**Market Failure Practices**

1. CSQ: More of Wire-less? – The Market for Wireless Data

2. CSQ: A Meaty Muddle

3. CSQ: Love-Hate Relationship with Plastics

4. Essay: Subsidies for higher education

5. Essay: Demerit goods

6. CSQ: Market failures in the Vietnamese energy market

1. Temasek JC H2 2019 Economics Preliminary Qsn 1

**More of Wire-less? – The Market for Wireless Data**

**Extract 4: Wireless@SG**

Surfing speeds on Singapore's free public Wi-Fi service Wireless@SG will be more than doubled to 5Mbps by the end of this year, as the Government sees the network as a key enabler of Singapore's Smart Nation vision.

"We must build first-class infrastructure for pervasive, seamless and high-speed connectivity to benefit citizens and businesses," Minister of State for Communications and Information Janil Puthucheary said, in announcing the upgrades in Parliament yesterday. He also added that Wireless@SG's current speed is faster than most public Wi-Fi services around the world. But because demand is increasing, there is a need to boost current speeds.

Singapore will also have the highest hotspot density in the world, calculated by the number of hotspots per inhabitant. Currently, it trails only Tokyo. Coverage expansion will target congested places such as hospitals, government buildings and community centres so more people can connect to the network without surfing slowdowns, a common bugbear. More public places such as hawker centres, train stations and retail malls will also be added to the list of Wireless@SG zones.

"But it is not the connectivity that makes us smart; it is what we do with it," said Dr Janil. "Operators can also use Wireless@SG to offer improved services such as cashless payment and location-based analytics. All this benefits consumers, businesses, and productivity."

One group of beneficiaries is low-income users. The idea is to allow Wireless@SG to complement existing efforts to bridge the digital divide between those who can afford the good and those who might not be able to.

Source: The Straits Times, 12 April 2016

**Extract 5: Economics of public Wi-Fi**

The basic economic objection to free public Wi-Fi is that any benefits to low income is unlikely to be realised. Free public Wi-Fi is unlikely to be strong in all areas and therefore locations with stronger Wi-Fi signals will simply bid up existing land and building prices.

Any benefit due to the free public Wi-Fi will be compensated by higher prices for local services (such as cafes and short-stay accommodation). For this reason, the target population of the free public Wi- Fi, which is presumably the lower income group, may experience no net benefit once general prices of the goods and services in any area is taken into account. The main beneficiary at the end of the day may just be the landlords in the area serviced by the free public Wi-Fi.

*Source: Journal of Telecommunications and the Digital Economy, February 2014*

(e) Discuss whether governments should follow Singapore’s example of providing free public Wi-Fi. [10]

Answer

**Introduction**

The provision of free public Wi-Fi can be justified on both macroeconomic and microeconomic grounds, and we can consider the impact in terms of economic growth, efficiency and equity.

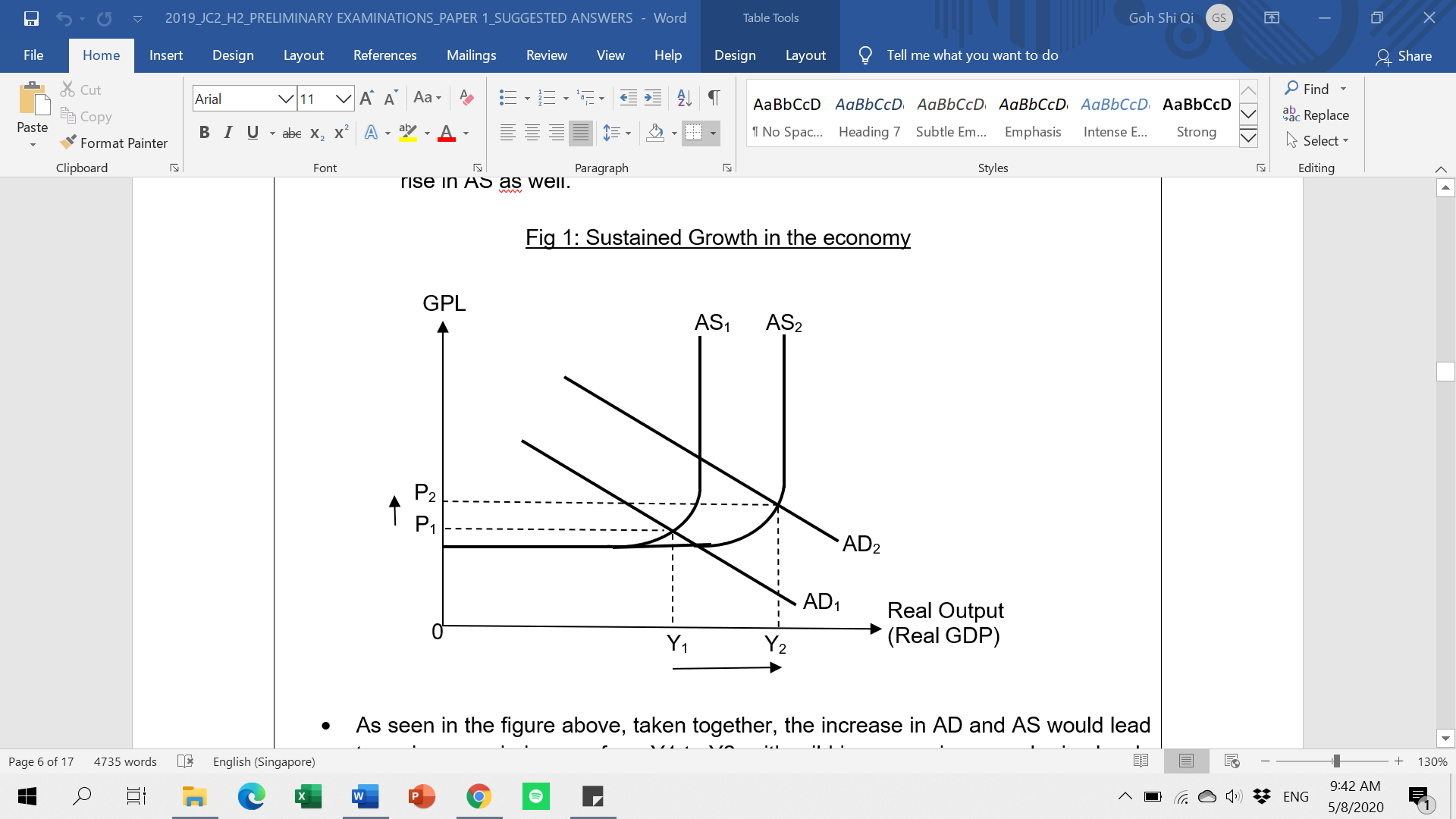
Thesis – choose 1-2 out of the following three arguments:

**Thesis 1: The promotion of free public Wi-Fi could help to generate sustained growth in the long run.**

- In the short run, the promotion of free public Wi-Fi will require a large amount of Government expenditure on infrastructure to boost connectivity around a city. It could also increase consumption as purchasing of goods become more convenient with online shopping. This, coupled with a multiplier effect where the initial increase in income would lead to further increases in induced consumption, would lead to a rise in AD.

- In the long run, the free public Wi-Fi would increase productivity and innovation among businesses. As mentioned in Extract 4, "Operators can also use Wireless@SG to offer improved services such as cashless payment and location-based analytics,” which are all evidences of improved productivity.

- As the quality of labour and entrepreneurs grow over time, this would lead to a rise in AS as well.



- As seen in the figure above, taken together, the increase in AD and AS would lead to an increase in income from Y1 to Y2, with mild increases in general price levels from P1 to P2 – indicating that sustained growth has taken place.

**Thesis 2:** **The promotion of free public Wi-Fi could help to achieve equity in the market for data access.**

- In developed countries such as Singapore, data can be seen to be a necessity in people’s everyday lives as it gives ready access to information for work or entertainment for leisure.

- If this is left to the free market, the price of data may become too expensive for low-income consumers due to the expensive mobile data plans.

- As a result, the low income may not get access to essential government services online (Extract 2 – “cannot avail a single government service today without online intervention”) if Wi-Fi is not readily available. The direct provision of free public Wi-Fi would thus help to increase equity in the market for data access.

**Thesis 3:** **The promotion of free public Wi-Fi could help to promote greater efficiency by correcting under-consumption due to positive externalities in consumption in the market for data.**

- **<P: Private Decision>** When deciding to consume additional data, the consumer considers only his own private benefit such as the utility of the data, and private cost such as the cost of mobile plans.

- **<E: External Benefit>** However, the use of data results in external benefits as well, such as the increased productivity of the workforce, or new ideas to spur production in other firms.

- **<T: Third Parties>** The firms who were not involved in the consumption of Wi-Fi by workers and are therefore considered third parties.

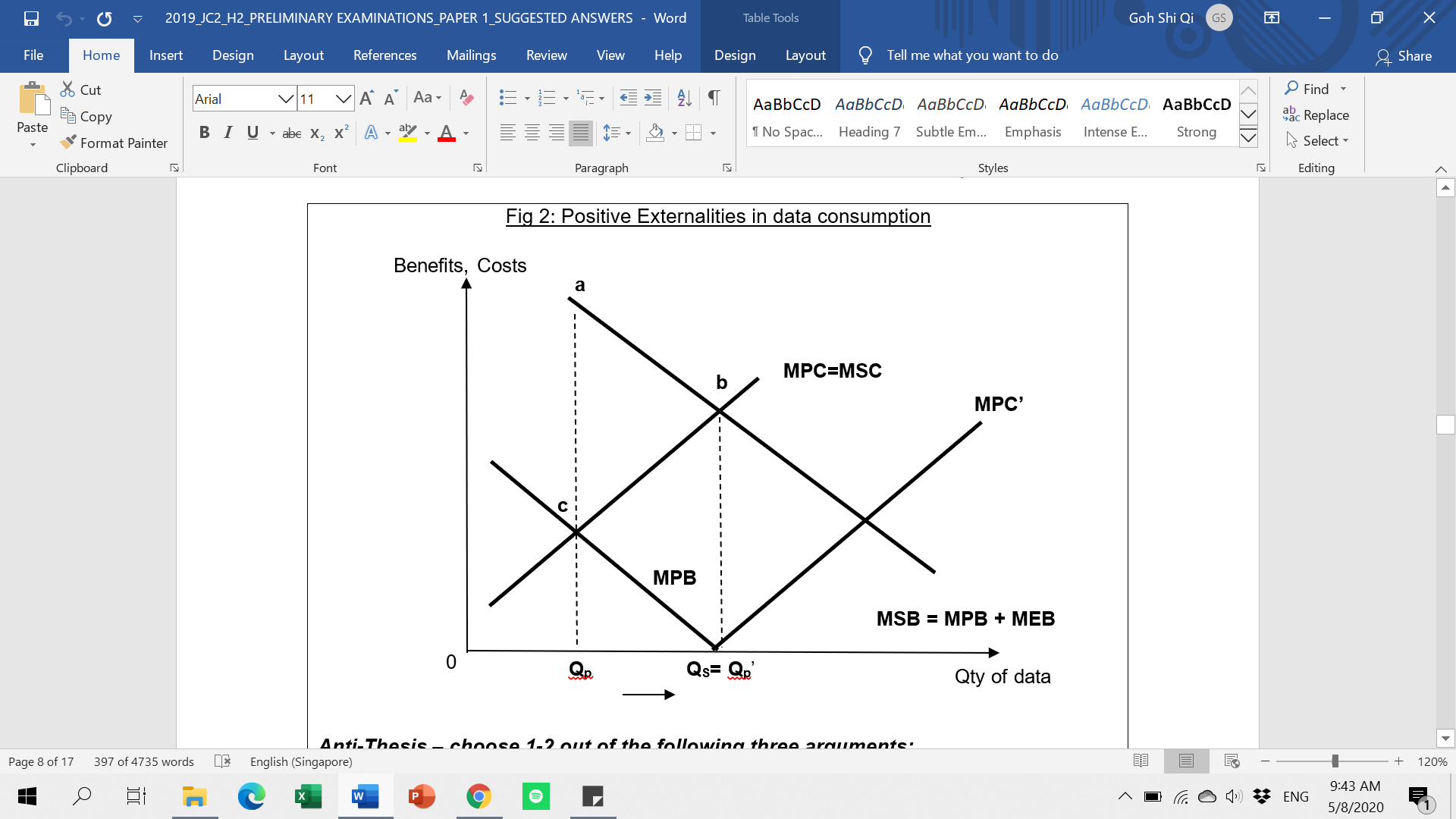
- **<D>** Due to existence of marginal external benefits (MEB), there is a divergence between Marginal Private Benefits (MPB) and Marginal Social Benefits (MSB) by the

amount of MEB. Assuming no negative externalities, Marginal Social Costs (MSC) = Marginal Private Cost (MPC).

- **<Qp vs Qs>** In the free market, out of self-interest, consumers consume Qp, where MPC = MPB. However, the social optimal outcome is Qs, where MSB=MSC. Since Qp<Qs, there is consumption of data.

- **<D>** Due to the underconsumption of (Qs-Qp), society loses benefits of area QpabQs, which is less than the cost -savings of area QpcbQs, resulting in a deadweight loss of the area abc. The price mechanism fails to allocate resources efficiently, the market fails and society’s welfare is not maximised.

- As a result, the direct provision of Wi-Fi would cause a fall in MPC, increasing the consumption from Qp to Qp’ = Qs and removing the deadweight loss, achieving allocative efficiency.



***Anti-Thesis – choose 1-2 out of the following three arguments:***

**Anti-Thesis 1: Countries should not provide free public Wi-Fi as the gains in equity may not be realised**

- As argued in Extract 5, free Wi-FI can actually just lead to increased property prices for landlords instead of truly serving the poor. (supported by Extract 5)

- This is because in areas where the free Wi-Fi is stronger, more businesses would sprout up to take advantage of the improved connectivity.

- For example, a café would be set up in an area where the free Wi-Fi connection is strong and charge relatively expensive prices for its coffee.

- This would result in the poor still being unable to access the free Wi-Fi because to do so, they would have to dine at the café in the first place.

**Anti-Thesis 2: Countries should not provide free public Wi-Fi as there could be a large opportunity cost involved.**

- There could be a strain on the government budget due to extensive spending on the networks required for free public Wi-Fi to be set up.

- The opportunity cost of the spending would be any gains in allocative efficiency in merit goods such as education/ healthcare market if the government had chosen to spent the money there.

**Anti-Thesis 3: Countries should not provide free public Wi-Fi as there negative externalities in consumption of the internet.**

This is primary due to the easy access to online activities such as online gaming or online gambling

- **<P: Private Decision>** When deciding to spend an additional hour on online gambling, the consumer considers only his own private benefit such as his potential winnings and private cost such as the cost of data and the money he is gambling. Note that with free Wi-Fi, the private cost would be especially low.

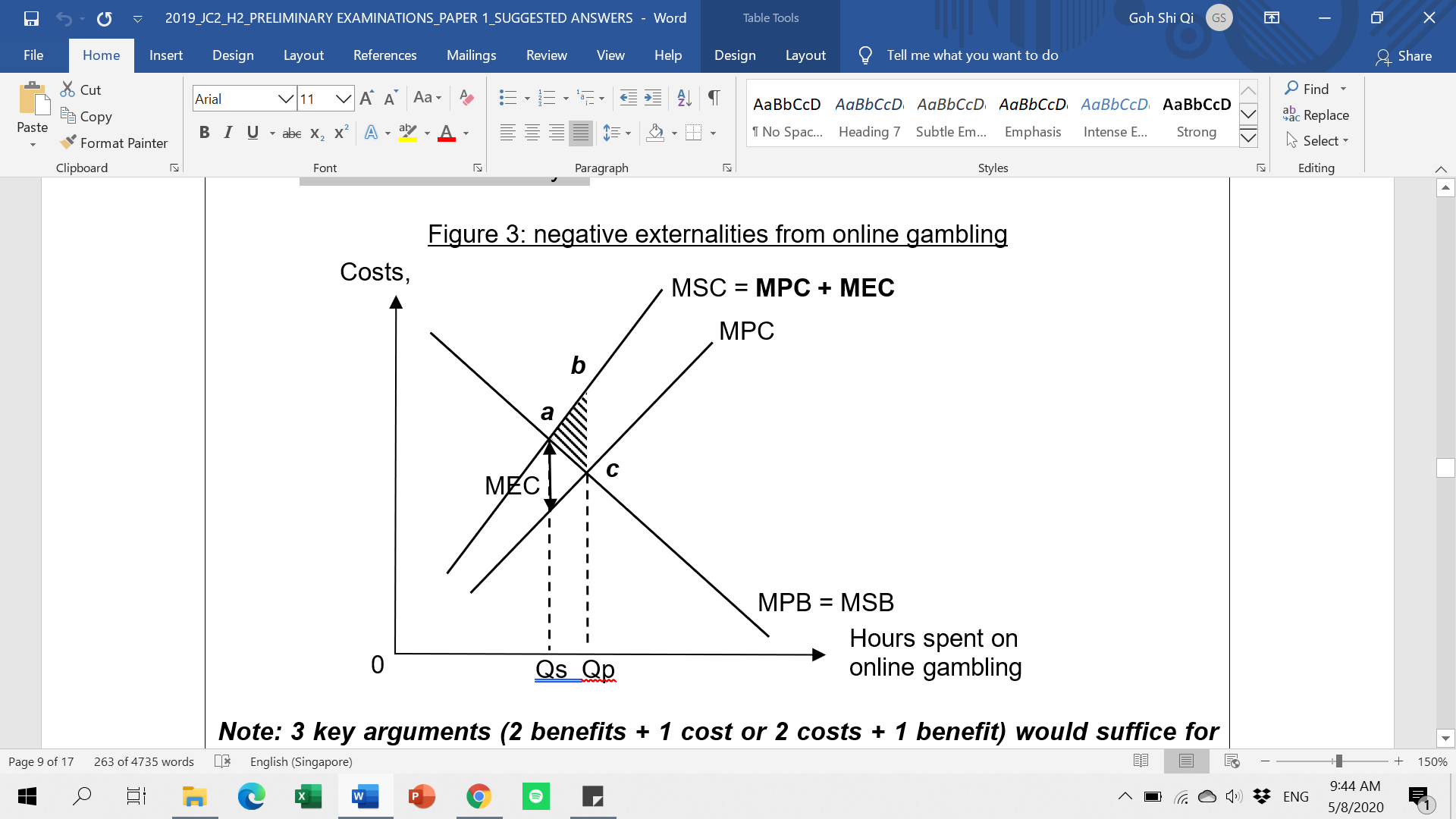
- **<E: External Cost>** However, the consumption of online gambling results in external costs as well, such as the possibility of family members having to pay to fund the consumer’s gambling addiction.

- **<T: Third Parties>** The family members of the online gambler are not involved directly in the consumption of online gambling and are therefore considered third parties.

- **<D>** Due to existence of marginal external costs (MEC), there is a divergence between Marginal Private Costs (MPCactual) and Marginal Social Costs (MSC) by the amount of MEC.

- **<Qp vs Qs>** In the free market, out of self-interest, consumers consume Qp, where MPCperceived = MPB. However, the social optimal outcome is Qs, where MSB=MSC. Since Qp>Qs, there is over-consumption of online gambling.

- **<D>** Due to the overconsumption of (Qp-Qs), society experiences an additional cost of area QpbaQs, which is more than the additional benefits of area QpcaQs, resulting in a deadweight loss of the area abc. The price mechanism fails to allocate resources efficiently, the market fails and society’s welfare is not maximised, leading to allocative inefficiency.



**Evaluative conclusion (a reasoned stand plus a max of 2 ATMS angles would suffice):**

- **[Stand]** The provision of free public Wi-Fi would bring about a set of benefits and costs to a city but the extent of the benefits and costs would differ based on the city in question.

- **[Situation]** Whether a government should adopt Singapore’s model of free public Wi-Fi depends on the country in question. The opportunity cost may be greater for a less-developed country as they might need to sacrifice spending in other more strategic and urgent sectors that can spur actual economic growth, such as road infrastructure.

- **[Situation**] One reason why Singapore is able to enact free public Wi-Fi is due to our relatively small size and relative low incidence of absolute poverty. Other cities/countries may face a bigger challenge due to their larger size and the amount of ghettos/undeveloped areas that would be difficult to reach.

- **[Magnitude]** Given that there are potentially both positive and negative externalities arguments involved in the consumption of data, the efficiency argument is relatively weak in helping make a decision and government should focus more on the potential of Wi-Fi to spur growth.

- **[Alternatives]** To ensure that the benefits from free public Wi-Fi are truly realised, governments can have accompanying supply-side policies to enhance the effectiveness of free public Wi-Fi, such as courses for workers and companies on how to leverage on wireless systems to improve productivity.

2. 2019 MI Prelim H1 Economics Q1

**A Meaty Muddle**

**Extract 1: Rising global meat consumption 'will devastate environment'**

Rising global meat consumption is likely to have a devastating environmental impact, scientists have warned.

A new major analysis suggests meat consumption is set to climb steeply as the world population increases along with average individual income, and could play a significant role in increasing carbon emissions and reducing biodiversity.

“What’s happening is a big concern and if meat consumption goes up further it’s going to be massively more so,” said Prof Tim Key, an epidemiologist at the University of Oxford and co-author of the review. “On a broad level you can say that eating substantial amounts of meat is bad for the environment.”

The review, published in the journal, Science, found that high levels of meat consumption also have negative health consequences, leading to an increased risk of colorectal cancer and possibly of cardiovascular disease.

The average amount of meat consumed per person globally has nearly doubled in the past 50 years, from around 23kg in 1961 to 43kg in 2014. The increase in average individual meat consumption means total meat production has been growing at a much faster than the rate of population growth, increasing four or fivefold since 1961.

There are recent indications that some countries, including the UK, may have reached “peak meat”. The UK’s 2017 National Food Survey found consumption of raw beef, lamb and pork had fallen by 4.2% and that of meat products including sausages, bacon and poultry by nearly 7% since 2012.

However, middle-income countries, particularly China and others in East Asia, are still seeing a rise. Taken together, there is a projected increase in global meat consumption of 76% by mid-century, including a doubling in the consumption of poultry, a 69% increase in beef and a 42% increase in pork.

“It is difficult to envisage how the world could supply a population of 10 billion or more people with the quantity of meat currently consumed in most high-income countries without substantial negative effects on the environment,” the Science paper concludes.

The paper outlines how, in broad terms, meat production – particularly livestock – is linked to far higher carbon emissions than vegetables, fruits and grains. Livestock production currently accounts for 15% of all anthropogenic emissions (carbon dioxide, methane and nitrous oxide).

Livestock farming is also a major contributor to biodiversity loss, as forests and wild countryside are given over to agricultural land to grow animal feed. And the draining of rivers and lakes to irrigate land used to grow corn and other grains used as animal feed is already having a substantial impact on water resources, the analysis found.

The paper also flags the potential negative health consequences of adopting a meat-heavy diet, although these are moderate compared to other ills like smoking. Since 2015, processed meat has been ranked by the World Health Organization in a group of 120 proven carcinogens alongside alcohol, asbestos and tobacco. According to Cancer Research UK, if no one ate processed or red meat in Britain, there would be 8,800 fewer cases of cancer a year.

*Source: The Guardian, 2018*

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| **b)** | Using Extract 1, explain the concepts of market failure due to negative externalities and imperfect information in the context of the meat market. | **[8]** |

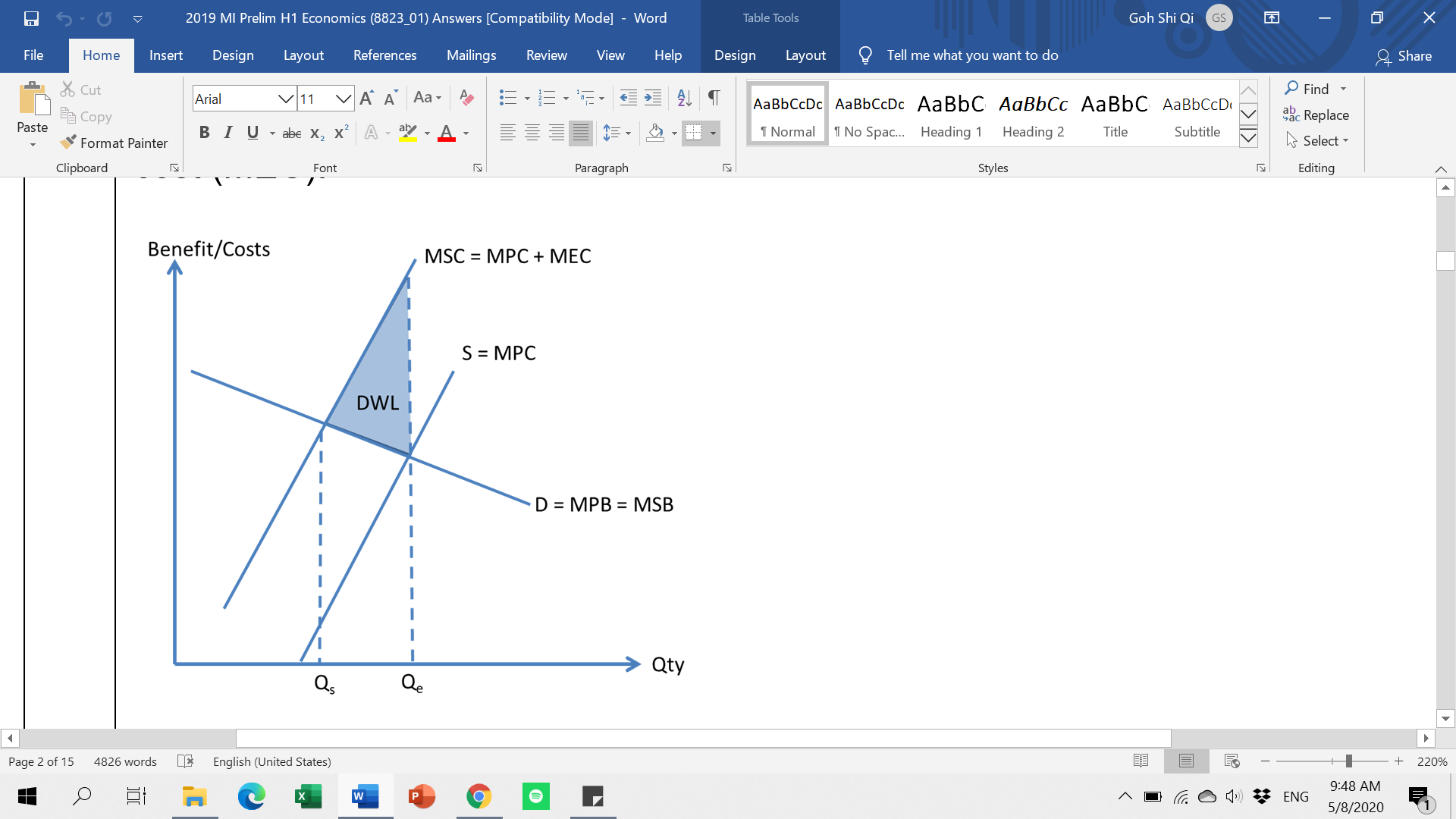
Answer

The market for meat is failing due to both negative externalities and imperfect information.

**Explain how market fails due to negative externalities**

Meat production generates negative externalities in terms of the damage to the environment such as the loss of biodiversity due to the clearing of land for livestock farming, and the contribution to global warming (Extract 1).

Such negative externalities cause a divergence between marginal social cost (MSC) and marginal private cost (MPC) as MSC = MPC + marginal external cost (MEC).

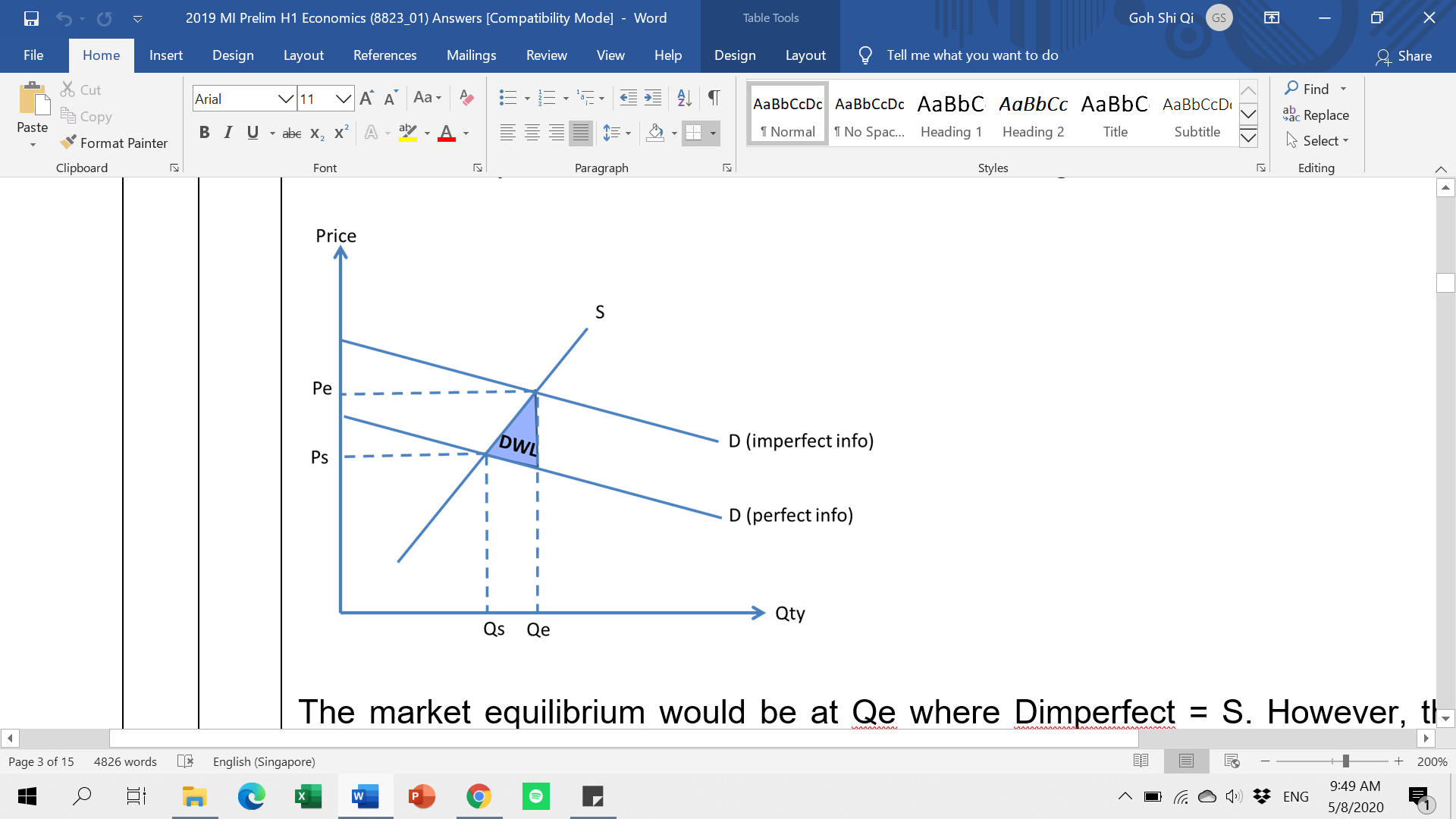


In the diagram above, the market equilibrium would be at Qe where MPB = MPC as consumers and producers of meat are self-interested and do not consider external costs. However, the socially optimal output is at Qs where MSB = MSC. Since Qe exceeds Qs, there is overproduction of meat. This causes a deadweight loss of the shaded area as MSC exceeds MSB for the output between Qs and Qe.

**Explain how market fails due to imperfect information**

Moreover, the market may fail due to imperfect information where consumers underestimate the cost of consuming meat to themselves, such as the health cost in terms of increased risk of colorectal cancer and possibly of cardiovascular disease (Extract 1).

This causes the demand with imperfect information to be higher than the demand with perfect information, as seen in the diagram below.



The market equilibrium would be at Qe where Dimperfect = S. However, the socially optimal output is at Qs where Dperfect = S. Since Qe exceeds Qs, there is overconsumption of meat. This causes a deadweight loss of the shaded area.

3. SAJC 2019 JC2 H1 Economics Prelims Q1

**Love-Hate Relationship with Plastics**

**Extract 4: Cut use with mandatory tax**

A Straits Times online poll had more than 75 per cent of over 4,700 respondents supporting a plastic bag tax. But many others spoke out vehemently against it on social media. Plastic bags should be given out for free, detractors say, for two main reasons: The bags are needed for bagging trash; and the lower-income group may be adversely affected by such a tax. If the bags are not given out for free, people may simply throw pollutive food waste directly into the common chute, turning it into a hot spot for cockroaches and other pests, they claim.

But as Mr Louis Ng, an MP for Nee Soon GRC, points out, a plastic bag tax is not a plastic bag ban. People would still be able to get bags for their trash. He said: "Many people forget that the first step of the 3Rs is to reduce... If people are charged for plastic bags, they may try to reduce the number of bags they get at the counter."

Moreover, not all trash needs to be bagged. "If we separate recyclables from organic food waste, we will find that most of the waste would go into the recycling bin - which you don't need to bag," said Mr Tay, executive director of Zero Waste SG. In the long run, it is vital to help consumers recognise that the slight inconvenience is a small price to pay for the sake of the environment.

On how lower-income groups will be affected by a plastic bag tax, experts say it depends on how much the levy is. At 10 cents per bag, calculations by Zero Waste SG show that the surcharge would make up just 0.35 per cent of the annual income of a household living in a one-or two-room Housing Development Board flat.

*Adapted from https://www.straitstimes.com/ accessed on 20 Jun 2019*

**Extract 5: Winners and losers of plastic ban**

Supermarkets and other retail outlets in Kenya are among the biggest beneficiaries of a ban on plastic bags, which took effect on Monday. The outlets are currently selling to their customers the alternatives that include canvas bags creating a new revenue stream. Since the ban, each outlet has been selling the shopping bags from US$0.05 for the light canvas bags to US$0.50 for the heavy canvas bags. And with hundreds of customers thronging into the retail outlets every day, the canvas bags are becoming a cash cow for the outlets.

In March, New York became the second state to ban plastic bags as a way to protect the environment. Far from weening New Yorkers off hazardous single-use plastics, the ban may actually be encouraging them to instead use thicker garbage bags. A study from the University of Sydney found that while plastic bag ban got rid of its target, the ban did not eliminate people's need for plastic bags: They still needed something to line their garbage cans or pick up after their pets. Prior to bag ban, this could mean just reusing the bags you carried your groceries home in. After the ban, folks turned to purchasing garbage bags, which are much more plastic-intensive. The study found that after the imposition of the bag ban, sales of small garbage bags increased by a full 120 percent.

*Adapted from https://www.newtimes.co.rw/ 30 Aug 2017, https://reason.com/ 11 Apr 2019*

(h) With reference to case materials and/or your own relevant knowledge, discuss whether public education on the harmful effects of plastic pollution is effective in correcting the market failure it creates. [12]

Answer

**Introduction**

Public education is one policy which could help correct market failure. Due to various reasons, implementing public education may not be effective in correcting market failure caused by plastic pollution.

**Thesis – Public education is effective in correcting market failure:**

Educating the public about the harmful effects of plastic pollution will be useful in helping to correct the market failure. As consumers do not fully appreciate the harm that their own consumption of plastic brings, they tend to overconsume them. For example, the microplastic pollution due to dumping of mismanaged plastic into the ocean gets ingested by marine life. In turn, human beings, most of whom would also be the very ones dumping plastic into the ocean themselves, consume such marine life. Overtime, the accumulation of microplastic in the human body may lead to organ damage. Due to imperfect information about the true marginal private cost (MPCtrue) of consuming plastics, the perceived marginal private cost (MPCoerceived) is lower than the true marginal private cost of consuming plastic. As a result, if left to free market forces, the actual consumption of plastic would occur where MPCoerceived = MPB. This actual consumption of plastic is higher than the socially optimal level of output where MSC = MSB (assuming no externalities). Hence, to reduce overconsumption caused by imperfect information, educating the public may reduce the consumption of plastic as consumers aim to maximise their welfare, thereby reducing the extent of market failure (smaller DWL).

**Anti-thesis – Public education may not be effective:**

**#1: Does not internalise MEC**

Given the nature of consumers to maximise only their self-interest, public education would inherently fail to incentivise consumers to internalise the negative externalities caused. As such, there remains an over-consumption of plastics in the society’s point of view. Market failure remains, albeit to a smaller degree.

**#2: Myopic nature of consumers**

Even if consumers know about the harm microplastic is causing to their own bodies, they may not reduce their consumption of plastic to the desired level. Organ failure may take years or decades to happen and consumers, not having felt any immediate and significant negative impact on their bodies, are unlikely to reduce their consumption of plastics.

**#3: Inaccurate/Imperfect information**

Scientific studies on the harmful effect of plastic ingestion on the human body remains debatable. With unconvincing serious health impact, consumers may place little notice on such danger and not reduce their consumption of plastic. Market failure remains uncorrected.

**Evaluation/ Conclusion**

Public education can, at best, remove imperfect information that consumers possess in their consumption of plastic, thus bringing consumption level down. It does not, however, make the consumer internalise the negative externalities created, thereby causing the continued existence of market failure. It is most likely that plastic consumption will not be reduced significantly due to the overwhelming low-cost convenience it brings to consumers around the world, with or without the knowledge of the harm it may cause the human body in the very long term.

4. GCE A Level H2 Economics 2012 Paper 2 Qsn 2

University education in Singapore and throughout the rest of the world is subsidised by national governments rather than left to market forces. During 2010, several governments announced that these subsidies would be cut, stating the need to reduce large fiscal budget deficits as the reason.

Explain why countries subsidize university education and discuss whether reductions in subsidies are justified. [25]

6. SAJC Prelim 2019 Qsn 3

Ministry of Home Affairs cited two areas of concern in Singapore: the large proportion of young drug abusers and cigarette smokers, who harm themselves and others.

Singapore has a zero tolerance approach to drug consumption - drugs are banned. Various measures including tax have been adopted to tackle the problem of cigarette smoking.

(a)With reference to the examples above, explain why government intervention is advocated in markets for demerit goods. [10]

(b) Discuss whether a total ban is the most appropriate policy for different demerit goods. [15]

1. GCE A Level H2 Economics 2019 Question 1

**Market failures in the Vietnamese energy market**

**Extract 3: Vietnam faces an energy dilemma**

Vietnam plans to rely more heavily on coal-fired power plants by 2030. The country’s current energy plan calls for more than 50% of its electricity production to come from coal by 2030, as compared with roughly a third in 2015. Unless this plan can be reversed, it is not only bad news for the Southeast Asian nation already suffering from severe air pollution but also for international efforts to battle climate change.

Only a few years ago, Vietnamese officials held out great hope for nuclear power plants that were to be built by the Russian state company Rosatom, but the Vietnamese government decided that the costs were too high. As a result, nuclear power seems out of reach. In addition, Vietnam’s hydropower has now reached its maximum capacity with no room for further growth. The renewable energy sector remains undeveloped. These factors have led Vietnam to plan to use more coal-fired power to keep up with growing demand for energy.

Vietnam’s Deputy Prime Minister has stated that coal-fired power will remain the country’s main source of electricity until 2030 and possibly even longer. The Deputy Director of Electricity of Vietnam (EVN), the state-owned electricity company, said in the same report that coal-fired power plants’ emissions will be ‘minimised by the application of modern technology’. EVN, however, could be part of the problem. A former US diplomat and Vietnam expert has written that EVN has been at least until recently ‘bloated and inefficient, dependent on old methods, and overly fond of yesterday’s technology’. Long after Vietnam introduced economic reforms in other sectors, Soviet-style planning survived at EVN and also at state-owned Vinamcom, which is a powerful monopoly in the market for coal.

This raises questions about how the notoriously inefficient EVN would be able to handle an expansion of Vietnam’s electricity infrastructure as it moves to accommodate increased power demands. EVN itself has reported that its productivity was only a tenth of Singapore’s electricity industry, three quarters of Malaysia’s, and less than half of Thailand’s. It is predicting however that Vietnam’s productivity can be boosted to the point where it will reach Malaysia’s level by 2020.

It was noted in a scientific journal earlier this year that until now Vietnam has failed on a wide scale to enforce environmental protection laws. A recent study concluded that pollution from coal had led to some 4300 premature deaths in Vietnam in 2011. In the latest development, it was reported that Vietnam had cancelled a controversial plan to dump some one million cubic metres of a mix of sediment, silt, and sand from a power plant into the sea. The plan had been met with strong opposition from local residents and fishing industry workers, who argued that waste would destroy coral reefs and fishing grounds.

On a potentially positive note, Hanoi, the capital city of Vietnam, has produced a plan to reduce another source of air pollution – an estimated five million motorbikes spewing so much gas into the air that breathing can often be difficult. Under the new plan, city residents would gradually switch to public transportation, with a ban on motorbikes coming into effect by 2030.

But Hanoi residents express doubts that the city can be put into place a public transport that would enable the switch away from motorbikes. In addition, some complain that the plan would be unfair to the majority who cannot afford to buy cars. Currently, Hanoi has limited bus transportation, with fewer than 10% of residents using buses, and there is no metro or underground system. An alternative policy is ‘road pricing’ where motorists would be charged to use busy roads at certain times.

*Source: Asia Times, 17 August 2017*

(e) Discuss whether the Vietnamese government’s plan to ban motorbikes and switch travel to public transport is likely to be better than a policy of road pricing in improving air quality in Hanoi. [8]