[1] Measuring economic activity and illustrating its variations

1. National income accounting as a measure of economic activity
2. The equivalence if the income, output and expenditure approaches to national income accounting, with reference to the circular flow model
3. A circular flow of income model diagram to show the interactions between decision makers, leakages and injections
4. Nominal gross domestic products as a measure of national output
5. Nominal GDP from sets of national income data, using the expenditure approach
6. Nominal GNI from data
7. The difference between real GDP and real GNI
8. Real GDP and real GNI using price deflator
9. Difference between real GDP/GNI per capita at purchasing power parity(PPP)
10. Real GDP per capita and real GNI per capita
11. The business cycle, including reference to short-term fluctuations and the long-term growth trend
12. A business cycle diagram to show short term fluctuations and the long-term growth trend
13. The appropriateness of using GDP or GNI statistics to measure economic well-being
14. Alternative measures of well-being: OECD better life index, Happiness index and Happy planet index

[1.1] National income accounting as a measure of economic activity

Macroeconomic have 4 major objects:

1. Steady rate of increase in national income, the **economic growth**
2. Low and sustainable rate of **unemployment**
3. Low and stable rate of **inflation**, the **price stability**
4. Sustainable level of **government** and **national debt**

National income is used to measure the **level of economic activity** in the economy. It refers to the money value of all the goods and services produced in a country during a year. It is usually measured with **Gross Domestic Product**(GDP).

[1.2] Measure of calculating GDP

Output method(National output(O)): Measuring the actual value of all **final goods/services** produced by the economy annually. It avoids double counting as it only refers to the final output.

Disadvantages: It is very difficult to measure output of economics where large amounts of informal economics activity take place

Income method(National income(Y)): Calculate the value of all factor income earned in the economy.

1. Wages and salaries - labor
2. Rent - land
3. Interest - capital
4. Profits - Enterprise

Disadvantages: It is very easy to hide expense if there is a high degree of corruption

Expenditure method(National expenditure(E)): The total value of all spending on goods and services in the economy. (Total spending on newly produced good and services during the year), comprising Consumption(**C**), Investment(**I**), Government(**G**) and exports(**X-M**):

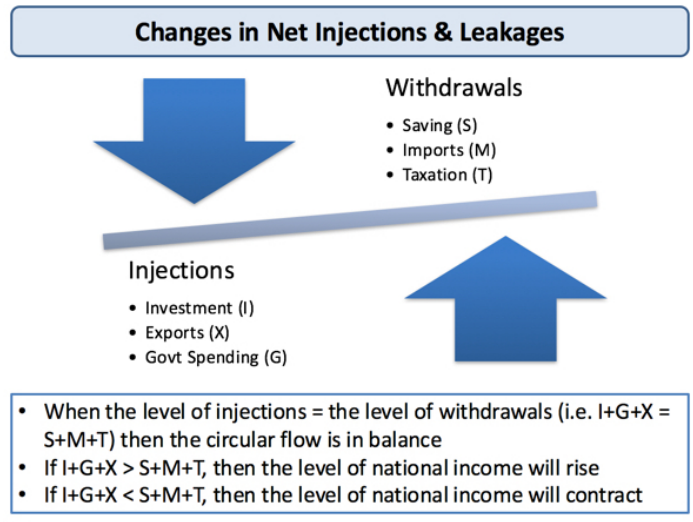
1. **C** - Spending by individuals and households on goods and services, the largest component of national expenditure
2. **I** - Spending by firms within the economy to increase their capital stock and production capacity. This refers to **gross fixed capital formation**.
3. **G** - Spending of the public sector
4. **(X - M)** - Difference between the export earning and the import expenditure

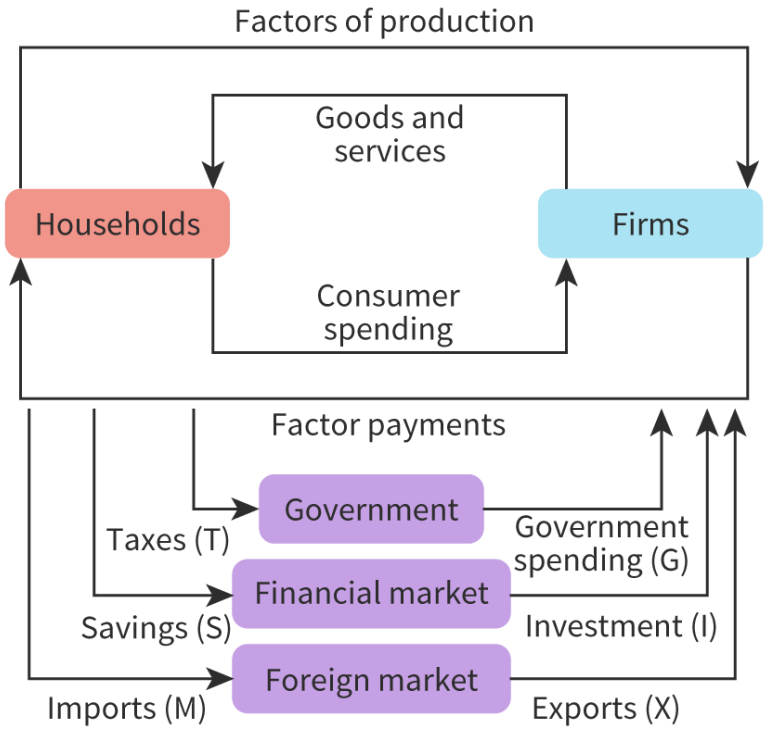
Equilibrium: Expenditure = Income = Output

- It is true is circular flow model, however there may be difficulties in measurement.

In theory, the value collected by these methods should be the same, such that **O = E = Y**. However, due to the inaccuracy of data collection, there would be some degree of variation in result.

[1.3] Circular flow model





The level of economic activity depends on the relative size of injection(J) and withdrawals(W)
Injection = G + I + X, Leakage = T + S + M.

Injections and withdrawals are considered for measuring the **national income data**, or, the **Gross Domestic Product**, GDP.

Domestic and national product:

Gross Domestic Product	Gross National Product	Gross National Income
Value of national output produced in a country 1. National income 2. National output 3. National expenditure	GNP = GDP + net property income from abroad	Similar to GNP - Sum value of output by resident producers + net receipts of primary income from abroad + any product taxes(less subsidy) not included in the valuation of output
Includes income of foreign multinationals	Excludes income earned by multinational when profit is sent back to other country	A country which earns positive net income on FDI(Foreign direct investment) will include of GNI, but not GDP
Include incomes of everyone in the country.	Subtract the income of foreigners, including the profit of all citizens, including the ones living outside the country.	

Advantage of GDP	Disadvantage of GDP
Allows comparison across country	Overestimate the quality of life
Informs policy makers	Does not account for disparity in income distribution
Gives an indication of average income	Contains inaccuracy
	Does not account for improvements in quality of output.

Nominal GDP:
Nominal GDP is directly calculated through the circular flow. It is possible to use the total expenditure method (C+I+G+(X-M)) directly. Or income method and output method.

Factor income:
Factor income is **the flow of income that is derived from the factors of production**—the general inputs required to produce goods and services.

$$Factor\ Income\ =\ C\ +\ S\ +\ (T\ -\ B)$$

Factor income are spent on: consumption(C), Savings(S), Paying taxes net of benefits(T-B)

GNI:
Takes into account wages and salaries, rent, interest, self-employed income and adds up to make total domestic income, and adds up to make total domestic income.

Real GDP:
Real GDP applies price deflator to reduce the effect of inflation.

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

$$Real\ GNI\ =\ \frac{Nominal\ GNI}{Price\ deflator}\times 100$$

Real GDP/GNI per capita:

$$Real\ GNI\ per\ capita\ =\ \frac{Real\ GNI}{Population\ size}$$

$$Real\ GDP\ per\ capita\ =\ \frac{Real\ GDP}{Population\ size}$$

Real GDP and GNI take the population size into account, demonstrating the **average living standard** for the citizens in a country.

Purchasing Power Parity(PPP):
Purchasing power parity refers to measuring the prices for goods and services in different locations. Meaning that it **equalized** the purchasing power of two currencies by considering the differences in the cost of **living** and **inflation**.

- Purchasing power parity (PPP) is a popular metric used by macroeconomic analysis that compares different countries' currencies through a "basket of goods" approach.
- Purchasing power parity (PPP) allows for economists to compare economic productivity and standards of living between countries.

- Some countries adjust their gross domestic product (GDP) figures to reflect PPP.

PPP adjusted exchange rate:

- The PPP is not necessarily the current exchange rate. When both do not align, it means that one of the currencies is over or undervalued.
- PPP adjusted exchange rates enable economists to see if a currency is under or overvalued.

Relative purchasing power parity:

Formula: Purchasing power is the power of money expressed by the number of goods or services that one unit can buy, and which can be reduced by inflation. RPPP suggests that countries with higher rates of inflation will have a devalued currency.

- Relative purchasing power parity (RPPP) is an economic theory that states that exchange rates and inflation rates (price levels) in two countries should equal out over time.
- Relative PPP is an extension of absolute PPP in that it is a dynamic (as opposed to static) version of PPP.
- While PPP is useful in understanding macroeconomics in theory, in practice RPPP does not seem to hold true over short time horizons.

PPP adjusted exchange rate:

$$S = \frac{P_1}{P_2}$$

S: Exchange rate of currency 1 to currency 2

P_1: Cost of goods in currency 1

P_2: Cost of goods in currency 2

Nominal GDP is significantly different from PPP adjusted GDP:

For **developing countries**, there tends to be a higher difference between Nominal GDP and PPP adjusted GDP. Because things in developing countries are relatively cheaper, although nominal GDP is low, buying force may still be high.

Business cycle/Trade cycle:

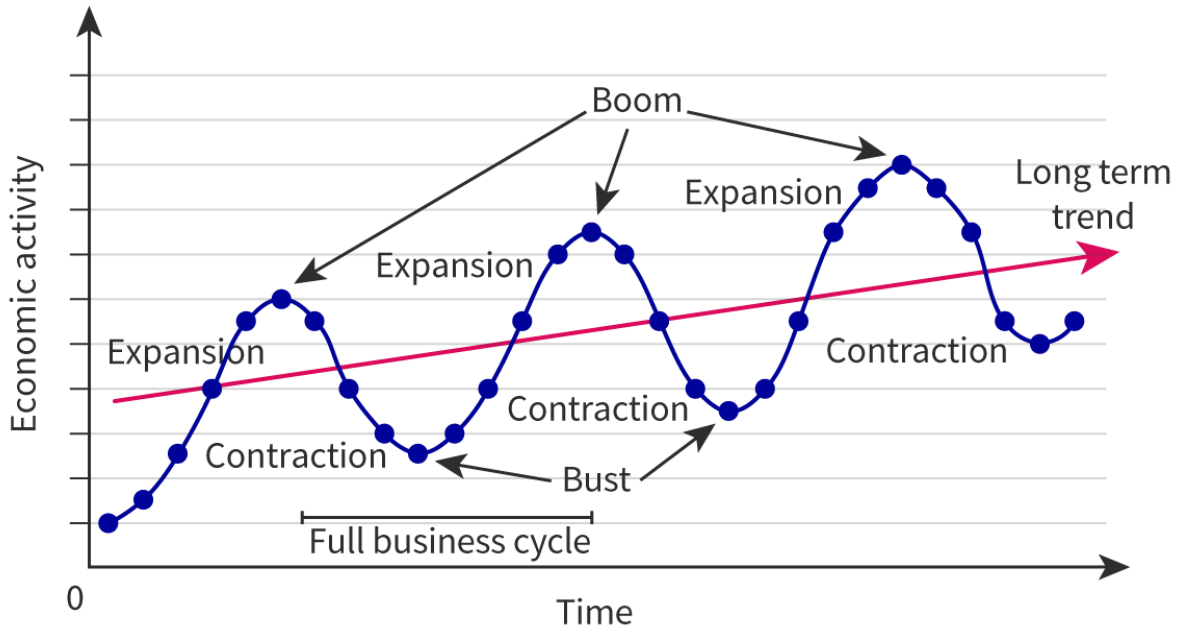
Business cycle describes the **fluctuations** in the level of **economic activity** in a country over time. Its y-axis is usually **Real GDP** or **economic activity level**.

Business cycle contains 4 different phases:

1. An expansionary phase
2. A peak phase
3. A contractionary phase
4. A trough

Boom/expansionary phase	**Peak**	**Recession**/Contraction phrase	**Slump**/trough	**Recovery**
Level of economic activity raises	Economic activity is at its **highest level**.	Fall in GDP for **two consecutive quarters**.	Bottom of recession in the business cycle	Start to rise after Trough in business cycle

Increase in any components of **aggregate demand**.	Low unemployment	Negative economic growth	All components of **aggregate demand** stays low	Consumption, investment and exports gradually rise
General price level rise	High level of business and consumer confidence	Cause business failures, increase in unemployment, and reducing consumer confidence level.	Massive **Cyclical unemployment** across economy	Leads to economic growth and employment opportunities



Economies can raise or fall below potential, creating a positive or negative **output gap**.
However, it is hard to measure economic potential. It is usually considered as the peak point of GDP growth.

The final point to learn about the business cycle is how to distinguish between a decrease in GDP and a decrease in GDP growth rate. A decrease in GDP is a fall in economic output, or a **recession** if occurring for longer than two quarters. A decrease in GDP growth rate means that there is an increase in GDP but at a slower rate than previous quarters or years.

OECD Better Life Index(BLI):

Another alternative to GDP is the OECD Better Life Index (BLI). The BLI measures 11 indicators across 35 countries which are members of the Organization for Economic Cooperation and Development, or OECD. These variables are:

1. Housing
2. Income
3. Jobs
4. Community
5. Education
6. Environment

7. Civic Engagement
8. Health
9. Life satisfaction
10. Safety
11. Work-life balance

Happy Planet Index:

$$\frac{Life\ expectancy \times Experienced\ well\text{—}being \times Inequality\ of\ outcomes}{ecological\ footprint}$$

HPI considers the inequality that BLI does not consider.
It scales from **1 to 10**

Potential national output(potential real GDP):
Potential real GDP refers to the highest level of real gross domestic product that can be **sustained** over the long-term, which can be shown by the business cycle.

Business cycle can be disturb by several factors:
This includes:

1. Infectious disease
2. Natural disasters
3. Global financial crisis
4. ...

Green GDP:
Green GDP accounts for environmental destruction of economic activity by deducting the environmental costs associated with the output of goods and services.

$$Green\ GDP\ = Nominal\ GDP\ -\ Environmental\ costs$$

[2] Aggregate demand and supply

Aggregate demand:

Aggregate demand is the total demand for goods and services produced for an economy. It includes the **same quantity** as GDP,

- Gross domestic product, or GDP is used as a measure for the size of an economy based on the monetary value of all finished goods and services made within a country during a specific period.
- Aggregate demand refers to the total amount of money exchanged for those finished goods and services at a specific price level and period of time.
- Both measures are utilized by macroeconomics, although their usefulness in practice has been called into question by some critics.

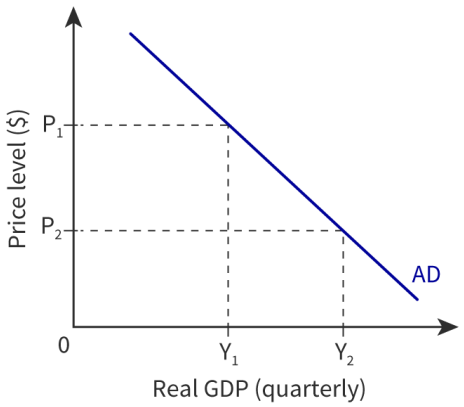
1. Quantitatively, aggregate demand and GDP is the same.
2. Aggregate demand only equals GDP in the long run after adjusting for the price level.
    a. Short-run aggregate demand measures total output for a single nominal price level
    b. Nominal is not adjusted for inflation.

Price level:
Price level is the average of current prices across the entire spectrum of goods and services produced in an economy

- Price levels are expressed in small ranges or as discrete values such as dollar figures.

- Price levels are leading indicators in the economy; rising prices indicate higher demand leading to inflation while declining prices indicate lower demand or deflation.

Aggregate demand curve:
Increase in price level causes the decrease in aggregate demand.



Underlying theory
1. **The Pigou wealth effect**: As the average price level falls, the wealth of participants in the economy increases in real terms as their **ability to purchase goods and services improves**. The real value of assets, like property or stock, is now higher. 2. **Keynes's interest rate effect**: At lower price levels, interest rates are lower too, giving people more disposable income to spend and with which to demand higher volumes of output. The incentive to save is also lower. 3. **The net balance effect/Mundell-fleming's exchange rate effect**: A lower price level and interest rate makes goods and services relatively cheaper for foreign countries to buy. Therefore, the **demand for exports rises** and the **demand for imports from abroad falls**, increasing the net trade balance and leaving it in an overall better position.

- The diminishing marginal utility does not apply in macroeconomy.

Determinants of aggregate demand:
Consumption(C):
CIWILE

1. **C - Consumer confidence**: Higher the consumer confidence, the more they will consume.
2. **I - Interest rates**: Interest rate refers to the price of the money, in terms of **the cost of borrowing and return** for saving money.
3. **W - Wealth**: Increased wealth of households will increase the consumption level.
4. **I - Income taxes**: Reduction of income tax will stimulate consumption
5. **L - Level of household indebtedness**: Lower level of household indebtedness will shift the AD curve to the right.
6. **E - Expectations of future price level**: If households expect the price level to increase in the future, they will tend to increase consumption today, increasing the AD curve. Especially for not perishable by storable products.

Investment(I):
LIBBT

1. **L - Level of corporate indebtedness**: Indebtedness tends to increase during periods of rising interest rates. Lower corporate indebtedness will shift the AD curve to the right.
2. **I - Interest rate**: Low interest rate encourages firms to borrow money for financing their growth, increasing the investment expenditure.

3. **B - Business Taxes**: Lower the rate of business taxes in the economy, the more attractive investment becomes, because firms are more likely to be able to earn a return on their investment.
4. **B - Business confidence**: Greater the level of business confidence in the economy, the higher the level of investment will be.
5. **T - Technology**: Technological improvement will tend to boost the level of investment expenditure.

Government spending(G):

PE

1. **Political priority**: Depending on a particular measure(e.g increase expenditure), the aggregate demand may increase or decrease.
2. **Economic priorities**: Some particular intervention will boost the level of aggregate demand.

Net Export(X-M):

TIE

1. **T - Trade policy:** Regulate or liberalize international trade. Administrative barriers and tariffs will cause the price of import to rise, reducing the demand to foreign goods. Therefore increasing aggregate demand.
2. **I - Income of trading partners**: Decrease of income of trading partners reduces the aggregate demand by reducing the level of export.
3. **E - Exchange rates**: Countries' price of currency in terms of the currency of its trading partners. Higher exchange rate tends to increase demand for imports, reduce the demand for export, and reduce aggregate demand.

Aggregate supply:

Aggregate demand is considered in both long term and short term. It is the amount of output of goods and services that firms within an economy are willing and able to supply at a **given time** and at an **overall price level**.

Short term aggregate supply(SRAS):

The SRAS curve shows the total planned national output at different price levels, holding productivity and cost of factor input as **CONSTANT**. (Wage rate and state of technology are assumed to be fixed)

SRAS is **upward sloping**, this is because:

1. Higher prices attract more firms in the economy to raise their output level.
2. SRAS is relatively price elastic in the short run as firms can increase output by getting employees to work over time.

Determinants of SRAS:

Cost of factors of production:

LERIB

1. **L - Labor costs**: Wages and salaries account for a significant proportion of costs for most firms. Higher labor costs will reduce the level of production in the short run owing to higher production costs for firms.
2. **E - Exchange rate**: A rise in the exchange rate (currency appreciation) means that domestic firms can buy imports at a lower price. Appreciation helps to reduce their cost of production(increasing purchasing power), thus **increasing aggregate supply.** However, it will make exports **less competitive**.
3. **R - Raw material costs**: Increase in the cost of raw materials or components will increase the cost of production for all firms in the industry or even across the economy.
4. **I - Interest Rate**: Firms with existing borrowing will have fewer funds to invest if interest rates increase. Thus, higher interest rates will decrease the aggregate supply.
5. **B - Bureaucracy and administration**: Strict legal procedures and policies mean that firms have to comply with rigorous and complicated **bureaucratic and administrative** matters. Increased levels of bureaucracy and administration costs will tend to reduce SRAS.

Indirect taxes:

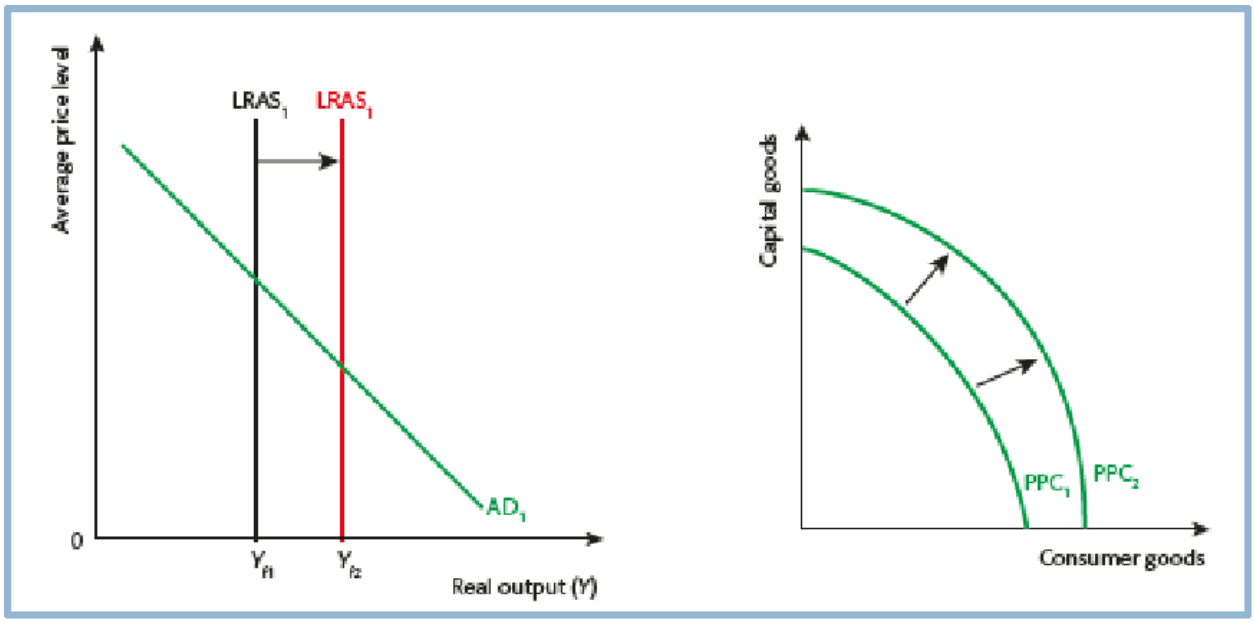
Most countries have a Value **Added Tax**(VAT) or a **Goods and Services Tax(**GST**)**, on consumption or expenditure. Although the producer may pass the tax on consumers, their **profitability** will reduce. Causing the decrease in SRAS.

Adverse supply-side shocks:

Adverse supply-side shocks(an event that causes unexpected increase in cost or disruption to production) may also decrease the supply, causing higher prices(inflation) and lower nation output.

Long run aggregate supply:

Monetarist/new classical view of the long run aggregate supply curve(LRAS):

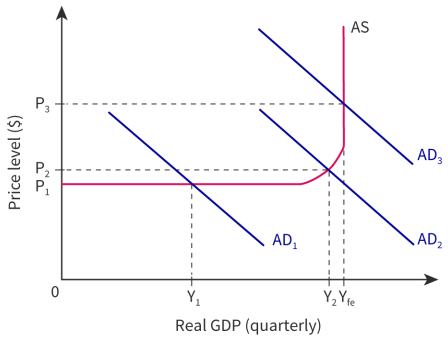


Monetarists believe that the LRAS curve is vertical at the full employment level of output in the long run. Meaning that in the new classical model, aggregate supply is **independent of the price level** in the long run.

1. Economy can NOT produce beyond its productive capacity
2. Monetarists argue that LRAS exists at the potential(**full employment**) level of real national output. (AD intersect LRAS)
3. Any attempt to increase AD beyond LRAS will only be **inflationary**.
4. Neoclassical/monetarists argue that potential output is based on the economy's quantity and quality factors of production. Thus Price Level does not affect LRAS.
5. Thus, the LRAS curve is vertical and dependent **ONLY** on **non-price variables**(e.g state of technology), or the quantity and quality of factors of production.
6. In other words, the potential output(Y) is highly dependent on the way that the factors of production are utilized.

Keynesian view of the AS curve:

Keynesians believe that the AS curve has multiple sections, owing to the varying degree of **spare capacity** in the economy.

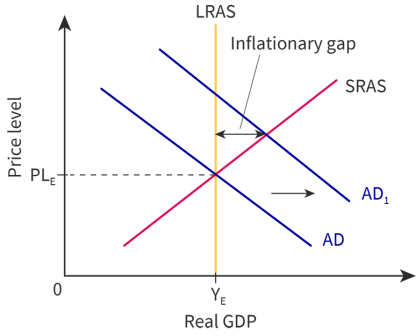


1. In the Keynesian AS curve, aggregate supply is perfectly price elastic(horizontal) at first, as there is plenty of spare capacity in the economy. Any increase in aggregate demand has no direct impact on the general price level.
2. Then, it becomes relatively less elastic. As there is the pressure of scarce resources as the economy grows. Increase in general price level will incentivize firms to supply more output.
3. In the final part, aggregate supply is perfectly price inelastic. As there is no longer any spare capacity in the economy. At this stage, any increase in aggregate demand beyond the full employment level of output is simply inflationary.
4. Wages and prices are **less flexible** in long run, in contrast to the idea that there will be **natural unemployment**.

Inflationary and deflationary/recessionary gap:

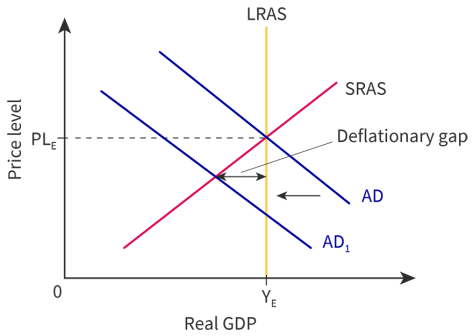
An **inflationary gap**(or **positive output gap**) exists if actual national output exceeds the full employment level.

1. Occurs when the economy operates beyond the full employment level of national output, due to the excess levels of aggregate demand for the consumption of goods and services.(Aggregate demand exceeds LRAS.)
2. Actual GDP exceeds potential GDP, so the higher levels of **expenditure** throughout the economy **increases the general price level** over time. (Move along AD_1 to meet LRAS)



An **deflationary gap** (or **recessionary gap/negative output gap**) exists when real national output equilibrium in short run is below the full employment level of output:

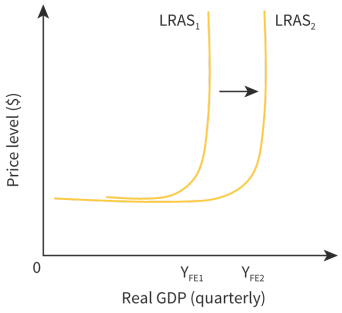
1. Actual economic growth is below the average trend rate of growth
2. Decrease in consumption causes the graduate decrease in price. (Move along AD_1 to meet LRAS)

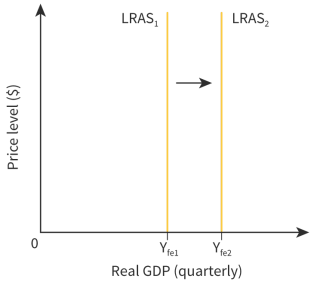


Shifts of AS curve over the long run:

Irrespective of which AS curve is used, economists agree that aggregate supply increases over a long run.

1. Changes in the economy's quantity and/or quality of factors of production: The more resources and the better these resources that a country has, the greater AS tends to be. Examples include:
    a. Discovering new resources
    b. Reclamation of land
    c. Larger and more skilled workforce
2. Improvements of technology:
    a. Higher productivity and increase the LRAS
    b. Help increase national output in the long-term
3. Increase in efficiency:
    a. Best possible use of resources and reduce wastage
    b. The increasing efficiency and output can contribute to R&D,
4. Changes in institutions:
    a. Institutional structure affects LRAS, by creating economic incentives and promoting greater entrepreneurial risk taking.
    b. Examples include improving healthcare, education systems/ etc.





Macroeconomic equilibrium:

Short run macroeconomic equilibrium:

Occurs when SRAS = AD.

Similar to microeconomic supply-demand curve:

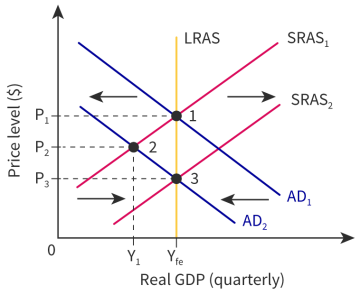
1. Increase(rightward shift) in AD result in higher price level and real GDP, vice versa
2. Increase(rightward shift) in SRAS results in lower price level but higher real GDP, vice versa.

Equilibrium in Monetarist/new classical model:

In the monetarist model, long run equilibrium occurs at the full employment level of output(potential output).

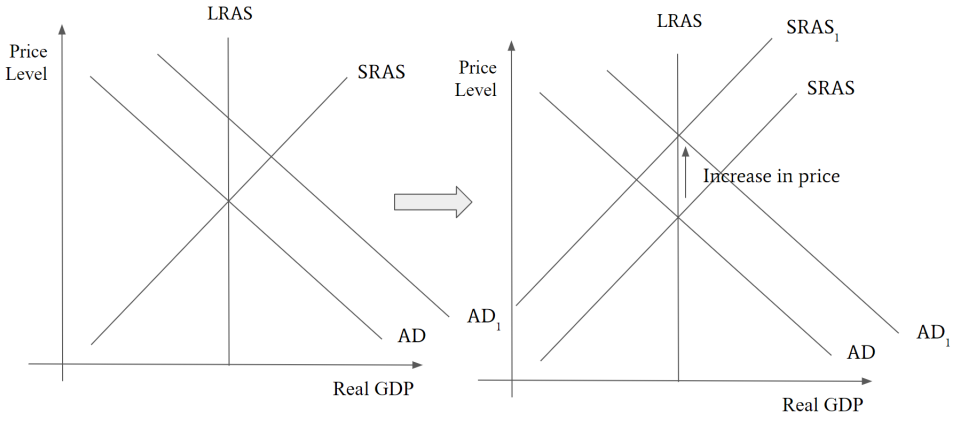
1. Automatica adjustments through the forces of AD and AS restore the economy to full employment(economy operates at full capacity) equilibrium in the long run.
2. However, full employment does not mean zero employment rates. Following exceptions are allowed:
    a. Frictional unemployment - People in-between jobs
    b. Seasonal unemployment - Redundancies caused by cylindrical factors
    c. Structural unemployment - Skills mismatch in certain industries
    → These three types of unemployment are referred to as the natural **rate of unemployment**.
3. Monetaries assume **automatic adjustment** of the economy to full employment equilibrium.
    a. Short term fluctuations in national output will only be temporary.
4. The output level will be restored, however not necessarily the price.

Examples of **automatic adjustment** in Long Run equilibrium:



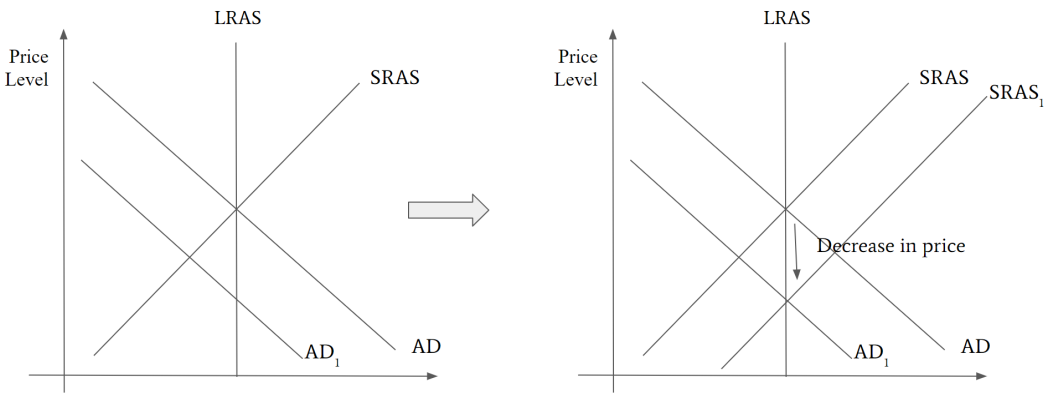
Example 1:

1. Increase in AD causes increase in PL
2. Inflation gap is formed
3. As AD-SRAS equilibrium went above LRAS, production costs increase
4. SRAS decrease
5. Return to the original output level, however with a higher price level.



Example 2:

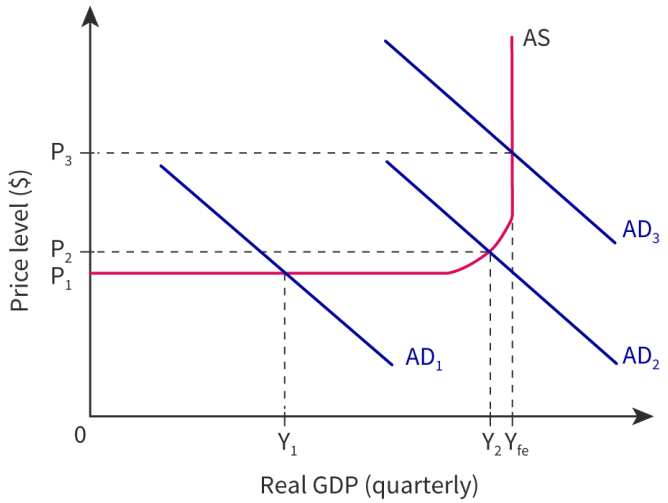
1. Decrease in AD causes a reduction in PL
2. Forming deflection gap
3. The production cost also decrease
4. SRAS increase
5. Return to the original output level, however with a lower price level.



Equilibrium in Keynesian model:

Keysnesian economists REJECT the idea that the economy can always maintain equilibrium at the full employment output, but there can be persistence of recessionary gaps → SHort term equilibrium level of output is not equal to the equilibrium in long term. \

1. High unemployment creates a multiplier effect(chain-effect caused by initial withdrawal), reducing GDP further.
2. For instance, Fall in household income will cause an overall decrease in consumption larger than initial decrease in income. Thus, government regulation is necessary.



$AD_1 \rightarrow AD_2$	$AD_2 \rightarrow AD_3$	$AD_3 +$
Increases in Real GDP do not increase the overall price level. Appears **recessionary gap**	Increase in price level as a result of higher AD. However, it is not necessarily causing inflation. Achieve full level of output.	Firms compete for highly limited resources as the economy is running in full capacity, causing inflation.

Notice that in the Keynesian model, there will be **inflation** when the economy operates at full employment. However it can **NOT** produce beyond the productive capacity.

Keynesian idea about market restoration:

1. Labor market do not necessarily clear in order to restore macroeconomic equilibrium
2. Wages are sticky downwards(resistance to change) because:

    a. Workers get used to a certain wage. Nominal pay cut is therefore
    b. The legal barriers(e.g labor contract) that disallow modification on wages level
    c. Not legally possible to set wage below national minimum wage
3. Macroeconomy is not always able to self-correct. Without intervention, the economy may be stuck in the cessionary gap.
4. Government intervention is necessary to resolve unemployment, decline of aggregate demand, etc.

Assumptions in new classical and Keynesian models:

New classical economy	Keynesian economy
1. Flexible wage → Fall during recession to clear the economy of any unemployment	1. Wage inflexibility → Unable to restore full employment 2. Wages are sticky downwards
Corresponding Arguments	
1. Demand side policy is ineffective. Rather, shifting LRAS is what addresses the issue.	1. Demand side policy is necessary to help the market restore from the persistent recession gap, by making AD match the LRAS.

[3] Macroeconomics objectives - economic growth

Economic Growth:

Economic growth refers to an increase in the country's level of Real GDP.

1. Usually, it is considered as an **increase in real GDP** for **two consecutive quarters**.

By contrast, **negative economic growth** occurs when Real GDP declines.

1. There is a fall in real GDP, associated with an economic downturn(e.g recession or **slump** in the business cycle)

Usually, economic growth occurs when there is an **increase in the quantity/quality of an economy's factor of production**.
Economists believe that sustained economic growth is the important macroeconomics objective.

Factors of Economic Growth:

1. **Factor endowments**:
    a. Refers to the quantity and quality of a country's factors of production. More factors of resources, more likely a country will achieve economic growth.
2. **Size and Skills of labor force**
3. **Investment expenditure in Capital and Human resources:**
    a. This is vital for a **long term competitiveness** and Economic Growth as it boosts the **productive capacity**.
4. **Discovery of raw materials:**
    a. Shift the **PPC** outwards
5. **Labor Productivity**:
    a. Refers to the output produced in a given time period
    b. Required a greater portion of GDP on investments in education and training
    c. Determined by several interrelated factors
        i. Qualifications
        ii. Experience
        iii. Training
        iv. Motivation

6. Mobility of Labor
    a. The more **occupationally** and **geographically** mobile workers are, the greater economic growth tends to be.

Short Term Growth:

Actual output: Actual output refers to the current, rather than potential, level of real GDP in the economy.

1. Represented by any **point** in the PPC diagram.
2. Occurs in the short term when an economy is **below its full employment level** of national income, but moves towards PPC.
3. It can also be measured by an AS - AD diagram. In which higher the level of AD, higher the SRAS-AD equilibrium, thus higher the GDP tends to be.

Long Term Growth:

Potential output is associated with an increase in **quantity/quality** of factors of production in the long run.

It helps to achieve two macroeconomic objectives: 1) Employment 2) Economic growth

1. **Potential growth** is a **long term** concept demonstrated by the **outward shift** of PPC.
2. In an AS - AD diagram, it is shown from the outward shift of the LRAS curve. Demonstrating the **increase in potential output**.