

**ACJC Preliminary Examination 2016
Economics H2**

Paper 2 Answers

1. Crude oil can now be extracted out of the ground at a lower cost of production. In addition, global economic activity has been contracting as a result of the slowdown in China's economy. This has resulted in crude oil prices falling by more than 50% in the second half of 2014.
- a) Explain the likely effects of cheaper crude oil on the market for natural gas and the market for refined oil. [10]
- b) Discuss the relative significance of demand and supply factors in determining whether a fall in price of crude oil will be persistent. [15]

Part (a)

Approach

- Recognition that there are two separate markets involved, and the likely effects should differ between the markets though the same economic framework is used. For each market,
 - Economic relationship between crude oil and the other product should be identified
 - Explaining why demand and/or supply will change as a result of a fall in price of crude oil
 - Using elasticity concepts (where appropriate) to justify the extent of change in demand or quantity demanded
 - Pointing out the changes in equilibrium price and quantity of the product with a brief explanation of the price adjustment process

Introduction

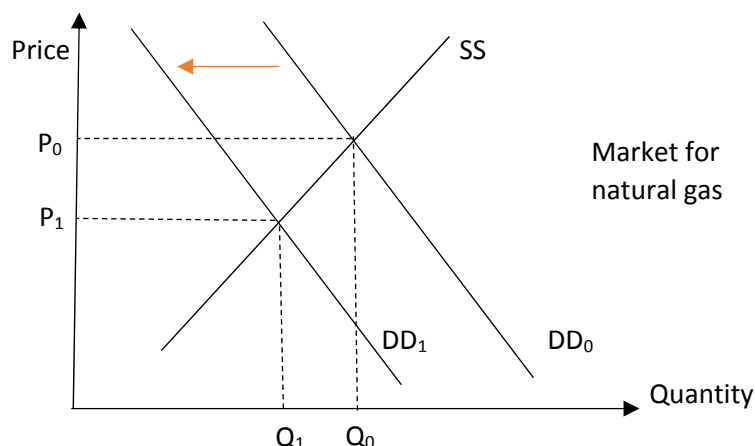
- A fall in price of crude oil will lead to different effects on the markets for natural gas and refined oil, due to the different economic relationships that crude oil has with these products.
- Whilst the equilibrium price and quantity of natural gas will fall arising from a fall in demand as a result of cheaper crude oil; in the market for refined oil, there is likely to be an increase in equilibrium quantity accompanied with a fall in equilibrium price due to an increase in supply. Assume ceteris paribus condition holds.

Body

Market for natural gas

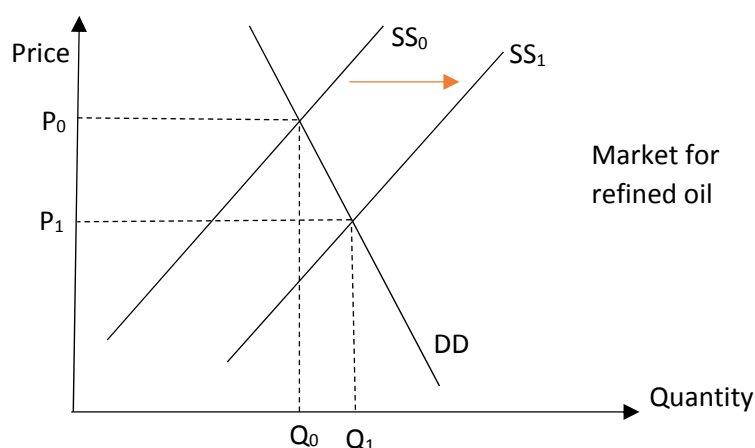
- Natural gas and crude oil are substitutes as energy sources.
- If crude oil is cheaper, than quantity demanded for crude oil as a source for energy will increase. This will result in a **fall in demand for natural gas** as a source for energy as producers switch from using natural gas to crude oil. (change in price of related goods)
- Extent of fall in demand for natural gas will depend on **XED**. Given that they are relatively close substitutes, XED is likely to be **positive and large**. Hence there will be a large fall in demand for natural gas due to the fall in price of crude oil.

- When demand for natural gas falls, the quantity supplied would exceed the quantity demanded at the original price, resulting in a surplus. This creates a downward pressure on price. Hence **price adjusts downwards to clear the market**.
- Overall as demand for natural gas falls, equilibrium price and quantity of natural gas will fall. This is illustrated in the diagram below.



Market for refined oil

- Refined oil uses crude oil as an input for its production.
- If crude oil is cheaper, then costs of production of refined oil falls as a result. This will result in an **increase in supply of refined oil**.
- When supply of refined oil increases, quantity supplied exceeds quantity demanded at the original price, creating a surplus. This creates downward pressure on price, which then adjusts accordingly to clear the market. As price falls, quantity demanded also increases since more consumers are willing to pay for the refined oil.
- In effect, an increase in supply of refined oil will lead to a **fall in equilibrium price and an increase in equilibrium quantity** as illustrated in the diagram below.
- The extent of increase in equilibrium quantity is likely to be small given that demand for refined oil is likely to be price inelastic. This is because refined oil is used as an input of production in many goods and services, such as fuel for cars.



Ideally, two demand and supply diagrams for both markets should be drawn to illustrate the changes to equilibrium price and quantity.

Conclusion

- For both markets, there is a fall in equilibrium price due to cheaper crude oil. But whilst there is an increase in equilibrium quantity for refined oil, equilibrium quantity of natural gas would fall as a result of cheaper crude oil.

Mark Scheme

| Knowledge, Understanding, Application and Analysis | | |
|---|--|--------------|
| <i>Level</i> | <i>Descriptors</i> | <i>Marks</i> |
| L3 | <ul style="list-style-type: none">• Clear, accurate and comprehensive use of demand and supply analysis (shifts and elasticity concepts) in explaining how cheaper crude oil would affect BOTH markets for natural gas and refined oil• Price adjustment process is briefly referred to in the explanation. | 7 – 10 |
| L2 | <ul style="list-style-type: none">• Demand and supply analysis is used to explain the impact of cheaper crude oil on both markets, but is not very clear or accurate at times.• No mention of the price adjustment process• Answer more on one market only | 5 – 6 |
| L1 | <ul style="list-style-type: none">• Essay contains many conceptual inaccuracies. Examples include price affecting demand and not quantity demanded, or a fall in demand causing a fall in supply. | 1 – 4 |

Part (b)

Approach

- Unpacking the context (market for crude oil) and the criteria used to anchor the question (**persistence** in the fall in price of crude oil).
- Explanation of both demand and supply factors leading to a fall in price of crude oil, with reference to the stem provided, and contextual knowledge where appropriate.
- Comparison of the significance of both demand and supply factors in determining whether this fall in price of crude oil will be persistent by considering the nature of the factors and the likelihood of outcomes.

Introduction

- The market for crude oil is rather volatile considering that there are many countries that produce it and rely on it to generate national income, such as Saudi Arabia or Venezuela. Any shocks to supply will definitely affect the price of crude oil. Recent developments, such as technological advancement or the lift in sanctions for Iran in exporting oil, have and will continue to affect the market for crude oil. Hence given the importance of the crude oil market, it is crucial to look at future changes in the price of crude oil.
- To determine whether the fall in price of crude oil is persistent, one might consider the likely changes in demand and supply of crude oil in the future. **Two key questions:**
 - Will supply of crude oil continue to increase in the future?
 - Will demand of crude oil continue to fall in the future? If not, will the increase in supply of crude oil exceed the increase in demand for crude oil?

- ***Given that supply factors tend to be more structural in nature as opposed to demand factors, it is likely that a continued increase in supply of crude oil will outweigh the changes in demand of crude oil, leading to the persistent fall in price of crude oil.***

Body

Development 1: Explaining possible demand factors leading to a change in price of crude oil

- **Changes in income:**
 - Contraction in global economic activity implies that global national income may be falling or rising less quickly. As crude oil is required as an input for production for many goods/services, and since demand for many of such normal goods/services with positive YED is falling, this will lead to a fall in demand for crude oil (Derived demand). Crude oil is a normal good in itself, and hence demand will fall when income falls.
- **Changes in tastes/preferences:**
 - The use of renewable fuels, such as LNG or biofuels, are gaining traction due to the growing need to reduce carbon emissions and slow the speed of global warming. Producing renewable fuels are more environmentally friendly and generate less carbon emissions as opposed to the production/extraction of crude oil. Since renewable fuels are alternative energy sources to crude oil, the change in preferences/tastes towards use of renewable fuels implies that there is a likelihood that demand for crude oil might begin to stagnate, or even fall in the future as demand for renewable fuels increases.
- **Changes in price of related goods**
 - With advancing technology in the production of renewable fuels, the price of renewable fuels is likely to fall further. As a result, this will also cause the demand for crude oil to decrease since crude oil and renewable fuels are substitutes as mentioned before. The extent of fall in demand for crude oil would depend on its XED with respect to price changes of renewable fuels. XED is likely to be quite large in value given the high degree of substitutability between crude oil and renewable fuels as sources of energy. Thus the fall in demand of crude oil could be quite large.

Development 2: Explaining possible supply factors leading to a change in price of crude oil

- **Technological advancements**
 - As technology advances, new techniques to extract crude oil has been developed. Examples include Fracking, hydraulic fracturing and horizontal drilling techniques. These techniques are cheaper than the original methods of extracting crude oil, hence there is a fall in cost of production.
- **Number of crude oil suppliers**
 - There is an increase in the number of crude oil suppliers across the world. Examples include Iran where oil sanctions were lifted recently, increased oil production by Iraq after decades of economic sanctions and wars.
- **Strategies adopted by OPEC in responding to increased competition**
 - Saudi Arabia decided to maintain crude oil production, so as to protect their market share. In doing so, it hoped that this would drive prices low enough and cause the new suppliers to be driven out of the market because of the losses it began to incur. However, this did not happen as the techniques used by new suppliers allowed them to produce at a very low cost.

Development 3: Weighing the relative significance of demand and supply factors in determining whether the fall in price of crude oil will be persistent

- **Structural (long-term) nature of supply factors supporting the argument that supply of crude oil will continue to increase into the future**
 - Future technological advancements in the production of crude oil will lead to further decreases in COP.
 - Iran is here to stay as an oil supplier in the market for crude oil.
- **Cyclical nature of supply factors supporting the argument that supply of crude oil could decrease in the future**
 - There is the possibility of supply shocks (examples include conflicts in the Middle East or an abrupt cut in the production of crude oil by OPEC) that might cause supply of crude oil production to fall drastically.
- **Cyclical nature of demand factors supporting the argument that demand for crude oil will likely rise in the future**
 - Given the cyclical nature of global economic activity, national income across countries are likely to rise in the near term, hence the fall in demand for crude oil is likely to be temporary. Since crude oil is considered a necessity in the production of many goods, YED is likely to be positive (normal good) and small. Thus even as income rises, the rise in demand for crude oil is still likely to be relatively small given YED is small in value.
- **Structural (long-term) nature of demand factors supporting the argument that demand for crude oil will continue to fall in the future**
 - Due to accelerating climate change, there might be increased pressure on countries to reduce carbon emissions. As a result, more government policies might be directed towards the pricing of carbon emissions. This might further reduce the demand for crude oil in the future.

Further Reference: <http://www.vox.com/2016/1/12/10755754/crude-oil-prices-falling>

Synthesis (Making a reasoned judgment and reconciling both sides of the arguments)

- Whilst there are both demand and supply factors that point to the possibility of price of crude oil rising in the future, these factors tend to be cyclical in nature, and also more uncertain. It is plausible that conflicts in the Middle East might cause a supply shock, or that there would be a global economic recovery, however this has yet to be observed in economies due to the severity of the economic problems leading to a prolonged slump. In addition, economic powerhouses such as China are likely to see further slowdown in their economic growth, crimping demand for crude oil
- This contrasts with the other demand and supply factors that point to the possibility that the fall in price of crude oil will be persistent. These factors are structural in nature and are more likely to continue into the future.
- Thus even though supply factors tend to be more structural in nature, there are also crucial demand factors, which are structural in nature, that suggests that demand of crude oil is likely to fall in the future. Hence the fall in price of crude oil is likely to be persistent.

| Knowledge, Understanding, Application and Analysis | | |
|--|--|--------|
| Level | Descriptors | Marks |
| L3 | <ul style="list-style-type: none"> • Clear unpacking of the term “persistent” in relating to the fall in price of crude oil • Accurate and precise explanations of both demand and supply factors leading to a fall in price of crude oil. These explanations are supported well by good use of real-world examples • Clear argumentation in weighing different demand and supply factors in determining whether the fall in price of crude oil is persistent, possibly with reference to criteria such as nature of factor | 9 – 11 |
| L2 | <ul style="list-style-type: none"> • Some understanding of the term “persistent” in relating to the fall in price of crude oil is demonstrated, but it is not very clear. • Underdeveloped explanations of both demand and supply factors leading to a fall in price of crude oil OR developed explanation of either demand or supply factors. • Some attempt to weigh the different demand and supply factors, but argumentation is weak. | 6 – 8 |
| L1 | <ul style="list-style-type: none"> • Incorrect understanding of the term “persistent” in relating to the fall in price of crude oil. • Essay is irrelevant in many parts. • Essay contains many conceptual inaccuracies, including demand and supply factors. | 1 – 5 |

| Evaluation | | |
|------------|---|-------|
| Level | Descriptors | Marks |
| E2 | <ul style="list-style-type: none"> • An evaluative discussion on the relative significance of demand and supply factors in determining whether the fall in price of crude oil is persistent. • Essay synthesizes several arguments and makes a reasoned judgment on whether this is a persistent fall. <p><i>Eg. Essay considers the nature of demand and supply factors, and weighs the different arguments before concluding that the fall in price of crude oil is likely to be persistent and this is not solely because of supply factors being structural in nature, but also (structural) demand factors that point towards a falling demand of crude oil in the future.</i></p> | 3 – 4 |
| E1 | <ul style="list-style-type: none"> • Judgments are made, but they remain largely unsubstantiated. <p><i>Eg. Essay recognizes that both demand and supply factors are significant in determining whether the fall in price of crude oil but does not argue clearly why.</i></p> | 1 – 2 |

2. Singapore's new satellite-based electronic road-pricing (ERP) system will have island-wide coverage and the ability to charge for distance travelled by different types of vehicles.

Assess the view that a system of road-pricing is the best way to tackle the problem of worsening traffic congestion in Singapore. [25]

Approach

- Brief explanation as to why traffic congestion is an example of market failure.
- Brief explanation of possible factors leading to worsening traffic congestion in Singapore (consideration of context mentioned in the question)
- Explanation and evaluation of road-pricing system (eg. use of ERP) in tackling worsening traffic congestion
- Considering any two other methods as solutions, in terms of their strengths over road pricing and possible limitation.
- Weighing the various arguments and coming to a reasoned conclusion as to the best way, by pointing back to the factors/root causes leading to worsening traffic congestion.

Introduction

- In land-scarce, there are constraints to how much land can be used for road development. With rising standard of living and high-capacity living, traffic congestion is an unavoidable problem in Singapore even with decades of traffic management policies in place.
- Demand for road space has grown faster than the supply of it. Due to shortage, there is a need for market forces to operate to clear the market.

Explaining market failure of traffic congestion

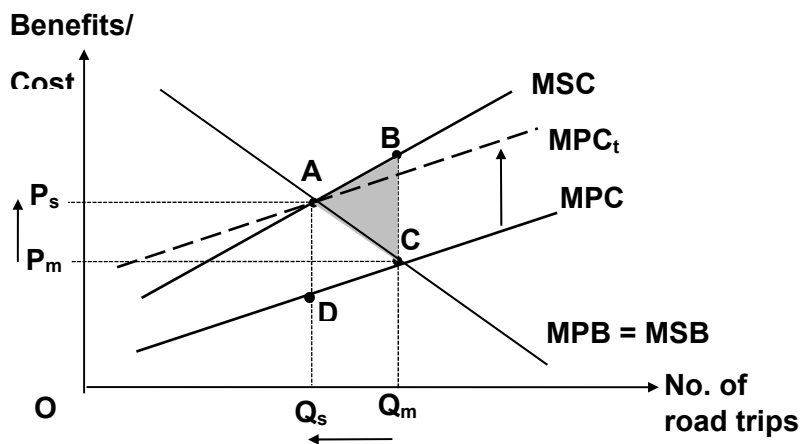
- Market failure is the situation in which the price mechanism does not bring about efficient allocation of resources and the welfare of society is not maximized. In the case of traffic congestion, the ***condition of too many cars on the road is a representation of market failure because it brings about welfare loss to society.***
- Cost-benefit analysis can be used to explain why traffic congestion is an example of market failure
 - Presence of negative externalities generated from road usage. Examples include pollution due to carbon emissions, or longer journey times for other drivers on the road
 - Divergence of MPC and MSC leads to too many cars being on the road (traffic congestion) as ***drivers do not take into account the negative externalities generated by the usage of their car.***
 - Existence of welfare loss (loss in productivity; quality of life)
- Brief explanation of possible factors leading to worsening traffic congestion in Singapore (*Note: Students could pick one or two to explain briefly*)
 - Increasing affluence, so more households might be buying cars (demand for cars and hence car usage increases)
 - Increasing population due to lax immigration policies in the early 2010s. This increases the demand for cars, especially amongst expats.
 - Public dissatisfaction with public transport due to increasing incidence of breakdowns in the train network and highly crowded buses/trains. This change in tastes/preferences increases the demand of alternative modes of transport besides bus/trains, such as cars and taxis.

- Lower prices of fuels due to the drastic fall in price of oil.
- Current policies could also be ineffective in curbing traffic congestion in Singapore. (Eg. Whilst the cost of owning a car is high, the cost of driving is comparatively lower)

Note: Students should only explain the critical ideas as to why traffic congestion is an example of market failure, since it is not the focus of the question. There is no need to draw the cost-benefit diagram to illustrate, since it could be drawn later to explain how road-pricing could solve the problem of traffic congestion.

Thesis: A system of road pricing would help to tackle the problem of worsening traffic congestion as it makes road users internalise the external cost of using road space. Different prices could also be charged depending on variable shortage conditions.

- ERP is an electronic toll collection scheme to manage the traffic by way of road pricing. It is a usage-based system.
- Cars have to pay tolls when they pass by ERP gantries, located at roads leading into the Central Business District and expressways



- ERP charges vary from place to place and between peak and off peak times, since extent of congestion also depends on the time of day and the location. If the road is more congested, ERP charges tend to be higher to alleviate the congestion as the demand for these roads are likely to be more price inelastic than other roads. These roads tend to be heavily used, and there are few alternative routes.
- Since the congestion is heavier on these roads, there could also be a larger extent of negative externality generated by using those particular roads (eg. More man-hours lost due to time spent on the road).
- Imposing charges on roads will make users internalise the external cost of their decision to drive by **increasing their MPC**. As a result, less users might decide to drive. The appropriate amount of fee to charge if the government aims for Q_s level of traffic would be equal to the amount of MEC at quantity Q_s (illustrated in the diagram as the length AD).
- With technological advancement, satellite technology could be employed to charge drivers a price for each km travelled with different prices for different roads and for different times of the day, perhaps mentioning automatic number plate recognition systems could be employed too.
- One significant benefit of this new system is that there is **finer differentiation of the charges**, so drivers are more likely to weigh their benefits against costs of driving on the roads at any one time.

- With finer differentiation of charges, more tax revenue can be collected through this system of road-pricing using satellite technology as compared to the current system using ERP gantries. (*similar idea to price discrimination*)

Antithesis 1: However road pricing as a solution could possibly be limited in its appropriateness due to government failure or the unintended consequences it could bring about for the economy.

- **Inadequate information** means that the government may set an inappropriate price for using roads. This could imply that the price doesn't reflect the true cost of congestion. If road charges are set too low, then traffic congestion persists as many drivers continue to use the roads, since they are unconcerned with the charges which may constitute a low proportion of their income.
- If road charges are set too high, then this could affect the economy negatively as **transport costs** rise possibly leading to higher prices of products. Cost push inflation may arise, as SRAS decreases owing to higher costs in distribution.
- Government policy could also be affected by public opinion and the reactions of voters and this might cause government failure.
- In relation to the satellite-based ERP system, a major drawback is that the tax is no longer salient to the road user. The road user may continue to use the roads nonchalantly because he is not mindful of the charges he incurs. Thus the internalisation of external cost may not be as effective due to the loss in salience.

Antithesis 2: There is a need for other methods to tackle the problem of worsening traffic congestion in Singapore. These methods could include the development of the public transport system which reduces the demand for cars, and reducing the number of COE quotas which increases the costs of owning a car.

1. Development of public transport system as quality and affordable alternatives

- The development of urban public transport provides an alternative to vehicle usage, thus reducing demand for private transport.
- If the public transport network is more reliable and extensive, helping to transport people from place to place quickly, this will increase the benefit to individuals of taking public transport, instead of driving on the roads. It will reduce the reliance on cars as a mode of transportation. Hence demand for cars decreases, implying that the MPB (private demand) curve for private vehicles is likely to shift leftward. Market equilibrium output can be reduced towards the socially efficient output.
- In developing the public transport system, there are many possible measures:
 - Construction of new MRT lines will improve the connectivity of the rail network in Singapore and increase the substitutability between trains and cars in getting from one destination to another. Example: the opening of the Circle Line in 2009 and Downtown Line phase 1 in 2013 and phase 2 in Dec 2015
 - The Singapore government has decided to nationalise bus and train assets so that the companies SBS and SMRT could focus on improving service quality and frequency, such that the experience of using public transport is enhanced, thus increasing the substitutability (XED value) between public and private transport. Demand for cars can fall by a greater extent as a result due to changing preferences or a fall in price of public transport (eg. Free MRT rides). In addition, demand for private transport could become more price elastic, thus making the policy of road pricing more effective.
- As an extension of public transport development, the government may also make public transport cheaper for commuters through rebates. An example is the Travel

Smart Rewards scheme which rewards public transport users with 1 point for every 1 km travelled on weekdays. Essentially these points will translate to rebates. In addition, the scheme gives more points if commuters travel between 6.15 am and 7.15 am or 8.45 am and 9.45 am. This is also to incentivise commuters to take the trains at these times, reducing crowded trains during peak periods.

Evaluation:

- **Degree of substitutability between public transport and cars could still be low.**
 - Although the convenience factor could be comparable in both options with a wide and extensive public transport network, the use of private vehicles provides more comfort and accessibility.
 - High income earners are very unlikely to take public transport given their high purchasing power, and their possible want of maintaining their reputation and status. Taking public transport could be perceived as a low-grade alternative.
 - This implies that the campaigns to educate the Singaporean public on the merits of public transport must also tackle this misperception that taking public transport is inferior relative to driving their cars to work.
- **The development of an extensive and efficient urban public transport requires a healthy government budget as well as time, which the Singapore government may not have.**
 - The development of an extensive and efficient public transport will incur a strain on government expenditure, for example through the fuel subsidies on mass transit vehicles or the construction of new subway lines. These funds have a large opportunity cost, since it could have been used for other productive purposes such as in the area of education or healthcare. This is very relevant in the case of Singapore which faces ageing population problems.
 - Furthermore, government expenditure is ultimately borne by the taxpayers, so this implies that there may be a higher burden on taxpayers to foot the bill for the development of the urban transport network. Tax rates may have to increase, which could have a detrimental effect on economic growth.

2. Reducing the number of COE quotas

- Although road pricing has added the variable cost component to vehicle ownership, this cost is still negligible once one has incurred the high fixed cost of vehicle purchase. It is therefore necessary for the government to manage car population growth in order to nip the congestion issue in the bud.
- COE represents a right to vehicle ownership and use of the limited road space (for 10 years). The government can manage car population size by tweaking the number of COEs it issues. This provides certainty of outcome by controlling the car population.
- By reducing the number of COE quotas, market forces will cause price of COE to increase. As a result, it will be more expensive to own a car in Singapore. This will reduce the quantity demanded for cars, and hence demand for road usage.
- As with road-pricing, one of the strengths of this measure include having more tax revenue collected. Since demand for private transport is still considered price inelastic, there is a more than proportionate increase in price of COE in relation to the quantity of COEs. Hence tax revenue would increase.

Evaluation:

- While this could address the market failure brought about by car usage, the problem is that it can lead to over-correction, i.e. too blunt, where people who may not use the

car often or do not use the car during peak hours, are also required to pay for the COE, discouraging them from buying a car.

- On the other hand, the measure might be counter-productive. After having paid a large sum of premium for COE, Singaporeans might use their cars even more. i.e. to spread the fixed cost. (Car users are subject to sunk-cost fallacy)
- Also, it might result in inequity issues, as those who need the car more may not be able to afford the COE premium.
- As with road-pricing, the increase in price of COE will mean increased fixed costs incurred by companies who need to purchase vehicles to facilitate their operations. Transportation and logistics companies are likely to be most affected by the increase in COE price.

3. Increasing taxes on fuels

- Increasing petrol duties can also be another way to raise the cost of using road space, hence reducing congestion.

Evaluation:

- Households could switch to energy-efficient cars that do not require fuel to operate. Thus this measure might not be effective in reducing the number of cars on the roads, though it does reduce the extent of negative externality generated by car usage since it reduces pollution caused by driving.
- As with road-pricing, this has unintended consequences on the economy as it might cause business costs to rise since transportation costs are higher. This could potentially cause economic growth to slow down.

Synthesis (Making a reasoned judgment on the “best” approach to use)

- All the measures are not perfect and have trade-offs. To decide on the “best” measure, one might have to consider and rank several criteria. This criteria could include appropriateness, effectiveness, and even implications on the budget position.

| Criteria | System of road pricing | Development of public transport system | Reducing the number of COE quotas |
|--|---|--|--|
| Appropriateness | Deals directly with usage of cars | Reduces demand for car usage indirectly | Blunt tool that does not tackle car usage |
| Effectiveness | Difficulty in determining optimal price to charge | Degree of substitutability between public transport and cars may be low and it is difficult to convince the public | Might actually increase car usage due to higher car prices |
| Implications on budget position | Helps to increase tax revenue collected | Large amount of funds needed, thus strains the government budget | Helps to increase tax revenue collected |

- After considering all the suggested measures, perhaps a multi-faceted approach needs to be adopted to reduce Singapore’s worsening traffic congestion. Not only should road pricing be developed further, but the public transport system needs to be developed further into an extensive network, so as to achieve a car-lite society.
 - These measures tackle the problem through different approaches. Whilst development of public transport system serves to reduce the demand for car usage, taxation and legislation such as the satellite-based ERP or reduction in

COE quotas would work on the supply-side through increasing the marginal private costs of car usage or ownership.

- While in the short term supply-side measures can help curb congestion, it does not directly tackle the root causes of the worsening traffic congestion in Singapore which has to do with increased demand for cars. In the long term the population must be offered with a comprehensive and quality public transport system as a viable substitute to private vehicles.
- Hence, the development of an efficient and accessible public transport system is needed in the long term to reduce the need for cars by shifting the preference of owning cars among Singaporeans towards public transport usage. This is crucial as both the population and affluence in Singapore is projected to increase further.
- The development of public transport system must also go hand-in-hand with other measures such as education to educate the Singapore public of the merits of public transport.

Further reference: <http://www.todayonline.com/singapore/frustrating-motorists-not-way-achieve-car-lite-society-khaw>

| Knowledge, Understanding, Application and Analysis | | |
|---|--|--------------|
| <i>Level</i> | <i>Descriptors</i> | <i>Marks</i> |
| High L3 | <ul style="list-style-type: none"> • Wide range of real-world examples used to illustrate policies adopted by Singapore government in tackling the worsening traffic congestion | 19 – 21 |
| Low L3 | <ul style="list-style-type: none"> • Highlights the critical ideas as to why traffic congestion is an example of market failure • Accurate and clear economic analysis explaining how three measures (including a system of road pricing) could help to tackle the problem of worsening traffic congestion • Evaluation of the limitations of the three measures by considering the implications of each measure | 15 - 18 |
| L2 | <ul style="list-style-type: none"> • Briefly explains why traffic congestion is an example of market failure • Lack of economic analysis in explaining how three measures (including a system of road pricing) could help to tackle the problem of worsening traffic congestion • The limitations of the three measures are mostly stated without considering their implications on other aspects, such as transport costs and equity • Limited references to examples | 10 – 14 |
| L1 | <ul style="list-style-type: none"> • Answer is irrelevant in most parts • Answer is largely descriptive and lacks economic analysis (eg. not referring to cost benefit concepts) • Entirely no reference to the context of Singapore as mentioned in the question | 1 – 9 |

| Evaluation | | |
|-------------------|--|--------------|
| <i>Level</i> | <i>Descriptors</i> | <i>Marks</i> |
| E2 | <ul style="list-style-type: none"> • An evaluative discussion of each measure using a set of criteria, such as appropriateness or effectiveness • Essay synthesizes several arguments and makes a reasoned judgment on the “best” way to tackle the worsening traffic congestion in Singapore <p><i>Eg. Essay argues that a multi-faceted approach is needed and substantiates it by pointing to the use of each measure in tackling different aspects of the problem.</i></p> | 3 – 4 |
| E1 | <ul style="list-style-type: none"> • Judgments are made, but they remain largely unsubstantiated. <p><i>Eg. Essay argues that a multi-faceted approach is needed but does not argue why.</i></p> | 1 – 2 |

- 3 **Successful firms are able to identify the growing trends of new shopper segments and use new technologies to provide an engaging and seamless shopping experience, in both online and offline spaces.**

Nielsen Insights, 29th April 2015

- (a) **Explain how technological advancement may improve profits of firms.** [10]
- (b) **In light of technological advancement, discuss whether more markets are likely to be oligopolistic.** [15]

(a)

Introduction

- Technological advancement by firms is often meant to improve competitiveness and increase profits. This can be done through investing in new capital or by carrying out further product development to enhance functionality of the good.
- Technological advancement in firms and how it can be carried out:
 - Can be small, simple, non-disruptive and low cost (e.g. going online and engaging in social-media marketing)
 - Firms with sufficient funds may carry out R&D to develop prototypes of new products and subsequently launch them as product innovations.
- $\text{Profits} = \text{Total Revenue} - \text{Total Cost}$. For profits to improve, increase in TR should be greater than increase in TC.

Note: Students need to link technological advancement that firms have implemented to changes in revenues and/or costs.

Body

1. What technological advancement brings to the market: product differentiation, better quality goods and improvement in customer satisfaction.
 - Consumers may be attracted to the new functions, new look of the good → **increase in demand for good** → increase in total revenue, hence profit.
 - Firms' product can be more competitive, thus making their **demand lower in price elasticity** → the ability to price higher for higher total revenue.
 - Firms need not engage in price-wars which can be debilitating in the long-run.
2. Firms moving into the online space may find greater demand for their products.
 - When DD for a firm's product increases, the firm's revenue increase, leading to higher profits (assume that costs are low or increase in costs due to technological investments are managed).
 - With extensive reach, there is possibility of **EOS** → Lower cost, expect higher sales in a short period.
 - Attractive websites also tend to capture the attention of consumers, leading to greater traffic and demand.
3. New firms with disruptive innovations through technology (for example, new online services through social media) could change the business models of delivering their products or services:
 - Short-run profits supernormal profits may be earned if successful
 - If the technology can be replicated by others, then in the long-run, firms will earn normal profits.

4. Higher technology may install barriers into some markets, and improve profits in the long-run:
 - Large firms which have the capability to conduct R&D on product development would be able to innovate and introduce significantly better products and products with advanced features.
 - → PED: DD becomes more price inelastic → firm may increase price to increase total revenue. Profits increase if the increase in total revenue is greater than the increase in technological costs.
 - Large firms, with better resources, might dominate the market and set up patents applied to these new technologies
 - Barriers to entry will protect supernormal profits of firms, enabling them to continue earning them in the long-run.
5. Technological improvements or R&D activities could improve the efficiency and productivity of factors of production.
 - **Average costs of production fall**
 - Profits per unit will increase even if price remains the same.

Conclusion

Technological advancement would be able to increase profits of firms through the various ways above, working through both enhancements to demand conditions and the lowering of costs.

| Knowledge, Understanding, Application & Analysis | | |
|--|---|-------|
| Level | Descriptors | Marks |
| L3 | <ul style="list-style-type: none"> • An excellent analysis of the ways in which technological advancement could enhance the profits of firms in the short-run and long-run • Analysis includes effect of technological advancement on PED of firm, market share/barriers to entry and cost efficiency • Answers that are well-organized and coherent, with good examples shown | 7 -10 |
| L2 | <ul style="list-style-type: none"> • Answers show coherence but lacked details in economic analysis and application to examples. • Students are able to show the different ways to increase profits through technological advancement but with some inaccurate or superficial economic analysis (for example, no analysis on competitiveness and PED, or long-run impact of technology) | 5 - 6 |
| L1 | <ul style="list-style-type: none"> • Mostly inaccurate analysis • Students fail to link profitability to technological advancement | 1- 4 |

(b) In light of technological advancement, discuss whether more markets are likely to be oligopolistic. [15]

Approach

- Analyse the nature of technological advancement, and whether it can or has been applied in monopolistically competitive or oligopolistic markets.
- Considering whether technological advancement will have wide impact on markets to the extent that many will consolidate into oligopolistic nature, putting in the argument that

there will be markets that remain monopolistically competitive due nature of goods and costs of production (small scale, highly differentiated).

- *Note that firms in perfect competition should be excluded in this analysis as technology, although allowing access to common information in some contexts, generally makes competition imperfect through modification and upgrade of designs of products.*

Introduction

When firms engage in further technological development, their objective could be to increase their profits and possibly the market share/dominance as well. Whether or not the market is more likely to be an oligopolistic one, we would need to know the type of good or service provided, and also to ascertain the nature of technological advancement and the ability of other firms to respond competitively.

Body

1. Features and behaviour of firms in an oligopolistic market:

- A few very large firms collectively control a good majority of the market share.
- Strong barriers to entry, which may take the forms of high start-up costs, patents for the protection of innovations or operating license from the government.
- With a few big firms dominating, these firms tend to be inter-dependent in their behaviour and methods of competition.

2. Technological advancement that establishes barriers to entry and enhances the incumbent firms' market shares, thus making markets oligopolistic

- As mentioned in part (a), technological advancement can take a few forms; for the market to be transformed from monopolistically competitive into oligopolistic, technological advancement should be of a complex nature and not simply by, for example having an online presence. Patents on new technologies can be a barrier to entry of this nature.
- Firms that have acquired supernormal profits from their initial innovation can build up their capital to embark on R&D to transform itself or its goods.
- With powerful innovation, firms can lower their price-elasticity of demand and protect their supernormal profits into the long run. Market share can be increased further through mergers and acquisition to strengthen their consumer base.

3. Would technological advancement cause many markets to be oligopolistic?

- Technological advancement that opens up the market through disruptive innovations **tend to begin from oligopolistic conditions.**
- New firms entering the market may be able to transform the market by introducing a new business model that does not copy the incumbents. For example UBER and Grab, where they are transport service providers through introduction of new ways of booking taxis or private cars. However, the market to begin with is already an oligopolistic one and not monopolistically competitive. Effectively these new firms merely preserve the type of market structure.
- **Monopolistically competitive firms starts off small, and would not have the resources and ability to undertake costly and transformative technological innovations.** It is more likely that they engage in petty product differentiation and adopt superficial technological changes. Eg. Production of processed food like cookies and frozen dumplings that require simple automation and robotics.

- In monopolistic competition, the ease of entry will erode firms' super normal profit, making it difficult for firms to sustain the revenue brought about by the small scale innovation.

4. Overall Evaluation and Judgement

- The nature and extent of technological advancement tend to be dependent on market structure. It is the large firms in oligopolistic markets that will likely have the resources and scale to embark on transformative technology.
- Firms in monopolistically competitive markets have very limited ability for big scale innovation, in fact the nature of their goods and services (service intensive, highly customised, retailing) itself limits the possibility of R&D.
- It is very much the nature of production, such as low cost production, that determine the nature of market structure and not the sudden impact of technology.
- It can be argued too that technological advancement has increased the level of competition (eg. through online platforms).

Conclusion

It is likely that firms in oligopolistic markets will take advantage of more complex technological advancements to secure their market share and prevent new firms from entering the market. While technology will indeed be a very critical approach for these firms to maintain their market dominance, the superficial nature of innovation which takes place in monopolistically competitive markets will unlikely transform them into oligopolistic ones. The nature of production in monopolistic competition creates the conditions for firms to remain small. It will be very difficult for the large firms to disrupt the market and eliminate the presence of many small competitors through mere innovations.

| Knowledge, Understanding, Application & Analysis | | |
|---|---|--------------|
| <i>Level</i> | <i>Descriptors</i> | <i>Marks</i> |
| L3 | <ul style="list-style-type: none"> • Recognise the difference in the nature of technological advancement between oligopolistic and monopolistically competitive markets • Answers raised the prospect of disruptive technologies on competition in markets but recognise that such disruptions simply preserve the oligopolistic markets • Understand that the nature of production and costs is a primary determinant of market structure, hence making it improbable for transformative technological advancement to occur in monopolistic competition | 9-11 |
| L2 | <ul style="list-style-type: none"> • Giving adequate analysis of impact of technological advancement on firms' profits and market share but unable to satisfactorily consider whether this can transform markets • Answers include some analysis of strategic behaviour of firms in either monopolistically competitive markets or oligopolistic markets with the adoption of technology | 6-8 |
| L1 | <ul style="list-style-type: none"> • Analysis of oligopolistic and/or monopolistically competitive market practices are raised but not linked to technological changes • Mainly inaccurate and insufficient analysis of behaviours of firms in oligopolistic and/or monopolistically competitive markets | 1-5 |
| Evaluation | | |
| E2 | <ul style="list-style-type: none"> • Answers attempt to provide judgement on the more likely market structure based on reasons attributed to behaviours of firms | 3-4 |
| E1 | <ul style="list-style-type: none"> • Answers have insufficient or no basis of evaluation. | 1-2 |

4 Household savings in 2014 as a proportion of the country's GDP was 24% for Singapore and 4.8% for USA.

Source: OECD Economic Outlook 2014

Assess the economic case for raising household savings in a country. [25]

Introduction & framing

- Unpack conceptual terms in the question
 - Definition of household savings: Household income not spent on goods and services, can be in the form of private or enforced savings e.g. Central Provident Fund scheme in Singapore.
 - Raising household savings may refer to an increase in MPS (proportion of each additional dollar of income saved) or APS (proportion of income saved).
- To raise household savings, the government can implement contractionary monetary and fiscal policies that discourage household spending or implement social security plans to enforce compulsory savings.
- Governments may have different reasons for raising household savings:
 - United States: Raising household savings is needed to reduce rising household debt. The economic rationale is to avoid loan defaults which can lead to a collapse of the US banking system if it happens.
 - Singapore: Raising household savings (usually via CPF regulations) is needed to instil financial self-reliance. The economic rationale is to reduce the strain on government budget when it spends on merit goods such as education, housing and healthcare. Singapore also faces ageing population which requires the government to spend more on elderly-friendly infrastructure.

Thesis: In the short term, countries may raise household savings to address existing economic problems. Countries that wish to sustain economic growth may also choose to raise household savings.

Argument 1: Raising household savings is needed to address existing economic problems.

- In large economies such as US, the larger average propensity to consume (APC) and marginal propensity to consume (MPC) would mean that households spend a greater proportion of their income or increase in income. This will result in a smaller APS and MPS which could explain why household savings as a proportion of the country's GDP is much lower in US compared to other countries such as Singapore.
- As a result, household debt has been rising in US due to many years of over-consumption and over-borrowing. Such a recurring household debt issue needs to be addressed as it increases the risk of indebted households to sudden shocks such as unemployment which can make it even more difficult for them to repay their loan. When this happens, defaults on loans will rise, causing banks to be at risk of making losses.
- FYI for students: It is important to avoid bank runs or a collapse in the banking system because the banking industry is the pillar of the economy – any negative news on the banking front affects confidence and thus a negative spiral effect on the rest of the economy.
- This was seen during the global financial crisis in 2008-09, which actually was triggered by the US - many US households readily took on mortgage loans to buy new property but were not able to pay back their loans later on when they started losing jobs.

- Through contractionary monetary policy where interest rate is raised to increase cost of borrowing, households will be discouraged to consume, hence saving more to reduce debt.
- In developed economies such as Singapore where ageing population is a concern, the need for the government to provide infrastructure such as elderly-friendly facilities and spend on increasingly costly healthcare for the elderly has led to greater strain on the government budget. Raising household savings through social safety nets such as CPF is deemed necessary for these reasons:
 - Manage the expansion of government spending needed for financing the needs of ageing population.
 - Ensure available resources for other critical areas of fiscal spending such as defence, education and skills training.
 - For elderly to have some stream of future earnings to finance their daily needs, eg. CPF Lifelong Income for the Elderly (CPF Life) is a scheme lifelong monthly payout.
- This is in contrast with countries such as UK and Canada where compulsory savings is not enforced and the government ends up running a smaller budget surplus or even deficit as a result of providing free healthcare.

Argument 2: Raising household savings helps countries to grow potential economic growth through the availability of domestic savings to finance investment.

- If household savings are raised in the form of private savings (i.e. deposits at banks), the supply of loanable funds will increase, causing interest rate for borrowing to fall.
- Stability in interest rate creates a sound condition for healthy investment rates. Firms may be more willing to borrow for investment purposes (e.g. purchase of new machines, R & D). High investment rates improve productive capacity (sustain potential growth) and improve international competitiveness.
- High investment rates will also grow AD and generate expansionary multiplier effect in national income.
- All in all, the increase in AD coupled with the increase in AS help in achieving actual and potential growth.

Anti-thesis: However, raising household savings can negatively affect macroeconomic performance in the short term and reduces the effectiveness of demand-management policies as a counter-cyclical approach.

Argument 1: In the short term, raising household savings brings about dampening effects on actual growth and employment.

- Household savings is a form of withdrawal from the country's circular flow of income.
- The fall in consumption expenditure reduces aggregate expenditure and causes a multiplied decrease in equilibrium national output through the reverse multiplier process.
- Explain briefly the reverse multiplier process using the Y-AE diagram*. A decrease in autonomous consumption will cause an initial decrease in income by the same extent. This initial fall in injection would decrease the revenue of firms producing consumption goods, hence inducing a further decline in consumption while part of this decrease in income is withdrawn from the circular flow of income in the form of saving, tax and imports. Eventually after the reverse multiplier process ends, national income would have decreased by a multiplied magnitude. Cyclical unemployment will also rise as producers with unsold inventories resort to firing workers in order to cut operating costs.

- This can be seen in US where the rise in household savings has led to poor retail figures, thus contributing to the country's weak economic recovery.

** Note: Answers that use AD/AS framework will be accepted but reverse multiplier process must be included.*

Argument 2: Raising household savings may not benefit the domestic economy if the funds are taken out of the country.

- An argument supporting high household savings is that the liquidity these add to the domestic funds market (supply of loanable funds) will lower interest rate and encourage investment.
- However, it is possible too that the liquidity will flow out of the country, into places where interest rates or exchange rates are higher. In this case, domestic investment will not rise, unless there is compensatory inflow of foreign funds into the domestic funds market.
- If household savings are raised in the form of private savings (i.e. deposits at banks), the supply of loanable funds will increase, causing interest rate for deposits to fall.

Argument 3: Raising household savings could lead to a rise in the country's marginal propensity to save (MPS), hence reducing the effectiveness of domestic management policies for greater economic stability.

- The size of a country's multiplier depends on the size of MPS.
- Policies implemented to raise household savings may lead to a rise in MPS while reducing MPC and MPT.
- The smaller MPC would mean that households are spending a smaller proportion of the increase in income for consumption.
- Since the size of a country's multiplier k is $1/MPW$ (where $MPW = MPS + MPM + MPT$), the fall in MPC will reduce the size of the multiplier, making demand-management policies less effective as a counter-cyclical approach to reduce volatility in economic performance.
- Should there be a recession, the government will therefore have to incur a larger budget deficit in generating the same desired rise in national income compared to before.

Synthesis:

- There are various justifications for a government to adopt measures to raise household savings. While doing so can help to address existing economic problems and bring about positive benefits in both the short and long term, it can also dampen the short term economic performance as saving is primarily a withdrawal.
- Due to the possible dampening effects, the urgency for such a policy direction differs across countries. Examples of such a consideration;
 - Singapore does not face the problem of rising household debt as in the US. Therefore, increasing savings to inculcate greater self-reliance has to be carefully calibrated against forecasts of economic performance in the medium terms, especially in view of the fact that Singapore's economic growth in the recent years has slowed down.
 - In comparison, due to the large household debt in US, the severity of the problem calls for raising household savings to be prioritized despite the economy also facing slowing economic growth.

- That said, a country can still raise household savings if it implements mitigating policies that can help reduce the anticipated negative effects on the economy. It is important too that the government has measures in place to allow domestic savings to be productively channelled for growth-productive uses and not frozen.

| Level descriptors for essay question 4 | | Marks |
|---|--|--------------|
| High L3 | <ul style="list-style-type: none"> • Conceptually accurate, well-developed and balanced analysis which considers the nuances in the policy orientation, such as these: <ul style="list-style-type: none"> ○ The need for raising household savings to address existing economic problems such as rising household debt and the need for long term financial self-reliance in the face of ageing population ○ Possible decrease in size of multiplier and how this reduces the effectiveness of demand-management policies as a counter-cyclical approach | 19 - 21 |
| Low L3 | <ul style="list-style-type: none"> • Conceptually sound analysis of the possible effects of rising savings on domestic interest rate, AE components and equilibrium national income, with references to multiplier effect. • Balanced analysis but may be more focused on one side (either on the justifying or trade-offs of the policy orientation) | 15 - 18 |
| L2 | <ul style="list-style-type: none"> • Conceptually correct as a whole but lacking in quality of reasoning or arguments are undeveloped • Some use of economic analysis in reasoning i.e. AD/AS framework but primarily descriptive answer | 10 - 14 |
| L1 | <ul style="list-style-type: none"> • Answer makes an attempt to address issue of raising household savings but does not use economic analysis in reasoning • Answer contains major conceptual errors | 5 - 9 |
| | <ul style="list-style-type: none"> • Answer entirely irrelevant or points made incidentally to issue of raising household savings | 1 - 4 |
| E2 | Well-reasoned and supported judgement, using valid criteria to assess whether <ul style="list-style-type: none"> • Raising household savings is necessary in all countries for domestic pool of savings for investment and economic development • Negative effects of raising household savings can be addressed | 3 - 4 |
| E1 | <ul style="list-style-type: none"> • Lack of clarity in focus of evaluation • Evaluative statements given incidentally and not as a focused discussion | 1 - 2 |

Question 5

5a) Explain why low unemployment is one of the macroeconomic objectives for Singapore. [10]

Approach

- Establish that government pursues healthy economic growth, price stability, low unemployment and healthy balance of payment as macroeconomic objectives so as to ensure continual improvement of standard of living in the country.
- Explain the positive effects of achieving low unemployment in the country, with references to how its achievement will help to keep growth sentiments positive.

Introduction: Explaining the meaning of low unemployment

- State what are the 4 macroeconomic objectives
- Explain what is meant by low unemployment:
 - Unemployment rate refers to part of the labour force who are not working but actively looking for jobs. Low unemployment suggests a condition of full employment or very near to it.
 - Low unemployment means labour resources are utilised and not left idle. Low unemployment does not mean zero unemployment but close to the natural rate of unemployment, which is the base level of unemployment that will always exist in the economy. Singapore is having low unemployment as the unemployment rate is at 1.9%.
- Identify that achieving low unemployment have positive effects on economic growth, standard of living and government budget.

Key point 1: Low unemployment means maximisation of standard of living

- Low unemployment ensures that scarce resources are fully utilized → the economy operates closer to the boundary of the PPC → AD is high enough relative to productive capacity.
- The achievement of full employment means that at current available resources and productive capacity, the country is producing the most output possible and income per capita would be at highest possible.
- With large part of labour force gainfully employed, households enjoy purchasing power for consumption.
- Singapore has been able to enjoy low unemployment and positive economic growth in recent years → 2% growth in real GDP and 1.9 % unemployment in 2015
- Low unemployment prevents social unrest and depression which may reduce non-material SOL. High Unemployment rate in some European countries have increased from 34% in 2006-07 to 46% in 2011-12 and the number of strikes, street protest and demonstration has increased significantly. Depression and excessive worry due to inability in finding employment can increase stress levels in the society, leading to a lower non-material SOL.

Key point 2: Low unemployment boosts domestic growth sentiments

- Low unemployment tends to take place alongside positive GDP growth. This boosts economic confidence for consumption and investment – positive effects on AD and equilibrium national income.

- On the other hand, if a country faces high unemployment households will not be optimistic to spend and firms to invest. This will have spiralling downward effects on AD, national income and inflation rate.

Key point 3: Low unemployment reduces strain on government budget

- Low unemployment means greater tax revenue from income tax and consumption tax as well as decreased spending on social assistance. Although Singapore does not have unemployment benefits, households could seek financial assistance. Needy Singaporeans received about S\$116 million of financial help between Apr 1, 2014 and Mar 31, 2015 from ComCare, the Government's social assistance scheme. Low unemployment thus reduces the need for Singapore government to divert their budget spending on social assistance and allows for funds to be channelled for other productive uses e.g. improving infrastructure and retraining of workers to move up the value chain. This would allow potential economic growth in the long term – rightward shift of LRAS.
- With sustained low unemployment, a government does not much need to dip into the reserves to adopt a budget deficit, allowing the government to accumulate its reserves and use it when the economy faces problems

Key point 4: Low unemployment prevents loss of labour skills and productive capacity

- Individuals who are unemployed for prolonged periods of time could lose their skills. This is referred to as the hysteresis effect where cyclical unemployment may become structural unemployment. This loss in productivity could adversely affect the productive capacity by decreasing the LRAS in the long-run as quality of workers deteriorates.
- Workers who have been structurally unemployed for a long-time may become discouraged and leave the labour force too. Workers may leave the country in search for better jobs and results in brain drain. This results in a fall in productive capacity as the labour force is shrunk.

Conclusion

- Low unemployment will bring about benefits in term of other macroeconomic aims as well as improvement in SOL. Singapore is a small country with only labour as its only viable factor of productions hence it is important for Singapore achieve low unemployment.
- High unemployment is an economic problem that will lower current standard of living due to lack of job and earnings and if this is prolonged will also weaken the prospects for future economic growth.

| Level Descriptors | | Marks |
|--------------------------|---|--------------|
| L3 | <ul style="list-style-type: none"> • A well-developed conceptual analysis of the benefits of low unemployment – considering its effects on both standard of living and growth performance with references to AD/AS concepts. • Well-applied to the context of Singapore (labour-constrained country, hence the importance of maximizing labour force potential. | 7-10 |
| L2 | <ul style="list-style-type: none"> • Conceptually correct but undeveloped explanation • Limited application to Singapore • Answer may contain minor inaccuracies | 5-6 |
| L1 | <ul style="list-style-type: none"> • Smattering of points, without use of economic concepts. • Significant conceptual errors. | 1-4 |

b) Assess whether the policies adopted by the Singapore government to maintain low rate of unemployment remain relevant in view of the challenges faced by the economy. [15]

Approach:

- Identify the challenges faced by Singapore and how they may lead to an increase in unemployment rate.
- Pointing out the current policies adopted by the Singapore government to maintain low unemployment and assess whether they remain relevant using criteria such as effectiveness, sustainability and feasibility of the policies.

Unpacking the context: What are the challenges faced by the Singapore economy?

- Sluggish growth environment → Weak global economic growth as shown by the slowdown in the China, US and EU economy → Singapore as an open economy is hugely affected by the global economy → slowdown in AD due to fall in net export earnings and foreign direct investment → may result in some firms retrenching workers → threats of cyclical unemployment
- Economic restructuring → Singapore faces an ageing population and increase in competition due to globalization, especially on lower skill jobs hence there is need to focus on productivity growth to drive the economy forward → emphasis on automation and innovation to drive productivity and economic growth by moving up the value-added chain → rising labour costs as Singapore government reduces the ease of employing foreign labour + threats of structural unemployment for labour who get displaced by automatic and technology.

Unpacking the context: What are the policies adopted by the Singapore government to maintain low rate of unemployment?

- Fiscal policy → The Singapore government adopts a counter-cyclical budget policy for the purpose of demand management and the need for fiscal prudence. During times of recession where unemployment rate is high, the Singapore government would adopt a budget deficit to stimulate the economy.
- Exchange rate policy → modest and gradual appreciation at most times to achieve price stability so as to maintain export competitiveness and attract FDI.
- Strong focus on supply side policies which promote efficiency and international competitiveness of domestic producers, such as pro-competition policy, continuing education and skills upgrading as part of labour culture, various support programmes to develop the capacity of SMEs.

Determining evaluation criteria: How to assess the relevance of the policies adopted by the Singapore government to maintain low rate of unemployment?

- To assess the relevance of the current policies, it depends on whether the policies can withstand the shocks from the fluctuations of the external economy and whether the policies will improve workers mobility/employability throughout ongoing structural adjustments which various industries go through in the course of shaping up to the demands of international competition.

Argument 1: Assessing the relevance of fiscal policy in maintaining low cyclical unemployment in Singapore

- Although the multiplier effect in Singapore is small due to high leakages from imports and savings, expansionary fiscal policy is used whenever the economy was threatened by recession and rising unemployment.
- During the recession in 2009, Singapore government implemented the resilience package totalling \$20.5 billion to help stimulate the economy. This was funded by tapping on past reserves build from past budget surpluses. The resilience package includes expanding public sector hiring and bringing forward public infrastructure projects, creating more jobs for the economy and reducing cyclical unemployment. The Jobs Credit scheme was introduced then, a short term policy, for the government to subsidise labour costs and prevent retrenchments.
- Fiscal policy remains relevant in maintaining low unemployment in view of the weak global demand. Although the government did not adopt a deficit budget this year (2016) although the economy has been weakening, this must have been considered against the rate of the slowdown. Overall, the use of fiscal policy will still be needed if the economy turns worse.

Argument 2: Assessing the relevance of exchange rate policy in maintaining low unemployment in Singapore

- Singapore has adopted a modest and gradual appreciation of the Sing Dollar to keep imported inflation low. This is important as Singapore is small country with no natural resources and hence it needs to import raw material for its re-exports as well as for domestic production and consumption.
- Stability of costs and wages is needed to keep unit labour costs in Singapore stable and competitive against other countries.
- Amidst the weak global economy, the Monetary Authority of Singapore has eased its monetary policy by adopting a 'zero appreciation' stance; not allowing the Sing Dollar to appreciate. Although this may result in higher cost of imported goods, this keeps Singapore's export more price competitive in the global market, especially in this weak global environment. This then allows external demand to remain high and prevent cyclical unemployment.
- The exchange rate policy is relevant to Singapore as it is a small and open economy, with total trade amounting to almost thrice its GDP.
- It should be noted that the adjustment of the policy stance based on Singapore's economic conditions suggests that the policy is still relevant. This policy provides MAS with the flexibility to adjust its monetary stance according to the challenges the economy is facing. If global demand picks up in the future, the MAS will revert back to its modest and gradual appreciation stance of the Sing Dollar.
- However, exchange rate policy alone is not enough to keep unemployment rate low in Singapore as it does not tackle structural unemployment where there is a mismatch of skills and jobs. Nonetheless, it remains largely relevant due to the import-dependence of the economy.

Argument 3: Assessing the relevance of supply side policy in maintaining low unemployment in Singapore

- Supply side policy can improve the match between jobs and skills, since Singapore is moving towards innovation-based growth to drive the economy forward.
- The Singapore government has tried to improve productivity growth by encouraging firms to rely on technology and automation instead of foreign manpower. Initiatives include the Productivity and Innovation Credits (PIC) scheme help firms, especially small and medium enterprises (SMEs), with their cash-flow needs for expenditure on innovation and productivity initiatives. Less workers would then be needed in these labour intensive industries such as food and beverages and these workers may not have the appropriate skills to work in other sectors which are booming such as the biomedical and financial industries.
- One key labour initiative is Skills Future, which every Singaporean aged 25 and above would receive \$500 credit to enrol in government approved courses. Education policies are also constantly reviewed to meet the changing nature of jobs available in the economy. For example, Singapore University of Technology and Design was set up to equip undergraduates the skills to innovate so as to increase productivity level. New innovation could also help to boost Singapore's international competitive as new innovative products could be exported out and boost Singapore's AD, creating more jobs in the economy, especially in view of the sluggish growth environment.
- Overall, supply side policy is largely relevant (or the most relevant) in maintaining low unemployment in Singapore as it can tackle problems brought by both economic restructuring and weak growth environment. Structural unemployment also appears to be more significant than cyclical unemployment as Singapore is still experiencing economic growth.
- However, supply side policies are considered as an ongoing approach which supports the economy in the long term. These policies are not meant to be counter-cyclical like the budget and exchange rate policies.

Conclusion

- Singapore has adopted a policy mix to maintain the low unemployment in the economy. This is an economically sound approach in view of the challenges of economic restructuring and sluggish growth environment which could bring about both cyclical and structural unemployment. The policies have remained relevant, and it appears that the government has given much more emphasis on supply side measures to boost labour ongoing employability and technology.
- Singapore could refine its policies to enhance their effectiveness in maintaining low unemployment in the economy. Retraining of workers could be more targeted at industries affected most by the economic restructuring. More efforts could also be aimed at changing the mind set of workers by providing more information of the benefits of retraining as well as preparing the workforce to deal with future challenges brought by globalization and increase in competition.

| Mark Scheme Knowledge, Application, Understanding, Analysis | | |
|---|--|-------|
| Level | Descriptors | Marks |
| L3 | <ul style="list-style-type: none"> Developed and balanced assessment of the policies adopted by the Singapore government in maintaining low unemployment Well-connected to context of sluggish growth environment and economic restructuring as current challenges Demonstrate a sound grasp of Singapore's policy mix | 9-11 |
| L2 | <ul style="list-style-type: none"> Balanced but underdeveloped assessment of the policies adopted by the Singapore government in maintaining low unemployment Lacking in the grasp of Singapore's current economic challenges <p>Or</p> <ul style="list-style-type: none"> One-sided developed assessment of the policies adopted by the Singapore government in maintaining low unemployment Ideas generally offer sound economic References to some policy examples | 6-8 |
| L1 | <ul style="list-style-type: none"> Of little relevance to question With major conceptual inaccuracies in reasoning | 1-5 |
| E2 | <p>Well-reasoned judgement on the relevance of the policies adopted by the Singapore government in maintaining low unemployment. Judgement is based on sound economic analysis.</p> <ul style="list-style-type: none"> Able to judge that while the mix of policy instruments remains the same, what matters is the flexibility of the policy orientations with changing economic conditions | 3-4 |
| E1 | <p>Mainly unexplained that is not supported by economic analysis. Merely stating the stand with no or little justification.</p> <ul style="list-style-type: none"> Tends to be a random evaluation of Singapore's policy instruments | 1-2 |

Question 6

(a) Explain what might cause a deficit in a country's balance of payment on current account to worsen. [10]

(b) Discuss whether currency depreciation or reducing government spending is a more effective policy for a country faced with a worsening current account. [15]

(a) Explain what might cause a deficit on a country's balance of payment on current account to worsen. [10]

Students need to show their understanding of what is included in the current account of the BOP. Factors that explain either falling exports or rising imports or both are acceptable. Falling earnings from investment overseas could also be a reason.

Introduction:

- The balance of payment on CA measures the inflow and outflow of goods, services and incomes such as investment incomes and other secondary incomes
- Question refers to a deficit worsening, which means expanding deficit. The total value of receipts received from abroad (i.e. credit) is less than total payments made to overseas (debit), or simply a reduction in the surplus.

Body: Factors causing worsening CA deficit

(i) Weak economic growth in trade partners' economies

Weakening of external economic environment (global/regional) can also cause a country's trade balance to suffer. Singapore for example is seeing its trade balance worsening this year due to weak growth of its major trade partners such as China and Europe.

(ii) Domestic economy growing faster than trade partners'

Higher economic growth relative to other countries. A country that gets out of the global economic crisis faster than the other countries would mean that it has higher income growth → ↑ imports. This is made worse if the country's MPM (or income elasticity of demand for import) is high, as the economic growth will lead to a larger increase in import.

(iii) Loss of export competitiveness for various reasons

- Extended periods of higher inflation relative to other countries' inflation rates can also lead to rising CA deficit. Higher inflation relative to other countries → the prices of domestic goods and services are rising faster than other countries' goods → domestic production becomes less competitive.
- Currency appreciation → export more expensive in foreign currencies and import cheaper in domestic currency → ↑ imports and exports ↓ → worsens trade balance if sum of the demand for both is price elastic.
- A country's domestically produced goods and services will become internationally uncompetitive as other countries gain the comparative advantage. The country's domestic production could be lagging behind due to lack of investment, innovation or structural rigidities. Such rigidities include labour laws that protect the workers too

much, leading to complacencies among workers and rising labour costs for producers. Such countries will find their export competitiveness diminished over time by other countries that implement measures to promote labour efficiency and training to increase productivity and hence lower labour costs.

- (iv) Falling investment income from overseas
- For developed countries that have a large concentration of overseas investment, weakening of global economic performance will result in falling inflow of earnings from overseas. This coupled with existing deficits in the current account would worsen the deficit condition.

Conclusion

The worsening CA deficit may be a short term problem if it's caused by some weakening in country's export markets. However, where it is caused by deeper structural rigidities, the problem can be a prolonged one, in which case it will cause severe adverse impact on country's economic growth and employment.

| Level | Description | Marks |
|-------|---|-------|
| 3 | <ul style="list-style-type: none"> Well-explained meaning of worsening current account At least 3 factors well explained with sound economic reasoning, with a combination of domestic and foreign factors. | 7-10 |
| 2 | <ul style="list-style-type: none"> 2 factors well explained Giving 3 factors but not well developed or sound in economic reasoning | 5-6 |
| 1 | <ul style="list-style-type: none"> Mostly irrelevant answer or with major conceptual errors Lack of knowledge of what it means by worsening current account | 1-4 |

(b) Discuss whether currency depreciation or reducing government spending is a more effective policy for a country faced with a worsening current account. [15]

Approach: A comparative evaluation of the two policies will require students to consider these factors

- Whether the CA deterioration is due to domestic or foreign factors (weakening exports due to weak foreign demand may call for exchange rate depreciation as foreign markets have become more price elastic).
- Price elasticity of demand for imports (depreciation induces imported inflation if country is import-dependent).
- Technical factors such as the size of expenditure multiplier and MPM.

Introduction (framing)

- Each policy involves a distinct approach in tackling the worsening CA. Currency depreciation can be considered a switching policy while the reduction of government spending is contractionary fiscal approach that works on dampening AD to improve CA position.
- Evaluation on whether depreciation of currency is more effective than reducing government expenditure on the CA should be discussed based on the objective of

improving CA position (whether a reduction of existing deficit or reversing a change of falling surplus).

How each works to improve CA (brief explanation)

- Currency depreciation → exports become cheaper in foreign currencies; imports become dearer in domestic currency → if the Marshall Learner condition is fulfilled (summation of the PED of both exceeds 1), CA can improve.
- Reduction of government spending → assuming tax revenue is held constant, there will be net withdrawal from circular flow → contractionary effect on equilibrium national income → import expenditure declines as this is directly related to national income & the lowering of domestic inflation may help country's exports to be cheaper too → improvement in CA position.

Thesis: depreciation of currency more effective than contractionary fiscal policy

- An important consideration will be the **economic condition of both the domestic economy and that of its trade partners**.
- The more price elastic the demand for the country's export and import, the more effective the policy of currency depreciation in correcting current account deficit. This can be relevant during soft economic conditions. Overseas demand for a country's exports will tend to be more price elastic as buyers are more sensitive to prices when their incomes are declining.
- Similarly, if the country trying to improve its CA position is also in weak economic conditions, reducing government expenditure will not be appropriate.
- **Depreciation of currency has a more direct effect on imports than reducing government spending**. Reducing government expenditure has to have an impact on AD and national income before affecting imports. Extent of the effect of reducing government expenditure depends on several factors such as the size of expenditure multiplier, and the size of import propensity and income elasticity of demand for imports. The policy can only be effective if these values are high.

Antithesis 1: currency depreciation may not be effective in correcting current account deficit

- Currency depreciation will have **inflationary effects** on an economy (imported/cost push inflation): ↑ cost of imported resources → ↑ production costs → ↑ export prices.
- Depreciation of currency is effective in addressing the worsening of current account deficit so long as it does not lead **retaliation from other countries**. Very often countries that depreciate their currencies are accused of adopting unfair competition and faced with retaliation from their trading partners, causing negative impact on their exports.
- Currency depreciation is ineffective in addressing the worsening of current account deficit for country faced with structural rigidities. E.g. Poor transport system to transport resources to factories and the produced goods to the ports for export, increasing transport costs. The lack of resources due to structural rigidities and inefficiency among firms → **unable to increase production to meet rising export demand**.

Antithesis 2: Reducing government spending can be more effective than depreciation of currency to correct the worsening current account deficit is more effective.

- **Reducing government spending is more effective for countries faced with economic overheating**

Developing countries import large amounts of resources, machinery and technology to help in their economic development → main reason for their current account deficit. However, with rising growth and → rising household income with the increasing growth of middle income group → rising demand for consumer goods → rising demand for resources

- Reducing government resources will reduce the strain on the country's resources, releasing the resources to be used by the private sector to increase output
- Effectiveness is short-term. **Reducing government spending is a contractionary policy** → slows down economic growth and may lead to rising unemployment → worsens economic outlook → lower investments (less Capital inflow) → no increase in future income flow into the country

Synthesis:

- Whether currency depreciation is more effective than reduction of government spending depends on the root cause of the worsening CA and the economic conditions of the country. If a country is facing both weakening domestic economy and weakening CA, certainly a reduction of government spending is inappropriate.
- Currency depreciation primarily requires PED of exports and imports to be price elastic. This tends to be unattainable in the short term and for a country to have depreciation policy for a long period, other economic problems such as domestic inflation or competitive depreciation by its trade partners will set in.
- Very often, the preferred approach to reverse CA deterioration is through supply-side approaches to improve a country's international competitiveness. Such measures in the long term will make domestic production more competitive both in the home and foreign markets.
- Where a government really has to address the CA problem, for example because of a prolonged deficit, then a range of policies will most likely be needed.

| Level | Description | Marks |
|-------|--|-------|
| L3 | <ul style="list-style-type: none"> • Demonstrate sound conceptual understanding of the linkage between exchange rate and government spending and CA performance • A sound comparison of the relative effectiveness between both policies • Recognise the importance of addressing structural rigidities to effectively improve CA performance | 9-11 |
| L2 | <ul style="list-style-type: none"> • Some clarity on the links between both policies with CA performance but lacking in conceptual analysis • Comparative but undeveloped OR more one policy hence severely lacking in comparison | 6-8 |
| L1 | <ul style="list-style-type: none"> • Major conceptual errors • Mostly irrelevant answer | 1-5 |
| | Evaluation | |
| E2 | <ul style="list-style-type: none"> • Evaluation is based on certain criteria (such as state of economy, root causes of problem) • A reasoned judgement, eg. currency depreciation is a short term solution | 3-4 |
| E1 | Evaluation which is mostly at random and without clear criteria | 1-2 |