ECONOMICS TOPIC 10

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TOPIC 10: THE MACROECONOMIC ENVIRONMENT

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0 INTRODUCTION

In the final part of the course, we will be studying macroeconomic theory, problems and policy. Macroeconomics is concerned with studying the economy as a whole. A business needs to be aware of changes in the economic environment in which it operates, in order to predict the likely effects on the business and to make appropriate decisions.

The two main goals of macroeconomic policy are:

1. to ensure that key macroeconomic variables (eg inflation) are at acceptable levels
2. to create a stable economic environment in which the economy can flourish

Flourish (v.) grow, develop, thrive
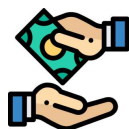
1 MACROECONOMIC OBJECTIVES

High but sustainable rate
of economic growth

Low level of unemployment

Low and stable rate of inflation

Favourable (and sustainable)
balance of payment position

1 MACROECONOMIC OBJECTIVES

The main instruments of **government policy** include:

Fiscal policy

Government spending
and taxation

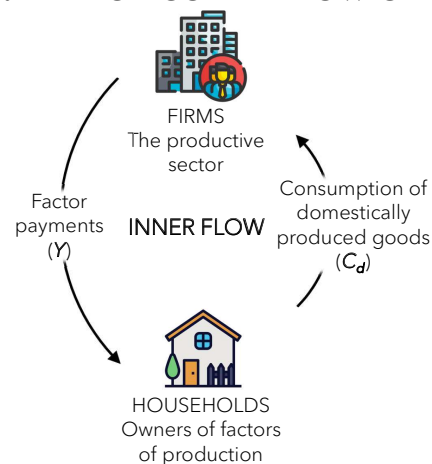**Monetary policy**

Money supply and
interest rate

Other
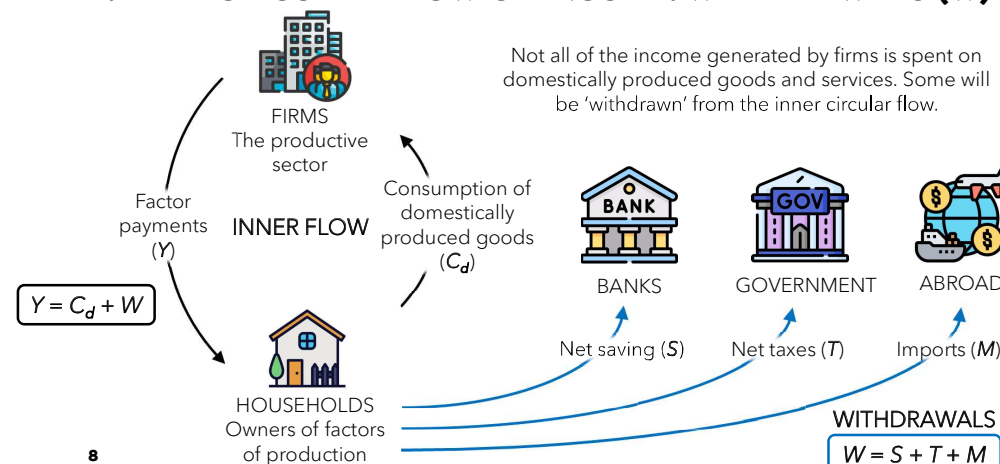
Competition policy,
import controls,
exchange rate controls

2.1 THE CIRCULAR FLOW OF INCOME: INNER FLOW

FIRMS
The productive
sector

INNER FLOW

Factor
payments
(Y)

Consumption of
domestically
produced goods
(C_d)

HOUSEHOLDS
Owners of factors
of production

The diagram shows the simplified relationship
between the various sectors in an economy.

The economy is divided into two major
groups: firms and households.

Households supply factors of production
(labour, capital, and land) to firms, and in return,
earn income (Y) from firms (in the form of wages,
interest, rent, and profit).

Households then return some of this income to
the firms when they consume domestically
produced good and services (C_d).

2.2 THE CIRCULAR FLOW OF INCOME: WITHDRAWALS (W)

FIRMS
The productive
sector

INNER FLOW

Factor
payments
(Y)

Consumption of
domestically
produced goods
(C_d)

$Y = C_d + W$

HOUSEHOLDS
Owners of factors
of production

Not all of the income generated by firms is spent on
domestically produced goods and services. Some will
be 'withdrawn' from the inner circular flow.

BANKS   GOVERNMENT   ABROAD

Net saving (S)   Net taxes (T)   Imports (M)

WITHDRAWALS

$W = S + T + M$

Apart from domestic consumers, firms receive money from other sources.

2.3 THE CIRCULAR FLOW OF INCOME: INJECTIONS (J)

INJECTIONS

$$J = I + G + X$$

FIRMS
The productive sector

Investment (I)   Government spending (G)   Exports (X)

Factor payments (Y)   INNER FLOW

Consumption of domestically produced goods (C_d)

$$Y = C_d + W$$

BANK

BANKS   GOVERNMENT   ABROAD

HOUSEHOLDS
Owners of factors of production

Net saving (S)   Net taxes (T)   Imports (M)

WITHDRAWALS

$$W = S + T + M$$
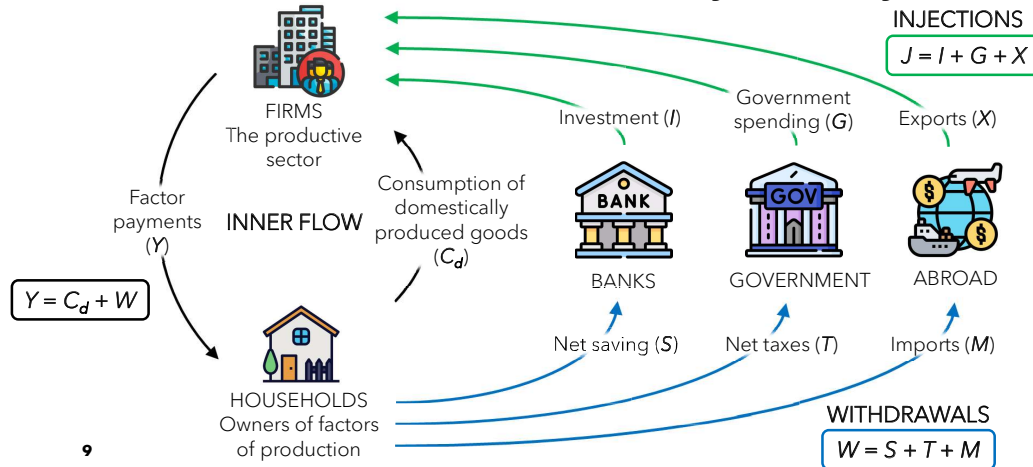
2.4 THE CIRCULAR FLOW OF INCOME: AGGREGATE DEMAND

Aggregate demand (E) is the total planned spending on goods and services made within the country.

Investment   Gov. Spending

$$E = C_d + I + G + X = C_d + J$$

Domestic consumption   Export   Injection

Alternatively, using C to denote total consumer spending (within and outside inner cycle):

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

$C_d + M$ Import

2.5 THE CIRCULAR FLOW & MACROECONOMIC OBJECTIVES

Assuming that the economy is not at full capacity, then an **increase in injections** or

a **decrease in withdrawals** will:

1. increase **national income** (or output) and therefore cause **economic growth**

2. increase **employment**

3. tend to increase **prices** and therefore cause **inflation** (the closer to full capacity, the greater the likelihood)

4. increase the **demand for imports** (as income grow) and reduce the demand for exports (as domestic inflation makes exports less competitive), so causing a deterioration in the balance of payments.

3.1 THE MEASUREMENT OF NATIONAL INCOME: GDP

Gross domestic product (GDP) is the measure of a country's output produced within a country over a 12-month period in terms of the prices actually paid. There are 3 ways of calculating GDP:

Product method	Income method	Expenditure method
Add up the "value added" of each industry. This avoids "double counting" of intermediate products.	Add up the *incomes earned before taxes*, ie wages, interest, rent and profit. Don't include transfer payments.	$GDP = C + G + I + X - M$ Do not include government spending on benefits (transfer payments).
Gross value added (GVA) at basic prices		
+ Taxes on products – Subsidies on products		

GVA is the sum of all the values added by all the industries in economy over the year. This can be either product-based or income-based measure.

3.1 THE MEASUREMENT OF NATIONAL INCOME: GDP

Product method

Add up the "value added" of each industry.

This avoids "double counting" of intermediate products.

Double counting is counting value of commodity more than once, usually through reselling.

Value added is total revenue less purchases from other firms.

UK GVA (product based measure): 2013	£m	% of GVA
Agriculture, forestry and fishing	9 937	0.7
Mining & quarrying; electricity & gas; water supply & sewerage	67 460	4.4
Manufacturing	147 697	9.7
Construction	92 363	6.1
Wholesale & retail trade; repair of motor vehicles	171 940	11.3
Hotels, restaurants & food services	43 044	2.8
Transportation; information & communication	159 424	10.5
Financial and insurance activities	122 587	8.0
Real estate	175 678	11.5
Public administration & defence	79 298	5.2
Education; human health & social work	206 336	13.5
Other services	249 540	16.4
GVA (gross value added at basic prices)	**1 525 304**	**100.0**

3.1 THE MEASUREMENT OF NATIONAL INCOME: GDP

Income method

Add up the *incomes earned before taxes*, ie wages, interest, rent and profit.

Don't include transfer payments.

Transfer payment is transferring money without goods or services exchange

UK GVA by category of income: 2013		
Compensation of employees (wages and salaries)	877 883	57.6
Operating surplus (gross profit, rent and interest of firms government and other institutions)	523 351	34.3
Mixed incomes	98 848	6.5
Tax less subsidies on production (other than those on products) plus statistical discrepancy	25 222	1.7
GVA (gross value added at basic prices)	**1 525 304**	**100.0**

UK GDP: 2013		
GVA (gross value added at basic prices)	1 525 304	
plus VAT and other taxes on products	194 735	
less Subsidies on products	−6 737	
GDP (at market prices)	**1 713 302**	

Notice that GVA for product-based and income-based method are the same.

3.1 THE MEASUREMENT OF NATIONAL INCOME: GDP

Expenditure method

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

Do not include government spending on benefits (transfer payments).

All three methods end up with the same GDP.

	£ million	% of GDP
Consumption expenditure of households and NPISH (C)	1 110 807	64.8
Government final consumption (G)	346 774	20.2
Gross capital formation (I)	291 717	17.0
Exports of goods and services (X)	511 275	29.8
less Imports of goods and services (M)	−543 375	−31.7
Statistical discrepancy	−3 896	−0.2
GDP at market prices	**1 713 302**	**100.0**

Source: *United Kingdom National Accounts* (National Statistics)

3.2 THE MEASUREMENT OF NATIONAL INCOME: OTHERS

GDP is the value of output produced domestically Some of this output is produced by foreign resources and therefore income is paid abroad. Similarly, domestic residents earn income from abroad.

Gross national income (GNY) (or gross national product) is the value of income earned by the nation's resources. So:

GNY at market prices = GDP at market prices + net income from abroad

Net national income (NNY) is the GNY allowing for depreciation (ie the decline in the value of capital equipment). So:

NNY at market prices = GNY at market prices - depreciation

3.2 THE MEASUREMENT OF NATIONAL INCOME: OTHERS

GNY at market prices = GDP at market prices + net income from abroad

NNY at market prices = GNY at market prices - depreciation

	£ million
Gross domestic product (GDP)	1 713 302
Plus net income from abroad	−13 132
Gross national income (GNY)	1 700 170
Less capital consumption (depreciation)	227 981
Net national income (NNY)	1 472 189

Source: *United Kingdom National Accounts* (National Statistics).

4.1 DETERMINATION OF NATIONAL INCOME: EQUILIBRIUM

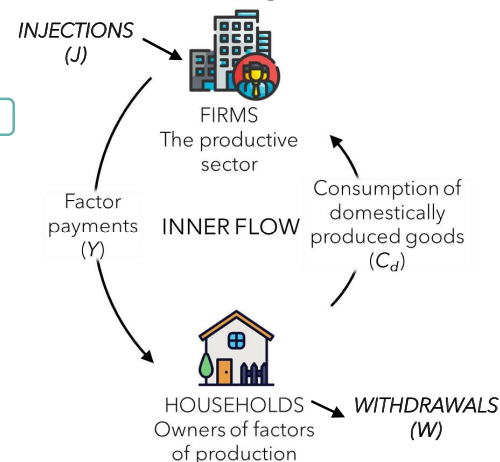The level of income (Y) will be in equilibrium when:

Planned injections (J) = Planned withdrawals (W)

and

Aggregate demand (E) = Income (Y)

It is obvious that if the amount being injected is the same as the amount leaks out, the level of income will be stable.

Similarly, if the total demand is equal to total output, the level of income will be stable.

INJECTIONS (J)

FIRMS
The productive sector

Factor payments (Y)   INNER FLOW   Consumption of domestically produced goods (C_d)

HOUSEHOLDS
Owners of factors of production   WITHDRAWALS (W)

4.1 DETERMINATION OF NATIONAL INCOME: EQUILIBRIUM

In the model, national income must always equal consumption of domestic goods plus with withdrawals:
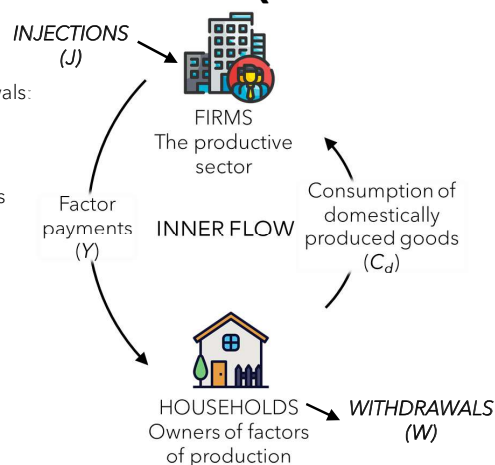
$$Y = C_d + W$$

Aggregate demand (domestic expenditure) consists of C_d plus three injections (J):

$$E = C_d + J$$

In equilibrium,

$$W = J$$
$$Y = E$$

INJECTIONS (J)

FIRMS
The productive sector

Factor payments (Y)   INNER FLOW   Consumption of domestically produced goods (C_d)

HOUSEHOLDS
Owners of factors of production   WITHDRAWALS (W)

4.1 DETERMINATION OF NATIONAL INCOME: EQUILIBRIUM

Example: Suppose we have the following information for an economy:

$$Y = 100, C_d = 0.6Y, J = 40$$

Check whether the current level of income is in equilibrium.

$W = Y - C_d$

$\quad = Y - 0.6Y$

$\quad = 0.4(100)$

$W = 40 = J$

$E = 0.6Y + J$

$\quad = 0.6(100) + 40$

$E = 100 = Y$

From above, planned injection (J) = planned withdrawal (W) AND aggregate demand (E) = income (Y)

Therefore, firm have produced the right level of output so income will stay at 100 (equilibrium).

$W = J$
$Y = E$

$J = I + G + X$
$W = S + T + M$
$Y = C_d + W$
$E = C_d + J$

4.2 THE KEYNESIAN 45° LINE DIAGRAM

E, C_d, J, W

$Y = C_d + W$

$E = C_d + J$
$= 0.6Y + 40$

45°

$Y_e = 100$

GDP (Y)

Keynes suggests "equilibrium national income is determined by aggregate demand."

The 45° line plots $C_d + W$ against real GDP (Y).
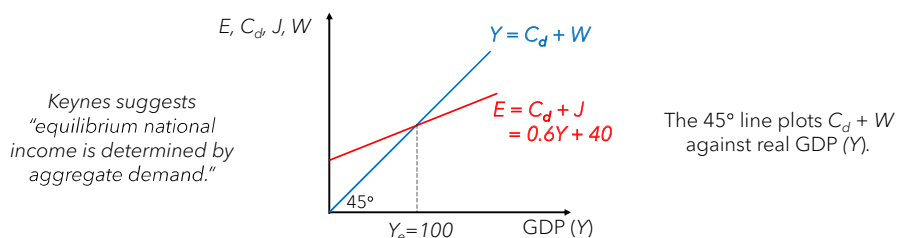
Aggregate expenditure (E) increases with income because C_d is assumed to increase with income, while injection (J) is assumed to be independent of income.

We can see that the equilibrium level of income occurs where the two lines cross, *ie* where $Y = E$ and $J = W$. In this case, at $Y = 100$.

4.3 RESTORING EQUILIBRIUM

- Whenever aggregate demand (expenditure) $(E = C_d + J)$ exceeds incomes $(Y = C_d + W)$, injections exceed withdrawals $(J > W)$.
- Firms will response by producing more and hence employing more factors of production.
- Income (Y) will rise, so too will savings, taxes, and imports.
- Withdrawals will rise to match the increase in injections until equilibrium is restored and national income (GDP) and employment will stop rising.

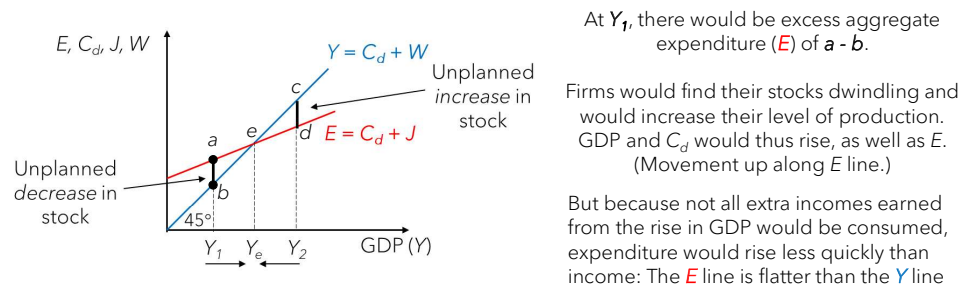$$J > W \rightarrow Y\uparrow \rightarrow W\uparrow \text{ until } J = W$$

- Similarly, if withdrawals exceed injections, this will lead to multiplied fall in GDP and employment:

$$J < W \rightarrow Y\downarrow \rightarrow W\downarrow \text{ until } J = W$$

4.3 RESTORING EQUILIBRIUM

Example: What would happen if income were below the equilibrium $Y_1 < Y_e$?
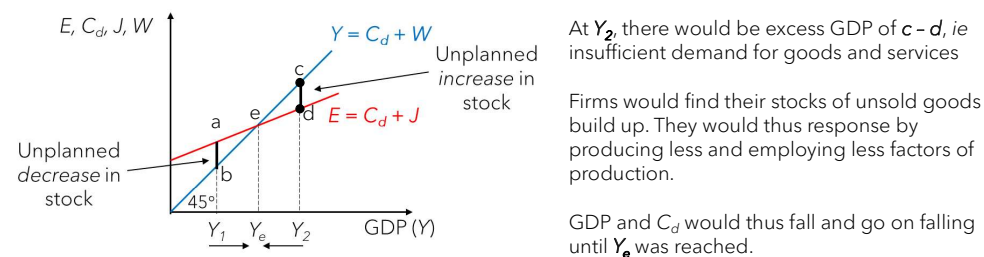
E, C_d, J, W

$Y = C_d + W$

Unplanned *increase* in stock

$E = C_d + J$

Unplanned *decrease* in stock

45°

Y_1 Y_e Y_2

GDP (Y)

At Y_1, there would be excess aggregate expenditure (E) of a - b.

Firms would find their stocks dwindling and would increase their level of production. GDP and C_d would thus rise, as well as E. (Movement up along E line.)

But because not all extra incomes earned from the rise in GDP would be consumed, expenditure would rise less quickly than income: The E line is flatter than the Y line

As income rises toward Y_e, the gap between the Y and E lines gets smaller. Once point $Y = E$ is reached. There is then no further tendency for GDP to rise.

4.3 RESTORING EQUILIBRIUM

Example: What would happen if income were above the equilibrium $Y_2 > Y_e$?

E, C_d, J, W

$Y = C_d + W$

Unplanned *increase* in stock

$E = C_d + J$

Unplanned *decrease* in stock

45°

Y_1 Y_e Y_2

GDP (Y)

At Y_2, there would be excess GDP of c – d, *ie* insufficient demand for goods and services

Firms would find their stocks of unsold goods build up. They would thus response by producing less and employing less factors of production.

GDP and C_d would thus fall and go on falling until Y_e was reached.

4.4 CHANGES IN EQUILIBRIUM NATIONAL INCOME

Previously, we saw that an increase injections will cause national income to increase. Let us look at this in more detail with the use of previous example.

Example: Suppose we have the following information for an economy:

$Y = 100$, $C_d = 0.6Y$, $J = 40$

Imagine what would happen if injections increase from 40 to 50.

INJECTIONS
$J = 50$

FIRMS

Y

$C_d = 0.6Y$

HOUSEHOLDS

WITHDRAWALS
$W = Y - C_d = 0.4Y$
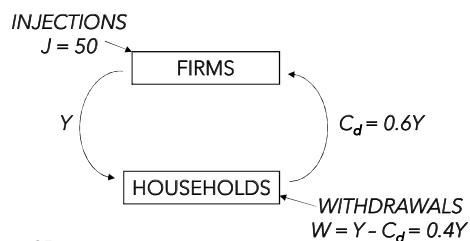
Answer: Aggregate demand will rise, firms will produce more and income will rise.

As income rise, consumption and withdrawals will also rise.

The level of income will increase until a new equilibrium is reached where $W = 50$, ie when income reaches 50/0.4 = 125.

25

4.4 CHANGES IN EQUILIBRIUM NATIONAL INCOME

Example: Suppose we have the following information for an economy:

$Y = 100$, $C_d = 0.6Y$, $J = 40$

Using the 45° diagram, imagine what would happen if injections increase from 40 to 50.

E, C_d, J, W

$Y = C_d + W$

$E_2 = C_d + J_2 = 0.6Y + 50$

$E_1 = C_d + J_1 = 0.6Y + 40$

45°

$Y_{e1} = 100$ $Y_{e2} = 125$

GDP (Y)
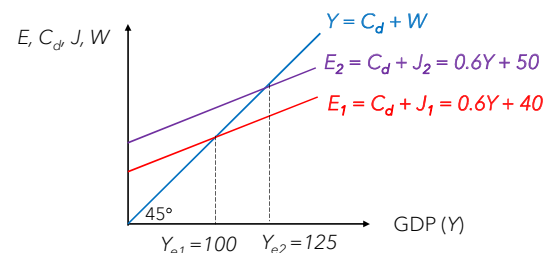
We can conclude that:

- Income will rise if injections increase and/or withdrawals decrease;
- Income will fall if injection decrease and/or withdrawals increase.

26   We will now consider by *how much* income will change when injections or withdrawals change.

4.5 THE MULTIPLIER

A *multiplier effect* is when a change in injections leads to greater absolute change in income. This is an example of the **principle of cumulative causation,** which states that an initial change can cause a much larger ultimate change.

In previous example, if J and E increase by 10, GDP (Y) increases by 25. In this case, the multiplier is 2.5. The size of the multiplier (k) is given by:

$$k = \frac{\Delta GDP}{\Delta E} = \frac{\Delta Y}{\Delta J}$$

Why does income increase by more than the initial injection?

27

4.5 THE MULTIPLIER

Why does income increase by more than the initial injection?

- Increase in injections causes increase in income
- However, part of that increase in income will be spent domestically and will therefore cause further increases in aggregate demand and hence output and income.
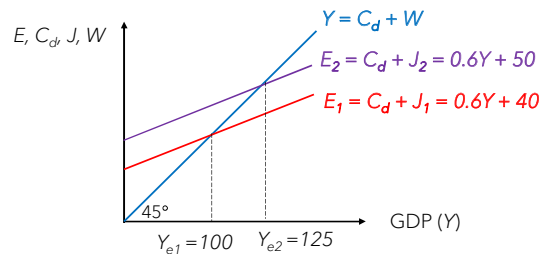
$J\uparrow$

FIRMS

$Y\uparrow$
$Y\uparrow$

$C_d\uparrow$

HOUSEHOLDS

W

The usual formula for k is given by:

$$k = \frac{1}{1 - mpc_d}$$

mpc_d is the **marginal propensity to consume domestically produced goods**, *ie* the proportion of any increase in income that is spent on domestically produced goods:

$$mpc_d = \frac{\Delta C_d}{\Delta GDP} = \frac{\Delta C_d}{\Delta Y}$$

28

4.4 THE MULTIPLIER

$$k = \frac{\Delta GDP}{\Delta E} = \frac{\Delta Y}{\Delta J}$$

$$k = \frac{1}{1 - mpc_d}$$

$$mpc_d = \frac{\Delta C_d}{\Delta GDP} = \frac{\Delta C_d}{\Delta Y}$$

From the previous example, $mpc_d = 0.6$, therefore $k = \frac{1}{1 - 0.6} = 2.5$

Notice that mpc_d is the slope of the E line.

Thus, the *higher* the mpc_d, the *higher* the multiplier.

5.1 ECONOMIC GROWTH: ACTUAL AND POTENTIAL GROWTH

Actual growth rate	Potential growth rate
the % increase in output over a 12-month period, ie the rate of growth of actual output	the % annual increase in the economy's *potential* output, *ie* productive capacity

Potential output is the output that could be produced when the economy is operating at its normal level of capacity utilization. This is less than the **full-capacity output**, which is the absolute maximum that could be produced.

Two major objectives of government are:
1. to ensure actual output is as clos as possible to potential output in the short run
2. to create an environment that encourage long-term growth in potential output.

5.2 ACTUAL GROWTH AND BUSINESS CYCLE

The economy's potential output tends to grow quite steadily, but actual output sometimes grown more quickly and at other times more slowly than the trend of potential output. This is the known as the **business cycle** or **trade cycle.**

The 4 phases of the business cycle are:

1. the *upturn*

2. the *rapid expansion*

3. the *peaking out*

4. the *slowdown, recession* or *slump*
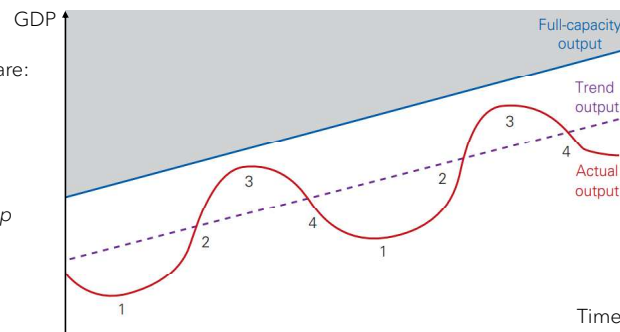
5.3 POLICIES FOR GROWTH

Demand-side policies	Supply-side policies
Ensure sufficient aggregate demand to attain potential output and to encourage investment. This can be done by increasing government spending, reducing tax, and reducing interest rate.	Increase potential output (aggregate supply) by encouraging research and development, innovation, and training. Tax incentives could also be introduced, as well as improving transportation.

You might want to revisit Topic 1.

6 UNEMPLOYMENT

The **unemployed** are those people of working age without jobs, who are available for work at the current wage rates. The unemployed, together with the employed, make up the **labour force**. The **unemployment rate** is:

$$\frac{\text{number unemployed}}{\text{labour force}}$$

The **costs** of unemployment include:
- the financial and personal cost to the unemployed
- the personal cost to the family and friends of the unemployed
- the worsening of the government's budgetary (or fiscal) position
- the lost services or investment the government could have provided
- the under utilization of nation's resources, resulting in actual output < potential output
- the long-term effect of unemployed resources on the productive capacity of the nation (*ie* the potential output could fall).

6.1 THE LABOUR MARKET MODEL
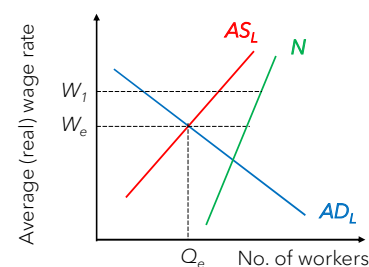
The **aggregate demand for labour** (AD_L) shows the total demand for labour at different wage rates.

The **aggregate supply of labour** (AS_L) shows the number of people willing and able to accept jobs at each wage rate

The **registered labour force** (N) state more people are willing to enter the labour force at higher wage rates.

The difference between the N and AS_L schedules represents the number of people who are in the labour force, but who are not immediately willing or able to accept a job at the current wage rate.

6.1 THE LABOUR MARKET MODEL: EQUILIBRIUM
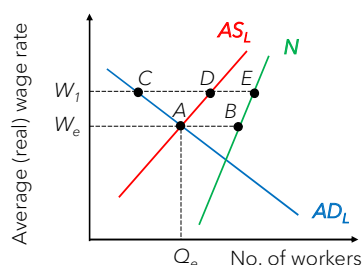
The labour market is in **equilibrium** with a real wage W_e and an equilibrium level of employment Q_e (*ie* when $AD_L = AS_L$).

At the real wage W_e, the **equilibrium level of unemployment** is denoted by the distance $B - A$.

If wages are held above the equilibrium at a wage of W_1, then total unemployment will be $E - C$.

$E - D$ consists of those workers who are not willing or able to accept a job at W_1

$D - C$ is a result of excess supply of labour or **disequilibrium unemployment**.

6.2 CAUSES OF UNEMPLOYMENT

Equilibrium unemployment
The main reasons for a divergence between the N and AS_L curves are:

1. **Frictional (search)** — unemployment resulting from *imperfect information* about labour market, *ie* both employers and employees take time to search for the right person

2. **Structural** — unemployment caused by a change in the structure of the industry, *ie* changes in demand or methods of production.

3. **Technological** — unemployment resulting from the introduction of labour-saving technology, *ie* Artificial Intelligence, robotics, machinery

4. **Regional** — structural unemployment that affects the particular region

5. **Seasonal** — unemployment caused by a decrease in the demand for labour at particular times of the year

6.2 CAUSES OF UNEMPLOYMENT

Disequilibrium unemployment
There are two main conditions for disequilibrium unemployment:

1. Aggregate supply for labour > Aggregate demand for labour
2. The real wage is "sticky".

There are therefore three main causes of disequilibrium unemployment:

1. **Demand-deficient (or cyclical)**   unemployment caused by a fall in aggregate demand (with no corresponding fall in the real wage rate). This occurs in a recession.

2. **Real-wage unemployment**   unemployment caused by inflexible wages (trade union power, minimum wage legislation or fixed wage contracts.

3. **Growth in the labour supply**

6.3 POLICIES FOR UNEMPLOYMENT

Supply-side policies for equilibrium unemployment

1. Improving information about job opportunities
2. Retraining
3. Relocation incentives to combat occupational and regional immobility

Disequilibrium unemployment

1. Fiscal and monetary demand-side policies to increase aggregate demand
   - Fiscal (taxes and government spending)
   - Monetary (interest rates and money supply)
2. Supply-side policies to increase the flexibility of the labour market.

7 INFLATION

The **rate of inflation** is the % increase in prices over a 12-month period.

A broader measure of inflation is the **GDP deflator.** This is the price index of all final domestically produced goods and services, *ie* all items that contribute towards GDP.
It is called a "deflator" because it is used to deflate "nominal GDP" into "real GDP", *ie* remove the effect of inflation.

$$\text{GDP deflator} = (\text{Nominal GDP} / \text{Real GDP}) \times 100$$

7.1 INFLATION: COSTS AND BENEFITS

1. **Menu costs**, ie the costs of changing menus, catalogues and vending machines.

2. **Mental arithmetic**, ie the difficulties of comparing prices over time; and the problem of confusing **nominal** figures (those using current prices) with **real** figures (those adjusted for inflation)

3. **Redistributional effects** between savers and borrowers, or strong and weak bargaining positions.

4. **Uncertainty** will make firms more cautious and reduce the rate of economic growth

5. **Balance of payments** as exports become less competitive and imports are more competitive

6. **Greater need for resources in financial services** to cope with uncertainty

7. **Hyperinflation** causes dramatic reduction in savings, investment, and national currency value, eg Zimbabwe and Venezuela

Benefit: since wages are often "sticky" downwards, a relatively modest rate of inflation could have the advantage of allowing real wages to fall.

7.1 INFLATION: HYPERINFLATION

Hyperinflation in Zimbabwe (2008) with inflation of 1000% caused the prices to double every 24 hours.

7.2 DEFLATION

Deflation is a fall in the general level of prices. It has been a problem for Japan over the last twenty years, and was concern for many countries as a result of the recession in 2008-9.

Although consumers generally welcome falling prices, deflation can be a problem because
- companies are **unable to increase prices** following any increase in costs
- consumers **delay purchasing** in the hope that prices will fall further
- the value of **debt increases** in real terms, so bankruptcies increase and consumption and investment decrease further.

7.3 THE AD-AS MODEL: EXPLAINED

The aggregate demand curve (AD) shows how much national output (real GDP) will be demanded at each level of prices (GDP deflator). AD curve slope downwards, suggesting people demand fewer products as price rise because:
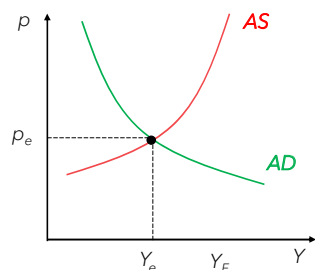

1. **International substitution effect**. If prices rise, C_d and X will fall, while M will rise (as they are relatively cheaper).

2. **Inter-temporal substitution effect.** As price rise, people are going to 'borrow' (loans, mortgages, use of credit cards), which drives up interest rates. A higher interest rates will discourage buyers and encourage saving.

3. **Real balance effect**. If prices rise, the real value of people's savings will fall. They may thus save more (and spend less) to compensate.

The aggregate supply curve (AS) slopes upwards, suggesting the higher the prices, the more will be produced. Provided that factor prices do not rise as rapidly as product prices, firms' profitability will be higher than before, encouraging them to produce more.

7.3 THE AD-AS MODEL: EQUILIBRIUM
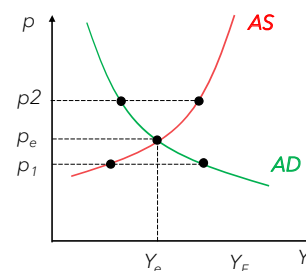
The equilibrium price level will be where aggregate demand (AD) equals aggregate supply (AS).

At p_1, the resulting shortages throughout the economy would drive up prices. This would cause a movement up along both curves until AD = AS (at p_e).

At p_2, the resulting surpluses throughout the economy would drop prices. This would cause a movement down along both curves until AD = AS (at p_e).

There will be an ultimate limit on the amount of output that can be produced, given the capacity of the economy. This is the full-capacity output YF

7.4 CAUSES OF INFLATION

Demand-pull inflation is caused by a persistent increase in the level of aggregate demand.
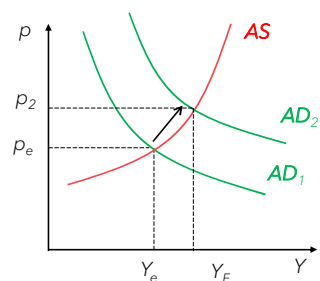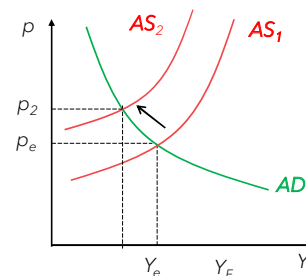

Firms respond to the increase in aggregate demand by increasing prices and increasing output, which makes it closer to full capacity, ie the less elastic (steeper) AS curve.

Demand-pull is associated with a boom in the economy.

7.4 CAUSES OF INFLATION

Cost-push inflation is caused by a persistent increase in costs independent of the level of aggregate demand, eg increases in wages or raw materials costs.

Firms respond to the increase in costs by increasing prices. This causes a reduction in aggregate demand so firms reduce output.

Cost-push inflation is associated with a slump in the economy.

7.5 POLICIES FOR INFLATION

- Fiscal and monetary demand-side policies to decrease aggregate demand
- Supply-side policies to reduce cost-push pressures and increase productivity.
- Inflation targeting to reduce expectations.