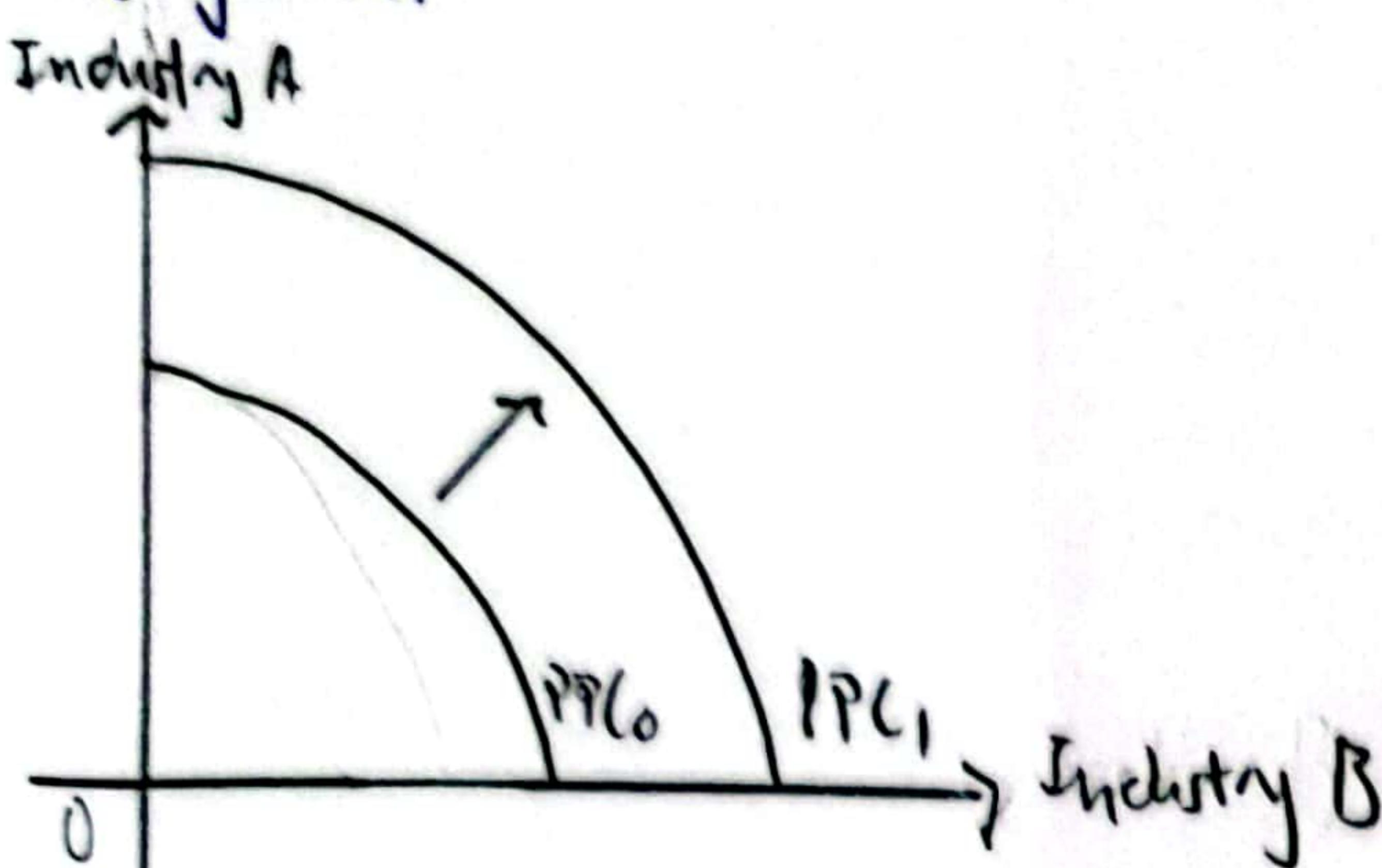


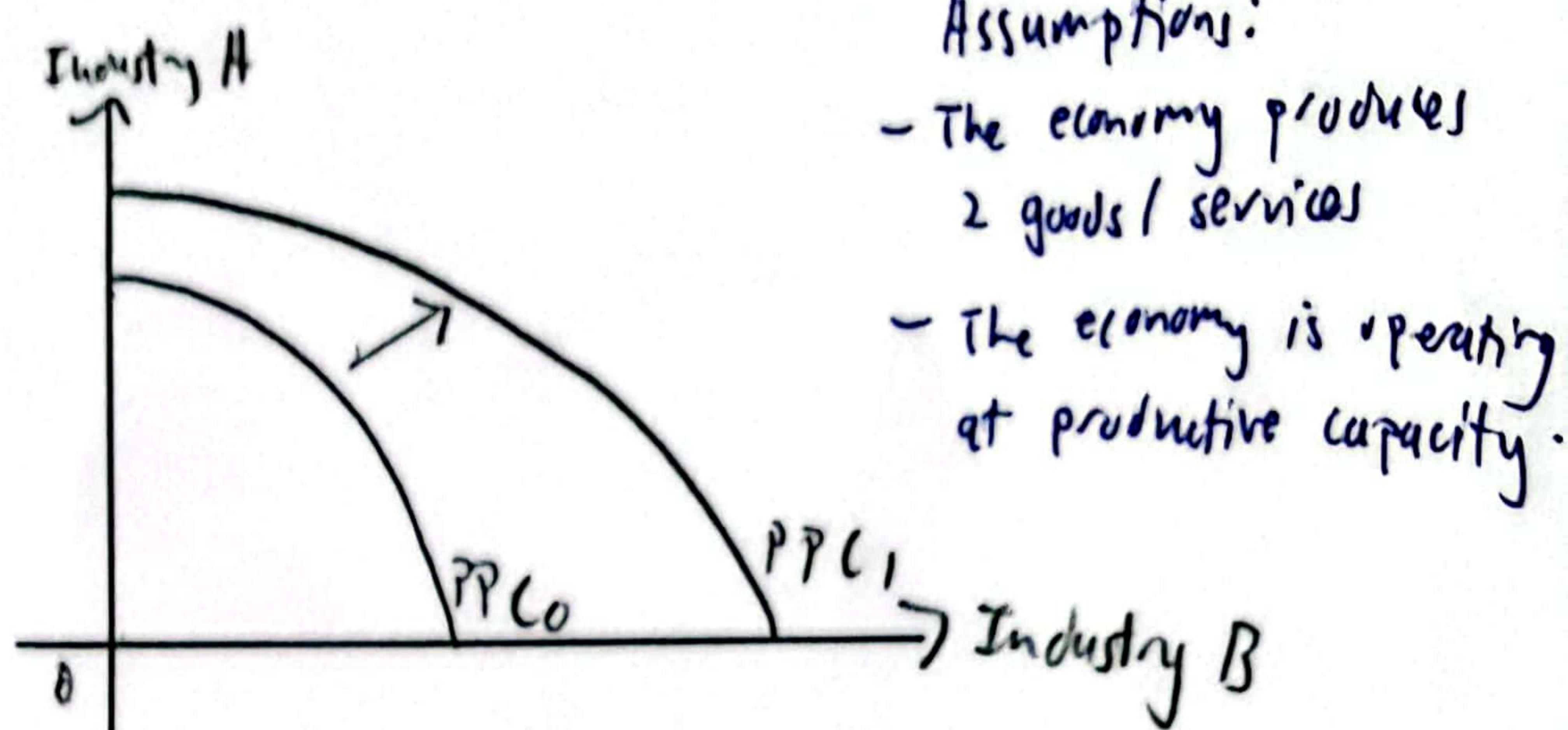
## Central Economic Problem

- Opportunity cost is defined as the benefits of the next best alternative forgone
  - Explained in terms of benefits only!

- Economic growth:

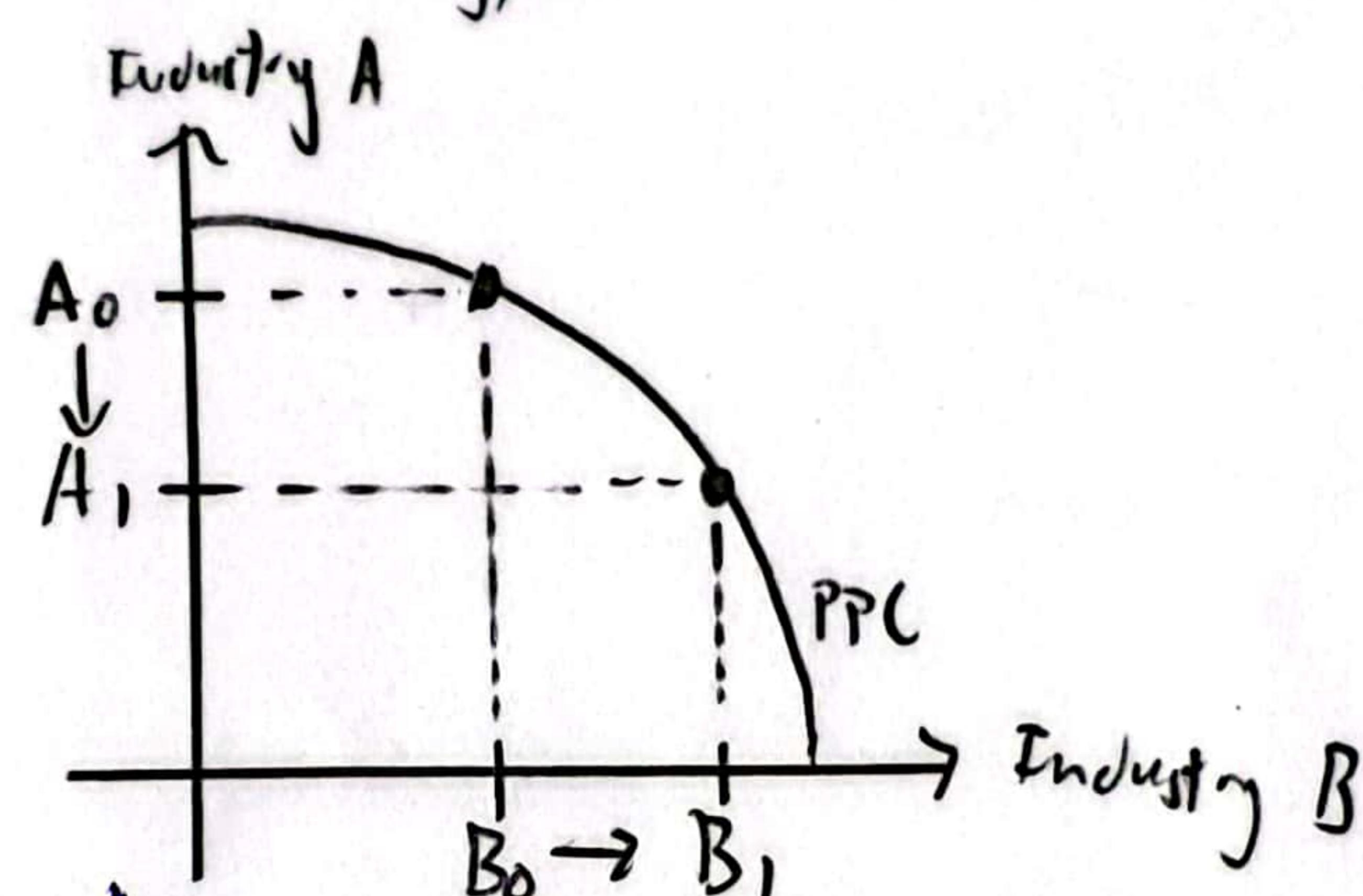


Parallel shift (The industries benefit equally)



Non-parallel shift (One industry benefits more than the other)

- Movement along PPC curve:



Opportunity cost: Forgoing  $A_0 - A_1$  units of A for  $B_1 - B_0$  units of B.

- Positive statements

- Purely facts-based
- Does not involve value judgment

VS

- Normative statements

- Opinion based
- Requires value-judgement

Assumptions:

- The economy produces 2 goods/services
- The economy is operating at productive capacity.

(The concavity indicates the increasing opportunity cost as resources are not homogeneous)

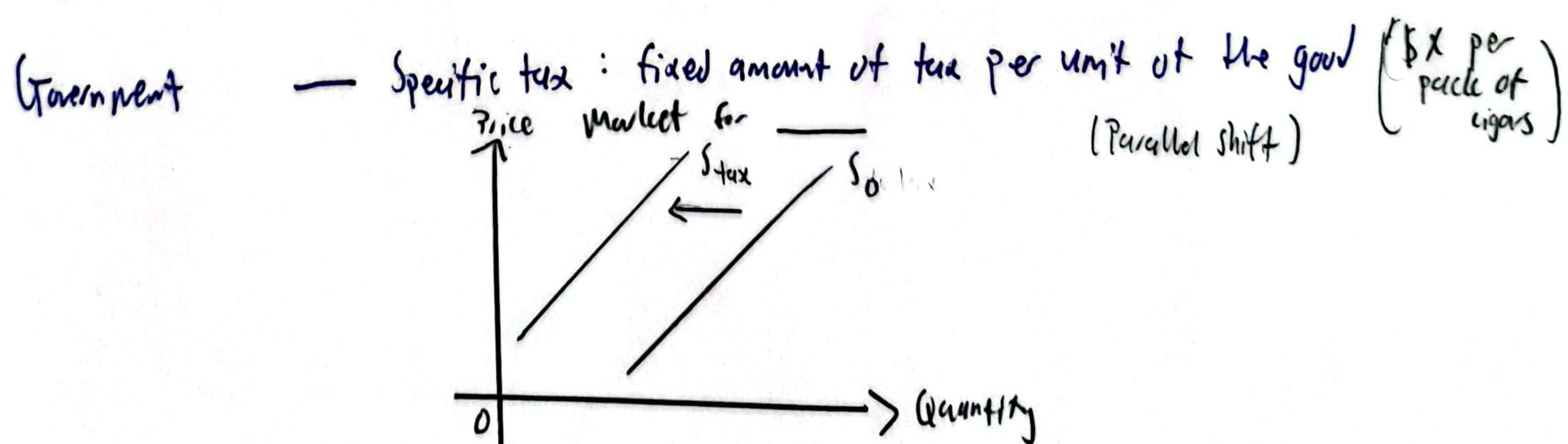
(The negative slope indicates opp. cost)

# Factors of the Market Economy

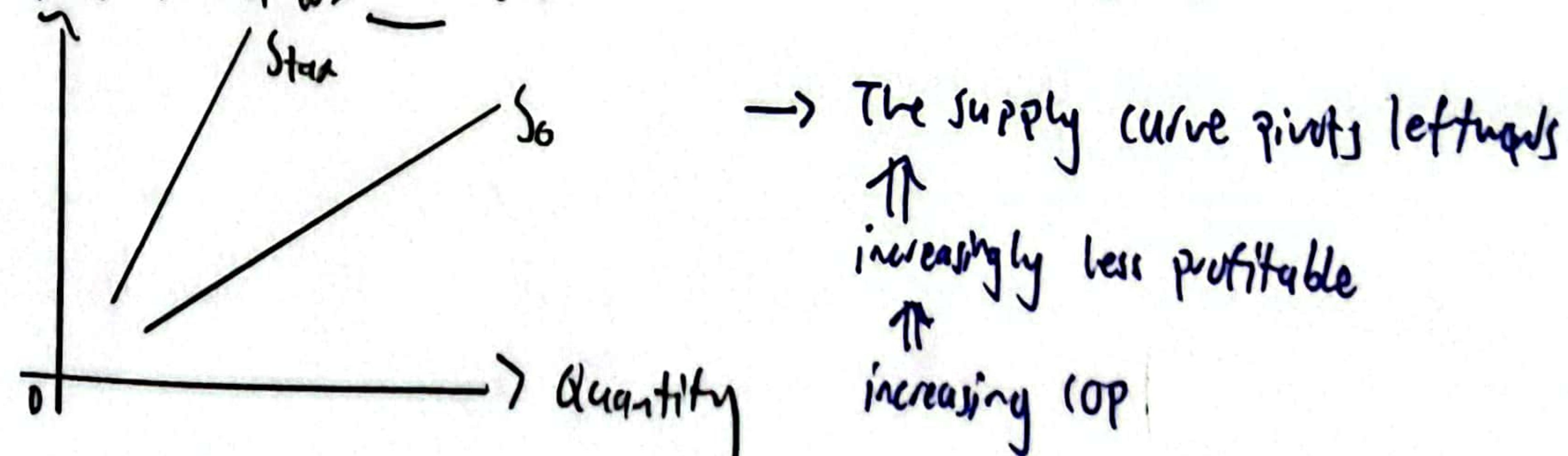
- D Demand:
- Tastes and preferences
  - Income ( $Y_d \propto$  q'ty normal goods) ( $Y_d \propto \frac{1}{q'ty inferior goods}$ )
  - Government policies (e.g. awareness campaign)
  - Expectations — Expect  $\uparrow P \Rightarrow$  buy more now  $\Rightarrow \uparrow D$  (current)  
 $\downarrow P \Rightarrow$  postpone purchases  $\Rightarrow \downarrow D$  (current)
  - Expect  $\uparrow Y_d \Rightarrow \uparrow D$  (current)  
 $\downarrow Y_d \Rightarrow \downarrow D$  (current)
- R related good's price — Substitutes in consumption:  $\uparrow D$  for A  $\Leftrightarrow \downarrow D$  for B
- Seasonal (e.g. NY)
- Interest rate — Cost of borrowing, reward for saving, ...  
D for big ticket items
- Population —  $\uparrow$  Population  $\Rightarrow \uparrow D$   
 $\uparrow$  income levels in population  $\Rightarrow \uparrow D$

- D Supply:
- Technology —  $\uparrow$  technology  $\Rightarrow \downarrow OP \Rightarrow \uparrow S$

Input prices  $\propto OP \propto S$  (e.g. Soil  $\propto S$  of plastics)



— Ad Valorem tax: a percentage of the value of the good  
Price Market for (GST is -% of every good)



口 Supply      Expectation — expect  $\uparrow P \Rightarrow \downarrow \text{current } S$ ,  $\uparrow \text{future } S$   
 $\downarrow P \Rightarrow \uparrow \text{current } S$

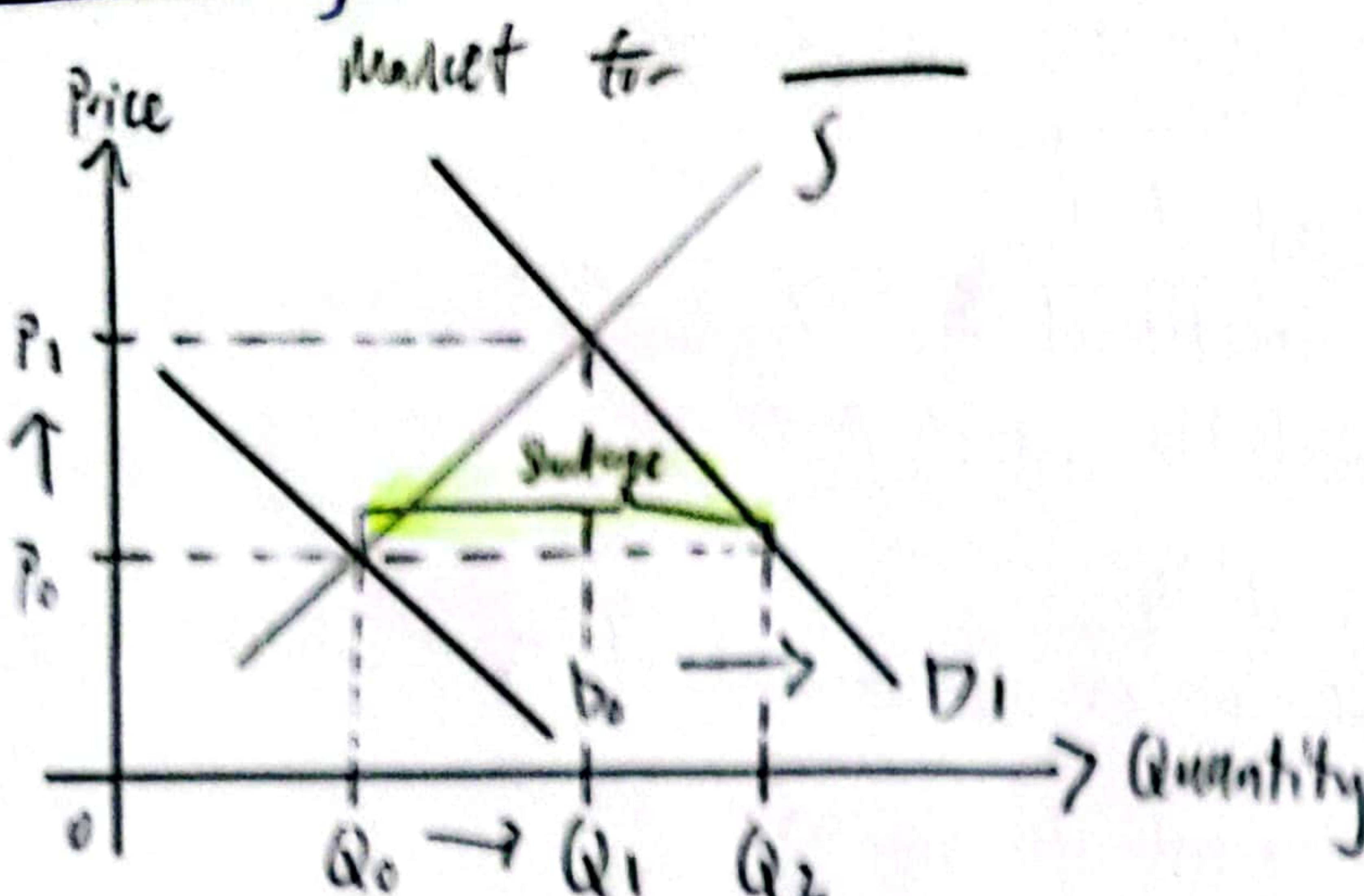
Related goods' prices — substitutes in production: produced using the same resources  
( $\downarrow P$  of rice  $\Rightarrow \uparrow S$  of corn)  
complements in production

Sellers' number — #  $\sim S$

Others

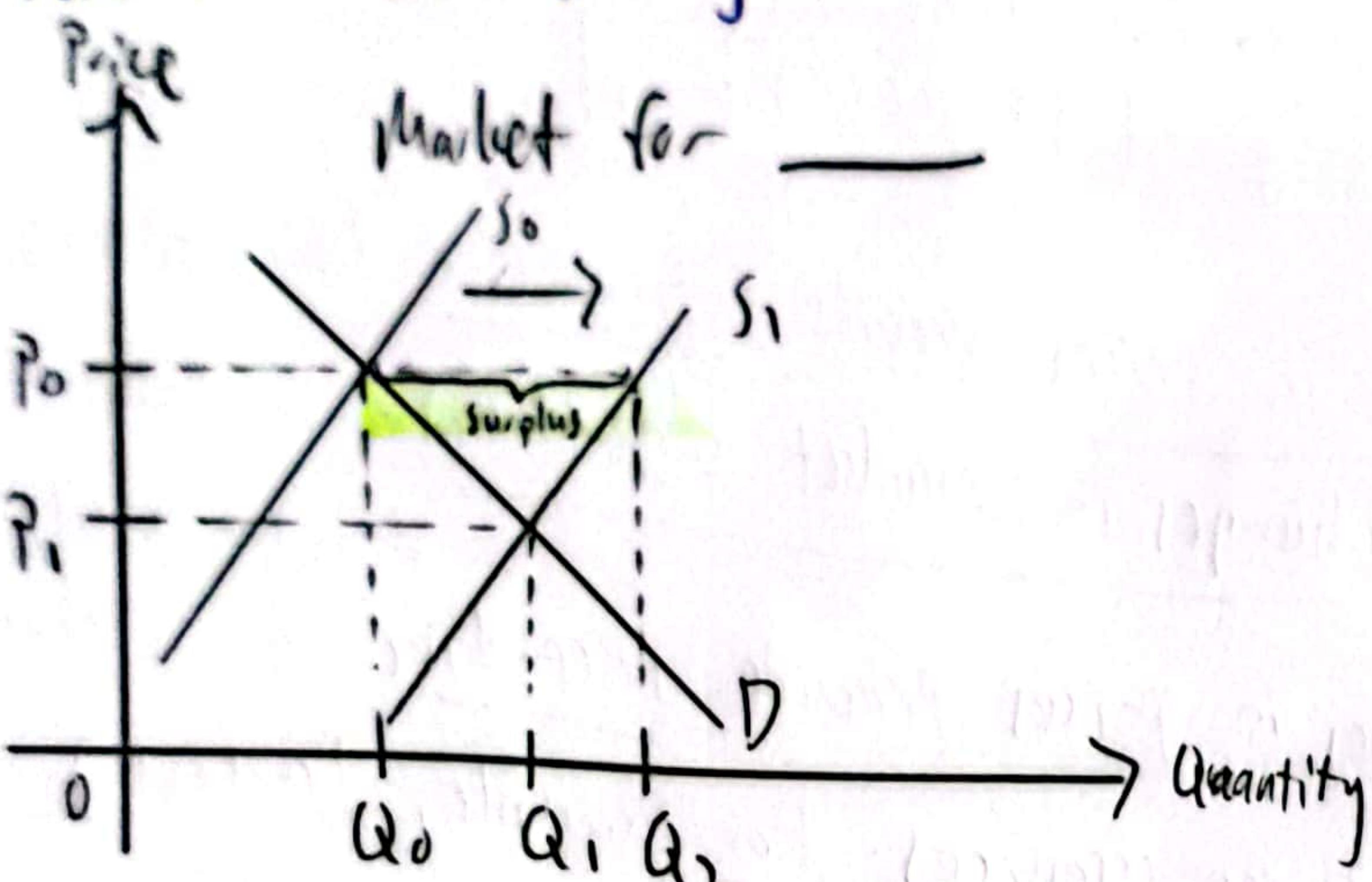
## The Market Economy

□  $\Delta D$



- At  $P_0$ , there is a shortage of  $Q_1 - Q_0$  as quantity demanded exceeds quantity supplied.
- Consumers offer higher prices as they can't buy all they want.
- Producers increase the quantity supplied to  $Q_1$ .

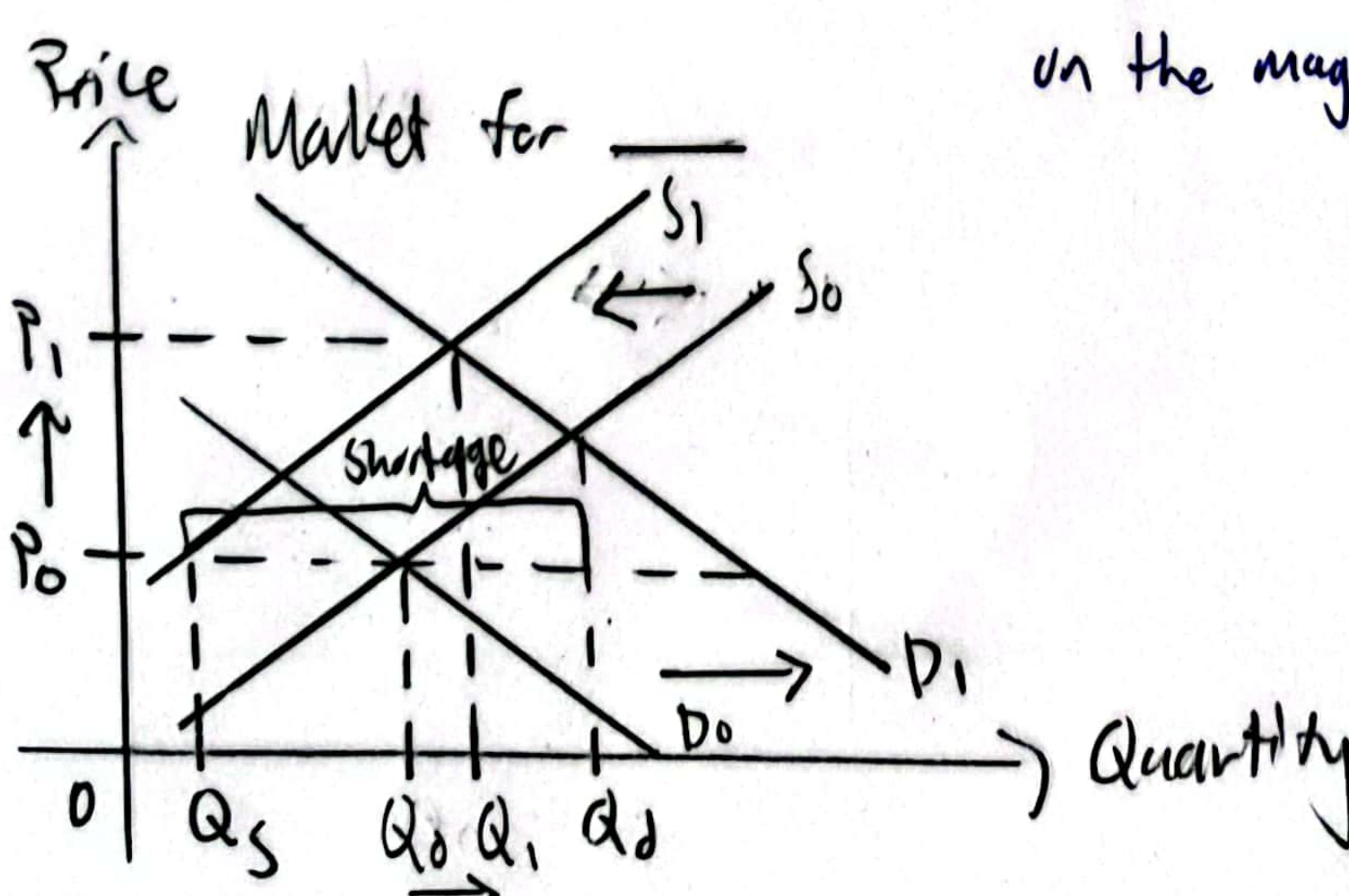
○ □  $\Delta S$



- At  $P_0$ , there is a surplus of  $Q_2 - Q_0$  as quantity supplied exceeds quantity demanded.
- Producers cannot sell all they produce  $\Rightarrow$  offer lower prices
- Quantity demanded increases to  $Q_1$ .

○ Simultaneous shift in  $D$  and  $S \Rightarrow$  one component ( $P$  or  $Q$ ) has a determinate change in direction

The other component's change in direction depends on the magnitude of change in  $D$  and  $S$ .



- At  $P_0$ , there is a shortage of  $Q_d - Q_s$  as quantity demanded exceeds quantity supplied.
- This causes an upwards pressure on price as competing buyers bid up the price of \_\_\_.
- Consumers will be less willing and able to buy at the higher prices; quantity demanded of \_\_\_ decreases.
- Producers are more incentivised to produce more, given higher prices; quantity supplied of food increases.

## 2 Rational decision-making : (J2 (T))

- Comparing the net benefits of A and B.
  - The benefit of A > the benefit of B
  - The cost of A < the cost of B
  - net benefit of A > net benefit of B  $\Rightarrow A \checkmark$
- Compare the benefit of A against the cost of A
  - The benefit of A is \_\_\_\_.
  - The opportunity cost of A is the benefit of B, which is \_\_\_\_.
  - The benefit of A > the cost of A  $\Rightarrow A \checkmark$

## Resource allocation & the Price Mechanism (J1 2022 Promos)

- ① Signalling function : Changes in prices provide information to producers and consumers (consumers signal T&P) about changes in market conditions. For example, [context] of higher profits.
- ② Incentive function : Changes in prices provide incentive for producers to reallocate (producers UOP) their scarce resources. For example, [context].
- ③ Rationing function : Changes in prices enable scarce resources to be rationed to the parties who are most willing to pay. For example, [context].

2 mle per function

# Elasticity

□ The price elasticity of demand measures the degree of responsiveness of quantity demanded of a good to a change in its price, ceteris paribus.

└ Always negative

$$P_{ED} = \frac{\% \Delta \text{ in } Q_d}{\% \Delta \text{ in } P}$$

□ Proportion of income spent on good  $\sim |P_{ED}|$

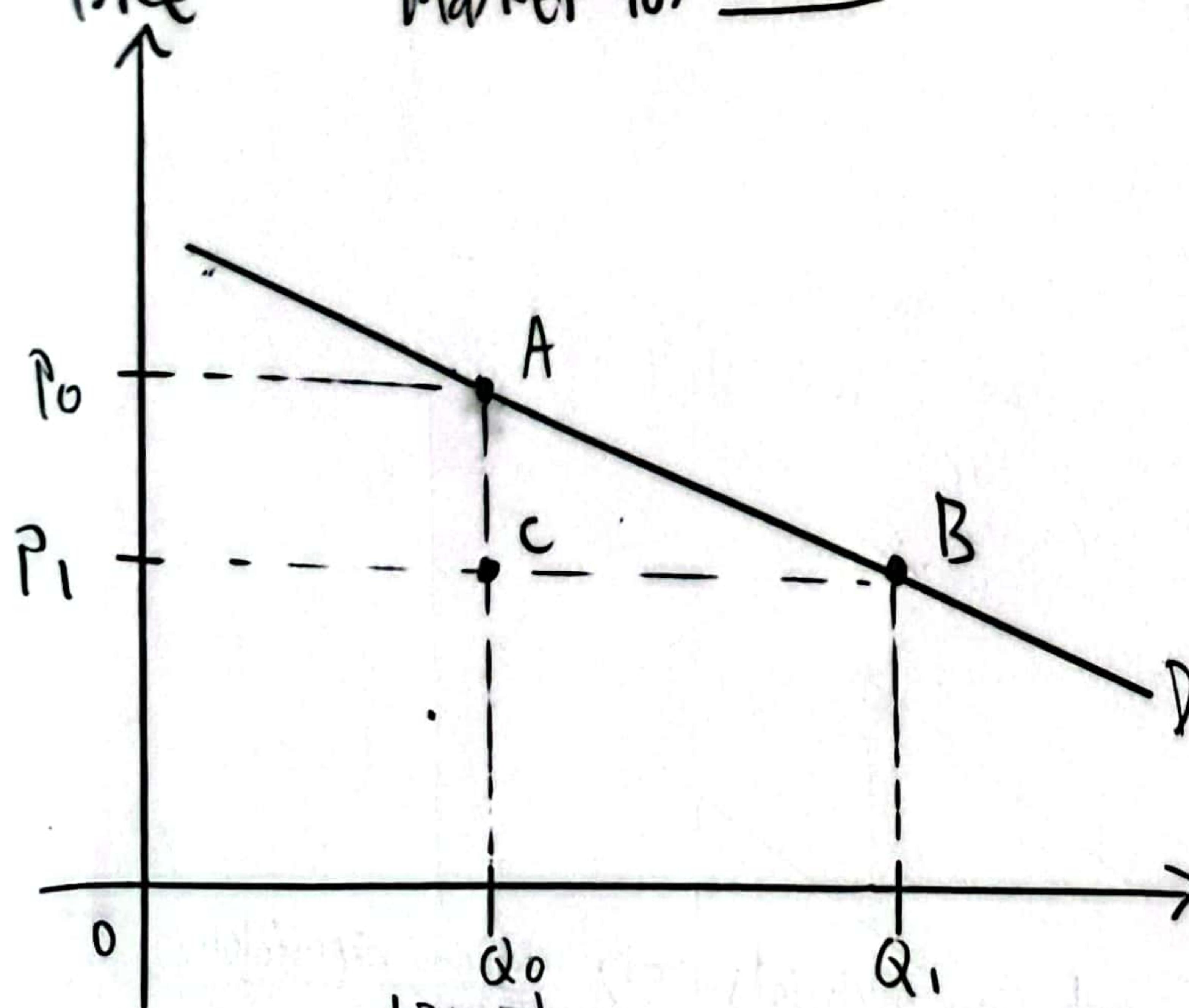
□ Availability number & closeness of substitutes  $\sim |P_{ED}|$   
(of subs.)

└ more broadly defined  $\sim$  less close substitutes  $\sim \sqrt{|P_{ED}|}$   
(e.g.  $|P_{ED}|_{shoes} < |P_{ED}|_{crosses}$ )

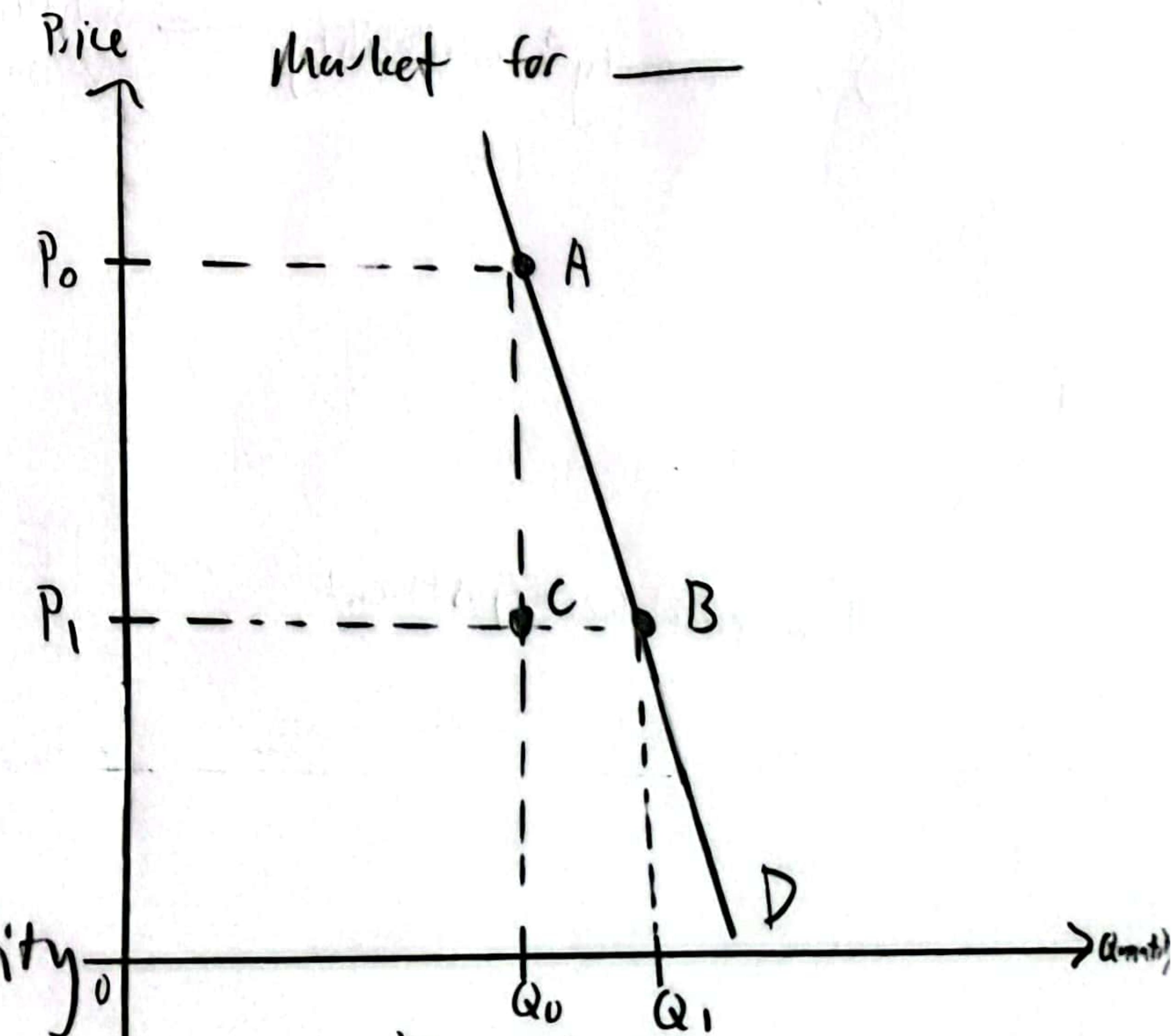
Necessity vs luxuries — necessity  $\sim |P_{ED}|$ , luxuries  $\sim \sqrt{|P_{ED}|}$

Time period for adjustment  $\sim |P_{ED}|$  — More time to find close substitutes / change consumption habits.

□ Total Revenue  
Market for —



- $P \downarrow \Rightarrow$  More than proportionate  $\uparrow Q$   
 $\Rightarrow \uparrow \text{TR}$  represented by area  $B(CQ_0Q_1) - \text{area } CA(P_0P_1) > 0$
- $P \uparrow \Rightarrow$  More than proportionate  $\downarrow Q$   
 $\Rightarrow \downarrow \text{TR}$  represented by area  $B(CQ_0Q_1) - \text{area } CA(P_0P_1) > 0$



- $P \downarrow \Rightarrow$  Less than proportionate  $\uparrow Q$   
 $\Rightarrow \downarrow \text{TR}$  represented by area  $C(AP_0P_1) - \text{area } BC(Q_0Q_1) > 0$
- $P \uparrow \Rightarrow$  Less than proportionate  $\downarrow Q$   
 $\Rightarrow \uparrow \text{TR}$  represented by area  $C(AP_0P_1) - \text{area } B(CQ_0Q_1) > 0$   
 $\Rightarrow$  Avoid waging a price war

- The price elasticity of supply measures the degree of responsiveness of quantity supplied of a good to a change in its price, ceteris paribus.
  - Always positive
  - $\frac{\% \Delta Q_s}{\% \Delta P}$

Factor mobility — Geographical mobility: How easily factors can be physically transferred between locations

— Occupational mobility ~ Are the workers' skills transferable (e.g. b/w industries or produce another good)

Industry type — How complex the production process is  
(e.g. food products take several years to see changes to  $Q_s$ , low PES)

Spare capacity's availability — sufficient spare capacity  $\Rightarrow \uparrow Q_s$  without  $\uparrow \uparrow P$ .  
 $\Rightarrow |PES| > 1$

Time period for adjustment ~ PES

Stocks (level / ease of accumulation) — Easily get raw materials  $\Rightarrow$  respond quickly  $\Rightarrow |PES| > 1$   
(e.g. large stocks of raw mat's)  
— Stored easily  $\Rightarrow |PES| > 1$

## Use of Elasticity in Decision-Making

□  $|PED| < 1 \Rightarrow \underline{\uparrow P} \Rightarrow \uparrow TR$

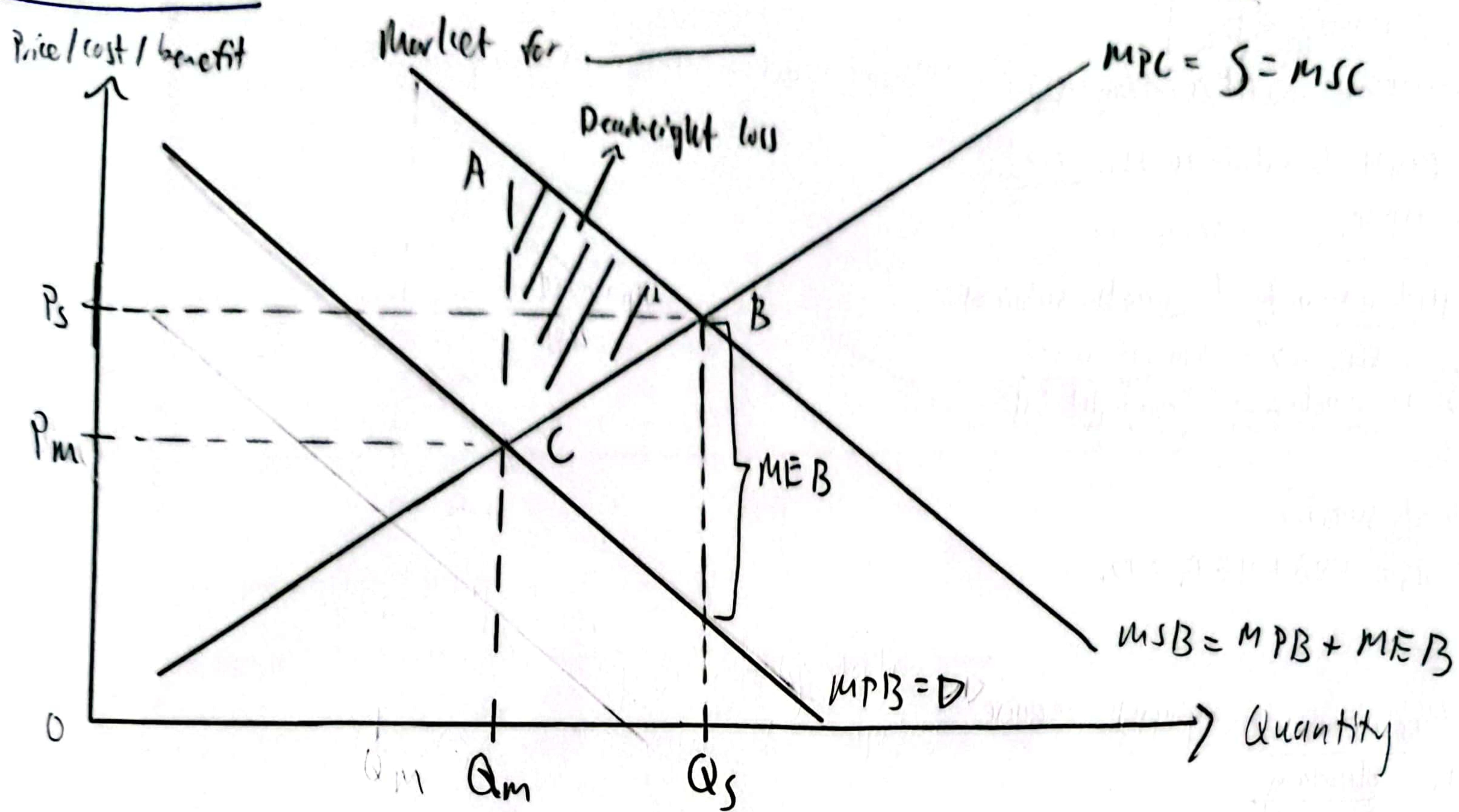
□  $|PED| > 1 \Rightarrow \underline{\downarrow P} \Rightarrow \uparrow TR$

↳ May trigger a price war: firms undercut each others' price to protect market share  
 $\Rightarrow$  detrimental to all firms' profits

+

# Market Failure

Positive externalities are benefits of production or consumption on persons other than the consumer and the producer themselves. The third parties do not make payment to enjoy the external benefit.



1. Define positive externality
2. use an example / context, where you clearly state the MPB, MEB, and third parties
3. Since  $MSB = MPB + MEB$ , the presence of positive externalities implies  $MSB > MPB$ .
4. Assume the absence of negative externalities
5. Draw graph
6. Identify free market equilibrium quantity  $Q_m$  (where  $MPB = MPC$ )
7. Identify socially optimal quantity  $Q_s$  (where  $MSB = MSC$ )
8.  $Q_m < Q_s$ , underproduction and under consumption of the good.

Allocative inefficiency results and there is deadweight loss represented by the shaded area  $ABC$ . Social welfare can be maximized when consumption and production increases to  $Q_s$ .

★ Tip : The deadweight loss triangle always 'points' to the point  $(Q_s, P_s)$  representing the socially optimal point.

# 1. Grants / Subsidies to consumers / producers

$$\begin{aligned} MSB &= MPB + MEB \\ &= MPB + \text{grant} \\ &= MPB_1 = D_1. \end{aligned}$$

$$\begin{aligned} MPC + \text{subsidies} &= MPC_1 \\ &= S_1 \end{aligned}$$

The external benefit is internalised. (assume grant = MEB / subsidy = MEB)

- Difficult to estimate the level of MEB, and hence the right amount of grants / subsidies.
  - Too little  $\Rightarrow$  Problem not solved
  - Too much  $\Rightarrow$  ↑ Deadweight loss (way)

# 2. Moral suasion

$$MSB = MPB + MEB = D_1$$

- Effectiveness is dubious because its voluntary.

# 3. Grant supplements production $\Rightarrow \uparrow S$

- Strain on government budget

# 4. Legislation to $\uparrow D$

(e.g. compulsory education)

- Effective legislation requires monitoring.

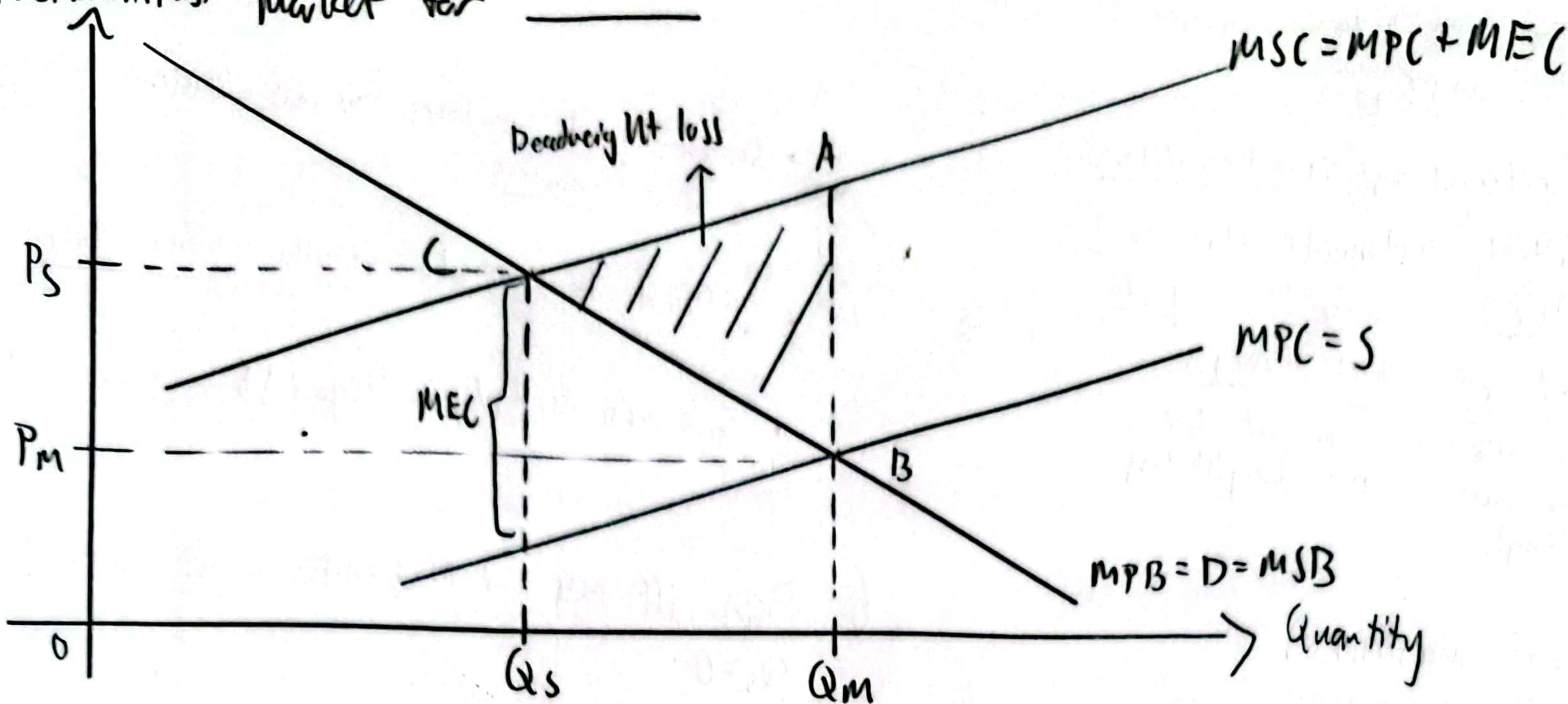
↳ Implement legislation iff cost < benefits from enacting the legislation. (cost-benefit analysis)

↳ Subsidies need to be provided for the poor, lest they can't follow the legislation.

\* A shift in the Demand / Supply curve due to govt interventions does not affect  $MSB / MSC$ .

Negative externalities are the costs of production or consumption on persons other than the consumers and producers. The third parties are uncompensated for the external costs.

Price/Benefit/Cost Market for \_\_\_\_\_



- 1. Define negative externality.
- 2. Use an example / the context, where you clearly state the MPC, MEC, and third parties.
- 3. Since  $MSC = MPC + MEC$ , the presence of negative externalities will cause  $MSC > MPC$ .
- 4. Assume the absence of positive externalities.
- 5. Draw graph.
- 6. Identify the free market equilibrium quantity  $Q_m$  (where  $MPB = MPC$ ) .
- 7. Identify the socially optimal equilibrium quantity  $Q_s$  (where  $MSB = MSC$ ) .
- 8.  $Q_m > Q_s$ , overproduction and overconsumption of the good.  
Allocative inefficiency results and there is deadweight loss represented by the shaded area ABC. Social welfare is maximised when consumption and production decreases to  $Q_s$ .

★ Tip : The deadweight loss triangle always points to the point  $(Q_s, P_s)$  corresponding to the socially optimal level of output.

## 1. Indirect taxes on producers

$$\begin{aligned} MSC &= MPC + MEC \\ &= MPC + \text{tax} \quad (\text{assume } MEC = \text{tax}) \\ &= MPC_1 \end{aligned}$$

The external cost is internalized.

- Difficult to estimate the level of MEC, and hence the right amount of indirect taxes.
  - Too little  $\Rightarrow$  Problem not solved
  - Too much  $\Rightarrow$   $\uparrow$  Deadweight loss (Way)

## 2. Moral suasion.

$$D_1 \leftarrow D_0 = MPB$$

- Effectiveness is dubious because it's voluntary.

## 5. Nationalisation

- Firms taken into public ownership  $\Rightarrow$  Govt can specify the level of production i.e.  $S$ .

- Remove profit incentives  $\Rightarrow$  less efficient  $\Rightarrow$  T(OP) & less innovative

- Difficult to estimate socially optimal level

- Govt lacks skills/knowledge/JD to produce the good.

## 6. Ban iff $MSC$ and $MSB = MPB$ do not intersect, i.e. $Q_s = 0$ .

- Ban  $\Rightarrow$  completely removing the potential net benefit  
 $\rightarrow \uparrow$  welfare loss (if  $Q_s > 0$ ).

## 3. Cap-and-trade

- Govt sets a cap on the total max. amount of pollutant.
- Firms receive emission permits, which can be traded among themselves.

- Difficult to determine the optimal cap on total pollution, and the correct no. of permits to be issued.

↳ Under issuance  $\Rightarrow$  over-priced permits  $\Rightarrow$  Undermine profitability ( $\downarrow \pi$ )

↳ Volatility in permit prices  $\Rightarrow$  Discourage I in green technology.  
(Firms d/c if I will return profits)

- High admin and enforcement costs (High G)

## 4. Output quota — limits the amount of GfS to be produced. (E.g. CFE in SGF)

- Govt needs accurate information to know the optimal quota to be set.

- Equity issues, i.e. only the rich can buy.

# Imperfect Information

1. Explain why there is imperfect information in the given context.
2. Point out how the presence of imperfect information causes a divergence between actual and perceived private benefits / costs (specify which is higher)
3. Draw diagram ( $MPB_{actual}$  vs  $MPB_{perceived}$ )
4. Identify the market output level  $\underline{Q_m}$
5. Identify the socially optimal level of output  $\underline{Q_s}$
6.  $(Q_m < Q_s \quad (Q_m > Q_s))$ , underproduction and underconsumption  
(overproduction and overconsumption) of the good.  
Allocative inefficiency results and there is deadweight loss represented by the shaded area  $ABC$ .  
Social welfare is maximised when consumption and production increases (decreases) to  $Q_s$ .

1. Campaigns / advertisements — educate the misinformed party  $\Rightarrow \downarrow$  information gap

## Voluntary participation

Addictive goods — those already addicted are unlikely to quit  $\Rightarrow \downarrow$  effectiveness

Time lag (long term measure)

Supplemented with shorter term measures

Complex nature of products makes it hard for consumers to understand.

2. Regulation / legislation — Mandate the compulsory disclosure of information
  - $\Rightarrow$  consumers estimate their  $MPB$  more accurately
  - $\Rightarrow Q_m \rightarrow Q_s$ 
    - Ban advertisements on some products (e.g. cigarettes)
    - Set a minimum age (e.g. to consume alcohol)

(costs of monitoring & enforcing are high

} CBA is needed

Strain on govt resources to plough through the wide range of advertisements!

## Public goods

- \* Non-excludable — it is impossible or prohibitively expensive to exclude any non-payers from using the good / service.
- \* Non-rivalry — the consumption of the good by one does not diminish the amount available for others.
- Non-rejectability — once supplied, the public good cannot be rejected by consumers.

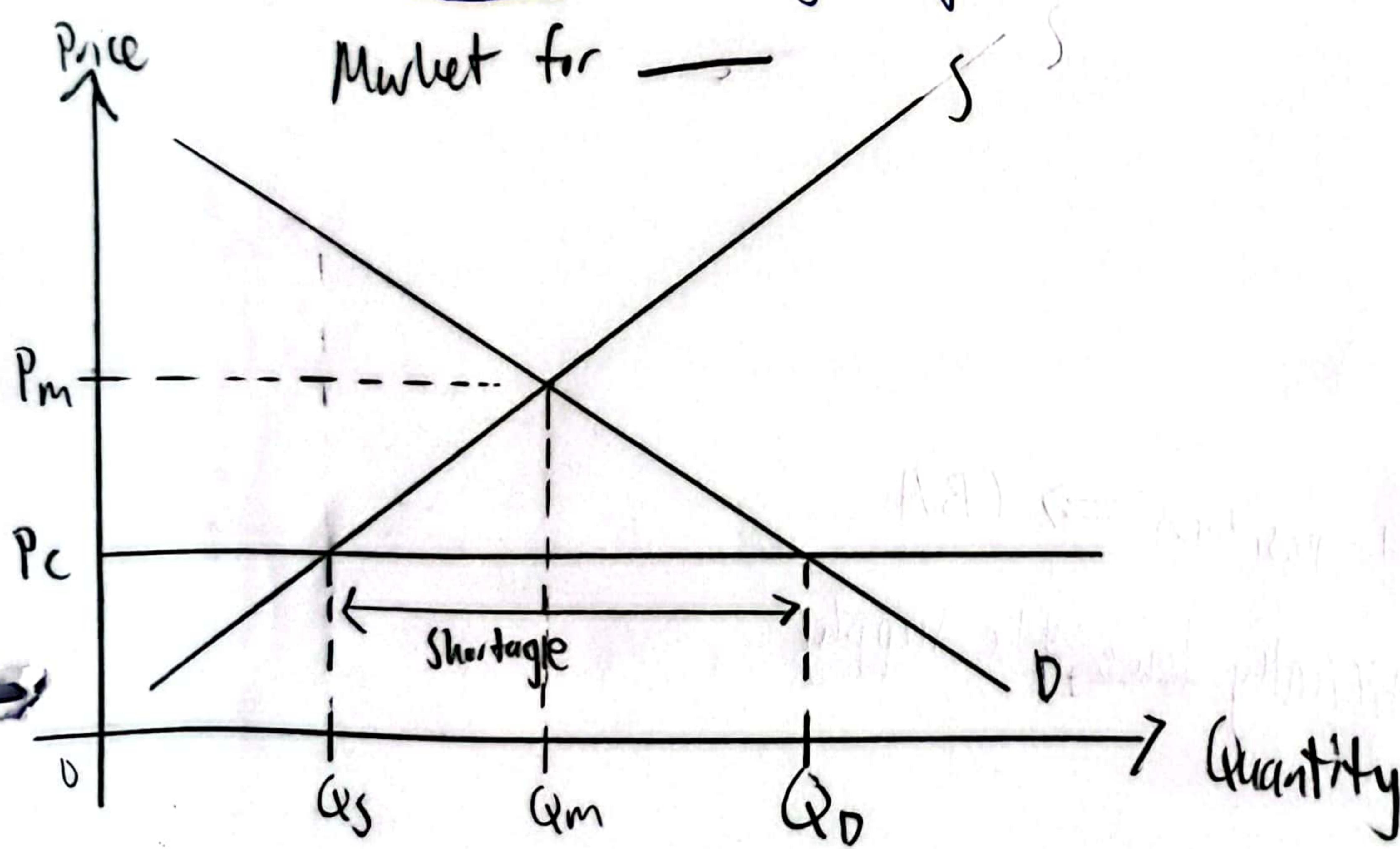
Equity is defined as fairness in the distribution of economic welfare. This is achieved when the allocation of the goods and services produced in the economy is considered fair, which occurs when all individuals in the economy have access to essential goods and services.

1. Subsidies/grants to producers/consumers to  $\uparrow S / \uparrow D$

Difficult to estimate the right amount of subsidies/grants to be given

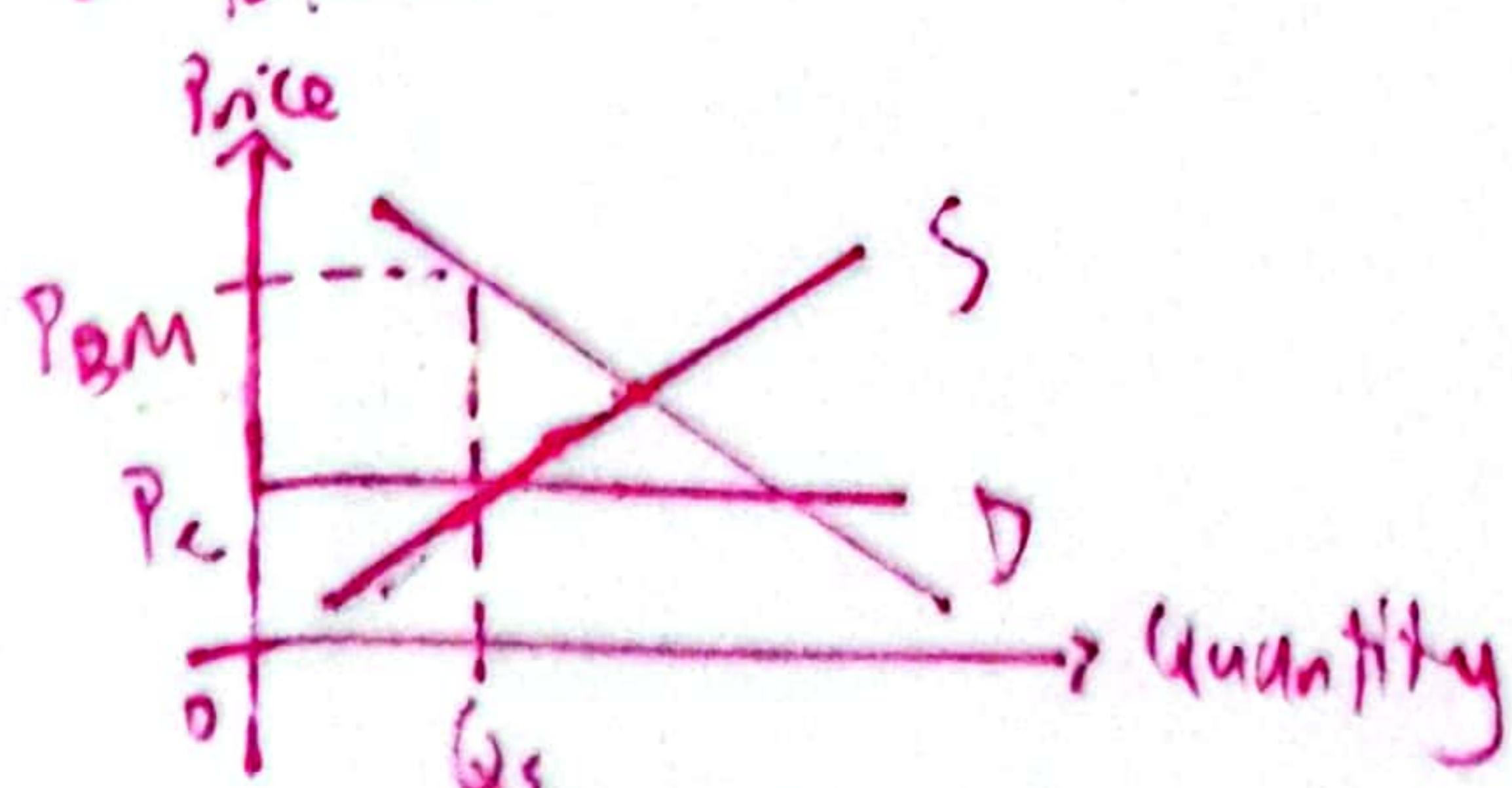
2. Social securities — cash benefits for the unemployed/retired/etc

Price ceiling is defined as the highest permissible price at which a producer can legally charge. It is considered effective or binding only if it is set below the equilibrium price.

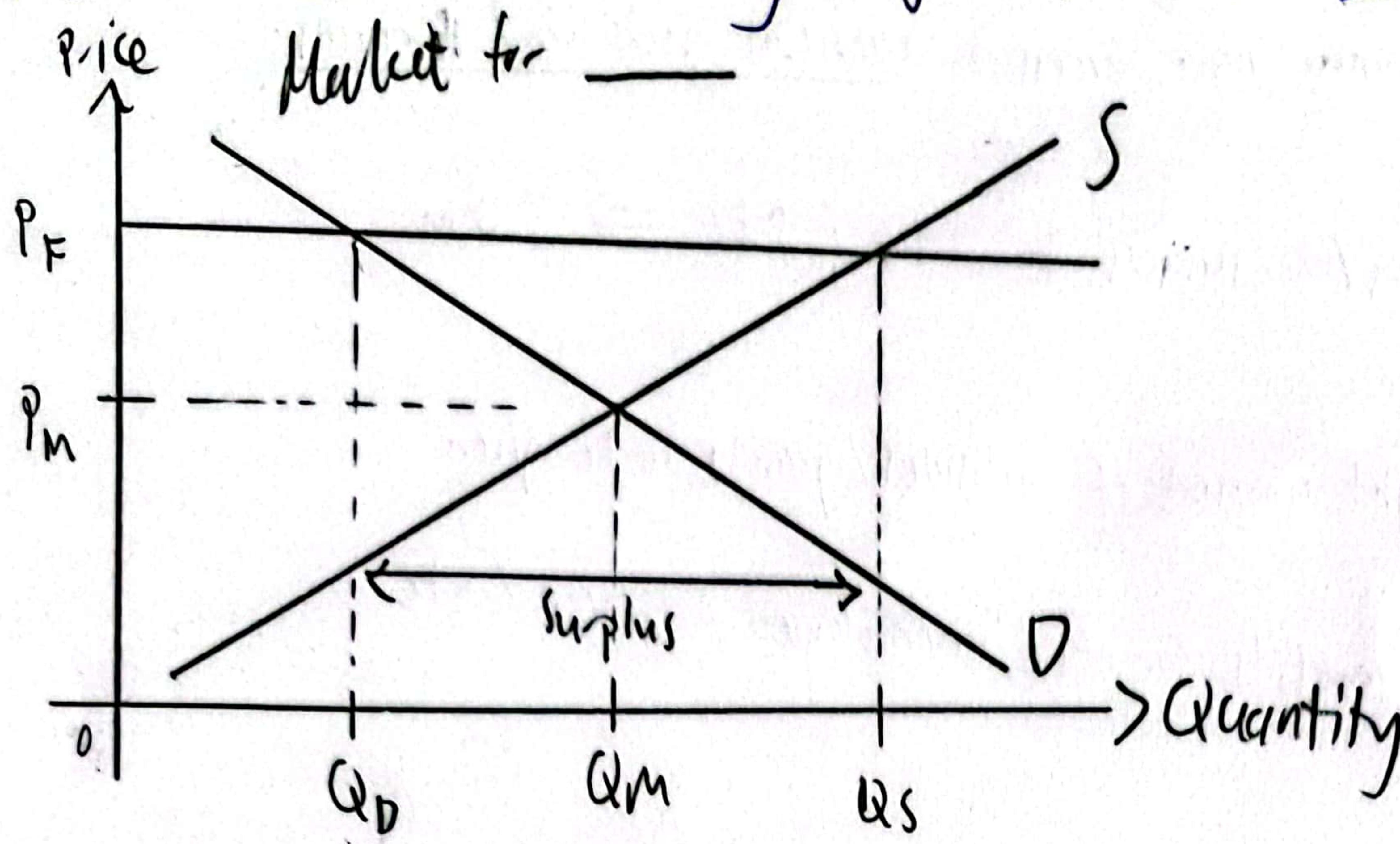


- Long queues — willing to arrive early and wait  $\leftrightarrow$  get  
— wastes buyers' time & is inefficient
- Sellers ration goods according to personal bias — inefficient & unfair

- Black market



Price floor is defined as the lowest permissible price at which the producer can legally charge. It is considered effective or binding only if it is set above the equilibrium price.



- Consumers choose a producer to buy from based on personal biases.

Govt can:

1. Purchase the surplus
  - $\uparrow G$ , worsen budget position  $\Rightarrow CBA$
2. Set a quota to artificially lower the supply
3. Attempt to  $\uparrow D / \downarrow S$

Concepts : 1. Ultimate goal of the government

□ Material SOL

- └ The quantity of goods and services that each consumer buys.
- └ Measured with real GDP per capita
  - └ Why real GDP?  
Real GDP is a better reflection for M-SOL (than raw GDP figures) because the effects of inflation have been adjusted for
  - └ Why per capita?  
Per capita figures better reflect the standard of living of an average resident of a country
- └  $\text{Tr}_{\text{GDP p.c.}} \Rightarrow$  (more GfS available to each citizen)
  - $\Rightarrow$  suggests ↑ production  $\Rightarrow$  ↑ demand for labour as it is a derived demand  $\Rightarrow Y_d \uparrow$
  - $\Rightarrow$  consumers buy more GfS  $\Rightarrow M_{\text{SOL}} \uparrow$

□ Non-material SOL

- └ Leisure time, stress, pollution, healthcare, etc ✓
- └ Mental health ✗

□ GDP at PPP vs GDP at CER

1. When comparing GDP at current ER, a higher figure for a country does not suggest that residents in that country enjoy more GfS.
2. Its COL would be higher than other countries such that the amount of GfS available for consumption is lower than other countries with lower GDP figures.
3. In contrast, GDP at PPP reflects the relative purchasing power of a currency as it accounts for COL. Hence, it better reflects the amt of GfS residents in a country can get for a given amt of \$.

Limitations of using NY as an indicator for SOL

□ Measurement

- Space:
  - There is no internationally agreed method of measuring NY.  
Not every country uses the same basis for their calculations. Some treat the territories of some items differently in their accounting.
  - The size of the country affects the reliability of the data collected.  
In large and populous countries, like China and India that have rural areas that are less accessible, the collection of data can be very difficult.
- Time:
  - Data collection becomes more comprehensive and reliable over time, as technology improves.  
These changes in data collections make comparisons over time difficult.

## Definitions

- The Gross Domestic Product (GDP) is defined as the market value of all final goods and services produced within a country in a given period of time. (for an average resident of the country to be added for GDP p.c.)
- The Gross National Product (GNP) is the market value of all final goods and services produced by the productive factors owned by the nationals from both within and outside the domestic economy, in a given period of time.
- PPP is the rate of exchange that would allow a given amount of money in a country to buy the same basket of goods in another country after exchanging it into the currency of that country.
- Economic growth =  $\frac{\text{real GDP}_{t+1} - \text{real GDP}_t}{\text{real GDP}_t} \cdot 100\%$
- Sustainable economic growth indicates a rate of growth that can be sustained without creating other significant economic problems (such as depleted resources and environmental problems), especially for future generations.
- Inclusive economic growth indicates a rate of growth that is sustained over a period of time, is broad-based across economic sectors, and creates productive employment opportunities for the majority of the country's population.
- Inflation is defined as a sustained, inordinate, and general increase in the prices of goods and services.
- Opportunity cost is defined as the benefit of the next best alternative forgone.
- The price elasticity of demand of a good measures the degree of responsiveness of the quantity demanded of the good to a change in its price.
- The price elasticity of supply of a good measures the degree of responsiveness of the quantity supplied of the good to a change in its price.
- Positive externalities are benefits of production or consumption on persons other than the consumer and producer themselves. The third parties do not make payment to enjoy the external benefit.
- Negative externalities are costs of production or consumption on persons other than the consumers and producers. The third parties are uncompensated for the external costs.

## □ Interpretation issues

- Space: △ The GDP per capita figure is just a statistical mean which does not reflect the income distribution within the countries.  
For example, a higher GDPpc could be attributed to ↑Y for a small rich minority, resulting in the ↑M-SOL/difference in M-SOL being overstated

△ Solution: Instead, we can use the Gini coefficient in conjunction with the GDP figures.

When we talk about the Gini coefficient, always link it back to what it means in terms of income inequality

[DEFINE:] The Gini coefficient measures the degree of income inequality, taking on a value between 0 (perfect income equality) and 1 (perfect income inequality). [Link:] If country A's higher GDPpc is paired with a smaller Gini coefficient compared to country B, then it is safe to conclude that the average country A resident enjoys a higher M-SOL than the average resident in B.

- Time: Similar to the above (key idea is that  $\uparrow \text{GDPpc} \not\Rightarrow \uparrow Y$  for an average resident)

$\uparrow Y$  might only be for a small rich minority  
overestimation of ↑M-SOL

## □ Human Development Index (HDI)

- To have a comprehensive conclusion about a country's overall SOL, we need other data, such as the Human Development Index (HDI). ②
- HDI combines three measures: life expectancy at birth, education level, and GNI per capita expressed in constant PPP, expressed as a value between 0 and 1. ① ③ii
- If country A has a higher HDI index than country B, then it can be concluded that the average resident of A enjoys a higher overall SOL than the average resident in B.

- Concepts :
- 1 Introduction to Macroeconomics       $\square$  Transfer payments belong to C and
  - $\square AD = C + I + G + (X - M)$
  - $\square SRAS \sim \text{unit OP}$        $\rightarrow (\downarrow \text{Unit OP} \leftarrow \begin{matrix} \downarrow \text{OP} \\ \uparrow \text{productivity} \end{matrix})$
  - $\square LRAS \sim \text{Qly, qty, mobility}$  of CELL  
(capital, entrepreneurship, land labour)
  - $\square \downarrow i/r \Rightarrow \downarrow \text{COB}$  (cost of borrowing)  $\Rightarrow$  consumers buy more big-ticket items  $\Rightarrow \uparrow C$   
 $\Rightarrow \downarrow \text{LOB}$  (lost of borrowing)  $\Rightarrow$  Previously unviable investment projects are now made viable
  - $\square$  Austerity measures  $\Rightarrow$  Reduce budget deficit ( $\uparrow T$  or  $\downarrow G$ )
  - $\square \uparrow C/I/\text{etc} \xrightarrow{k} \uparrow AD \Rightarrow \uparrow NY$  (via the multiplier effect) \* assuming the economy isn't at operating at "full capacity"
  - $\square$  Tax cuts  $\Rightarrow \uparrow Y_d \Rightarrow$  consumers buy more C+I+S  $\Rightarrow \uparrow C$  (and M-SOL)  
 $\Rightarrow$  After-tax profits  $\Rightarrow$  More funds to plough back into investment  $\Rightarrow \uparrow I$

$\square$  Poor public health  $\Rightarrow$  sick  $\Rightarrow \downarrow \text{productivity}$

$\nearrow \text{eff} \Rightarrow \uparrow \text{OP} \Rightarrow \downarrow \text{SRAS}$

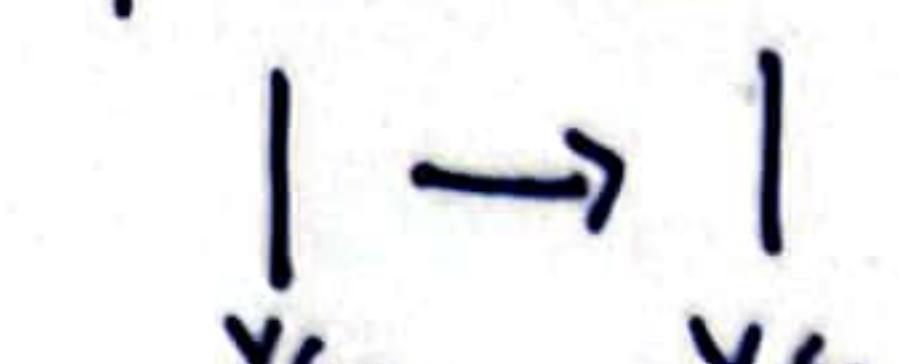
$\searrow \downarrow \text{productive capacity} \Rightarrow \downarrow \text{LRAS}$

Concept : 3 Economic Growth

TAD or TSRAS



TLRAS



Actual

+

Potential

+

No inflation

Sustained

+

No problems of environmental degradation / resource depletion, esp. for future generations

=

Sustainable

Sustained

+

No worsening of income inequality

=

Inclusive

Q How can \_\_\_\_ achieve sus/ inc growth.

1. Actual EG
2. Potential EG
3. Link back to sus/ inc (citing extract info wherever possible)

D Benefits of high actual EG (see handout)

Sustainable economic growth indicates a sustained rate of economic growth that does not lead to environmental degradation — such as air pollution — and resource depletion, especially for future generations

Inclusive economic growth indicates a sustained rate of economic growth that is broad-based

Material SOL — The quantity of goods and services that each consumer buys.

- Is measured through real GDP per capita (p.c.)
- The ↑M-SOL might be smaller than what the ↑rGDP p.c. suggests as income inequality ↑  
solution: Gini-coefficient ( $0 = \text{perfect income equality}, 1 = \text{perfect income inequality}$ ) (↑measure of income inequality)

Non-material SOL — Stress ✓      — Mental health X

— Pollution

— Healthcare

— Leisure time

— The GDP per capita figure is just a statistical mean  
which does not reflect the income distribution within the country.

Using the Gini-coefficient in an evaluation.

— For e.g.: higher GDP p.c. could be attributed to ↑ for rich minority → overstating ↑M-SOL in a country.

- What is it (an index that measures the degree of income inequality, which varies from 0 — representing no inequality to 1 — representing perfect income inequality)

— Relation to M-SOL:

◦ If ↑rGDP p.c. is paired with a ↓Gini-coefficient, relatively high ↑M-SOL that might even be understated by the ↑rGDP p.c.

◦ If ↑rGDP p.c. is paired with an ↑Gini-coefficient, ↑M-SOL is overstated by the ↑rGDP p.c.

or: ◦ If country A's higher GDP pc is accompanied by a smaller Gini coefficient, it is safe to conclude than an average resident of A enjoys ↑M-SOL. (↳ life expectancy at birth)

Using Holistic Development Index

— Combines three measures — namely GDP per capita, expressed at constant PPP, expected lifespan at birth,

and education level — to holistically assess a country's overall SOL.

— Relation to SOL

◦ If ↑HDI, this suggests there is a ↑overall SOL

◦ If ↓HDI, this suggests there is a ↓overall SOL

◦ If HDI is higher in country A compared to B, then overall SOL is higher ↗  
for A than in B for an average resident of A compared to an average resident

of B.

## Concepts: 4 Unemployment

- Unemployed = Working age people who are actively looking for jobs, but cannot find one.
- Unemployment rate =  $\frac{\# \text{unemployed}}{\# \text{labour force}} \cdot 100\%$
- Full employment  $\Rightarrow$  No cyclical unE

### D Types of Unemployment

#### 1. Cyclical unemployment $\sim \Delta rGDP$

- $\uparrow rGDP \Rightarrow \uparrow$  production levels  $\Rightarrow \uparrow$  qty demanded of labour, as labour is a derived demand
- $\Rightarrow \uparrow$  wages &  $\downarrow$  job vacancies

- $\downarrow rGDP \Rightarrow \dots \Rightarrow \downarrow$  job vacancies ( $\times \downarrow$  wages, as wages are sticky downwards)

unplanned ↑ inventories

#### 2. Frictional unemployment $\sim$ Imperfect information $\rightarrow$ (job) search time

#### 3. Structural unemployment

- Industry X is seeing a decline in the number of jobs created
- Workers are laid off and cannot transit into other sectors because of a mismatch of skills.

### D Identify and explain the type of unemployment present. Steps:

State 1. State the type of unemployment present.

Evidence 2. Quote the extract.

Link 3. Explain the link: how 2  $\Rightarrow$  1.

### E Pros and cons of Low UnE in relation to SOL

#### Pros

1.  $\uparrow M-SOL$   
 $\rightarrow$  More people are employed with an income  
 $\rightarrow$  They can consume more GfS.

#### 2. $\uparrow NM-SOL$

- $\rightarrow$  Fewer ppl turn to crime
- $\rightarrow$   $\uparrow$  public safety

OR

- $\rightarrow$   $\uparrow T$
- $\rightarrow$  Healthier budget position
- $\rightarrow$  Spend more on —

#### Cons

1.  $\downarrow M-SOL$   
 $\rightarrow$  If the economy is operating near full employment, there may be demand-pull inflation  
 $\rightarrow$   $\uparrow PP \Rightarrow$  Consume less GfS

#### 2. $\downarrow NM-SOL$

- $\rightarrow$  More production  $\Rightarrow$  More pollution  $\Rightarrow$  —

But there's still frictional and structural unE

# Concepts: Price Stability

□ Inflation =  $\uparrow \text{GPL}$

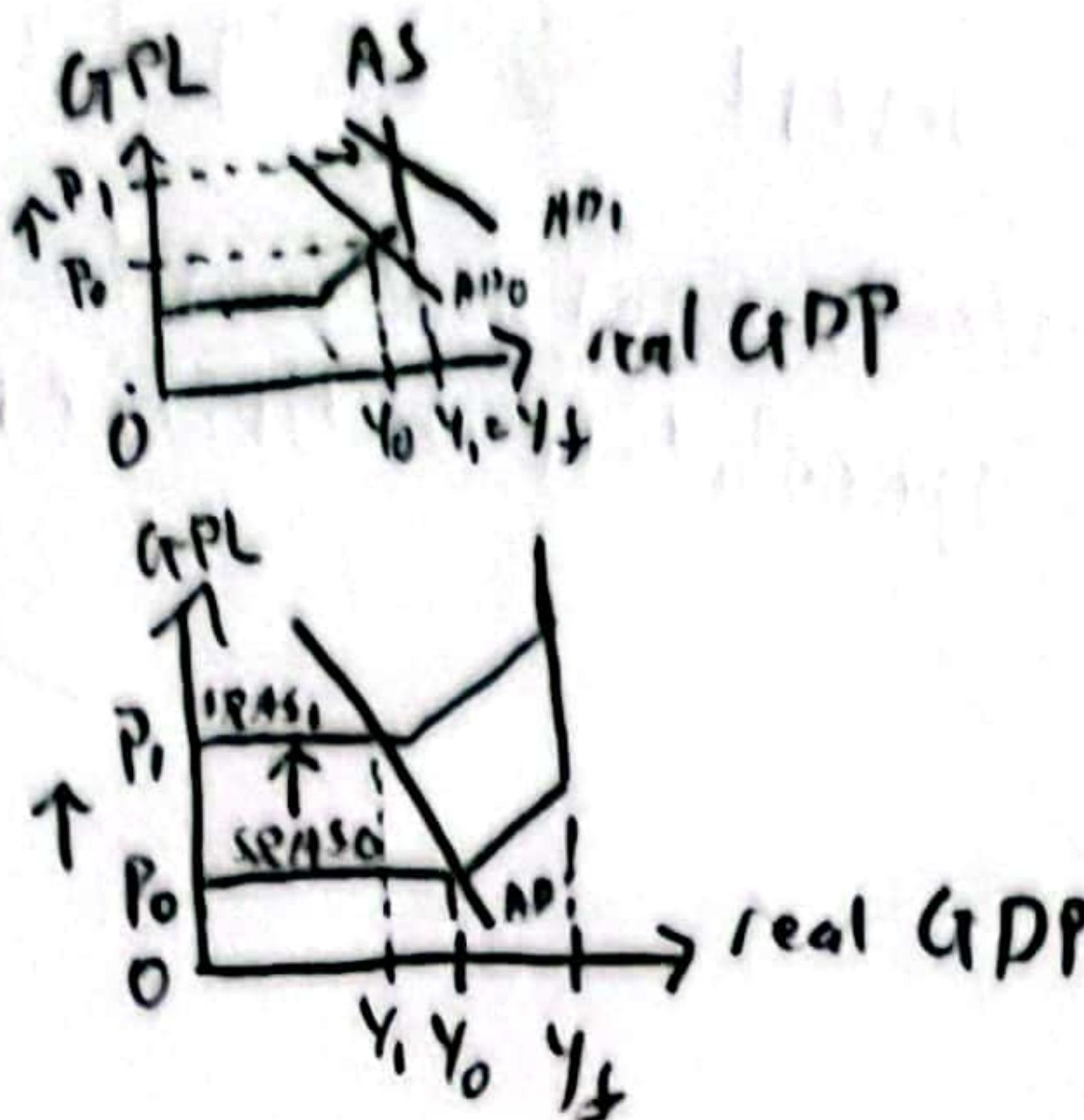
□ Disinflation =  
1. Inflation rate  $> 0$   
2. Inflation rate is decreasing

□ Deflation =  $\downarrow \text{GPL}$

□ Types of inflation

1. Demand pull ( $\uparrow \text{AD}$ )

2. Cost push ( $\downarrow \text{SRAS}$ )



Recall:  $\uparrow \text{SRAS}$  is represented by an upwards shift of the SRAS curve from  $\text{SRAS}_0$  to  $\text{SRAS}_1$ .

□ Effects

1. Fixed nominal income receivers

- $\uparrow \text{GPL} > \uparrow Y \Rightarrow \uparrow \text{P.P.} \Rightarrow \downarrow \text{M-SOL}$  — Forced to work harder + longer to maintain M-SOL  $\Rightarrow \downarrow \text{NM-SOL}$   
(prices rise faster than wages)
- If anticipated, they can negotiate for 'COL' clauses in their contracts.

2. Flexible income receivers

- Low and anticipate  $\uparrow \text{P.P.}$  & demand-pull inflation  $\Rightarrow$  entrepreneurial class gains as prices  $\uparrow$  but production costs lag behind
- cost push  $\Rightarrow \downarrow \text{Profits}$  as the lack of excess demand makes it hard to pass the rising cost to consumers.

3. Debtors & Creditors

Inflation:  $\frac{\text{P}_1}{\text{P}_0} > 1$

4. Savers

- P.P. of savings  $\downarrow$
- Discouraged from saving OR encouraged to save more to compensate for the  $\downarrow \text{PP}$ .

See price stability tut

## Effects

### Mild and anticipated inflation

- $\uparrow I \leftarrow$  the certainty of a higher expected yield on their investments
- $\uparrow AD$
- $\uparrow$  actual growth

### Severe inflation

- uncertainty about future costs, prices of their products, and expected returns.

- Reluctant to take risks & invest  $\Rightarrow \downarrow$  q.ty & q.ty labour

- $\downarrow LRAS$

instead, firms and household divert funds from productive investment to speculative activities

### Transaction costs

1. shoe-leather costs  $\uparrow$   
(costs of financial transactions)

2. menu costs  
(costs of changing prices)

### Firms

### High inflation

- Uncertain about future prices & profits  $\Rightarrow \downarrow I$
- Engage in speculative activities  $\Rightarrow$  convert cash to equities  $\Rightarrow \uparrow$  shoe-leather costs.
- $\downarrow I \Rightarrow \downarrow AD \xrightarrow{\text{if } I_c} \downarrow r(GDP)$
- $\downarrow$  production  $\Rightarrow \downarrow$  derived demand for labour  $\Rightarrow \uparrow$  unE

### If $\uparrow IOP \Rightarrow$ High inflation

- Firms pass the cost onto consumers  $\Rightarrow \uparrow GPL \Rightarrow \uparrow p.p. \Rightarrow \downarrow M-SOL$
- Firms  $\downarrow$  production &  $\downarrow I \Rightarrow (\downarrow AD \xrightarrow{\text{if } I_c} \downarrow \text{real GDP}) \& (\downarrow \text{derived demand}_{\text{for labour}}) \Rightarrow \uparrow \text{unE}$

# Deflation

## Economy

- Consumers anticipate  $\downarrow$  GPPL  $\Rightarrow$  consumers delay spending  $\Rightarrow \downarrow C$
- $\uparrow$  unplanned inventories  $\Rightarrow \downarrow$  GPPL
- low  $\overset{\text{after-tax}}{\text{profits}}$   $\Rightarrow \downarrow I$
- Deflationary spiral:  $\downarrow AD \overset{!}{\Rightarrow} \downarrow \text{real GDP}$

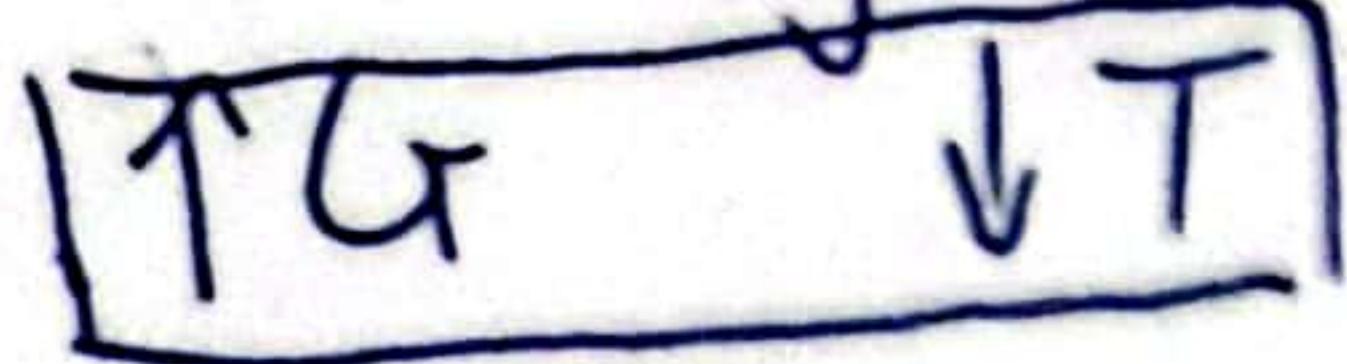
## Debtors

- $\uparrow$  real value of debt
- $\downarrow$  wages +  $\downarrow$  profits  $\Rightarrow$  harder to repay
- $\downarrow$  ~~compliance~~
- $\uparrow$  default debt

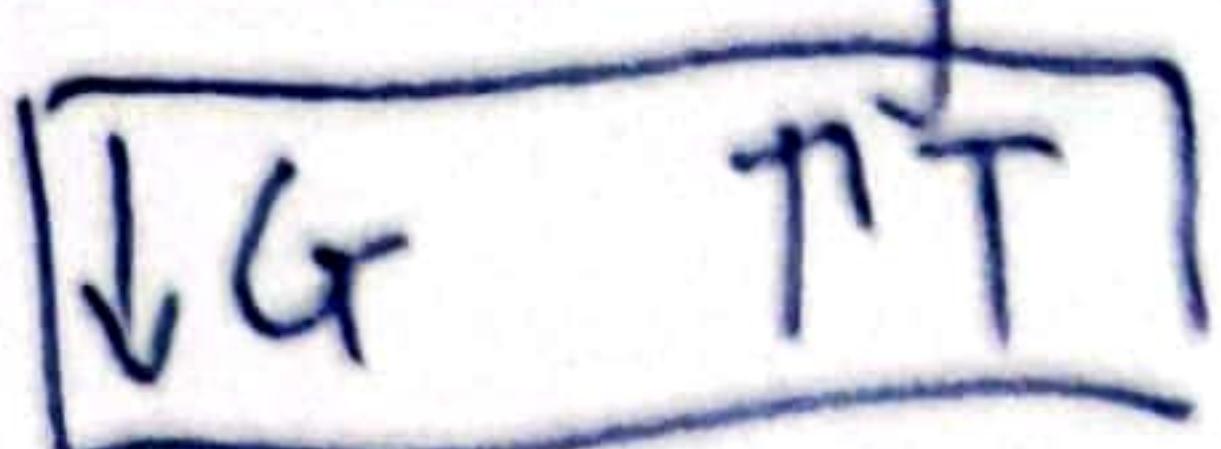
## Creditors

## Concepts 7 : Fiscal Policy

- Expansionary FP is used during a period of economic downturn



- Contractionary FP is used to tackle demand pull inflation (AD is too high)



### Limitations

- Time lags
  - recognition lag (verify ↓GDP for ≥ 2 consecutive quarters)
  - implementation lag (design, evaluated and passed by govt  $\Rightarrow$  time)
  - impact lag (e.g. the time difference between receiving transfer payments and spending)
- Inaccurate projections — error in estimating variables (e.g. multiplier)  $\Rightarrow$  ↑G too much / too little  
 $\downarrow T$

### (-) (cont. FP only) Inflexibility of G

- Reducing expenditure on long-term developments (e.g. schools/roads/ports) may cause disruption
- Abandoning projects midway  $\Rightarrow$  wasting resources
- Reducing defense spending  $\Rightarrow$  compromises national security
- Reducing health care expenditure  $\Rightarrow$  Unpopular & strongly resisted X

### (-) Unpredictable effects of tax changes on consumption and investment.

- $\downarrow T$  but -ve economic outlook (still)  $\Rightarrow$  firms reluctant to invest as there is a big risk of low returns I

consumers continue saving up in preparation for a continued -ve outlook

$\Rightarrow$  Small  $\Delta I, \Delta C$

### (-) Crowding out effect

- Govt borrow  $\Rightarrow$  T DD for loanable funds  $\Rightarrow$   $\Delta i/r \Rightarrow$  crowd out private I and C  
 $\Rightarrow \downarrow I, \downarrow C$   
 $\Rightarrow$  not net  $\Delta AD$

- Higher budget deficit  $\Rightarrow$  Future:  $\downarrow G$  or  $\uparrow T$  to repay debt  
 $\Rightarrow$  reduce SOL for future generations

# Impacts

## - Consumers

EFP (+ve)  $\rightarrow \uparrow G, \uparrow I, \uparrow C \Rightarrow \uparrow AD \xrightarrow{^k_e} TNY \Rightarrow \downarrow uE + \uparrow Yd \Rightarrow \underline{\text{ImSol}}$   
CFP (-ve)  $\Rightarrow \downarrow G, \downarrow I, \downarrow C \Rightarrow \downarrow AD \xrightarrow{^k_e} \downarrow NY \Rightarrow \uparrow uE \Rightarrow \underline{\text{ImSol}}$

## - Firms

- ▲ CFP
  - Income effect:  $\uparrow PIT \Rightarrow \downarrow Y_d \Rightarrow \downarrow C + \downarrow \text{leisure time} \Rightarrow \text{encourage work longer}$
  - Substitution effect:  $\uparrow PIT \Rightarrow \text{Marginal cost } (\downarrow Y_d)$  from an additional hour of leisure  $\Rightarrow \text{encourage less work}$  ("getting their money's worth")
  - Income effect > Substitution effect: competitive wages for producers,  $\downarrow \text{COP} \Rightarrow \downarrow \text{profit}$
  - Substitution effect > Income effect:  $\uparrow \text{wages}, \uparrow \text{COP} \Rightarrow \downarrow \text{profit}$

## ▲ EFP

If the govt needs to borrow  $\Rightarrow \dots \Rightarrow$  (crowd) out private I  
(more investment projects are now unviable)

## - Economy

+ve:  $\uparrow G$  on public investment  $\Rightarrow \uparrow AD \xrightarrow{^k_e} TNY \Rightarrow \underline{\text{Paly + Qty of capital}} \Rightarrow \uparrow LRAS$

-ve: overly aggressive EFP  $\Rightarrow \uparrow AD$  beyond  $Y_f \Rightarrow \uparrow GPL \Rightarrow \uparrow COL$   
 $\Rightarrow$  wage unions bargain  $\Rightarrow \uparrow \text{wages}, \uparrow \text{COP} \Rightarrow \uparrow GPL \Rightarrow \underline{\text{wage-price spiral}}$

## Singapore:

1. Small domestic market  $\Rightarrow$  Domestic C and I is a small proportion of GDP

$\Rightarrow$  EGP leads to limited  $\uparrow C, \uparrow I$  and hence limited EGP.

(via i/r)  $\rightarrow$  companies can bring \$ from overseas and not care about SGX i/r.

2. Singapore's highly open nature & heavy import reliance  $\Rightarrow \uparrow C$  leaks out as M.  
high MPS (marginal propensity to save: )

3. PF siphons off private sector wealth as forced savings  $\Rightarrow$  another leakage

• 1+3  $\Rightarrow$  small multiplier ( $k_e$ )

# Concepts : 7 Supply Side Policies (TLRAS)

## Market-oriented Policies

'bonus' effect

### • $\downarrow T$

-  $\downarrow \text{PIT} \Rightarrow \uparrow Y_D \Rightarrow \uparrow C$

-  $\downarrow (IT) \Rightarrow \uparrow \text{After-tax profits} \Rightarrow$  Firms have more funds to plough back into investment  
 $\Rightarrow \uparrow I$

-  $\downarrow \text{PIT} \Rightarrow \uparrow Y_D \Rightarrow$  workers retain more of what they earn

$\Rightarrow$  Encourage existing workers to work longer  
+

Encourage ppl outside the labour force to join LFE and work

$\Rightarrow$   $\uparrow$  qty of labour

-  $\downarrow (IT) \Rightarrow \uparrow \text{After-tax profits} \Rightarrow$  Firms have more funds to plough back into investment

$\Rightarrow \uparrow I$

$\Rightarrow \uparrow$  qty,  $\uparrow$  qty capital

-  $\uparrow$  LRA

### • Privatisation

- Govt enterprises  $\Rightarrow$  bureaucratic processes, high administrative costs, unmotivated workers  
 $\Rightarrow$  inefficient

- Private sector  $\Rightarrow$  motivated by profits  $\Rightarrow$  minimise OP + invest in r&d  
to stay ahead of competition  $\Rightarrow$   $\uparrow$  qty,  $\uparrow$  qty : capital, labour, level of technology  
 $\Rightarrow$  TLRAs

easier to enter industry easier to do business (e.g. admin costs & approval time)

### • Liberalisation + Deregulation

Liberalisation: remove barriers of entry  
Deregulation: reduction of govt regulation ]  $\Rightarrow$   $\uparrow$  competition among firms

$\Rightarrow$  find ways to  $\downarrow$  OP  $\Rightarrow$   $\uparrow$  efficiency  $\Rightarrow$   $\uparrow$  qty of capital, labour (better allocation)  
 $\Rightarrow$  TLRAs

- Reduce minimum wage
  - $\downarrow$  wages  $\Rightarrow$   $\downarrow$  unE +  $\downarrow$  lOP  $\Rightarrow$   $\uparrow$  profits  $\Rightarrow$   $\uparrow I$   $\Rightarrow$   $\uparrow$  q<sub>ty</sub>,  $\uparrow$  q<sub>ty</sub> capital  
 $\Rightarrow$   $\uparrow$  LRAJ
- Weaken trade unions
  - Unions often succeed in  $\uparrow$  wages
  - weaken trade unions  $\Rightarrow$  wages more responsive to market forces  $\Rightarrow$   $\downarrow$  wages  
 $\Rightarrow$   $\downarrow$  lOP  $\Rightarrow$   $\uparrow$  q<sub>ty</sub>,  $\uparrow$  q<sub>ty</sub> capital  $\Rightarrow$   $\uparrow$  LRAJ
- Reducing unemployment benefits (amt + duration)
  - Encourage the unemployed to look for work  $\Rightarrow$   $\downarrow$  unE +  $\uparrow$  q<sub>ty</sub> of labour  
 $\Rightarrow$   $\uparrow$  LRAs

## Limitations

### Taxes

- workers access same amount of Gf+S with less work  $\Rightarrow$  limited Qty of labour  
 $\Rightarrow$  limited TLRAJ

### Privatisation

- depends on who takes over  $\Rightarrow$  experience + expertise!
- Firms do not use profits to invest/R&D  $\Rightarrow$  limited PI  $\Rightarrow$  limited Qty/Qty capital  
 $\Rightarrow$  limited TLRAJ.

### Liberisation and Deregulation

- Difficult to implement anti-monopoly policies
- ↑ competition  $\Rightarrow$  ↓ scale of production  $\Rightarrow$  ↓ economies of scale  $\Rightarrow$  ↓ efficiency
- ↑ competition  $\Rightarrow$  ↓ profitability  $\Rightarrow$  ↓ funds available to plough back into investment  
 $\Rightarrow$  ↓ I  
 $\Rightarrow$  ↓ Qty, Qty capital  
 $\Rightarrow$  limited TLRAJ
- Environmental degradation & misallocation of resources.

## Interventionist policies

- Education and training investment
  - Poly T mobility of LF  $\Rightarrow$  TLRAs
- Grant investment in R&D / technology
  - $\uparrow$  R&D  $\Rightarrow$  Poly T of capital  $\Rightarrow$  TLRAs  
E.g. sponsoring R&D, <sup>tax</sup> incentives for firms to R&D, patents
- Provision and maintenance of infrastructure
  - $\uparrow$  efficiency  $\Rightarrow$  encourage foreign investment  $\Rightarrow$  TI  $\Rightarrow$  Poly T of capital

## Limitations

- Education and training investment
  - \$\$\$ costly, employers fear losing workers after training
  - Effectiveness: inclination, attitude, aptitude of workers  
+ appropriateness of training
  - Impact lag (time to source programme + train workers)
- R&D
  - Time lag  $\Rightarrow$  long developmental periods
  - Not guaranteed to yield positive results
  - Imperfect information (govt)  $\Rightarrow$  dk which industries to assist

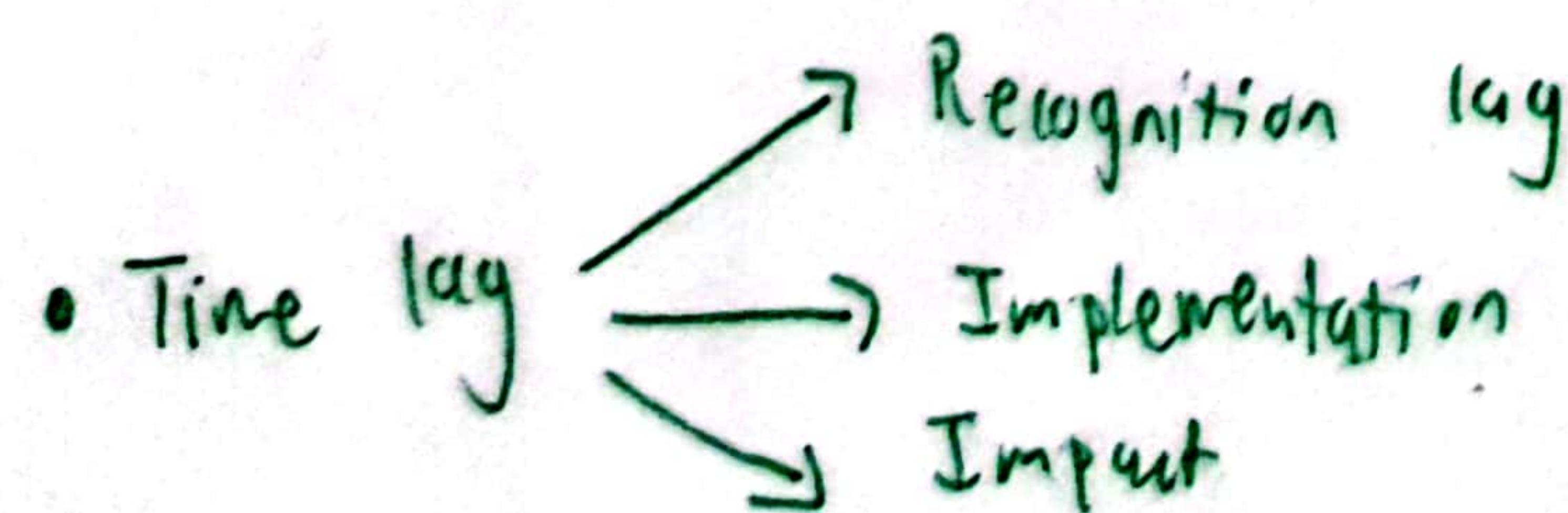
Monetary Policy  $i/r = COB = \text{rewards to savings}$

- Expansionary MP
- $\downarrow i/r$  (or: rewards of saving  $\downarrow$ ,  $\downarrow$  cost of spending)
  - $\downarrow COB \Rightarrow$  consumers buy more big ticket items  $\Rightarrow \uparrow C$   
 $\Rightarrow$  investment projects which were previously unviable are now viable, under the lower  $i/r \Rightarrow \uparrow I$

- Lower  $i/r$  compared to other countries  $\Rightarrow$  "Hot" money flows <sup>\* out of</sup> the country  $\Rightarrow \uparrow SS$  of domestic currency  $\Rightarrow$  domestic currency depreciates  
 $\Rightarrow$  Domestic exports are relatively cheaper in foreign currencies ✓ ( $\downarrow P_M$  in f.c.)  
 Imports from foreign markets are relatively more expensive in the domestic currency  $\Rightarrow \uparrow X$   $\downarrow M \Rightarrow \uparrow (X - M)$  assuming the Marshall-Lerner condition
  - $\uparrow C, \uparrow I, \uparrow (X - M) \Rightarrow \uparrow AD$
  - If economy isn't already operating at productive capacity, then  $'k'$   $\uparrow NY$ . ( $\uparrow P_M$  in d.c.)  $(PED_X + PED_M > 1)$
- Contractionary MP
- Opposite of EMP
  - Goal:  $\downarrow$  inflation

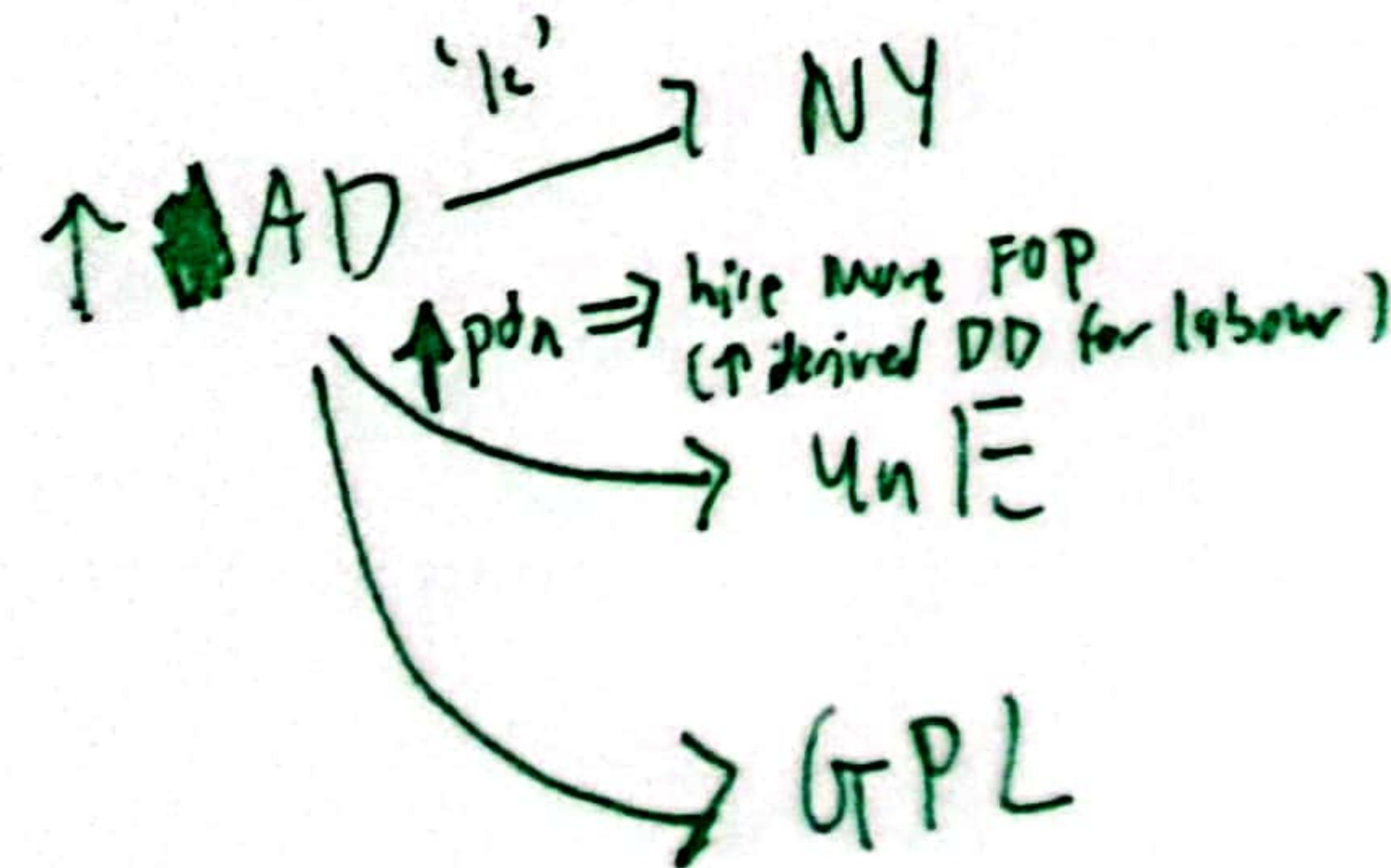
- Limitations
- Current economic outlook
    - Bleak  $\Rightarrow$  even if  $i/r \downarrow$ , investors may lack the confidence to borrow more to invest  $\Rightarrow$  <sup>Limited</sup>  $\uparrow I, C$
    - Positive  $\Rightarrow$  even if  $i/r \uparrow$ , investors may still feel confident enough that their investments will  $\Rightarrow$  <sup>Limited</sup>  $\downarrow I$

- Problem of zero lower bound ( $i/r \geq 0$ ) (EMP only)
- Size of ' $k$ ' — small ' $k$ '  $\Rightarrow$  small  $\uparrow NY$
- Liquidity trap — People want to hold on to cash, rather than buying assets or spending.



- Responsiveness of  $I$  to  $\Delta i/r$

## Impacts on Macroeconomics

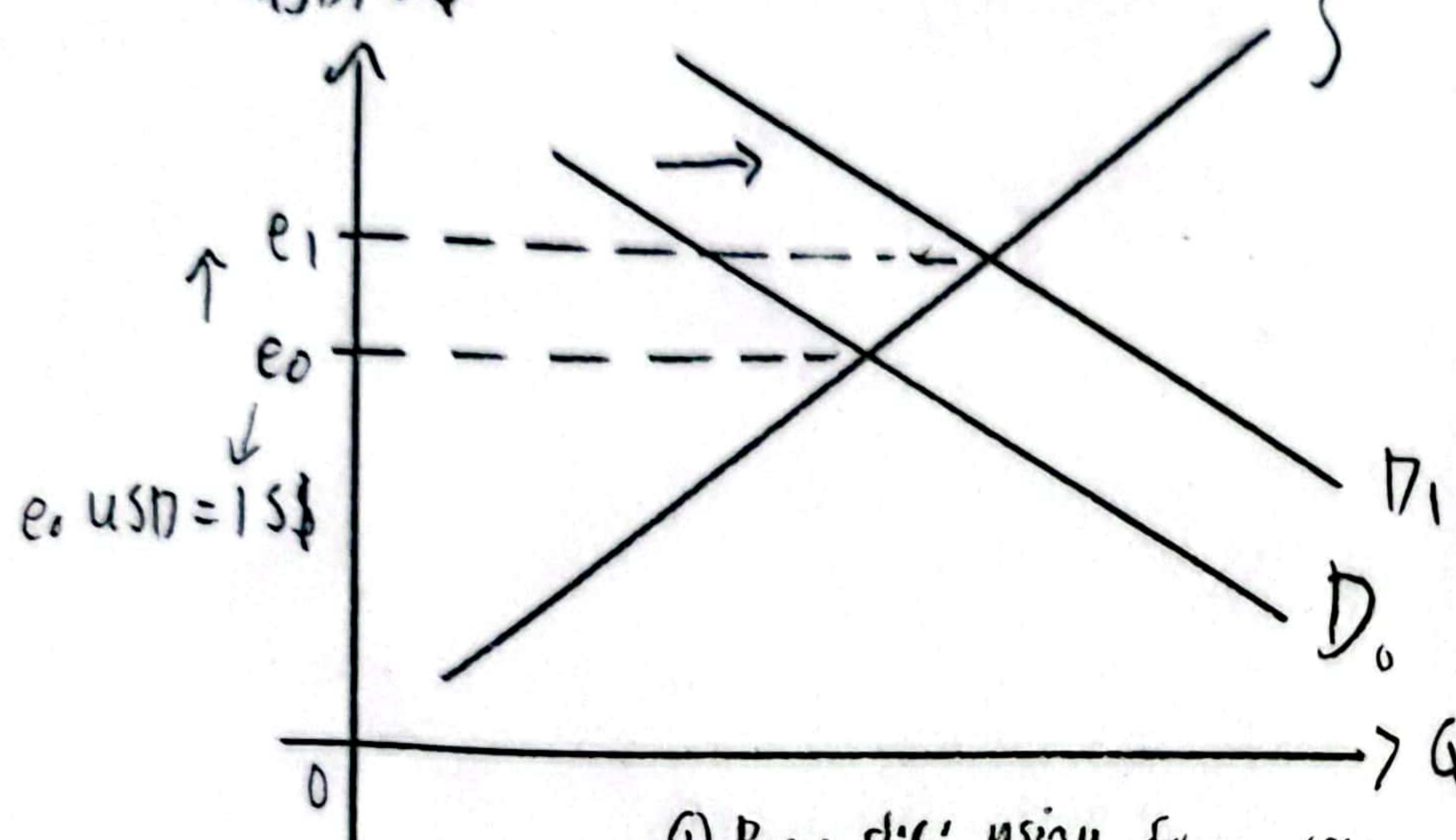
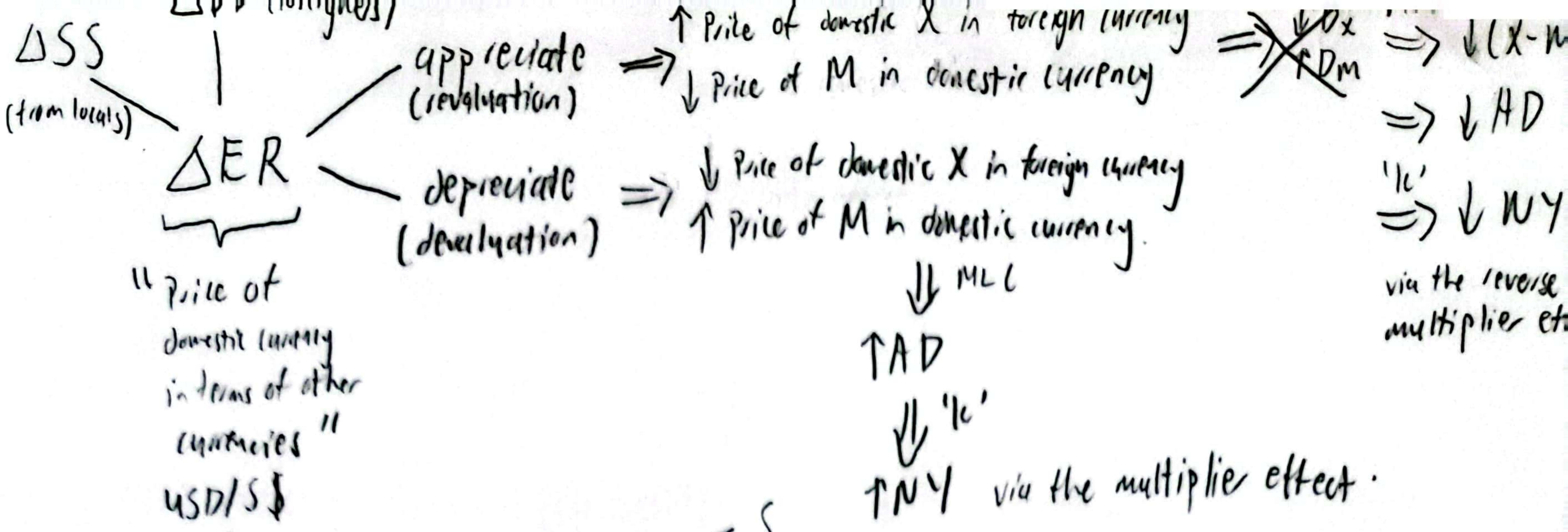


### ~~★ Why Singapore satisfies the MLC :~~

- Singapore primarily exports electronics, for which many close substitutes are easily sourced from various developed countries. Thus, the demand for our exports is price elastic ( $PED_x > 1$ ) .
- Due to our reliance on imports, our demand for imports is price inelastic ( $PED_m < 1$ ) .
- Therefore, the Marshall - Lemer Condition ( $PED_x + PED_m > 1$ ) is satisfied.

~~★ SGF tighten / loosen MP  $\Rightarrow \uparrow ER / \downarrow ER$  ✓ NOT  $\Delta i/r \propto$  (SGF does not use interest-rate based MP)~~

(gradual and modest)



a. Govt  $\begin{cases} 1. \text{Buy d.c. using forex reserves} \\ 2. \text{Sell d.c. to buy foreign currencies (T forex reserves)} \end{cases} \Rightarrow \uparrow \text{DD d.c.} \Rightarrow \text{Appreciate}$   
 a. i/r

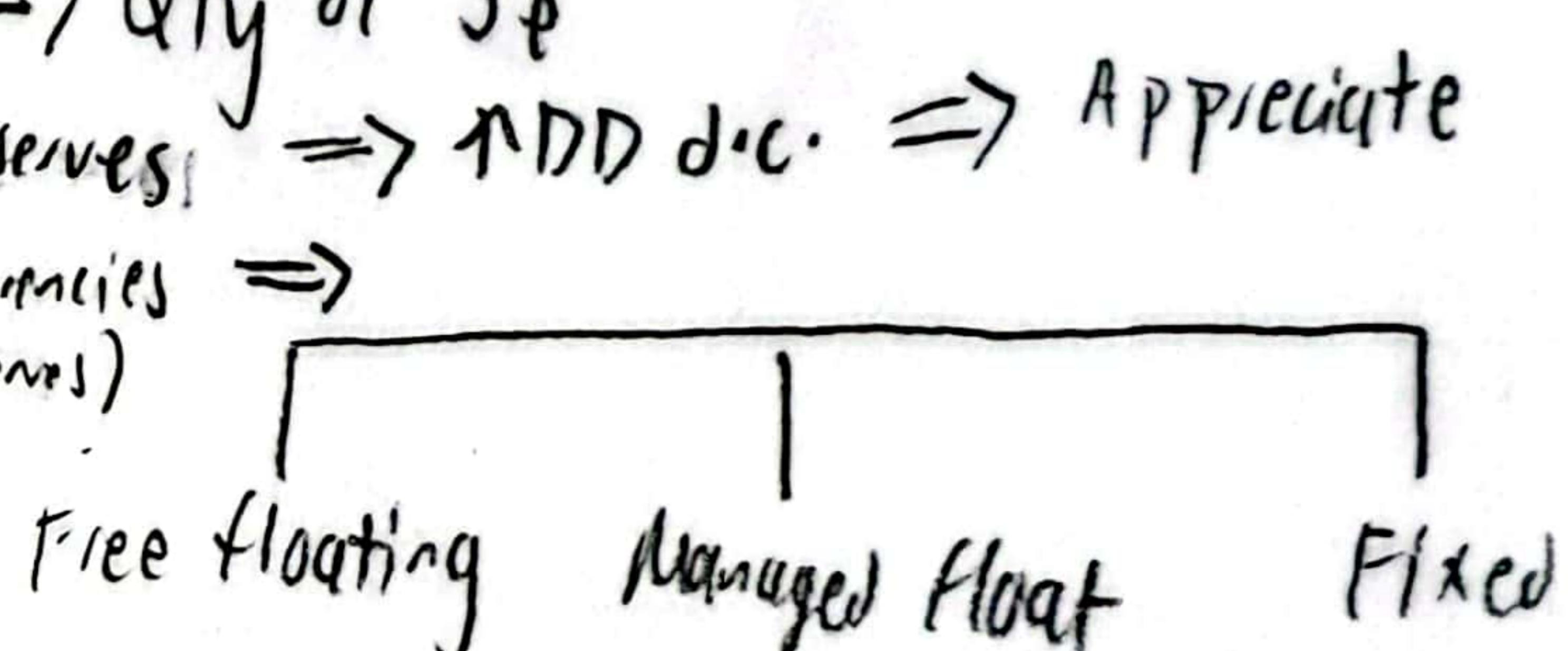
(Tot 5 (SQ)) b. Inflation rates

c. Currency speculation

d. DY

e. FDI

f.  $\Delta$  Taxes & Preferences



Limitation:

1. Size of multiplier

2. Proportion of net exports ( $X-M$ ) to total GDP.

Singapore:

1. See FP notes

2. Singapore's total trade volume is more than 300% of her GDP.

Thus, changes to our net exports significantly influence our GDP.

(Also, our reliance on imports means exr influences GDP significantly, and hence export comp.)