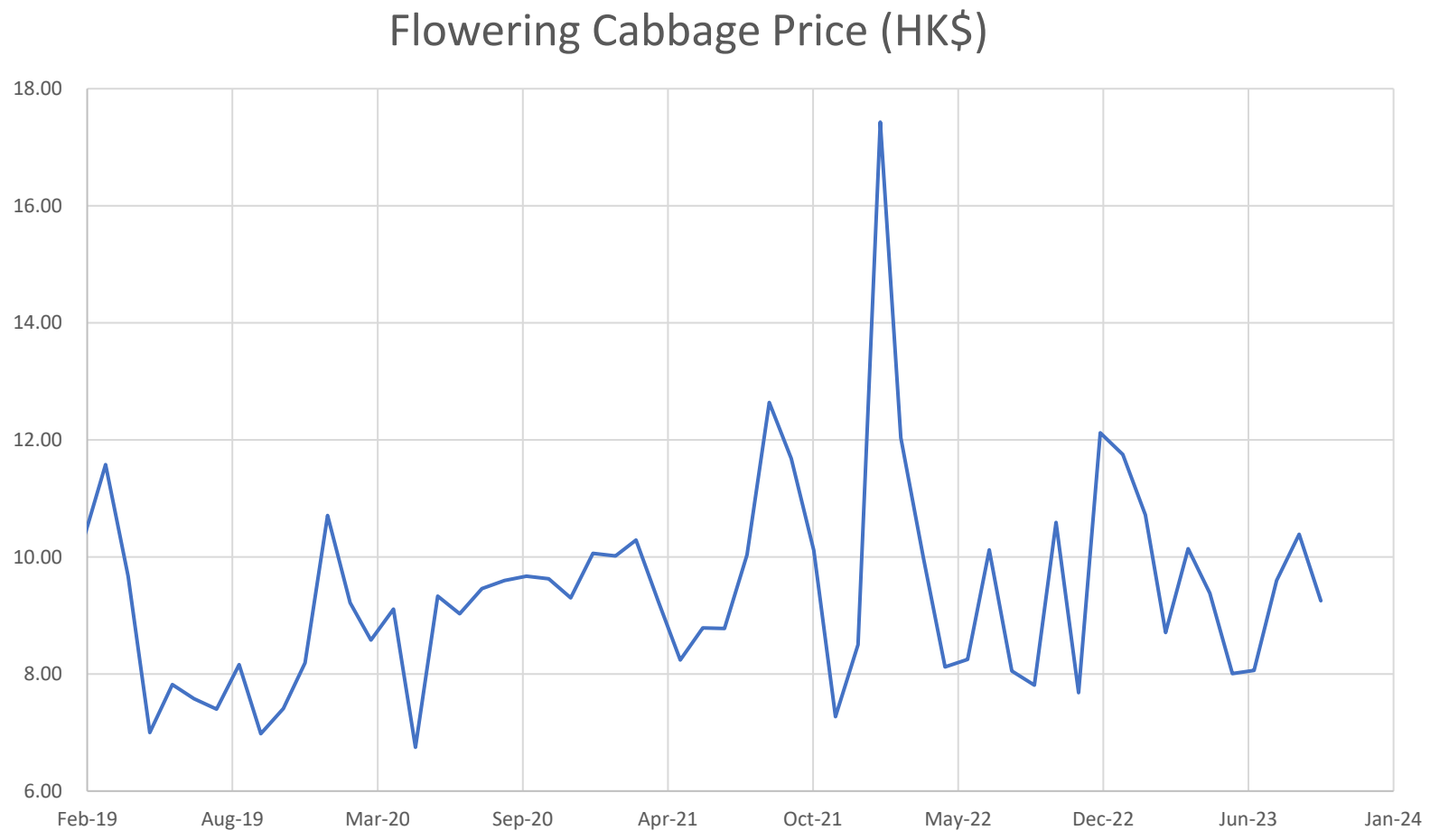
UWTSD MBA HKBM7009
(UWMBA-30013-2023-1-SS)

Global Business Challenges (2-1)

Microeconomics Foundations I: Market forces

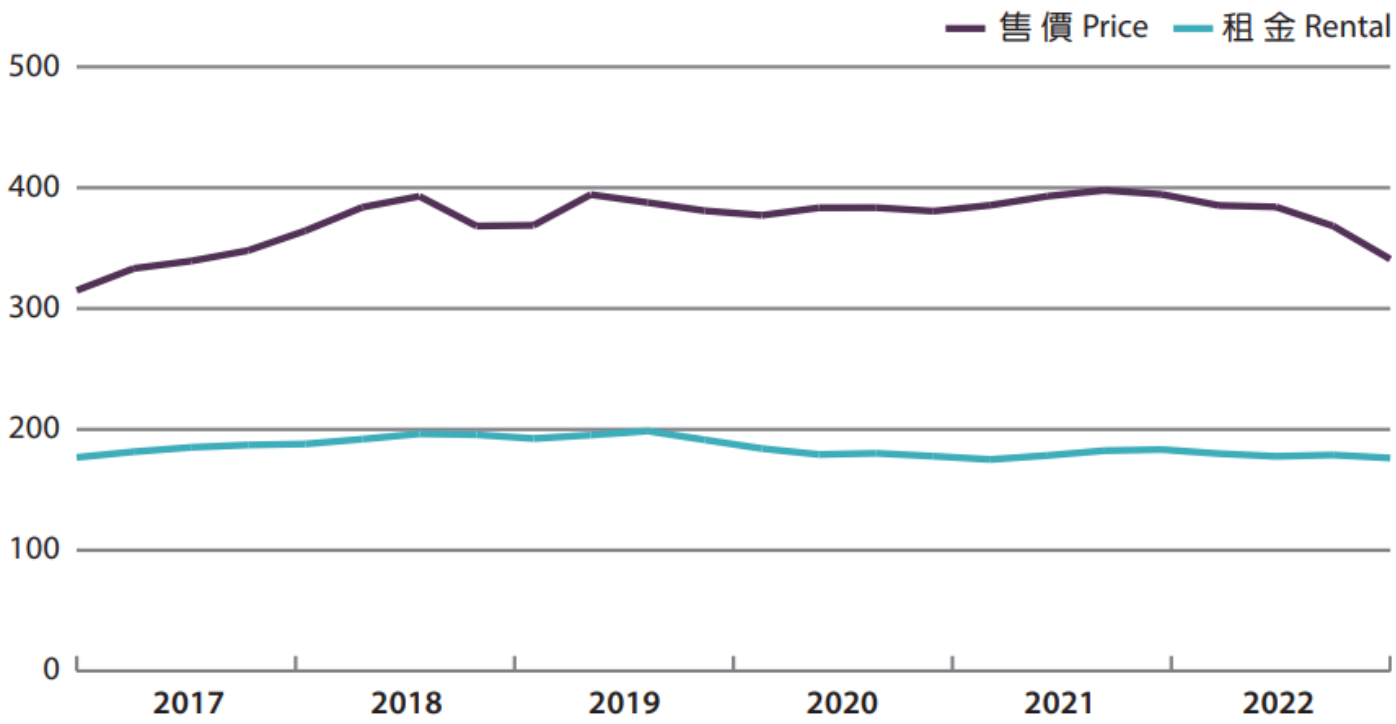
Che Cheong POON
14 January 2023; Sunday 12:00nn to 3:30pm



Sources: https://www.censtatd.gov.hk/tc/EIndexbySubject.html?scode=460&pcode=B1010002

Why do fresh vegetable prices change?

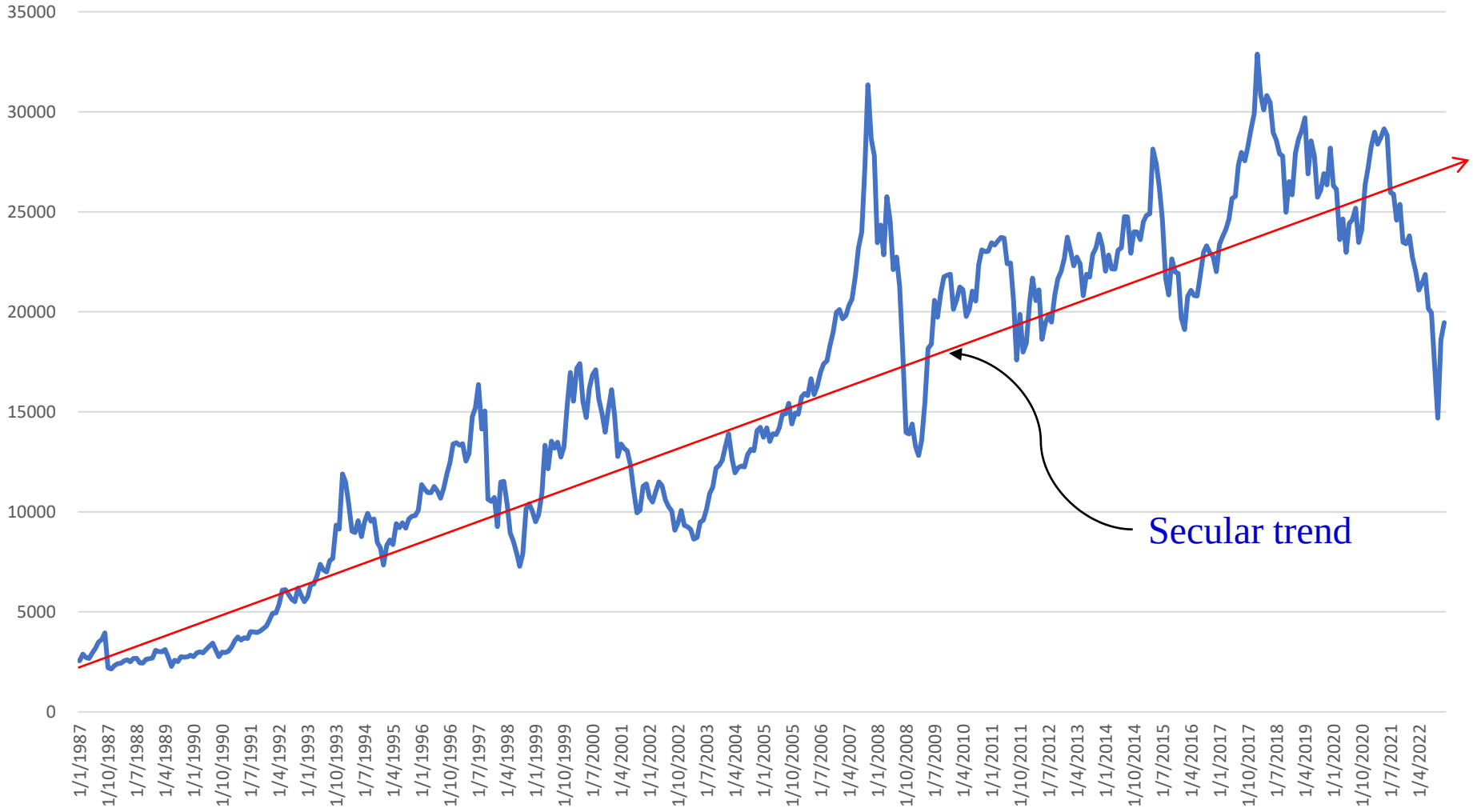
Private domestic property price and rental indices (1999=100)



Sources: Hong Kong Property Review 2023
https://www.rvd.gov.hk/doc/en/hkpr23/03a_Domestic_Overall_TC.pdf

Why do the trend movement of private residential price and rental were different in 2021-23?

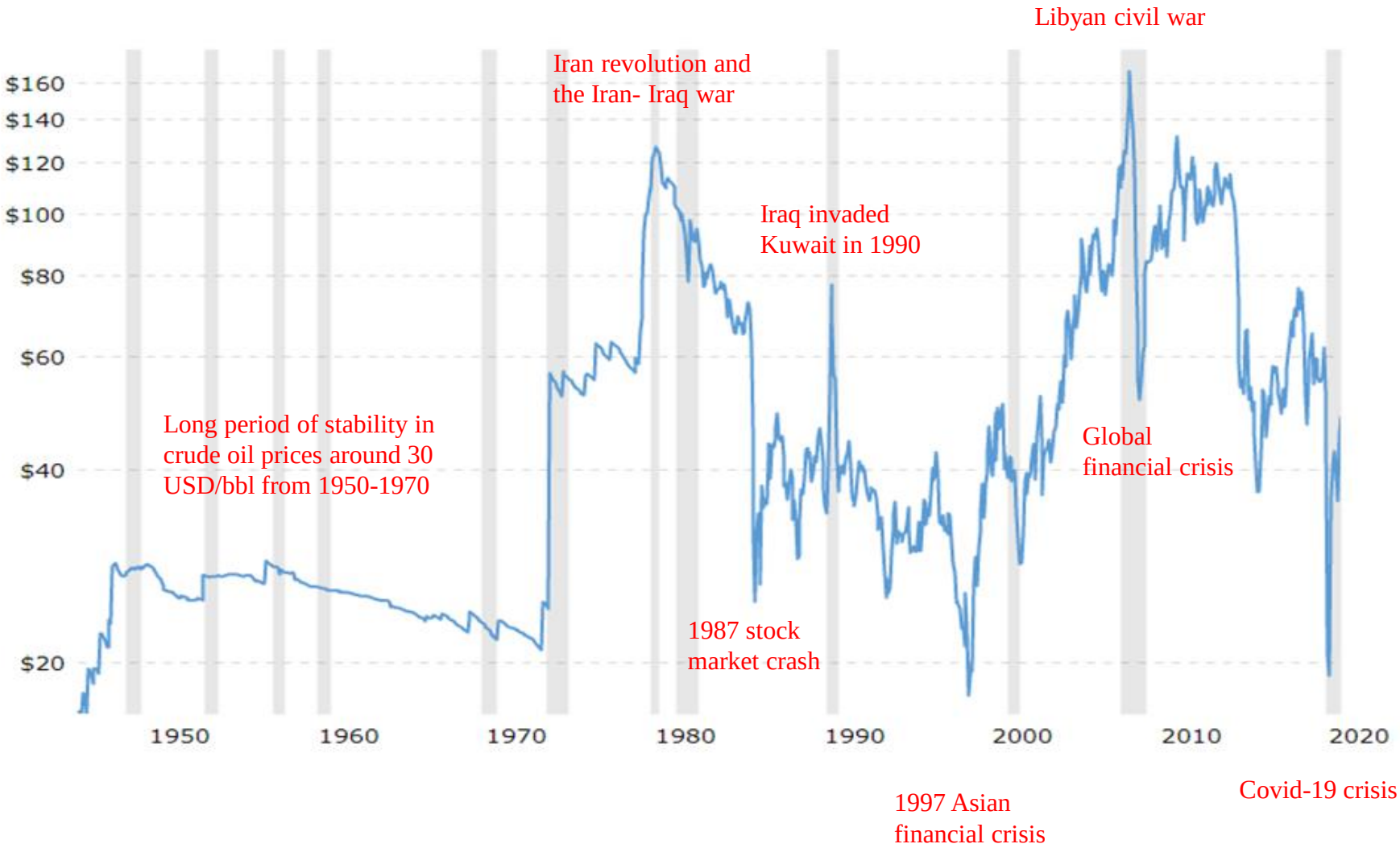
Time plot of Hong Kong HSI (31 July 1964=100) close price: Jan 1987 to Dec 2022.



Source:
https://finance.yahoo.com/quote/%5EHSI/history?period1=536371200&period2=1670889600&interval=1mo&filter=history&frequency=1mo&includeAdjustedClose=true

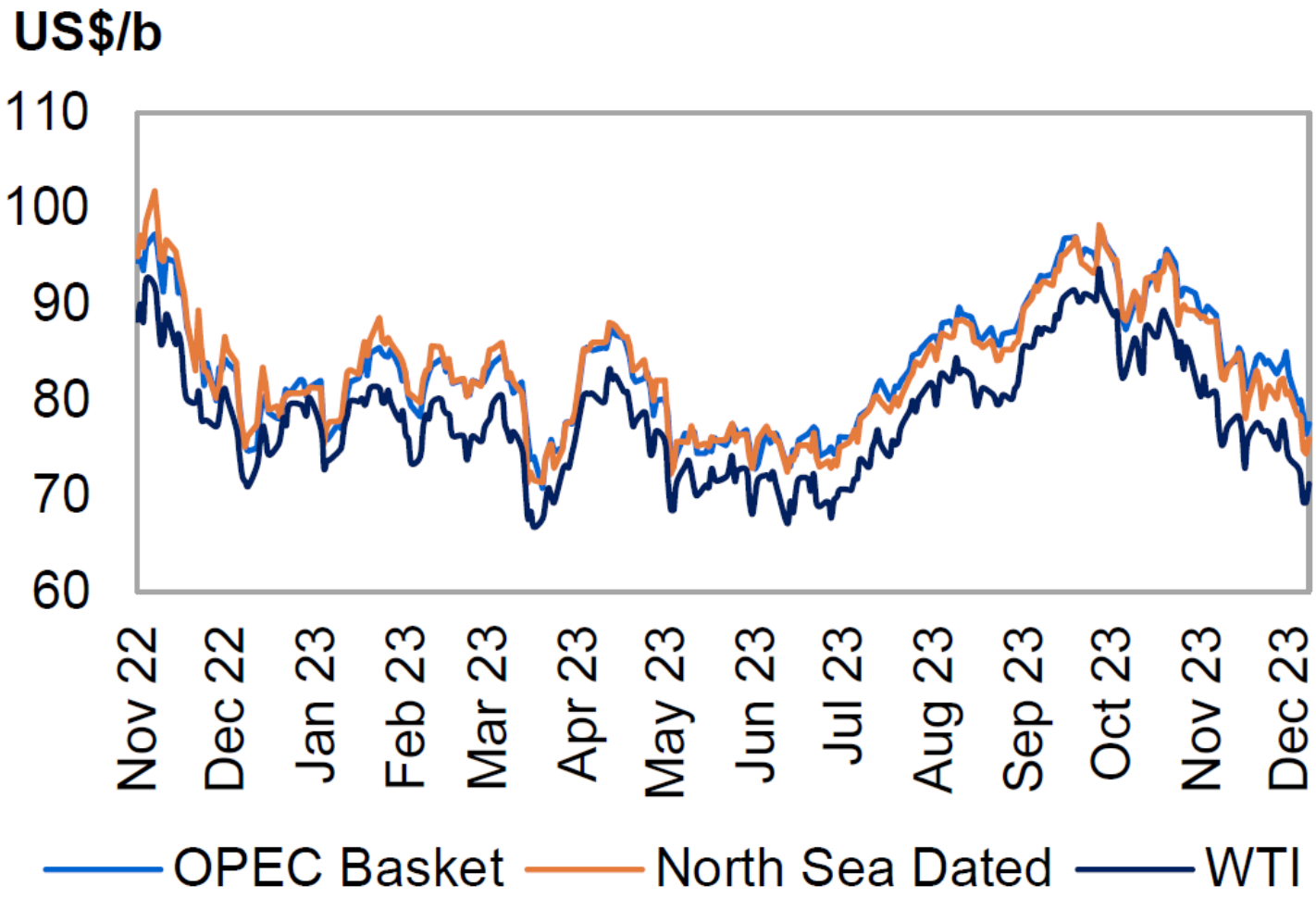
Why do stock prices change?

70 Year historical crude oil price chart in USD (in log scale)



Source: https://www.macrotrends.net/1369/crude-oil-price-history-chart
https://www.weforum.org/agenda/2016/12/155-years-of-oil-prices-in-one-chart/

Crude oil price movement Nov 22 to Dec 23



Sources:
Oil Market Report - December 2023
https://momr.opec.org/pdf-download/

This lecture is designed to provide a conceptual and practical understanding of why do prices change.

Lecture Agenda：

- The Concept of Markets
- Product Markets: Market Demand
- Product Markets: Market Supply
- Product Markets: Market Equilibrium
- Demand, Supply, and Equilibrium in the Factor Mark

The Concept of Markets

Who gives orders to make sure that the “right” products are produced in the “right” amounts and available at the “right” places?

Market Forces

- Forces of demand and supply represent the aggregate influence of self-interested buyers and sellers on price and quantity of the goods and services offered in a market.
- The force of demand refers to wants that backed by the ability to pay; the force of supply refers the willingness and ability to supply.
- The market (price) mechanism refers to the free market system and the way in which prices act as automatic signals which coordinate the actions of individual decision marking units. By means of this role, the price system provides a mechanism whereby changes in demand and supply conditions can affect the allocative efficiency of resources.

- Market forces of supply and demand means the driving force behind the operation of a market economy.
- This driving force is like an invisible hand to allocate limited human resources in line with economic rationality.
- In a free market, no regulation of any type would be needed to ensure that the voluntary and mutually beneficial exchange of goods and services took place, since this "invisible hand" would guide market participants to trade in the most mutually beneficial manner.
- The interactions of market supply and demand determine the price and quantity of production factors (labor, land, capital, and business management).

Factors affecting the market price

- Customers' needs (market demand)
- Costs (market supply)
- Competitor's price and non-price strategies
- Regulatory control under legal, political, cultural and environment
- Price localization
  It is tailoring the price of a commodity, a product, or a service to suit an international market, including the currency type.

There are many reasons why commodity prices change:

- Supply and demand are two obvious ones, and a slowing global economy logically would entail lower commodity prices.
- The US dollar is another cause of price movement in the markets, and recent dollar strength in Forex markets has resulted in a fall in the dollar price of commodities. If the US dollar appreciates against a local currency, then the country`s products will cost less in dollars.
- In the present situation the combination of weaker demand because of a slowing global economy and the resurgent US dollar has brought about lower commodity prices generally.

Product Markets: Market Demand

Consumer equilibrium

- When consumers make choices about the quantity of goods and services to consume, it is presumed that their objective is to maximize total utility.
- Utility refers to the amount of satisfaction a person gets from the consumption of a certain item of a good, and marginal utility refers to the addition made to total utility a person gets after consuming one more unit.
- In maximizing total utility, the consumer faces a number of constraints, the most important of which are the consumer's income and the prices of the goods and services that the consumer wishes to consume.
- The consumer's effort to maximize total utility, subject to these constraints, is referred to as the consumer's problem.
- The solution to the consumer's problem, which entails decisions about how much the consumer will consume of a number of goods and services, is referred to as consumer equilibrium.

Consumer surplus

- The difference between the amount that a consumer would be willing to pay for a commodity and the amount actually paid.
- This difference arises because the marginal utilities (in dollar terms) of all but the last unit exceed the price.
- Under certain conditions, the money value of consumer surplus can be measured (using a demand-curve diagram) as the area under the demand curve but above the price line.

The demand curve

- Any point on the demand curve shows optimal combination of the price and quantity demanded (that is, the consumer is in equilibrium)

- When choosing among goods, consumers would maximize their utility by equalizing the marginal utility per dollar of spending.

- The rule implies the following condition (MU_A—Marginal Utility) (P_A) (MU_M) :

$$\frac{MU_A}{P_A} = MU_M$$

The price of commodity A

- In words, the ratio of the marginal utility of two goods, MU_A and MU_M , is equal to the ratio of their prices, P_A and P_M (by letting M represents money, $P_M = 1$). This condition must hold for any individual consumer who buy the two goods in question.

The marginal utility obtained from consuming commodity A

The price of money is 1

The marginal utility of money

Law of diminishing marginal utility

- The law which says that, as more and more of any one commodity is consumed, its marginal utility declines.
- That is, the additional benefit a consumer derives from a given increase of his consumption of a good diminishes with every increase in the quantity consumed that he already has.

Reasons for the downward slope of a demand curve ：

1. Assuming that the product and money are subject to the law of diminishing marginal utility.

2. The set of indifference curves, which representing the total utility of an individual consumer can enjoy by consuming a given amount of the products and money, are convex to the origin and slope downward from left to right.

3. An inverse change in quantity demanded resulting from a price change is called a price effect which is equal to the sum of the income effect and substitution effect. That is, the combination of these effects does not change this direction.

- Quantity demanded refers to the willingness and ability of an individual to buy a given quantity of a commodity.
- Law of demand refers to the inverse relationship between changes in commodity price and changes in quantity demanded, ceteris paribus.

$$Q_d \uparrow = f\,(P \downarrow\ ;\ D_1 \uparrow\ ,\ D_{2SG} \uparrow\ ,\ D_{2CG} \downarrow\ ,\ D_3 \uparrow\ ,\ D_4 \uparrow\ ,\ D_5 \uparrow)$$

Where： Q_d represents quantity demanded

P represents the market price. It is the endogenous variable of the demand function, and its variations cause changes in the quantity demanded.

D_1 represents the consumer's money income

D_2 represents prices of related goods

(SG represents substitute goods; CG represents complementary goods)

D_3 represents preferences or tastes

D_4 represents consumers' expectation of future price movements

D_5 represents the number of buyers in the market

D_1 , D_2 , D_3 , D_4 and D_5 are exogenous variable, their variations cause changes in demand.

Product Markets: Market Supply

Basic concepts: Supply

- Any point on the supply curve denotes a producer equilibrium. This means that the firm can maximize its profits given all the known constraints.

- Producer equilibrium refers to a situation at which the marginal revenue (MR) earned from selling a product is equal to the marginal cost (MC) of producing the product. That is, MC = MR or MC = P.

- According to the law of diminishing marginal returns, when the quantity of a product is increasing, its marginal return must be decreasing, this means the marginal cost is also increasing.

Reasons for the upward slope of a supply curve ：

1. The production of this product is subject to the law of diminishing marginal returns.

2. If this is a perfectly competitive industry, the supply curve of individual firms in this industry is its marginal cost (MC) curve above the minimum point of its average variable cost (AVC).

3. That is due to an increase in the price increases the marginal revenue (MR), to meet the conditions for profit maximization of MC = MR, and to accommodate a higher marginal cost (MC), output must be pulled up.

- Quantity supplied refers to the willingness and ability of the producer to offer a given quantity of a commodity to the market.
- Law of supply refers to the direct relationship between changes in commodity prices and changes is quantity demanded, ceteris paribus.

$$Q_s \uparrow = f\,(P \uparrow \;;\; S_1 \downarrow \;,\; S_2 \uparrow \;,\; S_3 \downarrow \;,\; S_4 \uparrow)$$

Where： Q_s represents quantity supplied

P represents market price. It is the endogenous variable in the supply function, and its variation cause changes in the quantity supplied.

S_1 represents input prices (or costs)

S_2 represents technology

S_3 represents sellers' expectation of future price movements:

Short run ↓; Long run ↑ (we generally do not look at long run.)

S_4 represents the number of sellers in the market.

S_1 , S_2 , S_3 and S_4 are exogenous variable, their variations cause changes in supply.

Product Markets: Market Equilibrium

Basic concept：Equilibrium

- Market equilibrium is the state of the market at which the market quantity supplied is equal to the market quantity demanded, and the adjustment process of commodity prices and quantity is stop.
- Equilibrium price is the price which equalizes the quantity of market supplied and the quantity of market demanded.
- Equilibrium quantity is the quantity which equalizes the market supply price and the market demand price

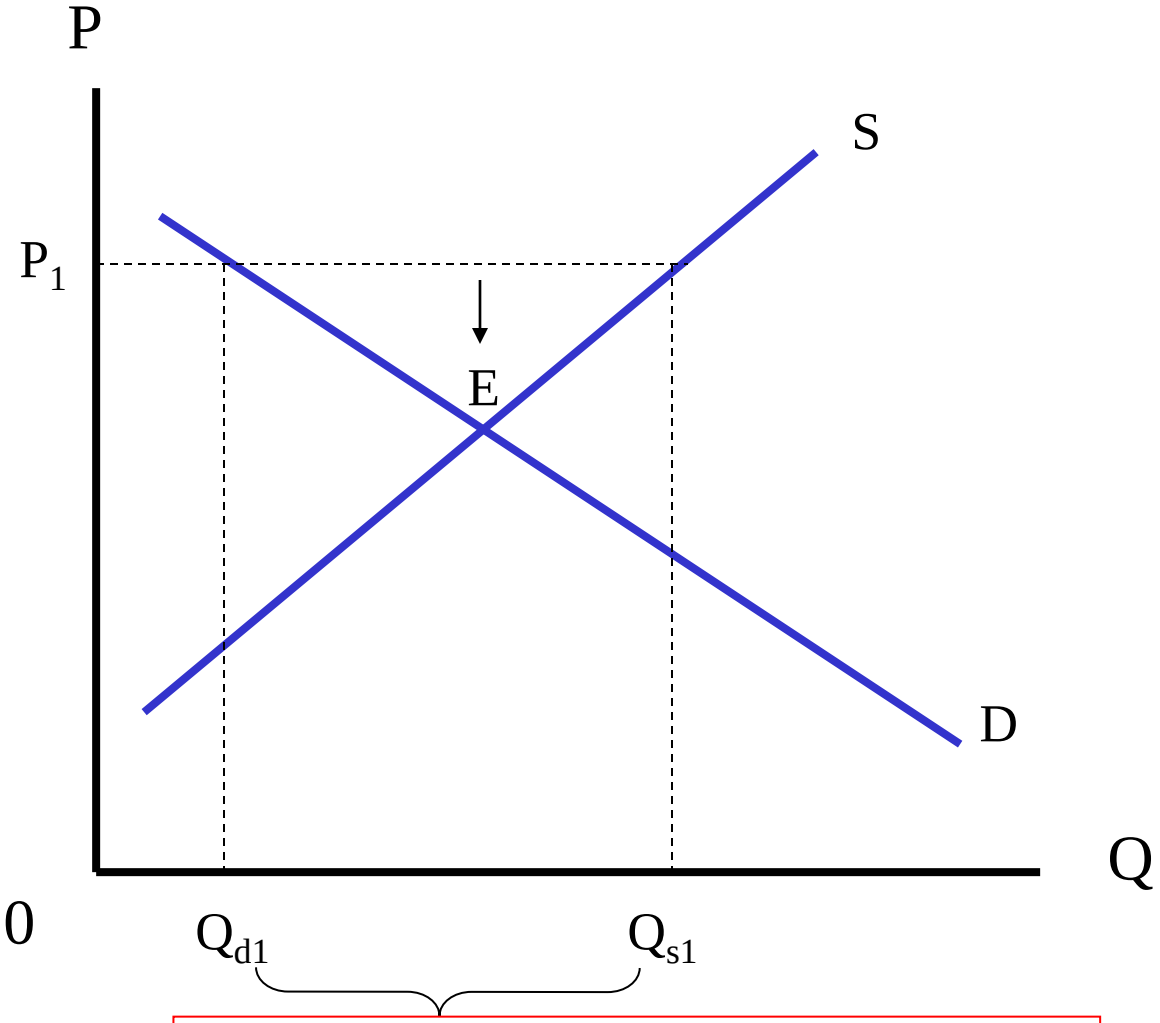
Basic concepts: Disequilibrium

- Market disequilibrium means that market supply is not equal to market demand, or market supply price is not equal to the market demand.

- A surplus occurs when the quantity of market supplied is greater than the quantity of market demanded at a given market price (not an equilibrium price); this market atmosphere will make sellers feel anxious and force them to compete with one another by offering lower prices.

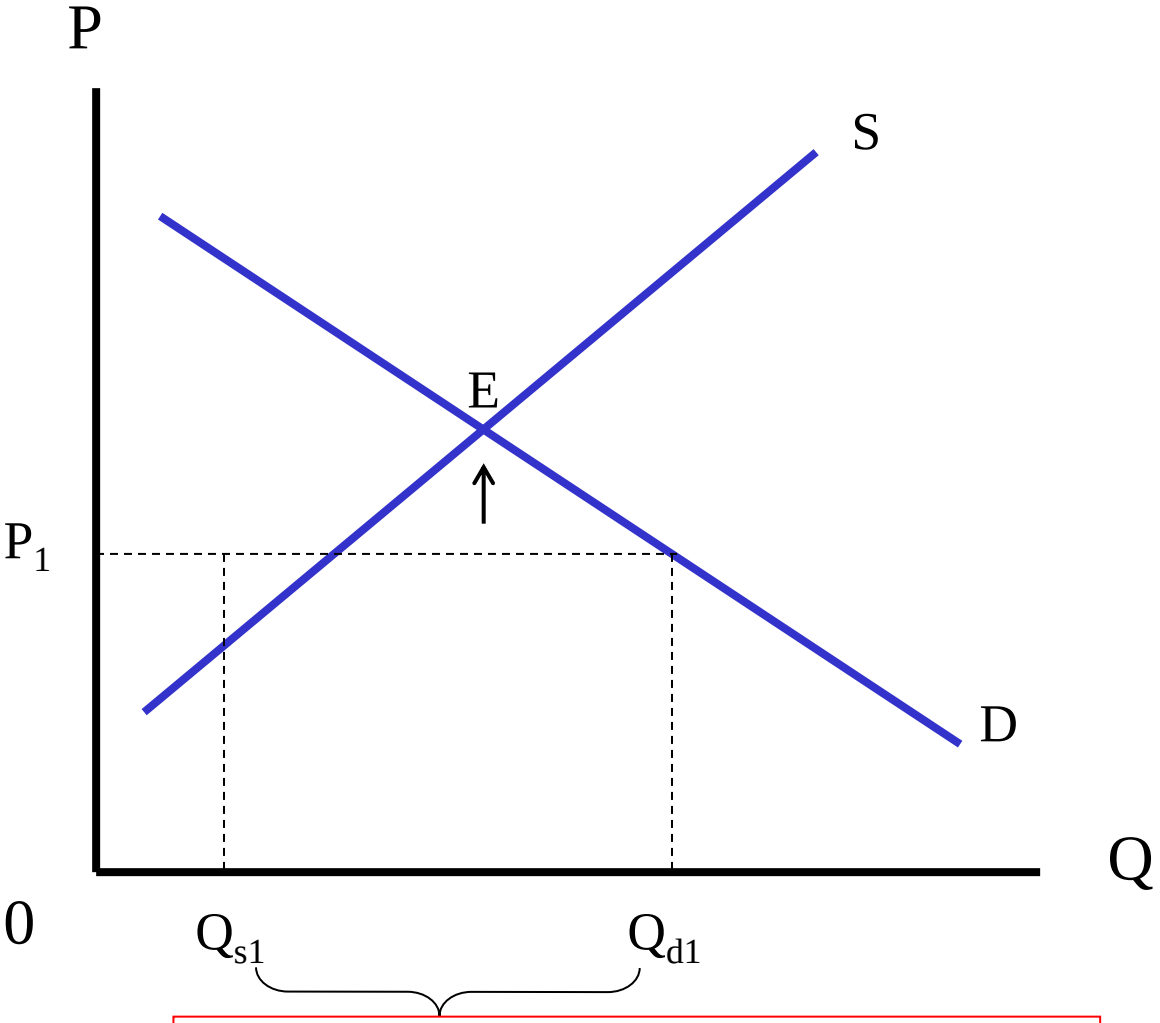
- A shortage occurs when the quantity of market demanded is greater than the quantity of market supplied at a given market price (not an equilibrium price); this market atmosphere will make buyers feel anxious and force them to compete with one another by offering higher prices.

- In a competitive market, the competing ask and bid behavior of market participants will make the market price adjusted upward until the market equilibrium is reached.



The Quantity supplied is greater than the quantity demanded ➡ Surplus (Excess quantity supplied)

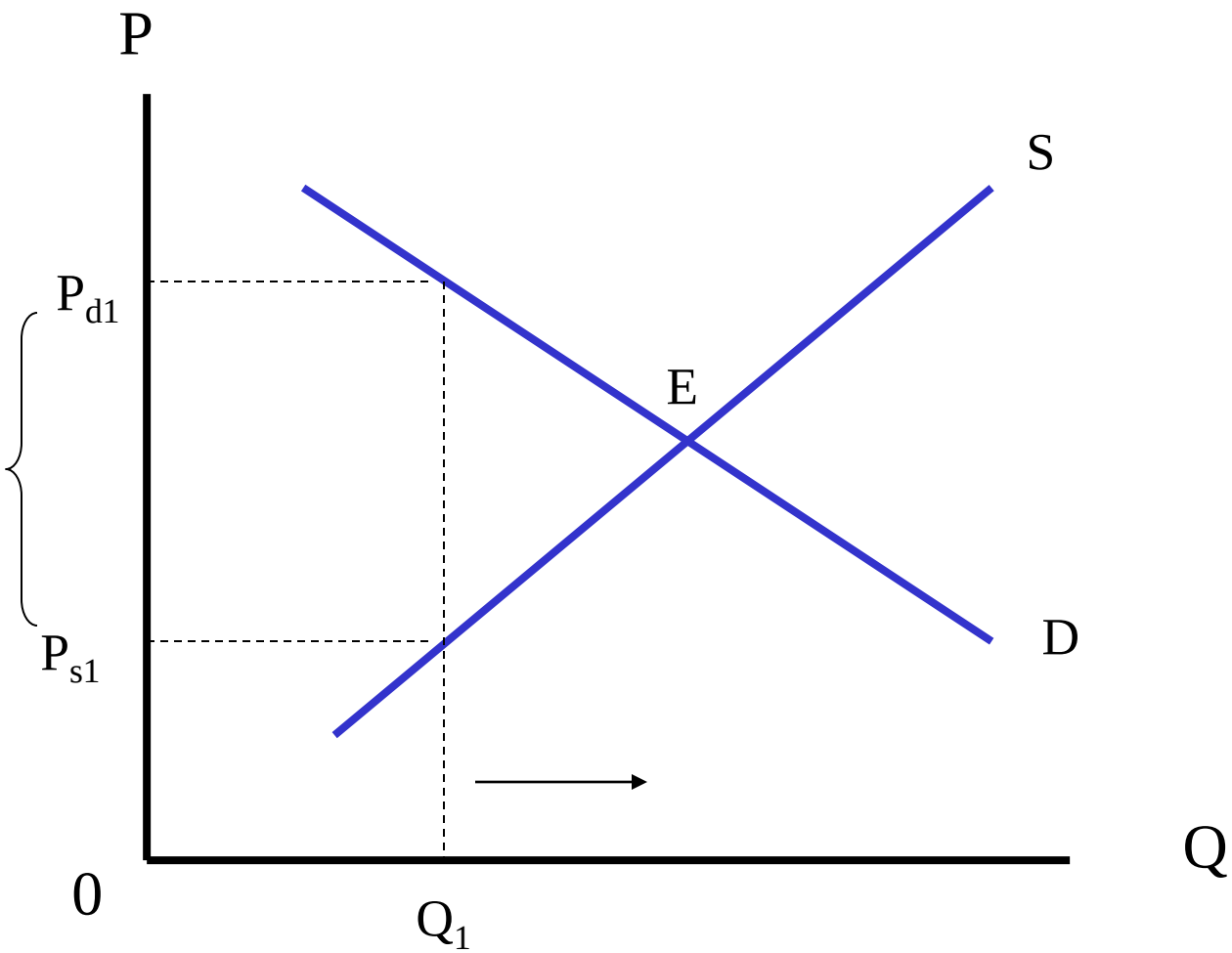
Through downward adjustments in market prices to make the quantity supplied equal to the quantity demanded.



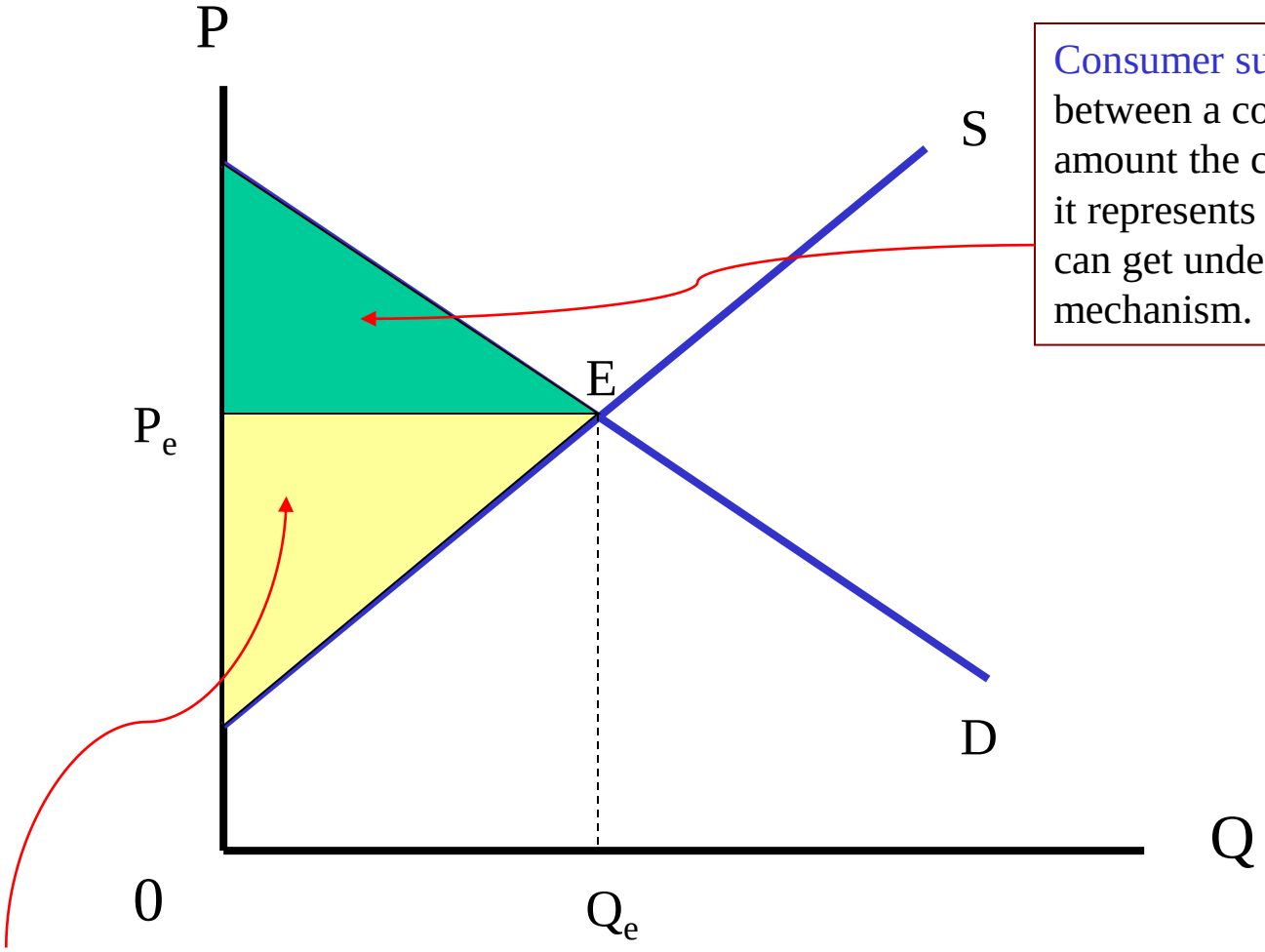
The Quantity demanded is greater than the quantity supplied ➡ Shortage (Excess quantity demanded)

Through upward adjustments in market prices to make the quantity supplied equal to the quantity demanded.

The demand price are higher than the supply price (Excess demand price)



Through upward adjustments in quantity supplied and demanded to make the supply price equal to demand price.



Consumer surplus is the difference between a commodity's price and the amount the consumer is willing to pay, it represents the profits the consumer can get under the operation of market mechanism.

Producer surplus is the difference between a commodity's price and the price the firm is willing to offer, it represents the sum of its profit and total fixed cost.

Three steps in Comparative Static analysis

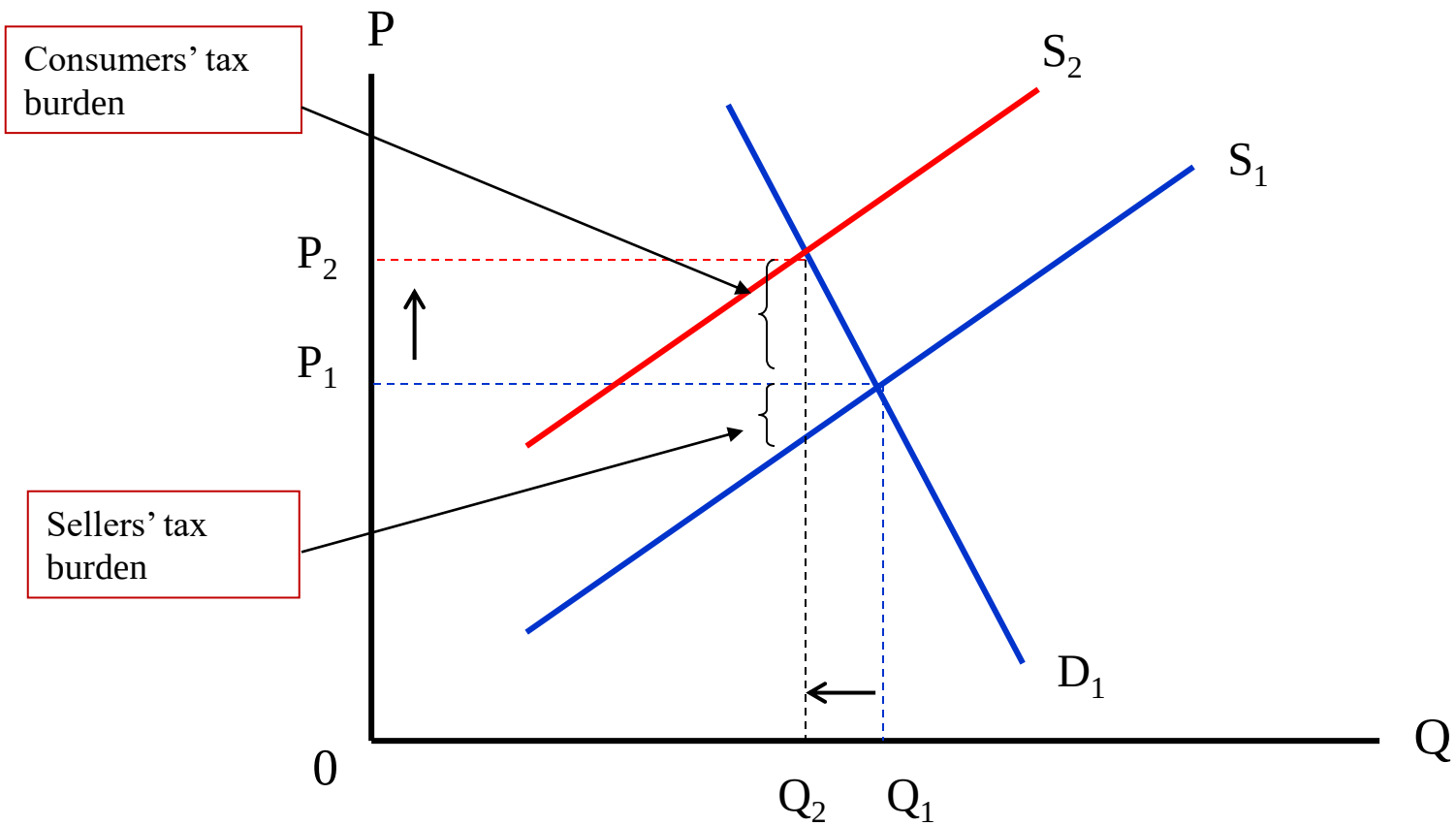
1. To decide whether the disturbance will cause a change in the exogenous variable(s) in the supply or demand function(s).

2. Determine the direction of movement of the curve.

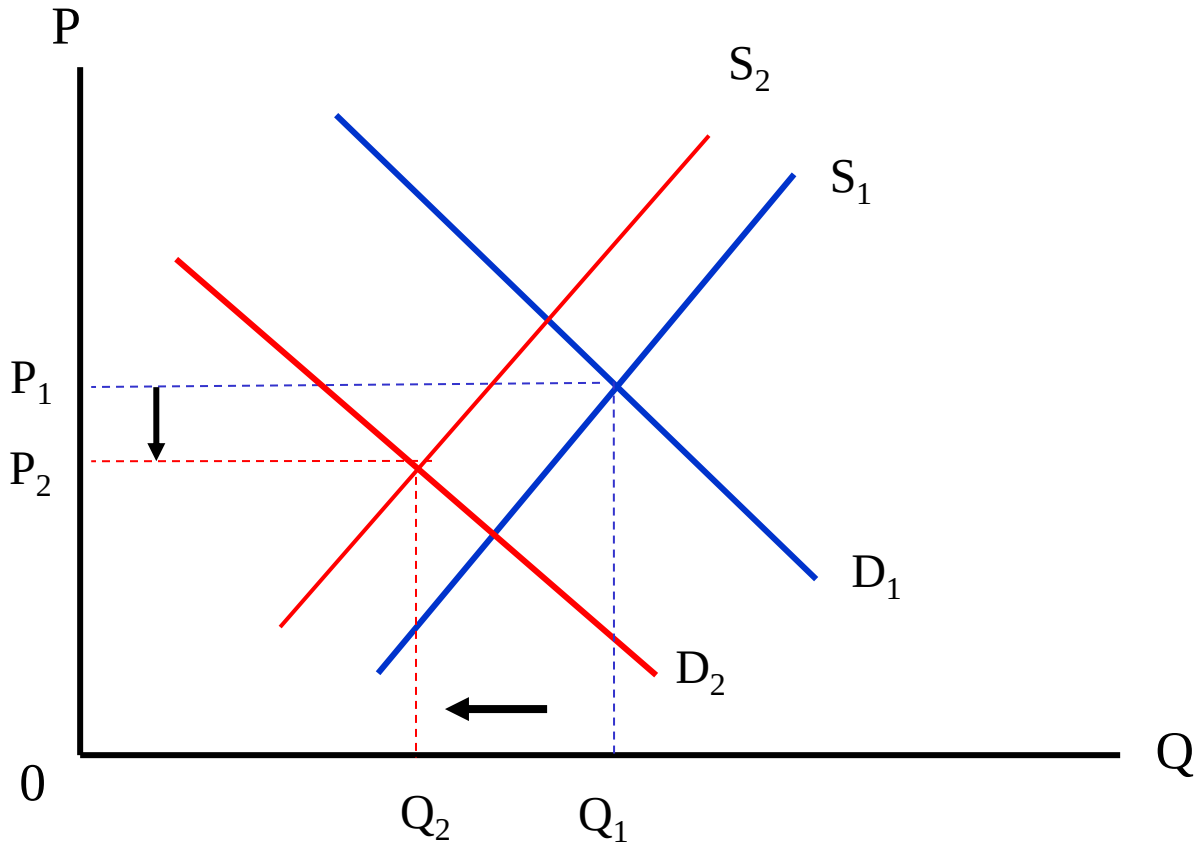
3. Use Supply-Demand diagram to illustrate how the shift(s) of the supply curve and/or demand curve affect(s) the equilibrium price and quantity.

An article in *New York Times* about a successful marketing campaign in the French Champagne industry reported that "many corporate managers were excited for the shot up of champagne prices, but they were also worried about such a sharp rise in prices would lead to a drop in the quantity demanded and then lower the price." What was wrong with the managers in the analysis of this market situation?

What will be the effects on the market price and quantity of cigarettes if the Council on Smoking and Health (COSH) successfully urge upon the government to impose a heavier tax on cigarettes to lower smoking rate in Hong Kong.



What would be the effect on the equilibrium price and quantity of touring coach services after the outbreak of the COVID-19 crisis in Hong Kong?



Demand, Supply, and Equilibrium in the Factor Market

- Factor of production
  - Human resources
    - Labor
    - Entrepreneurial ability or Management
  - Physical resources
    - Land or Natural resources
    - Capital

Some scholars believe：

Factor market

- Capital market
- Labor market
- Land market
- Property rights market
- Technology and information market

Three steps used by a firm to make production decisions

1. Determine the relationship between the quantity of factor inputs and the quantity of product output.
2. Determine the relationship between the quantity of product output and the production cost.
3. Determine the price or the quantity that can maximize the firm's profit.

Factor price

- An increase in factor prices implies a higher production cost.
- Factor prices are determined by the supply and demand of factor inputs; that is, the interaction of business firms' factor demand and households' factor supply determine the factor market price.
- Factor demands are derived demands.
- Factor demands are interdependent demands.
- Different kinds of production factors have different shapes of their supply curves.

Derived demand

- There is a difference between producers' derived demand and consumers' demand for a product.
- While consumers demand for a product is because of the product can satisfy their wants directly, the demand for a production factor by producers is derived from the demand for the product which is produced by that production factor.

True or false?

The lowest cost is a necessary condition to achieve the maximum profit.

The lowest cost combination of inputs

The lowest cost combination → Producer equilibrium in the factor market

$$\frac{MP_1}{P_1} = \frac{MP_2}{P_2} = \cdots = \frac{MP_n}{P_n}$$

Where MP_1 , MP_2 , …, MP_n is the marginal product of n factors of production (inputs), respectively; P_1 , P_2 , …, P_n is their respective factor prices.

Marginal product (MP) means the amount increase in total product resulting from a unit increase in the variable factor input.

$$MP_L = \frac{\Delta Q}{\Delta Q_L}$$

Seller's equilibrium in a perfectly competitive factor market: The factor demand curve

- Marginal revenue product (MRP) is the product of the marginal product (MP) and marginal revenue (MR) ：

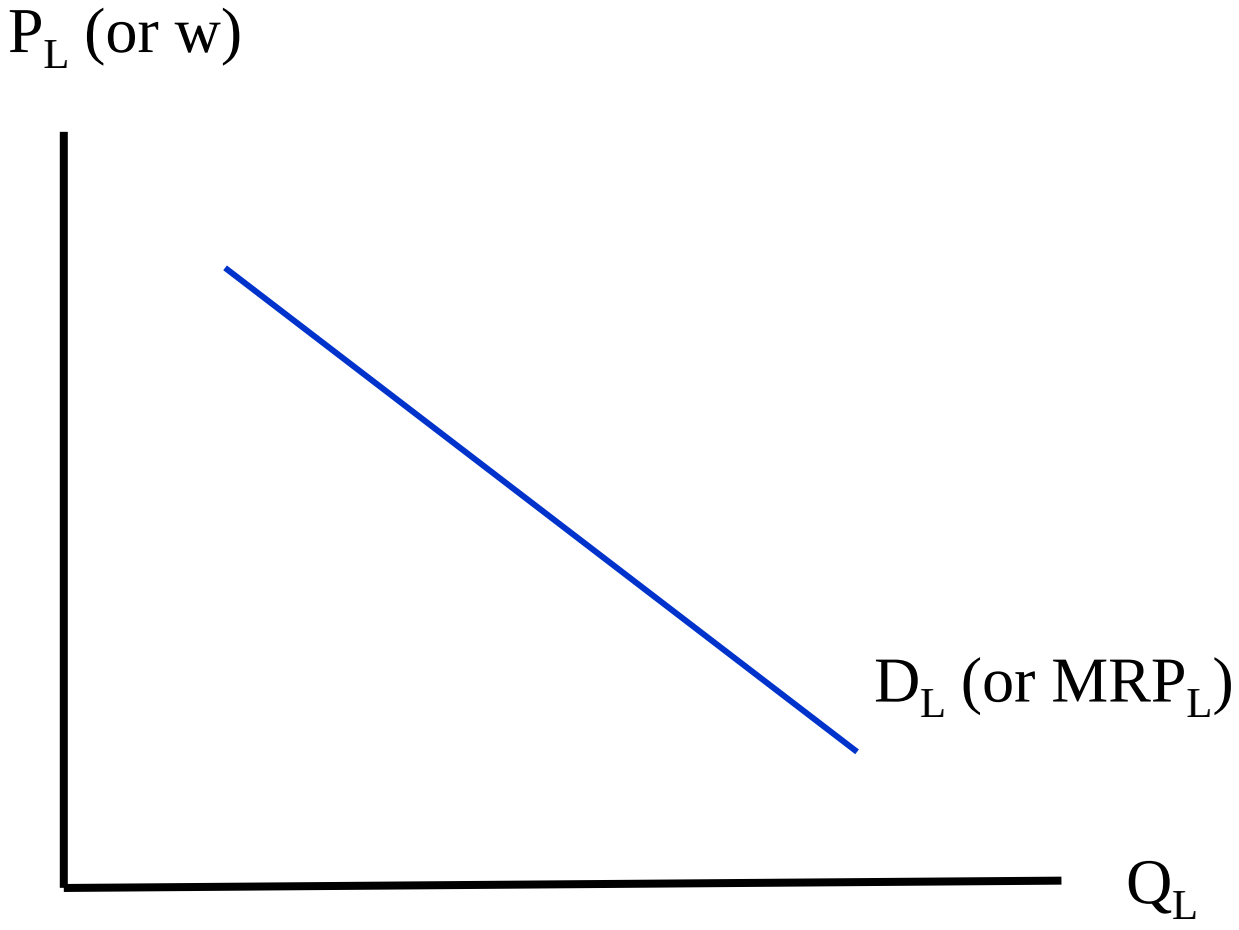
$$MRP_i = MP_i \times MR$$ Example： $MRP_L = MP_L \times MR$

- The most profitable amount of a product factor used must meet the following condition :

$$P_i = MRP_i$$ Example： $w = MRP_L$

- If we use Q_L to represent the amount of production factor hired. Because of the functioning of the law of diminishing marginal returns, in general, marginal product (MP_L) diminishes as the amount of factor input increases. Thus, the MRP curve must be negatively sloped.

- In order to achieve maximum profits, a firm's factor demand is determined by the intersection of the MRP_L curve and the factor price curve. Thus, the downward sloping part of the MRP_L curve is the firm's factor demand curve.



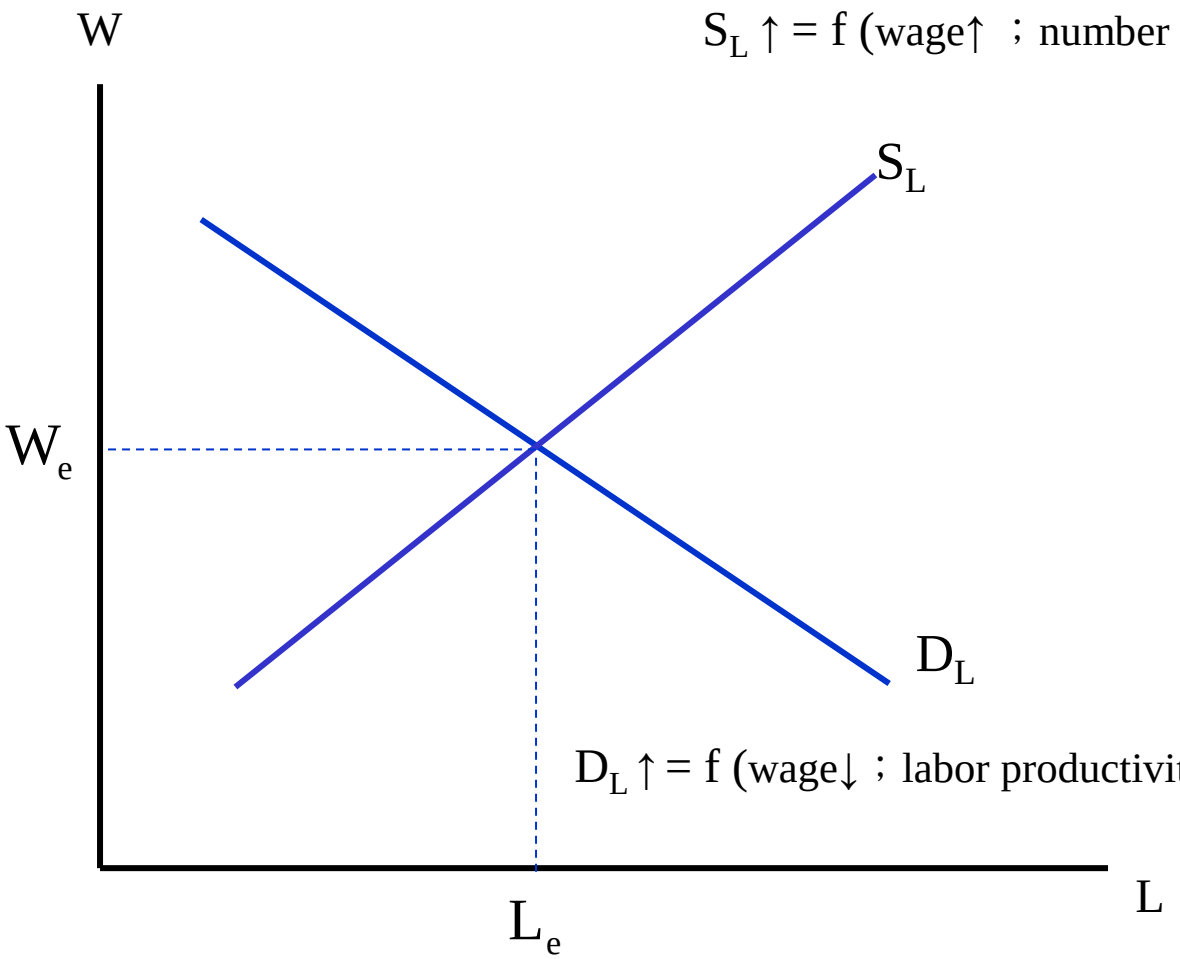
Any points on the factor demand curve denotes a producer equilibrium.

$$w = MRP_L$$

$$Q_L^d\uparrow = f(P_L\downarrow ; MRP_L\uparrow , Q^d\uparrow)$$

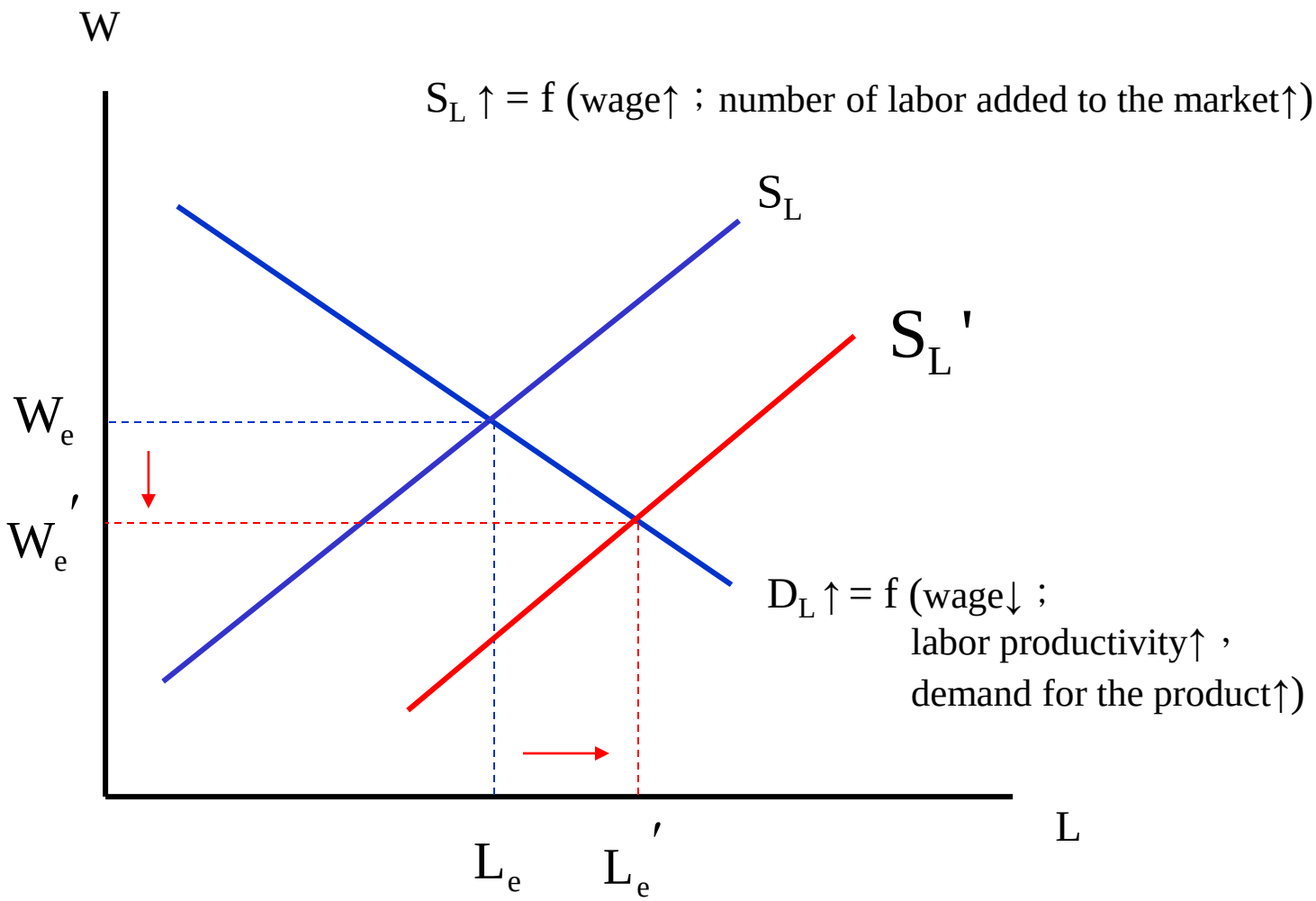
Example: Labor Market

$S_L \uparrow = f$ (wage↑ ；number of labor added to the market↑)

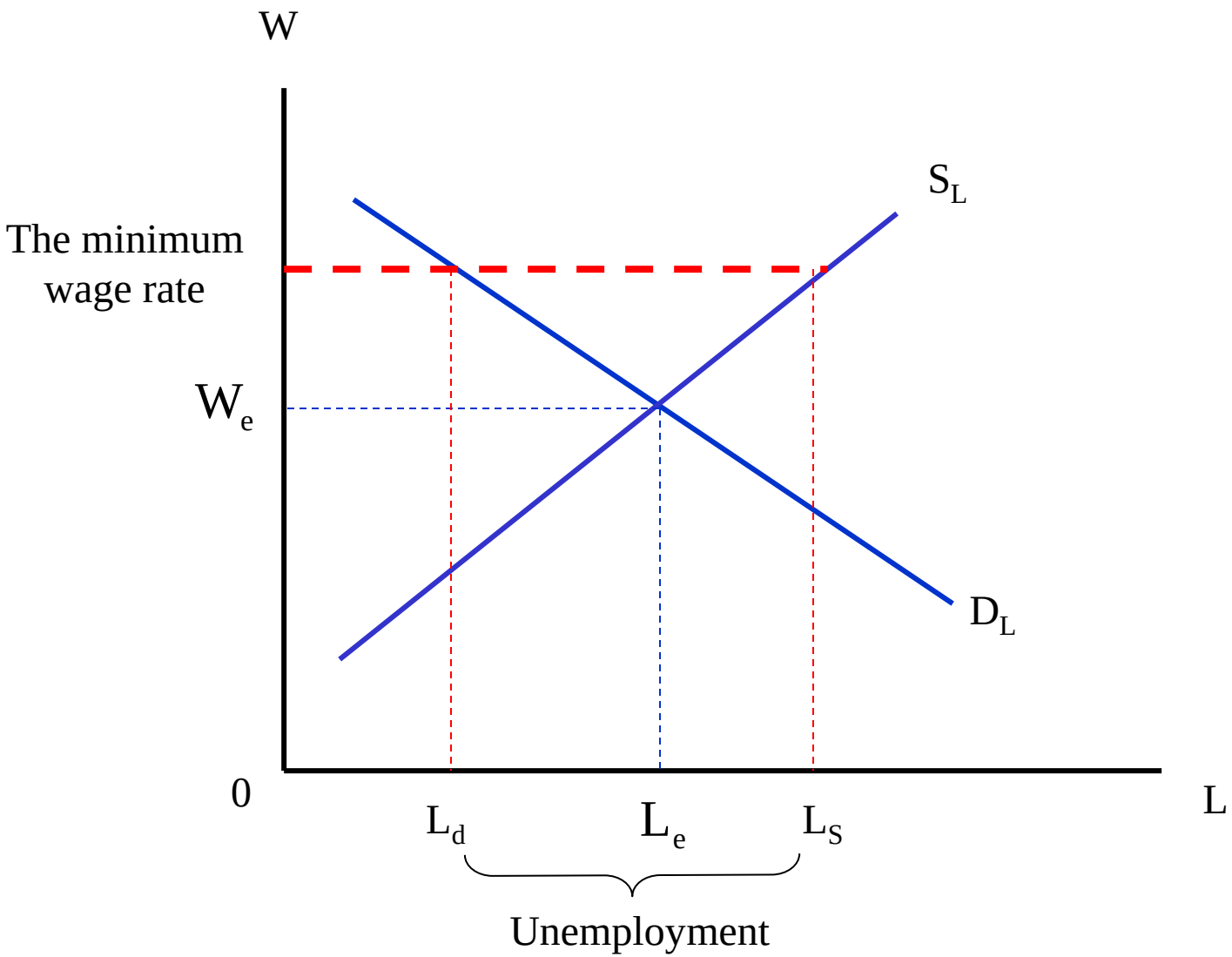


$D_L \uparrow = f$ (wage↓；labor productivity↑，demand for the product↑)

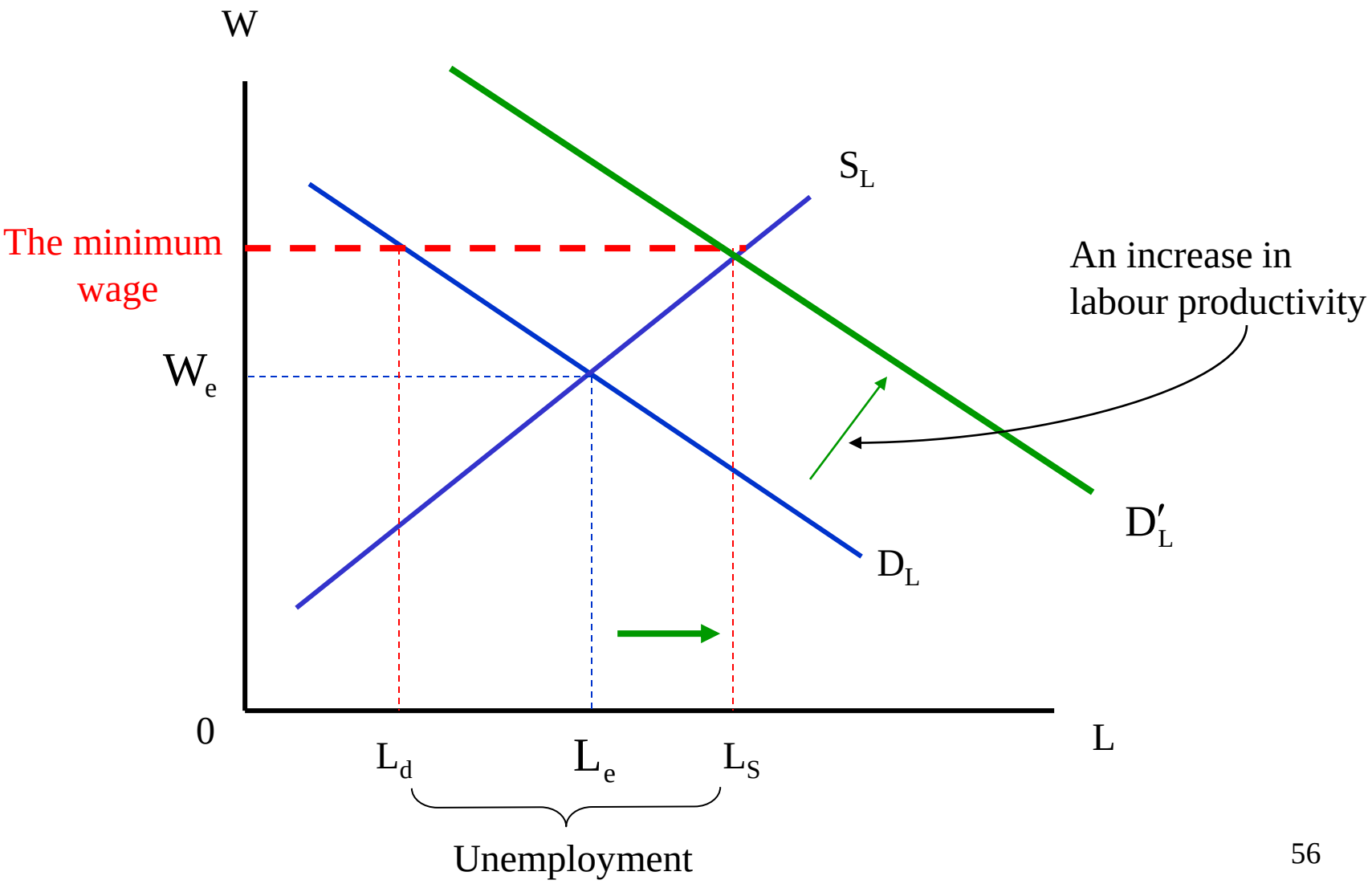
Comparative static analysis: A number of graduates entering the labor market



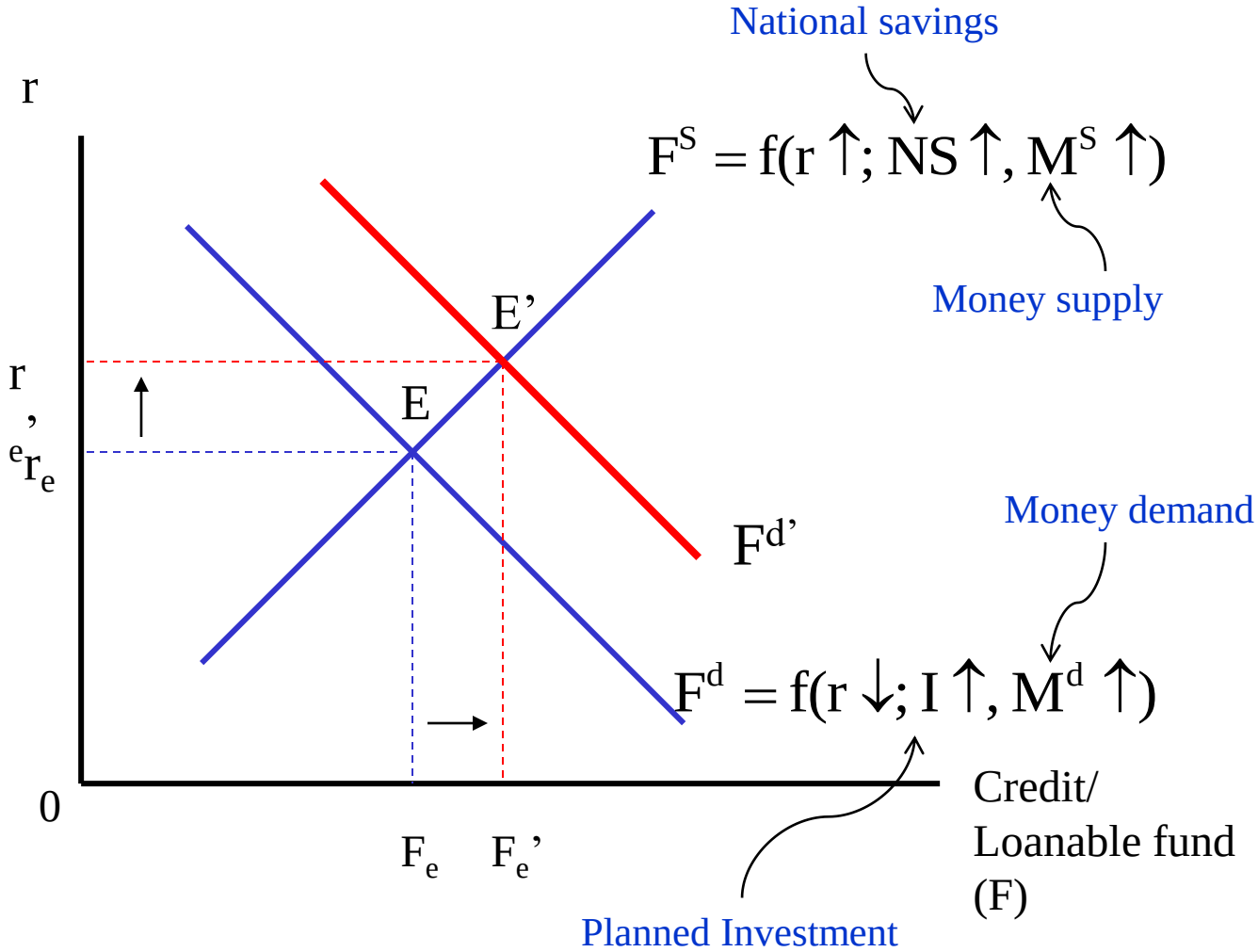
Comparative static analysis: Minimum wage legislation would cause unemployment



If the minimum wage legislation will raise labor productivity, the unemployment situation may improve



Example: Capital Market
The issue of public debt will cause market interest rate to increase



Thank you for your attention