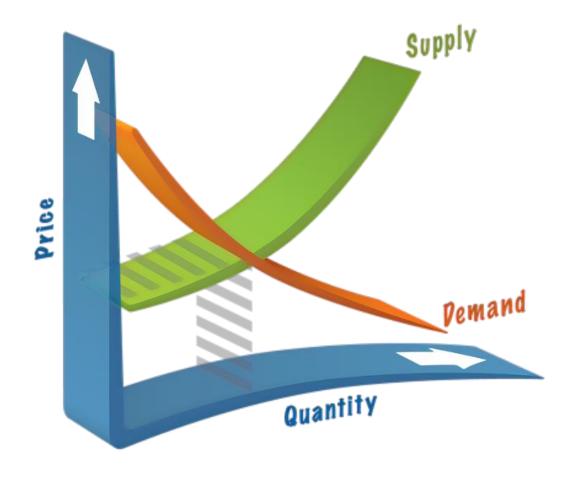
Grading for this semester

Grades for this semester will be calculated based on:

- The First Monthly Test (10%)
- Mid-term Exam (25%)
- The Third Monthly Test (10%)
- Final Exam (35%)
- Coursework (20%)

Tests will always be announced well ahead of time, but quizzes may be given with warning or as a surprise. Any missed assignments (homework, tests, quizzes, and report) are to be made up as quickly as possible upon your return to class.

- We've studied the market demand and supply in Microeconomics, which determines the price and quantity of a single goods or services.
- In Macroeconomics, we also have 'demand' and 'supply', but not the demand and supply for a single good/service, it is 'aggregate demand' and 'aggregate supply' for an economy.





Aggregate demand

Aggregate demand is the total quantity of goods and services that all buyers in an economy (consumers, firms, the government and foreigners) want to buy over a particular time period, at different possible price levels, ceteris paribus.

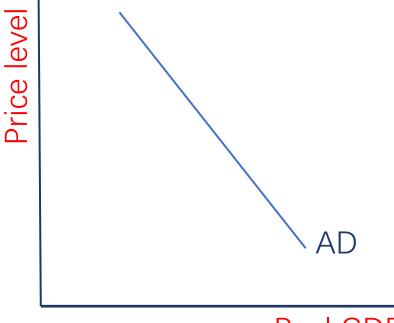
It consists of:

- The demand of consumers (C)
- The demand of businesses (firms) (I)
- The demand of government (G)
- The demand of foreigners for exports (X) minus the demand for imports (M)

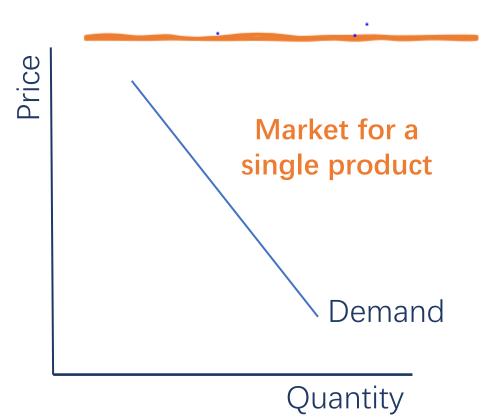
The aggregate demand curve

Aggregate demand curve: a curve used in macroeconomics showing the relationship between the total amount of real output demanded by the four components (consumers, firms, government, foreigners) and the economy's price level over a particular time period, ceteris paribus.

- Horizontal axis: aggregate output (real GDP)
- Vertical axis: the general price level in the economy, it is an average over the prices of all goods and services.



Distinguish demand and aggregate demand

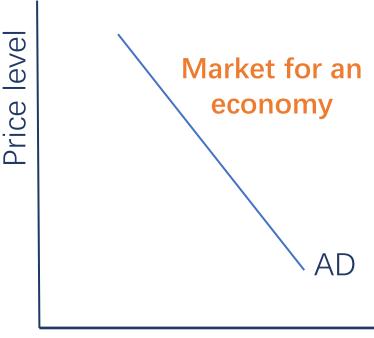


Demand curve

- Horizontal axis: The quantity of a single product
- Vertical axis: the <u>price</u> of a single product
- the quantity bought or sold of one good or service in an amount of time

Aggregate demand curve

- Horizontal axis: the economy's total output of goods and services. (real GDP)
- **Vertical axis**: the general <u>price level</u> in the economy, it is an average over the prices of all goods and services.
- the actual production of the economy in a given period.

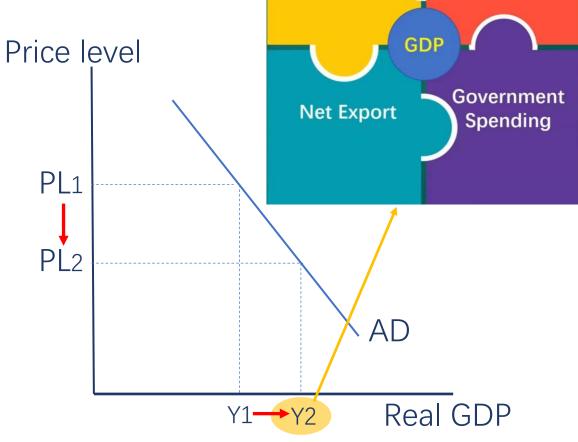


Real GDP

The negative (downward) slope of AD curve

A fall in the economy's overall level of prices (from, say, PL1 to PL2) tends to raise the number of goods and services demanded (from Y1 to Y2), ceteris paribus. We assume that the money supply is fixed.

- GDP = C + I + G + NX, All 4 GDP components contribute to the aggregate demand for goods and services.
 - we pretend that by policy government spending (G) is fixed.
 not affected by price level.
 - The other 3 components of spending are—consumption, investment, and net exports depend on economic conditions and, in particular, at the price level.



Y=C+I+G+NX

Investment

Spending

Consumer

Spending

Why AD curve is downward sloping?

1. The Price Level and Consumption: The Wealth Effect

- Logic: A lower price level increases real wealth, which encourages spending on consumption. (C)
- **Explanation**: When prices level falls, people can buy more goods and services with the same amount of money, thus, a decrease in the price level makes consumers feel wealthier, which in turn encourages them to spend more money. The increase in consumer spending leads to a larger quantity of goods and services demanded. Vice versa.



2. The Price Level and Investment: The Interest-Rate Effect

- Logic: A higher price level increase the interest rate, which discourages spending on consumption (C) and investment. (I)
- **Explanation:** If there is an increase in the price level, consumers and firms need more money to carry out their purchases and transactions. → increase in the demand for money. → an increase in rates of interest.
- → Higher interest rates (higher cost of borrowing) discourage borrowing by firms that want to invest in new plants and equipment and by households who wish to invest in new housing. Vice versa.



Why AD curve is downward sloping?

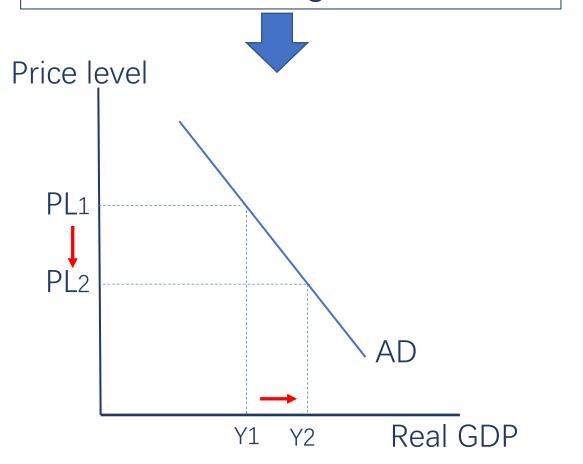
3. The Price Level and Net Exports: The Exchange-Rate Effect

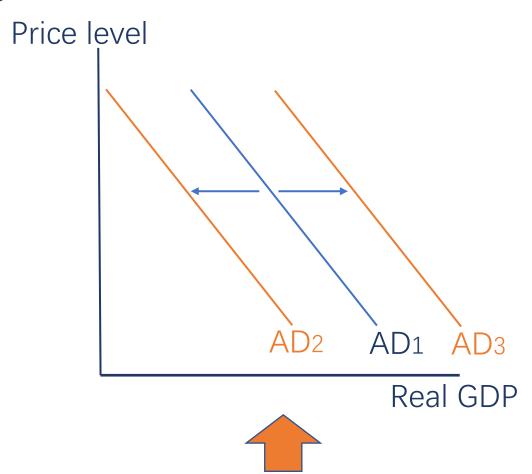
Logic: Lower domestic price level → more export, less import Higher domestic price level → less export, more import

- Explanation: Lower domestic price level→ lower local interest rate → depreciation of local currency → more export, less import
 - Country A have Lower domestic price level→ lower local interest rate.
 - → Domestic investors shift their investments to country B with higher interest rates to get a better return.
 - →to do that, they have to exchange some of their currency A\$ to B\$. This increases the international supply of A\$, which causes the currency A\$ to depreciate.
 - →domestic consumers will find that imports become relatively more expensive. So they buy less from abroad, and imports decrease; Meanwhile, domestic exports become relatively cheaper for foreigners to buy, so exports increase. As a result, net exports (*i.e., exports imports*) rise, which increases the quantity of goods and services demanded.

Distinguish between movement along and shifts of AD curve

• Price level change will lead to movement along the AD curve.

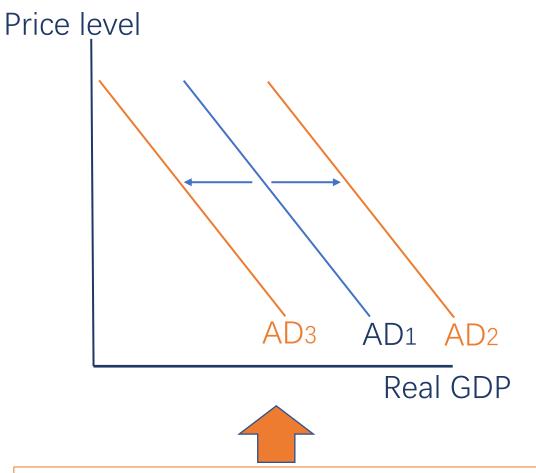




• The determinants of the AD will lead to shifts of the AD curve.

Distinguish between movement along and shifts of AD curve

- A rightward shift from AD1 to AD2 means that aggregate demand increases: for any price level, a larger amount of real GDP is demanded.
- A leftward shift from AD1 to AD3 means that aggregate demand decreases: for any price level, a smaller amount of real GDP is demanded.

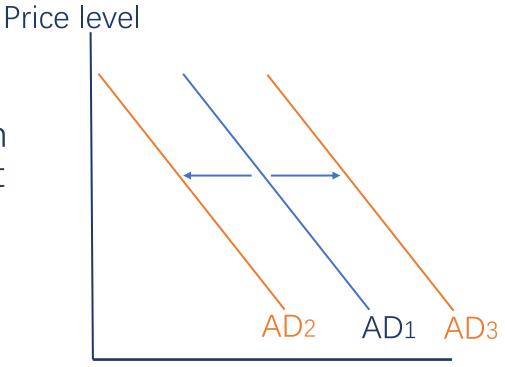


• The determinants of the AD will lead to shifts of the AD curve.

The determinants of aggregate demand -shifts in the AD curve

- Aggregate demand is composed of:
 - Consumer spending (C)
 - Investment spending (I)
 - Government spending (G)
 - Net export spending (X-M)

→ Any factors that produces a **change** in **one of these four components** can shift the demand curve AD.





1. Changes in consumer confidence.

- Consumer confidence is a measure of how optimistic consumers are about their future income and the future of the economy.
 - If consumers are optimistic about the future, they are likely to spend more, thus the AD curve shifts to the right.
 - Low consumer confidence indicates expectations of falling incomes and worsening economic conditions, causing decreases in spending, the AD curve shifts to the left.

2. Change in interest rates

- Some consumer spending is financed by borrowing and have to pay interest; Also some consumer may lend some of their extra money to the financial institution to gain interest.
 - An **increase** in interest rates makes borrowing more expensive, resulting in lower consumer spending (borrow less or lend more), and therefore a leftward shift in the AD curve.
 - An decrease in interest rates makes borrowing less expensive, and results in more consumer spending and a rightward shift in the AD curve.
- * Interest rates can change as a result of a type of policy called "monetary policy", which will be discussed later.

3. Changes in income taxes

- If the government increases income tax, consumers' disposable income (income left over after personal income taxes have been paid) falls, therefore, spending drops, AD curve shifts to the left.
- If the income tax decreases, it will result in higher disposable income and a rightwards shift in the AD curve.
- * Changes in tax are the result of a type of government policy called 'fiscal policy" which will be discussed later.



4. Changes in the level of household indebtedness

- Indebtedness refers to how much money people owe from borrowing in the past.
 - If consumers have a high level of debt, then they are under pressure to make high monthly payments to pay back their loans plus interest, so they are more likely to cut back on their present expenditure, AD curve shifts to the left. Vice versa.



5. Changes in wealth

- Wealth is the value of assets that people own (savings in their bank accounts, houses, stocks and bonds, jewelry, works of art, etc.) minus debt to banks or other financial institutions.
 - An increase in consumer wealth makes people wealthier, therefore they spend more and the AD curve shifts to the right.
 - >A decrease in wealth lowers aggregate demand, the AD curve shifts to the left.



6. Expectations of future price levels

- Consumer spending may be influenced by what they expect prices to be in the future.
 - If consumer expect prices level to fall, they may postpone spending as they wait for prices to fall, causing AD to decrease, shifting AD to the left.
 - If consumer expect future prices to increase, they may buy more now in order to avoid the higher prices later, AD increase and shift to the right.

FUTURE PRICES





1. Changes in business confidence

- Business confidence refers to how optimistic firms are about their future sales and economic activity.
 - If businesses are optimistic, they spend more on investment, AD curve shifts to the right.
 - ➤ If businesses are pessimism, they spend less on investment, AD curve shift leftwards.



2. Changes in interest rates

Increases in interest rates raise the cost of borrowing, and force businesses to reduce investment spending financed by borrowing. AD curve shifts to the left. Vice versa.

3. The level of corporate indebtedness

> If business have high levels of debt due to past borrowing, they will be less willing to make invest, AD curve shifts to the left. Vice versa.



4. Changes in business taxes (taxes on profits)

• If government increases taxes on profits of businesses, firm's after-tax profits fall, investment spending decreases, AD curve shifts to the left. Vice versa.



5. Change (improvements) in technology. (SR&LR)

• Improvements in technology stimulate investment spending, thus causing increases in AD and a rightward shift in the AD curve.



6. Legal/institutional changes

- The legal and institutional environment in which businesses operate has an impact on investment spending.
- In many developing economies where laws and institutions do not favour small businesses. Small businesses do not have access to credit and cannot borrow easily to finance investments.
- E.g. SME (small to medium enterprise) support





1. Changes in political priorities

- The government may decide to increase or decrease its expenditures in response to changes in its priorities.
- Increased government spending shifts the AD curve to the right
- Decreased government spending shifts the AD curve to the left

2. Changes in economic priorities: deliberate efforts to influence aggregate demand.

- Government spending includes:
 - Provision of merit goods and public goods
 - Spending on subsidies and pensions
 - Payments of wages and salaries to its employees
 - Purchases of goods for its own use
 - And so on



The determinants of aggregate demand 4. causes of changes in export – import spending (X-M)

1. Changes in national income abroad

- Country A and Country B
- If country B's national income increases, it will import more goods and services from country A, country A's export will increase, AD curve of country A shift to the right. Vice versa.

2. Changes in exchange rates

- An exchange rate is the price of one country's currency in terms of another country's currency.
- If the price of country A's currency increases, becoming more expensive relative to the currency of country B. Country B finds country A's output more expensive and import less from country A. country A's export decreases. Country A finds country B's output becoming cheaper and import more from country B. country A's AD curve shifts to the left. Vice versa.



The determinants of aggregate demand

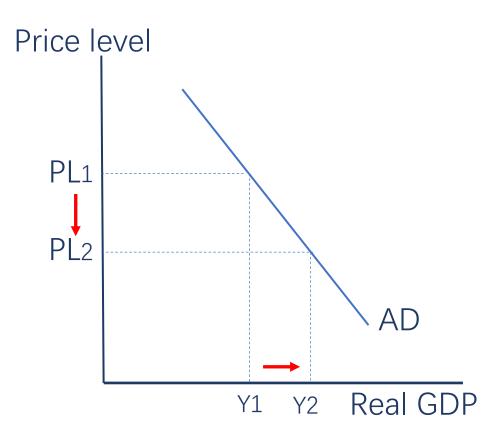
4. causes of changes in export – import spending (X-M)

- 3. Changes in trade policies, or the level of trade protection
- Trade protection refers to restrictions to free international trade often imposed by governments.
 - If country B's government decides to impose restrictions on imports from country A, country A's exports will fall, and country A's AD curve will shift to the left. On the other hand, country B's import will decrease, country B's AD curve shifts to the right.

Whether income is a determinants of AD?

- Income is not included among the factors that can shift the AD curve. The reason is:
 - real GDP, measured on the horizontal axis, also represents national income. It is not possible for any variable measured on either of the two axes to cause a shift of a curve

*This does not contradict the ability of changes in disposable (or after-tax) income due to changes in taxes to affect aggregate demand. Because changes in taxes and disposable income do not affect national income, as they simply involve a transfer of income from households to the government. National income remains unchanged.





The short run and long run in macroeconomics

- The **short run in macroeconomics** is the period of time when **prices of resources** are roughly **constant or inflexible**, in spite of changes in the price level; they do not change together with changes in the price level.
- The long run in macroeconomics is the period of time when the prices of all resources, including the price of labour (wages), are **flexible** and change along with changes in the price level.
- The distinction between the short run and long run in macroeconomics does not affect aggregate demand, but is very important for aggregate supply.



The rigidity of labour price



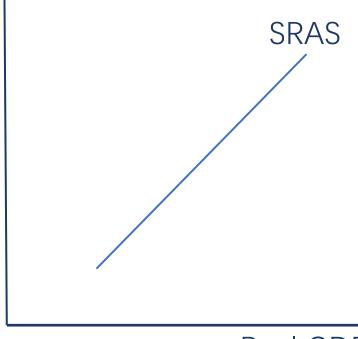
- The labour cost account for the largest part of firms' costs of production and strongly affect the quantity of output supplied by firms.
- Wages do not change very much over relatively short periods of time, because:
 - Labour contracts fix wage rates for certain periods of time. (a year or two or more)
 - Minimum wage legislation fixes the lowest legally permissible wage.
 - Workers and labour unions resist wage cuts
 - Wage cuts have negative effects on worker morale, causing firms to avoid them.

Short Run Aggregate supply

 Aggregate supply is the total quantity of goods and services produced in an economy (real GDP) over a particular time period at different price level.

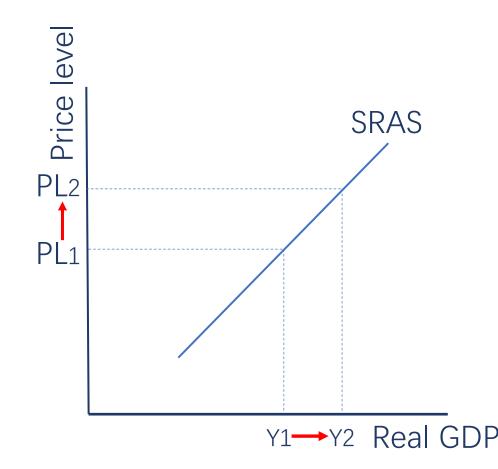
Price leve

- The short-run aggregate supply curve (SRAS) shows the relationship between the price level and the quantity of real output (real GDP) produced by firms when resource prices (especially wages) do not change.
 - Fixed wage rates
 - Fixed state of technology.



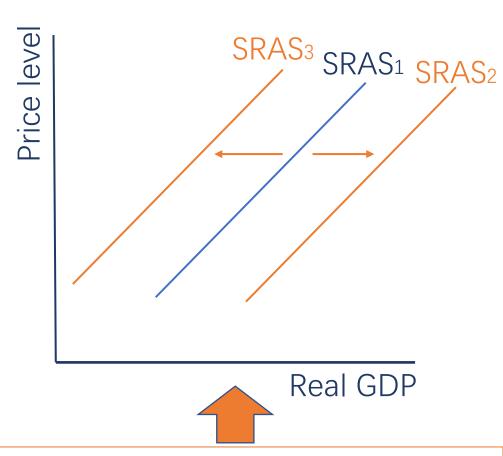
Why the SRAS curve is upward-sloping?

- There is a **positive** relationship between the price level and real output (real GDP).
- Key reason: firm profitability higher prices attract more firms in the economy to raise their output level.
- Over short period of time, the SRAS curve shifts to the left or to the right mainly as a result of factors that influence **firms' cost of production.**
- If price level goes up → output price increase → firm's profit increase (with unchanging resource price in short-run) → firms increase the quantity of output produced.(quantity of real GDP supplied)
- Vice versa



The shifts of the SRAS curve

- A rightward shift from SRAS₁ to SRAS₂ means that short-run aggregate supply increases: for any particular price level, firms produce a larger quantity of real GDP.
- A **leftward shift** from SRAS₁ to SRAS₃ means that aggregate supply decreases: for any particular price level, firms produce a smaller quantity of real GDP.



The determinants of the aggregate supply will lead to shifts of the SRAS curve.

The determinants of short-run aggregate supply - shifts in the SRAS curve

1. Changes in wages

- If wages increase, with the price level constant, firm's costs of production rise, SRAS shift leftward.
- If wages decrease, with the price level constant, firm's costs of production drop, giving rise to a rightward shift in the SRAS curve.

2. Changes in non-labour resource prices.

- Resources of oil, equipment, capital goods, land inputs, and so on.
- Same effect as above.

3. Changes in indirect taxes

- Same as change in firm's cost of production.
- Same effect as above.



The determinants of short-run aggregate supply - shifts in the SRAS curve

4. Changes in subsidies offered to businesses

- Money transferred from the government to firms
- Opposite effect to taxes
- If subsidies increases, SRAS shifts rightwards.
- If subsidies decreases, SRAS shifts leftwards.

5. Supply shocks

- Events that have a sudden and strong impact on short-run aggregate supply.
- E.g. war, violent conflict, unfavorable or good weather condition…

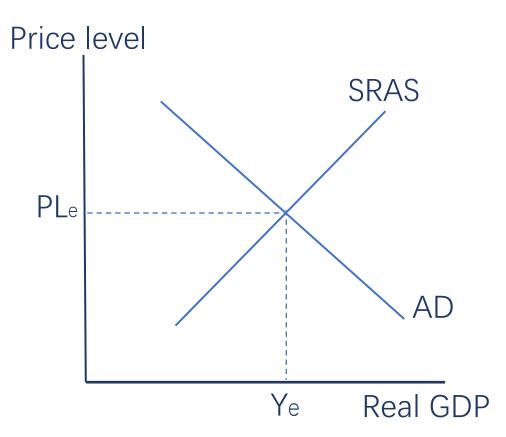


Short-run equilibrium in the AD-AS model

• In the AD-AS model, the equilibrium level of output occurs where aggregate demand intersects aggregate supply.

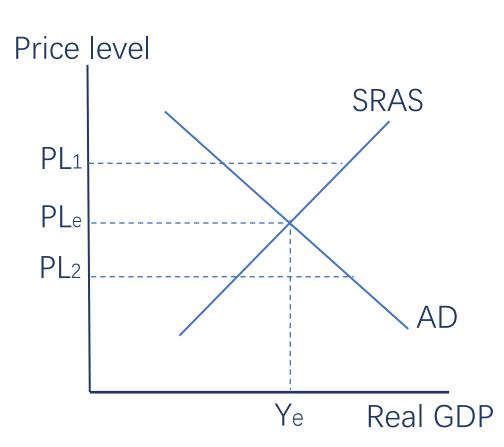
• Short-run equilibrium is given by the point of intersection of the AD and SRAS curves, and determines the price level, the level of real GDP and the level of employment.

- Ple equilibrium price level
- Ye equilibrium level of real GDP



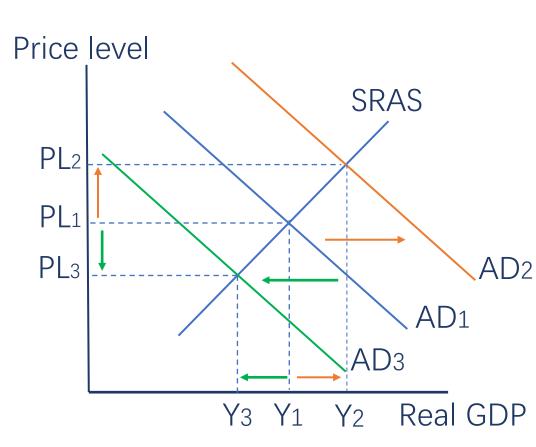
Short-run equilibrium in the AD-AS model

- At price level PL1, there is an excess amount of real GDP supplied (disequilibrium), putting a downward pressure on the price level, which falls until it reaches PLe.
- At price level PL2, there is an excess amount of real GDP demanded (disequilibrium), putting an upward pressure on the price level, which moves upward until it settles at Ple.
- Short-run equilibrium at PLe.



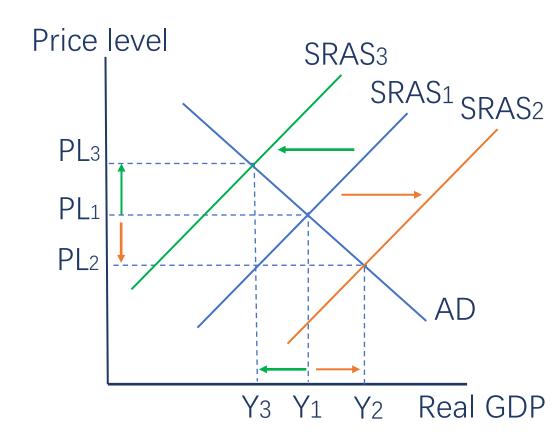
Impacts of changes in short-run equilibrium - Changes in aggregate demand

- The short-run equilibrium of an economy changes whenever there is a change in aggregate demand or short-run aggregate supply.
- When there is a determinant of AD change, leading to an increase (rightward shift) of AD from AD1 to AD2 (shifts in orange color)
- It results in an increase in the price level from PL1 to PL2 and an increase in real GDP from Y1 to Y2.
- These changes also lead to a fall in unemployment since firms hire more labour in order to produce more output.
- Vice versa (shifts in green color)

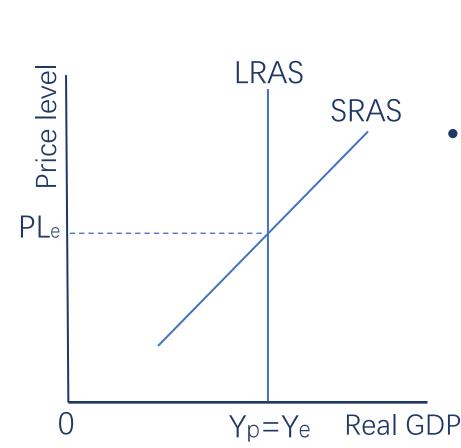


Impacts of changes in short-run equilibrium - Changes in aggregate supply

- When there is a determinant of SRAS change, leading to an increase (rightward shift) of SRAS from SRAS1 to SRAS2 (shifts in orange color)
- It results in an decrease in the price level from PL1 to PL2, an increase in real GDP from Y1 to Y2 and lower unemployment.
- Vice versa (shifts in green color)



Long Run Aggregate Supply -The monetary/new classical model



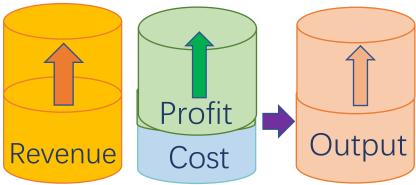
- Long-run aggregate supply (LRAS) curve is a curve showing the relationship between real GDP produced and the price level when wages (and other resource prices) change to reflect changes in the price level, ceteris paribus.
- The LRAS curve is vertical at the full employment level of GDP, indicating that in the long run output is independent of the price level.

Reason for vertical LRAS curve

Rigidity of labour price (sticky resource price)

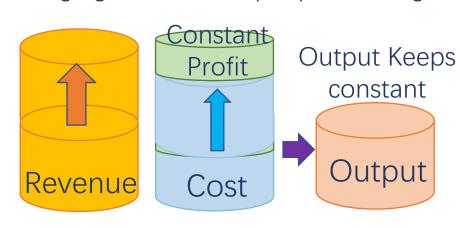
In Short run

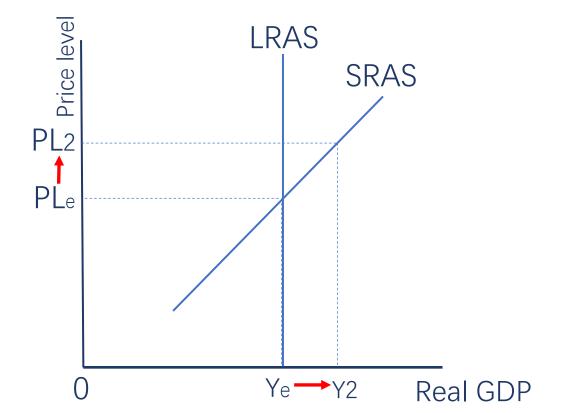
In the long run, as the price level increases or decreases, with constant real costs, firms' profits are also constant, and firms no longer have any incentive to increase or decrease their output levels.



In Long run

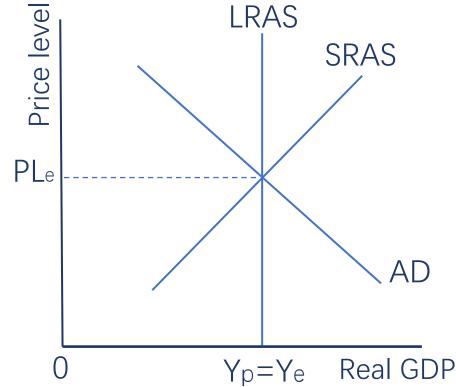
The price of wages(other resources) changing to match output price changes.



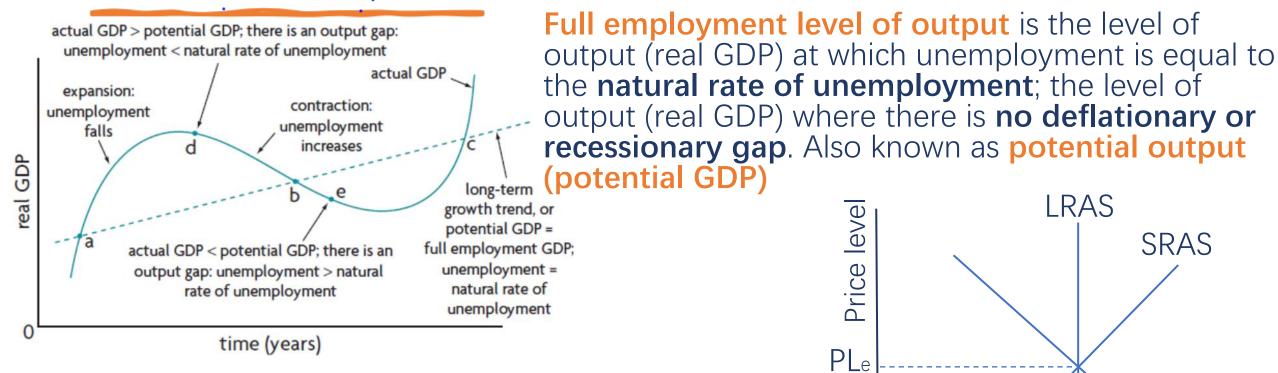


Long-run aggregate supply in the monetarist/new classical model

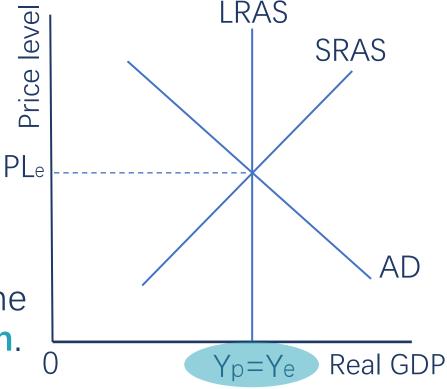
- In the long run, all resource prices including wages change to match changes in the price level.
- The LRAS curve is **vertical** at **potential GDP-Yp** (full employment level of real GDP), indicating that in the long run the economy produces potential GDP, which is **independent of the price level.**
- The economy is in long-run equilibrium when the AD curve and the SRAS curve intersect at any point on the LRAS curve.
- In the long run, any change in AD results only in changes in the price level while the quantity of real GDP produced remains the same.



Recall: Full employment level of output (GDP)



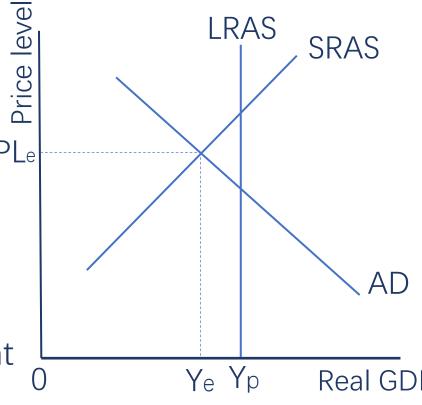
→ Full employment output and potential output both refer to the output (Y_p) that is produced when the economy is at long-run equilibrium.



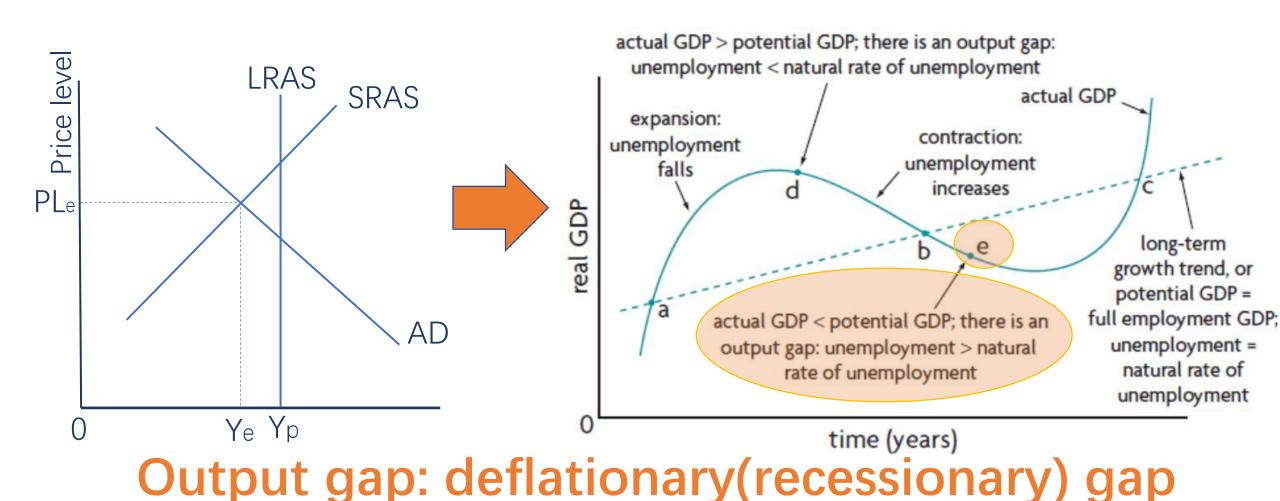
Short-run equilibrium positions in relation to long-run equilibrium

Deflationary (recessionary) gap

- When equilibrium real GDP Ye lies to the **left** of potential GDP, **real GDP Ye**<**potential GDP Yp**, the economy is experiencing a deflationary gap.
- At Price level PLe, the amount of real GDP that the four components of aggregate demand want to buy is less than the economy's potential GDP, there is **not enough total demand** in the economy to make it worthwhile for firms to produce potential GDP.
- Firms require **less labour (resources)** for their production.
- → Unemployment rate > natural rate of unemployment



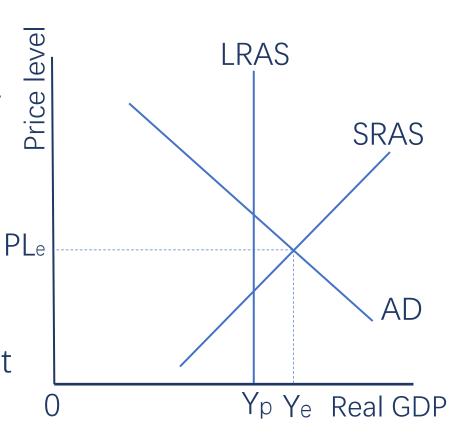
States of the economy correspond to the phases of the business cycle



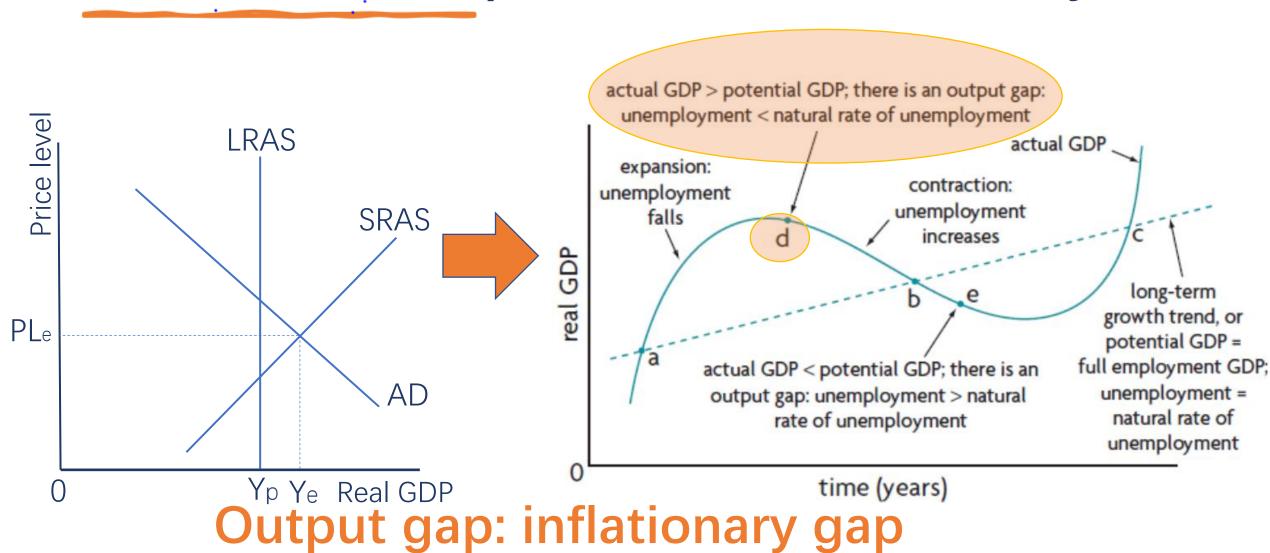
Short-run equilibrium positions in relation to long-run equilibrium

Inflationary gap

- When equilibrium real GDP Ye lies to the **right** of potential GDP, **real GDP Ye>Potential GDP Yp**, the economy is experiencing a inflationary gap.
- At Price level PLe, the amount of real GDP that the four components of aggregate demand want to buy is greater than the economy's potential GDP, there is **too much total demand** in the economy, firms producing a greater quantity of real GDP than potential GDP.
- Firms require **more labour (resources)** for their production.
- → Unemployment rate<natural rate of unemployment

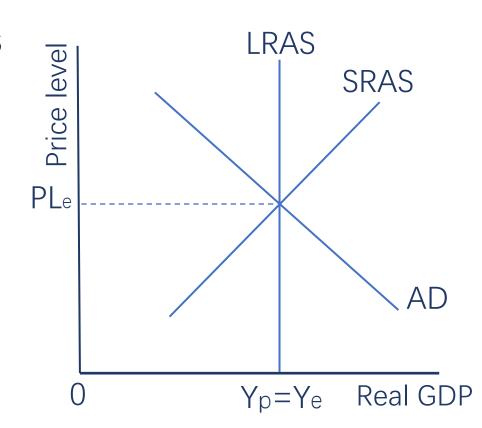


States of the economy correspond to the phases of the business cycle

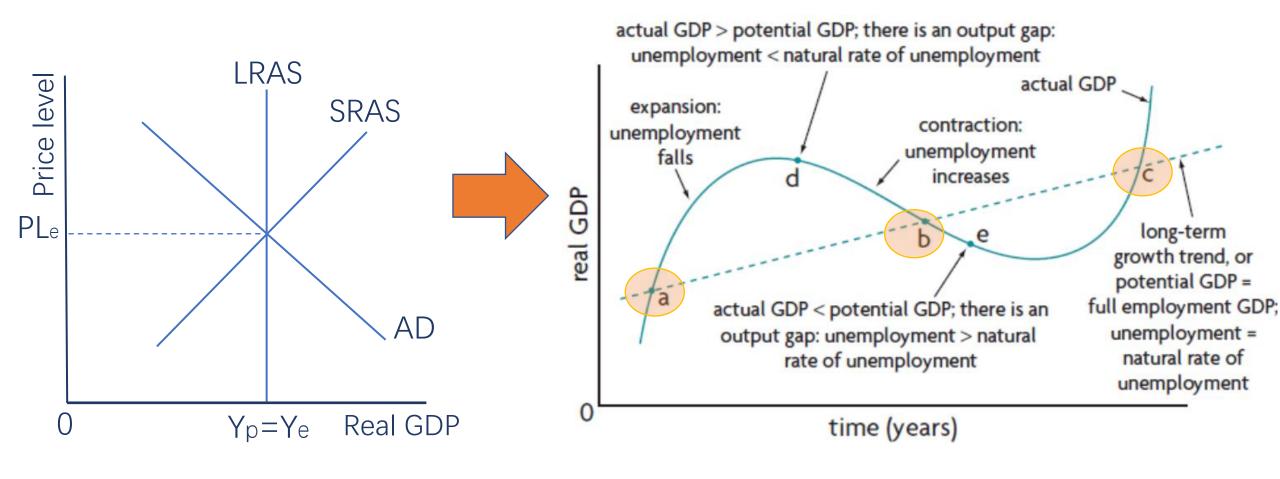


Short-run equilibrium positions in relation to long-run equilibrium

- Full employment level of real GDP, or potential output.
- When equilibrium real GDP is equal to full employment or potential GDP. The economy is producing its potential output.
- Unemployment rate = natural rate of unemployment.
- No deflationary or inflationary gap.

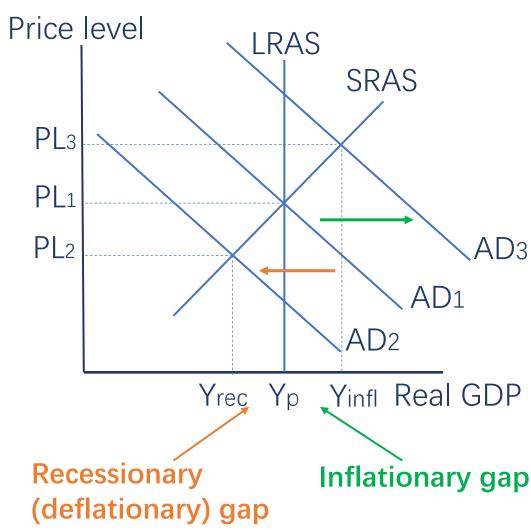


States of the economy correspond to the phases of the business cycle



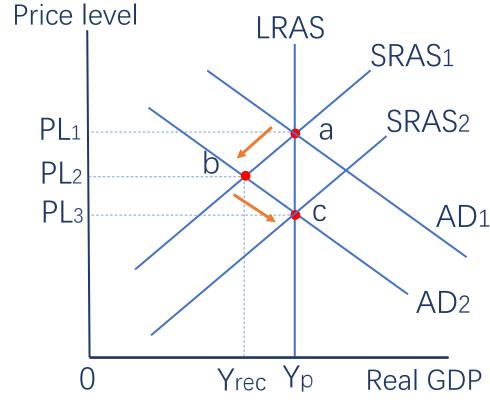
Shifts in AD as possible causes of the business cycle

- The economy is initially at full employment equilibrium, producing potential output Y_p.
- Aggregate demand fall from AD₁ to AD₂ causes a recessionary gap.
- Aggregate demand increase from AD₁ to AD₃ causes an inflationary gap.
- * Most economists believe that changes in aggregate demand are more frequent than changes in aggregate supply as causes of the business cycle.



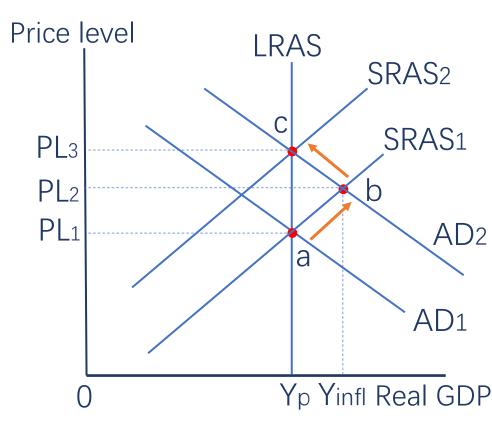
Why inflationary and deflationary gaps cannot persist in the long run?

- Inflationary and deflationary gaps are only short-run phenomena that cannot persist in the long run.
- Initial long equilibrium at point a producing potential output, Yp at PL1.
- A fall in aggregate demand from AD1 to AD2, economy move in the short run from point a to point b (with output Yrec and price level of PL2), where there arises a deflationary gap.
- In the long run, the fall in the price level is matched by a fall in price of wages (other resources), SRAS shifts to the right from SRAS1 to SRAS2 until the economy is back on the LRAS curve, at point **c**.
- The deflationary gap is eliminated, price level fall from PL₁ to PL₃.



Why inflationary and deflationary gaps cannot persist in the long run?

- Inflationary and deflationary gaps are only short-run phenomena that cannot persist in the long run.
- Initial long equilibrium at point a producing potential output, Yp at PL1.
- A increase in aggregate demand from AD1 to AD2, economy move in the short run from point a to point b (with output Yinfl and price level of PL2), where there arises a inflationary gap.
- In the long run, the increase in the price level is matched by a increase in price of wages (other resources), SRAS shifts to the left from SRAS1 to SRAS2 until the economy is back on the LRAS curve, at point **c**.
- The inflationary gap is eliminated, price level increase from PL₁ to PL₃.



Shifts in SRAS as possible causes of the business cycle

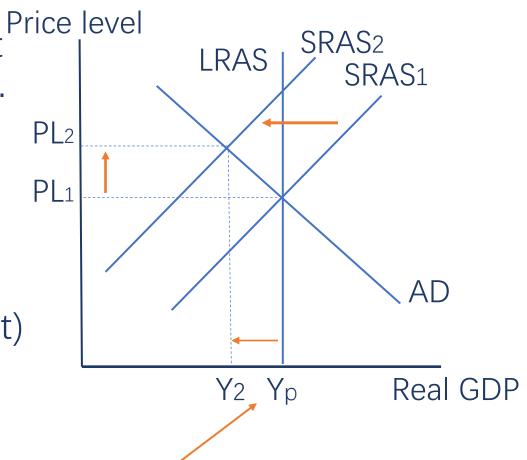
• The economy is initially at full employment equilibrium, producing potential output Yp.

1. SRAS fall from **SRAS1** to **SRAS 2**, leads to an economic contraction

→ Price level rise from PL1 to PL2, Real GDP falling to Y2 and unemployment increasing.

→Stagflation: recession (with unemployment) and rising price level.

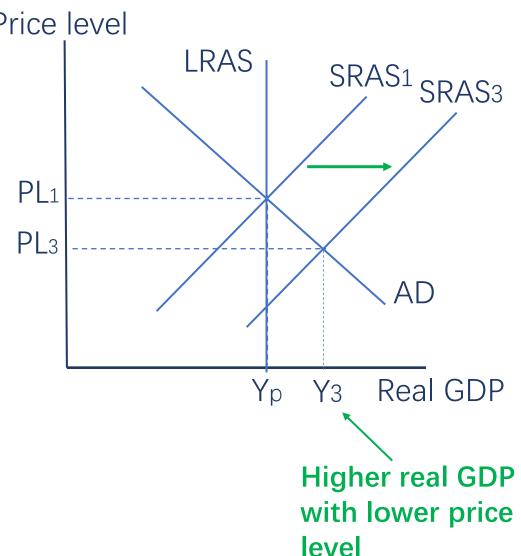
*stagflation combining 'stagnation' with 'inflation'.



Recession with inflation ('stagflation')

Shifts in SRAS as possible causes of the business cycle

- The economy is initially at full employment equilibrium, producing potential output Yp.
- 2. SRAS rise from SRAS1 to SRAS3, leading to an economic expansion as real GDP increases to Y₃ and unemployment falls
- → Falling price level
- →Increasing aggregate demand



Summary

- In the monetarist/new classical perspective, changes in aggregate demand can only influence real GDP in the short run.
- The assumption of wage and price flexibility in the long run has allowed the economy to automatically come back to its long-run equilibrium level of output. In the long run, aggregate demand can only influence the price level, having no impact on real GDP, as this remains constant at the level of potential or full employment output.
- Recessionary (deflationary) and inflationary gaps are eliminated in the long run. This ensures that in the long run the LRAS curve is vertical at the level of potential GDP. The economy has a built-in tendency towards full employment equilibrium.

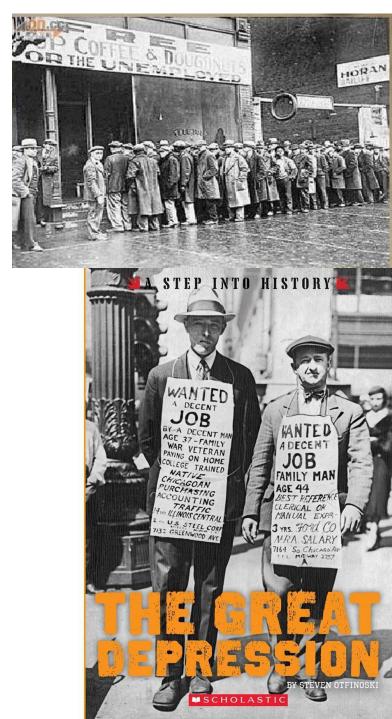
The new classical economics

- The importance of the price mechanism or coordinating economic activities;
- The concept of competitive market equilibrium
- The economy is a harmonious system that automatically tends towards full employment.



The Great Depression in 1930s

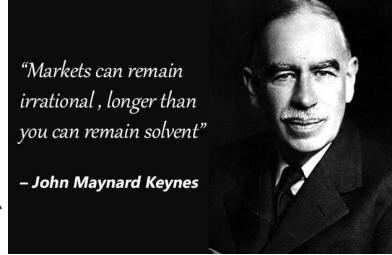
- In November 1929, there was a "great crash", The New York stock market failed. A large number of people who had borrowed money from banks could not repay their debts. Many banks simply closed down. People without money could buy nothing from the shops.
- The **Great Depression** was an extremely severe global economic downturn approximately from 1929-1941), global GDP shrank by approximately fifteen percent. In the US, unemployment reached 25%. In fact, in some countries, it exceeded 33%.



The Keynesian Theory

- John Maynard Keynes (1883-1946)
- 'General Theory of Employment, Interest and Money', 1936
- The father of Macroeconomics
- Main ideas:
- Full employment is not going to occur all the time.
- Wage down inflexibility
- Keynes believed that aggregate demand determined the overall level of economic activity.
- He believed government should intervene during economic recessions and depressions by increasing government spending

 increasing AD
- Specifically, Keynes emphasis the importance of **fiscal** and **monetary policies**.
- Fiscal policy refers to government spending and the collection of taxes. Monetary policy, refers to decisions that the central bank makes. Raising or reducing interest rates are examples of monetary policies.



Wage downward inflexibility

- Keynesian economists argue that there is an asymmetry between wage changes in the upward and downward directions.
- In economic expansion with strong aggregate demand (rightward shifts in the AD curve causing an inflationary gap), with unemployment lower than the natural rate and a rising price level, wages quickly begin to goes up.

- In recessionary gap with weak aggregate demand, unemployment >natural rate of unemployment, wages do not fall easily even over long period of time. Reasons:
 - Labour contracts, minimum wage legislation, worker and union resistance, employer resistance due to morale. Etc.



Product prices downward inflexibility



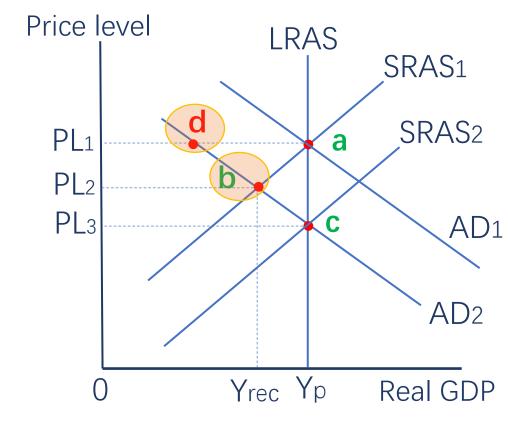
Wage → cost of production → price level

In recession: downward inflexibility of wage → product price downward inflexibility → price level keeps constant

- Even an economy is in a recessionary gap, if wages will not go down, firms will avoid lowering their prices because that would reduce their profits.
- → Wage and prices do not fall easily, the economy may get stuck in the short run.

The implications of downwardly inflexible wages and prices

- In monetarist/new classical economists' point of view, wage and price flexibility in the long run has allowed the economy to automatically come back to its long-run equilibrium level of output. (from point $a \rightarrow b \rightarrow c$)
- If price level cannot fall from PL₁, when aggregate demand falls, the economy will move to point d on the new, lower, aggregate demand curve, AD₂.
- If wages cannot fall: Even if the price level succeeds in falling to PL2 reaching point b, if the wages do not fall to shift SRAS1 to SRAS2, the economy may get stuck in the short run, it is unable to move into long run where it eliminates the recessionary gap.



The Keynesian's beliefs:

- Wages are sticky downwards
- Therefore the product price are sticky downwards
- They do not distinguish between the short run and the long run
 - * Keynesian analysis focus more on short-term analysis, because they do not accept the idea that the economy can automatically move into a long run where there is full resource and product price flexibility.