HWA CHONG INSTITUTION
C2 Preliminary Examination
Higher 1

CANDIDATE NAME		**CT GROUP**	**18**
CENTRE NUMBER		**INDEX NUMBER**	

ECONOMICS
Paper 1

8823 / 01
2 September 2019
3 hours

Additional Material: Answer Booklet

READ THESE INSTRUCTIONS FIRST

Read all instructions printed on the cover page of the 12-page answer booklet carefully.

Write all your particulars clearly on the cover page of the 12-page answer booklet.

Indicate on the cover page of the 12-page answer booklet your H1 Economics tutor's name on the top right hand corner.

Answer **ALL** questions.

Write all your answers in the 12-page answer booklet.

All work must be handed in. If you have used any additional 4-page booklets, please insert it inside the 12-page answer booklet.

Do all your rough work in pen using the answer booklet and cross it through without making it illegible.

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

You may use a calculator.

You are reminded of the need for good English and clear presentation in your answers.

This document consists of **9** printed pages.

[Turn over

Answer **all** questions**.**

Question 1: Market for timber

Extract 1: Logging halt would boost economy

Victoria's central highlands is the catchment for the majority of Melbourne's water storage reservoirs and it also contributes to the tourism economy in the most populous city of the Australian state of Victoria. It is estimated that the central highlands adds $310 million worth of economic value to the state's water supply and $260 million to tourism.

On the other hand, the central highlands is home to trees which have been logged for hardwood production. A study last year found native logging and processing helped generate more than $500 million for the state's economy supporting more than 2,000 jobs. Opponents of native timber logging, much of which is used as pulp for paper and for furniture production, said the industry could be supplied with plantation timber instead of trees from the highlands.

Furthermore, some analysts reported that moving away from harvesting of native forest would contribute to improved economic, social and environmental benefits for the people of Victoria. By stopping logging, the water catchment would be improved and would maximise "water yield and quality" and increase the amount of water available to Melbourne. A young forest after logging soaks up most of the water, dries out the water catchments and reduces the amount of water that flows into the dams for the city of Melbourne. These dams are meant to power hydroelectric power stations that generate cheap, renewable electricity and hence provide sustainable and reliable source of energy.

Tourism is a major employer in the region and it would be boosted by ending logging. Local tourism operators say a national park would boost domestic and international tourism with some of the world's oldest trees and forests in the region.

Source: *ABC News,* 10 Sep 2017 and *Melbourne Water,* accessed 25 Jun 2019

Extract 2: First UK company to be fined under illegal logging laws

Designer furniture retailer Lombok has become the first UK company to be prosecuted and fined under illegal logging rules designed to stop the import of timber linked to widespread deforestation around the world. Environmental groups said the prosecution was likely to be the "tip of the iceberg" as many firms, particularly in the furniture sector, still don't have a grip on where their raw materials come from.

According to the Department for Business Energy and Industrial Strategy (BEIS), authorities twice warned Lombok in 2015 after it failed to exercise the required due diligence to ensure that items it had sourced from India were made out of wood from legal logging sites, but the company continued to sell those items. BEIS is a governmental department in UK that aims to promote competitive markets and responsible business practices, and actively take actions against climate change. In October 2016, BEIS enforcement officers visited Lombok's central London showroom and found the company had again not made checks on an imported sideboard it was selling. The company was then prosecuted and fined £5,000 plus costs.

World Wildlife Fund's (WWF) research has found that many businesses do not have policies on how they buy their timber, four years after the European Union Timber Regulations (EUTR) were introduced. This often goes hand in hand with failure to carry out due diligence on suppliers and their sources. The EUTR requires importers or sellers of timber and wood products to keep records of the sources of their supplies. The rules are intended to slow the global trade in illegal timber which Interpol estimates to be worth between $30 billion and $90 billion every year.

"Deforestation, which illegal logging leads to, is not just about habitat loss – forests are of fundamental importance to life on Earth," a representative for WWF said. "They are vital resources for local communities, but the impact of their loss can also be far reaching. Computer modelling has shown that deforestation in Asia could lead to changes in the route storms take over Europe, and Amazon deforestation could increase annual rainfall in northern Europe. The EUTR and efforts by BEIS will therefore ensure that consumers of timber products are well informed of the true cost of buying timber products that come from illegal sources.

Table 1: Production data on selected products using forest woods in Europe

	2013	2014	2015	2016	2017
Production of Industrial Roundwood (1000 meter cubic)1	366,929	383,446	388,422	396,055	400,973
Production of Paper-based Products (million tonnes)2	98,656	98,085	97,769	97,663	97,870

Note: Both industrial roundwood and paper-based products are alternative products of logging.

1.Industrial roundwood is a term used to refer to a range of wooden products such as pulpwood and wood residues, that are commonly used in the construction industry or the production of furniture.
2. Paper-based products refer to a range of products such as writing papers and paperboard (cardboard).

Source: *Various*

Extract 3: Chinese demand for rosewood timber drives towards its extinction

The purchasing power of China's burgeoning middle class is the stuff of dreams for retailers, but is increasingly causing nightmares for conservationists. The robust pace of China's economic growth between 1978 and 2012 created a massive middle class of 480 million people in 2018, a figure projected to increase to 780 million by the mid-2020s.

For these consumers, previously unaffordable products like rosewood timber furniture have become status symbols. Known in Chinese as *hongmu*, rosewood timber is a fragrant, richly hued timber native to the tropics, from Southeast Asia to Africa. Rosewood furniture derives value from both its "beautiful lustrous qualities" and its rarity, since rosewood timber is "difficult to harvest and mostly found outside China". The rosewood tree is slow-growing, with a lifespan of several hundred years, and the rapid rise in demand has driven numerous species of rosewood timber towards commercial extinction.

Furniture-makers have turned to Siamese rosewood timber in Southeast Asia, but as these timber supplies fell as well, they have ventured ever farther afield for related species – to Africa. Currently, between 40 and 50 percent of rosewood timber in the Chinese market originates in African countries, such as Kenya.

Source: *South China Morning Post,* 17 Sep 2018

Extract 4: Kenya's industry hit hard after logging ban and a rise in minimum wage

Kenya's Deputy President suspended logging in all forests in the country for the next three months as water levels in major rivers continue to drop at alarming levels. This move is part of the efforts by the country's government to respond to the drought that is sweeping across the country. The logging ban has triggered a 36 percent and 11 percent rise in timber and furniture prices, respectively. According to the official estimates, acute shortage of logs hit saw millers' ability to meet demand from builders and carpenters, pushing up prices.

The latest logging ban is a hit to the construction industry in Kenya, which is still reeling from the announced increase in the minimum wage for Kenyan workers recently. Kenya's President said the increment had been made in view of the current inflation rate. "In recognition of the good work done by our workers and taking into account the rate of inflation of 4.8% this year, I hereby declare a corresponding increase of 5% on the minimum wage," the government statement read.

In response, the Kenyan businessmen sounded a warning against an increase of the minimum wage, saying such a measure would be a big blow to the industry. "A ceremonial wage increase will not help us to tackle the subject of poverty eradication and will be costly for industry players," said the chief of a business association.

Source: *Various*

Extract 5: Forest tax in Washington

Washington State encourages sound forestry practices so that present and future generations can enjoy the many benefits they provide. In addition to scenic and recreational spaces, healthy forests provide an enhanced water supply, reduced soil erosion, storm and flood damage. Forest tax – sometimes called timber tax – is an excise tax that began in 1971, when the Legislature excluded timber from property taxation. In place of a property tax on trees, timber owners pay a 5 percent excise tax on the value of their timber when it is harvested.

In 1982, the Forest Tax was extended to timber harvested from state and federal land, in addition to private land. The person who owns the timber at the time of harvest is responsible for paying forest tax. The timber is taxed at 5 percent, with 4 percent going to the county where the harvest occurred and 1 percent going to the state general fund. Under this scheme, timber owners will have to apply for an official permit before they can start harvesting timber. The owners will then register and pay the necessary forest tax.

Source: *Department of Revenue, Washington State,* accessed 25 Jun 2019

Questions

(a) From Extract 1, identify **two** unintended consequences of logging. [2]

(b) **(i)** Explain whether the service provided by an organization such as the Department for Business Energy and Industrial Strategy (BEIS) is likely to be a public good. [5]

(ii) With reference to Table 1, compare the trends in the production of industrial roundwood and paper-based products in Europe and hence explain the economic relationship between industrial roundwood and paper-based products. [4]

(c) **(i)** Given the information contained in Extract 3, explain the likely value of price elasticity of supply for rosewood timber. [2]

(ii) Using Extracts 3 and 4 and with the help of a diagram, explain **one** demand and **one** supply factor that jointly lead to a rise in the equilibrium price in the world market for rosewood timber, and comment on the likely impact on the change in equilibrium quantity. [8]

(d) Discuss the likely impact of a rise in minimum wage on the workers and producers in Kenya. [8]

(e) **(i)** Explain how the presence of externalities could lead to an over-allocation of resources in the market for timber. [4]

(ii) Discuss the factors that a rational government should consider when deciding whether to implement taxation or a total ban to achieve a more efficient allocation of resources in the market for timber. [12]

[Total: 45]

Question 2: Economic growth and digital transformation

Table 2: Selected economic indicators for China and Singapore (2015-2017)

	2015	2016	2017
China			
Real GDP annual growth rate (%)	6.9	6.7	6.7
Rate of unemployment (%)	4.1	4.0	3.9
Annual rate of inflation (%)	1.4	2.0	1.6
Consumption (% of GDP)	52.8	54.0	53.2
X+M (% of GDP)	36	37	38.1
Gini Coefficient	0.462	0.465	0.467
Human Development Index (Ranking)	-	86	86
Singapore			
Real GDP annual growth rate (%)	2.9	3.0	3.7
Rate of unemployment (%)	1.8	1.9	2.2
Annual rate of inflation (%)	-0.5	-0.5	0.6
Consumption (% of GDP)	47.3	46.8	46.0
X+M (% of GDP)	329.4	304.5	318.8
Gini Coefficient	0.463	0.458	0.459
Human Development Index (Ranking)	-	8	9

Source: *Various*

Extract 6: China's economic slowdown and rebalancing

China has so far managed a gradual economic slowdown. Looking at the demand-side of growth, investment has long been a major driver in China. A gradual rebalancing from investment-driven to consumption-driven growth is needed to avoid any further over-allocation of capital and its negative consequences, such as excess capacity in the economy.

While this rebalancing started a couple of years ago, the most recent Government Work Report reiterate the importance of boosting consumption. Consumption tends to be a more stable driver of growth than investment, being less prone to boom-and-bust of business cycles. In recent years, consumption has become the major driver of growth in China, overtaking investment. Nevertheless, the overall contribution of consumption to growth has been relatively stable in the past few decades. Thus, although rebalancing is under way, its pace is relatively slow. This may relate to still very strong motives to save money related to social security coverage that is only partial and the varying quality of public healthcare and education services provided across China. These factors force people to save for their old age, in case of illness or for their children's education, and so there is lower consumption.

The key question therefore is how to realise the consumption potential in China. Important prerequisites are high employment rates and rapidly growing incomes. While the unemployment rate has long been low in China, there is less information about underemployment, particularly in rural areas, where, by definition, all people are employed. Income growth has been strong in past years, though in 2016 it was relatively weaker, especially in urban areas. The good news, however, is that rural incomes have been continuously growing faster than urban ones, thereby reducing the urban-rural income divide.

Source: *The Telegraph,* 15 March 2017

Extract 7: Digital China

China has around 700 million internet users and 282 million digital natives (internet users less than 25 years old) eager to adopt new technology. The massive scale of the Chinese market and a supportive regulatory and supervisory environment in the early years of digitalization made China a global leader in frontier industries such as e-commerce and financial technology.

Digitalisation will continue to transform the Chinese economy by improving efficiency and softening the slowing growth as the economy matures. Over the past decade, China has become a leading global force in several areas of the digital economy. For instance, in e-commerce, only about a decade ago China accounted for less than 1 percent of the value of worldwide transactions; that share is now more than 40 percent. Some early investors in leading Chinese e-commerce players are estimated to have earned returns of thousands of times their initial investment. In mobile payments, penetration among China's internet users has grown rapidly, from just 25 percent in 2013 to 68 percent in 2016. In 2016, the value of China's mobile payments related to consumption by individuals was $790 billion, 11 times that of the United States.

The Chinese government spent 430 billion yuan in 2015 to beef up the nationwide internet infrastructure. Another 700 billion yuan will be spent on this effort in 2016 and 2017, and an additional 140 billion yuan will be invested in improving rural internet connectivity until 2020. Putting all these internet-related policies in place could help provide economic growth momentum for China in the years ahead. The internet and its related technologies will change the nature of economic growth, especially as labour costs increase and the country's population ages. They will create new markets for innovative products and services.

Just a decade ago, there were fewer than 100 million internet users in mainland China, and the penetration rate was just 7 percent. Now, the penetration rate has reached nearly 50 percent.

Sources: *McKinsey Report 2017* and *South China Morning Post,* 3 February 2018

Extract 8: Singapore - Slower growth expected in 2018

Growth this year is expected to be slower, The Ministry of Trade and Industry's (MTI) said. The Singapore economy, which grew 2.4 percent in 2016, picked up pace in 2017 on the back of surging global demand for electronic gadgets.

Government forecasters are estimating growth of 1.5 to 3.5 percent in 2018. Externally-oriented services sectors such as finance and insurance, transportation & storage and wholesale trade are expected to benefit from firm external demand, although their pace of growth is also likely to ease in 2018. The MTI said Singapore's external demand outlook is likely to be weaker this year compared with last year. Some risks remain - including concerns over protectionist sentiment and trade policies especially in the United States.

Source: *The Business Times,* 14 February 2018

Extract 9: Digital transformation in Singapore

Given the possible external challenges, the Singapore economy may have to turn towards domestic drivers for growth. This will be led by the ongoing expansion in services arising from the digital transformation of the economy. Digital transformation in the economy will add an estimated US$10 billion to Singapore's GDP and increase GDP growth at an annual rate of 0.6 percent by 2021. These findings come from a study by tech giant Microsoft and market researcher International Data Corporation Asia.

As digital technologies continue to play a bigger role in the economy, digital products and services created directly through the use of digital technologies - such as cloud-related products and artificial intelligence (AI) - are poised to make up 60 percent of the country's GDP by 2021, up from 10 percent in 2017. Digital transformation holds additional economic benefits such as increased educational and training opportunities, the creation of higher-value jobs, and opportunities to take up digital-related freelance work.

Microsoft Singapore's managing director said: "Singapore is clearly on the digital transformation fast track. At the same time, businesses in Asia-Pacific are increasingly deploying emerging technologies such as AI as part of their digital transformation initiatives, and that will accelerate growth even further."

To date, Singapore's internet penetration rate has reached 82 percent, which is much higher than the global average rate of 50 percent.

Source: *The Business Times,* 21 February 2018

Extract 10: Digital transformation challenges Asia's inclusive growth

Inclusive growth entails maintaining growth that creates employment opportunities and helps in reducing poverty. It means the poor can have access to essential services in health and education. It includes providing equal opportunity, empowering people through education and skill development. Some say that digital transformation can play a powerful role in fostering inclusive growth.

However, in the course of digital transformation, income disparity could grow, especially in developing Asian countries where the income gap and inequality in opportunities to access education have been persistent. Digital transformation, characterised by developments of a range of new technologies, is likely to result in job displacement in the labour-intensive industries. Consequently, white-collar workers with sought-after intellectual qualities would be offered higher salaries and benefits, compared to less educated and low-skilled labourers, intensifying the income gap. And, income disparity occurs not only between countries but also within countries because of the unequal provision of education services, especially between rural and urban regions.

Therefore, as long as changes in education do not catch up with technological advancements, the skill-biased technological transformation would affect people with insufficient or unsuitable education, perpetuating the vicious cycle of poverty and inequality. Thus, in order for the workforce to be fully and equally prepared for the technological revolution, increased education spending is an essential condition.

In Singapore, one key area of focus for policymakers will be how to make sure no one is left behind. Several key measures have been put in place in recent years, chief among them being SkillsFuture. Its initiatives, aim to provide a range of opportunities for workers to continue their education and training so that they can improve their skills and incomes throughout their careers. Other measures target improving the position of lower-paid workers and those who have retired from the workforce.

Sources: *The Straits Times*, 27 Sep 2015 and 13 May 2017

Questions

(a) With reference to Table 2:

(i) Compare the changes in Real GDP for China and Singapore over the period indicated. [3]

(ii) State and comment on the likely relationship between Singapore's Real GDP growth rate and inflation rate between 2016 and 2017. [3]

(b) Using AD/AS analysis, explain **two** intended consequences of rebalancing in the Chinese economy and use an AD/AS diagram to explain why rebalancing might not remove the 'excess capacity' in the Chinese economy. (Extract 6) [7]

(c) Using Extracts 9 and 10, explain and comment on the impact of digital transformation on the various types of unemployment. [8]

(d) Discuss whether Asian economies can achieve inclusive growth through digital transformation. [10]

(e) **(i)** From Table 2, identify and explain **one** indicator that is most useful in assessing standard of living. [2]

(ii) Discuss the view that governmental efforts to promote digital transformation is the best approach to achieve faster growth in standard of living for a country. [12]

[Total: 45]

End of Paper

(a)	**With reference to Extract 1, identify two unintended consequences of logging.**		**[2]**
	Loss of $310 million worth of economic value to the state's water supply **[1]** and Loss of $260 million of tourism revenue. (Extract 1) **[1]**		
(b)	**(i)**	**Explain whether the service provided an organization such as the Department for Business Energy and Industrial Strategy (BEIS) is likely to be a public good.**	**[5]**
	Yes **[1]**, service provided by BEIS is non-excludable and non-rivalrous in consumption. It is non-excludable in consumption since society at large will benefit from the enforcement service including better environment/climate/more competitive market. And, it is impossible for the producers to prevent non-payers from enjoying these benefits once the enforcement service has been provided by BEIS. **[2]** It is non-rivalrous in consumption since an additional citizen benefitting from a better environment/climate/more competitive market due to the enforcement service provided by BEIS, does not diminish the amount of these benefits available to other citizens. **[2]**		
	(ii)	**With reference to Table 1, compare the trends in the production of industrial roundwood and paper-based products in Europe and hence explain the economic relationship between industrial roundwood and paper-based products.**	**[4]**
	The production of industrial roundwood generally increased while the production of paper-based products generally decreased in Europe. **[1]** This is because industrial roundwood and paper-based products are ***competitive in supply*** **[1]** since they are both derived from the same resources, trees **[1]**. Hence, an increase in the production of industrial roundwood will lead to a fall in supply **[1]**, hence production of paper-based products.		
(c)	**(i)**	**With reference to Extract 3, explain the likely value of price elasticity of supply for rosewood timber.**	**[2]**
		It is likely that PES<1 for rosewood timber due to long production time. **[1]** Extract 3 mentions that rosewood trees are "slow-growing". **[1]**	

	(ii)	**Using Extracts 3 and 4 and with the help of a diagram, explain one demand and one supply factor that jointly lead to a rise in the equilibrium price in the world market for rosewood timber and comment on the likely impact on the change in equilibrium quantity.**	**[8]**

Demand factor (2 marks)

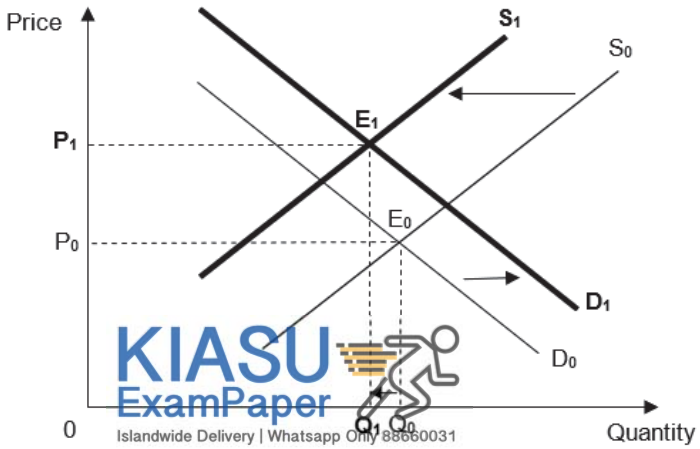
Extract 3 mentioned that the "robust pace of China's economic growth between 1978 and 2012 created a massive middle class of 480 million people in 2018, a figure projected to increase to 780 million by the mid-2020s." This has led to a **higher income** and hence purchasing power of the middle-class consumers in China. "For these consumers, previously unaffordable products like rosewood furniture have become status symbols", hence the rosewood furniture is likely to be a normal good. As the demand for rosewood furniture increases, the ***derived demand for timber*** in Kenya increases too since timber that originates from "African countries such as Kenya" (Extract 3) are raw material / factor input for rosewood furniture. The demand increases from D0 to D1 in Figure 1.

Alternative demand factor: **Positive taste and preference** towards consumption of rosewood furniture as rosewood furniture have become "status symbols"

Supply factor (2 marks)

The suspension of logging in all forests in Kenya for the next three months (extract 4) will reduces the supply of timber drastically as no trees can be felled to produce timber for the next 3 months. This will cause the supply to decrease from S0 to S1 in Figure 1.

Alternative supply factor: Increase in minimum wage in Kenya increases the **cost of production** of rosewood timber (if we consider a rise in wage of rosewood timber loggers)



Synthesis + Diagram (2 marks)

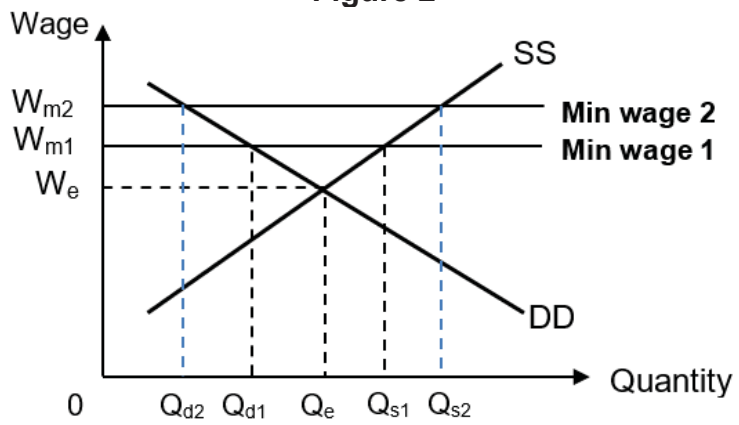
The final equilibrium output is theoretically indeterminate and depends on the relative shift of demand and supply shift. If the supply curve shifts more than the demand curve, final equilibrium quantity is likely to fall from Q0 to Q1.

Comment on (2 marks)

Extract 3 mentions that currently, "between 40 and 50 per cent of rosewood timber in the Chinese market originates in African countries such as Kenya". There are also other sources of rosewood timber in Southeast Asia, Latin America and other African countries other than Kenya. Hence the demand for timber from Kenya is unlikely to increase a lot since rosewood furniture producers can procure the timber from other sources. Conversely, the fall in supply of timber is likely to be drastic due to the 3 months ban of logging. Hence, the supply is like to fall more than the increase in demand for timber in Kenya, leading to a fall in equilibrium quantity of timber in Kenya.

(d)	**Discuss the likely impact of a rise in minimum wage on the workers and producers in Kenya.**	**[8]**

Figure 2



A minimum wage is a legally established minimum wage above the market equilibrium wage. The minimum wage law is a regulation that makes hiring labour below a specific wage illegal. With reference to Figure 2, the initial minimum wage is at W_{m1}, where Q_{d1} units of labour are hired at a wage rate of W_{m1}. There is a surplus of (Q_{s1}-Q_{d1}) units of labour at the initial minimum wage level of W_{m1}.

Impact on Workers

When the minimum wage in Kenya is raised to W_{m2} for instance, less workers, Q_{d2} units of labour are hired but they will earn a higher wage rate of W_{m2}. Extract 4 mentions that the 5% increase in minimum wage will allow workers to keep up with the 4.8% inflation rate in Kenya. Since the ***growth in nominal wage is higher than the inflation rate***, the ***real wage of the Kenyan workers will increase***, which will ***increase their material SOL***.

However, there will be a ***retrenchment of (Q_{d1}-Q_{d2}) units of labour*** since Q_{d1} were hired initially before the rise in minimum wage. There is also an increase in the surplus of labor from (Q_{s1}-Q_{d1}) to (Q_{s2}-Q_{d2}), ***hence higher unemployment rate***. The new surplus of (Q_{s2}-Q_{d2}) units of labour is made up

of (Q_{d1}-Q_{d2}) who are retrenched and (Q_{s2}-Q_{s1}) who join the market seeking for a job due to the rise in minimum wage but are unable to find a job. These workers who are retrenched or remain unemployed will experience a fall in material and non-material SOL>

The ***retrenchment of workers due to a rise in minimum wage will be significant as demand for workers who earn low wages is likely to be price elastic.*** This is because low wage earners are typically unskilled or low skilled workers who can be more easily substituted by machines. Hence, the rise in minimum wage will lead to a ***more than proportionate fall in quantity demanded of labour*** in Kenya.

Impact on Producers

Producers in the construction and manufacturing industry will face a ***rising cost of production*** since labour is a major factor input. As Extract 4 mentions, a rise in minimum wage will not help to "tackle the subject of poverty eradication in a sustainable way" as it will be costly for the producers. The producers will ***suffer a fall in profit*** levels since Profit = Revenue – Cost.

Evaluation

A rise in minimum wage is likely to bring more harm than benefit, especially in the long run. While a rise in minimum wage increases income, purchasing power and hence material SOL, this ***only benefits those Kenyan workers who remain employed in the relevant industries***. Producers will suffer as a result of the rise in minimum wage due to a rise in cost of production. A rise in minimum wage is not sustainable and if firms were forced to shut down due to them not been able to keep up with rising cost, more Kenyan workers will be retrenched and find themselves unemployed. Hence, a rise in minimum wage is likely to bring negative impacts on workers and producers in the long run.

L2	**Consolidate (Application and Analysis)** Sound analysis and coherent economic arguments. Discuss the positive and negative impacts of rise in minimum wage on both producers and workers in a clear and accurate manner with application Clarify – give examples from data with more elaboration Consider both sides (Thesis and anti-thesis / workers and producers)	**4 – 6**
L1	For an answer that demonstrates knowledge but lacks understanding, application and analysis: Insufficient scope of discussion, only touches on either only thesis (positive impacts) or anti-thesis (negative impacts), or touches on either only impact on workers or impact on producers Lack of accuracy in the use of economic concepts, terms or phrasing of explanation.	**1 – 3**

		Mainly lifting from extracts without additional DD-SS analysis or diagram.		
	E2	**Evaluative Comment** For an evaluation that contains: A synthesis using economic arguments to arrive at **relevant** judgements/decisions of the impact on the workers and producers due to a rise in minimum wage in Kenya. Evaluative comments supported by **accurate, logical** and **clear** analysis	**2**	
	E1	**Relevant** judgement(s)/decision(s) (did answer the question) but may not follow from relevant economic arguments. Comment (s) may lack **depth, clarity, and logic**.	**1**	

(e)	**(i)**	**Explain how the presence of externalities can lead to over-allocation of resource in the market for timber.**	**[4]**

Negative ***production*** externalities **[1]** occur when the production of a good negatively affects the well-being of third parties. According to extract 4, excessive logging to produce timber can lead to external cost such as drought **[1]**, which will adversely affect the livelihood of third parties such as residents who are not involved in the production and consumption of timber. This results in a divergence between SMC and PMC. **[1]** The market equilibrium quantity is at Qm where PMB=PMC. The social optimal quantity is at Qs where SMB=SMC. There is an ***over-production*** of timber **[1]** (Qm – Qs) and hence over-allocation of resources in the market for timber.

Other possible EMC:

a. Drought (extract 4)
b. Soil Erosion (Extract 5)
c. Flood damage (Extract 5)
d. Less tourism revenue (Extract 1)
e. Less water supply (extract 1 and 5)
f. Climate change (extract 2)

(e)	(ii)	**Discuss the factors that a rational government should consider when deciding whether to implement taxation or a total ban to achieve a more efficient allocation of resources in the market for timber.**	**[12]**

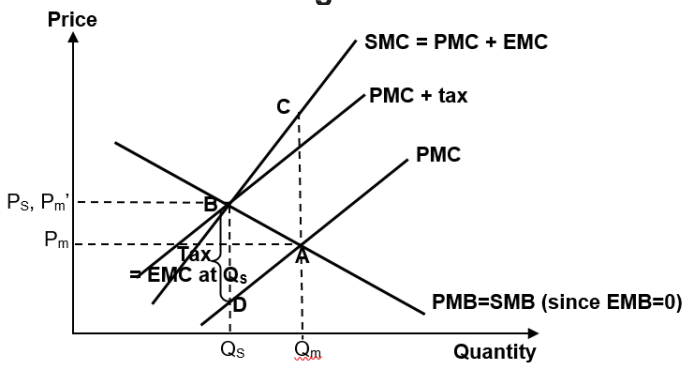
Introduction

A rational government should consider the cost, benefit and unintended consequence of the two policies in deciding which one to implement to achieve the best outcome.

Government should consider the benefit of implementing taxation

Imposition of an indirect tax on producers that corresponds to the external marginal cost i.e. **Tax = EMC at Q_S** (distance BD) on each unit of timber shifts the PMC upwards so that the new PMC, which equals PMC + tax, coincides with the PMB at Q_S. Hence, the new market equilibrium quantity where PMB = PMC + tax, now coincides with the **socially efficient** quantity Q_S, where SMB = SMC. If the tax accurately reflects the external marginal cost, timber producers and consumers are now in effect paying for the use of the environment. The externality has then been **internalised or priced in**. Deadweight loss is then eliminated as Q_m is reduced to socially optimal level, Q_S.

Figure 3



Government should consider the limitations of taxation

Lack of information

- Even if a government decides to impose a tax equal to EMC, there will still be a problem of measuring those costs and apportioning blame as it is difficult to quantify the EMC due to soil erosion and droughts and give a monetary value to them

- To correct the negative externality, the tax must accurately reflect the external costs. In reality, this is easier said than done. If the government over-estimate or under-estimate the external costs, then the problem of resource misallocation in the market for timber is still not fully resolved.

Administration and compliance cost

- According to Extract 5, timber owners in Washington will have to apply for a permit from the Department of Natural Resources before they can start harvesting timber. They will have to fill up tax reporting forms in order to register and pay the necessary forest tax. This

process might be costly and require a lot of manpower to oversee, incurring high administration and compliance cost.

Impractical to use different tax rates

- To correctly internalise the externality, the tax should accurately reflect the external costs. However, timber owners produce varying amounts of externalities based on method of harvest timber. But it is administratively impractical to imposes different tax rates for timber owners. Logging activities can take many forms, from selective harvesting to limited, small-scale clear-cutting, which, in temperate forests, can mimic natural disturbances such as fires or landslides. Timber owners who engage in such sustainable way of harvesting timber might incur lower EMC than others. However, it would be extremely difficult to measure and ascertain how much EMC each timber owner incurs.

<u>Government should consider the benefits of a total ban in resolving negative externality.</u>

A total ban represents an extreme form of regulation in which the authorities prohibits the production of timber.

Figure 4: Total Ban

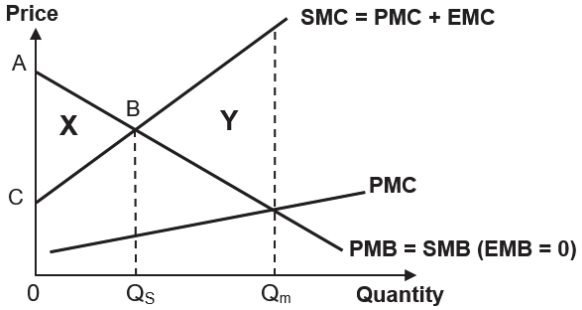


Figure 4 compares the welfare loss caused by the negative externality from producing timber with the welfare loss brought about by a total ban of timber.

The market equilibrium quantity is at Q_m where PMB = PMC, compared to the socially efficient quantity Q_S where SMB = SMC. Hence there is an overproduction of electricity from coal by quantity Q_m - Q_S, which results in a deadweight welfare loss of area Y.

When there is a total ban, zero quantity of electricity is generated.

In such a situation, there would be a loss of Area X (0ABQs – 0CBQs) measured in terms of potential net welfare benefit forgone if the socially efficient quantity of good was produced.

On the other hand, a stoppage of production would result in a welfare gain of Area Y caused by overproduction. Hence, final outcome on welfare would depend on the relative size of Area X and Area Y.

According to figure 4, a total ban is beneficial since Area Y > Area X and hence there would be a net welfare gain from imposing the ban.

Government should consider the other benefits of a total ban to the economy

Logging ban will lead to actual growth of Melbourne's economy.

Victoria's central highlands is essential to contributing to the tourism economy in the most populous city of the Australian state of Victoria. It is estimated that the central highlands add $260 million to tourism. Given that "tourism is a major employer in the region" (extract 1), this will lead to a substantial increase in the X component of AD, causing AD to shift to the right. Actual growth results as the equilibrium NI increases.

Victoria's central highlands is also essential to protecting Melbourne's water supply. By stopping logging, the water catchment would be improved and would maximise "water yield and quality" and increase the amount of water that "flows into the dams for the city of Melbourne." (extract 1) These dams will power hydroelectric power stations that generates "cheap, renewable electricity", hence lowering cost of production and shifting SRAS to the right, leading to actual growth as the equilibrium NI increases.

Government should consider the limitations/unintended consequences of a total ban

- Government intervention in the form of total ban may be costly to administer and enforce. The administrative costs of administering and enforcing a ban to correct market failure in the market for timber may outweigh the social benefits from the correction. For example, the cost of monitoring the entry of banned products for a large country would be high. Also, it may work against the welfare of the society if the ban (a regulation) results in greater welfare loss (i.e. Area X > Area Y).
- According to Extract 1, native logging and processing in Victoria has helped generate more than $500 million for the state's economy supporting more than 2,000 jobs. So a total halt/ban on logging can lead to loss in jobs and national income.
- According to Extract 5, the logging ban in Kenya has triggered a 36 percent and 11 percent rise in timber and furniture prices, respectively, in the past year, hitting the local construction industry hard.

Evaluation

In conclusion, a rational government should consider the cost, benefit and unintended consequence of the two policies in deciding which one to implement to achieve the best outcome. Both total ban and taxation will face the same problem of high administrative and compliance cost. While taxation aims to bring the equilibrium quantity of timber nearer to the social optimal level, a total ban is a more extreme form of regulation that brings the equilibrium quantity to zero, eliminating any welfare gain that timber can bring to society. Given the importance of timber in producing various products such as furniture and paper, and the number of jobs and national income that the industry supports, a total ban might not be the best policy to tackle market failure in the market for timber. In

particular, it is likely that area X > area Y in Figure 4, meaning that a total ban on logging might lead to more cost than benefits. Hence, taxation would be a better policy to reduce inefficient allocation of resources in the market for timber.

L3	**Consolidate (Application and Analysis)** Sound analysis and coherent economic arguments. Discuss whether government should choose taxation over a total ban to tackle inefficient allocation of resources in the market for timber in a clear and accurate manner with application Clarify – give examples from data with more elaboration Consider both sides (Thesis and anti-thesis / total ban and taxation)	**7 – 9**
L2	Identify – the key points with limited explanation or/and key evidence from case data without much elaboration. Lopsided. Consider only 1 side – either only thesis or anti-thesis, or only addresses total ban or taxation. – no evidence of discussion / superficial consideration of more than 1 side.	**4 – 6**
L1	For an answer that demonstrates knowledge but lacks understanding, application and analysis: Insufficient scope of discussion, only touches on either only thesis or anti-thesis, or touches on either only total ban or taxation Lack of accuracy in the use of economic concepts, terms or phrasing of explanation. Mainly lifting from extracts without additional market failure analysis or diagram.	**1 – 3**
E2	**Evaluative Comment** For an evaluation that contains: A synthesis using economic arguments to arrive at **relevant** judgements/decisions of whether government should choose taxation over a total ban to tackle inefficient allocation of resources in the market for timber. Evaluative comments supported by **accurate, logical** and **clear** analysis	**2 - 3**
E1	**Relevant** judgement(s)/decision(s) (did answer the question) but may not follow from relevant economic arguments. Comment (s) may lack **depth, clarity, and logic**.	**1**

[45marks]

HCI H1 Economics Prelims CSQ2 (Macro) 2019

(a)(i)	**Using Table 1, compare the changes in Real GDP for China and Singapore over the period.**	**[3]**
	Requirement: Meaningful comparison of Real GDP changes with at least one similarity and two differences. • *Both* economies experience increase in Real GDP. *[1m - similarity]* • *However*, China experienced faster Real GDP increase as compared to Singapore. *[1m – first difference]* • And, China's Real GDP increases at decreasing rate whereas Singapore's Real GDP increases at increasing rate. *[1m – second difference]*	
(a)(ii)	**State and comment on the likely relationship between Singapore's Real GDP growth rate and inflation rate between 2016 and 2017.**	**[3]**
	Requirement: Identify relationship and comment on likely reason(s). • Positive relationship *[1m]* • An increase in GDP growth rate is likely to be caused by rising AD (i.e. actual growth). With the Singapore economy likely to be operating near/at full employment, an increase in AD would lead to demand-pull inflation, as the economy encounters supply bottleneck. *[up to 2m for elaborated comment]*	
(b)	**Using AD/AS analysis, explain two intended consequences of rebalancing in the Chinese economy and use an AD-AS diagram to explain why rebalancing might not remove the 'excess capacity' in the economy. (Extract 6)**	**[7]**
	Requirement for first part: Explain two intended consequences, supported by evidence. [Up to 4 m] (i) **To reduce excess capacity** • Investment used to be the traditional 'engine of growth' in China, boosting actual growth. • However, concurrently, it has led to over-allocation of capital goods in the economy resulting in excessive spare capacity. • *As mentioned in Extract 6: Rebalancing is needed to avoid any 'further over-allocation of capital… (reducing) excess capacity in the economy'.* • Hence, a gradual reduction in investment expenditure to reduce the excess productive capacity is necessary. • At the same time, a corresponding rise in consumption is required to better utilize the existing spare capacity. (ii) **To achieve more stable economic growth** • On the other hand, consumption-led growth tends to be more stable as compared to investment driven growth. • *As mentioned in Extract 6: 'Consumption is less prone to 'boom-and-bust of the business cycle'*	

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• With consumption replacing investment as the 'growth driver', it would lead to less drastic economic upswings and downswings. Thus minimizing any adverse consequences such as heightened cyclical unemployment during downturns.

Second part : Explain how rebalancing might not remove excess capacity [Up to 3m]

• Investment has previously created excess capacity in China, and while consumption has increased, it has not reached its 'full potential' due to high savings rate in China.
• As a result, the overall rise in AD is probably still insufficient to utilize the spare resources and achieve the full employment output.
• Thus, the excess capacity has not been removed in China. (Refer to diagram.)

Insert AD-AS diagram showing excess capacity.

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<tr><td>(c)</td><td>Using Extracts 9 and 10, explain and comment on the impact of digital transformation on the various types of unemployment.</td><td>[8]</td></tr>
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Requirement of Question:
Explain how Structural, Demand-deficient and Frictional unemployment can be impacted using relevant evidence [Up to 6m]. And, comment on the likely extent and/or nature of the impact [Up to 2m].

(i) Explain likely impact on Demand-deficient Unemployment

• Extract 9 stated that: *"As digital technologies continue to play a bigger role in the economy, … creation of higher-value jobs"*
• The increase in G, I on internet infrastructure and boost C through e-commerce, leading to overall increase in AD.
• AD increases leads to unplanned decrease in stocks. As firms increase production levels in the next period, they would hire more workers, leading to an increase in employment.
• Thus, reducing Demand-deficient unemployment.

(ii) Explain impact on Structural Unemployment

• As mentioned in Extract 9: *"increased educational and training opportunities"*
• This is likely to reduce Structural unemployment - Increased skills training and education – Re-skilling workers to take up new digital jobs created.
• However, when the workforce is not suitably trained and educated, Digital transformation (DT) may lead to job replacements and skills mismatch. (Extract 10)
• The resultant impact is inconclusive.

(iii) Explain impact on Frictional Unemployment

• DT can possibly reduce Frictional unemployment.
• Workers in between jobs or fresh graduates searching for work can take up digital 'freelance jobs' (Extract 9), assuming that they are suitably equipped.

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	• With better internet connectivity, job information is made more available thus reducing imperfect information in the job market. *(This point is not directly provided in Extract but acceptable as an inference.)* ***For evaluative comments, candidates can briefly comment on which type of unemployment is more impacted and nature of impact etc.*** • E.g. Exact impact on structural unemployment seems less certain as it depends on the workers' ability to take on new digital jobs created. This depends on education level of workforce and presence of relevant government policies such as SkillsFuture to upgrade skills level.	
(d)	**Discuss whether Asian economies can achieve inclusive growth through digital transformation.**	**[10]**
	Requirement of Question: ***Discuss whether Asian economies like Singapore and China can achieve various aspects of inclusive growth via digital transformation in the economy. To achieve sufficient scope, answers should tackle adequate aspects of Inclusive Growth and various ways digital transformation by which can impact inclusive growth.*** ***Introduction*** • Inclusive growth (IG) means sustained economic growth that creates employment opportunities and helps in reducing poverty. It means having access to essential services in health and education by the poor. It includes providing equality of opportunities, empowering people through education and skill development. • Asian economies in this context refers to China, a large developing economy and Singapore, a small and relatively developed economy. As indicated by the relatively high Gini Coefficient in Table 2, both Asian economies are facing challenges in inclusive growth. • Based on the evidence in various extracts, Digital transformation (DT) is unparalleled in terms of the scope, scale, and speed in transforming the Asian economies. The impacts of the digital technologies are generally felt across many sectors of the economy and has extensive impact on IG. ***Thesis – Asian Economies can achieve IG as economic growth is boosted*** • It can be argued that Asian economies like China and Singapore can achieve IG through DT due to sustained economic growth. • Extracts 7- 10 indicate that DT can cause significant rise in various components of AD leading to increase in real national income leading to Actual Growth. For instance, in China: • *There was rapid rise in consumption as indicated in Extract 7, mobile payments' penetration rate which would enhance consumption spending has grown from just 25% in 2013 to 68% in 2016.* • *There was also significant increase in government spending as the Chinese government spent 430 billion yuan in 2015 to beef up the internet infrastructure. (Extract 7)*	

- In totality, there would be a significant increase in autonomous spending and aggregate demand in China due to DT which generated a more than proportionate increase in the national income via the multiplier effect.

- Through generating economic growth, DT can generate funds for Asian governments to implement fiscal measures to improve IG.
- Actual growth caused by DT can generate increase in household income. And with progressive tax structure, this means larger tax revenue collected by the governments to fund the improvements in merit goods and social securities standards for the poor.
- This is especially needed in China given its uneven spread of economic benefits across such a vast and diverse economy.
- Tax revenue collected can also be used to fund education and skills training (like SkillsFuture in Singapore) for the lower-skilled workers to adapt to the new digital technologies, ensuring that they do not fall behind in terms of skill-set and improve wage growth.
- Cumulatively, the above fiscal measures would reduce income gap and enhance access to merit goods for the poorer segment of the population.

- In addition, China's rural 'internet connectivity' would be extensively boosted by 2020 (Extract 7).
- This can bring about substantial gains in terms of consumption (via mobile payments and ecommerce) on the demand-side and better labour market information flow in the rural areas on the supply-side.
- This rise in connectivity and boosted consumption can help to create jobs and improve productivity gains in rural areas.
- Also, China can reduce its rural 'underemployment' as the internet connectivity improves which is made possible by improving better information flow in the labour market. Under-utilized labour in the rural areas can be better employed and channeled towards the emerging digital sector.
- These improvements in connectivity and productivity can generate potential wage growth for the workers in the rural areas and reduce rural-urban income gap.

AT - Economies may not achieve IG due to Income divide / Structural un+

- On the other hand, it can be argued that IG cannot be achieved via DT alone, especially as Extract 9 expresses strong evidence that DT might actually worsen income inequality.
- DT might result in tech firms gaining excessive market power and wealth, leading to a greater share of the gains from economic growth to be concentrated with these larger firms rather than shared with the rest of the society.
- And, instead of achieving IG, DT might cause job losses in the traditional non-digital sectors.
- For instance, the more traditional industries like brick-and-mortar retail stores can be replaced by ecommerce, which would be more skill-biased and require more educated and IT-trained workers.
- Wage gaps between the skilled and unskilled can worsen, deteriorating IG.

Possible Evaluation/Conclusion

- Therefore, whether IG can be achieved in the Asian economies very much hinges on the pervasiveness of DT and presence of government policies to manage the potential shortcomings in these economies.
- Both China and Singapore seems well poised to achieve IG due to the pervasiveness of digital penetration in the economies and their strong economic fundamentals.
- Nonetheless, being a relatively developed and small (and nimble) economy, Singapore seems to in a stronger position to tap on DT.
- For instance, Singapore's education standard is extremely high by international standards, and its internet penetration is almost complete. With absence of any poor rural population, IG can be more easily achieved.
- Also, Singapore government is forward-looking and has implemented effective policies like SkillsFuture to minimize any fallout from DT like structural unemployment.
- In contrast, China's economy is much bigger and more complex.
- And IG is potentially hampered by the patchy standards of merit goods and substantial rural-urban income divide.
- To fully realize IG, larger Asian economies like China need stronger government interventions to strengthen its enabling conditions for IG, such as like education standards and improving income redistribution policies (like increasing corporate taxes for tech firms). This is to ensure that the massive rural populations and lower income groups do not fall behind economically.

L2	**Consolidate (Application and Analysis)** Sound analysis and coherent economic arguments. Discuss the impact on inclusive growth from digital transformation in a clear and accurate manner with application. Clarify – give examples from data with more elaboration. Consider both sides (Thesis and anti-thesis).	**4 – 7**
L1	For an answer that demonstrates knowledge but lacks understanding, application and analysis. Insufficient scope of discussion, only touches on either only Thesis or Anti-thesis. Lack of accuracy in the use of economic concepts, terms or phrasing of explanation. Mainly lifting from extracts without economic analysis.	**1 – 3**
E2	**Evaluative Comment** For an evaluation that contains: A synthesis using economic arguments to arrive at **relevant** judgements/decisions on whether Asian economies can achieve inclusive growth via digital transformation.	**2 -3**

	Evaluative comments supported by **accurate, logical** and **clear** analysis		
E1	**Relevant** judgement(s) (did answer the question) but may not follow from relevant economic arguments. Comment (s) may lack **depth, clarity, and logic flow**.	**1**	

(e)(i)	**From Table 1, identify and explain one economic indicator that is the most useful in assessing standard of living.**	**[2]**
	The Human Development Index (HDI). *[1m]* HDI is a composite index of life expectancy, education, and per capita income indicators. Thus HDI is the most useful indicator for SOL as it encompasses both material and non-material indicators for standard of living. *[1m]*	
(e)(ii)	**Discuss the view that governmental efforts to promote digital transformation is the best approach to achieve faster growth in standard of living for a country.**	**[12]**
	Introduction • The issue at hand is to discuss the view that promoting digital transformation (DT) by governments can achieve *faster growth* in living standards based on the information provided. • On whether DT is the *best approach*, at least one alternative approach should be discussed. • *'Faster growth in SOL'* would entail *more rapid improvements* in the SOL, in the material as well as non-material aspects. ***Thesis 1 – DT can be a good approach to achieve faster growth in SOL*** ***Thesis 1a – Faster growth in Material aspects of SOL*** • It can be argued that DT can lead to *faster growth* in material aspects of standards of living. • This is best indicated by a *rapid rise* in the Real GDP per capita. • Extracts 7 - 10 indicate that DT can cause significant rise in various components of AD. Putting the mentioned demand-side changes together, there would be a significant increase in autonomous spending in China which generated a more than proportionate increase in the national income via the multiplier effect *(Actual growth as presented in part d).* • In order to properly judge the improvements in material aspects of SOL, we need data for Real national income per capita. The real per capita national income figures are obtained by dividing GDP by the population size. • Based on the data, Asian economies' population growth is slowing/decreasing and this is likely to lead to a faster increase in per capita national income. • This means higher purchasing power for the average resident to enjoy a larger basket of goods and services, enhancing the SOL in the material aspects.	

- Hence, given the significant rise in real national income and coupled with the aging population, it is likely that there is a *faster growth* in SOL due to DT.
- Furthermore, DT becomes even more important in <u>accelerating</u> per capita national income and material aspects of SOL as China is facing slowing growth due to ongoing rebalancing efforts and weakening external outlook.

<u>Thesis 1b – Improvements in the Non-material aspects of SOL</u>

- To be more holistic in assessment, the discussion of SOL should always include the non-material aspects of life.
- Though the information given did not directly include that, we can infer from a few pieces of evidence.
- In Extract 7 expressed the view that digitization can help to improve efficiency and we can infer that productivity should increase. This increase in output per worker should lead to shorter working hours and more leisure time, indicating a higher non-material SOL.
- Extract 7 also mentioned that more innovative products can be created via DT. For instance, through AI and cloud computing technologies. This can cause consumers to gain *non-price* benefits, for example, wider product choices and greater convenience due to the innovations leading to better SOL non-materially.

<u>AT1 - Limitations of DT in promoting faster growth in SOL:</u>

- However, even when real GDP per capita increase with DT, if there is worsening income distribution, we cannot say then that the average resident is better off. There are indications that income distribution might be adversely affected by DT. As stated in Extract 10, DT could cause income disparity to grow, especially in developing Asian countries where income gap and unequal access to education is persistent.
- Besides, there is time lag in DT which might delay the growth of SOL. In Extract 9, it was mentioned that in Singapore, 0.6% GDP growth can only materialize in 2021 and digital technologies are only poised to make up 60% of Singapore's GDP in the year 2021. Time lag can seriously hamper faster growth of SOL.
- Also, DT cannot directly solve China's incomplete coverage of social security and merit goods insufficiency especially in rural areas affects non-material aspects of SOL (Extract 6)

<u>AT2 – Alternative policy to achieve faster growth of SOL</u>

- Hence, due to time lag and various limitations of DT, faster growth of SOL is not guaranteed.
- Instead, implementation of timely Expansionary Fiscal Policy to boost income and enhance merit goods can probably achieve growth in SOL in a shorter timeframe as compared to DT.
- For instance, a fall in income tax rate will increase the disposable income of consumers, so purchasing power increases, which in turns increases the consumption. This can more directly impact SOL materially as compared to DT as the government put more disposable income into the hands of residents directly.
- On the other hand, increase in government expenditure on education and health services can more directly impact the non-material aspect of SOL.

- However, while the effectiveness of Expansionary FP sounds promising, the adverse impact of Asian economies' ageing population (Extract 7) on the effectiveness of FP cannot be ignored.
- Ageing population reduces the scope for expansionary FP due to diminishing tax revenue and increasing government spending on benefits and healthcare for the senior citizens.

Overall Evaluation / Conclusion

- In the short run, to achieve faster growth in SOL, *more timely and expedient* fiscal intervention seems necessary as DT takes time to materialize and permeate its full benefits in the economy.
- However, in the current climate of economic slowdown and ageing population, fiscal intervention in raising SOL would not be sustainable in the long run.
- Thus, DT still is the best approach in the long term due to its pervasiveness and transformational effects on many sectors in the economy.
- But in the short-term, fiscal intervention seems unavoidable.
- And, government might need to find creative solutions (like raising GST) to fund the fiscal interventions to ensure faster growth of SOL in the short term.

L3	**Consolidate (Application and Analysis)** Sound analysis and coherent economic arguments. Discuss with at least one alternative policy/measure with accurate manner with application. Clarify – give examples from data with more elaboration. Consider both sides (Thesis and anti-thesis).	**7 – 9**
L2	Identify – the key points with limited explanation or/and key evidence from case data without much elaboration. Lopsided – No evidence of discussion / superficial consideration of more than 1 side.	**4 – 6**
L1	For an answer that demonstrates knowledge but lacks understanding, application and analysis: Insufficient scope of discussion, only touches on either only thesis or anti-thesis. Lack of accuracy in the use of economic concepts, terms or phrasing of explanation. Mainly lifting from extracts without additional analysis.	**1 – 3**
E2	**Evaluative Comment** For an evaluation that contains:	**2 – 3**

			A synthesis using economic arguments to arrive at **relevant** judgements. Evaluative comments supported by **accurate, logical** and **clear** analysis			
		E1	**Relevant** judgement(s)/decision(s) (did answer the question) but may not follow from relevant economic arguments. Comment (s) may lack **depth, clarity, and logic**.	**1**		