ANGLO-CHINESE JUNIOR COLLEGE
JC1 Economics 2023

H1
H2

CENTRAL ECONOMIC PROBLEM
Tutorial Worksheet: Suggested Answers

Section A: Discussion Questions

Question 1: Rational Decision Making *(Adapted from 2021 H2 A Levels Question 1)*

(a) Explain how consumers act rationally to decide whether or not to buy a bicycle.

Consumers aim to maximize utility when deciding to buy a bicycle or not.

Main Point 1: Decision Making Framework

Topic Sentence: Consumers determine whether buying a bicycle is beneficial and feasible by comparing the benefits, costs, and constraints.

Constraints: The amount of savings and budget the consumer has accumulated for the bicycle.

Benefits:
- The satisfaction gained from using the bicycle
- Improvement of health due to riding the bicycle for exercise

Costs:
- **Explicit Cost** – the monetary cost of purchasing the bicycle
- **Opportunity cost -** Net benefit of next best alternative foregone: Potential satisfaction derived from the consumption of the alternative / i.e. another good or service (beside bicycle)

Buying a bicycle is beneficial if the benefits outweigh the costs, and feasible if the costs are within the benefits.

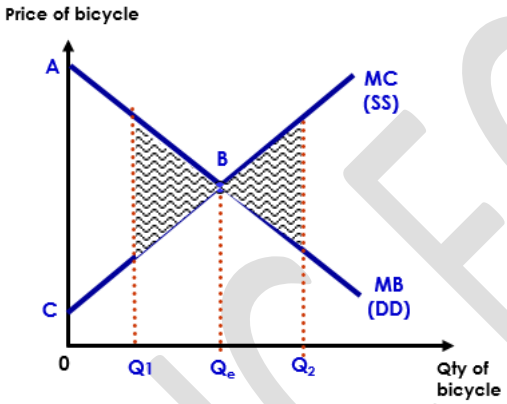
In addition, the consumer may also consider:
- **Information -** Availability of information on the type of bicycles that suit the lifestyle of the consumer best (E.g. should one use a folding bicycle or a road bicycle to commute to work etc.)
- **Perspectives -** His family members who may be sharing the bicycle with him or helping to pay for it.

Main Point 2: Weighing of costs and benefits

Topic sentence: To maximise utility, consumers consume bicycles up the the point where marginal benefit = marginal cost.

Explanation:

- To maximize self-interest, consumers would increase consumption when the additional unit consumed generates additional net benefit (i.e. marginal benefit exceeds marginal cost).
- For instance, for a consumer to maximize utility, every dollar spent by the consumer on a good or service (in this case, purchase of a bicycle) must bring additional net benefit ***(MB>MC),*** in such case, the ***consumer should buy an additional bicycle (i.e. Q_1^{th} unit)***. In so doing, the additional net benefits would lead to an increase in the total net benefit.
- If the additional dollar brings additional net cost ***(MB<MC), the consumer should not spend on an additional bicycle (i.e. Q_2^{th} unit)***. In so doing, the additional net costs would lead to a decrease in the total net benefit.
- Hence in the market of a bicycle, the ***optimal spending amount is attained when the MB equals MC (MB = MC) which suggests that additional spending can no longer yield additional net benefit***.
- At this point where MC=MB, the ***total net benefit is the maximum possible***.



Note: You will learn this diagram in the next topic, "Price Mechanism".

- This process of ***examining the additional benefits continues until MB = MC***, at this point of output consumed or produced would have ***maximized the total consumers' utility***.

(b) Explain how producers of bicycles act rationally to determine their level of output.

Producers aim to maximize profit when deciding which output level (number of bicycle) to produce up to.

Main Point 1: Decision Making Framework

Topic Sentence: Producers determine whether producing an additional bicycle is beneficial and feasible by comparing the benefits, costs, and constraints.

Constraints: The amount of financial capital or reserves the producer has accumulated.

Benefits:

- The revenue earned from selling an additional bicycle

Costs:

- **Explicit Cost** – Cost per unit incurred by producer for manufacturing an additional bicycle

- **Opportunity cost -** Net benefit of next best alternative foregone: Potential additional revenue earned from selling an alternative good e.g. a scooter

Producing an additional bicycle is beneficial if the benefits outweigh the costs, and feasible if the costs are within the benefits.

In addition, the producer may also consider:

- **Information** - Availability of updated information on consumers taste and preferences (E.g. foldable bicycles, road bikes, mountain bikes, cruiser, BMX, electric bikes etc.)
- **Perspectives** - The perspectives of other stakeholders of the firm or other bicycle producing firms.

Main Point 2: Weighing of costs and benefits

Topic sentence: To maximise profits, producers produce bicycles up the the point where marginal benefit = marginal cost.

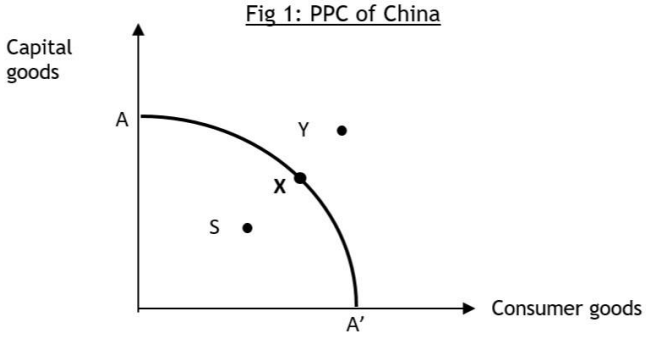
Explanation:

- For a producer to maximise the profits, one should proceed to produce an additional bicycle should MB> MC while if MB < MC, the additional bicycle should not be produced. Otherwise, the total net benefit would not be maximised. Hence, producers too would aim to produce up to the output level where MB=MC (i.e. output level at Qe).
- This process of examining the additional benefits continues until MB = MC, at this point of output produced would have maximized the total producers' profits.

Question 2: The China Economy

Assume that China is only producing capital goods and consumer goods. Currently, the PPC of China is AA', and China is producing at point X. Each question starts with curve AA' as the initial PPC.

Fig 1: PPC of China



(a) China's production moves from point S to X, explain what happens to the resources in China and the amount of goods produced.

- China is producing more of both capital and consumer goods.
- In order to increase production, more resources such as land and labour are utilised. Thus, there is greater employment of resources in China.

(b) Explain one possible way for China to increase its production from point S to point Y.

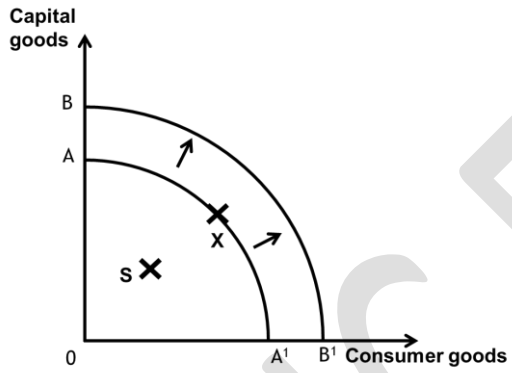
- At point S, there is unemployment (presence of idle resources; not at full employment)

- To move from S to Y, China needs to (i) get from a point within the PPC to a point on the PPC, and (ii) shift its PPC outwards.
- (i) China can mobilize its unemployed labour and seek ways to encourage households to consume more goods, and firms to invest in machines (increase in capital goods & consumer goods). This may move the country from point S towards point X on PPC AA'.
- (ii) China can increase the amount of factors of production (e.g. labour, raw materials), the quality of its factors of production (e.g. increase education and retraining), and improve its level of technology (e.g. new methods of production)

(c) For each of the scenario below, illustrate how China PPC and/or production point may change and explain the change.

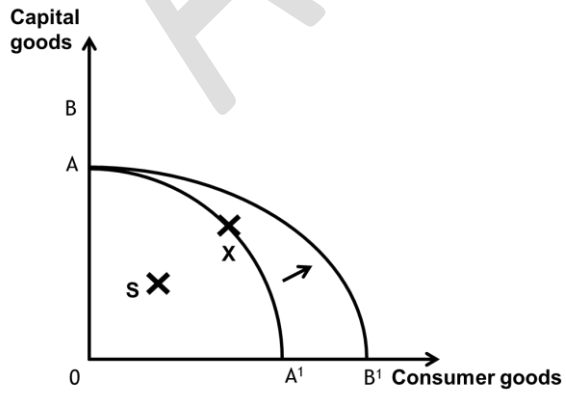
i. Massive new sources of oil and land are discovered.

The PPC should shift outwards. Having more factors of production allows China to produce more capital and consumer goods. The outward shift of the PPC represents an increased productive capacity.



ii. There is a major technological breakthrough in the consumer goods industry

The PPC should shifts outwards, pivoting on point A. The PPC should intersect the axis for consumer goods further right because the technological breakthrough for consumer goods allows China to produce more consumer goods. However, the technological breakthrough does not apply for capital goods, implying that there is no change in the amount of capital goods China can produce. Therefore, the PPC should still intersect the axis for capital goods at A.



iii. There has been a rise in unemployment rate over the pandemic years in China.

As unemployment increases, fewer resources are being used for production. This is represented by a movement from a point closer to the PPC to a point further away from the PPC (e.g. from Point X to Point S).

NOTE: An increase in unemployment does not affect the quantity of labour/resources available. The total amount of labour (consisting of those employment and unemployed) remains unchanged. Thus there is NO shift in the PPC curve.

(d) Suppose the China's government is deciding to invest $1 billion into either consumer or capital goods. Explain how the investment into the different types of goods would affect China's current and future standard of living.

Assuming that China is currently producing on the PPC, an investment in either type of good would result in an opportunity cost incurred. For example, investing into consumer goods would result in fewer capital goods being produced, and vice versa.

Point 1: Investment into consumer goods:
The investment into consumer goods would result in an increase in consumption in the short run. With a higher level of consumption attained, China's current material standard of living would improve. (*Note: Material living standards refer to the consumption of goods and services and include tangible items such as cars, homes, and health services. We will cover this in more detail in JC2 when we study macroeconomics*).

However, the opportunity cost incurred would be investment into capital goods. With fewer capital goods being produced, there would be less potential growth. Thus, future standard of living would not be able to increase as much.

Point 2: Investment into capital goods:
With investment into capital goods, the opportunity cost incurred would be a decrease in consumer goods produced. Thus, current standard of living would fall.

The investment into capital goods would increase the quality and/or quantity of capital in the economy. This would therefore increase the productive capacity of the economy. Greater potential growh, illustrated by an outward shift of the PPC, would be achieved. In the future, China will be able to produce at a higher level of output, beyond the current PPC. If more consumer goods are produced in the future, future standard of living would improve.

Section B: Mini Case Study Questions

Question 3 *(Adapted from 2019 H1 A Levels Case Study 1)*

Egypt experienced a political revolution in early 2011, a popularly-backed military coup in 2013 and then a series of high-profile airline disasters. The results has been disastrous for the country's tourist industry. Tourist numbers recovered considerably after the shocks of 2011 and 2013, but by 2016 were 60% below their peak 2008 level. The impact on the whole economy, including in particular employment, has been devastating, and the government's promises to take effective action to repair the economic the economic damage have been ineffective.

Source: *The Guardian*, 21 October 2016

Assess whether or not the statement that the Egyptian 'government's promises to take effective action to repair the economic damange have been ineffective' is a normative one. [4]

Question Analysis:

Command Word	Assess: Explain and evaluate • Explain normative statement • Give both sides (only 4m, overall evaluation not required)
Concepts	Normative statements
Context	-

Suggested Response:

- A normative statement is non-factual in nature and expresses a value judgement or opinion about a situation or issue.
- 2-sided perspective:
  - In this case, the statement can be argued to be a normative statement as it contains an opinion about the Egyptian government's promises.
  - However, if there are sufficient evidences to prove that the government's promises are indeed ineffective (e.g. lack of improvement in economic growth despite the government's announcement of expansionary fiscal policy), the statement can be argued to be a positive statement since the evidence would have made the statement factual instead of being just a value judgement.
  - Therefore, whether the statement is a normative or positive statement depends on whether there are evidences to support the statement.

In the extract, as there were no evidence given to validate the statement, the statement can be argued to be a normative statement.

Question 4 *(Adapted from 2013 H2 A Levels Case Study 1)*

Extract 1: UK real household disposale incomes fall for the first time in 30 years

Real take-home pay in the UK fell for the first time in three decades after prices rose faser than incomes in 2010, dealing a further blow to the prospect of an economic recovery. Less than a week after George Osborne, the Chancellor of the Exchequer, downgraded the UK's growth forecasts for 2011 in his budget presentation, figures revealed that real household disposable incomes dropped by 0.8% in 2010.

(a) Using the concept of opportunity cost to explain one effect on each of consumers, firms, and the government arising from the fall in real household disposable incomes described in Extract 1. [6]

Explain/define choice and opportunity cost:
When we make a choice, we incur an opportunity cost. Opportunity cost refers to the value of the next best alternative forgone.

Consumers:
The fall in real household disposable income means that consumers have lower purchasing power, which leads to a lower ability to purchase goods and services. This might force consumers to choose how to spend their income. If they decided to spend on transport, for example, the opportunity cost would be other potential areas of spending that have to be sacrificed, such as entertainment.

Firms:

As real household disposable income falls, expenditure on goods and services will fall. Firms will earn lower revenue and are likely to make lower profits. This might force firms to choose how to spend their profits. If they decided to spend on R&D, for example, the opportunity cost could be other potential areas of spending that have to be sacrificed, such as marketing.

Governments:
A lower real household disposable income could result in a smaller taxable income and leading to lower tax revenue collected by the government. This might force governments to choose how they would spend their tax revenue. If they decided to spend on infrastructure, for example, the opportunity cost would be other potential areas of spending that have to be sacrificed such as welfare programmes.

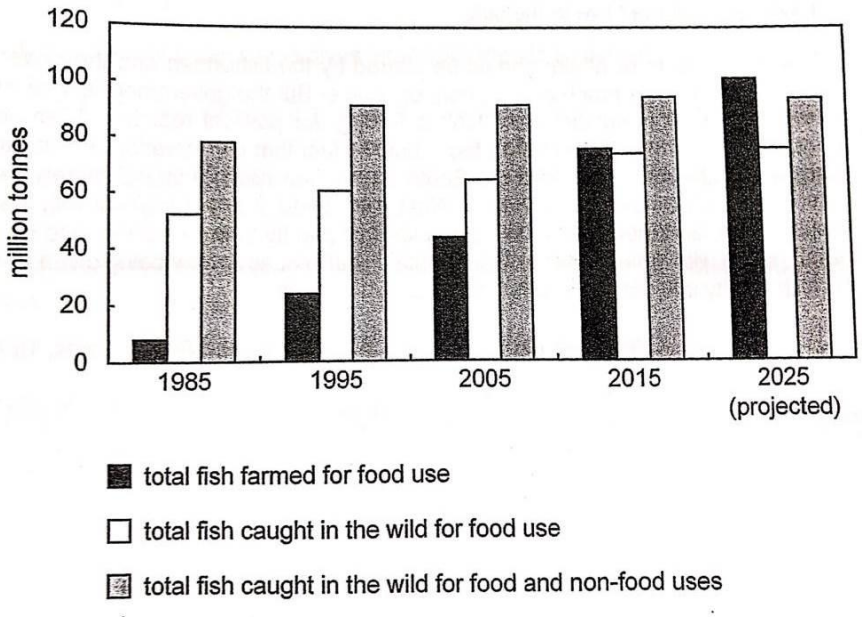
Question 5 (*2018 H1 A level Question 1ai and 1aii)*

Challenges facing the global fishing industry

Extract 1: World fish output

Fish can either be caught in the wild or bred in fish farms. It can be used both for food and for non-food purposes, such as fish oil. Figure 1 below, from the Food and Agriculture Organisation of the United Nations (FAO), shows actual and projected future world output from both fish farming and from fish caught in the wild, 1985 – 2025.

Figure 1: World fish output (1985–2025)

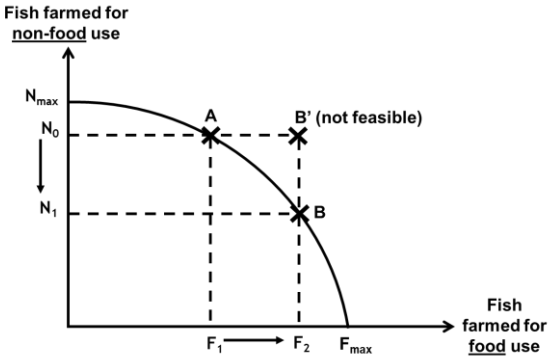


Extract 2: How China can save Asia's depleted oceans

A recent analysis from the FAO warns that if we keep pulling fish out of our seas and rivers at the current rate, we are going to run out of fish. In China, the pursuit of growing fish volume has exacted a terrible environmental toll. Today, the Yangtze River produces less than a quarter of the fish it did 60 years ago, and most of its 170 fish species are on the verge of extinction. At sea, the situation is no better, for example with damage being done to coral reefs. The Chinese government acknowledges that fishermen routinely exceed annual sustainable catch limits in Chinese territorial waters by 30% or more; a visit to any Chinese seafood market will turn up larger numbers of under-sized fish that should have been returned live to the sea.

Questions:

(a) Using a production possibility curve diagram, explain the trade-off that exists between fish farmed for food use and fish farmed for non-food use. [2]



- Assuming the economy was initially producing at point A, on the PPC, there is no unutilised factors of production for fish farming. To produce more fish for food use from F0 to F1, some factors of production previously used for non-food fish farming have to be diverted away. This causes the production of fish for non-food use to fall from N0 to N1.
- Given the current quality and quantity of factors of production and level of technology, it is not possible to produce at point B', where the same level of production for non-food use fish is held constant while increasing the production of fish for food use. Instead, the economy would move from point A to point B, where the production for fish farmed for non-food use is lower.
- The trade-off between fish farmed for food-use and non-food use, therefore, is that to increase the production of one type of fish farming, the production of the other would have to fall.

(b) Explain the likely opportunity cost of catching and landing large numbers of young, under-sized fish. [3]

- Opportunity cost refers to the value of the next-best alternative forgone.
- The next-best alternative of catching large numbers of young, under-sized fish is letting these fishes back into the waters and allowing them to grow to adult-size fish. Alternatively/additionally, this allows fishes to repopulate the waters. This would allow fishermen to catch more large adult-sized fish in the future.
- The value of this next-best alternative is the higher revenue, and thus profits, fishermen would have in the future. Alternatively/additionally, the value of the next-best alternative can also be the satisfaction from having more available fish for consumption or used in production of other products.

Section C: Essay Questions (Optional for H1)

Question 6 (2015 A Level Question 1):

Prospective students and governments each make decisions that affect the scarce resources that are devoted to university education.

(a) Explain the determinants of a rational prospective student's decision on whether to participate in university education. [10]

Question Analysis:

Command Word	Explain • Start point: determinants/factors of decision making • End point: maximise utility (objective of consumers)
Concepts	• Framework: Rational decision making • Marginal Analysis
Context	Students, University Education

Introduction:

- Explain Rational Decision Making: A rational student makes decisions to maximise their utility. The decision made also has to be a feasible one, where the costs are within the contraints of the student.
- In order to make a rational decision, a student has to consider the benefits, costs, and constraints of participating in university education. If the net benefit is higher than other alternatives, the student would choose to participate.

Requirement 1: One determinant is the net benefit of participating in university education as compared to other choices. [Note: The approach in Tutorial Q1 where the opportunity cost is considered and there is no comparison to different choice is also acceptable.]

A rational prospective student will compare the net benefits of participating in university education with other alternative choices such as getting a job.

- Benefits: the student may obtain utility from the enjoyment of studying a subject area of interest. In addition, there are quantifiable benefits such as better job opportunities in the future and the ability to earn higher future income.
- Costs: the student should also consider the cost of university education, which includes the yearly tuition fees and the cost of obtaining learning materials such as textbooks.
- The student should then repeat the process of considering the benefits and costs of other options such as working.
- If university education is the choice provides the highest net benefit, the student will then decide to participate in university education, as long as the choice is feasible.
- Participating in university education is a feasible choice if the costs are within the constraints of the student. The student may face budget constraints such as whether they can obtain funding from their parents, or take out a student loan.
- Thus, the determining factors are the costs, benefits, and constraints faced.

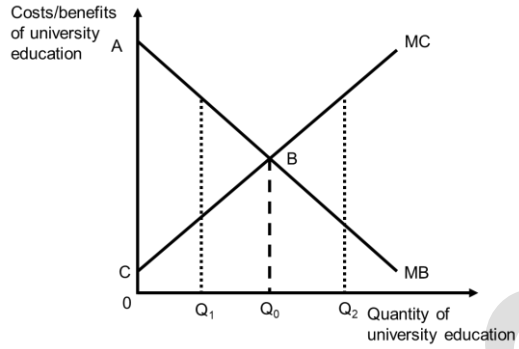
Requirement 2: Another determinant would be the marginal costs and benefits of participating in university education.

A rational prospective student will compare the MB and MC of participating in university education to decide how much university education to consume.

- To maximize self-interest, consumers would increase consumption when the additional unit consumed generates additional net benefit (i.e. marginal benefit exceeds marginal cost).
- For instance, for a consumer to maximize utility, unit of university education must bring additional net benefit ***(MB>MC)***, in such case, the ***consumer should participate in an***

additional unit (i.e. Q_1^{th} unit). In so doing, the additional net benefits would lead to an increase in the total net benefit.

- If the unit of education brings additional net cost ***(MB<MC), the consumer should not spend on an additional unit (i.e. Q_2^{th} unit)***. In so doing, the additional net costs would lead to a decrease in the total net benefit.
- Hence in the market of education, the ***optimal spending amount is attained when the MB equals MC (MB = MC) which suggests that additional spending can no longer yield additional net benefit***.
- At this point where MC=MB, the ***total net benefit is the maximum possible***.
- *In the next few topics, you will learn the following diagram to illustrate the outcome of decision made at the margin*



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- This process of ***examining the additional benefits continues until MB = MC***, at this point of output consumed or produced would have ***maximized the total consumers' utility***.
- Thus, the marginal benefits and costs of participating in university education determine the amount of participation (no. of degrees or no. of years of university) by the the prospective student.

(b) Discuss the factors that governments should consider in allocating resources to university education. [15]

This question requires Market Failure concepts to answer, which will be covered in a future topic. Your tutor may revisit this question when you have covered these concepts.

Question 7 (2016 A Level Question 2) [Stretch Question]

Singapore's spending on healthcare is about 4% of GDP. This is lower than many developed countries. However, Singapore's population is ageing and economic growth may not be as high as before. The government's share of national healthcare expenditure is expected to rise from 33% in 2012 to over 40% in the future.

Source: Adapted from Singapore Public Sector Outcomes Review, 2014

Discuss how the opportunity cost of increased healthcare expenditure differs, depending on whether it is financed by individuals or the Singapore government. [15]

Guiding Questions:

- *Explain the opportunity cost of financing increased healthcare expenditure for individuals.*
- *Explain the opportunity cost of financing increased healthcare expenditure for the Singapore government.*
- *In your opinion, who do you think has a greater opportunity cost?*

- *Who should finance the increased healthcare expenditure?*

Question Analysis:

Command word	Discuss: Explain and evaluate • Start point: increase in healthcare expenditure • End point: opportunity cost incurred by individuals and the Singapore government • Evaluation: Is the opportunity cost higher for individuals or for the government?
Concepts	• Opportunity cost • Possible framework: PPC to explain choice and opportunity cost for the government.
Context	• Market for healthcare in Singapore

Introduction:

- Due to the problem of scarcity, where there is limited resources but unlimited wants, there is an opportunity cost incurred when we make a choice.
- When we make an economic decision to spend more on healthcare, some other wants are forgone. The next best want forgone is the **opportunity cost** incurred when more resources are allocated to healthcare.

Define Opportunity Cost: Opportunity cost refers to the value of **the next best alternative forgone.**

Requirement 1: Discuss the opportunity cost incurred when it is financed by individuals

While individuals have unlimited wants, but they are constrained by limited resources such as their budget.

Hence the opportunity cost when the higher healthcare expenditure is financed by individuals is measured by the utility of other consumption that is given up for healthcare.

In order to fund the increased healthcare expenditure, individuals need to give up consumption of other goods such as education, food, vacation, housing, etc.

Also, as healthcare is very expensive in SG, the opportunity cost incurred is very high for individuals. This is especially so for the lower income group as due to the higher medical bills they have to pay, some of them may have to give up sending their children to school for education due to budget constraints.

Requirement 2: Discuss the opportunity cost incurred when it is financed by Singapore government

The government has to cater for many needs but is constrained by its finite resources such as its budget. In financing the higher healthcare expenditure, the government can give subsidies or grants to consumers. The extent of subsidies and grants depends on the **government's fiscal position**. Such payments will incur opportunity cost and may need to be financed through higher taxes. Hence the opportunity cost when the higher healthcare expenditure is financed by the Singapore government is the money that could have been spent on other areas such as education, infrastructure, etc.

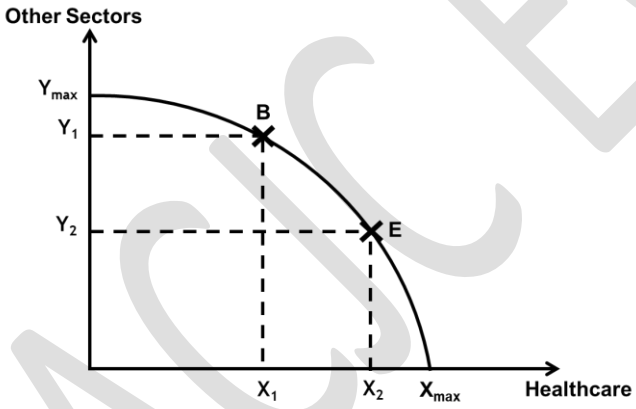
- Examples of healthcare subsidies in Singapore, e.g a wide range of subsidies depending on the ward classes. Accompanying each ward class is a different level of government subsidy. For instance, the Singapore government subsidises up to 80% for ward C, 65% for ward B2, etc. Means testing is one of the most targeted forms of subsidy allocation

that the Singapore government has put in place to determine how much subsidies a patient receives.
- One example of subsidies to consumers in Singapore includes Medifund. This is a state-established endowment fund that is set up to help needy Singaporeans who are unable to pay for their medical expenses. With an ageing population, the government has also decided to carve out a portion of Medifund as Medifund Silver to deliver assistance to needy elderly Singaporean patients.

Subsidies on healthcare also has an opportunity cost which is reduced funding available for other sectors or industries.

The choices of where the government spends on could be analysed through the use of a production possibility curve [PPC], which illustrates the maximum amount of 2 goods an economy can produced, assuming that this is within the same time period, using the same level of technology, the same amount of resources and that all resources are fully and efficiently used.

- Assuming all resources are fully used and Singapore is currently producing on the PPC at point B.
- As government allocates more expenditure to healthcare, changing the production point towards point E on the PPC, the resources remain efficiently used.
- However, the change in allocation represents opportunity costs → amount of expenditure on other sectors have to be given up in order for Singapore to finance the increased healthcare expenditure.
- Since resources are not perfectly substitutable, there will be increasing opportunity costs incurred → thus the PPC is concave in shape.



Subsidies on healthcare also has an opportunity cost which is reduced funding available for other sectors or industries such as education.

- Education → another form of merit goods which can contribute to improvement in productive capacity of economy. Furthermore, established education facility could attract better FDI and foreign talents
- Consider land allocation for SUTD → 4th public university in Singapore → to increase proportion of graduates in Singapore → improve factor quality of labour → attract foreign investment → **opportunity costs → expansionary effect on economy**

Thus there is a very high opportunity cost when the government has to finance the higher medical expenditure. Hence in order to reduce the opportunity cost, the Singapore government has put in various measures:

- One way to counter this could be different level of subsidies for different types of medical care. Since no one should be denied the chance to access to basic medical care, more subsidies should be given to the basic medical care and outpatient treatments. In the case of Singapore, means testing is used to ensure that the low income group gets most of the subsidies. This help to reduce the opportunity cost incurred and reduce wastage of resources and alleviate the burden on government's budget.
- At the same time, there should not be a big group of consumers needing invasive or specialized treatments, so subsidies in these areas could be lowered.

Evaluation: Comparing the opportunity cost when it is financed by individuals vs SG government

Thus whether individuals or the Singapore government finance the increase healthcare expenditure, there will always be an opportunity cost incurred. Even though the government is able to finance most of the healthcare expenditure, it still relies on patients' co-payments and other market mechanisms to ration demand and minimise the moral hazard of providing free or heavily subsidised healthcare, as this will result in greater healthcare expenditure, leading to higher opportunity cost.