H1 Case Study Q1 & Suggested Answers

(a)	Explain the likely magnitude of		
	(i)	The price elasticity of demand for smartphones. Price inelastic demand, magnitude less than 1 in absolute terms. [1] Reason [1] A device for user to stay connected on the go with no close substitutes available. OR The need to stay connect wherever and whenever makes smartphone a necessity to the user. OR Price of smartphone takes up insignificant portion of income as it becomes more affordable.	[2]
	(ii)	The price elasticity of supply for smartphones. Price elastic supply, magnitude more than 1 in absolute terms. [1] Reason [1] Manufactured products with short production time. OR Existence of spare capacity of smartphone producers. Markers' comments: In general, candidates are able to state and explain the reason for the price elasticity of demand and supply of smartphones. However, they need to note that there is a need to state the range of the numerical value of price elasticity of demand and supply as the question is asking on the "magnitude". Candidates should also understand that smartphone in general has no close substitutes, as some incorrect responses mentioned the large availability of substitutes due to having different brands.	[2]
(b)	Identify and explain 2 demand factors why the growth in smartphone market is faster in China as compared to the world. Ans: Low smartphone penetration rate relative to other countries, hence has greater potential to grow faster. Hence demand likely to increase faster and thus growth in smartphone market is faster in China. [2]		[4]

High economic growth rates over past few years, relative to other countries, leads to faster increase in demand for smartphones and thus growth in smartphone market is faster in China. [2]

Also able to accept…

As Chinese consumers tend to replace cheap phones much more quickly given its low price relative to high-end smartphones, the increase in quantity demanded can be greater and thus growth in smartphone market is faster in China. [2]

If responses do not link to demand increase resulting in growth in smartphone market, max 3 marks.

Markers' Comments:
Most candidates were able to provide the explanation of the demand factors in influencing the increase in demand for smartphones in China. The better responses addressed the requirement on "faster" growth in China compared to the rest of the world. Some weaker responses mistook China's smartphone market as Xiaomi's smartphone market and thus affected the quality of the answer.

(c)	Using Figure 1, compare the changes in worldwide smartphone shipment between budget phones and mid to high range phones from 2011 to 2014. Ans: Both increases [1], with shipment for budget phones increases in a faster rate. [2] Markers' Comments: Majority of the candidates had no problem in scoring the full credit for this question. Weaker responses compared on the absolute increase in smartphone shipment instead of the rate of increase.	[2]
(d)	Comment on the impact on China's balance of payment as China smartphone makers such as Xiaomi sells smartphones in other parts of the world. The start of sale of Xiaomi smartphones in other parts of the world means they are exporting Xiaomi smartphones to buyers from other countries. China's export revenue will increase, hence leads to improvement in current account of the balance of payment. [2] However, given that smartphone is not the only good that China exports, the improvement in current account may not be significant. [2] OR Balance of payment account consists of capital and financial account too, hence balance of payment might not improve much/might not improve even when Xiaomi starts to sell smartphones abroad. [2] Markers' comments: While most candidates were able to identify an improvement in balance of payment from an increase in export revenue from Xiaomi's sale of smartphones in other parts of the world, they tend to over-elaborate on how would the export revenue increased, which is not necessary. Many candidates also failed to comment on the other possibility on	[4]

		balance of payment, instead they elaborated on the effects on capital and financial account of balance of payment, which is not directly influence by Xiaomi's sale of smartphones in other countries.		
(e)	**(i)**	Explain the external cost of using smartphones. External cost is using smartphone is the cost on 3rd party [1] who is not directly involved in the consumption/use of smartphone. Example, a pedestrian who uses smartphone while walking and places too much focus on the use may collide into other pedestrians. [1] Marker's comments: While most candidates did well for this question, one should take note on defining the meaning of external cost should be included in the explanation of the external cost of using smartphones		[2]
	(ii)	Discuss whether the imposition of fines on pedestrians using smartphones is an appropriate policy in addressing the external cost. Fines may disincentivise pedestrians from using smartphones while on the move, as there is the risk of them getting caught and get fined for it. The external cost can thus be reduced, or removed if all pedestrians stop using smartphones while walking. However, it is difficult for the authorities to enforce the fines as many pedestrians can still get away from using smartphones while walking without getting caught. It will be extremely difficult to monitor each pedestrian's action and high cost needs to be incurred in employing manpower in supervising the pedestrians, hence it may not be appropriate in addressing the external cost. Also, the fines need to be substantial enough in order to deter pedestrians from using smartphones, if not the penalty might not be heavy enough to change the pedestrians' behaviour. Other measures such as public education may be a more appropriate policy as it helps to inform the pedestrian the risk of using smartphones while on the go to themselves as well as to other road users can help in altering their behaviour, thus reducing or removing the external cost of using smartphones. Although this policy make require longer time for the effect to take place as pedestrians may need time to change the way they use smartphones. It also must ensure that the message reach out to more pedestrians, one way can be through the use of TV ads or programme to reach out to a larger audience.		[6]

Level	Descriptors	Marks
L2	For a well-developed and balanced discussion on the appropriateness of the use of fines and another 1 policy in addressing the external cost of using smartphones. If only well-developed discussion on the appropriateness of fines (1 policy) – max 4m (Not sure if I am too strict to require another policy)	4-6

		L1	For an underdeveloped explanation on the use of fines and other policy, if any.	1-3	

Markers' Comments:
While candidates generally showed understanding that the imposition of fines would lower the use of smartphone while walking, the explanation tend to be superficial and did not relate to marginal private benefit of smartphone usage. Many also took fines as tax in their explanation, which is not true given that fines are not paid for until smartphone users were caught for their actions. Many candidates also suggested an alternative policy on public education to address the external cost, but mostly failed to explain how might public education work better than fines.

(f) Discuss whether the use of smartphones will always lead to increased productivity. [8]

Use of smartphones increase productivity as there are many different apps with useful functions, where smartphone users can use them to increase productivity. But the use of smartphones does not always lead to increased productivity if more time has to be spent on work.

Through the use of enterprise apps, with some simple clicking on the smartphone, users can send in work to their companies with minimal effort and can be done at time beyond working hours in office, such as during transit, which is convenient and time saving leads to increase in the productivity. Results was observed in a study done in UK where the use of these apps on smartphones increases worker productivity by more than 34%.

However, over-using smartphone may be counterproductive as smartphone users access email and other apps on their devices eats into their working and thinking time and distracts them from doing their real work. This is especially true when the workers are required to use time to reply long emails or using smartphones for non-work related purposes during working hours. Furthermore, with smartphones, working time and leisure time is blurred, where there could be possibility that workers continue to work beyond their working hours through their smartphones, which means that longer time is spent to do the expected amount of work, thus it could be less productive for these workers who uses smartphones for work.

Overall, smartphones with enterprise apps and email functions are meant to help to increase workers' productivity and allowing them to do work anytime, anywhere. But to truly ensure that the use of smartphones leads to increased productivity, there is need to ensure that the same work that is done through smartphones really reduces the time spent in completion as compared to doing the work through other means. Secondly, it should not eat into the workers' personal space, as it is harmful for their well-being and is unlikely to be sustainable.

Level	Descriptors	Marks
L2	For a well-developed and balanced discussion on the use of smartphones will lead to increment in productivity or not, with reference to the case data. 1 sided answer on either use of smartphones lead to increment in productivity or worsens productivity – 4m	4-6

L1	For an underdeveloped explanation of how the use of smartphones may or may not lead to increment in productivity.	1-3	
	Evaluation		
E2	For reasoned evaluative comment well-supported by economic analysis.	3-4	
E1	For unsupported evaluative comment.	1-2	

Markers' comments:
This question is well addressed by most of the candidates, where the responses included a 2-sided on how the usage of smartphones increased productivity for work. Some responses were with little or no reference to the case study context, which affected their quality. Weaker responses also did not specifically link productivity to the concept of output per labour hour, which is necessary for clear explanation of how productivity is increased or worsened. Evaluative statements were seen in some responses, but they were mostly unexplained or under-explained.

[Total : 30]

H1 Case Q1 Suggested Answers

(a)	Identify the relationships of China's GDP growth with that of Australia and Singapore between 2010 and 2015. China and Singapore GDP growth seems to have a direct relationship [1] whereas China and Australia GDP growth have an indirect/inverse or no clear relationship [1]. Markers Comment: Students ignored the word relationship and went on to compare about the growth rates. Some did not know the difference between GDP and GDP growth. Some student wrote inversely proportionate which is incorrect. **1m each to state the relationship between China vs Singapore GDP growth and China vs Australia GDP growth**	[2]
(b)	Explain possible reasons why Singapore adopts exchange rate policy instead of monetary policy. Singapore adopts exchange rate instead of interest rate (monetary policy) as Singapore is an open economy that is very susceptible to large capital inflow and outflow, Further, Singapore being a small economy hence it is a price taker in world markets à unable to control interest rate as domestic interest rates are largely determined by foreign rates and market expectations of the movement of the SGD thus any attempt by MAS to raise domestic interest rates over the world's interest rate, it would result in large inflow of short term capital. Singapore may also face huge short term capital inflow (in the form of 'hot money') as a result of using interest rate to control inflation a large and quick movements of capital makes it difficult to control money supply in Singapore since the net flow	[4]

of funds from abroad can easily affect domestic money supply hence making the change in interest rates ineffective.

Furthermore, a rise in interest rate may results in an initial capital and financial account surplus □ however, this is only short term. Once the interest rate falls back to the equilibrium interest rates same as those of other countries, Singapore will experience huge ST capital outflow (huge capital flight) □ making BOP very unstable and making Singapore vulnerable to exchange rate fluctuations.

Hence, interest rate control will be ineffective to enable Singapore to achieve low inflation and sustainable economic growth. As Singapore being very dependent on long term investment such as FDI for economic growth which are investments funded more by past profits rather than through borrowing thus manipulation of interest rates will be unable to help maintaining low inflation for sustained economic growth.

Singapore adopts exchange rate instead of interest rate (monetary policy) as being a small economy and thus its dependent nature of Singapore's economy on imports makes her extremely vulnerable to import cost-push inflation and imported inflation. Hence by adopting exchange rate policy it allows appreciating SGD would mean that Singapore would be able to buy more units of foreign currency and hence a reduction in the price of its imports.

Appreciation of S$ will make our imports (raw materials, semi-finished goods and final goods and services) in terms of domestic currency relatively cheaper as Singapore imports most of our factors of production and raw materials □able to lower price of imports and this is important as Singapore is dependent on imports for fop and basic necessities □ appreciation will decrease the cost of production for domestic firms□ domestic firms would respond partially by increasing their output and partially by lowering the cost to consumers in the form of lower prices□ This results in a rise of the SRAS curve from AS1 to AS0 as illustrated by a rightward shift shown in Figure 1 □This could alleviate/reduce imported cost-push in Singapore as indicated by the fall in general price level from P1 to P0 lowering imported cost-push inflation.

Any 2 possible reasons with economic analysis.
2m for each possible reason that explains why Singapore chooses exchange rate policy over interest rate policy.
Impossible trinity also accepted if well explained.

Markers' comment:

This question was generally well explained by students. However, some students merely stated the point such as Singapore is small and open without further elaboration or further explanation why it is better for SG to adopt exchange rate policy than int rate policy.

| (c) | Extract 9 and 10 make reference to the impact of China's economic slowdown. | |

(i)	Using AD-AS analysis, explain how fiscal policies in Singapore and interest rate policy in Australia will help to mitigate the impact of China's economic slowdown.	[6]
	China's economic slowdown will reduces both Australia's and Singapore's economic growth rate and employment rate through a slowdown in demand for their exports of goods such as minerals products from Australia (extract 10) and tourism services (Extract 9) which will have a contractionary effect on Singapore's growth. Hence by adopting expansionary fiscal policy, it will aid in reducing the negative impact by reigniting the economic growth and increase employment.	

Singapore's fiscal policies:
- Government decides to use discretionary expansionary fiscal policy.
- Government increases government expenditure.
- There is increased aggregate demand for goods and services.
- Through the multiplier effect, there is a series of induced increases in income induced consumption spending that result.
- The final increase in national income is more than the initial increase in government spending.
- As shown in Figure 1 below, an increase in the government expenditure shifts the aggregate demand curve from AD0 to AD1 as it is a component of AD. This causes the equilibrium real national income to rise from Y0 to Y1 via the multiplier effect, bringing about increase in actual economic growth and employment therefore able to mitigate the china's impact of economic slowdown.
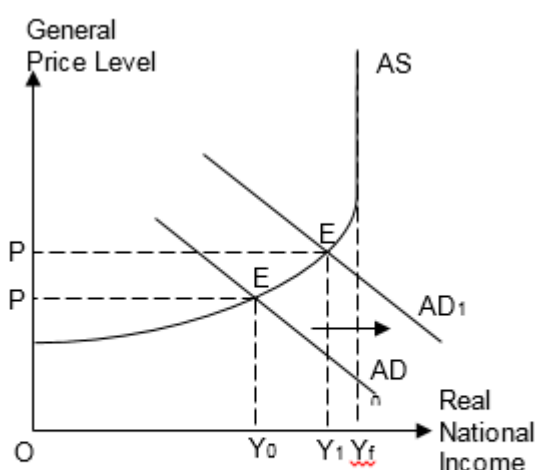

Figure 1: Expansionary Fiscal Policy
(Increase in government expenditure)

Australia's central bank reduce commercial banks' required reserve ratio to simulate lending, money supply will increase from MS to MS1 as banks can give out more loans. There will be an excess quantity of money supplied at

the prevailing interest rate, r. People will use this excess holding of money to buy bonds, thereby driving up bond prices and lowering interest rates from r to r1.

According to the marginal efficiency of investment (MEI) theory, lower interest rates will encourage investment (I to I1), as investors enjoy a lower cost of borrowing and increase expected profit from their investments. Lower interest rate encourages consumption as cost of credit decreases. Moreover, savings fall too as reward for savings decreases (Extract 10). The increase in investment and consumption will cause AD to increase from AD to AD1, leading to a multiplied expansion in output, income and employment from Y to Y1 as shown in Figure 2. Thus mitigating the impact of fall in net x due to China's economic slowdown.
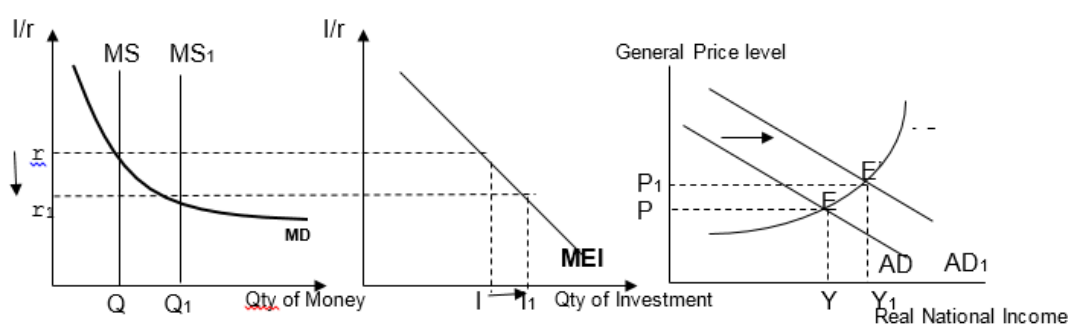

Figure 2: Keynesian Transmission Mechanism for Expansionary MP (AD-AS)

3m - Explain how fiscal policies in Singapore help to mitigate the impact of China's economic slowdown
3m – Explain how interest rate policy in Australia help to mitigate the impact of China's economic slowdown

Max 5- Failure to address what impact china slowdown of economic growth will have on Australia and Singapore

Marker's comment:

Well done by most students but many did not state the problem that was caused by China's economic slowdown and thus the need for use of such policies. Some students misinterpret the question and thought that the policies adopted by Singapore and Australia was to help China's economy to improve. Some students were unable to give an in-depth economic analysis to explain how monetary policies works and merely stopping analysis at increase in AD.

(ii)	Comment on possible reasons why these policies may have limited effectiveness in mitigating the impact of China's economic slowdown.		[4]

Singapore:
Small size of multiplier, ineffective to increase AD that is caused by a significant fall in demand for net x due to china's economic slowdown as China is one of our major trading partner. Small size of multiplier due to high MPS and MPM.

Australia:
Monetary policy is limited ineffectiveness as Australia's economy is largely dependent on mining industries hence by lower interest rates may not spur miners to invest more or other industries to invest due to poor economic outlook as investment is not just solely dependent on interest rates but also other factors such as economic outlook.

2m for one possible limitations and explains why Singapore fiscal policy has limited effectiveness.
2m for one possible limitation and explains why Australia interest policy has limited effectiveness.
Marker's comment:
Most students were able to do well for this question. However some students did not state limitations related to the context of Singapore and Australia while some merely stated without proper elaboration of the point. A handful of students did not consider the marks allocation and wrote too much.

(d)	Using Extract 10 and 11, comment whether the bans on the sales and imports of coal by China is a form of protectionism. Protectionism is primarily aimed at reducing the consumption of imports so as to promote the consumption of domestically produced goods by local-based firms. Yes it is a form of protectionism as seen in Extract 11 where China is looking to cut overall coal imports in order to boost demand for its domestic producers of clean energy. Ban will result in higher demand for domestic coal hence coal producers will have to step up production by hiring more workers hence reducing unemployment rate thus protecting domestic employment. No it is not a policy targeting at protecting domestic producers of clean energy but is rather to reduce the negative externality arises from the production of energy using coal. Extract 10 mentioned that through burning of coal for the production of energy, it will have release ash content which will cause air pollution in Beijing and other cities in China. Therefore by banning the sale and imports of coal, will cause power plants to switch to alternative sources of fuel for the production of energy and reduce the MEC which are cost incurred on third parties such as animals and the ecosystem. Overall, it seems the China government adopting the ban of sale and imports of coal as a measure to reduce negative externality rather than for protectionist purpose as China only ban imports of dirty coal and encourages production of clean energy. As the air pollution problems which has reached a hazardous level in some of the cities in China which had affected the non-material standard of living (SOL). **Point marking suggested scheme** - **3m for explanation this policy is for the purpose of protecting domestic economy and made references to extract information.**	[6]

	- **3m for explanation this policy is for the purpose of reducing negative externalities and made references to extract information.** - **Max 5 without a conclusive stand. As 1m is reserved for conclusive statement whether the ban of coal imports is a form of protectionism or not.** Markers' Comment: Students did not understand the definition of protectionism and purpose of protectionism policies. Students were unable to differentiate use of a ban on different situations to achieve different economic goals. Some students mistook ban as tariffs and went on to explain how tariffs work instead of answering the question.	
(e)	In light of the issues raised in the extracts, discuss the desirability of China's economic slowdown.	[8]
	[Total : 30]	

	China's slowdown is desirable	China's slowdown is undesirable
China	- Price stability - Environmental damage - Balance of payment surplus with rest of the world	- Unemployment - Future living standards - Income inequity
Singapore	-Diverts investment towards Asia (eg Singapore)	- Economic growth -Unemployment -BOP -SOL
Australia	- Diverts investment towards Australia -lesser mining, lesser environmental damage (negative ext)	-Economic growth -Unemployment -Inflation -BOP -SOL

Suggested answer:

China's economic slowdown is desirable as it will help to reduce excessive BOP surplus with the rest of the world. As there is slower economic growth due to the change in the focus from external driven to domestically driven. This will result in a slower increase in demand for its exports thus BOP surplus will not continue to balloon which will cause large deficits in other countries which relies on China's exports.

The economic slowdown in China might lead to worsening of employment issues. China might worsen in terms of domestic employment as economic slowdown will mean lesser economic activity hence jobs creation might decrease or some industries might not be sustainable to just depend on domestic demand hence might retrench workers due to lower output produced.

China's economic slowdown might have a larger cost than benefit as China's economy shows a massive unemployment due to lower production hence lesser demand for coal etc and it will lead to govt revenue to reduce hence govt debt will increase making the economy rather unstable.

China's economic slowdown will be undesirable to countries that are largely dependent on china for its economic growth like Singapore. As a slowdown will meant lesser demand for Singapore's exports, net X fall→ AD fall suffers from recession and high cyclical unemployment.

All in all, in view of slow and uncertain economic recovery in US from worldwide financial crisis and the slowdown of china's economic growth meant that the two power house of the global economy might led to poor investor's outlook in the highly globalized economy. Hence it is largely undesirable for small and open economies like Singapore that are dependent on trade for growth.

Marking Descriptors		
L2	For a balanced answer that discusses the desirability of China's economic slowdown on China and 1 other economy such as Singapore or Australia. Max 4m: if answer only discusses the benefits and costs of the economic slowdown in China. Max 4m: if answer only discusses one sided analysis on either benefits or costs of China's economic slowdown on china and 1 other economy.	**4-6**
L1	For a one-sided answer that explain the benefits or costs of China's economic slowdown on China. Or answers could be descriptive or with little economic analysis about economic slowdown on all the different countries. Max 3m: for 1 well-explained benefits/costs of china economic slowdown on one economy.	**1-3**
E2	Explained /reasoned judgment	**2**
E1	Stated judgement without justification	**1**

Marker's Comment:

Time management is poor for most students. Most student only considered the undesirable effects on China and other economies hence were not able to provide a balance to the answer.

H1 Economics Prelims 2016 Paper 1 Qn 3 Suggested Answer

3. In a free market, the price mechanism is the best way to allocate scarce resources for the production of goods and services. Government intervention is unnecessary.

a. Explain with examples what is meant by public goods and merit goods. [10]

Suggested Mark Scheme

	Knowledge, Understanding, Application and Analysis	
L3	- Well-developed answer that explains **both** merit goods and public goods adequately with good use of relevant examples. - At least one of the two issues (e.g. positive externalities and under-valuation of private benefits) relating to merit goods is fully explained. - Both issues of non-rivalry and non-excludability are explained. - Answer goes onto explain **why** market failure arises as a result, clearly distinguishing between complete and partial market failure. - **Full marks** can be awarded if: all of the above are present, AND **brief explanation of the other issue relating to merit goods** is present, AND with **clear diagram** explained in answer, AND detailed **economic analysis**.	7 - 10
L2	- Undeveloped explanation of merit goods and public goods with some use of relevant examples. - **Cap at 5**: Only merit good OR public good well-explained.	5 - 6
L1	- **Cap at 4**: Theoretical explanation only **without use of examples**. - Descriptive answer lacking in economic analysis.	1 - 4

Suggested Outline

Public goods are goods that display characteristics of non-rivalry and non-excludability. Examples of public goods are street lighting and national defence.

- Define with aid of an example non-rivalry.
- Explain why non-rivalry implies that the good will not be produced at allocative efficient output by the free market.
    - When a good is non-rivalrous, it suggests that the marginal cost of provision is zero. The social optimum output is where $P = MC = 0$. At that quantity, the value society places on the last unit of the good produced (Price) is equal to opportunity cost of producing it (Marginal Cost) and society's welfare is maximised. However, profit-motivated producers in a free market will not be willing to produce up to that quantity as that means selling at $P = MC = 0$. Revenue (P times Q) will be zero and firm will make losses. Thus the free market will not produce the public good at the social optimum quantity due to its non-rivalrous property. The market fails as a result.

- Define with aid of an example non-excludability.
- Explain why non-excludability -> no effective demand -> producers cannot charge a price for the good -> the good will not be produced.

Merit goods are goods that the government deems to be socially desirable and under-consumed. Most merit goods generate positive externalities in consumption or its marginal private benefits may be undervalued. Examples of merit goods include healthcare and education.

- Explain with aid of an example and diagram how positive externalities -> external benefits -> divergence between marginal social benefit and marginal private benefit -> in a free market producers and consumers do not take into account external benefits and costs -> under-consumption -> market failure & deadweight loss.
- **Alternatively**, explain in detail with aid of an example how imperfect information -> undervaluation of marginal private benefits -> under-consumption in the free market -> market failure.
    - Consumers may undervalue the private benefits of a merit good such as healthcare due to imperfect information. For example, they may perceive long-term benefits of healthcare to be lower than it actually is. In the free market, consumers will consume up to the point where their perceived marginal private benefits equals to the marginal private cost. However, at this quantity, the actual

*Take note: important to distinguish between the market failure arising from imperfect information and that from externalities

Examiner's Remarks

- This question was generally well done with most responses in the L2 range and quite a number of students achieving top marks in the L3 range. A sample response from a student who achieved 8/10 has been featured with some minor edits.
- The most common error is that students do not distinguish between market failure arising from imperfect information and that from positive externalities. These are two separate sources of market failure.
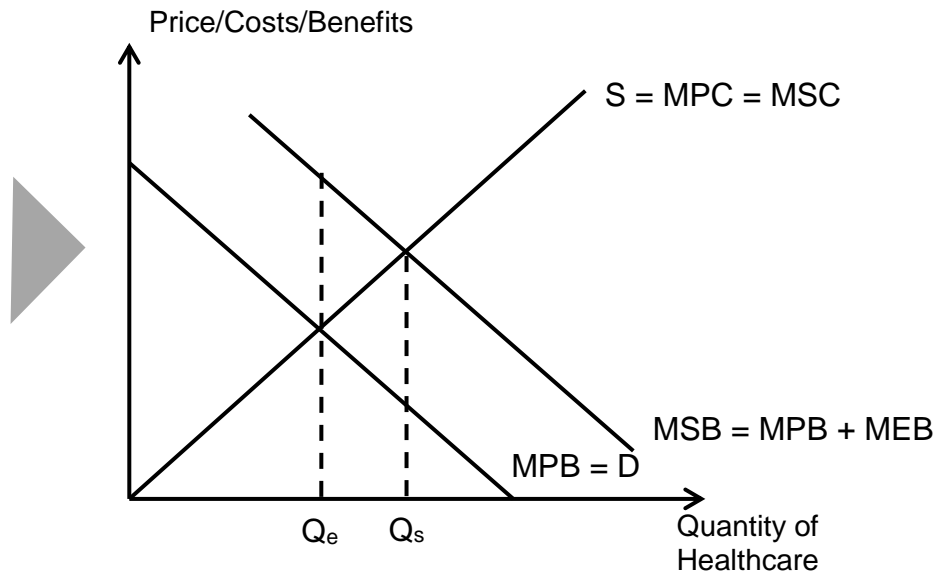
- Students also face difficulty in explaining the concept of non-rivalry clearly. A full explanation has been provided in the answer key above.
- Students use the terms "no effective demand" and "no effective supply" indiscriminately. In general, try to avoid use of meaningless jargon if you are unclear of what they actually mean and which situations they are relevant in.
- A few scripts were excessively long for a part (a) answer. There is a need to decide on what to summarise and cut when answering a question that seems to have a lot of content to cover. The answer key would be reasonable in awarding marks and would definitely not require students to write beyond what is humanly possibly in 18 minutes. i.e. it must be possible for students to achieve **<u>full credit</u>** for an answer within time constraints.

Sample response from student (Nur Iffah Bte Ariffin 1512C)

Public goods are goods that have the characteristic of non-excludability and non-rivalry. Non-excludability means that it would be very hard or costly to exclude non-payers from enjoying the service. As such, this creates a free-rider problem as people would not be willing to pay for such service. This will then result in no effective demand since people can easily free ride from the service and not pay a single cent. Producer, being profit-minded, would not be willing to provide such services as no profit will be generated. As such there is no effective demand and supply leading to market failure. One example would be the service of street lights service. Firstly, it would be very hard and costly to even track down non-payers that enjoy the light provided. As such, it would then be very hard and costly to charge them for benefiting from the service. It is hard to track non-payers down as street lights are placed in the public and it is important for people, be it drivers or pedestrians, to see the street especially at night.

Non-rivalry means that the additional user would not degrade the quantity and quality of the good or service. As such, the effective cost of producing for one more consumer = 0, thus marginal cost is 0 as well. Since free market equilibrium price equals to marginal cost of the producers' supply curve, price equals to zero. As such producers being profit minded will not be willing to supply for such service as there is no revenue that they can earn from it. As such, there is no effective supply, leading to market failure. One example would be the street lights. The usage of one person will not degrade the quantity and quality of intensity of light that is coming out from the source. It is because the intensity of light emitting out is more or less the same regardless of the quantity of people on the street.

Merit goods are goods deemed as socially desirable by the government. One example is healthcare. However, healthcare generates positive externalities. Positive externalities are external benefits borne by third party in the society who are not involved directly in the production or consumption of the good. Healthcare generates positive externalities as if the someone is healthy, the risk of others falling sick decreases, leading to a more healthy and productive society. However, consumer only take into account their own private benefit into their demand curve. As such the marginal private benefit (MPB), is lower than the marginal social benefit (MSB). The divergence is marginal external benefit (MEB) as shown in the diagram below. Since there is no externality in production, marginal private cost (MPC) equals to marginal social cost (MSC) as shown below. In free market, producer and consumer only take into account their private benefit and cost such that the equilibrium is at E where the quantity is at Qe as shown below. However the socially optimal equilibrium is at Es such that the quantity is at Qs. As such there is an under-consumption of healthcare. For every unit of consumption such that MPB < MSB, there will be an underconsumption. This leads to social welfare loss [shown by the shaded area]. As such consumers would have to consume such that MSB > MPB, until the last unit where MPB = MSB. This leads to market failure as there is inefficient allocation of resources.

Price/Costs/Benefits

S = MPC = MSC

MSB = MPB + MEB

MPB = D

Q_e   Q_s

Quantity of Healthcare

People undervalue healthcare due to imperfect information. This is because they are unaware of the potential benefits that healthcare can bring [not] only to them but [also] to the society, leading to under-consumption.

3. In a free market, the price mechanism is the best way to allocate scarce resources for the production of goods and services. Government intervention is unnecessary.

b. Discuss the view that government intervention in a free market is unnecessary in order to achieve an efficient allocation of resources. [15]

Suggested Mark Scheme

	Knowledge, Understanding, Application and Analysis	
L3	- Well-developed explanation of how government intervention may be unnecessary under strict assumptions, and how government intervention could be necessary in market failure contexts in the real world. - Answer clearly explains how government intervention may solve various market failures. - Appropriate use of examples and diagrams to aid explanation.	9 - 11
L2	- Undeveloped explanation of how government intervention may be unnecessary and how government intervention may solve various market failures. - **Cap at 6m**: Weak/No explanation of why government intervention may be unnecessary and how the free market can achieve an efficient allocation of resources.	6 - 8
L1	- Descriptive answer lacking in economic analysis.	1 - 5
E2	Clear and well-reasoned stand that is well justified by economic analysis.	3 - 4
E1	Stand stated with little to no economic justification.	1 - 2

Suggested Outline

Possible Stand 1: Government intervention is necessary if society wants to achieve an efficient allocation of resources because markets in the real world are imperfect, but government intervention does not guarantee/is insufficient to ensure an efficient allocation of resources as governments can make bad policy decisions and are also prone to various types of government failure.

Possible Stand 2: An efficient allocation of resources is impossible to achieve in the real world, government intervention or not. Government intervention just makes the situation worse as government is prone to government failure and constraints in policy making that tend to worsen the initial situation. The free market while it is imperfect when left alone, is better.

Possible Stand 3: Without government intervention, the free market cannot achieve an efficient allocation of resources. However the government should still rely largely on the free market and intervene to the least extent possible. The government should favour incentive-based policies over command-and-control policies and largely preserve the natural functioning of the price mechanism. Government intervention is necessary, but governments should avoid over-intervening too.

OR: Any other well-explained stand.

Introduction

Define allocative efficiency: A situation where the combination of goods and services produced and consumed maximises society's welfare (for a given level of income distribution).

Condition for AE: Allocative efficiency is achieved when MSB = MSC, or in the absence of externalities, when MPB = MPC, or frequently just P = MC.

Thesis: Government intervention in a free market is unnecessary in order to achieve an efficient allocation of resources <=> the free market is able to achieve allocative efficiency.

Under strict assumptions (of perfect competition) i.e. no externalities, perfect information, no public goods etc. the free market can achieve an efficient allocation of resources.

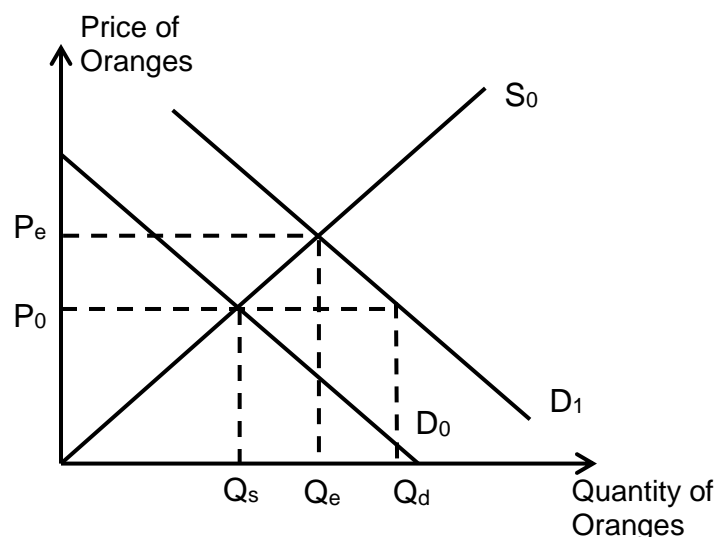**Various possibilities (Poss) are accepted at this point as the thesis:**

Poss 1: The price mechanism explanation

Explain how the price mechanism answers the question of resource allocation and provides a response to scarcity i.e. what and how much to produce, as well as how to produce, and therefore leads to an efficient allocation of resources.

An efficient allocation of resources is achieved in the free market with the help of the price mechanism through its signaling, incentive, and rationing functions. In a free market, **through the price**, consumers **signal** their preferences and constraints to producers and producers **signal** the opportunity costs of production for goods to consumers. As both parties make rational decisions pertaining to consumption and production by responding to the price signals, this answers the question of "what and how much to produce" and allocative efficiency can be achieved. For its **incentive function**, the price mechanism incentivizes profit-maxmising producers to seek the lowest cost method of production for a given output. Since profit equals to revenue minus costs, any difference between the market price and firm's marginal costs of production will accrue to firm's profits for an additional unit of good produced. Since all firms are incentivized to choose methods of production that minimises costs, this answers the question of "how to produce" and society will achieve productive efficiency as a whole. Lastly, the **rationing function** of the price mechanism helps to distribute goods and services produced to the consumers who value them the most – based on willingness and ability to pay. This answers the question of "for whom to produce for" and allows for exchange efficiency to be achieved.

Explain, with help of a diagram, how the price mechanism in a free market functions to return the market to an equilibrium by correcting surpluses or shortages in the market.

The price mechanism adjusts automatically to changes in demand and supply to restore equilibrium across various markets and achieve an efficient allocation of resources across the economy. In the diagram below, given an increase in demand from D_0 to D_1 in the market for oranges, at the prevailing price P_0 there is a shortage as quantity demanded Q_d exceeds quantity supplied Q_s. Consumers through dollar votes will signal their willingness and ability to pay for the good by bidding prices up. Producers will respond to the higher prices by increasing quantity supplied by the law of supply. Consumers will respond by reducing quantity demanded by the law of demand. This process continues until the shortage is eliminated and the new equilibrium is reached at Q_e and P_e.

Poss 2: The no market-failure explanation

<u>Explain how net private and hence social benefits are maximised in the absence of externalities and imperfect information.</u>
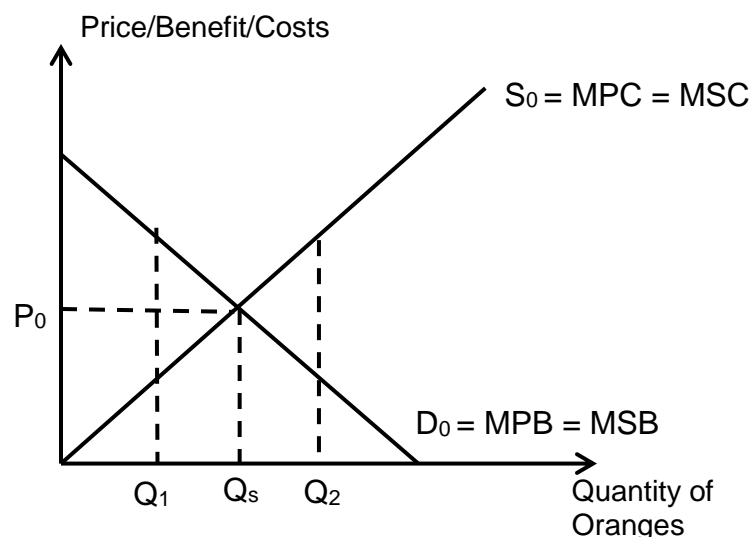
Without sources of market failure -> MPB = MSB and MPC = MSC and consumers and producers both perceive the accurate benefits and costs of production and consumption of a good.

<u>Explain with aid of an example, that in a free market, consumers and producers will take into account MPB and MPC respectively and produce and consume up to the point where MPB = MPC so as to maximise their utility and profits.</u>

In a free market, consumers and producers will only take into account their private benefits and costs respectively -> produce up to MPB = MPC in order to maximise utility and profits.

<u>Explain using a diagram, why at the point where MPB/MSB = MPC/MSC, society's welfare is maximised and allocative efficiency is achieved i.e. essentially an explanation of the marginalist principle, why a little less or a little more is bad.</u>

Referring to the diagram below, at the free market of equilibrium of Q_s, social welfare is maximized as MSB = MSC. Suppose Q_2 units of the good is produced. At this point, MPC and MSC are greater than MPB and MSB and MPC and MSC are upward sloping. This suggests that total welfare to society can be improved if fewer resources are allocated to the production of oranges. Suppose now the free market is at the equilibrium Q_1. At this point, MPB=MSB is greater than MPC=MSC. This suggests that total welfare to society can be increase if more oranges are produced and consumed. More resources should be allocated to the production of oranges. Thus, when MSB = MSC, society's welfare is maximized and allocative efficiency is achieved.

Price/Benefit/Costs

$S_0 = MPC = MSC$

P_0

$D_0 = MPB = MSB$

Q_1 Q_s Q_2

Quantity of Oranges

Poss 3: The rational decision making explanation

Explain how, with use of relevant examples, and with help of a diagram how the free market maximises society's welfare through maximising consumer and producer surplus.

- Explain how rational consumers will consume up to the point where MPB = Price of a good. -> maximise consumer surplus
- Explain how rational producers will produce up to the point where Price of a good = MPC. -> maximise producer surplus
- Thus, responding to price signals -> P = MPC = MPB, given absence of externalities, consumer and producer surplus maximized -> society's welfare is maximised and allocative efficiency is achieved.

Evaluation:
- Explain +reg why the starting assumptions for the free market to achieve an efficient allocation of resources are unrealistic in the real world -> government intervention is necessary.

Anti-thesis 1: In the case of market failure from public goods, government intervention, for example in the form of direct provision, is necessary to achieve an efficient of allocation of resources.

-   Public goods as explained in (a) -> market failure -> government intervention is necessary.
-   Direct provision -> produce good at socially optimum quantity -> allocative efficiency.

Possible evaluation for <u>stand 1</u>: Limitations of policy [inefficiency in production, bureaucracy]
-   Government may not choose the most efficient method of production -> lack of profit-motive unlike in a free market. No invisible hand/price mechanism to incentivize government -> may not achieve productive and allocative efficiency.
-   Government may be subject to government failure -> for example bureaucracy -> higher unit costs of production -> inefficient outcome.

Possible evaluation for <u>stand 2</u>: In the real world, crowd-funding platforms (e.g. Kickstarter) and smart contracts that replace the role of the government in coordinating the production of the public good (e.g. Ethereal) provide a way to solve the problem of public goods through the free market. Consumers can be offered special one-off rewards that add to their MPB -> incentivise them to fund the public good. Once the public good is produced, it is non-rivalrous and non-excludable. e.g. ARKYD: A space telescope for everyone was crowdfunded 1.5 million. The rewards given are the first selfies taken using the satellite. -> government intervention is unnecessary to solve the problem.

Possible evaluation for <u>stand 3</u>: A high degree of government intervention through direct provision is necessary and important in this case because of complete market failure.

- Since in the case of public good there is complete market failure the problem cannot be resolved by relying on the price mechanism -> government forced to intervene using command-and-control in this case e.g. direct provision -> take over production and bypass price signal

Anti-thesis 2: In the case of market failure from merit goods, government intervention, for example in the form of subsidies and public education, are necessary to achieve an efficient of allocation of resources.

- Merit goods as explained in (a) -> market failure -> requires government intervention in the form of subsidy and education.
- For merit goods such as healthcare, subsidy given to producer -> shift MPC -> producer pass on lower costs of production as lower prices to consumers -> external benefits from consumption internalized by consumers -> solve problem of underconsumption -> efficient allocation achieved.
- Public education -> resolve imperfect information -> consumers realise actual marginal private benefit -> consume at quantity where Actual MPB = MPC -> assuming externalities are internalised -> resolve under consumption -> solves market failure.

Possible evaluation for <u>stand 1</u>: Limitations of policy [imperfect information, difficult to remove] & [time lag]
- Government may mis-estimate extent of external benefits -> unable to achieve efficient outcome or perhaps create even greater DWL.
- Public education could take a long time to be effective -> efficient outcome may not be achieved in the medium term.

Possible evaluation for <u>stand 2</u>: Governments may over-estimate the benefits and create wastage and overconsumption/production instead OR governments may opt for less effective solutions like direct free provision for political reasons -> more DWL.
- Government intervention creates even worse outcomes compared to free market due to over-estimation of external benefits & political factors that tend to sway governments to over-subsidise -> illustrate on diagram how this may lead to even greater DWL to society -> inefficient outcome worsened.

Possible evaluation for <u>stand 3</u>: Explain why for partial market failure, government intervention through incentive-based policies may be better than command-and-control policies. Minimal government intervention is better.

- Price mechanism still functioning -> if objective is to achieve efficiency -> government should minimize intervention and rely on price mechanism for allocation -> reason is that the rationing and incentive functions are still working in the free market -> only have to use subsidies to ensure that the price signal reflects the right information in terms of extent of benefits and costs to society -> internalize external benefits. Thus policies like subsidies and public education that are "light touches" can work better than direct provision or other command-and-control policies that may cause price mechanism to cease functioning -> limit extent of intervention and do not interfere with the working parts of the price mechanism.

Anti-thesis 3: In the case of market failure from negative externalities, government intervention, in the form of taxes, are necessary to achieve an efficient of allocation of resources.

Anti-thesis 4: Any market failure.

Conclusion: Reiterate chosen stand, taking into account all previous evaluative statements made.

Examiner's Remarks

- Part (b) was generally poorly done. There were very few L2 answers and no L3 responses.
- Students were unable to produce a reasonable thesis i.e. why government intervention could be unnecessary in a free market to achieve an efficient allocation of resources ⇔ how the free market can achieve efficient allocation of resources on its own. Most answers for this part was descriptive and lacking in economic analysis and rigour. This meant that the script was capped at L2-6m.
- For the anti-thesis, most students did not make good reference to their part (a) answer and instead chose to explain new sources of market failure. This is a poor use of available time.
- Most students identified that government intervention is necessary when sources of market failure exist
- However, the same students also tended to stop short of explaining how government intervention through certain policies can help to achieve an efficient allocation of resources. Therefore there was a lack of analysis for the anti-thesis as well. This meant that most scripts ended up in the L1 range.

4　　**(a)** Explain how an economy could gain from free trade.　　　　　　　　[10]

　　　　(b) Discuss the extent to which rising inflation is the major cause of a fall in average standard of living in an economy.　　　　　　　　[15]

Part a

Introduction

Free trade refers to the flow of goods and services between countries which is not restricted by policies imposed by the government. Advocates of free trade often emphasizes on how free flow of goods and services can bring about increases in consumption levels, improved efficiency of domestic firms due to higher levels of competition, and act as a source of economic growth.

Body Para 1: Explain how free trade could result in higher world output level, increasing consumer surplus.

Firstly, through specialization and trading of goods that a country has comparative advantage in, it allows domestic consumers to have a higher quantity of goods and services to consume. Figure 1 shows how free trade could result in an increase in consumption of a particular good / service.
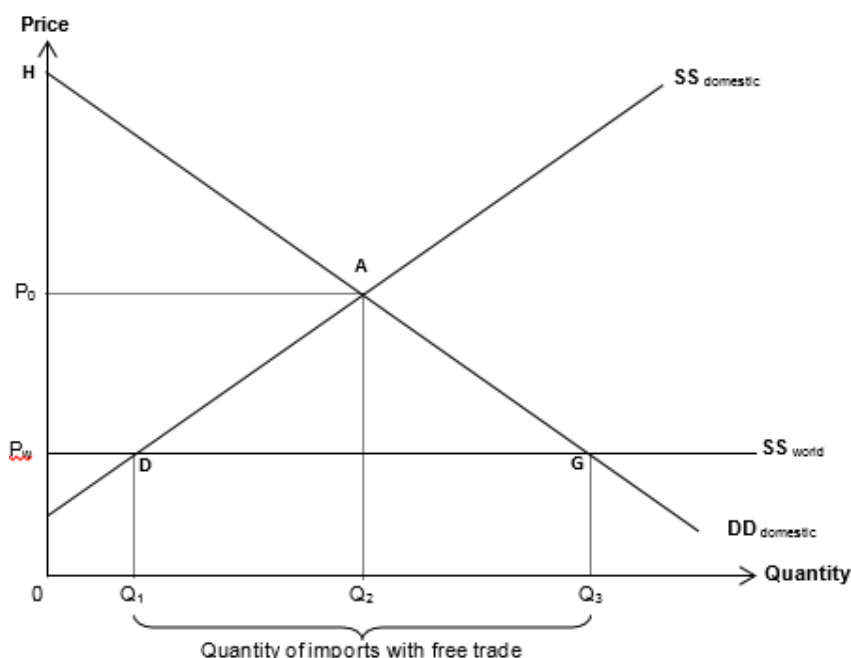

Figure 1: Increased consumption from free trade

In the case without free trade, the market for computer products will produce at Q_2 and charge a price pf P_0 where SS_{dom} and DD_{dom} intersect. However, with free trade, foreign suppliers are able to sell computer within the domestic market at P_w, which is significantly lower than P_0. At this lowered price, it increases the willingness and ability of domestic consumers to purchase computer products and hence quantity demanded will increase to Q_3. On the other hand, as some domestic firms are not as price competitive relative to foreign producers, the lowered price reduces the quantity supplied of computer products to Q_1. Despite this shortage created, free trade allows for domestic consumers to import Q_1Q_3 quantity of computer products. Hence, domestic consumers benefit from free trade due to lower prices from P_0 to P_w and higher consumption level from Q_2 to Q_3. In addition, consumers have a wider variety of computer products to choose from, and are able to make

decisions based on their varied tastes and preferences. Based on this discussion, standard of living within the economy increases.

Body Para 2: Explain how free trade could result in higher productive and dynamic efficiency
In addition, when domestic firms are faced with foreign competition, it increases the incentive for domestic firms to be cost efficient in production. Competition will minimize the probability of domestic firms being complacent in their current production methods, and provides an incentive for them to ensure both price and non-price competitiveness. The need for higher price competitiveness against foreign competition will push domestic firms the monitor costs and produce at lowest cost possible given a particular output level, reducing productive inefficiency. They also have the incentive to innovate and improve on existing products to be competitive against foreign products in terms of quality, thus encouraging dynamic efficiency. The economy will then benefit through lowered price and improved quality of goods and services over time.

Body Para 3: Explain how free trade could act as an external engine of growth
Embracing free trade can also be an important source of economic growth for economies, especially those with small domestic markets like Singapore. With free trade with foreign economies like the United States and China, the size of market to which firms can produce for and sell to increases. This will significantly increase the export revenue generated for Singapore, increasing aggregate demand. With the need for a higher level of production, more factors of production including labour will be employed, reducing cyclical unemployment and making fuller usage of resources within the economy. In addition, increase in real national income results in higher real purchasing power of consumers, allowing them to consume higher quantities of goods and services, increasing their material living standards. The improvement in unemployment and real incomes would have been notably lesser if Singapore were to just depend on domestic market and its consumption for a source of economic growth.

Conclusion
With gains from free trade, it brings about a higher standard of living within the economy. Thus, countries should thoroughly consider the costs and benefits before employing protectionism policies.

Level	Knowledge, Application, Understanding and Analysis	Marks
3	For a well-developed explanation of the gains from free trade, with appropriate examples used. Max 7 – For a well-developed answer that explains only two gains from free trade.	7-10
2	For an underdeveloped explanation of at least 2 ways countries could gain from free trade. Max 5 – For a well-developed answer that explains only one gain from free trade.	5-6
1	For an answer that contains a mere listing of gains from free trade OR largely irrelevant / contains inaccuracies	1-4

Part b

Introduction

An economy has four main macroeconomic goals, namely price stability, sustained economic growth, low unemployment and healthy balance of payments. Attaining these goals would help to ensure that society enjoys higher living standards over the years. The inability to maintain price stability which results in rising inflation could then worsen the average living standard of an individual. However, government must note that there are other macroeconomic goals and environmental issues which could affect standard of living. Whether or not rising inflation is the major cause of a fall in average standard of living would then depend on the relative changes in these factors influencing living standards.

Point 1: Explain how rising inflation is the major cause of a fall in average standard of living in an economy

Rising inflation could result in a fall in material living standards. This is especially true in economies with exceptionally high inflation rate like the 122% experienced by Venezuela in 2015. Higher general price level of goods and services within Venezuela has resulted in consumers having lower real purchasing power, lowering their ability to purchase goods and services. Hence, effective demand for goods and services in general will decrease, and consumption level of the society will fall. With lower quantities of goods and services consumed, the society derives lower satisfaction and faces a significantly lower material living standards.

However, the above mentioned erosion of purchasing power have not taken into account that consumers can switch to consuming imports that may not face changes in prices. When domestic inflation rates are increasing which result in the erosion of real purchasing power of domestic goods and services, imports which may be a good substitute for domestic goods could become relatively cheaper. Hence, if consumers have access to these imports as a substitute, real purchasing power of consumers may not be significantly eroded, and the fall in consumption of goods and services in general may not necessarily have fallen. Hence, material standard of living might not have decreased.

Point 2: Explain how changes in other macroeconomic indicators will negatively affect SOL

A fall in economic growth can also result in a fall in average standard of living in an economy. When there is a fall in real national income, there is a smaller income tax base which results in lesser income tax revenue collected by the government. In addition, with lower income, consumers are also unable to consume as much goods and services, resulting in a fall in tax revenue from Goods and Services tax. A large fall in real national income could thus result in a significant fall in tax revenue earned by the government, decreasing the amount of funds available for provision of public and merit goods such as national defense and healthcare. If there is lesser funds directed to such markets, it may decrease the consumption level of such goods and services, lowering material standard of living within the economy.

Whether standard of living decreases due to this depends on government's objective and decision making. For example, during The Great Recession where real incomes are falling in the United States, more transfer payments such as unemployment benefits and subsidies for lower income earners may be paid out to minimize the reduction of consumers' purchasing power. If a government decides to increase transfer payments despite the fall in tax revenue earned during this period, consumers' material standard of living may not have fallen significantly.

Point 3: Explain how rising inflation is unable to account for changes in non-material living standards

In addition, when considering the cause of a fall in standard of living, one must also consider the non-material living standards. Rising inflation could account for worsening of material living standards but is unable to provide insight on the changes in non-material living standards. For

instance, the rising air pollution levels in China is causing many residents to experience deterioration in health conditions. The air pollution was so severe such that schools and outdoor construction work was suspended for a period of time. When residents are exposed to such air pollution for a prolonged period of time, it increases the probability of lung-related diseases and may shorten the life expectancy. This environmental degradation thus reduces their non-material living standards as people are unable to enjoy daily activities as before and may inconvenience those who needs to travel amidst the pollution.

Whether rising inflation is the major cause of a fall in average standard of living in an economy depends on relative changes in performance of macroeconomic goals and environmental standards within an economy. Hence, one cannot look at rising inflation solely to gauge the changes in average standard of living.

Level	Knowledge, Application, Understanding and Analysis	Marks
3	For a well-developed explanation of how rising inflation could erode living standards, as well as other factors which influences living standards. Answer should include real world examples to support economic analysis. Max 9 – For a well-developed answer of how rising inflation and one more factor could influence living standards within an economy	9-11
2	For an underdeveloped explanation of how rising inflation as well as other factors influences standard of living Max 6 – For a well-developed answer of how rising inflation or one other factor could influence living standards within an economy	6-8
1	For an answer that is largely descriptive and undeveloped or irrelevant.	1-5

Evaluation		
2	Judgement that is supported by economic analysis	3-4
1	Judgement that is not supported by economic analysis	1-2