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DUNMAN HIGH SCHOOL
Preliminary Examination
Year 6

Economics

Paper 1 Case Study

8823/01

12 September 2022

3 hours

No Additional Materials are required

READ THESE INSTRUCTIONS FIRST

An answer booklet will be provided with this question paper. You should follow the instructions on the front cover of the answer booklet. If you need additional answer paper ask the invigilator for a continuation booklet.

Answer **all** questions.

The number of marks is given in brackets [] at the end of each question or part question.

This document consists of **9** printed pages including this cover page.

[Turn over

Answer all questions

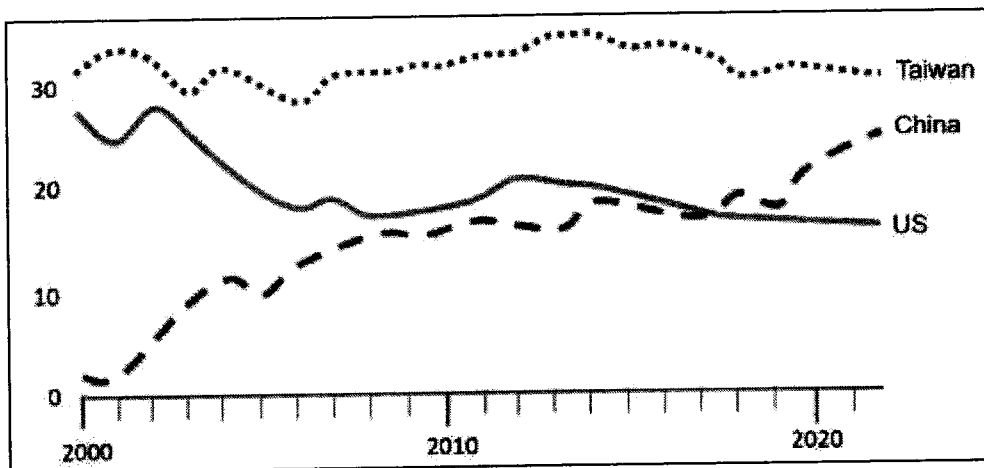
Question 1: Chipageddon

Extract 1: Gartner says worldwide semiconductor revenue declined in 2019

Worldwide semiconductor revenue totalled US\$418.3 billion in 2019, down 11.9% from 2018. The revenue declined was due to an oversupply that started at the end of 2018 and lasted throughout 2019. Excessive inventory pushed pricing lower and resulted in an average selling price decline of 47.4% in 2019.

Source: Meghan Rimol, Gartner, 14 January 2020

Figure 1: Share of global semiconductor manufacturing capacity, by location (%)



Source: Semiconductor Industry Association

Extract 2: Countries lavish subsidies and perks on semiconductor manufacturers as a global chip war heats up

When a semiconductor company opens a factory in Taiwan, the government covers almost half of the land and construction costs and 25 percent of the equipment costs. In Singapore, government subsidies cut the cost of owning a computer-chip factory by more than a quarter. And in China, the government is on track to spend as much as US\$200 billion to subsidise semiconductor companies through 2025.

These government support come with real opportunity costs for taxpayers and citizens as scarce public resources are spent on providing support to individual firms, rather than on providing the education and infrastructure from which all – including small as well as large firms – can benefit. Governments do have a critical role in ensuring the enabling environment for innovation and for competitive firms to grow and create jobs – and even in providing support in areas where the market cannot deliver.

Source: Jeanne Whalen, *The Washington Post*, 14 June 2021

Extract 3: 'Made in China' chip drive falls far short of 70% self-sufficiency

China has witnessed a trajectory of steady growth in the global consumption market, far outweighing the Americas, Europe, Japan, and the rest of the world. Simply stated, the growing demand for smartphones, tablets, digital televisions, wireless communications infrastructure, network hardware, computers and electro-medical devices is stimulating global demand of semiconductors which are an essential component of these electronic devices.

The semiconductor trade is seen as vital by the Chinese government. As such, policies are put in place to encourage innovation in the market. However, the Chinese government's goal of meeting 70% of its semiconductor needs through domestic supply remains a long way off.

There are several obstacles in the way before China can become truly self-sufficient in the semiconductor supply chain. An example being, China has lack of access to advanced technology to keep up with the semiconductor chip production found in modern electronics. These advances in semiconductor manufacturing demand skills and expertise that cannot be developed overnight. Currently the Chinese industry is also facing a shortfall in skilled researchers specialising in advanced chip development and experienced managers. Without immediate infusions of talent, the semiconductor jobs deficit and wages could balloon, hampering industry growth.

At the same time, U.S. increasing sanctions on Chinese semiconductor exports and imports have also seen an effect on the market. According to Reuters, the U.S. government not only mounted an extensive campaign to block the sale of Dutch chip manufacturing technology to China, it also blocked US-based companies from exporting advanced technologies to China, over fears that China used the technology for military needs.

Though the Chinese government looks to build a semiconductor supply chain that is immune to U.S. sanctions, some experts say that task will be easier said than done. "Semiconductors are premised on global division of labour," said one expert. "No country can create its own independent supply chain."

Source: Yvette To, CityU, East Asia Forum, 22 February 2021

Extract 4: Commerce Department survey uncovers 'alarming' chip shortages

The United States is facing an "alarming" shortage of semiconductors, a government survey of more than 150 companies that make and buy chips found; the situation is threatening American factory production and helping to fuel inflation, Gina M. Raimondo, the Commerce Secretary, said in an interview on Monday.

She said the findings showed a critical need to support domestic manufacturing and called on Congress to pass legislation aimed at bolstering U.S. competitiveness with China by enabling more American production.

"It's alarming, really, the situation we're in as a country, and how urgently we need to move to increase our domestic capacity," Ms. Raimondo said.

The combination of surging demand for consumer products that contain chips and pandemic-related disruptions in production has led to shortages and skyrocketing prices for semiconductors over the past two years.

Chip shortages have forced some factories that rely on the components to make their products, like those of American carmakers, to slow or suspend production. That has dented

U.S. economic growth and led to higher car prices, a big factor in the soaring inflation in the United States. The price of a used car grew 37 percent last year, helping to push inflation to a 40-year high in December.

Source: Ana Swanson and Catie Edmondson, The New York Times, 25 January 2022

Extract 5: Semiconductor manufacturing: achieving water authority compliance

The manufacturing of semiconductors generates wastewater that contains heavy metals and toxic solvents. This has severely affected the natural water resources, causing a significant threat to clean drinking water and raising chronic effects to human health.

Semiconductor companies historically have incurred clean-up costs related to groundwater contamination of up to US\$100 million. Regulators have also shut down facilities for releasing untreated effluents. Some companies are proactively meeting these challenges and mitigating related risks by reducing their reliance on chemicals and pro-actively improving the treatment of water before discharge.

In U.S., semiconductor manufacturing facilities must meet local, state and Environmental Protection Agency (EPA) wastewater requirements for effluent discharge, including those under the Clean Water Act. Failing to do so can result in severe fines that quickly escalate.

As for UK, green groups call to ban the use of chemicals in response to the tightening of environmental regulations.

Source: Silicon Semiconductor, 11 March 2020 and Consumer Choice Center, retrieved on 1 August 2022

Questions

- (a) With reference to Extract 1, explain the estimated value of price elasticity of demand (PED). [2]
- (b) Compare the share of global semiconductor manufacturing capacity by the locations given in Figure 1. [3]
- (c) Using the concepts of scarcity, choice and opportunity cost, explain how the provision of subsidy to produce semiconductors affects the Production Possibility Curve in the short run and long run. [8]
- (d) With the aid of a demand and supply diagram, explain why China “falls far short of 70% self-sufficiency” for semiconductors and comment on whether this trend would likely continue. [8]
- (e) Without immediate infusions of talent, the semiconductor jobs deficit and wages could balloon (Extract 3).

Using a relevant diagram and one elasticity concept, explain the above statement. [4]

- (f) (i) With reference to Extracts 4 and 5 and by considering governments' microeconomic and macroeconomic goals, discuss the factors that the US government would consider when deciding whether to increase its domestic production of semiconductors. [10]
- (ii) By comparing a fine with one other policy, discuss whether a fine is the better policy to achieve a more efficient allocation of resources in the production of semiconductors. [10]

[Total: 45]

Question 2: Economic Growth in East Asia

Extract 6: Global economic growth in 2019 was lowest of the decade

The global economy recorded its slowest growth of the decade in 2019, falling to 2.3%, accompanied by a sharp slowdown in international trade and global manufacturing activity. Business confidence has deteriorated, dampening investment growth across most regions. Slower world growth threatens to undermine progress towards eradicating poverty, raising living standards, and creating a sufficient number of decent jobs.

Softening demand has affected global commodity prices, particularly oil and industrial metals. A significant number of commodity-exporting countries are suffering from the effects of the commodity price downturn, which has resulted in persistent output losses and setbacks in poverty reduction.

East Asia remains the world's fastest growing region and largest contributor to global growth. GDP growth in the region is projected to gradually slow from 6.1% in 2019 to 6% in 2020.

Source: Edith M Lederer, AP News, 17 January 2020

Figure 2: GDP of Republic of Korea and Thailand from 2010 to 2020 (Current US\$ Trillion)

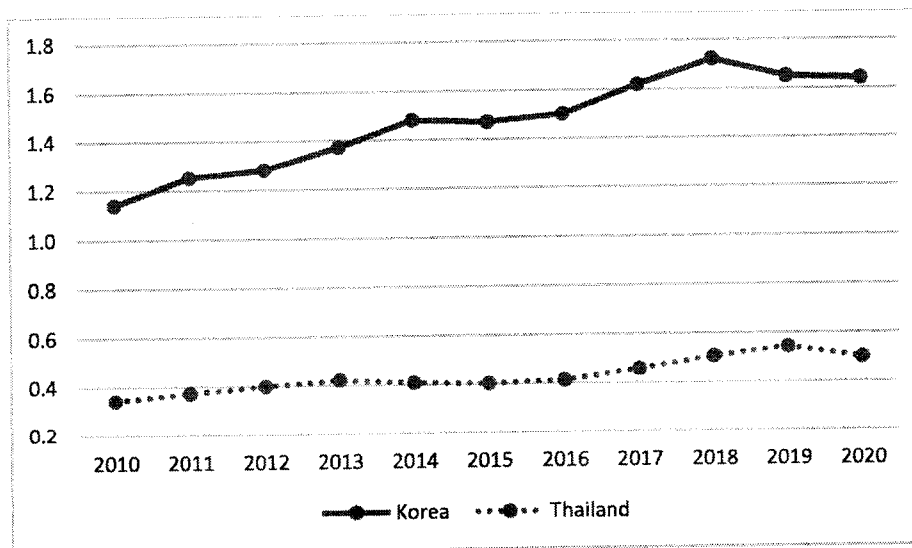


Table 1: Inflation and unemployment in Korea and Thailand from 2016 to 2020

Year	Inflation rate (% change in consumer prices)		Unemployment rate (%)	
	Korea	Thailand	Korea	Thailand
2016	1.0	0.2	3.7	1.0
2017	1.9	0.7	3.7	1.2
2018	1.5	1.1	3.8	1.1
2019	0.4	0.7	3.8	1.0
2020	0.5	-0.8	3.9	2.0

Sources: The World Bank, International Monetary Fund

Extract 7: Surge in Thai baht

The Thai currency has jumped to a six-year high against the United States dollar. The exchange rate has been hovering at around 30 baht per US dollar over the past month. Thailand's central bank has expressed concerns about the baht's upward trajectory. The effects of the strong currency can already be seen with a slower-than-expected economic growth of 0.1% for the third quarter, ending in September. A strong baht mainly affects Thailand's exports and tourism sector. Thailand's exports, which contribute about 70% of its economy, would become more expensive to buy, thereby decreasing its competitiveness. The tourism sector is already reeling from the effects of a strong baht, with a slowdown in arrivals from China. Visitors from the mainland fell 5% in the first half of this year from the same period last year. Tourism accounts for about 20% of Thailand's economy. While a stronger baht would technically mean that Thailand's imports would be cheaper for its own residents, experts believe that the spending power for an average Thai outside of its capital Bangkok is limited due to increasing social inequality.

Source: Janice Lim, Today, 26 November 2019

Extract 8: Thailand 4.0

The Thai government is launching policies to address tensions concerning productivity as well as to boost short-to-medium-term economic growth. The 'Thailand 4.0' plan represents a combination of promoting industrial transformation and establishing an economic corridor in eastern Thailand. Newly targeted industries selected to serve as growth engines include new-generation automotive technologies, smart electronics, medical and wellness tourism, aviation and logistics. The Eastern Economic Corridor (EEC) will support the country's industrial transformation and straddles three eastern provinces — Chonburi, Rayong and Chachoengsao. The government is offering investment incentives like tax breaks, and access to long-term land leases, import duty exemptions and work visas. It is also undertaking infrastructure investment projects like launching a third international airport, expanding the seaport and extending land transport networks in the EEC area — representing a total investment of US\$43 billion over 2019–2025.

Thailand 4.0 represents the current government's hopes for enhancing productivity and boosting economic growth. Yet, there are at least two challenges to be overcome. First, picking certain industries for industrial transformation is a risky policy to pursue. This strategy could leave many industries behind as the targeted industries account for only 50% of gross manufacturing output. This uncertainty is even worse in an era of disruptive technology, where the transition could be associated with high adjustment costs. Also, the EEC's effect on productivity and economic growth will be positive in the short-to-medium-term, but the magnitude will be conditioned by how fast the projects are implemented. Delays in the EEC's infrastructure projects signal uncertainty for investors. Foreign direct investors often adopt a 'wait-and-see' mode, *regardless of the investment incentives.*

Source: Archanun Kohpaiboon, East Asia Forum, 20 April 2020

Extract 9: Minimum wage hikes in Korea

The Korean government initiated a set of new economic policies to raise incomes for individuals in the middle- and low-income brackets, aimed at increasing household income, enhancing household's capacity for consumption and economic growth. The minimum wage was raised by a record 16.4% at the start of 2018, and another hike by 10.9% for 2019, with the goal of reaching a minimum wage of 10,000 won per hour by 2020. The increases in minimum wage had consistently been higher than the economic growth rate for years, and was exceptionally higher in 2018 and 2019, while labour productivity has remained low or stagnant. Evidence up to the second quarter of 2019 suggests that the quick and steep minimum wage hike led to hiring cuts, business shutdowns, job losses and worsened income polarisation. The record hike in the minimum wage has burdened small- and medium-sized enterprises (SMEs) the most, with many unable to cover the increased labour costs or even freezing new hires.

Source: Choong Yong Ahn, Global Asia, September 2019

Extract 10: The Korean economy faces challenges

The pandemic compounds pre-existing challenges like rapid population ageing and relatively low productivity in parts of the Korean economy. While productivity is high in manufacturing, especially for information and communication technology equipment, it is lagging in services, including digital services.

The shrinking working-age population will weigh on Korea's GDP growth over the coming decades. Better mobilising labour resources can partly counteract this trend, as well as help build a more inclusive economy and society. Less than half of youth aged 15-29 were employed in 2019. More than two-thirds of youth obtain tertiary degrees, but are slow in transitioning from education to employment. The crisis exacerbates the difficulties faced by youth entering the job market. To address skills mismatches, the government has stepped up career counselling, developed apprenticeships and vocational education and introduced incentives for tertiary education institutions to propose more market-relevant degrees. Nevertheless, career guidance and counselling will need to be stepped up, in particular through increased resources for the public employment service and stronger involvement of employers.

Digital technologies, in which Korea is a top player, offer vast opportunities to raise firms' productivity and people's well-being. Investment in areas featuring in the recent Korean New Deal, such as 5G, telecommunication and artificial intelligence, will help boost the knowledge-based economy. Promoting Digital New Deals will make decent job opportunities, especially for young people. It is not intended to merely overcome the crisis by creating temporary jobs. The large-scale project to promote a digital economy is expected to increase the demand of the young talents in the technology field, and there has indeed been increased recruitment in the IT industries in spite of the pandemic. Policies should aim at promoting the diffusion of technology across the economy and addressing digital skills gaps. Regulatory reforms to encourage innovation in products or business models, could boost growth.

Sources: Hyungim Jang, Korea Economic Institute of America, 15 July 2020, and Christophe André, OECD Economics Department, 11 August 2020

Questions

- (a) With reference to Extract 6, explain the consequences on employment and living standards for a commodity-exporting country suffering from the effects of a commodity price downturn due to softening demand. [6]
- (b) (i) Define Gross Domestic Product (GDP). [2]
- (ii) Using Figure 2 and Table 1, compare the performance of Korea and Thailand with respect to GDP and unemployment. [4]
- (iii) Explain why the Thai government might be concerned with the economy's inflation rate in 2020 (Table 1). [2]
- (c) Explain and comment on the undesirability of an appreciation of the baht for the Thai economy. [7]
- (d) According to Extract 8, 'Thailand 4.0 represents the current government's hopes for enhancing productivity and boosting economic growth.'
- Using AD/AS analysis, discuss the effectiveness of 'Thailand 4.0' on achieving the above goals. [10]
- (e) With reference to Extract 9, explain one intended and one unintended consequence of minimum wage hikes in Korea. [4]
- (f) Discuss whether investments in digital technologies in Korea can help to reduce youth unemployment and build a more inclusive economy. [10]

[Total: 45]

Marking Guide:

- Be positive in your marking, awarding marks for what is there without being overly influenced by omissions.
- Marks should not be deducted for inaccuracies.
- Part-questions which ask candidates to 'comment' do not use Levels of Response marking guides. There will be a separate mark allocation for 'comment', with either 2 or 3 marks – which will never be more than 50% of the total mark available.
- Part-questions which ask candidates to 'discuss' have a Levels of Response marking guide. In determining the Level that an answer falls in, use a 'best-fit' approach; the answer may therefore not always exhibit all the features of the Level description.
- Having determined the Level, begin your determination of the mark at the midpoint for the Level. Then decide whether to move the mark up or down within the Level to reflect the quality of the answer.
- Marks for evaluation or comment must be added to the mark for knowledge and understanding, interpreting information, application and analysis.
- Differences in marks should be based on the ability of the candidate to demonstrate the various assessment objectives listed in the syllabus and not purely on the ability to itemise further facts from the content of the syllabus.
- Guidance on making allocations for part-questions with a Levels of Response marking:

Total Mark	Analysis/Explanation Levels of Response Mark Range	Marks for Evaluation
7	L1 1-2 L2 3-5	1-2
8	L1 1-3 L2 4-6	1-2
9	L1 1-3 L2 4-6	1-3
10	L1 1-2 L2 3-4 L3 5-7	1-3
11	L1 1-2 L2 3-5 L3 6-8	1-3
12	L1 1-2 L2 3-5 L3 6-9	1-3



DUNMAN HIGH SCHOOL

Preliminary Examination

Higher 1 Economics

Suggested Answers and Mark Schemes

Question 1: Chipageddon

- (a) With reference to Extract 1, explain the estimated value of price elasticity of demand (PED). [2]

Suggested Answer

PED is inelastic (1m). Since "(evidence) average selling price decline of 47.4% while Worldwide semiconductor revenue down 11.9%", this suggested that quantity demanded has increased less than proportionately, *ceteris paribus* (1m)

- (b) Compare the share of global semiconductor manufacturing capacity by the locations given in Figure 1. [3]

Suggested Answer

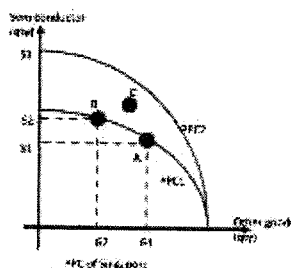
Taiwan has the largest share among the 3 locations.
US's share has been falling while China's has been increasing
China's share of global semiconductor manufacturing capacity has increased extensively over the time.

Marking Guide:

1 mark for each comparative statement.

- (c) Using the concepts of scarcity, choice and opportunity cost, explain how the provision of subsidy to produce semiconductors affects the Production Possibility Curve in the short run and long run. [8]

Suggested Answer



A production possibilities curve is a graphical model that represents all of the different combinations of two goods that can be produced; the PPC captures scarcity of resources and opportunity costs.

Scarcity is the situation where limited resources are insufficient to produce goods and services to satisfy unlimited human wants. Since quantity and quality of resources including remain constant at any given period, any point beyond PPC0 eg Point C is unattainable.

Scarcity necessitates choice. In other words, society needs to make a choice which combination of goods and services to produce due to scarcity. Keeping in mind that resources are limited in the short run, if the choice is to produce more of one product, resources must be diverted from the other. Therefore, as the provision of indirect subsidy lowers the marginal costs of producing semiconductors, profit driven producers would step up to produce more semiconductor. This results in resource diversion and fewer resources left available for other goods. As a result, the quantity of other goods produced would fall from G1 to G2 as production of semiconductors increases from S1 to S2. Consequently, the society incurs an opportunity cost in terms of the potential revenue forgone for producing G2G1 when it chooses to produce more semiconductors.

In the long run, when the producers modify its technology or machineries to produce more semiconductors, assuming not affecting the production of other goods, the PPC1 would increase to PPC2 as maximum output for semiconductors increase to S3 from S2 while holding the maximum output for other goods constant.

Marking Guide:

- Up to 2 marks for quality use of a Production Possibility Curve diagram with correctly labelled curves and axes, relevant positions on the curve correctly identified as well as associating the analysis to the diagram.
- Up to 6 marks for explaining scarcity, choice, and opportunity cost in both short and long run.

- (d) With the aid of a demand and supply diagram, explain why China “falls far short of 70% self-sufficiency” for semiconductors and comment on whether this trend would likely continue. [8]

Suggested Answer

1st part: explain why China “falls far short of 70% self-sufficiency” for semiconductors

From Ext 3, China is facing the following:

Increasing demand from D0 to D1 due to “growing demand for smartphones, tablets, digital televisions, wireless communications infrastructure, network hardware, computers and electro-medical devices is stimulating global demand of semiconductors which are an essential component of these electronic devices”

Increasing supply from S0 to S1 due to “policies are put in place to encourage innovation in the market” such as subsidies in Ex 2 which lowers the marginal cost of producing semiconductors.

<insert diagram – well-explained, clearly labelled axis and curves – up to 2 marks)

At original price P_0 , there is a shortage $Q_d < Q_s$ created since demand is increasing faster than supply since China is short of essential services eg technology and skilled labour

2nd part: comment on whether this trend would likely continue (up to 2 marks for valid evaluative comment)

Possible points

- Yes, likely to continue due to the sanctions imposed by US to block the trading of advanced technologies to China.
- No, if Chinese adopt appropriate policies such as providing subsidies on R&D to develop their own semiconductor chain.

- (e) Without immediate infusions of talent, the semiconductor jobs deficit and wages could balloon (Extract 3).

Using a relevant diagram and one elasticity concept, explain the above statement. [4]

Suggested Answer

- Rising demand for labour from D_0 to D_1
- PES for workers in semiconductor is inelastic since "shortfall in skilled researchers specialising in advanced chip development and experienced managers" and it takes time to train these workers.
- To clear the shortage at original wage W_0 , prices need to increase by a large extent from P_0 to P_i instead of P_e to remove the shortage

Marking Guide

- Up to 2 marks for quality use of a demand/supply diagram – correct labelling of axes, curves, equilibrium points, etc., and correct identification of the scenario
- Up to 2 further marks for explaining "the scenario with the use of one elasticity concept"

- (f) (i) With reference to Extracts 4 and 5 and by considering governments' microeconomic and macroeconomic goals, discuss the factors that the US government would consider when deciding whether to increase its domestic production of semiconductors. [10]

Suggested Answer

Benefits – in terms of macroeconomic goals

Rising investment, a component of AD, will cause AD_0 to rise to AD_1 . Firms, face with unplanned disinvestments, would step up production and hire more workers. This result in a fall in demand deficient unemployment as stated in Ex 2. At the same time, RNY would increase from Y_0 to Y_1 , stimulating actual economic growth. <insert diagram>

Costs – in terms of macroeconomic goals

This increases the competition for limited workers in the semi-conductor industry and drives up the prices of factor input, leading to demand-pull inflation as GPL rises from P_0 to P_1 , eroding the internal value of money and mSOL to fall.

Weigh benefits and costs

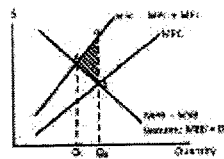
Rational government will choose to go ahead to increase its domestic production of semiconductors only if benefits outweigh the costs.

Unintended consequences in terms of microeconomic goals

The production of semiconductors leads to pollution: Ext 5 severely affected the natural water resources, causing a significant threat to clean drinking water and raising chronic effects to human health". This affects 3-party like residents who are not involved directly in the production of semi-conductor to incur additional healthcare costs which is known as marginal external cost (MEC).

For producers who act based on self-interest, they produce up to Q_p which is the private optimal output where $MPB=MPC$ while to the society, social optimal output occurs at Q_s where $MSB=MSC$. $Q_p=Q_s$ when there is no externality.

However, the presence of MEC leads to a divergence of MPC and MSC , hence an over-production of semi-conductors since $Q_p > Q_s$ and a deadweight loss of abc as the additional benefits society could derived is less than the costs incurred.

**Evaluation:**

- Net social welfare
- Based on the needs of the economy or priority of the government

Marking Guide

L3	An answer that uses appropriate analysis to explain the factors affecting government decisions to achieve both micro and macro goals with rigorous economic analysis and well-referenced to the extracts.	5-7
L2	An answer that merely identifies or describes the factors affecting government decisions to achieve either micro or macro goals with some economic analysis with little reference to the extracts.	3-4
L1	An answer that demonstrates some knowledge of the factors affecting government decisions with limited economic analysis.	1-2

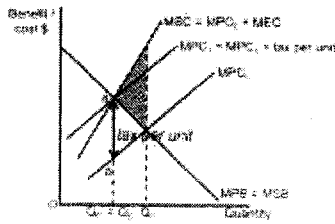
In addition, **up to a further 3 marks** for valid evaluative comment which may include the most/least important factor which government would consider in the given scenario.

- (ii) By comparing a fine with one other policy, discuss whether a fine is the better policy to achieve a more efficient allocation of resources in the production of semiconductors. [10]

Suggested Answer

Explain how a fine can lead to a more efficient allocation of resources.

The imposition of a fine equivalent to MEC at Q_s increases the MPC_0 to MPC_1 . Producers will cut its production to Q_p' which coincides with Q_s which leads to an efficient allocation of resources.



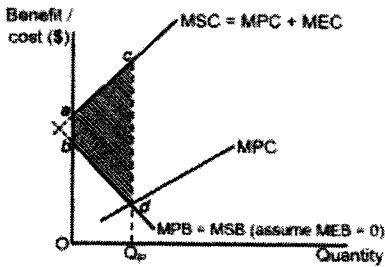
Limitation of a fine

Govt due to imperfect information may over-estimate the size of MEC. If serious, the new level of output may lead a deadweight loss larger than the original. Hence, the society will be worse off than before.

Explain how a ban can lead to a more efficient allocation of resources.

If the MEC is extensive, govt would consider a ban.

Left to the free market, the amount produced and consumed would be at Q_p where $MPB = MPC$. This would, however, cost the society $OacQ_p$ while yielding a benefit of only $ObdQ_p$, leaving society with a deadweight loss of area $abdc$.

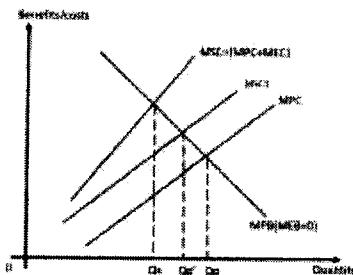


Limitation of a ban

May not be feasible since semi-conductors are essential FOP of many daily products

Explain how R&D can lead to a more efficient allocation of resources.

Evidence: To engage in R&D so that firms can "reduce their reliance on chemicals and pro-actively improving the treatment of water before discharge" Extract 5.



Limitation of R&D

- No guaranteed results and long gestation period

Evaluation

Which is a better policy

Fine vs Ban → Ban has a higher possibility of govt failure

Fine vs Ban → fine collected can be used to offset the administration costs, mitigating the unintended consequences

Fine vs R&D → short vs long run

Marking Guide		
L3	An answer that uses appropriate analysis to explain how both policies work to achieve higher allocative efficiency in the given context. Possible alternative policies with reference to Ext 5 are research and development and ban	5-7
L2	An answer that merely identifies or describes at least how one policy works to achieve higher allocative efficiency in the given context or using an alternative policy irrelevant to the extracts.	3-4
L1	An answer that demonstrates some knowledge of allocative efficiency	1-2

In addition, **up to a further 3 marks** for valid evaluative comment that considers which is a better policy to achieve higher allocative efficiency in the given context.

[Total: 45]

Question 2: Economic Growth in East Asia

- (a) **With reference to Extract 6, explain the consequences on employment and living standards for a commodity-exporting country suffering from the effects of a commodity price downturn due to softening demand.** [6]

- Slowdown in global economic activity and investment → lesser demand for commodities, particularly oil and industrial metals → commodity price downturn
- Countries exporting commodities face falling AD via (X-M) → falling national output (actual growth) and employment/ derived demand for labour (rising demand-deficient unemployment) via reverse multiplier process [3]
 - Fall in AD via I – indirect impact
- Lower household incomes, purchasing power, reduction in tax revenue, worsening health and education outcomes, setbacks in poverty reduction → worsen material and non-material SOL. [3]
 - Can accept improvement in non-material SOL due to slowdown in depletion of resources or reduced pollution from mining resources.
 - Can accept worsening material SOL in LR due to slower capital accumulation.

- (b) (i) **Define Gross Domestic Product (GDP).** [2]

GDP measures the total value of all final goods and services newly produced within the geographical boundary of a country in a given year/ time period before allowance for depreciation.

Comments:

- Many candidates were able to give a succinct, complete definition of GDP.
- Several candidates did not include key components of the definition (eg, 'within the geographical boundary', 'before allowance for depreciation').

- (ii) **Using Figure 2 and Table 1, compare the performance of Korea and Thailand with respect to GDP and unemployment.** [4]

GDP (any two)

- GDP of Korea and Thailand increased over the period.
- GDP of Korea rose faster than GDP of Thailand over the period.
- GDP of Korea was higher than GDP of Thailand over the period.

Unemployment (any two)

- Unemployment in Korea and Thailand rose over the period.
- Unemployment in Korea was higher than in Thailand over the period.
- While unemployment in Korea rose at a gradual/ consistent pace over the period, unemployment in Thailand rose at a slower pace from 2017 to 2019 before rising at a faster pace from 2019 to 2020.

(iii) Explain why the Thai government might be concerned with the economy's inflation rate in 2020 (Table 1). [2]

Thailand's inflation rate in 2020 → economy faced deflation/ falling consumer prices in 2020.

SR effect: AD would decrease, *ceteris paribus*, through the reverse multiplier process, real national income contracts, unemployment rises and the general price level continues to fall, marking the start of a deflationary spiral (any one cause):

- Reduction in C - Consumers postpone their spending, waiting for prices to fall further before buying so as to maximise their utility from their given budget. Consumption falls while saving increases. While this is, for the individual consumers, a rational decision, taken as a whole, the move towards greater saving has a contractionary effect on the economy.
- Reduction in I - Firms revise their expected return from investment downwards. Where the expected return from investment falls below the cost of borrowing to finance that investment (reflected by the interest rate), rational firms cut back investment.

OR LR effect of reduction in I - lower expected returns on investment means a lower rate of capital accumulation. With capital being one of the four fops, a smaller increase in the economy's capital stock limits the rate at which the economy's productive capacity (either AD/AS or PPC framework) can expand in the long term. With lower potential growth, this in turn limits the extent to which material SOL can improve over time.

(c) Explain and comment on the undesirability of an appreciation of the baht for the Thai economy. [7]

- Undesirable → harmful for Thailand's economy → link to macroeconomic goals/ standard of living

Explain undesirability of an appreciation of the Thai baht on Thailand's exports and tourism sector [4]:

- As the domestic currency appreciates against foreign currencies, prices of the country's exports increase in foreign currency terms while prices of imports decrease in domestic currency terms, causing the quantity demanded for the country's exports to decline and the quantity demanded of imports into the country to rise, the extent to which depends on the relevant price elasticity of demand. At the same time, depending on the degree of substitutability between imports and domestically-produced goods and services, the falling import prices might induce domestic consumers to switch to imports, away from domestically-produced goods and services, decreasing C_d .
- Assuming Marshall-Lerner condition holds, i.e. $|PED_x| + |PED_M| > 1$, the price changes in exports and imports will induce sufficiently large changes in quantity demanded in the opposite direction to cause TR_x to decrease relative to TE_M . *Ceteris paribus*, this brings about a deterioration in (X-M)
- SR impact → fall in AD, rise in demand-deficient unemployment, fall in consumer prices in the short run → worsen material SOL.
- LR impact → slow down capital accumulation, potential growth.
- Explain with reference to a well-labelled diagram

Comment on the undesirability of an appreciation of the Thai baht on Thailand's exports and tourism sector [3]:

- [+] Appreciation of Thai baht means that imports are cheaper for its own residents
 - Cheaper imported consumer goods → greater ability for Thai consumers to satisfy needs and wants, enjoy more variety of goods and services
 - Cheaper factors of production → lower unit cost of production for firms → pass on cost savings to consumers in the form of lower prices/ raise export price competitiveness → partially offset loss of export price competitiveness due to appreciation of Thai baht.
- [-] Huge negative impact of appreciation of Thai baht
 - Large fall in AD as Thailand's exports contribute about 70% of its economy, tourism accounts for about 20% of Thailand's economy, poor economic outlook deters investments and consumption.
 - Many people may lose jobs in export and tourism related industries, lose purchasing power, widen income disparity → 'spending power for an average Thai outside of its capital Bangkok is limited' → cannot afford to buy more domestic goods/ imports even as Thai baht appreciates.
- Overall, negative effects outweigh positive effects of appreciation of Thai baht → undesirable

(d) According to Extract 8, 'Thailand 4.0 represents the current government's hopes for enhancing productivity and boosting economic growth.'

Using AD/AS analysis, discuss the effectiveness of 'Thailand 4.0' on achieving the above goals. [10]

- Effectiveness → extent of success in producing the desired outcome
- Enhancing productivity → increase rate of output per unit of input (eg, worker)
- Boosting economic growth → increase actual and potential growth → sustained EG

Explain how Thailand 4.0 can help to achieve these goals:

- Promoting industrial transformation
 - Newly targeted industries (eg, new generation automotive technologies, smart electronics) → implies greater use of technology to increase efficiency, **productivity** (output per worker)
- Expansionary fiscal policies
 - Investment incentives like tax breaks to increase stimulate I
 - Increase in G since government undertakes infrastructure investment projects → stimulate AD via multiplier process → increase actual growth (SR), reduce demand-deficient unemployment → also boost potential growth (LR)
- Supply-side policies
 - Import duty exemptions help to reduce unit cost of production → increase AS in short run (actual growth)
 - Access to long term land leases, work visas help to increase factor mobility, reduce structural rigidities → AS becomes less inelastic, increase the extent to which real national output can increase in response to rising AD (non-inflationary growth)
 - Infrastructural investments, promoting industrial transformation/ innovation to expand the economy's productive capacity through raising factor quantity and quality (potential growth).

Challenges:

- Risk of picking certain industries – uncertain outcome, uneven growth (target industries account for only 50% of gross manufacturing output), structural unemployment
- Delays in infrastructural projects – inability to gain investors' confidence, wait-and-see despite incentives
- Strain on government budget, high adjustment costs → crowding out effect, opportunity costs

L3 5-7	An answer that provides appropriate two-sided analysis to discuss the effectiveness of 'Thailand 4.0' on achieving the goals of enhancing productivity and boosting economic growth, with rigorous economic analysis and well-referenced to the extracts.
L2 3-4	A two-sided answer that discusses the effectiveness of 'Thailand 4.0' on achieving the goals of enhancing productivity and boosting economic growth, with some economic analysis and/ or little reference to the extracts OR one-sided only.
L1 1-2	An answer that demonstrates some knowledge of how 'Thailand 4.0' on achieving the goals of enhancing productivity and boosting economic growth, with limited economic analysis.

In addition, **up to a further 3 marks** for valid evaluative comment which may include the factors which could affect the effectiveness of 'Thailand 4.0' on achieving the goals of enhancing productivity and boosting economic growth.

Evaluation

- Overall, 'Thailand 4.0' would be effective in enhancing productivity if challenges can be mitigated. Factors include:
 - Speed of implementation of projects → reduce delays in infrastructure projects to increase investor confidence
 - Success of newly targeted industries → fulfill ability to serve as growth engines
 - Attitude and aptitude of workers towards training → increase occupational mobility in view of industrial transformation

(e) **With reference to Extract 9, explain one intended and one unintended consequence of minimum wage hikes in Korea.** [4]

- Intended consequence – minimum wage hikes in Korea enhances household's capacity for consumption → increase in purchasing power → increase in material SOL.
- Unintended consequence – higher wage costs led to increased cost of production for SMEs, unable to cope with increase labour costs or freeze new hires → increase unemployment.

(f) **Discuss whether investments in digital technologies in Korea can help to reduce youth unemployment and build a more inclusive economy.** [10]

- Youth unemployment – structural unemployment (many with tertiary degrees but are slow in transiting from education to employment, skills mismatch)
- Inclusive economy – broad based growth – may include youths and other segments (eg, seniors, females)

Investments in digital technologies in Korea can help to reduce youth unemployment and build a more inclusive economy.

- Increases AD via I, multiplier process → reduces demand-deficient unemployment (Extract 10: shrinking working-age population will weigh on Korea's GDP growth). Also increase job opportunities for young people (tech-savvy), increased recruitment of young talents in the technology field in spite of the pandemic (Extract 10) → help to reduce youth unemployment.
- Promote diffusion of technology across the economy, address digital skills gaps → improve quality of workers, increase their ability to bargain for higher wages (eg, higher, more price inelastic demand for skilled workers), not merely creating temporary jobs
- Also increases AS in long run → productive capacity
- Inclusive growth through income redistribution: With economic growth, government is better able to redistribute income from the rich to the poor. As income increases, people will pay more direct taxes (in the form of progressive income tax) as well as indirect taxes (in the form of GST). This additional tax revenue collected can then be spent on transfer payments e.g. income support to help poorer households.

Investments in digital technologies in Korea cannot help to reduce youth unemployment and build a more inclusive economy.

- Investments in digital technologies could worsen structural unemployment, gap between skilled vs unskilled workers, further polarisation, harder to achieve inclusive growth
 - In some high-skilled jobs, workers become more productive with sophisticated software at their side or forms of automation, from robots to phone-answering systems, have simply replaced factory workers, receptionists, and many other kinds of low-skilled employees.
 - Demand for high-skilled workers rises from D_0 to D_1 in response to the growth of the knowledge industry and their productivity. Supply of high-skilled workers is inelastic and rises much slower as acquiring these skills take time. Resultantly, a shortage of workers ab at the original wage rate W_0 . With a more inelastic supply for skilled labour, quantity supplied is less responsive to wage changes. A larger rise in wages (to W_1) is thus needed

to raise quantity supplied by a large enough amount for the shortage created to be eliminated and the market to clear.

- In contrast, low-skilled workers displaced by automation see demand for their skills falling from D_2 to D_3 . This creates a surplus of labour cd , pushing wages down from W_2 to W_3 .

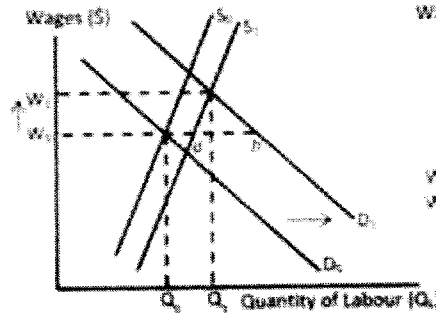


Figure 8a: Market for high-skilled workers

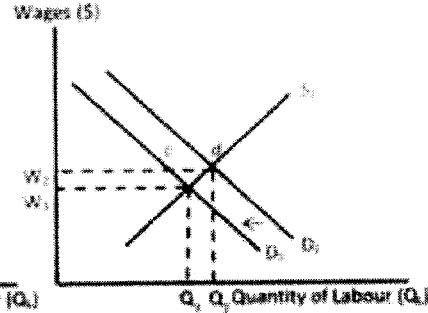


Figure 8b: Market for low-skilled workers

- Limitations – attitude/ aptitude of workers, gestation period, uncertainty in success of investment in digital technology, strain on government resources to invest in other areas that can help improve youth unemployment and build a more inclusive economy (eg, healthcare)

L3 5-7	An answer that provides appropriate two-sided analysis to discuss whether investments in digital technologies in Korea can help to reduce youth unemployment and build a more inclusive economy, with rigorous economic analysis and well-referenced to the extracts.
L2 3-4	An answer that explains how investments in digital technologies can help to reduce youth unemployment and/ or build a more inclusive economy, with some economic analysis and/ or little reference to the extracts. Two-sided or one-sided only.
L1 1-2	An answer that demonstrates some knowledge of how investments in digital technologies can help to reduce youth unemployment and/ or build a more inclusive economy, with limited economic analysis.

In addition, **up to a further 3 marks** for valid evaluative comment which may include the most/least important factor which government would consider in the given scenario.

Evaluation:

- Clear stand – agree/ disagree
- Relevant conditions – how government can mitigate the costs of investments in digital technologies, so that it can better help to reduce youth unemployment and build a more inclusive economy (eg, multi-pronged approach – coupled with career counselling).