Health screening is crucial for early disease detection, thereby increasing treatment effectiveness and reducing costs.

(a)	Explain why the market for health screening might fail in the case of positive externality and where information is imperfect. [10]
(b)	Discuss whether the most appropriate way to ensure efficient allocation of resources in the
	market for health screening is to provide it for free.

1st **Requirement: positive externalities in consumption** – Candidates are expected to explain and illustrate with diagram how positive externalities in consumption leads to underconsumption of health screening.

2nd Requirement: imperfect information – Candidates are expected to explain and illustrate with diagram how imperfect information leads to underconsumption of health screening

Introduction

This essay will explore why the free market for health screening fails in the case of positive externalities and imperfect information.

Explain why the market for health screening might fail in the case of positive externality



Figure 1: Positive Externalities resulting in Market failure

The marginal private benefit (MPB) to a consumer of health screening could be the early detection of critical illness and hence higher probability of recovery, therefore saving on medical expenses, while the marginal private costs (MPC) to the consumer is the associated cost of doing the health screening.

In a free market without government intervention, the consumer maximises his/her own welfare by consuming $0Q_p$ amount of vaccination where his/her MPB = MPC. Therefore, the private optimum output for him/her is at $0Q_p$.

Assuming that there are no negative externalities, MPC equals to marginal social costs (MSC).

Consumption of health screening however generates positive externalities in consumption (MEB).

Health screening can actually help to keep the entire nation healthier and fitter, since any early detection of illness is likely to lead to more successful treatment and recovery, which will result in a more productive workforce. The economy benefits since less man-hours is lost due to workers being ill (e.g. No loss in productivity), the economy also benefits with a larger workforce since workers who remains healthy can also continue to work for a longer period of time before they retire.

The presence of MEB causes a divergence between the marginal social benefit (MSB) and MPB, where MSB is higher than MPB. This is illustrated in Figure 3 where the MSB lies <u>above</u> the MPB, with the vertical distance between MPB and MSB representing the MEB

At $0Q_P$, MSB > MSC. This means that at output $0Q_P$, society benefits more from consuming an additional unit of health screening than the cost it would incur. Hence, net benefit to society/social welfare can be increased with greater level consumption of health screening.

The socially optimum level of output, $0Q_s$, occurs where MSC = MSB. Hence, when left to the market forces, there is under-consumption of health screening by Q_PQ_s amount.

By summing the excess of MSB over MSC for the units Q_PQ_S , we arrive at a monetary measure of welfare loss (also known as deadweight loss) of area ABC to the society.

As a result, the underconsumption of health screening leads to market failure.

Explain why the market for health screening might fail in the case where information is imperfect



The perceived marginal private benefit (MPB_{perceived}) of a consumer in getting health screening is the knowledge of his/her health status while his/her marginal private costs are the associated cost in getting the health screening.

In a free market, without government intervention, the consumer maximises his/her welfare by consuming the amount of health screening $0Q_p$ where his/her **perceived** marginal private

benefit (MPB_{perceived}) = marginal private costs (MPC). His/her perceived private optimal output is therefore $0Q_p$.

The consumers are not fully aware of the benefits (to themselves) of regular health screenings, which is the early detection of potentially chronic diseases such as cancer and cost savings from avoiding treatment of the illness for the long term (early treatment is more effective). In actual fact, most individuals only get screened when serious symptoms are present.

Due to the imperfect information, consumers under-estimate their actual marginal private benefit (MPB_{actual}) of going for medical screenings, resulting in a perceived marginal private benefit (MPB_{perceived}) that is lower than MPB_{actual} as seen in Fig 11.

Therefore his/her perceived private optimal output is at 0Q_p, where MPB_{perceived} = MPC.

But because the benefits of early medical screening is undervalued, their actual marginal private benefit (MPB_{actual}) is higher than their perceived marginal private benefit (MPB_{perceived}). This means that with perfect information, private optimum consumption will be at $0Q_a$.

As a result, with the information being imperfect, the consumer has underconsumed health screenings. The quantity of medical screening consumed by the consumer is sub-optimal and does not maximises his/her welfare, leading to market failure.

Level	Knowledge, Application/Understanding and Analysis	Marks
L3	Analysis & Application	8 – 10
	For an analytical answer that addresses the question thoroughly with clear	[A+A: 10]
	explanation well supported by tools of analysis , such as market failure analysis and diagram. There's clear and thorough explanation of how positive externalities in consumption and imperfect information leads to market failure in the health screening market.	[A+C: 8-9
	There is good ability to organise ideas or discriminate between relevant and irrelevant factors. Answer is well-focused on question , (e.g., the health screening market) with the good use of economic concepts, theories or principles.	
	Knowledge & Understanding	
	For an answer that demonstrates an accurate knowledge and understanding of economic concepts, theories related to question, e.g., market failure analysis.	
L2	Analysis & Application	5 – 7
	For an under-developed answer that attempts to address the question and	[A+K: 7]
	explain how positive externalities in consumption and imperfect information leads to market failure in the health screening market. Answers may be	[C+C: 6-7]
	descriptive, lack an analytical approach (e.g., not supported with tools of	[A+0: 6]

	analysis, incomplete use of graph) or is incompletely explained with gaps in analysis.	[K+C: 5-6]
	[Or	
	For a one-sided analytical answer that address only one of the two question requirements, i.e., explanation of one source of market failure only]	
	For an answer that is supported with some application to the context of the question (e.g., the SSBs market). There is limited ability to organise ideas or discriminate between relevant and irrelevant materials. Answer has some relevance to the question context but is generic (e.g., pre-learnt answer that is not focused on addressing the question specifically).	
	Knowledge & Understanding	
	For an answer that demonstrates largely accurate knowledge and understanding of economic concepts, theories related to question, e.g., market failure analysis (i.e., no major conceptual errors).	
L1	Knowledge & Understanding	1 – 4
	For an answer that shows limited knowledge and understanding of	[C+0: 4]
	definitions). Few valid points made which are scant and inadequately	[K+K: 2-4]
	explained. Answers are mostly irrelevant and inaccurate. Answer demonstrates that the meaning of question is not properly grasped or may contain basic errors of theory.	[K+0: 1-2]

Markers' Comments

In general, students were able to explain the two sources of market failure as required by the question. The better responses clearly explained what the positive externality from the consumption of health screening was, as well as the imperfect information. The weaker responses did not manage to explain the sources of market failure clearly and tend to mix up between positive externality and imperfect information. For example, they wrongly explained that the positive externality was due to consumers being unaware of the benefits of health screening, and wrongly explained that the imperfect information was that consumers were not aware of the positive externality in the consumption of health screening.

b) Discuss whether the most appropriate way to ensure efficient allocation of resources in the market for health screening is to provide it for free.

First requirement: Government policy 1 (Provide health screening for free) – Candidates should discuss how free provision can increase consumption of health screening and achieve efficient allocation of resources..

Second requirement: Government policy 2 (e.g. public campaign) – Candidates should discuss at least one other policy (e.g. public campaign) how it works to increase consumption of health screening and achieve efficient allocation of resources.

To enter L3 candidates should discuss at least two government policies.

Evaluation marks: Well-argued judgements about two government policies with a summative conclusion about which is the most appropriate policy to achieve efficient allocation of resources in the market for health screening.

Introduction

Given that there will be underconsumption of health screening in the free market, by providing health screening for free, it can possibly to increase consumption and address the market failure. However, depending on the extend of marginal external benefit and imperfect information in the market for health screening, free health screening may not always necessarily result in efficient allocation of resources for the market of health screening.

Provide health screening for free can ensure efficient allocation of resources

Providing health screening for free is equivalent to subsidizing substantially to the producers of health screening, such that they are able to provide the health screening service to consumers at the price of zero. This policy will work to achieve efficient allocation of resources only when the MEB of health screening is significant. Providing health screening for free will shift the consumers's MPC vertically downwards such that it intersects with MPC at the price of zero. The new private optimal output level where MPC' equates to MPB at price of zero is now at $0Q_P$ ', which coincides with $0Q_s$. This means that consumers will now increase consumption to the socially optimal level $0Q_s$. Thus, allocative efficiency is attained in the market of health screening.



However, in the case where the MEB of health screening is not so substantial, providing free health screening will most likely result in overconsumption instead, which means that the allocation of resources for health screening market will not be efficient. In the case where the MEB is not huge at all, free provision of health screening increases consumption to Qp' might end up result in a more inefficient allocation of resources instead of non-intervention, as seen in Figure 4, where the original dead weight loss was Area abc, but with free providing of health screening, the deadweight loss is now Area adf.



Figure 4: Effect of free provision

Public campaigns to encourage health screening can lead to efficient allocation of resources

The health promotion board can public campaigns to encourage health to educate the people about various critical illnesses and the benefit of health screening for early detection. Public campaigns are aimed at making consumers more aware of the full benefits of consuming health screening to themselves (towards more informed decision-making). With public campaigns, consumers perceive the benefits of the medical screening to be much higher. With reference to Figure 5, if such public education campaigns are successful, the private benefit for health screening would increase from MPB_{perceived} to MPB_{actual}. This, in turn, will cause consumption to increase from Q_p to Q_a, eliminating the extent of under-consumption due to imperfect information and lead to efficient allocation of resources in the market for health screening.



Dependent on the receptiveness of the public towards this policy. If individuals are not receptive to the campaigns, it reduces the effectiveness of the policy, i.e. the older population may be less receptive to public campaigns. For example, elderly may be less receptive to the campaigns about the benefit of the health screening as they might have a stronger belief in traditional medicine and remedies to be the better way for prevention than health screening. Also, usually the effectiveness of the policy would only be felt in the long-run, as mind-set of people take time to change, such that the consumption of health screening may not be able to increase much in the short term. On top of that, people may be generally occupied with their daily lives such as work, and may not be able to find time to do the necessary health screening.

Conclusion

While health screening does generate positive externalities in consumption, the extent of the external benefit might not be so significant, such that free provision of health screening will only lead to overconsumption and wastage. Even to provide health screening for free, it should be more targeted towards specific group of consumers, for example, adults age 40 years and older as they will be more at risk to undetected early critical illness. Perhaps, a per unit subsidy = MEC can be implemented instead, so as to increase the consumption of health screening to optimal instead of overconsuming. Given that there is also imperfect information in the market of health screening, it actually make senses to implement both subsidy and public campaigns together. Subsidy lowers the MPC and can encourage more consumption in the short term, while public campaign with sufficient amount of time, can slowly change consumers' mindset and increase their MPB perceived, and to encourage them to take do health screening. When mindset change has eventually taken place, the government can also progressively reduce the amount of subsidy given, so as to reduce the strain on the government's budget.

Level	Knowledge, Application/Understanding and Analysis	Marks
L3	Analysis & Application	8 – 10
	For an analytical answer that addresses the question thoroughly with clear explanation well supported by tools of analysis , such as market failure analysis and diagram. There's thorough explanation of how at least two policies work to achieve an efficient allocation of resources as well as the strengths and/or limitations of policies.	[A+A: 10] [A+C: 8-9]
	There is good ability to organise ideas or discriminate between relevant and irrelevant factors. Answer is well-focused on question , (e.g., the health screening market) with the good use of relevant economic concepts, theories or principles.	
	Knowledge & Understanding	
	For an answer that demonstrates an accurate knowledge and understanding of economic concepts, theories related to question, e.g., market failure analysis.	
	Analysis 9 Analisation	5 7
L2	Analysis & Application	5 - 7 [A+K·7]
	For an under-developed answer that attempts to address the question and explain how at least two policies work to achieve an efficient allocation of resources as well as the strengths and/or limitations of policies. Answers may be descriptive , lack an analytical approach (e.g., not supported with tools of analysis, incomplete use of graph) or is incompletely explained with gaps in analysis.	[C+C: 6-7]
		[A +0: 6]
		[K+C: 5-6
	[Or	
	For a one-sided analytical answer that address only one of the two question requirements, i.e., explanation of one policy only]	
	For an answer that is supported with some application to the context of the question (e.g., the health screening market). There is limited ability to organise ideas or discriminate between relevant and irrelevant materials. Answer has some relevance to the question context but is generic (e.g., pre-learnt answer that is not focused on addressing the question specifically). Knowledge & Understanding	

	For an answer that demonstrates largely accurate knowledge and understanding of economic concepts, theories related to question, e.g., market failure analysis (i.e., no major conceptual errors).	
L1	Knowledge & Understanding For an answer that shows limited knowledge and understanding of relevant economic concepts and theories (e.g., basic description or definitions). Few valid points made which are scant and inadequately explained. Answers are mostly irrelevant and inaccurate. Answer demonstrates that the meaning of question is not properly grasped or may contain basic errors of theory.	1 – 4 [C+0: 4] [K+K: 2-4] [K+0: 1-2]
Level	Evaluation Synthesis	Marks
E3	Well-explained evaluative judgements about 2 requirements + a summative conclusion.	5
E2	Well-explained evaluative judgements about 2 requirements. OR A well-explained evaluative judgement about 1 requirement + an evaluative statement for the second + a summative conclusion.	4
	A well-explained evaluative judgement about 1 requirement + an evaluative statement for the second.	3
E1	A well-explained evaluative judgement about 1 requirement. OR evaluative statements for 2 requirements.	2
	An evaluative statement for 1 requirement.	1
E0	No attempt at evaluation.	0

Markers' Comments

Many students managed to discuss how free provision of health screening and another policy as per of the question requirement. The stronger responses were able to recognized that free provision was equivalent to substantial subsidy given in order to lead to the price of health screening being zero, with sound economic analysis to explain how efficient allocation of resources could be achieved. The weaker responses were superficial and were not supported with tools of economic analysis. Some students even wrongly explained that free provision of health screening would turn it into a public good.