Case Study Qn 1 – Demand and Supply

1. (i) **With reference to Figure 1, summarise how the world price of rice changed from 2011 to 2016.**

[2]

The world price of rice generally fell [1] over the period. However, it showed a (less significant) rise from 2011 to 2014 [1].

# Using a demand and supply diagram, explain two possible reasons for your observation.

[4]

One supply factor [1]:

* + - From Extract 1, there were decreasing costs of production for inputs in rice production like chemical fertilisers, fuel and transport due to the decreasing price of oil which was used to produce these inputs.

OR

* + - There was good harvest for rice in 2015

Hence, the supply of rice increased significantly from 2015, causing the price of rice to fall sharply.

One demand factor [1]:

* + - From Extract 2, the demand for rice rose due to rapid population growth Rise in ss > rise in dd  surplus  P falls [1] as shown in the diagram [1] below:



Price of rice

D2

D1

S1

surplus

S2

P1 P2

O

Q1 Q2



Quantity of rice

Acceptable answers include:

* + - the use of Extract 2 for supply falling (challenges faced by rice producers) and the increased demand from the population growth  shortage to explain the rise in price of rice for 2011-2014.
    - The use of PED concept to explain the sharp fall in price of rice

Answer should not provide only 2 supply factors to explain the shortage/surplus.

# Extract 2 states that there was a re-purposing of land. Identify the choices available and the opportunity cost of such a decision.

[2]

Choices are the urban expansion to grow the city and the land to be used to grow crops for biofuel production. [1] For opportunity cost, the benefits of the next best alternative sacrificed (eg. TR to producer) due to loss of rice output [1] must be specified.

# Explain how a rise in the productivity levels of rice farming may affect resource allocation in the market for biofuels.

[4]

Rise in productivity means that with the same amount of inputs there will be higher output of rice. The supply of rice increases [1] causing the price of rice to fall [1], ceteris paribus i.e. no change in demand.

Rice farmers will face falling revenue since the demand for rice is likely to be price- inelastic (necessity) [1].

They will switch to growing other crops (competitive supply) which will provide higher revenue, for example, crops like corn for biofuels. Hence, more resources will move from rice production to the production of other crops for biofuels.[1]

Alternative answers are acceptable:

* As a result of the increased productivity in rice farming, the economy’s production-possibility curve (PPC) shifts outwards. This meant it is now possible to increase rice production whilst more factor resources can be released into increased production of biofuels as well.
* Rice is also an input for biofuels. The fall in the price of rice will therefore mean a lower cost of production for biofuels using rice inputs. The demand for other crops for biofuels, e.g. corn, will face a fall in demand. Resources will be reallocated from the production of other crops into even higher rice production which is now more profitable for the biofuel producers.

# (i) With reference to Extract 3 and using an appropriate diagram, explain why the market for rice fails.

[5]

According to Extract 3, the market for rice fails due to information failure (over- estimation of private benefit of consumption). Indonesians may underestimate the private costs of consuming rice as they are not be fully informed of the health risks of consuming rice such as developing diabetes. Extract 3 highlights that Indonesians generally think that diabetes is hereditary, rather than linked to dietary factors. [1] As a result, they underestimate the private costs of consuming rice. Because they do not fully appreciate the harmful effects (information failure) of rice, they will tend to over- demand rice (Dperceived > Dactual). [1]



Price/ Benefits/

Costs



S1 =MPC=MSC

Figure: Market for rice [1]

E1

E2

Dperceived =MPB2

B

Dactual=MPB1=MSB Quantity of rice

0

Q2

Q1

If the consumers are aware of the true harm of consuming rice on themselves, the ‘correct’ level of demand, they would consume OQ2, the socially efficient quantity of the good where MSB=MSC. However, due to the lack of information about how ‘bad’

rice is, it results in individuals ‘over-valuing’ the product. Demand registered for rice is at a higher level of Dperceived in the market. This leads to a level of production and consumption of OQ1 that is above the socially efficient output level, OQ2. [1] The overconsumption of rice by Q2Q1 incur a deadweight loss of E1E2B on society as the cost of consuming Q1Q2 amount (E1Q1Q2E2) exceeds the benefit that society enjoys (BQ1Q2E2) [1]. The market has therefore failed to allocate resources efficiently such that society’s welfare is not maximised.

[Market failure analysis based on rice as a demerit good is also accepted.]

# Explain how the Indonesian government’s food diversification programme mentioned in Extract 3 may impact the economy, and comment on the likely impact on its standard of living.

[7]

Diversification program is about persuading citizens to switch from consuming rice to other local food [1] fall in DD for imported rice  rise in DD for local food alternatives which are substitutes for imported rice[1].

Many Indonesian households spend more on local food alternatives  Rise in Cd  Rise in AD  assuming that Indonesian economy is operating near full employment level of output multiplied rise in real national income, rise in GPL. [1]. Firms hire more factors of production to produce more goods  higher employment of labour. [1]

**Comment [up to 3m]**

* + - Rise in real national income  increase in households’ purchasing power 

material SOL improves.

* + - Greater domestic production of alternative foodstuff  environmental pollution

 Indonesians may develop health problems such as breathing issues  non- material SOL may worsen

* + - Employment rises  greater job security, less stress non-material SOL might improve
    - The decreased rice consumption will lower the risks of diseases like diabetes and the material (fewer sick days and higher incomes) and non-material (lower healthcare costs) standards of living will increase.

Take a stand: Overall SOL is likely to improve assuming environmental pollution is not significant. [Alternative stand is also acceptable.]

# Analyse how Mexico’s sugar tax would harm US drinks manufacturers and employees, and discuss briefly whether it is inevitable that US drinks manufacturers will be adversely affected.

|  |  |
| --- | --- |
| **Content** | Impact of a tax on firms’ revenue and on jobs |
| **Context** | Consequences of a tax on firms and employees |
| **Command** | Assess + Discuss |

‘Harm’  US drinks manufacturers experience a fall in total revenue; workers in the US drinks industry may lose their jobs.

Mexico government imposes a sugar tax on sweetened drinks  rise in unit cop 

fall in supply of US manufactured sweetened drinks from SS1 to SS2

[9]

 shortage at initial price  rise in equilibrium price from P1 to P2, fall in equilibrium quantity from Q1 to Q2.

PED>1 due to avail of substitutes

 a rise in price of sweetened soft drinks will lead to a more than proportionate fall in its quantity demand

 total revenue gained due to a rise in price (Area A) < loss in total revenue due to a fall in quantity demanded (Area B)

 overall, fall in total revenue earned by US drinks manufacturers.

Post-tax revenue will be even lower.



SS2

Price of US

sweetened drinks

SS1

P2

**A**

P1 **B**

DD

Q2

Q1



Qty of US sweetened drinks

Fall in quantity demanded of sugar-sweetened drinks produced by US drinks manufacturers  Fall in demand for workers in US drinks industry  unemployment rises, wages earned by employed workers fall. Hence, the welfare of workers in the US drinks industry will be adversely affected. Extract 4 claims that the US beverage industry has lobbied heavily against the taxes, saying it would hurt jobs.

**Discuss briefly:**

**US drinks manufacturers may not be adversely affected:**

* Drinks manufacturers may diversify their businesses into healthier foods and drinks as highlighted in Extract 4
* Tax does not affect drinks manufacturers with no or little sugar content in their drinks; Such drinks manufacturers may experience a rise in TR as consumers switch from more expensive sugar-sweetened drinks to non/less sweet drinks

# US drinks manufacturers may be adversely affected:

* Sales of sweetened drinks may be US drink manufacturers’ core business
* Consumers may not like the taste of non/less sweet substitute drinks
* Diversification of drinks may require US drinks firms to incur higher R & D expenditure and thus costs

**Take a stand:** Whether it is inevitable that Mexico’s sugar tax will adversely impact US drinks manufacturers depend on factors such as the success of the sales of its non/less sweet drinks and the ability of US drinks manufacturers to keep lower R & D costs.

|  |  |
| --- | --- |
|  | **Knowledge, Application/ Understanding and Analysis** |
| L2 | A well explained answer that explains the harmful impact of sugar tax on |
| (4-6m) | BOTH US drink manufacturers AND employees. Use of case study |
|  | evidence is present. |
| L1 | A descriptive answer that explains only the harmful impact of sugar tax |
| (1-3) | on US drink manufacturers OR employees. |

|  |  |
| --- | --- |
| Discuss | Up to 3m to reach a reasoned judgement on whether it is inevitable that US drinks manufacturers and employees will be adversely affected. |

# Using evidence from the case study and/or your own knowledge, discuss whether the best course for Indonesia is to follow Mexico’s policy of taxation in its push to discourage Indonesians from consuming rice.

|  |  |
| --- | --- |
| **Content** | Micro policies to address excessive consumption of rice |
| **Context** | Government decision-making relating to choice of policies |
| **Command** | Discuss |

**Highlight aim of Indonesian government:** To achieve allocative efficiency and equity in the rice market  helps to curb health problems such diabetes

# Indonesia should follow Mexico’s policy of taxation:

1. **Explain how indirect tax corrects allocative inefficiency in market for rice**.

Indirect tax on rice  rise in unit cop  fall in supply of rice from S1 to S2 until Q2 is

achieved  deadweight loss is eliminated  allocative efficiency in the market for rice is achieved.



[12]

S2=MPC2

E3 S1 =MPC=MSC E1



Price/ Benefits/

Costs

Figure: Market for rice

E2

Dperceived =MPB2

0 Q2 Q1

Dactual=MPB1=MSB

Quantity of rice

# Strengths of an indirect tax:

* Effective tool at reducing rice consumption of middle or lower income groups that forms a significant proportion of population in Indonesia, as in the case of Mexico (Extract 4)
* Internalises external cost in consumption  rations out those who are unable &/or unwilling to internalise the external cost through higher price
* Flexible method that changes incentive to consume in market  affects behaviour of consumers as in case of Mexico (Extract 4)
* Source of tax revenue for Indonesian government  greater ability to provide subsidies for healthcare or other merit goods to enhance society’s welfare

# Indonesia should not follow Mexico’s policy of taxation:

1. **Limitations of an indirect tax:**

* Government failure  overestimation of size of indirect tax  problem of over- taxation may lead to greater societal welfare loss
* Does not directly target at correcting info failure, obesogenic environment that is highlighted in Extract 3
* Demand for rice is price inelastic (i.e. rice is a necessity as indicated in Extract 3)  a tax may be ineffective as a rise in the price of rice leads to a less than proportionate fall in quantity demanded of rice.
* Higher prices of rice  less affordable  worsens problem of inequity

# Recommend alternative policy:

Root cause of problem seems to be information failure as highlighted in Extract 3  Government should carry out educational campaigns that targets at correcting imperfect information

 If successful, DD for rice falls as people adopt a healthier lifestyle by consuming less carbohydrates corrects problem of overconsumption of rice & thus allocative inefficiency in the rice market, reduced problem of inequity as the price of rice falls.

# Evaluative conclusion:

Whether Indonesia should follow Mexico’s policy of taxation in its push to discourage Indonesians from consuming rice may depend on severity of the market failure in the case of rice. If the market failure is severe (which may be evidenced by diabetes as the leading cause of death in Southeast Asia as highlighted in Extract 3), the Indonesian government may need to consider Mexico’s policy of taxation to deter its citizens from consuming rice, especially if the current food diversification program is unsuccessful. However, as the nature of rice in Indonesia is likely to be different from that of sweetened drinks in Mexico, the indirect tax on rice needs to be significantly large for it to be effective at discouraging the quantity demanded of rice. Indonesian government should also complement the tax policy with other policies such as campaigns such as on educating the public on living a healthy lifestyle so as to effectively address the root cause of market failure.