price for goods and services is change every/certain time in a year and this become a problem to choose the right price.
- iv. **Weighted**  
Taste and preferences for each household is different and this will effects to the find the weighted for each item of goods and services.

## TUTORIAL 5

1. Identify and explain the assets which are included in measuring M1 and M2.
2. Explain the characteristics and function of money.
3. Explain how Bank Negara Malaysia can use open market operation to change the level of bank reserves. How does a change in reserves affect the money supply? (Give answer both an increases and a decreases in the money supply).
4. For each of the following situations, determine whether the money supply will increases, decreases or remained unchanged.
  - a. Depositors heard that some banks are going bankrupt.
  - b. The BNM lowers the required reserves ratio.
  - c. Malaysian economy enters into recession and a lot of borrowers are defaulting on their loans.
  - d. The BNM sells RM200 million of bonds to CIMB Bank Berhad.
5. The table shows the balance sheet of Bank AA for the year ended 2018.

Asset (RM)		Liability (RM)	
Cash	850	Initial deposits	5,000
Loans	4,150		
Total	5,000	Total	5,000

- a) Define cash ratio and calculate its value.
- b) Calculate the total money supply and total credit created.
- c) Assuming Bank AA wishes to hold 3% of the excess reserves, how would this affect the total money change in money supply? Why?
- d) List two limitations of credit creation.

6. Answer the following questions based on the table.

Year	Consumer Price Index (CPI)
2011	100
2012	105
2013	95
2014	110
2015	115
2016	128

- a) Which year is the base year?
- b) What is the rate of percentage change in general price level from year 2011 to year 2012 and from year 2011 to 2016?
- c) Does the cost of living increase or decrease from year 2011 to year 2014? Justify
- d) Does the cost of living increase or decrease from year 2011 to year 2016? Justify.

# **Money Demand and The Interest Rate Equilibrium**

## **Learning outcome**

- 1. Understand the demand for money**
- 2. To examine the motive for holding money**
- 3. Understand the money demand curve**

## 6.1 The Demand for Money

The main concern in the study of the demand for money is: How much of your financial assets you want to hold in the form of money, which does not earn interest, versus how much you want to hold in interest-bearing securities.

### 6.1.1 Motives for Holding Money

i. **Transaction Motive (Mt)**

Money, as a medium of exchange is demanded in order to carry out day to day transaction (daily expenditure)

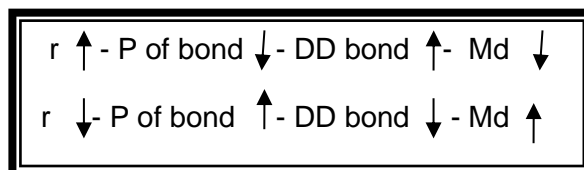
ii. **Precautionary Motive (Mp)**

Money demanded in case of unforeseen circumstances which may require cash balances.

iii. **Speculative Motive (Msp)**

One reason for holding bonds instead of money: Investors may want to hold bonds when interest rates are high with the hope of selling them when interest rates fall.

When interest rates are high (low) and expected to fall (rise), demand for bonds is likely to be high (low) and money demand is likely to be low (high).



### 6.1.2 The Demand Curve for Money

We have seen that the transactions, precautionary, and speculative demands for money vary negatively with the interest rate. Putting those three sources of demand together, we can draw a demand curve for money to show how the interest rate affects the total quantity of money people hold. The demand curve for money shows the quantity of money demanded at each interest rate, all other things unchanged.

$L_t$  = money demand for transaction motive (Mt) + money demand for precautionary motive (Mp).



$L_t = f(Y)$ , and  $L_t \neq f(r)$

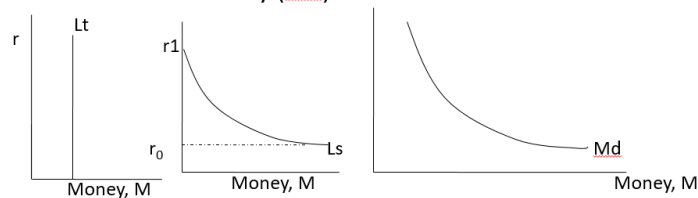
$L_s =$  money demand for speculative motive ( $M_{sp}$ ).

$L_s = f(r)$

Total demand for money ( $M_d$ ) =  $L_t + L_s$

$L_s$  : bonds price is inversely related to the interest rate. When the interest rates are high (bonds price are low) – public would find it attractive to hold bonds. When interest rates fall, the bonds will increase in price. Thus, when interest rates are low, it is a good time to be holding money and not bond.

Total demand for money ( $M_d$ ) =  $L_t + L_s$

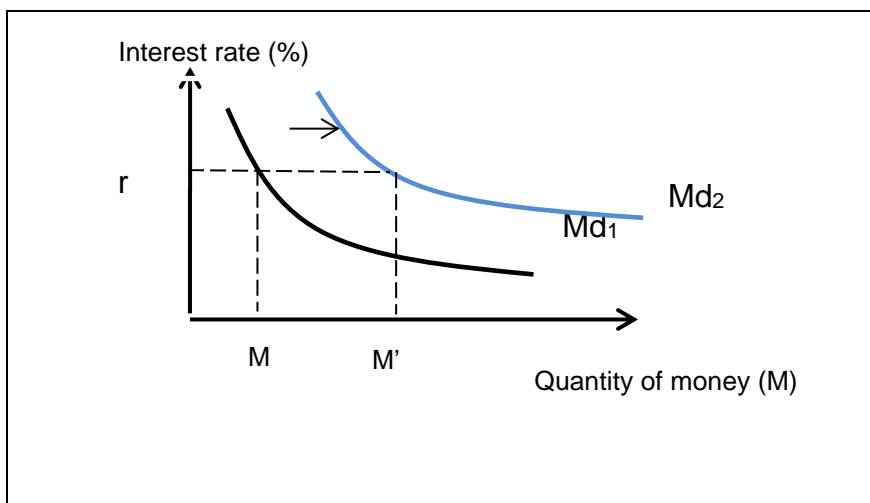


**Figure 6.1 : Money Demand Curve**

$L_s$  : bonds price is inversely related to the interest rate. When the interest rates are high (bonds price are low) – public would find it attractive to hold bonds. When interest rates fall, the bonds will increase in price. Thus, when interest rates are low, it is a good time to be holding money and not bond.

### 6.1.3 Other Determinants of the Demand for Money

- a. The interest rate:  $r$  (The quantity of money demanded is a negative function of the interest rate.)
- b. The dollar volume of transactions
  - i. Aggregate output (income):  $Y$  (An increase in  $Y$  shifts the money demand curve to the right.)
  - ii. The price level:  $P$  (An increase in  $P$  shifts the money demand curve to the right.)



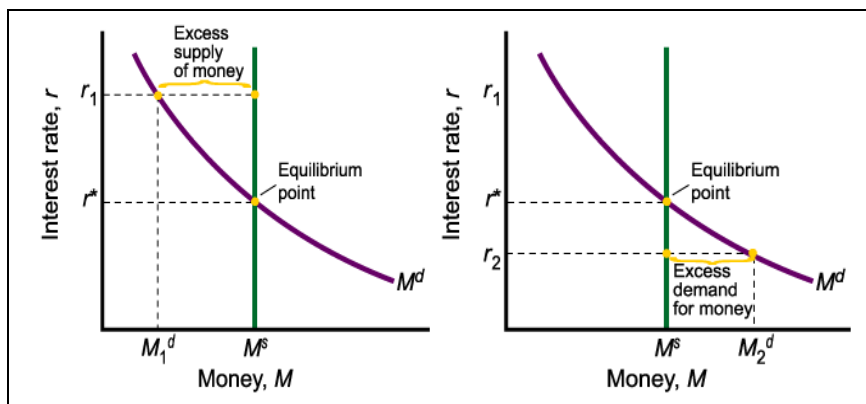
**Figure 6.2: An Increase in Money Demand**

Figure 2 shows an increase in the demand for money such an increase could result from a higher real GDP, a higher price level, a change in expectations, an increase in transfer costs, or a change in preferences will increase the quantity of money demanded at any interest rate  $r$ , increasing the demand for money from  $Md_1$  to  $Md_2$ . The quantity of money demanded at interest rate  $r$  rises from  $M$  to  $M'$ . The reverse of any such events would reduce the quantity of money demanded at every interest rate, shifting the demand curve to the left.

## 6.2 The Equilibrium Interest Rate

### 6.2.1 Equilibrium in the Market for Money

The money market is the interaction among institutions through which money is supplied to individuals, firms, and other institutions that demand money. Money market equilibrium occurs at the interest rate at which the quantity of money demanded is equal to the quantity of money supplied.



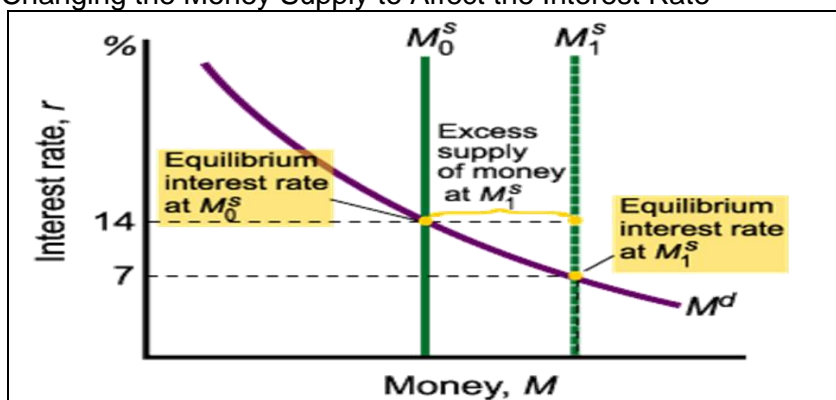
**Figure 6.3 : Money Market Equilibrium**

Figure 6.3 combines demand and supply curves for money to illustrate equilibrium in the market for money. With a stock of money ( $M$ ), the equilibrium interest rate is  $r^*$ . At  $r_1$ , amount of money in circulation is higher than households and firms want to hold. They will attempt to reduce their money holdings by buying bonds. At  $r_2$ , households don't have enough money to facilitate ordinary transactions. They will shift assets out of bonds and into their checking accounts.

### 6.2.3 Effects of Changes in the Money Market

A shift in money demand or supply will lead to a change in the equilibrium interest rate. Let's look at the effects of such changes on the economy.

#### (a) Changing the Money Supply to Affect the Interest Rate



**Figure 6.4 : Changing the Money Supply**

Figure 6.4 shows An increase in the supply of money lowers the rate of interest. To expand the money supply the government can reduce the reserve requirement, cut the discount rate, or buy U.S. government securities in the open market.

(b) Changing the Money Demand to Affect the Interest Rate

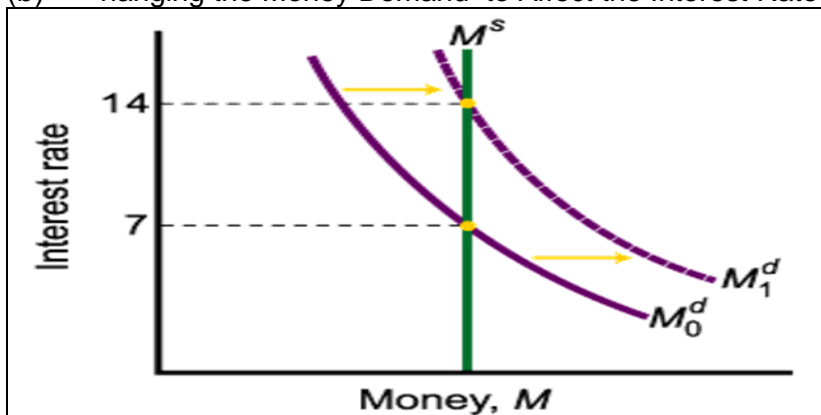


Figure 6.5 : Changing the Money Demand

An increase in aggregate output (income) shifts the money demand curve, which raises the equilibrium interest rate from 7 percent to 14 percent. An increase in the price level has the same effect.

### 6.2.2 Monetary Policy

The monetary policy refers to a policy which employs the central bank's control of the supply of money as an instrument for achieving the objectives of the general economic policy. A monetary policy may aim to achieve the optimum level of employment and output, price stability, balance of payments equilibrium or other goals of the government's economic policy with the regulation by the central bank.

### 6.2.3 Types of Monetary Policy

There are two types of monetary policies practiced by a government. The government may choose to adopt either type depending on the circumstances or the situation. The two types of monetary policy are :

(a) Contractionary or Tight monetary policy

Refers to government policies that contract or reduce the money supply in an effort to restrain the economy.

(b) Expansionary or Easy monetary policy

Refers to government policies that expand the money supply in an effort to stimulate the economy.

### 6.2.4 Effects of Expansionary Monetary Policy on Interest Rates

Government policies that expand the money supply and thus lower interest rates in an effort to stimulate the economy.

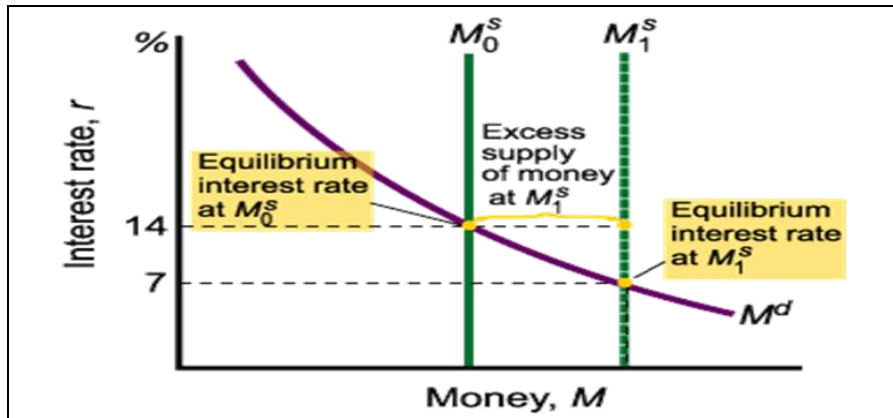


Figure 6.6 : Effects of Expansionary Monetary Policy on Interest Rates

### 6.2.5 Effects of Contractionary Monetary Policy on Interest Rates

Government policies that contract the money supply and thus raise interest rates in an effort to restrain the economy.

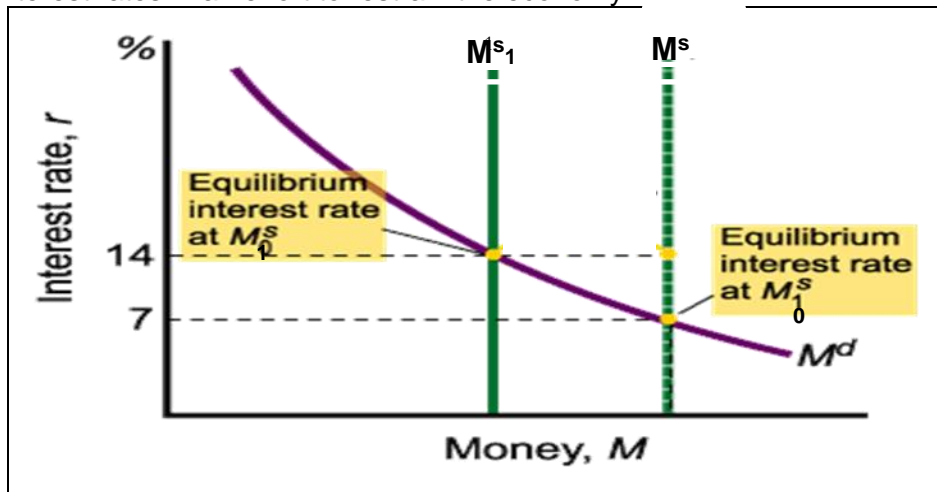


Figure 6.7 : Effects of Contractionary Monetary Policy on Interest Rates

## TUTORIAL 6

### Essay Question

1. Explain the motivation for holding money, based on the ideas of Keynes.
2. Discuss the negative relationship between the interest rate and the quantity of money holdings.
3. Suppose the equilibrium interest rate is 4% and the market interest rate is 3.5%. Graphically explain how the money market will make its adjustment.
4. Define monetary policy, and discuss four instruments of monetary policy that are used to promote a sustainable economic growth with higher employment?
5. Using the supply and demand analysis in the Malaysia money market, graphically explain the following situation:
  - a. The inflation rate fall from 4% to 2.8% in early January 2020.
  - b. The GDP per capita rose from RM48,600 in the fourth quarter of 2017 to RM53,400 in the first quarter of 2018.
  - c. The unemployment rate fall by 1.2% while inflation rate rose by 1.4%.
  - d. The **BNM** decided to expand monetary policy by reducing the required reserve ratio.

# **Inflation**

## **Learning Outcomes**

- 1. Understand the definition of inflation and measuring the inflation rate**
- 2. Understand the types, cause and effects of inflation, Cost-push inflation, demand-pull inflation**
- 3. Understand the adjustment and economic policy to control the inflation**

## **7.1 Introduction**

Inflation is defined as a sustained increase in the price level or a fall in the value of money. When the level of currency of a country exceeds the level of production, inflation occurs. Value of money depreciates with the occurrence of inflation. Inflation can come from both the demand and the supply-side of an economy.

## **7.2 Definition**

In economics, the word of inflation refers to general rise in prices measured against a standard level of purchasing power.

## **7.3 Types Of Inflation**

### **7.3.1 Demand- Pull Inflation**

Demand-pull inflation is an increase in price of goods or services as a result of the aggregate demand (AD) for these goods or services being greater than the aggregate supply (AS) or without increase in AS. In this sense, the economic demand is pulling the purchasing power of the currency down and causing inflation. Demand-pull inflation becomes a threat when an economy has experienced a boom with GDP rising faster than the long-run trend growth of potential GDP. Demand-pull inflation is likely when there is full employment of resources and SRAS is inelastic.

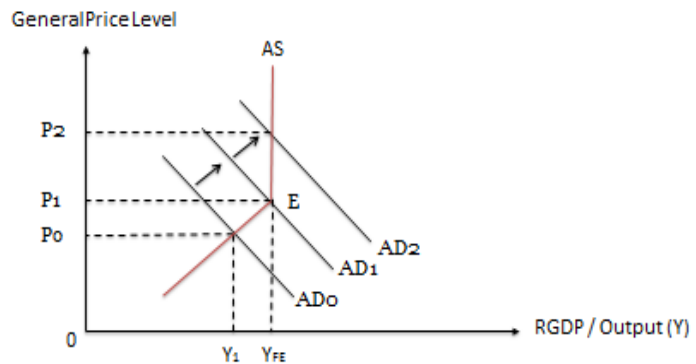
#### **7.3.1.1 Causes of Demand-Pull Inflation**

An increase of AD or AD curve can shift to the right for a number of reason, including:

- i. A depreciation of the exchange rate increases the price of imports and reduces the foreign price of a country's exports. If consumers buy fewer imports, while exports grow, AD in will rise – and there may be a multiplier effect on the level of demand and output.
- ii. Higher demand from a fiscal stimulus (drop in taxes and increase in government spending). For instance, lower direct or indirect taxes or higher government spending. If direct taxes are reduced, consumers have more disposable income causing demand to rise. Higher government spending and increased borrowing creates extra demand in the circular flow.



- iii. Monetary stimulus to the economy (increase in money supply). A fall in interest rates may stimulate too much demand. For example in raising demand for loans or in leading to house price inflation. Monetarist economists believe that inflation is caused by “too much money chasing too few goods” and that governments can lose control of inflation if they allow the financial system to expand the money supply too quickly.
- iv. Fast growth in other countries (increase in net export) providing a boost to Malaysia exports overseas. Export sales provide an extra flow of income and spending into the Malaysia circular flow – so what is happening to the economic cycles of other countries definitely affects the Malaysia.



**Figure 7.1: Demand pull inflation**

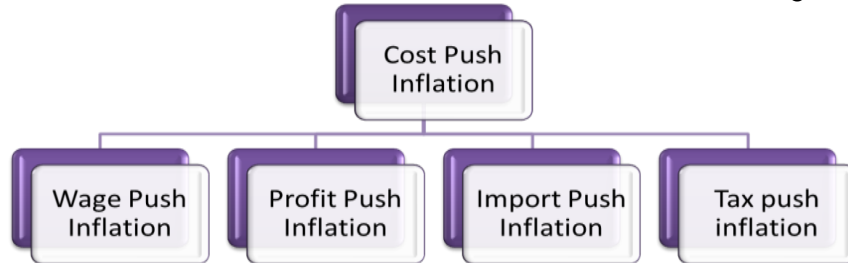
Figure 1 shows that  $0Y_{Fe}$  is the full employment aggregate output which is determined at the point of intersection of the aggregate demand curve  $AD_1$  and aggregate supply (AS). An increase in the aggregate demand toward full employment ( $Y_{Fe}$ ) from  $AD_0$  to  $AD_1$  cause an increase in the price level from  $P_0$  to  $P_1$ . An increase in the AD above full employment ( $Y_{Fe}$ ) from  $AD_1$  to  $AD_2$  cause an increase in price to  $P_2$ . Real output has reached the maximum limit but prices are still increasing. The increase in general price level is **Demand-Pull Inflation**.

### 7.3.2 Cost – Push Inflation

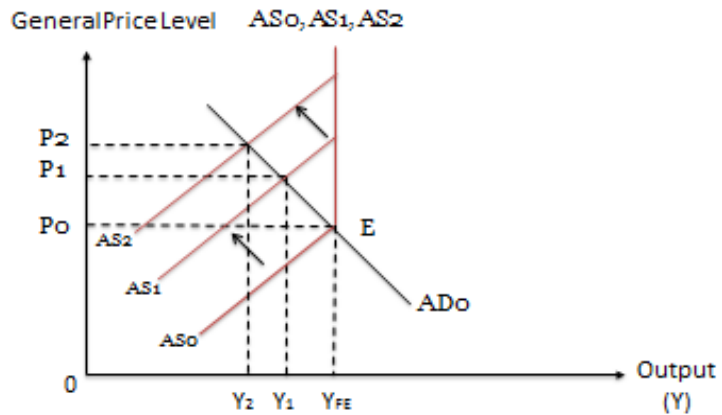
This inflation happen due to an increase in the cost of production. When industries are faced with rising cost of production cost, they will push prices up.

### 7.3.2.1 Causes of Cost – Push Inflation

AS curve can shift to the left for a number of reasons, including:



- a. **Wage push inflation**  
Happen due to an increase in wage level. The employers or employee will face a higher average cost and will respond by reducing the supply of goods, which will increase price. Wage may be forced to rise due to:
  - i. Excess of labor demand over labor supply at full employment output.
  - ii. A bargain by labor union.
  - iii. Producers is forced to increase wage to avoid migration of workers to others firm.
- b. **Profit push inflation**  
Happen when the firm use their monopoly power to make large profits by restrict their output. So as a result the price will increase.
- c. **Import push inflation**  
Happen when the price of imported raw materials or finished goods increase. This will lead to an increase in the production cost of imported nation as eventually increase in the price of output.
- d. **Tax push inflation**  
Happen when the tax rise, it will effect the average cost to increase and the producer will respond by reducing the supply, which will increase price. For example sales tax and corporate tax.
- e. **Supply-shock inflation**  
A sudden decrease in AS caused by flood, tsunami, a severe frost.



**Figure 7.2 : Cost push inflation**

In figure 7.2,  $OY_{FE}$  is the full employment aggregate output which is determined at the point of intersection of the  $AD_0$  &  $AS_0$ . Consequent upon the upward shift in the AS from  $AS_0$  to  $AS_1$ , the equilibrium aggregate output falls from  $OY_{FE}$  to  $OY_1$  while the general price level rises from  $P_0$  to  $P_1$ . A further upward shift in the aggregate supply curve from  $AS_1$  to  $AS_2$  creates a further increases in price to  $P_2$ . The increase in the general price level is called the cost push inflation.

#### 7.4 Measuring The Inflation Rate

Inflation is measured using Consumer Price Index (CPI). CPI is a measure of the overall cost of goods and services bought by a typical consumer. The value of the price index at base year is set equal to 100. An increased in CPI does not necessarily mean that the prices of all goods and services have increased or increased by the same proportion. Often prices of most commodities rise even though differently, prices of some commodities may remain unchanged and of few may even fall. In the case of Malaysia, the goods and services included in the basket for the construction of the CPI are food and beverage, housing, utilities and fuel, transport and communications, clothing and footwear, restaurants and hotels, education and health, as well as alcohol and tobacco. These goods and services are selected based on the consumption pattern of Malaysians.

Formula CPI:

$$CPI = \frac{\sum P_n Q_0}{\sum P_0 Q_0} \times 100$$

Where :

$\sum P_n Q_0$  = cost of a market basket of goods and services at current prices.

$\sum P_0 Q_0$  = cost of the same basket of goods and services at prices prevailing over the base period.

**Example :**

Assumption: consumers buy only noodles and fried rice.

**Step 1: Determine a fixed basket of goods.**

4 bowls of soup noodles, 2 plates of fried rice.

**Step 2: Find the price of each good in each year.**

Price of a bowl of soup noodles:

RM1 (2009), RM1.50 (2010), RM2.00 (2011)

Price of a plate of fried rice:

RM2 (2009), RM2.50 (2010), RM3.00 (2011)

**Step 3: Compute the cost of the basket of goods in each year**

$$\begin{array}{lcl} 2009: & (4 \times 1) + (2 \times 2) & = \text{RM8} \\ 2010: & (4 \times 1.50) + (2 \times 2.50) & = \text{RM11} \\ 2011: & (4 \times 2) + (2 \times 3) & = \text{RM14} \end{array}$$

**Step 4: Using 2009 as a base year, compute CPI in each year**

$$\begin{array}{lcl} 2009 \text{ CPI} & = & (\text{RM8}/\text{RM8}) \times 100 = 100 \\ 2010 \text{ CPI} & = & (\text{RM11}/\text{RM8}) \times 100 = 137.5 \\ 2011 \text{ CPI} & = & (\text{RM14}/\text{RM8}) \times 100 = 175 \end{array}$$

Formula the rate of inflation :

Inflation rate =

Where :

$$\frac{(CPI_t - CPI_{t-1})}{CPI_{t-1}} \times 100$$

$CPI_t$  = consumer price index at current year

$CPI_{t-1}$  = consumer price index at previous year

**Example:**

Given that the CPI for the year 2010 was 137.5 and for the year 2011 is 175. Calculate inflation rate between 2010 and 2011?

Year	CPI
2009	100
2010	137.5
2011	175

**Solution :**

Inflation rate in 2011 =  $[(175-137.5)/137.5] \times 100 = 27.27\%$

**7.4 Effects or Cost of Inflation****a. Income distribution**

Wider gap in real income distribution between group of people. In other words, there will be a gainer and loser. The group that gains or benefit will be:

- i. Businessman, investors, farmers: since they make profits from rising price.
- ii. Debtors: because they repay the debt borrowed at the same amount but at lower value by the time they pay back their loans.
- iii. Shareholders: since higher prices will lead to higher profit for the company and subsequently higher dividend for the shareholder.
- iv. Strong labor union who succeed in its bargain for higher wage rate.

The group that loser will be:

- i. Pensioners and those receiving fixed salaries: if the amount of pensions received remains unchanged, and prices keep rising, the purchasing power of the pensions received actually shrink- their standard of living declined.
- ii. Creditors or lenders: because they are repaid the same amount as borrowed by debtors but the value of money has dropped.
- iii. Those receiving fixed interest from investment: such as government bonds and fixed time saving.

**b. An increase in investment and production**

When inflation occurs, the businessman will earn higher income. They can reinvest their undistributed profit for larger production of goods and services. This means, higher profit due to higher price encourage firms to invest and produce more.

**c. The amount of saving will decrease**

Higher inflation rate will reduce the purchasing power of money. Therefore, this will discourage people to put their money in saving. People will choose other forms to asset instead of saving.

**d. Deficit in balance of trade**

Balance of payment position will worse because local goods are more expensive in the foreign market while foreign goods are cheaper. Since foreign goods are cheaper, import will increase but export decrease. As a result balance of payment will be deficit.

**e. Exchange rates**

If Malaysia is having a deficit in balance of trade, the demand for the Malaysian Ringgit will fall against the USD. As a result the USD becomes more expensive than the Malaysian Ringgit.

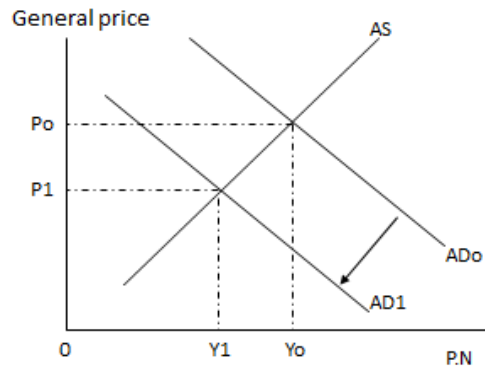
**7.5 Adjustment and Economic Policy**

Inflation can be controlled using any one or combination of monetary, fiscal or direct control policy.

Policy	Tools
Fiscal Policy or surplus budget: use contractionary or tight fiscal policy	<ul style="list-style-type: none"><li>• <b>Increase in taxes:</b> An increase in taxes will reduce disposable income of individual. A reduction in consumption will follow and this in turn will reduce aggregate demand (AD) in the nation. Eventually general price level will fall due to a slow demand of goods.</li><li>• <b>Decrease in government spending:</b> A reduction in government spending will directly effect AD. Government may cut salaries civil servants and postpone projects that can be delayed. By cutting down on expenses, AD will fall and this will reduce general income and general price level.</li></ul>
Monetary Policy: use contractionary or tight monetary policy – aim to decrease money supply	<ul style="list-style-type: none"><li>• Using a contractionary monetary policy to reduce the money supply and the level of AD and spending. A decrease in money can be achieved by:<ul style="list-style-type: none"><li>(a) making loans more expensive and difficult to obtain such as<ul style="list-style-type: none"><li>(i) increasing the interest rates on loan,</li><li>(ii) increasing the cash, legal and liquidity ratios (↑reserve ratio),</li></ul></li></ul></li></ul>

	<p>(iii) selling government securities through the open market operation, and          (iv) restricting the hire purchase regulations.          (b) reducing the amount of new money issued by Bank Negara Malaysia.</p> <p><b>Others tool</b></p> <ul style="list-style-type: none"> <li>• <b>Open market operation:</b> When inflation occurs, CB may sell the government securities, treasury bills and short term bonds in open market to reduce bank deposit and credit creation from commercial banks. Money supply will reduce, and reducing aggregate demand and price level.</li> <li>• <b>Reserve requirement:</b> during inflation CB will increase the reserve requirement of commercial bank and this can reduce the ability of commercial bank to provide loans and decrease credit creation, money supply and inflation rate.</li> <li>• <b>Raising the interest rate :</b> Central bank will direct to commercial bank to increase interest rate to the public. Higher interest rate will encourage public to saving and thus increase saving level, decrease in aggregate demand and price level.</li> </ul>
<p>Direct control policy : direct government intervention to correct economic problems of a country</p>	<ul style="list-style-type: none"> <li>• Controlling prices by setting controlled items.</li> <li>• Controlling wages</li> <li>• Increasing the AS by improving the productivity of workers, giving subsidies to firms that produce necessities goods.</li> <li>• Giving cash assistance to compensate the rising cost of living. For example, giving RM100 one off cash assistance to school children and RM500 for household with a monthly income of RM3000 and below.</li> </ul>

A contractionary fiscal policy and contractionary monetary policy will reduce AD and spending. AD curve shift downwards and  $P \downarrow$ .





## TUTORIAL 7

### Essay Question

1. Using suitable diagram, explain the differences demand-pull inflation and cost push inflation.
2. What is monetary policy? Should the central bank implement expansionary or contractionary monetary policy to control inflation?
3. Briefly explain the two types of direct controls that can be use to solve inflation.
4. Explain how appropriate government policies can be used to control cost-push inflation and demand-pull inflation. Sketch an appropriate diagram to support your answer.
5. The table shows the price index for year 2018 with 2015 as a base year.

Good	Price index 2018	Weight
A	130	2
B	113.5	2
C	98	4
D	140	1
E	150	3

- a. Calculate the weighted consumer price index (CPI) for every good in current year.
- b. Calculate the weighted consumer price index(CPI) for the current year.
- c. Based on (b) above, what is problem faced by this economy? Calculate the percentage change in the general price level of the current year.
- d. Calculate the real value of money in the current year.
- e. What will happen to the value of money in the current year? Why?

# **Aggregate Demand in Goods and Money Market**

## **Learning Outcomes**

- 1. Understand the goods market and money market**
- 2. Understand the equilibrium in goods and money markets**
- 3. Understand the policy in goods and money markets**

## 8.0 Introduction

Goods Market - market in which goods and services are exchanged and in which the equilibrium level of aggregate outputs determined.

Money Market - market in which financial instruments are exchanged and in which the equilibrium level of the interest rate is determined.

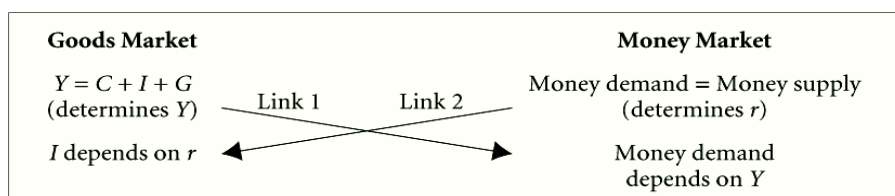
### 8.1 The Links between Goods market and Money Markets

#### a. The Money Market

The money market determines the interest rate. The demand for money in the money market is affected by income (which is determined in the goods market).

#### b. The Goods Market

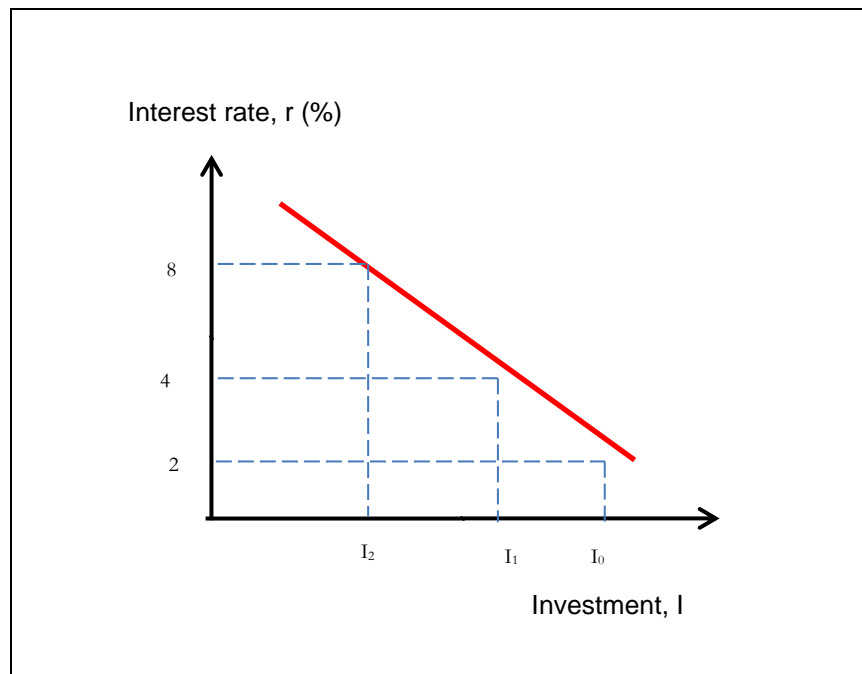
The goods market determines income, which depends on planned investment. Planned investment in turn depends on the interest rate (which is determined in the money market). The key link between the two markets is the interest rate.



**Figure 8.1 : Links between the Goods Market and the Money Market**

Based on figure 8.1, planned investment is depends on the interest rate, and money demand depends on aggregate output.

## 8.2 Planned Investment And The Interest Rate



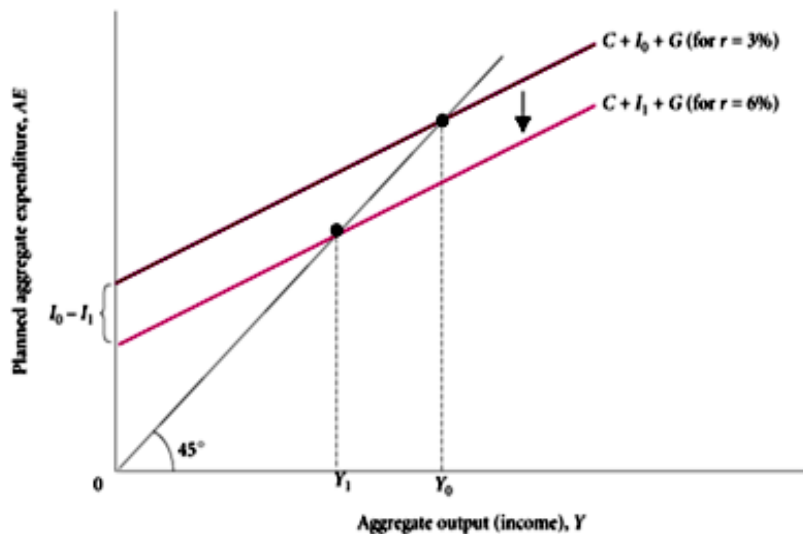
**Figure 8.2: Planned investment**

Figure 8.2 shows planned investment spending is a negative relationship between interest rate. An increase in the interest rate from 2 percent to 4 percent reduces planned investment from  $I_0$  to  $I_1$ .

## 8.3 Planned Aggregate Expenditure and The Interest Rate

Planned investment depends on the interest rate to consider how planned aggregate expenditure (AE) depends on the interest rate. Recall that planned aggregate expenditure is the sum of consumption, planned investment, and government purchases.

$$\text{That is, } AE \equiv C + I + G$$



**Figure 8.3: Relationship between Interest Rate Increase and Planned Aggregate Expenditure**

Based on figure 8.3, an increase in the interest rate from 2 % to 4 % lowers planned aggregate expenditure and thus reduces equilibrium income from  $Y_0$  to  $Y_1$ . The effects of a change in the interest rate include:

- i. A high interest rate ( $r$ ) discourages planned investment ( $I$ ).
- ii. Planned investment is a part of planned aggregate expenditure ( $AE$ ).
- iii. Thus, when the interest rate rises, planned aggregate expenditure ( $AE$ ) at every level of income falls.
- iv. Finally, a decrease in planned aggregate expenditure lowers equilibrium output (income) ( $Y$ ) by a multiple of the initial decrease in planned investment.

Using a convenient shorthand:

$$\begin{array}{l}
 r \downarrow \rightarrow I \uparrow \rightarrow AE \uparrow \rightarrow Y \uparrow \\
 r \uparrow \rightarrow I \downarrow \rightarrow AE \downarrow \rightarrow Y \downarrow
 \end{array}$$

## 8.4 Equilibrium in Both The Goods and Money Markets

- An increase in the interest rate ( $r$ ) decreases output ( $Y$ ) in the goods market because an increase in interest rate lowers planned investment.
- When income ( $Y$ ) increases, this shifts the money demand curve to the right, which increases the interest rate ( $r$ ) with a fixed money supply.

We can thus write:

$$\begin{array}{l}
 Y \uparrow \rightarrow M^d \uparrow \rightarrow r \uparrow \\
 Y \downarrow \rightarrow M^d \downarrow \rightarrow r \downarrow
 \end{array}$$

## 8.5 Policy Effects in The Goods and Money Markets

### 8.5.1 Expansionary Policy Effects

- Expansionary fiscal policy - An increase in government spending or a reduction in net taxes aimed at increasing aggregate output (income) ( $Y$ ).

#### i. Crowding-out effect

The tendency for increases in government spending to cause reductions in private investment spending.

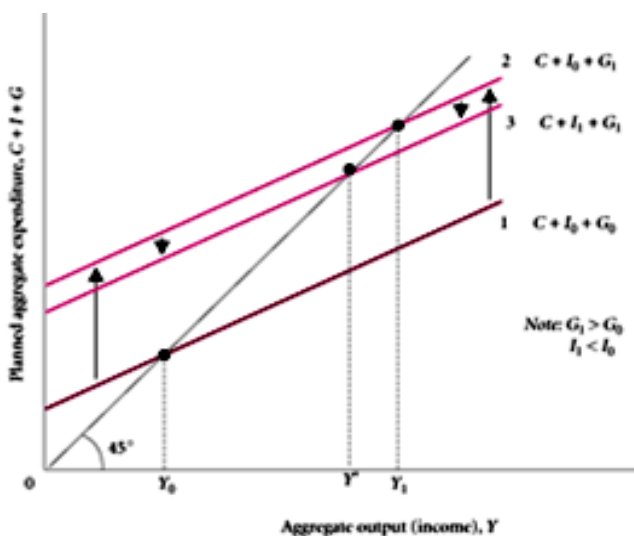


Figure 8.4 : The Crowding-Out Effect

Figure 4 shows an increase in Government Purchases (G) or a Decrease in Net Taxes (T). An increase in government spending G from  $G_0$  to  $G_1$  shifts the planned aggregate expenditure schedule from 1 to 2. The crowding-out effect of the decrease in planned investment (brought about by the increased interest rate) then shifts the planned aggregate expenditure schedule from 2 to 3.

## ii. Interest Sensitivity or Insensitivity of Planned Investment

The responsiveness of planned investment spending to changes in the interest rate. Interest sensitivity means that planned investment spending changes a great deal in response to changes in the interest rate; interest insensitivity means little or no change in planned investment as a result of changes in the interest rate.

Effects of an expansionary fiscal policy:

$$G \uparrow \rightarrow Y \uparrow \rightarrow M^d \uparrow \rightarrow r \uparrow \rightarrow I \downarrow$$

→  $Y$  increases less than if  $r$  did not increase

### b. Expansionary monetary policy

An increase in the money supply aimed at increasing aggregate output (income) (Y).

Effects of an expansionary monetary policy:

$$M^s \uparrow \rightarrow r \downarrow \rightarrow I \uparrow \rightarrow Y \uparrow \rightarrow M^d \uparrow$$

→  $r$  decreases less than if  $M^d$  did not increase

## 8.5.2 Contractionary Policy Effects

a. Contractionary fiscal policy - A decrease in government spending or an increase in net taxes aimed at decreasing aggregate output (income) (Y).

Effects of a contractionary fiscal policy:

$$G \downarrow \text{ or } T \uparrow \rightarrow Y \downarrow \rightarrow M^d \downarrow \rightarrow r \downarrow \rightarrow I \uparrow$$

→  $Y$  decreases less than if  $r$  did not decrease

- b. Contractionary monetary policy - A decrease in the money supply aimed at decreasing aggregate output (income) (Y).

Effects of a contractionary monetary policy:

$$M^s \downarrow \rightarrow r \uparrow \rightarrow I \downarrow \rightarrow Y \downarrow \rightarrow M^d \downarrow$$

$\rightarrow r \text{ increases less than if } M^d \text{ did not decrease}$

## 8.6 The aggregate demand (AD) curve

A curve that shows the negative relationship between aggregate output (income) and the price level. Each point on the AD curve is a point at which both the goods market and the money market are in equilibrium.

### The Aggregate Demand (AD) Curve

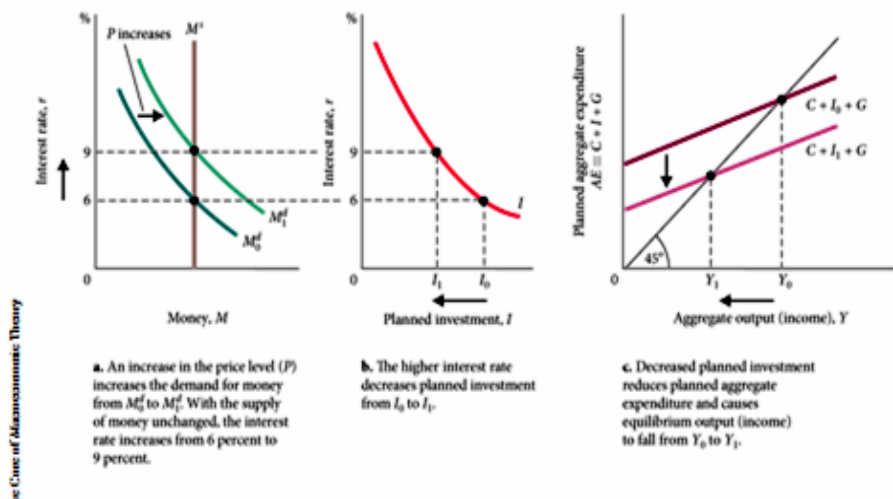
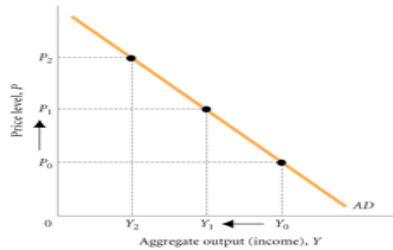


Figure 8.5 : The Impact of an Increase in the Price Level on the Economy: Assuming No Changes in  $G$ ,  $T$ , and  $M_s$



At all points along the *AD* curve, both the goods market and the money market are in equilibrium. The policy variables  $G$ ,  $T$ , and  $M^s$  are fixed.



**Figure 8.6 : The Aggregate Demand (AD) Curve**

### 8.6.1 Downward-Sloping Aggregate Demand Curve

- a. Increased spending power.  
At a lower price level, consumers are likely to have higher disposable income and therefore spend more. (Note this assumes that wages are constant and not falling with prices)
- b. Increase in demand for exports.  
If there is a lower price level in the Malaysia, Malaysia goods will become relatively more competitive, leading to higher exports. Exports are a component of AD, and therefore AD will be higher.
- c. Lower interest rates.  
At a lower price level, interest rates usually fall, and this causes higher aggregate demand.

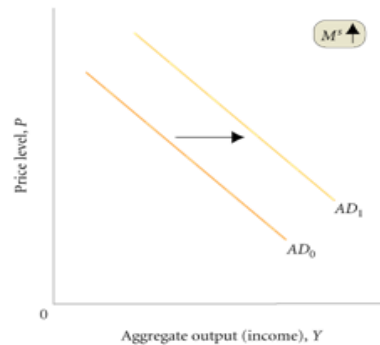
### 8.6.2 Shifts of The Aggregate Demand Curve

- a. An increase in the money supply ( $M_s$ )  
Causes the aggregate demand curve to shift to the right, from  $AD_0$  to  $AD_1$ . This shift occurs because the increase in  $M_s$  lowers the interest rate, which increases planned investment (and thus planned aggregate expenditure). The final result is an increase in output at each possible price level.

An increase in the money supply ( $M^s$ ) causes the aggregate demand curve to shift to the right, from  $AD_0$  to  $AD_1$ .

This shift occurs because the increase in  $M^s$  lowers the interest rate, which increases planned investment (and thus planned aggregate expenditure).

The final result is an increase in output at each possible price level.



**Figure 8.7: The Effect of An Increase In Money Supply on The AD Curve**

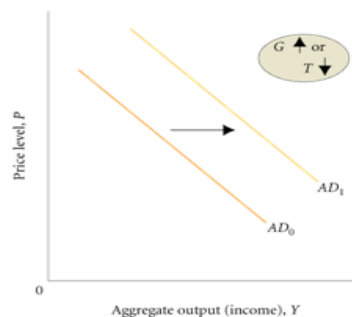
a. AD will shift to the right from  $AD_0$  to  $AD_1$  because of the increase in  $G$  or decrease in  $T$ . When increases in  $G$ , output will increase at each possible price thus will increase in planned aggregate expenditure.

An increase in government purchases ( $G$ ) or a decrease in net taxes ( $T$ ) causes the aggregate demand curve to shift to the right, from  $AD_0$  to  $AD_1$ .

The increase in  $G$  increases planned aggregate expenditure, which leads to an increase in output at each possible price level.

A decrease in  $T$  causes consumption to rise.

The higher consumption then increases planned aggregate expenditure, which leads to an increase in output at each possible price level.



**Figure 8.8: The Effect of An Increase In Government Purchases or A Decrease In Net Taxes on The AD Curve**

#### 8.6.4 Summary

<b>Expansionary monetary policy</b> $M^s \uparrow \rightarrow AD$ curve shifts to the right	<b>Contractionary monetary policy</b> $M^s \downarrow \rightarrow AD$ curve shifts to the left
<b>Expansionary fiscal policy</b> $G \uparrow \rightarrow AD$ curve shifts to the right $T \downarrow \rightarrow AD$ curve shifts to the right	<b>Contractionary fiscal policy</b> $G \downarrow \rightarrow AD$ curve shifts to the left $T \uparrow \rightarrow AD$ curve shifts to the left

**Figure 8.9 : Factors That Shift The Aggregate Demand Curve**

## TUTORIAL 8

1. Define aggregate demand.
2. Give three reasons why the aggregate demand curves downwards sloping.
3. Explain the determinants of the aggregate demand (AD) and describe how the AD curve will shift when one of these determinants changes.
4. Illustrate graphically the effect of the following factors on the aggregate demand (AD) curve:
  - a. Expansionary monetary policy.
  - b. An increases in taxes
  - c. Government suspending transportation related projects
  - d. Interest rate increases
  - e. Ringgit depreciation.
5. What are the difference between the demand curve for an individual product (such as apples) and the aggregate demand curve (AD).
6. Using aggregate demand (AD) and aggregate supply (AS) curves, discuss the effects of the following events on the price level and equilibrium GDP (Y) in short-run.
  - a. A tax cut, while the government spending is unchanged and the economy is operating at nearly full capacity.
  - b. An increase in money supply during a period of high unemployment and an excess industrial capacity.

# **Aggregate Supply and The Equilibrium Price Level**

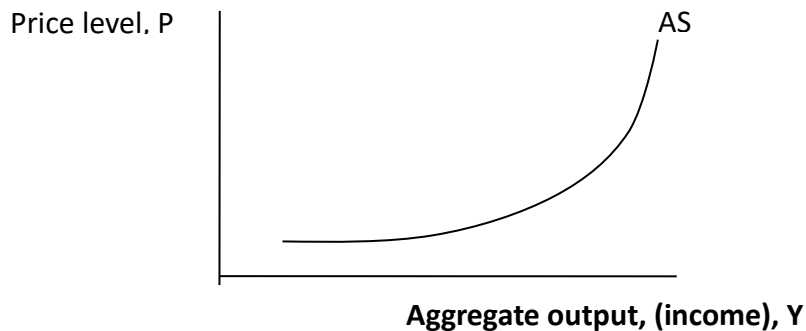
## **Learning Outcomes**

- 1. Understand the AS curve in short run and long run**
- 2. Factor or determinant of shift in AS**
- 3. Policy implication of monetary and fiscal policy to AD and AS**

## 9.1 Aggregate Supply (AS)

AS can be defined as the total supply of all goods and services in an economy. AS curve is a curve that shows the relationship between the aggregate quantity of output supplied by all firms in an economy and the overall price level.

## 9.2 Aggregate supply curve in short run



In the short run AS curve has a positive slope. At lower levels of aggregate output, the curve is fairly flat because firms are likely to have excess capacity. As the economy approaches capacity, the curve becomes nearly vertical. At capacity, the curve is vertical.

## 9.3 Reasons why the short run aggregate supply (SRAS) curve slopes upward

1. Salaries for workers remain fixed by contract for several years.
2. Firms are often slow to adjust wages: many workers have their wages adjusted only once a year.  
Due to these 2 reasons, when AD increase the profit would be increasing if the firms increase price & output.
3. Menu costs make some prices sticky.

Menu costs = the costs to firms of changing prices. Example: for a restaurant, changing price would be costly because it would involve printing new menus or catalogs.

If the demand for their products is higher, because of menu cost, firm will not increase their price, thus sales increasing, which will cause them to increase output.

**Conclusion:** the response of the overall economy to the AD increase will be an increase in price level and output: a positive slope of SRAS curve.

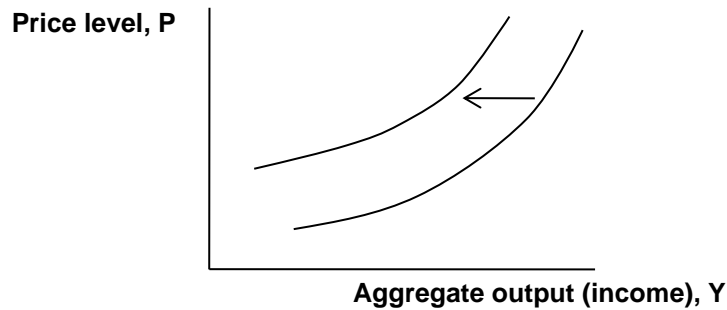
**9.3.1 SRAS curve will be determined by the costs of production.  
What factors determine the costs of production?**

The key factors:

- i. Input prices (wage & materials)
- ii. The state of technology.
- iii. Taxes, subsidies, or economic regulations.

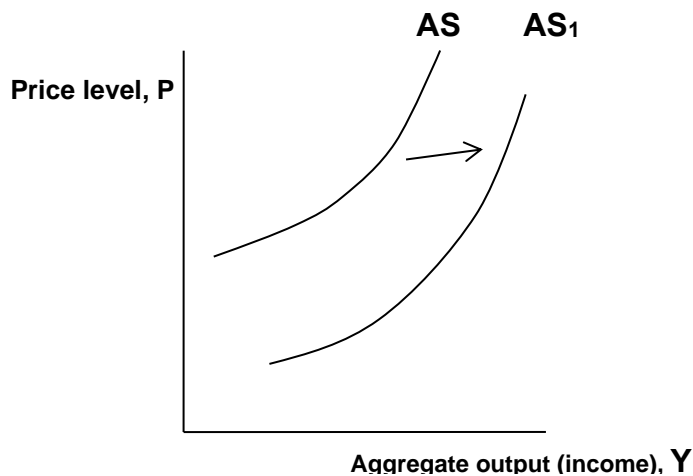
**9.4 Shifts of the short run aggregate supply (SRAS) curve**

- 1. A decrease in aggregate supply:



A shift to left of AS curve from  $AS_0$  to  $AS_1$ , because of rising in cost of production such as input prices (price of raw material) and increase in taxes.

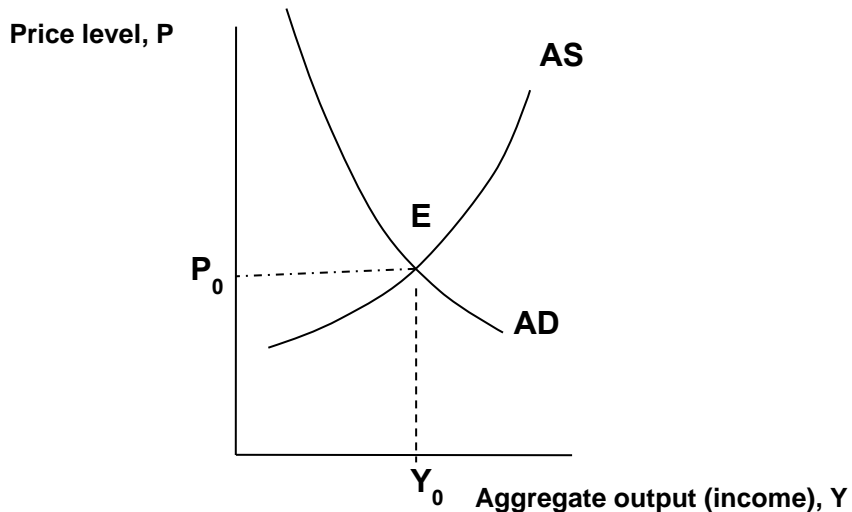
- 2. Increase in aggregate supply:



A AS curve shift to right from  $AS_0$  to  $AS_1$  could be caused by a decrease in costs of production (price of raw materials), decrease in inputs prices or taxes or increase in subsidies and change in technology

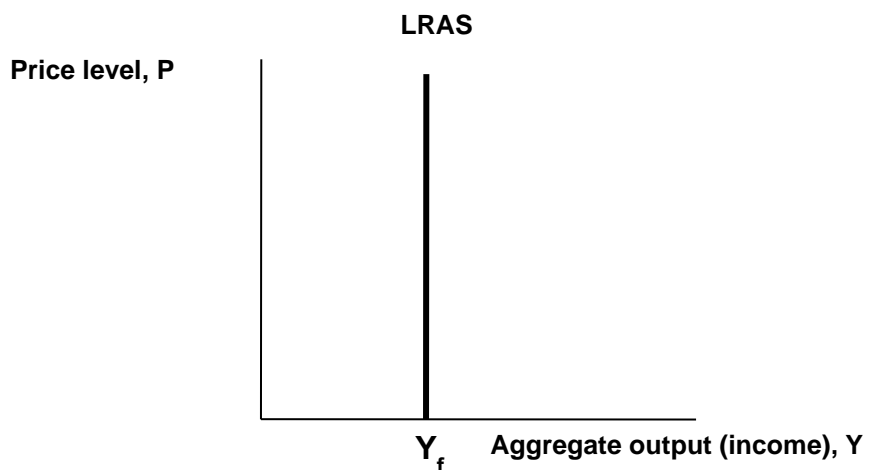
### 9.4 The Equilibrium Price Level

The equilibrium P level is when the P level at which the AD & AS curves intersect.

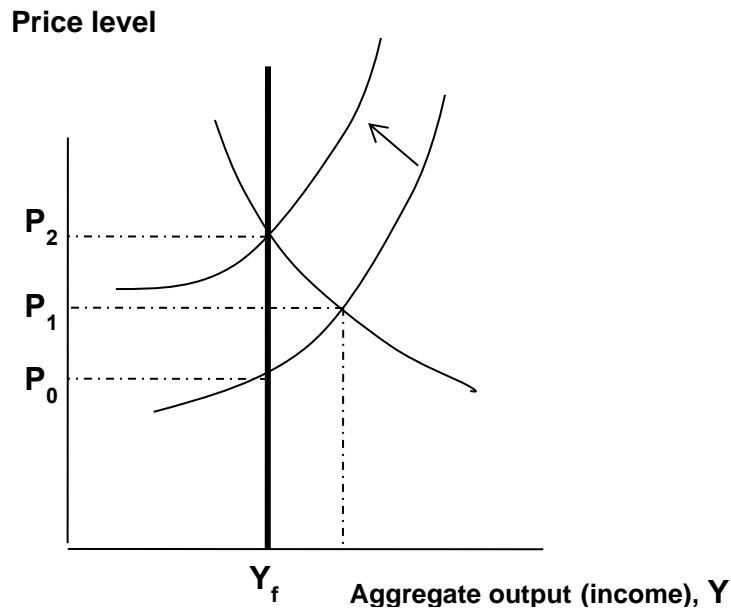


At each point along AD curve, both money market and goods market are in equilibrium. Each point on the AS curve represents the price / output decisions of all firms in the economy. At point E:  $P_0$  = equilibrium price level.  $Y_0$  = real output demanded/ supplied.

### 9.5 The long-run AS curve (LRAS)



In the long run, the economy operates at full employment & changes in the price level do not affect employment. LRAS curve is vertical at full employment level of real GDP ( $Y_f$ ).



In the long run, wages and other input prices rise and fall to match changes in price level. So price-level changes do not affect firm's profit & thus they create no incentive for firms to alter their output.

## 9.6 Expansionary Monetary and Fiscal Policy

### 1. Expansionary Monetary Policy:

Implementation of expansionary monetary policy through increase in money supply.

### 2. Expansionary Fiscal Policy:

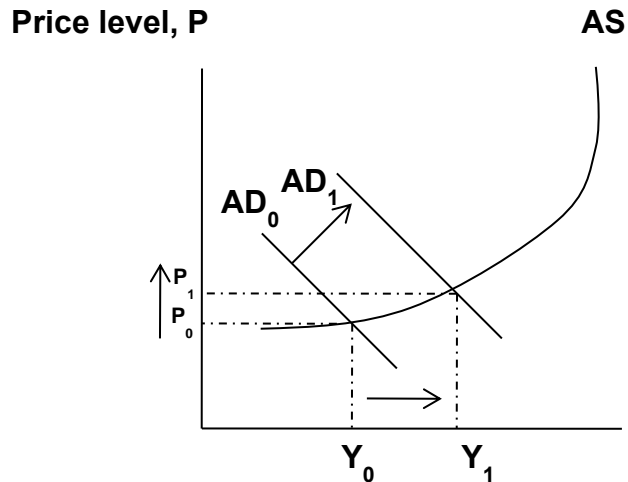
Implementation of expansionary fiscal policy through increase in government expenditure or decrease in Taxes.

**Effect:** To stimulate the economy, government using an expansionary policy and shifts the AD curve to the right.



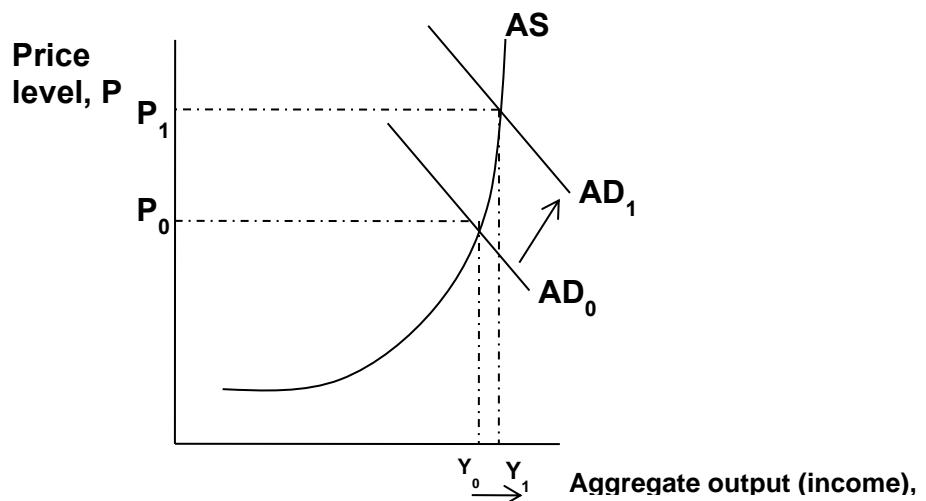
### 9.6.1 Effect of expansionary on the equilibrium price and output.

1. A AD curve shift when the economy is on the nearly flat part.



If the AD curve shifts rightwards (from  $AD_0$  to  $AD_1$ ) when the economy is on the nearly flat portion of AS curve, the result will be an increase in equilibrium  $Y$  (from  $Y_0$  to  $Y_1$ ) with little increase in the price level (from  $P_0$  to  $P_1$ ). The increase in equilibrium  $Y$  is much greater than the increase in equilibrium  $P$ .

2. A AD curve shift when economy is operating at or near maximum capacity:



If AD curve shifts rightwards (from  $AD_0$  to  $AD_1$ ) when the economy is operating near full capacity, the result will be an increase in the price level (from  $P_0$  to  $P_1$ ) with little increase in output (from  $Y_0$  to  $Y_1$ ).

**Conclusion:** The increase in the equilibrium price ( $P$ ) is much more than the increase in output ( $Y$ ).

## Tutorial 9

1. Define aggregate supply (AS).
2. Distinguish between short-run AS and long-run AS.
3. Give three reasons why AS curve slopes upward.
4. Explain the determinants of aggregate supply (AS) and describe how the AS curve will shift when one of these determinant change.
5. Illustrate graphically the effects of AS.
  - a. Productivity increases
  - b. Subsidies are available for natural resources.
  - c. Government imposes more export duties.
6. Using AD-AS framework, explain briefly the following:
  - a. How an recessionary gap exists in the economy?
  - b. How an recessionary gap could be eliminate by an expansionary monetary policy.

# Chapter

# 10

## International Trade

### Learning Outcome

- 1. Understand the concept of international trade**
- 2. Different between international trade and domestic trade**
- 3. Calculation for international trade using theory of absolute advantage and comparative advantage**
- 4. Advantage and disadvantage of international trade**
- 5. Know about protectionism of international trade**

## **10.1 Concept of International Trade**

International trade refers to government and individual activities on the exchange of goods and services across international borders.

## **10.2 Differences of International Trade and Domestic Trade**

### **i. Immobility of Factors of Production**

This reason was given by the classical economists on the assumption that labor was the only factor of production. Laborers are free to move the country (domestic trade) but immobile (less mobile) between countries (international trade). This is due to financial constraints, language barriers, cultural differences and such like reasons.

### **ii. Natural Resources**

Different countries are differently gifted with production of commodities because they have a supply of different productive factors. For example, Malaysia can produce palm oil and rubber and China can produce cotton due to the availability of natural resources. International specialization can increase world output and give rise to comparative advantage.

### **iii. Monetary Units**

When trade takes place within the country, for example transactions will be in Ringgit Malaysia. However, in international trade there will be differences in monetary units or currencies. Different countries have different currencies with different values. For example, Singapore has the Singapore dollar, Indonesia the rupiah, the European Union the euro, and the United Kingdom the sterling pound and so on. Since different currencies prevail in different countries, trade between nations can take place if the negotiation of exchange among different currencies is determined. Basically, many countries use the US Dollar in international trade.

### **iv. National Policies**

In domestic trade, laws and rules relating to taxation, labour standards, education and legislation will be the same within each country. In the case of international trade, there will be vast differences in the laws of different countries.

### **v. Documentation**

International trade involves greater documentation as compared to domestic trade. Examples of documentation that exist in international trade are import and export licenses, traveller's cheque, bills of exchange and many more.

**vi. Protectionism**

Protectionism is practiced only in international trade where many countries want to protect their local industries from foreign competition. Instruments of protectionism include tariffs, quotas, embargoes and non-tariff barriers.

**vii. Size of Market and Total Transactions**

In international trade, the size of the market is relatively larger than the size in domestic trade. Total transactions involved in international trade are greater in volume than those in domestic trade. For example, a coconut producer in Malaysia exports his products to Thailand. The sales volume would be higher compared to his sales within Malaysia.

**viii. Increase the use of latest technology:**

Increase in productivity: increase in output, minimize cost and time, increase product quality. Increase in labor skill in the use of new technology.

**xi. Increase in specialization and mass production**

Economies of scale. Productivity increase, cost of production decrease and price decreases.

### **10.3 Absolute Advantage and Comparative Advantage**

#### **10.3.1 Absolute Advantage Theory**

Absolute advantage means that country can produce more of a certain type of good than another country, using the same amount of resources. There are several underlying assumptions in the absolute advantage theory:

- a. There are only two countries in the world.
- b. Only two goods are produced.
- c. Free trade exists between these two countries.
- d. No transportation costs are involved.
- e. Production is under the law of constant costs.
- f. Identical production functions between trading countries.

To illustrate the concept of absolute advantage, let us take the example of Malaysia and Indonesia where both countries produce cloth and paddy. Table 10.1 shows the production of cotton and rice by both countries.

**Table 10.1: Production Before Specialization**

<b>Country</b>	<b>Cloth</b>	<b>Paddy</b>
<b>Malaysia</b>	20	40
<b>Indonesia</b>	40	20
<b>Total</b>	60	60

These countries are dividing their resources equally (at the initial stage). For instance, Malaysia uses 50% of the given resources to produce cloth and 50% to produce paddy. Therefore, Malaysia can produce 20 tons of cloth 40 tons of paddy. While Indonesia can produce 40 tons of cloth and 20 tones of corn with equally divided resources for the production of cloth and paddy.

From Table 10.1, it can be seen that Malaysia has an absolute advantage in producing paddy and Indonesia has an absolute advantage in producing cloth.

Since both countries have a mutual absolute advantage in the production of cloth and paddy, specialization can take place. Malaysia will channel all it resources to rice production and Indonesia will channel all its resource to cloth production. This would yield 80 tons of paddy and 80 tons of cloth respectively.

**Table 10.2 Production after Specialization**

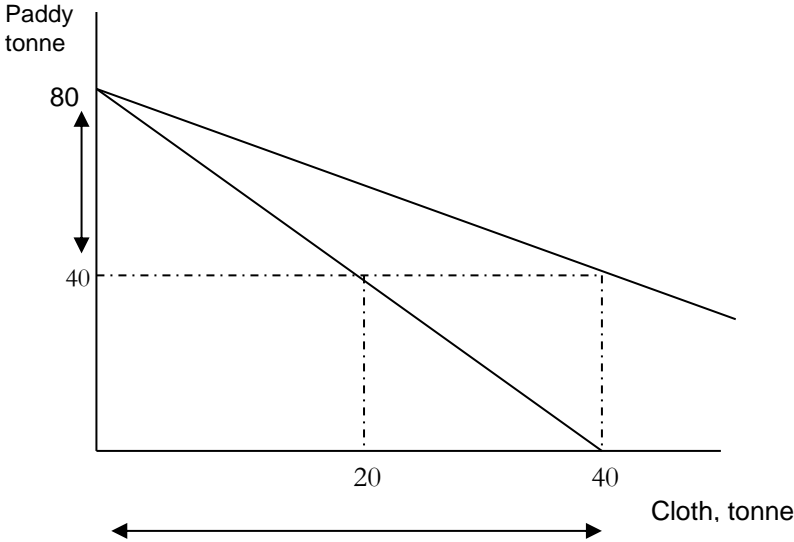
<b>Country</b>	<b>Cloth</b>	<b>Paddy</b>
<b>Malaysia</b>	0	80
<b>Indonesia</b>	80	0
<b>Total</b>	80	80

It is clear that the total world output has increased with specialization. The amount of cloth and paddy produced has doubled with specialization, both countries are able to trade with each or to consume both the products. Assume that there is an arrangement to trade 1 ton of cloth for 1 ton of paddy (TOT 1:1). If Malaysia wishes to consume cloth, then it has to give 20 tons of paddy to Indonesia. Table 10.3 on the quantity produced to trade after international trade comes in.

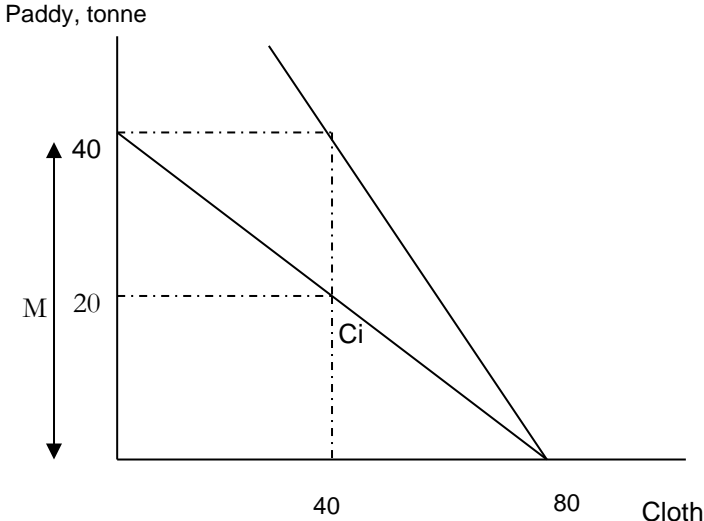
**Table 10.3: Production after International Trade Takes Places**

<b>Country</b>	<b>Cloth</b>	<b>Paddy</b>
<b>Malaysia</b>	40	40
<b>Indonesia</b>	40	40
<b>Total</b>	80	80

Both countries, Malaysia and Indonesia, are better off with more result of international trade. But what happens if a country has advantage over both goods? Will international trade then be will can the two countries specialize? To overcome this problem, David Ricardo developed a theory commonly referred to as the Comparative Advantage Theory.



**Figure 10.1: Production, X & M and Consumption (Malaysia)**



**Figure 10.2: Production, X & M and Consumption (Indonesia)**



### 10.3.1.1 Weaknesses of Absolute Advantage Theory

Too dependent on the assumptions to make the advantage real, whereas:

- i. Assumption of 2 countries traded is unrealistic;
- ii. Assumption of 2 products trade is also unrealistic;
- iii. Assumption of constant opportunity cost (linear production possibility curve) is untrue;
- iv. The role of transportation cost and foreign exchange rate cannot be ignored; and
- v. Trade barriers are real.

### 10.3.2 Comparative Advantage Theory

Comparative advantage refers to the ability of one country to produce goods at a lower opportunity cost than another country. Opportunity cost is the cost of the desired goods that has to be forgone to obtain another commodity.

Returning to the same example of Malaysia and Indonesia with the two products, cloth and paddy, Table 4 shows the production of cotton and rice by both countries.

**Table 10.4: Production Before Specialization**

Country	Cloth	Paddy
Malaysia	70	10
Indonesia	40	10
Total	110	20

From Table 10.4, it can be seen that given the resources, Malaysia can produce 70 tons of cloth and 10 tons of paddy while Indonesia can produce 40 tons of cloth and 10 tons of paddy.

According to David Ricardo, a country should specialize in goods in which it has a greater comparative advantage or lower opportunity cost than other countries. To determine which country is to specialize in rice or cotton, the opportunity cost of production must be calculated.

#### Calculation of Opportunity Cost

1. **The opportunity cost in the production of cloth is as follows:**

Malaysia: 1 ton of cloth = paddy/cloth =  $10/70 = 0.14^*$   
Indonesia: 1 ton of cloth = paddy/cloth =  $10/40 = 0.25$

2. **The opportunity cost in the production of paddy is thus:**

Malaysia: 1 ton of paddy = cloth/paddy =  $70/10 = 7$   
Indonesia: 1 ton of rice = cloth/paddy =  $40/10 = 4$

3. The opportunity cost is tabulated as in Table 10.5.

**Table 10.5 Opportunity Cost**

Country	Cloth	Paddy
<b>Malaysia</b>	0.14*(10/70)	7(70/10)
<b>Indonesia</b>	0.25(10/40)	4*(40/10)

\*Indicates the lower opportunity cost

From Table 10.5 it can be seen that in the production of cloth, Malaysia has the lower opportunity cost (0.14 tons of paddy) and in the production of paddy, Indonesia has the lower opportunity cost (4 tons of cloth). Therefore, Malaysia has the comparative advantage in the production of cloth and Indonesia has a comparative advantage in the production of paddy.

Malaysia has to sacrifice only 0.14 tons of rice to produce 1 ton of cloth while Indonesia has to forgo 0.25 tons of paddy. It is better for Malaysia to produce cloth since it has a lower opportunity cost in respect of cloth than Indonesia.

In terms of rice, Indonesia has to give up 4 tons of cloth as compared to Malaysia which has to give up 7 tons of cloth. This means that Indonesia can produce paddy at a lower cost.

Table 10.6 illustrates the production after Malaysia and Indonesia specialize in rice and cotton respectively.

**Table 10.6 Production After Specialization**

Country	Cloth	Paddy
<b>Malaysia</b>	$(10/0.14)+70=141$	0
<b>Indonesia</b>	0	$(40/4)+10=20$
<b>Total</b>	141	20

The total world output of cloth increases after specialization with Malaysia specializing in the production of cloth (producing 141 tons) and specializing in the production of paddy (producing 20 tons).

After specializing in the production of their respective goods exchange countries must settle on their terms of trade, i.e. how much rice to exchange for cotton.

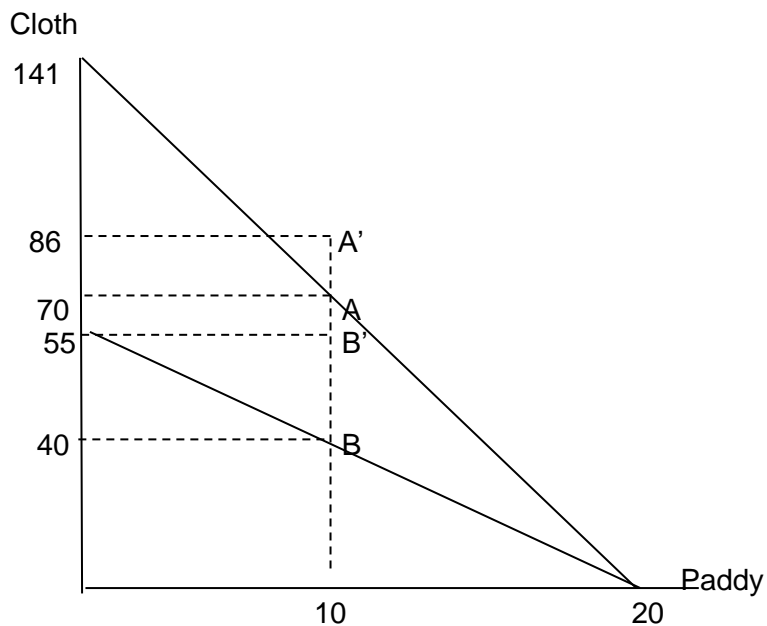
- To exchange the two goods between Malaysia and Indonesia, terms of trade (TOT) must be settled, i.e. how much rice to exchange for cotton..
- In the present case for Malaysia, 1Paddy = 7Cloth; and for Indonesia 1Paddy = 4Cloth
- Thus,  $1\text{Paddy} = (7+4)/2 = 5.5\text{Cloth}$

Say, Malaysia and Indonesia agree to exchange 55 tonnes of cloth for 10 tonnes of paddy.

Table 10.7 shows the distribution of goods between the 2 countries. (A for Malaysia, B for Indonesia).

**Table 10.7: Consumption after ITR**

Country	Cloth (ton)	Paddy (ton)	$\Delta$ Cloth	$\Delta$ Paddy
Malaysia	86	10	$86 - 70 = 16$	$10 - 10 = 0$
Indonesia	55	10	$55 - 40 = 15$	$10 - 10 = 0$
Total	141	20	31	0



**Figure 10.3: Consumption after ITR**

- A & B = production before specialization.
- With specialization, Malaysia produces 141 tonnes of cloth; Indonesia, 20 tonnes of paddy.

With TOT:  $1\text{Paddy} = 5.5\text{Cloth}$ , consumption of both countries increased to A' (Malaysia) and B' (Indonesia)

## 10.4 Terms of Trade

Terms of trade refers to the rate at which goods are exchanged. X-words, terms of trade is the amount of a commodity that needs to be forgone to obtain another commodity.

If the average prices of exports and imports are obtained, the term can be measured as the ratio of export prices to import prices. The used to measure terms of trade is:

$$\text{Terms of Trade} = \frac{\text{Average price of Exports}}{\text{Average price of imports}} \times 100$$

If export prices rise, we have favourable terms of trade and if the import prices increase, we have unfavourable terms of trade.

However, in this case, for Malaysia, 1 ton of paddy is the cost at cloth (1P = 6C). Indonesia also faces a similar situation where for 1 the opportunity cost is 4 tons of cloth (1P = 2C). So, the terms of

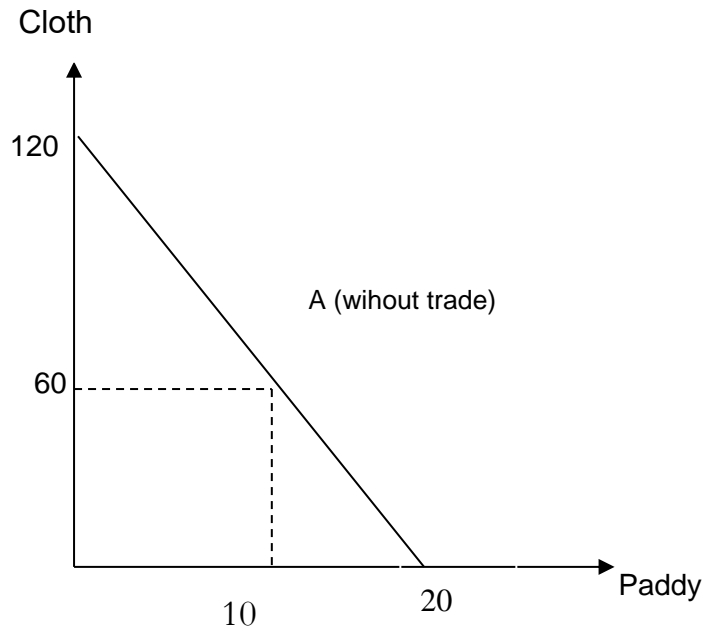
$$1P = \frac{6+2}{2} = 4C$$

Suppose, Malaysia agrees to trade 40 tons of cloth in exchange for 10 tons of paddy with Indonesia, and in return, Indonesia sells 10 tons of paddy for 40 tons of cloth, this can be shown in Table 10.8.

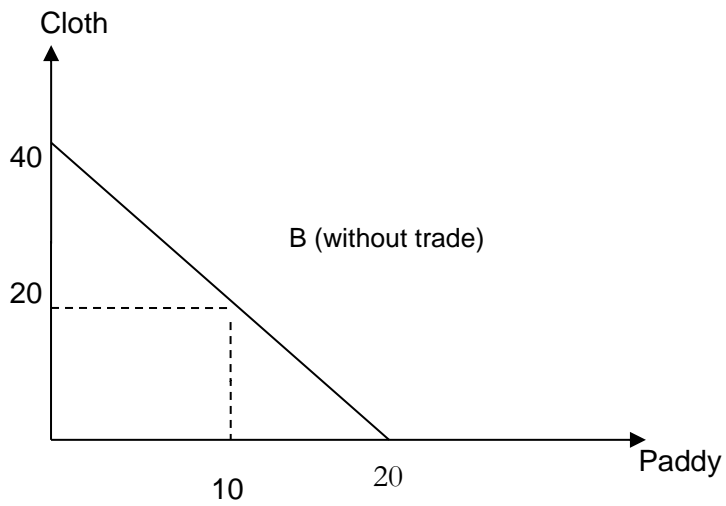
**Table 10.8 Terms of trade for Malaysia and Indonesia**

Country	Cloth	Paddy
Malaysia	80	10
Indonesia	40	10
Total	120	20

Then construct a production possibilities frontier (PPF) for each country assuming that both countries allocate resources equally for the production of cotton and rice as shown in Figure 10.4.



**Figure 10.4: Malaysia PPF**



**Figure 10.5: Indonesia PPF**

## 10.5 Advantages of International Trade

International trade brings advantages to the individual countries as well as to the world. There are:

- i. **Increase world output**  
Through specialization and trade, output will increase and this is explained by the comparative advantage and individual output increases.
- ii. **Varieties of goods and services**  
More varieties for goods with the international trade that not produce in Malaysia.
- iii. **Relationship between trading partners**  
The relationship with the trading partners such as trade fairs, economic co-operation (ASEAN and EU) and exchanges.
- iv. **Higher income and economic growth**  
Increases in export of goods will increase income for the economic growth.
- v. **Sharing of knowledge and technology**  
Many countries can share their knowledge, information and technology such as Malaysia and Japan.

## 10.6 Disadvantages of International Trade

- i. **Depletion of country's reserves**  
The continuous export of raw materials from a country, such as oil, iron and steel, may deplete a country's reserve of the deposit in the long run.
- ii. **Economics and political dependence**  
Through international trade, political and economic dependence between the countries and also relationship between the trading partners.
- iii. **Transportation costs**  
If transportation cost is too high, it will be a risk to the countries.

## 10.7 Protectionism of International Trade

Reasons for Protectionism

- i. National security argument
- ii. Infant industry arguments
- iii. Anti-dumping argument
- iv. Domestic employment arguments
- v. Low foreign wage argument

## Summary of reason TPP

- i. To protect infant or strategic industries- agro-based industry, food industry, automobile industry.
- ii. To diversify domestic economic activities, e.g from agriculture to manufacturing.
- iii. To increase economic growth and ↓ unemployment rate.
- iv. To discourage dumping of foreign goods
- v. To protect local employment
- vi. To improve trade balance.
- vii. To increase government tax revenue.

## 10.8 Tools of Protectionism

Countries use various tools or instruments to enforce protectionist policies.

### 10.8.1 Tariffs

Tax imposed on imports. When tariff imposed on imported goods, the price of these goods becomes more expensive. This will lead to a decrease in the consumption of imported goods by households. There are two types of tariffs

#### a. Specific tariff

Tariff imposed on imported goods with fixed rate. For example, a tariff set for an imported goods such as handbag at RM50. If price of one handbag is RM300 and the company imports 50 handbag, the charged will be charged will be RM2500.

A specific tariff is based on the quantity of goods and not on the value.

#### b. Ad valorem tariff

Ad valorem tariff is a tariff imposed on imports based on the value of the import. For example, a tariff for imported shoes is 10% and the price of shoes RM150. Thus the tariff charged is RM15. If the price of shoes is RM200, then the tariff rate is RM20. Ad valorem tariff is based on the value of the goods.

#### Immediate effects of tariffs:

- i. Increase the price of imports vis-à-vis local products;
- ii. Increase government revenue.

### Net Impact of Tariff

- i. World car price =  $P_w$ ; Local Price =  $P_w + \text{Tariff} = P_d$ .
- ii. At  $P_w$ , Malaysian buy car =  $Q_2$ , but supply from the local producer =  $Q_1$ ; thus  $Q_2 - Q_1$  is imported.
- iii. At  $P_w$ ,  $CS = A+B+C+D+E+F$  and  $PS = G$
- iv. At  $P_d$  (with tariff),  $CS = A+B$ ;  $PS = G+C$ ; Government Tax =  $E$  (total import,  $Q_4 - Q_3 \times \text{tariff}$ ,  $P_d - P_w$ )
- v. Thus, the impact of tariff is  $\downarrow CS$ ,  $\uparrow PS$  and  $\uparrow T$ .
- vi. Since tariff causes the loss of CS (Area  $C+D+E+F$ )  $>$  gain in PS (Area  $C$ ) + gain in Tax revenue (Area  $E$ ); the net loss to the economy = Area  $D+F$ .

Tax revenue (Area  $E$ ); the net loss to the economy = Area  $D+F$ .

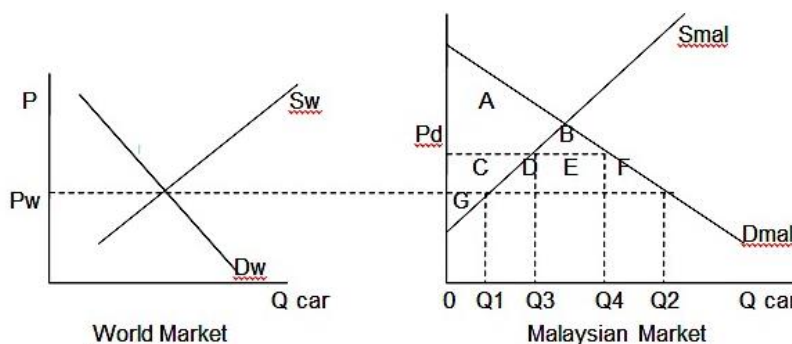


Figure 10.6: Impact of Tariff

### 10.8.2 Quotas

A restriction or limitation on the volume of imported goods. It will effects to price of goods and resulting price will increases, thus demand for imported goods will decreases.

### 10.8.2 Embargoes

A direct control by the government of the country to prohibit certain goods and services from being brought into the country.

### 10.8.4 Exchange control

Government wants to restrict the supply of foreign currencies in the country. In order to import goods and services from other countries, payment have to be made using their currencies.



### 10.8.5 Industry subsidies

Government giving subsidies to local producers to produce goods and services for export. This will encourage competition in the price of goods and services. Thus price of goods will be decreased.

Give subsidies to local producers:  $\downarrow$  cost,  $\uparrow$ Q,  $\uparrow$ X

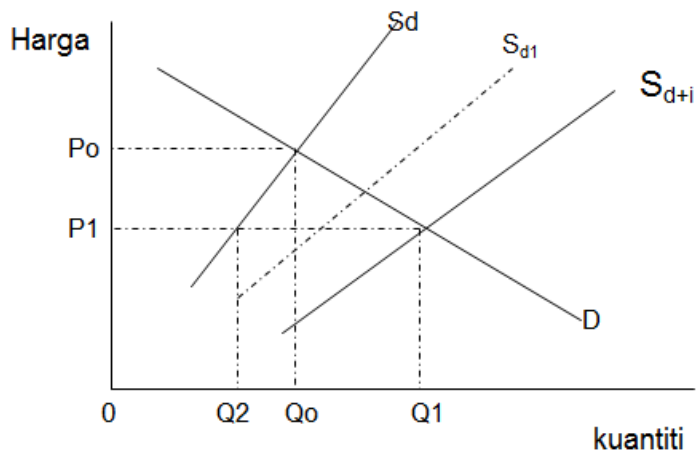


Figure 10.7: Impact of subsidies

## TUTORIAL 10

1. Distinguish between absolute advantage and comparative advantage.
2. Analyze the THREE types of trade restrictions.
3. Differentiate between tariff and quota.
4. Using an appropriate diagram, compare the imposition of tariff and quota in terms of economic welfare.
5. Define protectionism. Using appropriate example, discuss four trade barriers.
6. What is a trade protection policy?  
Explain four reasons why a trade protection policy is necessary for a developing country.
7. What is meant by tariff? Using demand and supply curves, explain how tariff could be used to protect domestic firms, reduce imports, and at the same time the government could obtain tax revenue.
8. Suppose two countries, P & Q, each produce only two goods, A & B. Both are produced using labor only. Assuming both countries are at full employment, you are given the following information:  
  
Country P:  
20 units of labor required to produce 1 unit of  
10 units of labor required to produce 1 unit of  
Total labor force: 1,000,000 units.  
  
Country Q:  
10 units of labor required to produce 1 unit of  
20 units of labor required to produce 1 unit of  
Total labor force: 750,000 units.  
  
a) Sketch the production possibilities curve for each country without trade.  
  
b) Without trade, each country evenly split their labor units between both products, A & B. Identify the combination of products A & B produced by each country.

- c) State which country has an absolute advantage in the production of product A, or B.
- d) Assume that after trading, one unit of product A can be exchanged for one unit of product B. Graphically illustrate how both countries can benefit from trade.

# Chapter

# 11

## Balance of Payment and International Trade

### Learning Outcome

1. **Understand the concept of international trade**
2. **Differentiate between international trade and domestic trade**
3. **Calculation for international trade using theory of absolute advantage and comparative advantage**
4. **Advantage and disadvantage of international trade.**

## 11.0 Introduction

Economic activity in one country or others countries may have effects to the other nations. Examples, financial crisis in Thailand in 1997, spread rapidly to other countries, Southeast Asia and East Asian countries; sub-prime mortgage crisis in the U.S. in 2008 felt by other regions, including E.U. Balance of payment (BOP) shows the “health” of a country’s economy in relation to another country or countries.

### 11.1 Balance of Payment (BOP)

BOP is the national account of a country which measures all financial transactions and flow of currencies into and out of the economy within a particular period, usually a year.

It records a country’s international financial transactions in 3 broad accounts in a given period of time. The international transactions of a nation are divided into three separate accounts:

- i. Current account: record of the goods and services into and out of the country
- ii. Financial account: record of the flow of financial capital to and from the country
- iii. Capital account: record of some specialized types of relatively small capital flows

#### 11.1.1 Structure of BOP

<i>Receipts (Credits)</i>	<i>Payments (Debits)</i>
1) Exports of goods	1) Imports of goods
<i>Trade Account Balance</i>	
2) Exports of services	2) Imports of services
3) Interests, profits and dividends received	3) Interests, profits and dividends paid
4) Unilateral receipts	4) Unilateral Payments
<i>Current Account Balance</i> (1 to 4)	
5) Foreign Investments	5) Investments abroad
6) Short term borrowing	6) Short term lending
7) Medium and long term borrowing	7) Medium and long term lending
8)	Statistical discrepancy (Errors and omission)
<i>Capital Account Balance</i> (5 to 8)	
9) Change in reserves (+)	9) Change in reserves
<i>Total Receipts = Total payments</i>	

## 1. Current Account

Monetary value of transactions in goods, services, income flows and unilateral transfers

- a. Trade Account: includes all goods that exports or imports
  - i. Balance of trade account: Total Export (X) minus Total import (M) of Goods.
  - ii. Surplus (positive balance) implies exports > imports
  - iii. Deficit (negative balance) implies imports > exports
- b. Services Account
  - i. Balance of service account: Total Export (X) minus Total import (M) of services.
- c. Income
  - i. Income from investments abroad minus income paid to foreigners (from investment – plants, real estate, securities).
- d. Transfer Payments.
  - i. Any foreign aid or other transfers received by foreigners (that given to foreigners)
  - ii. Example: Money sent abroad; Government transfers to foreign residents; foreign aid; money sent to families abroad; Personal gifts sent abroad; Charitable donations and etc.

## 2. Financial Account

Differences between sales of assets to foreigners and purchases of assets held abroad; e.g. Malaysian government assets abroad, Malaysian private assets (real estate direct investment, securities etc)

## 3. Capital Account

Capital transfers that result in a change in the stock of assets: mostly capital transfers (e.g. debt forgiveness); other minor items non-financial non-produced (eg. copyrights etc).

### 11.1.2 BOP Deficits

Current Account, Capital Account and BOP can be surplus or deficits. Implications of deficits/negative BOP:

- i. Deterioration of foreign reserve.
- ii. Increase in foreign debt to finance imports.
- iii. Depreciation in foreign exchange rate.
- iv. Decrease in economic growth and increase in unemployment rate.

### 11.1.3 How to improve BOP Deficits

- i. Use gold and foreign currencies reserves
- ii. Discourage imports:
  - a. tariff, quota, embargo
  - b. Foreign currency control
  - c. Increase interest rate
- iii. Promote exports
- iv. Devaluation: reducing the value of local currency against foreign currencies. E.g.: USD1 = RM3.80 to USD1 = RM4.00.  
**This ↑ exports and ↓ imports.**

## 11.2 Exchange rate

The price of one currency in terms of another currency, which is determined by the relative price of traded commodities to ensure equality in the purchasing power among two or more regions.

### 11.2.1 Gold Standard

Prior to the 1930s, the gold standard was the major system of the exchange rate determination. The values of all currencies were fixed directly to gold and have a fixed relationship to each another. Therefore, the exchange rate could be determined easily.

For instance, if the United States defines \$20 in terms of one ounce of gold Britain defines £4 for one ounce of gold, then the exchange rate between dollar and pounds will be \$5 to £1.

This system has the following features:

- a. Each country defines its monetary value in terms of a quantity of gold.
- b. There must be freedom in the export and import of gold.
- c. Each country maintains a fixed relationship between its stock of gold and its money supply.

Two problems will arise from this system. The first problem is that the country has little control over its monetary policy. The second problem is the inflation will increase with the desired expenditure on goods and services if production cannot be increased.

### 11.2.2 Bretton Woods System

In 1944, after the Great Depression and the Second World War, representatives from industrial countries held an international conference at Bretton Woods to create a new monetary system to replace the gold standard.

The new system was the modification of the fixed exchange rate system known as the adjustable-peg system or Bretton Woods system. This system will include the advantages of the old gold standard that is the fixed change rate and exclude the disadvantages of domestic macroeconomic adjustments.

Under this system, countries have to peg their currencies to the U.S. dollar instead of to gold. Then, the U.S. dollar was pegged directly to gold that was worth \$35 per ounce of gold. Thus, the dollars became a substitute for PM since the discovery of new gold was limited. In order to encourage other countries to hold dollars as their major reserve currency, the U.S. government guaranteed that the dollar could easily be converted into gold. However, they have to revalue or devalue their currency against the dollar from time to time. Under the Bretton Woods system, different types of adjustments were allowed to balance the balance of payments disequilibrium depending on severity of the economic problem.

**For example:**

US \$1.00 = 0.0286 ounce of gold

US \$1.00 = RM3.80

US \$1.00 = Y50

If Malaysia wants to import cars worth 500 million yen (¥500 million) from Japan, then the payment using the exchange rate will be:

¥500 million → US \$10 million RM38 million

### 11.2.3 Flexible Exchange Rate System

A flexible exchange rate regime is determined by market forces of demand and supply of the country's currency. Assumptions: a country is demanded on foreign exchanges solely for the payment of trade and only trade flows will determine the exchange rates; demand for import is price elastic.

### 11.4 Demand Curve for foreign currency

- Demand for foreign currency arises when residents of a country import G&S from or invest in another country.
- E.g. Malaysian traders import goods from the US worth USD100 thousand. If USD1=RM3.00, this trader will demand USD100,000 and supply RM300,000.
- If USD appreciate in value to USD1=RM3.50, US imports are more expensive, i.e. RM350,000. It leads to decreases in imports from US, decreases in demand for USD.



**Example:**

Demand for foreign currency arises when residents of a country import goods and services from or invest in another country.

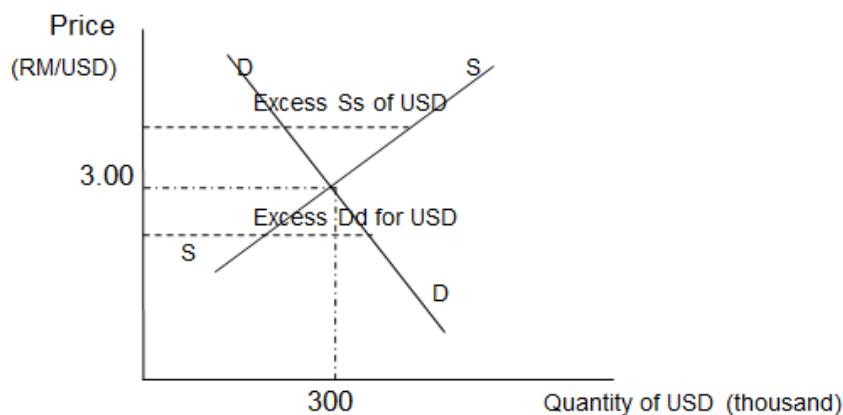
Malaysian traders import goods from the US worth USD100 thousand. If USD1=RM3.00, this trader will demand USD100,000 and supply RM300,000. If USD increase in value to USD1=RM3.50, US imports are more expensive, i.e. RM350,000. It leads to decrease in imports from US, decrease demand for USD.

**11.5 Supply Curve for foreign currency**

- For Malaysian, supply of foreign currency (USD) exists the US residents import G&S from or invest in Malaysia.
- If Americans import RM300,000 worth of goods from Malaysia, they supply USD100,00 (if USD1=RM3.00) to finance the import.
- If, exchange rate change to USD1=RM3.50, supply of the foreign currency is < USD100,000. Malaysian goods are cheaper, increases in import (M) from Malaysia, supply for USD increases.

**Example**

For Malaysian, supply of foreign currency (USD) exists the US residents import goods and services from or invest in Malaysia. If Americans import RM300,000 worth of goods from Malaysia, they supply USD100,00 (if USD1=RM3.00) to finance the import. If, exchange rate change to USD1=RM3.50, Ss of the foreign currency is < USD100,000. Malaysian goods are cheaper, increase import from Malaysia, supply of USD increase.



## Figure 11.1: Market equilibrium for exchange rate between US dollar and the Malaysian ringgit

### 11.6 Foreign Exchange Rate Equilibrium

Foreign exchange may fluctuate due to:

#### 1. Taste and preferences (T&P)

If T&P for US products, DD for USD will increase, RM will depreciate

If T&P for Malaysian products by Americans increase, SS of USD will increase for finance import, RM will appreciate.

#### 2. Relative Incomes

If Malaysian income increases relative to the U.S, demand for US products will increase, DD for USD will increase, RM will depreciate.

#### 3. Relative Price Levels.

If Malaysian price level increases relative to the U.S, demand for US products will increase, DD for USD will increase, RM will depreciate.

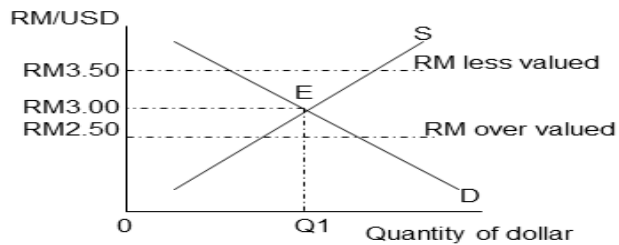
#### 4. Relative Real Interest Rates.

If real interest rates in US increase and in Malaysia unchanged, increase demand for bonds or other interest-bearing securities issued by U.S private or government bodies, demand for USD increase, RM will depreciate. *Vice Versa*

### 11.7 Fixed Foreign Exchange Rate (FER)

An exchange rate determined by the government through buying/selling of currencies. Initial fixed exchange rate equilibrium at **E**. If the Malaysian Government sees this rate is not suitable, new rate can be as follows:

1. RM less valued =  $RM < \text{market value}$  = RM depreciation.  
To encourage exports and discourage imports – RM depreciation makes Malaysia products relatively cheaper than foreign goods.
2. RM over-valued =  $RM > \text{market value}$  = RM appreciation.  
To discourage speculation on RM (buying and selling RM for profit)



$$\text{USD1} = \text{RM3.50} \text{ or } \text{RM1} = \text{USD0.286}$$

$$\text{USD1} = \text{RM3.00} \text{ or } \text{RM1} = \text{USD0.333}$$

$$\text{USD1} = \text{RM2.50} \text{ or } \text{RM1} = \text{USD0.400}$$

### 11.8 Floating Foreign Exchange Rate (FER)

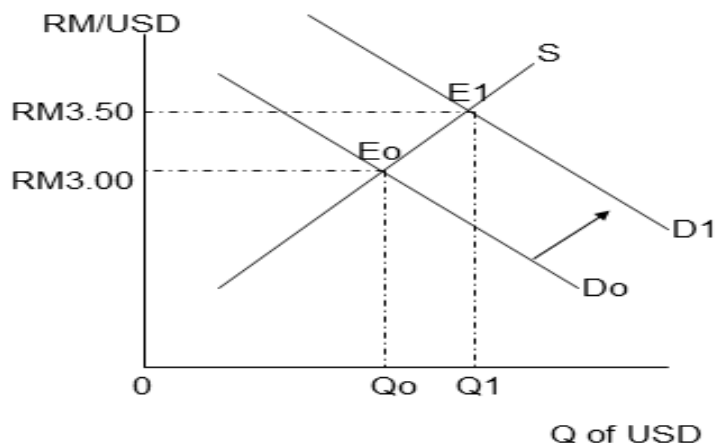
Floating FER is an exchange rate determined by the market forces.

$E_0$  = Initial equilibrium

When  $D_d$  for US goods ( $M \uparrow$ ),  $D_d$  for USD  $\uparrow$  ( $D_0$  to  $D_1$ ), USD  $\uparrow$  and RM  $\downarrow$ . *Vice Versa*.

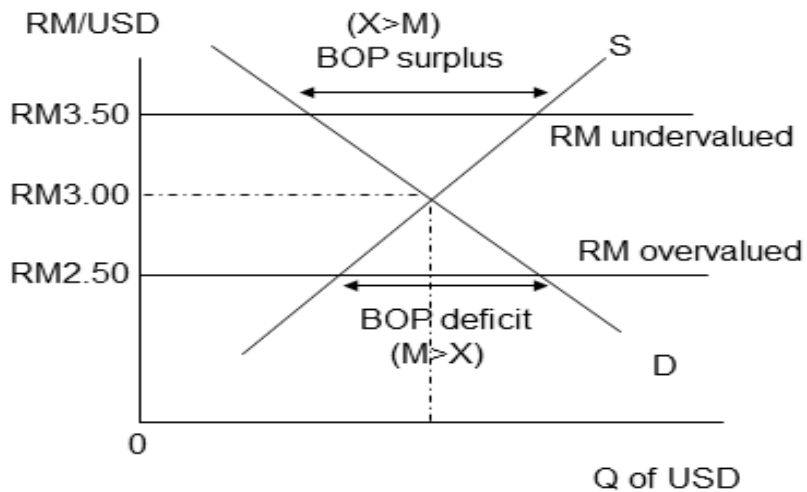
This floating FER regime creates:

- i. Economic instability
- ii. Currency speculation
- iii. High risks for exporters in importers in the long run.



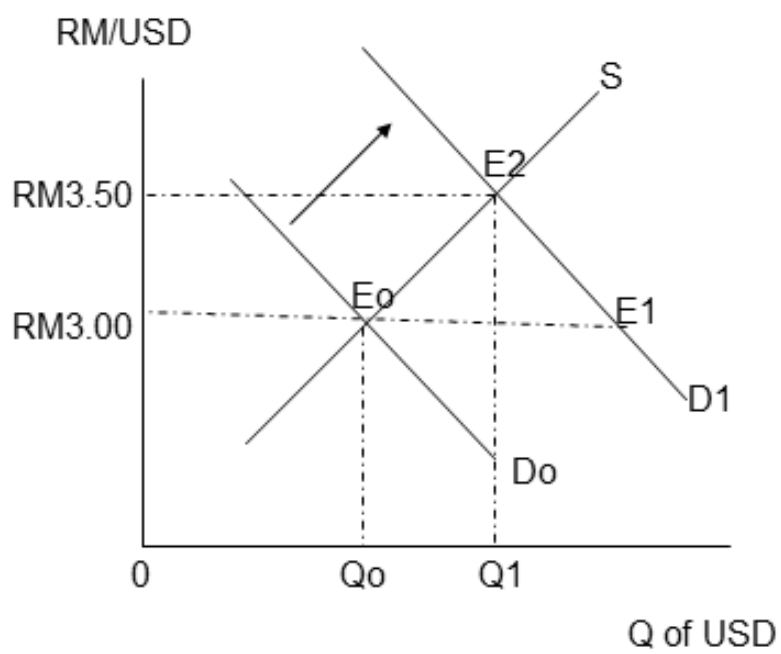
### 11.9 Effects of Fixed Foreign Exchange Rate on Balance of Payment

Fixed foreign exchange rate would not achieve equilibrium balance of payment. Based on figure 6; at USD1=RM3.50: supply of USD is greater than demand for USD ( $X > M$  for Malaysia). To fix this rate, the Government uses RM reserve to buy USD. To achieve, equilibrium, USD should decrease. In contrast, to remain at USD1=RM2.50, the Government sell USD reserve to finance the BOP deficit (imports).



### 11.10 Effects of Floating Foreign Exchange Rate on Balance of Payment

Based on figure 7;  $E_0$  is an Initial equilibrium. When Malaysian  $\uparrow M$  from US,  $D_d$  for USD  $\uparrow$  ( $D_0$  to  $D_1$ ); US BOP surplus by  $E_0 E_1$ ; USD  $\uparrow$ ; US exports more expensive;  $D_d$  for US goods drops from  $E_1$  to  $E_2$ . In contrast, RM  $\downarrow$  and Malaysia goods cheaper; US  $\uparrow M$  for Malaysia goods,  $\uparrow S_s$  of USD from  $E_0$  to  $E_2$ . New  $E_q = E_2$ . Thus, Malaysia and US BOPs are always in equilibrium between  $E_0$  and  $E_2$ .



## TUTORIAL 11

1. Describe the components of balances of payments.
2. Elaborate on how fiscal and monetary policies can be used to correct a persistent deficit in the balance of payment.
3. How do countries correct a deficit in their trade balance? Explain four measures.
4. How a currency be overvalued or undervalued? Explain your answer using an appropriate graph.

## Bibliography

Case, K.E., and Fair, R.C., Principle of Macroeconomics. 5<sup>th</sup> edition. Pearson/ Prentice Hall.

Deviga V. Karunagaran M., (2013),Principles of Economics, Oxford University Press.

Grace Lee, H.Y.,et al. (2019). Principles of Economics, SJ Learning.

Har, M.W. et al. (2016). Economics. Second Edition. SJ Learning.

Hassan, Zubair (2006); Introduction to Microeconomics. An Islamic Perspective, Pearson/ Prentice Hall.

Michael Parkin (2013); Microeconomics, 13th Edition, Addison – Wesley Publishing Company.

N. Gregory Mankiw (2007); Principles of Microeconomics, 4th Edition, Thomson South- Western, USA.

Robin Bade, Michael Parkin (2012): Essential Foundations of Economics, Prentice Hall.

Tey, H.C., et al. (2017). Fundamentals of Economics. Oxford University Press.

## ABOUT THE AUTHORS



Nur Haiza Nordin is a Senior Lecturer in Economics at Universiti Malaysia Kelantan. She receives her Bachelor degree in Banking from Universiti Utara Malaysia, Master Degree and Doctor of Philosophy (PhD) in Economics from Universiti Putra Malaysia. Dr. Nur Haiza specializes in the field of finance. Her current research interest includes health care expenditure, education, population and aging.



Nur Naddia Nordin Senior Lecturer in Economics at Universiti Malaysia Kelantan. She receives her Bachelor Degree, Master Degree and Doctor of Philosophy (PhD) in Economics from Universiti Putra Malaysia. Dr. Nur Naddia specializes in the field of finance. Her current research interest includes labour market, innovation, research and development (R&D) and foreign direct investment.



Nik Noorhazila Nik Mud is a lecturer of Economics at Faculty of Business and Entrepreneurship, Universiti Malaysia Kelantan (UMK). She obtained her Bachelor Degree and Masters Degree in Economics from Universiti Kebangsaan Malaysia with specialization in Islamic Economics. Her main research interest is risk management in Islamic banking.



