### Question 1

**The Market for Steel**

### Figure 1: World price of steel



Source: Bloomberg

### Extract 1: Global steel demand set to fall again in 2016: Worldsteel

Global steel demand will continue to fall this year before a slight pick-up in 2017, the World Steel Association forecast on Wednesday.

Falling demand has plunged the global steel market into crisis, with excess capacity taking a heavy toll on producers, including those in China - leading to plant closures and job losses.

Global apparent steel use - deliveries minus net exports of steel industry goods - is expected to fall 0.8 percent in 2016 to 1.488 billion tonnes after a 3 percent fall last year, according to Worldsteel.

China, which produces about half the world's steel, is under increasing international pressure to tackle a local supply glut that has led to accusations of China flooding markets with cheap steel. However, China is reluctant to do so as cutting industrial capacity will force China to lay off probably 1.8 million workers from steel and related sectors.

"The key to this year's figure is the decline in demand from China, which is responsible for half of the global demand, where a surplus in residential properties is a problem, but also weaker demand from Brazil and Russia," Worldsteel Director General Edwin Basson said.

Source: Reuters, 13 April 2016, the Straits Times, 8 March 2016

### Extract 2: China tackles pollution woes

Worried by the social and political impact of pollution, China has vowed to crack down on lawbreaking companies and the local governments that protect them. As part of its war on pollution, China's traditionally underpowered environment ministry was granted new powers to send inspection teams to local regions without warning, and was also given the authority to summon senior provincial officials to explain their conduct.

During a nationwide investigation of 1,019 steel enterprises across the country, the Ministry of Environmental Protection inspectors found that 173 firms were found to have violated the country's environmental rules, with 62 firms involved in illegal construction and 35 exceeding state emission limits. 23 of the offending firms had been asked to cut production, while another 29 had been shut down temporarily to "rectify" their problems. Fines totaling 18.9 million yuan have been imposed and three officials have been detained.

Source: Reuters, 10 Oct 2016, South China Morning Post, 2 Apr 2017, FORES Study 2012:1

### Questions

1. **i)** With reference to Figure 1, describe the trend in the world price of steel between March 2009 and March 2016.

### [2]

* 1. With reference to the case material, account for the change in world price of steel in 2015.
	2. Explain and justify the value of price elasticity of supply. (2)

**[4]**

1. **i)** Explain one example of negative externality which could result from steel production.

**[2]**

* 1. Explain how negative externality in steel production could lead to market failure.

**[5]**

* 1. As an economic advisor, evaluate the measure undertaken by the Chinese government (from Extract 3) in tackling the negative externalities associated with steel production and recommend an alternative policy option to the Chinese government. Justify your answer.

### [10]

### [Total: 25]

Suggested Answer:

1. **i) With reference to Figure 1, describe the trend in the world price of steel between March 2009 and March 2016. (2)**

World price of steel generally rose between Mar 2009 to end 2011 before decreasing generally until Mar 2016.

* 1. **With reference to the case material, account for the change in world price of World price of steel generally fell in 2015. (4)**

A fall in price could be due to decrease in demand and/or increase in supply.

**Reason for the decrease in DD:**

1) The decrease in global demand for steel stems from the fall in demand for steel from China, Brazil and Russia. And since China is responsible for nearly half the global metals demand, a decrease in demand from China due to slow-down in the construction industry will lead to a large (extent) fall in global demand.

(Must capture 1) decrease in global demand + 2) either China is responsible for nearly half the global demand or decrease in demand from China due to slow-down in construction industry to score 2m)

**Reasons for the increase in SS:**

1) Overcapacity in China (Ext 1 P3) could have led to increase in SS or over-supply of steel to the world market. This can be seen from Ext 3 P4 that China government is aiming to shut down facilities producing 100 to 150 million tonnes annually by 2020.

* 1. China could also be dumping their steel into the global market. This will increase in SS of steel in the world market at low prices. This can be seen from Ext 3 P2 and 5 where China’s steel exports reached a record 112.4m tonnes (19% increase) but value fell by 10.5% (prices would have decreased by approximately 30%)
	2. Explain and justify the value of price elasticity of supply of Steel. (2)

Price elasticity of supply refers the measurement of changes in the quantity supply of steel in response to a change in the price of steel. The price of elasticity of steel is valued to be price elastic which means that the price of steel increases will lead to a more than increase in quantity supplied of steel. This is because the production capacity of steel can be stocked up to increase the supply of steel in the short run as ‘China has flooded the dteel market to decrease the price’.

**[4]**

1. **i) Explain one example of negative externality which could result from steel production. (2)**

Greenhouse gases emissions causing global warming

Air pollution affecting the health of population and visibility in country.

* 1. **Explain how negative externality in steel production could lead to market failure.**
1. overview
2. economic causation
3. draw diagram
4. description of diagram
5. analysis

1. Overview

Negative externality in the form of pollution leads to market failures as it will contribute to the loss in welfare that undermines the industry from maximizing net social benefit gain, indicating the condition of market failure.

 2. Economic causation

[6]

In the production of steel, which is classified as a demerit good, it will emit pollution which is the form of negative externality that will be emitted when steel is produced. This gives rise to external cost which is the third-party cost seen in terms of medical cost that the third party must pay for their medical condition. The workers also lost their productivity which is the external cost to the economy. This eventually leads to the loss of economic welfare which is loss of welfare which is the loss of investment and national income that undermines the net social benefit gain which is the indication of market failure.

3 draw diagram

4. description of diagram

As seen in the diagram above, the market equilibrium rests at Qm where MPC is equal to MPB. When the value of the negative externality is considered, MPC diverges from MSC =MPC +MEC as the value of external cost is calculated. As such, the market for steel experiences over-production as the market equilibrium at Qm is below social equilibrium and deadweight loss arises between Qm and Qs because MSC exceeds MSB. Thus, market failure occurs as the industry fails to attain maximization of resource allocation due to net social welfare loss.

1. Analysis

Th extent of market failures is determined by the degree of pollution which will affect the value of external cost. The higher the external cost, the higher the degree of divergence of the MPC to MSC which means that the value of DWL will be greater, implying a higher degree of market failure.

* 1. **As an economic advisor, evaluate the measure undertaken by the Chinese government (from Extract 3) in tackling the negative externalities associated with steel production and recommend an alternative policy option to the Chinese government. Justify your answer.**
1. **state that the current policy adopted is legislatures and direct regulation and explains how it works**
2. **evaluate the strengths and weaknesses of the policy\**
3. **propose another policy like quota or tradeable permits**
4. **evaluate the strengths and weaknesses**
5. **analysis – compare the two policies**

### [10]

 **State that the current policy adopted is legislatures and direct regulation and explains how it works**

 As seen from the extraction, China has adopted the approach of the legislature and direct regulation to solve the market failures in this steel industry. This can be seen from the extract that “China's traditionally underpowered environment ministry was granted new powers to send inspection teams to local regions without warning.” In this policy, the government will use rules to investigate the issue and will impose rules and regulations to ensure that the pollution is controlled and set at the social optimal level where there is efficient resource allocation. In this process, the government will regulate the production process and ensure that the producers abide to the rule and regulation set by the China’s authority to ensure that there is maximization of net social benefit.

 **Evaluate the strengths and weaknesses of the policy**

 In this policy, the use of rules and regulation enables the government to solve the market failure in the steel industry by using rules to erase the causes and frictions that contributes to the rise of negative externality. This allows the government to solve some of the root causes of the pollution in the steel industry. The rules and regulation are also effective as it direct, enforcing, and instrumental in the implementation process and may be enforced by an administrative body that has the expertise and depth of knowledge. However, this method may be effective as the administrative body is often undermined by efficiency as it is corrupted. The rules and regulation are seldom enforced as there is a lack of political well and is conflicting with the aim of economic growth as China needs a lot of steel for its economy in the construction industry for building, miltary, and other aspects of the economy.

 **propose another policy like quota or tradeable permits**

The government can also impose other policies like quota where the level of production of steel is set at the social optimal level of pollution is at the level of production where output is Qs and the level of MSC=MPC+MEC is equal to MSB as such that there is efficient resource allocation of resource allocation where there is maximization of net social benefit gain, absence of DWL.

Optional – draw diagram and description of diagram

 **evaluate the strengths and weaknesses**

 It is easy for the government to ensure that there is efficient allocation of resources in this industry as the setting is easily set at the social optimal of output if the Chinese authority can identify this level of output. The government can also collect revenue if they are able to sell the tradeable permits to the producer and this increases the revenue for the government. However, such a policy requires a good understanding of the issue to derive the right value of external cost and opportunity cost, and this may disrupt the government from deriving the value of the output level at social equilibrium. It also adds the cost of production and be passed to other stakeholders, creating an inflationary impact on the economy.

1. **analysis – compere the two policies**

**Compare the two policies – which policy is better (can be used as a conclusion**

The use of rules and regulation would be a better policy at the 1st stage as it allows the government to introduce regulation that can immediately address the problem of pollution. This enables the government to solve the problem with a better understanding on how to derive subsequent policy to solve the problems. Quota or tradeable permit is useful in the second stage as it relies on principle of market mechanism and yet allow the economy to attain efficient resource allocation. In this way, it solves the problem with a striking balance on how the conflicting aims of growth and efficient resource allocation can be solved.