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DUNMAN HIGH SCHOOL

Preliminary Examination

Year 6

Economics

8819/1

Higher 1

23 September 2014

Section A Case Study

3 hours

Section B Essay

Additional Materials: Writing Papers

PLEASE READ THE FOLLOWING INSTRUCTIONS FIRST

Write your name and class on all the work you hand in.

Write in dark blue or black pen on both sides of the paper.

You may use a soft pencil for any diagrams, graphs or rough working.

Do not use staples, paper clips, highlighters, glue or correction fluid.

Please start on a fresh sheet of paper for a new question.

Section A

Answer **all** questions.

Section B

Answer **one** question.

At the end of the examination, fasten all your work securely into two separate bundles for Section A and Section B.

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

Section A		Section B	
Q1	Q2	Q3	Q4

This document consists of **8** printed pages including this cover page.

[Turn over

Section A

Answer **all** questions in this section

Question 1

The high cost of food

Extract 1: Global food crisis

This year, for the sixth time in 11 years, the world will consume more food than it produces, largely because of extreme weather in the US, Russia and other major food-exporting countries. Countries have been releasing grains from their reserves. World grain reserves are so dangerously low that severe weather in the United States or other food-exporting countries could trigger a major hunger crisis next year. China and India have the largest and fastest growing populations creating demand for food from around the world. Dietary changes in developing economies have seen increasingly wealthy workers eat more meat. Global corn prices surged nearly 23%, exacerbated by the heatwaves and drought in 2012.

The surge in corn prices will have a big impact on consumers. Corn is used in almost everything; arable crops as feedstock and crop diversion to biofuel production. The price of key staples is expected to rise, threatening disastrous consequences for poor people who spend a large proportion of their income on food. However, food price inflation is also driven by higher oil prices. Crude oil is used in practically every aspect of industrial-scale food production, from planting, irrigating and reaping, to transportation, then food processing and packaging. On top of that, petrochemicals are a principal component of many of the fertilizers and pesticides now so vital to modern agricultural activity. Crude price averaged \$112 per barrel during 2012 – the highest ever annual average price.

Adapted from various sources in 2012

Extract 2: Livestock farmers' profits squeezed

A surge in the cost of feedstock after the worst U.S. drought in more than half a century has stripped many livestock farmers of profit. The global economic downturn has made it difficult for farmers to pass on rising costs to cash-strapped consumers, and they have sought to scale back production plans in the face of mounting losses. In the pork industry, this has meant slaughtering breeding sows, which in the short term can actually increase meat supplies, with the eventual decline in production not felt until 2013.

Adapted from: <http://www.reuters.com>, 8th November 2012

Extract 3: Ethanol cuts may drive down corn prices

Congress has declined to renew the 30-year-old federal subsidy for ethanol. In the U.S., 95% of ethanol is made from corn. This had made subsidy of ethanol controversial because of the allegations that it raised food prices. The subsidy cost the government \$6 billion annually, and it had added to the budget deficit.

People who defend subsidies for particular sectors often highlight the goods or services that have been produced, or the new jobs created. What they do not normally acknowledge is that the benefits to society of that money, if it had been spent otherwise, or left in the pockets of taxpayers, might have been even greater. In the presence of a budget constraint, all spending decisions, at the margin, imply trade-offs.

Critics often point to the economic distortions created by subsidies, especially subsidies that are used to promote specific sectors or industries. Generally, such subsidies tend to divert resources from more productive to less productive uses, thus reducing economic efficiency.

Sources: Adapted from usatoday.com, news.yahoo.com, <http://www.iisd.org/gsi/effects-subsidies>

Table 1: UK Annual Inflation

Year	2008	2009	2010	2011	2012	2013*
CPI	3.6%	2.2%	3.3%	4.5%	2.7%	2.1%

***Estimate**

Source: www.britishchambers.org.uk, September 2012

Extract 4: Economic growth adjusted downwards

The UK economy is forecasted to contract by 0.1%. Domestic demand has been held back by a number of factors, including: tight credit conditions; austerity; and a squeeze on real incomes. Weak wage growth, increases in VAT and import and energy prices have borne down on real income growth in recent years. Household savings, which is dependent on their expectations of future, also rose sharply during 2008 and 2009. Corn and other food prices have surged to record highs recently, as a result of the US drought, and oil prices have risen. These developments will put pressure on UK food and petrol prices. Energy prices affect CPI inflation directly, for example through household energy bills. In addition, they affect inflation indirectly through their impact on companies' costs.

Source: Bank of England, November 2012

Questions

- (a) (i) Define price elasticity of supply. [1]
- (ii) With reference to Extract 1, is the supply of food likely to be price elastic or inelastic? Explain your reason. [2]
- (b) With reference to the data,
- (i) Explain the relationship between corn and ethanol. [2]
- (ii) Discuss whether rising oil price is the main cause of sharp increase in food prices. [8]
- (c) With reference to Extract 2 and the aid of demand and supply diagram, explain why farmers are finding it tough to pass on rising cost of pork to consumers. [5]
- (d) With reference to Extract 3, explain how the subsidy on ethanol leads to inefficient allocation of the economy's resources. [4]
- (e) With reference to Table 1 and Extract 4,
- (i) Describe the trend in UK annual inflation from 2008 to 2013. [2]
- (ii) Discuss the likely impact of rising food prices on the UK economy. [6]

[Total 30marks]

Question 2**Economic Growth and Challenges****Report on Indonesia, Japan and South Korea****Extract 5: Indonesia**

Indonesia grew about 5% annually in 2009-12. During the global financial crisis, Indonesia outperformed its regional neighbours and joined China and India as the only G20 members posting growth in 2009.

Indonesia still struggles with poverty and unemployment, inadequate infrastructure, corruption, a complex regulatory environment, and unequal resource distribution among regions.

Extract 6: Japan

Japan's industrial sector is heavily dependent on imported raw materials and fuels. A small agricultural sector is highly subsidised and protected, with crop yields among the highest in the world.

The economy has fallen into recession three times since 2008. A sharp downturn in business investment and global demand for Japan's exports in late 2008 pushed Japan into recession. Government stimulus spending helped the economy recover in late 2009 and 2010, but the economy contracted again in 2011 as the massive 9.0 magnitude earthquake and the ensuing tsunami in March disrupted manufacturing. Newly-elected Prime Minister Shinzo Abe has declared economic growth as his government's top priority; will continue a longstanding debate on restructuring the economy and reining in Japan's huge government debt, which exceeds 200% of GDP. Persistent deflation, reliance on exports to drive growth, and an aging and shrinking population are other major long-term challenges for the economy.

Extract 7: South Korea

South Korea government promoted the import of raw materials and technology at the expense of consumer goods, and encouraged savings and investment over consumption.

The South Korean economy's long-term challenges include a rapidly aging population, inflexible labour market, and heavy reliance on exports – which comprise half of GDP.

Source: www.indexmundi.com

Table 2: Macroeconomic Indicators: Indonesia

	2009	2010	2011	2012
Annual Rate of Growth Real GDP (%)	4.6	6.2	6.5	6.3
Rate of Inflation (%)	4.8	5.1	5.3	4
Unemployment Rate (%)	7.9	7.1	6.6	6.1
Current Account Balance (% of GDP)	2	0.7	0.2	-2.8
Current Account Balance (USD billion)	10.6	5.1	1.7	-24.4
Visible Exports (USD billion)	116.5	157.8	203.5	190.0
Visible Imports (USD billion)	96.8	135.7	177.4	116.5
Exchange Rate vs USD	9,425	9,010	9,068	9,638

Table 3: Macroeconomic Indicators: Japan

	2009	2010	2011	2012
Annual Rate of Growth Real GDP (%)	-5.5	4.7	-0.5	1.4
Rate of Inflation (%)	-1.4	-0.7	-0.3	-0.0
Unemployment Rate (%)	5.1	5.1	4.6	4.3
Current Account Balance (% of GDP)	2.9	3.9	2.1	1.0
Current Account Balance (USD billion)	145.3	217.2	126.5	58.5
Visible Exports (USD billion)	581.1	768.1	823.4	798.0
Visible Imports (USD billion)	552.4	692.5	856.1	885.4
Exchange Rate vs USD	92.9	81.2	77.0	86.7

Table 4: Macroeconomic Indicators: South Korea

	2009	2010	2011	2012
Annual Rate of Growth Real GDP (%)	0.7	6.5	3.7	2.3
Rate of Inflation (%)	2.8	2.9	4.0	2.2
Unemployment Rate (%)	3.7	3.7	3.4	3.2
Current Account Balance (% of GDP)	3.7	2.6	1.6	4.1
Current Account Balance (USD billion)	33.6	28.9	18.7	50.8
Visible Exports (USD billion)	363.5	466.4	555.2	547.9
Visible Imports (USD billion)	323.1	425.2	524.4	519.6
Exchange Rate vs USD	1,276	1,156	1,108	1,127

Source: Organisation for Economic Co-operation and Development

Questions

- (a)** (i) With reference to Tables 3 and 4, compare the trade balances in Japan and South Korea between 2009 and 2012. [2]
- (ii) Account for the difference in Indonesia's current account balance and trade balance in Table 2. [4]
- (b)** With reference to Table 3:
- (i) How does the value of Japanese Yen in 2011 compare to its value in 2009? [2]
- (ii) Comment on the significance of changes in exchange rates on the export revenue in Japan between 2009 and 2011. [6]
- (c)** Explain the likely macroeconomic impact of the massive 9.0 magnitude earthquake on Japan and its trading partners. [8]
- (d)** Discuss whether the data provided are sufficient to assess changes in the standard of living in these Asian economies over the period. [8]

[Total 30marks]

Section B

Answer **one** question from this section

- 3** **(a)** Explain why the existence of public good and merit good causes market failure. [10]
- (b)** Discuss the view that taxation is the best policy for a government to correct the market failure resulting from the existence of negative externality. [15]
- 4** **(a)** Explain the importance of achieving low unemployment and high economic growth for an economy. [10]
- (b)** Assess the view that supply-side policies are the most effective way to address the twin problems of high inflation and balance of trade deficit. [15]



DUNMAN HIGH SCHOOL

Preliminary Examination 2014

Economics **8819**

Answer and Mark Schemes

Case Study Q1**a (i) Define PES. [1]**

Change in Q_{ss} in response to a given change in price of the good, ceteris paribus.
[0m: no marks if ceteris paribus assumption is not provided]

(ii) With reference to Extract 1, is the supply of food likely to be price elastic or inelastic? Explain your reason. [2]

Supply of food is likely to be price inelastic.

<Evidence> 'world grain reserves are so dangerously low' (Extract 1)

<Analysis> low level of stocks → given an increase in demand which increases the price, Q_{ss} of food can increase only by a smaller than proportionate amount, c.p.

1m for correct identification of PES of food

1m for correct explanation

b (i) Explain the relationship between corn and ethanol. [2]

The demand for corn is derived from the demand for ethanol.

<Evidence> 'Corn is used in almost everything; arable crops as feedstock and crop diversion to biofuel production' (Extract 1)

<Analysis> Corn is a factor input for the production of ethanol, a form of biofuel. As demand for biofuel rises c.p. sellers of biofuels experience rising profits, incentivising them to increase production. They will then enter into the corn market (factor market) to demand for more corn.

1m for correct identification of relationship between the two goods

1m for correct explanation

Accept also competitive supply if candidates explained corn as corn for food

(ii) Discuss whether rising oil price is the main cause of sharp increase in food prices. [8]

Thesis: rising food price is a result of rising oil price, antithesis: soaring oil costs is not the main cause of sharp increase in food prices as there are other factors that are also significant, evaluation.

Framework: market demand-supply analysis

Thesis

<Evidence>

'Crude oil is used in practically every aspect of industrial-scale food production... petrochemicals are a principal component of many of the fertilizers and pesticides now so vital to modern agricultural activity'

<Analysis> Oil is an essential FOP of food → rising oil price leading to large increase in marginal cost of producing food, c.p. → lower profits → rational and incentive-driven firms decrease quantity supplied of food at every price level, shown by a leftward shift in supply

Antithesis

<Evidence>

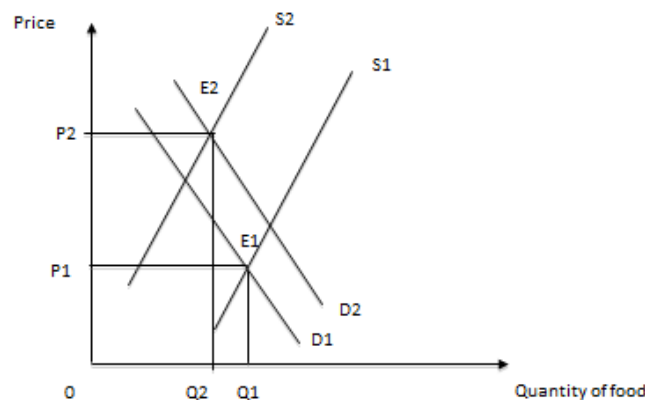
- 'largely because of extreme weather in ... major food-exporting countries'
- 'China and India have the largest and fastest growing populations creating demand for food from around the world ... dietary changes in developing economies have seen increasingly wealthy workers eat more meat'

<Analysis>

Extreme weather e.g. flood and drought → destruction of crops and increasing marginal cost of planting food due to lack of water → fall in Q_{ss} at each and every price, represented by a leftward shift in ss

Increasing income in developing countries in particular China → Chinese consumers more willing and able to pay for more meat, meat being a normal good → increase in demand for corn as animal feed

Diagrammatic analysis: With rising dd and falling ss , shortage of food is observed at the current price level (label in the diagram). The increased competition for food will lead to some consumers willing and able to pay higher prices for food while others dropped out. Producers will respond to the shortage by increasing quantity supplied and this process will repeat and stop only when a new equilibrium has been achieved.



Evaluation:

Increasing income leading to an increase in demand for food has been an ongoing process while the surge in oil price leading to rising cost of production for food is a sudden phenomenon. Furthermore, there is a lack of substitutes for a lot of the oil-related FOP used in food production. Rising oil price is thus likely to be the main contributor of the sharp increase in food price.

L1	Largely unexplained points on whether rising oil price leads to rising food price. Conceptual errors. Incorrect use of Dd-Ss diagram.	1-2
L2	<ul style="list-style-type: none"> • One-sided answer on whether rising oil price leads to rising food price was explained with Dd-Ss diagram. <p>Or</p> <ul style="list-style-type: none"> • Whether rising oil price leads to rising food price was explained with some gaps in the answer with Dd-Ss diagram. • Good use of exemplifications from case data. 	3-4
L3	<ul style="list-style-type: none"> • Whether rising oil price leads to rising food price was well-explained with Dd-Ss diagram. • Good use of exemplifications from case data. 	5-6
E	A well-explained stand on whether rising oil price leads to rising food price was given.	1-2

(c) With reference to Extract 2 and the aid of demand and supply diagram, explain why farmers are finding it tough to pass on rising cost of pork to consumers. [5]

Supply of pork is price inelastic → long time to breed pig and thus pork. Demand of pork is price elastic → availability of substitutes.

P: PES of pork is inelastic

E: a long time is needed to breed pig, thus production of pork.

P: PED of pork is elastic

E: there are many substitutes available for consumers when consuming meat as a source of protein

Falling income has led to a decline in purchasing power of consumers and pork is a normal good, thus demand for pork. At the same time, there is a fall in supply of pork due to rising cost of production: surge in cost of feedstock.

P: Supply of pork has fallen

E: the surge in cost of feedstock has increased cost of production

Since both demand and supply of pork has fallen and supply of pork is more price inelastic than demand, producers are less able to pass on the rise in cost of production by reducing output of pork than if supply is more price elastic than demand.

P: Fall in demand and supply of pork has decreased price of pork

E: since supply is more price inelastic than demand, the increase in cost of production cannot be passed on easily by producers to consumers. Consumers can easily switch away given an increase in price, thus producers has to bear a larger portion of the increase in cost of production. A larger fall in quantity is required to clear the market.

[inserts Dd-Ss diagram]

L1	Largely unexplained points on why farmers are finding it tough to pass on rising cost of pork to consumers. Conceptual errors. Incorrect use of Dd-Ss diagram.	1-2
L2	<ul style="list-style-type: none"> Well-explained answer on why farmers are finding it tough to pass on rising cost of pork to consumers with relevant elasticity concepts with correct use of Dd-Ss diagram. Good use of exemplifications from case data. 	3-5

(d) With reference to Extract 3, explain how the subsidy on ethanol leads to inefficient allocation of the economy's resources. [4]

The imposition of subsidy will decrease unit cost of production of firms, enabling them to produce at a lower price. This essentially increases supply of food and the vertical distance the supply curves is the per unit subsidy provided by the government to the firm. The total amount of subsidy (\$6 billion) provided by the government is not transferred entirely in increasing consumers' and producers' surplus, thus deadweight loss of area ABC is observed (diverting of resources from productive to less productive use). The total amount of subsidy spent by the government is P1PtCB. The increase in consumers' surplus is P0P1BA while the increase in producers' surplus is P0PtCA.

Refer to diagram below for this comment.

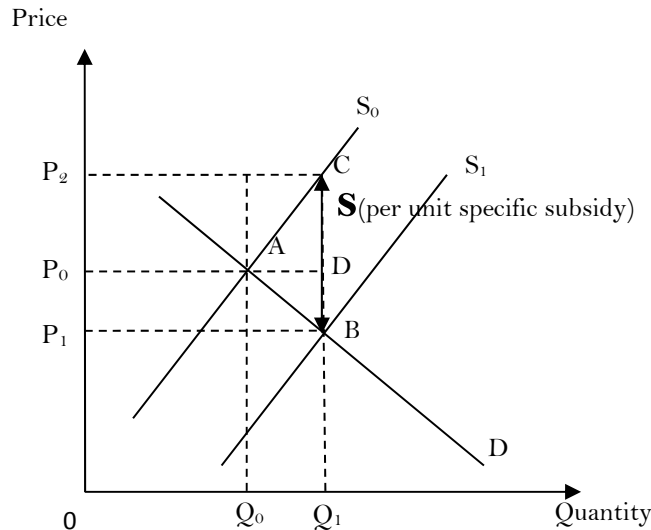


Figure 4: Incidence of subsidy

Other acceptable approach: MSB-MSC analysis

L1	Largely unexplained points on why provision of subsidy by the government leads to inefficient allocation of resources and creation of deadweight loss.	1-2
L2	<ul style="list-style-type: none"> Well-explained answer on why provision of subsidy by the government leads to inefficient allocation of resources and creation of deadweight loss. Good use of exemplifications from case data. 	3-4

e (i) Describe the trend in UK annual inflation from 2008 to 2013. [2]

Inflation is decreasing except in 2010 and 2011 [2: 1m for general, 1m for refinement]

(ii) Discuss the likely impact of rising food prices on the UK economy. [6]

Thesis: rising food prices affect UK economy negatively, anti-thesis: rising food prices affect UK economy positively, evaluation.

Negative effects:

Rising food prices leads to cost-push inflation, firms in their attempt to cover profit margin will decrease production level and pass on rising unit cost to consumers. As firms cut back on its production, it will also lead to increase in unN and negative economic growth. [insert AD/AS]

P: Rising food prices lead to cost-push inflation

E: Unit cost of firms has increased and squeezed profit margins of firms. As rational profit maximizers, firms will be cutting down its production and demand less factors of production (FOP). FOP includes land, labour, capital and entrepreneur. As a result, both unemployment will increase and real national income falls.

Positive effects:

The expectation of increase in GPL, might actually help the UK, given its economy is currently contracting by 0.1%. Consumers are incentivised to spend, protecting the value of their money, before the prices in the economy increase. This can

increase AD, assuming they do not spend on imports but on domestically produced goods and services. The overall impact on the negative economic growth can be cushioned. [insert AD/AS]

Evaluation:

It depends on consumers' expectation of the increase in GPL. If the outlook remains bad, consumers might expect the AD to fall continuously and this can overcome the decrease in AS in SR due to rising food price.

Q: May I ask what is your opinion? It seems to say AS in SR will decrease due to drought, energy and oil prices while AD will decrease due to tight credit, austerity, weak wage growth.

L1	<ul style="list-style-type: none"> • One-sided answer on whether rising food price will affect the UK economy. • Balanced answer on whether rising food price will affect the UK economy, but answer contained explanation gaps. • Did not exemplify • Conceptual errors. 	1-2
L2	<ul style="list-style-type: none"> • Balanced answer on whether rising food price will affect the UK economy. • Good use of exemplifications from case data. 	3-5
E	A well-explained stand on whether rising oil price leads to rising food price was given.	1

H1 Case Study Q2
Suggested Mark Scheme

- (a) (i) **Compare the trade balances in Japan and South Korea between 2009 and 2012. [2]**

Trade Balance (USD billion)

	2009	2010	2011	2012
<i>S Korea</i>	40.4	41.2	30.8	28.3
<i>Japan</i>	28.7	75.6	-32.7	-87.4

- Both countries' trade balances have worsen
- Japan – surplus to deficit while South Korea has a surplus trade balance

Students cannot explain the current account balance

Workings for the trade balances are not required nor credited for marks

- (ii) **Account for the difference in Indonesia's current account balance and trade balance. [4]**

	2009	2010	2011	2012
<i>Current Account Balance (USD billion)</i>	10.6	5.1	1.7	-24.4
<i>Trade Balance (USD billion)</i>	20	22	26	74

- Current account includes both trade (visible) and invisible trade account
 - trade in services such as shipping, aviation, banking and insurance and tourism
 - factor income (i.e. interest, profits and dividends received from or paid to abroad)
- Indonesia Data: Surpluses in both visible and current account in 2009 to 2011
- In 2012 has trade surplus but a current account deficit => net outflow for invisible account balance > the trade surplus

Difference between C/A balance & trade balance is the invisible trade balance

[1]

Current a/c balance has consistently been < trade balance **[1]**

Suggests that invisible trade consistently been in deficit **[1]**

Net outflow in factor income (i.e. interest, profits and dividends received from or paid to abroad) **[1]**

- (b) (i) **How does the value of Japanese Yen in 2011 compare to its value in 2009? [2]**

- Yen appreciated against USD from 2009 -2011.
- If only states "appreciate" – 1m

(ii) Comment on the significance of changes in exchange rates on the export revenue in Japan between 2009 and 2011. [6]

- Yen appreciated against USD from 2009 -2011, visible export (value) has increased
- Yen has depreciated against USD in 2012 while export revenue has decrease
- Implied positive relationship
- In theory: Prices of Japanese exports in USD increased, PED_x is price elastic (students can quote from Extract 2, Japan main exports are manufacture products & explain why PED >1), quantity demanded will decrease by a larger, export revenue should decrease.
- Not supported by the data => not significant
 - ✚ Cause and effect. Eg. Increase in demand for export => demand for yen increase (appreciation of Yen against USD)
 - ✚ Other factors – contract, lacked of substitutes, change in other non-price factors

Significance – data usage with economic analysis – 4m
May not be significant – 2m

(c) Explain the likely macroeconomic impact of the massive 9.0 magnitude earthquake in Japan and its trading partners. [8]

- 4 macro objectives
- Period under consideration only 2011 & beyond
- Japan's economy contracted: using AD/AS framework explain the
- Internal impact – economic growth, employment and price stability
- External impact – BOP as well as the external value of Japanese yen. From Table 2, yen has depreciated against USD
- Trading partners (use case or empirical examples) – external effect – BOP, currencies against Yen. Such as – a fall in imports from Japan; currency appreciated against yen.
- Mostly negative impact; any positive impact?
 - Japan, in the LR – consider the safety issues of nuclear plant, preventive measures
 - Trading partners – how to prevent a disruption in supply chain that was experienced during the tragedy.

Knowledge, Application, Understanding and Analysis		
L3	- Structure & linking sentences are present - Rigour in economic analysis, including multiplier effect (reverse process) – consider both Japan and its trading partners - Address the 4 macro objectives	5-6
L2	- An accurate but undeveloped/ lapses in explanation - refer to Japan and trading partners	3-4
L1	- Content: Weak - Mainly irrelevancies and substantial glaring conceptual errors	1-2
Evaluation		
E	For an evaluative assessment based on economic analysis or empirical evidence.	1 –2

(d) Discuss whether the data provided are sufficient to assess changes in the standard of living in these Asian economies over the period. [8]

Introduction

- Assess **changes**, students have to identified - as an improvement in SOL
- Define SOL – both material and non-material aspects

Body

- Balanced answer with data from case materials

Material aspects:

- In general, real GDP growth rates for the 3 economies are rising while unemployment rates are decreasing (from the 3 tables). This means that while materially, people are better off than before (and hence higher SOL). [Students do not need to consider inflation rate; as we are looking real GDP growth, which has eliminated the effects of inflation]
- Current account balance shows improvement in South Korea and Japan except for Indonesia. However, the higher imports in Indonesia could lead to higher SOL since this is due to strong private consumption. Furthermore, if the imports are primarily on capital goods for investments, then this could translate into higher SOL only in the future. While current account improvement means higher export earnings, goods produced are meant for foreigners and hence may not translate into higher SOL but it generates income and employment for the economies.
- Public debt as a % of GDP is rather stable for South Korea and Indonesia but increasing for Japan. Indicating the economies are doing well except for Japan. In future, Japanese government will implement contractionary fiscal policy to repay the public debt, leading to lower SOL, ceteris paribus.

Hence the data does provide an indication of the changes to the material aspect of the SOL over the time period. However it provides an incomplete picture. E.g.: per capita income figure should be considered to take into account population changes. Other indicators to take into account non-material aspect could be:

- Gini coefficient to account for differences in income distribution on living standards
- Pollution index esp. as there is high level of production in China which could contribute to increased pollution
- Amount of leisure time: high economic growth may mean better material well-being but this could imply more stress, less leisure time and hence possibility of lower SOL.

Knowledge, Application, Understanding and Analysis		
L3	- Structure & linking sentences are present - Rigour in economic analysis – balanced answer whether the data provided are sufficient to assess improvement in the standard of living in these Asian economies over the period. - Use of case material	5-6
L2	- An accurate but undeveloped/ lapses in explanation - refer to the 3 Asian economies	3-4
L1	- Content: Weak - Mainly irrelevancies and substantial glaring conceptual errors	1-2
Evaluation		
E	For an evaluative assessment based on economic analysis or empirical evidence.	1 –2

H1 Question 3

- (a) Explain why the existence of public good and merit good causes market failure. [10]
- (b) Discuss the view that taxation is the best policy for a government to correct the market failure resulting from the existence of negative externality. [15]

Answer for part (a)

Define public goods: A good is a public good if it has the two characteristics of non-rivalry and non-excludability.

Total market failure arising from public good:

- *[P] Non-excludability* means it is either impossible or prohibitively expensive to exclude anyone from using the good, once it is provided.
- *[E]* Once national defence is produced by the government, it is impossible to exclude people who did not contribute to the tax revenue of the government, like tourists, from enjoying the security provided.
- *[P] Non-rivalrous in consumption* means the consumption of the good /service by one person does not diminish another person's ability to consume the same good/ service. This implies that once the good is produced, marginal cost to provide for another person benefiting from consuming the good is zero.
- *[E]* Once national defence is produced by the government, the marginal cost of providing national defence for another citizen is zero as no additional resources are required.
- *[E]: Free-ridership:* rational consumers would conceal their true demand for public good and are unwilling to pay private firms to produce public good. They would be incentivised to free-ride on others as it is prohibitively costly to exclude non-payers from consuming it.
- *[L]:* As a result, public good is not produced by the free market and the problem of a missing market is created.

Merit goods are goods which the *government¹* deems as desirable and that the market under-allocates resources to the production of such goods.

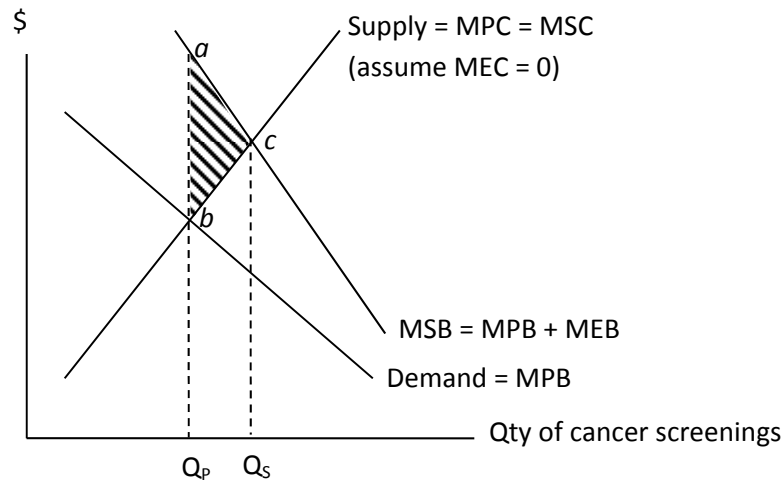
Causes of market failure in merit good: positive externality and imperfect information (Imperfect info is not in the H1 syllabus)

Define positive externality: Positive externalities are spillover benefits on 3rd parties who are not directly involved in the production or consumption of the good.

- Screening for cancer is deemed to have positive externalities. Identify the MPB and MPC of screening for cancer. MPB includes the benefits to the individual from early detection of cancer. This will be a longer lifespan & higher life time income. MPC includes the cost of screening itself.
- Identify MEB: MEB may include the productivity of the workforce due to the lack of illness.
- Explain that individuals, acting in pursuit of their self-interest, disregard the external benefit and in consequence consume only up to Q_P , a case of under-consumption. The fact that $Q_P < Q_S$ was not consumed results in the loss of additional benefit to society measured by the area Q_PacQ_S . At the same time, it also allows the society to avoid additional costs equal to the area Q_PbcQ_S . As the loss of additional benefits exceeds the

¹ In a democracy, the government is seen as representative of the society – acting in accordance to the values of the community.

additional costs avoided, the under-consumption results a welfare loss or deadweight loss of area abc .



• Figure 1: Under-consumption of cancer screening

L1 [1-4m]	<ul style="list-style-type: none"> - Answer largely descriptive - Gross conceptual error of 'positive externality' and characteristics of 'public' good
L2 [5-7m]	<ul style="list-style-type: none"> - Some ability to use economic framework for analysis - Scope OR depth - Scope: Able to explain how the characteristics of public good leads to market failure and how positive externality in can result in market failure - Depth: Able to explain the characteristics of public goods leads to market failure, and how positive externality can result in market failure - Exemplification [Cap L2-5 : Perfect explanation of positive externality without public goods]
L3 [8-10m]	<ul style="list-style-type: none"> - Scope <u>AND</u> depth - Analysis consistently rigorous - Well applied to context - No fundamental conceptual error

Answer for part (b)

Define negative externality: negative externalities are spillover costs on 3rd parties who are not directly involved in the production or consumption of the good.

- Consumption of cigarettes is deemed to have negative externalities. Identify the MPB and MPC of smoking cigarettes. MPB includes the benefits to the individual from the utility derived from smoking. This will enable smokers the ability to work normally. MPC includes the cost of purchasing cigarettes.
- Identify MEC: MEC is the external cost on 3rd parties such passive-smokers who need to incur additional healthcare costs due to breathing difficulties.
- Explain that individuals, acting in pursuit of their self-interest, disregard the external cost and in consequence consume only up to Q_p , a case of over-consumption. Q_p (MPB=MPC) is the private output maximizing utility of private individuals while Q_s (MSB=MSC) is the socially desired output maximizing welfare of society. The fact that $Q_p < Q_s$ was over-consumed results in the additional benefit to society ($Q_s - Q_p$) be less than additional cost to society ($Q_s - Q_p$). The over-consumption results a welfare loss or deadweight loss of area abc .

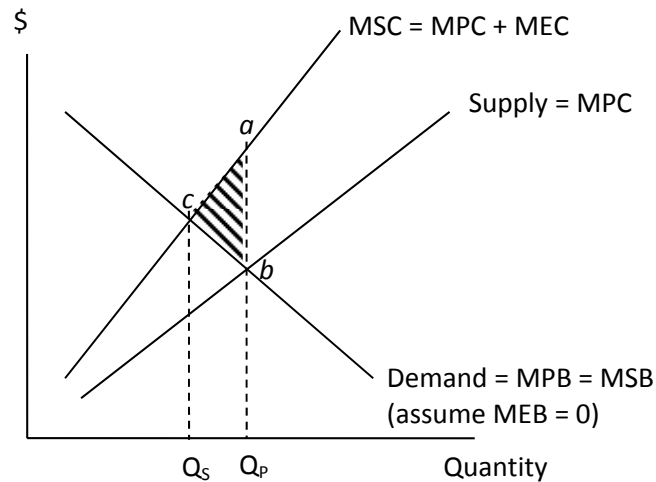


Figure 6: Over-consumption of goods with negative externalities

Thesis:

Taxation can correct the market failure resulting from the existence of negative externality

Indirect tax:

Imposition of indirect tax to force consumers of cigarettes to internalise the 3rd parties cost.

When faced with negative externalities, a government may choose to impose an indirect specific tax that is equivalent to the value of the marginal external costs generated at the socially optimum level of output, given by the divergence between MSC and MPC_0 at Q_S .

The cost that was previously 'external' to the firm, through the indirect tax, now becomes part of the firm's private cost, aligning MPC with MSC. In other words, the pigouvian tax gets firms to "internalise" the external cost.

new MPC of firms, $MPC_1 = MPC_0 + \text{tax per unit of output}$

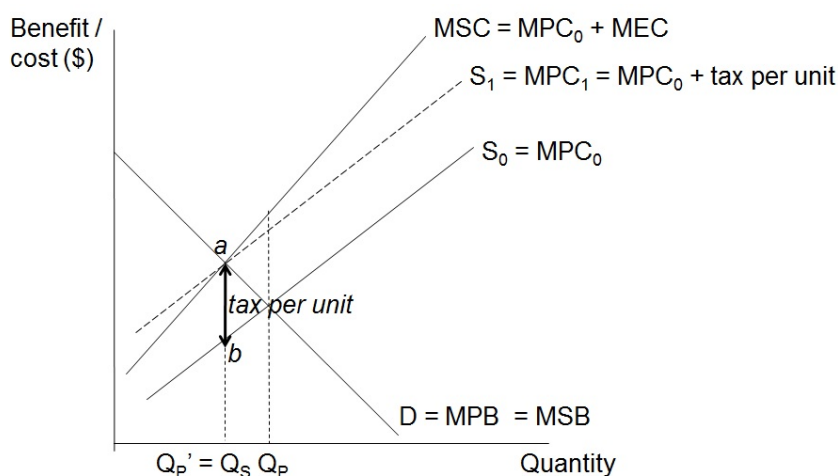


Figure: Indirect tax to correct negative externality

In Figure above, an indirect specific tax equal to ab per unit of output will increase the firm's marginal cost, shifting the marginal private costs (MPC) upwards to MPC_1 . The new private optimum level of output occurs at Q_P' where $MPC_1 = MPB$, down from the original private

equilibrium output Q_P where $MPC_0 = MPB$. Notice that the new private optimal output Q_P' , $MSC = MSB$. In other words, by taxing an amount equivalent to the MEC at Q_S , the pigouvian tax aligns firms' marginal private cost with the marginal social cost. Faced with the full cost of production, the firm will therefore cut back its production to the socially optimal level.

Advantage of indirect taxation:

A source of revenue for government in financing policies used to remedy the negative externalities. Such as, subsidizing healthcare costs to help 3rd parties suffering from the harmful effects of smoking. But more than the revenue to correct the effects of the negative externality, indirect taxes raise revenue that the government can use to reduce other taxes, such as income taxes, which distort incentives and reduce economic welfare.

Problem of indirect taxation:

It is difficult for the government to correctly estimate the amount of indirect tax to be imposed on smokers. It is difficult to quantify the negative externalities. Negative externalities are unpriced effect. The indirect tax imposed might be too much or too little to correct the negative externality. **The problem of too little indirect tax being levied is the problem of over-consumption remains and DWL remains unsolved.**

Antithesis:

Other policies can correct the market failure resulting from the existence of negative externality **arising apart from consumption of cigarettes**

- Command and control policies: setting production standards for production of a good which is causing negative externalities or banning the consumption of a good which is causing negative externalities
- Education on the harms of over-consumption of a good with negative externalities

Command and control policies:

Imposing Standards

The over-consumption of car-rides in Singapore has led to the problem of air pollution. The marginal private cost of drivers is the cost of extra petrol for extra car-rides while the marginal private benefit is the extra time saved and spent on increasing one's productivity and thus income. However, drivers do not account for marginal external cost, the cost borne by 3rd parties due to breathing in polluted exhaust released from the burning of petrol.

One method of imposing standard is for the government to specify the type of cars suitable for driving in Singapore. These cars must be fitted with catalytic convertor, otherwise a fine or imprisonment will be meted out to offenders. While a reduction in pollution brings benefit to society (e.g. improved productivity and consequently increase income through better health and increased tourism earnings), pollution reduction or abatement is not costless. Car owners have to bear the higher cost of buying a car fitted with catalytic convertor, to incur cost to treat the pollutive exhaust before discharging it into the atmosphere, etc. The socially optimal level of pollution occurs when the MSB of pollution abatement = MSC of pollution abatement

One method is for the government to specify maximum pollution levels beyond which, a fine may be imposed. While a reduction in pollution brings benefit to society (e.g. improved productivity and consequently increase income through better health and increased tourism earnings), pollution reduction or abatement is not costless. Firms have to install pollution abatement devices, to incur cost to treat their industrial waste before discharging the effluent into the river, etc. The socially optimal level of pollution occurs when the MSB of pollution abatement = MSC of pollution abatement. Alternatively, government may make it compulsory for firms to install pollution abatement equipment.

Examples:

- In Singapore the National Environment Agency (NEA) sets a limit on smoke from vehicles and imposes a penalty against vehicles which emit excessive smoke.

Bans

Apart from consumption of cigarettes which leads to negative externality, government also intervenes in the consumption of drugs like cocaine. In extreme cases such as the consumption of cocaine where the magnitude of external effects may be so large that the government may choose to ban the production and/or consumption of the good.

Examples of bans in Singapore include:

- chewing gum
- firecrackers
- drugs like cocaine

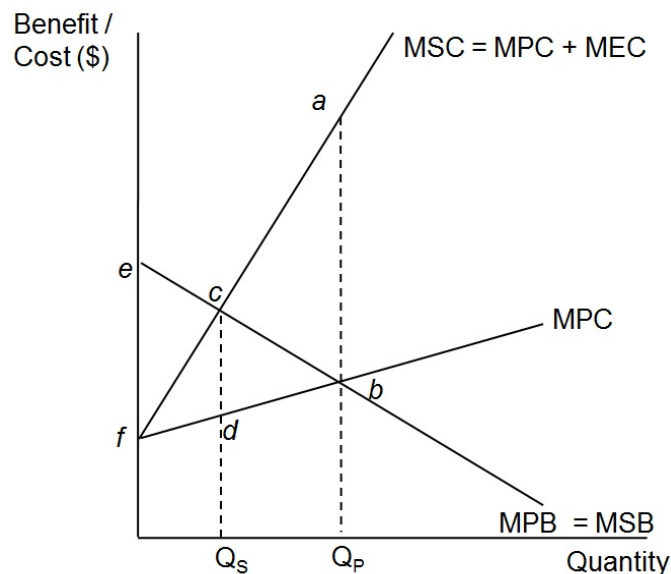


Figure 14

The MPB of consumption of cocaine is the extra satisfaction of craving and ability to function normally at work, MPC of consumption of cocaine is the extra cost to buy cocaine. The MEC of consumption of cocaine is the 3rd party cost borne by firms when workers disappear to consume cocaine illegally.

In Figure 14 above, the private optimal quantity where $MPB = MPC$ is Q_P . There exists a very large magnitude of external costs (shown by the divergence between the MSC and MPC) at output level Q_P , the social optimal quantity exists at a very small output level (Q_S). For the units $Q_S Q_P$ produced and consumed in excess of the socially optimal level, the additional cost to society (area Q_ScaQ_P) is greater than the additional benefit the society derives (area Q_ScaQ_P) and a deadweight loss of area abc arises.

In situations like this, the government can choose to either impose an indirect tax or a total ban on this market. If indirect tax is imposed, it will be imposed at the socially optimal output level of Q_S . The amount of specific indirect tax imposed will equal to cd per unit, equivalent to the MEC at Q_S . However, the cost incurred by the government to collect indirect taxes could be costly due to the sheer size of manpower to be deployed and complexities of administration.

In such cases, the government may prefer to impose a total ban on such economic activities. Although the society still incurs a welfare loss, it has been reduced with the use of ban. The welfare loss without a ban is represented by area *abc*. The welfare loss with a ban is represented by area *cef*, the excess of MSB over MSC from consuming OQ_S units of output. This shows that the society's welfare has been improved with the use of a ban.

Advantages of command and control:

Unlike the use of market-based solutions such as taxes, command-and-control policies give greater certainty of outcome. With indirect taxes and subsidies, the final effect on output is uncertain - it depends on both price elasticity of demand and price elasticity of supply.

Problem of command and control:

Regulatory standards do little to encourage compliance beyond what is mandated because unlike an **tax on cigarettes**, the firm does not benefit from further reduction in pollution.

Evaluation:

A combination of policies is needed to effectively solve negative externality in both SR and LR.

SR: indirect taxation is likely to be least effective as demand can remain price inelastic, thus a large indirect taxation needs to be imposed for successful reduction of over-consumption as compared to command and control policies.

LR: Indirect taxation and education is more effective than command and control policies. Indirect taxation is able to provide the funding needed to educate society on the negative externality created. Furthermore, demand is more price elastic as not only habits can be changed, it also takes time for society to be successfully educated. Both policies deal with root cause of as compared to command and control policies. Consumers' awareness of the need to protect the environment can act as an incentive for firms to use more clean methods of production.

L1 [1-4m]	<ul style="list-style-type: none"> - Answer largely descriptive - Gross conceptual error of how indirect taxation and other policies can solve the problem of negative externality.
L2 [5-7m]	<ul style="list-style-type: none"> - Some ability to use economic framework for analysis - Scope OR depth - Scope: Able to explain how indirect taxation and other policies can solve the problem of externality, and problem of each policy with some conceptual gaps - Depth: Able to explain thoroughly at least how one of the policy can solve the problem of externality, and problem of this policy - Exemplification is provided
L3 [8-10m]	<ul style="list-style-type: none"> - Scope AND depth - Analysis consistently rigorous - Well applied to context - No fundamental conceptual error
E1 [1-2]	<ul style="list-style-type: none"> - A stand was given on which policy can best solve negative externality in SR and LR, respectively.
E2 [3-4]	<ul style="list-style-type: none"> - A well-explained stand on which policy can best solve negative externality in SR and LR, respectively.

Question 4

- (a) Explain the importance of achieving low unemployment and high economic growth for an economy. [10]

Candidates are to analyse why an economy wants to achieve low unemployment and high economic growth – benefits of attaining these two goals to the different stakeholders of the economy.

Suggested Answers for Part (a)***Introduction***

Explain what is meant by economic growth (EG). There are two types of EG, namely actual EG and potential EG. The former measures the rise in real national output that an economy produces within a given time period, while the latter measures the rise in productive capacity in the long run, i.e. what a country can possibly produce.

Explain what is meant by unemployment (UN). UN is the condition of the economy in which some factors of production are not being used in the production of goods and services. It is measured by the UN rate, which is a measure of the percentage of the labour force of legal working age who are without jobs but are willing and able to work, and are actively seeking work at current wage rates.

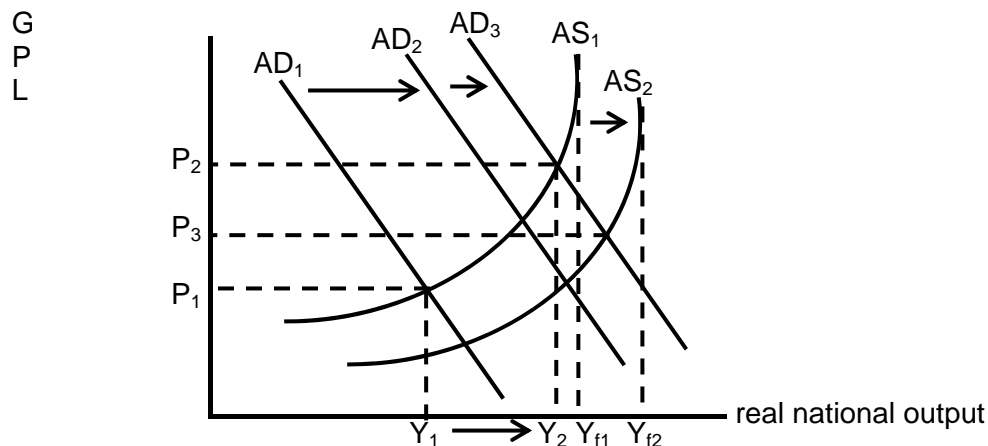
Body

- 1) Rise in material and non-material standard of living (SOL)

<P> High economic growth (EG) leads to a rapid rise in SOL. <E> A rise in actual EG reflects a rise in real national output produced by the country, and corresponds to the rise in income earned from the production of these goods and services. As households enjoy more incomes, the increase in purchasing power leads to a rise in willingness and ability to consume more and better quality goods and services. As a result, they experience a rise in material SOL due to the greater utility / satisfaction derived. <E> The double digit growth rates in China has enabled Chinese citizens to enjoy rapid rises in incomes as well as the quantity and types of goods and services (imported luxury / branded goods) they purchase.

- 2) Fall in cyclical unemployment

<P> With the increased purchasing power to buy more goods and services due to the rise in actual EG, aggregate demand (AD) rises from AD_1 to AD_2 .



<E> Domestic firms draw down on their inventories and in order to restore inventories back to the optimal level, in the next production cycle, they step up production and in the process employ more factors of production, including labour, reducing cyclical UN. These workers would then receive factor incomes, and in the process spend on goods and services. This rise in income-induced consumption is known as the multiplier effect, generating further increases in AD as well as boosts national output and employment. This process continues until any further rise in income-induced consumption is too insignificant to generate any further rise in employment and national output. The total rise in AD due to income-induced consumption from AD_2 to AD_3 causes the real national output to be at Y_2 and cyclical UN to fall. <E> China, characterised by her strong nominal EG between 7.7% and 10.4%, has generally been experiencing low UN rates of 4.4 to 4.5 % between 2009 and 2012.

3) Non-inflationary EG

<P> The rise in actual EG indicates a rise in expected rate of returns (ROR) on investments. <E> This is due to the rise in demand for goods and services that brings about greater profits for firms. Firms therefore find it more profitable to invest in such a country that enjoys strong EG rates. The rise in foreign direct investments (FDI) leads to positive spill-over effects such as transfer of technology, expertise and management know-how which raise productivity of the country due to increased efficiency that boosts production output levels per factor input. As a result, the aggregate supply (AS) of the country shifts rightwards and downwards from AS_1 to AS_2 (refer to previous graph), causing a rise in productive capacity from Y_{f1} to Y_{f2} . The rise in efficiency reduces unit costs of firms, and if these cost savings are passed on to consumers, general price level (GPL) falls. As a result, the country enjoys non-inflationary EG, where EG is experienced with minimal inflation (GPL rises to P_3 instead of P_2). <E> China received about 20% of all FDI to developing countries over the last 10 years, and industries in China with higher FDI seem to have higher productivity rises than other industries. Moreover, FDI has catalysed China's economic reforms, and together, these contributions have supported China in maintaining a record high of 10% growth rate during most of the 1980-2010 period.² This rise in potential EG also means that the country is able to produce more consumer goods in future, thereby raising future SOL.

4) Improves fiscal position / government budget of the country

<P> A country that experiences strong EG and lower UN rate adds to the government coffers. <E> As explained earlier, a rise in EG and thus a fall in cyclical UN imply that the government does not need to spend on welfare or UN benefits, and boosts its revenue via a rise in income tax revenue (as more people are now employed) as well as goods and services tax revenue (as more households spend their increased incomes on goods and services). Furthermore, less of other costs such as social costs are incurred from higher crime rates or frequent riots committed by the unemployed. <E> China has faced a rising tax revenue as a % of GDP (8.7% to 10.6% between 2005 and 2011³). Together, they improve the budget / fiscal position of the country. Also, this allows the government can also better divert these resources to other uses such as to provide public or merit goods, reducing allocative inefficiency and improving the non-material SOL of its people without having to raise tax rates or incur debt. For instance, the government can build more recreational facilities such as national parks to promote family bonding as well as to create a clean and green living environment, or sports hubs that encourage healthier living which enhance non-material SOL. <E> In China, public health expenditure as a % of total health expenditure has been rising from 52.5% to 56% between 2009 and 2012.

² <http://www.worldbank.org/en/news/feature/2010/07/16/foreign-direct-investment-china-story>

³ <http://wdi.worldbank.org/table/5.6>

5) Reduces productive inefficiency

<P> The lower the UN rate, the higher the EG. <E> A fall in UN rate means that more factors of production (FOPs) are employed / utilised, hence pushing the economy from a point within PPC to a point on the PPC. This helps to increase the real national output and hence contribute to EG. Moreover, this also means a reduction in productive inefficiency.

6) Reduces economic burden on the government and society

<P> A country that faces long periods of stagnant EG such as Japan since 1990s may suffer from high UN. <E> These workers who are unemployed for long periods become de-skilled via erosion of skills, and their skills become increasingly obsolete in a rapidly changing job market, leading to structural UN, reducing their chances of gaining employment in the future. In addition, discouraged workers may drop out of the labour market, causing the labour force to shrink, and the economy may thus suffer from a slowdown in potential growth. <E> Japan's youth joblessness, which surged after its financial crisis in the early 1990s, has stayed high. A large class of *hikikomori* live with their parents, rarely leaving home and withdrawn from the workforce.⁴ A shrinking labour force means a shrinking tax base for the government, and furthermore, the government may have to distribute more UN benefits to them, increasing the economic burden on the government and society (that has to be taxed more). Hence, with majority of the workforce being employed, it reduces the need for the government to implement retraining programmes to equip structurally unemployed workers, due to the loss of jobs in declining industries, with relevant skills to move into growing / sunrise industries. As such, this reduces opportunity costs incurred by the government as it does not have to divert resources to such supply-side policies.

Conclusion

The various benefits associated with high and sustained economic growth as well as low unemployment explain governments' pursuit of these macroeconomic goals to achieve the overall aim of higher standard of living for its citizens.

L1	<ul style="list-style-type: none"> ➤ May show some understanding of the question. ➤ May make serious conceptual errors. 	1 – 4
L2	<ul style="list-style-type: none"> ➤ Undeveloped analysis on the benefits of achieving low unemployment AND high economic growth, covering either breadth OR depth: <ul style="list-style-type: none"> - Breadth: different types of EG or unemployment OR benefits to different stakeholders of the economy (households, investors or government) - Depth: rigorous analysis with the aid of diagrams ➤ OR well-developed analysis on the benefits achieving low unemployment OR high economic growth, covering both breadth AND depth. ➤ Lack of real world exemplifications to support analysis. 	5 – 6
L3	<ul style="list-style-type: none"> ➤ Well-developed analysis on the benefits of achieving low unemployment AND high economic growth, covering both breadth AND depth. ➤ Use of real world exemplifications to support analysis. 	7 – 10

⁴ <http://www.economist.com/news/international/21576657-around-world-almost-300m-15-24-year-olds-are-not-working-what-has-caused>

- (b) Assess the view that supply-side policies are the most effective way to address the twin problems of high inflation and balance of trade deficit. [15]

Candidates are required to assess if supply-side (SS-side) policies or demand-management (DD-mgmt) policies are the best way to address the twin problems of high inflation and balance of trade (BOT) deficit. They should explain how the policies work and evaluate specifically on how effective the policies help to reduce inflation and BOT deficit. Lastly, candidates need to come to a conclusion on which is the most effective policy to help address the twin problems.

Suggested Answers for Part (b)

Introduction

Inflation is defined as the sustained increase in general price level. There are two main types of inflation, namely, demand-pull and cost-push inflation, the latter comprising different types such as imported inflation, wage-push inflation etc. BOT deficit refers to a negative balance of trade i.e. the sum of the receipts from the export of goods (total revenue of exports TR_X) falls short of the payment for the import of goods (total expenditure on imports TE_M). In short, net export revenue, $TR_X - TE_M$, is negative, i.e. $TE_M > TR_X$.

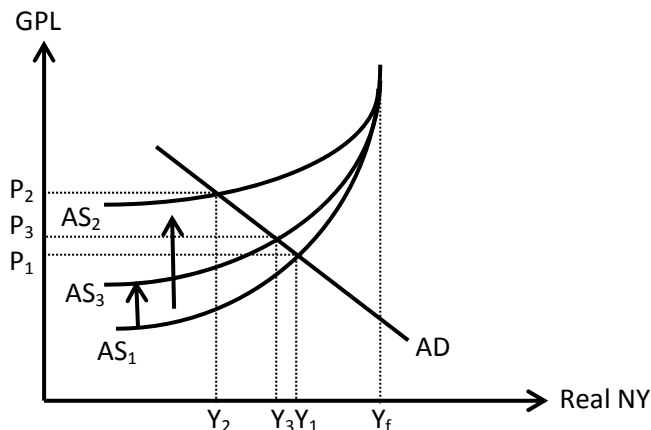
Body

Different policies for e.g. SS-side and DD-mgmt policies are required to alleviate BOT deficit and different types of inflation. The former involves both short-run (SR) and long-run (LR) SS-side policies such as cost-cutting measures and improving productivity or training or research and development (R&D) programmes respectively. The latter includes fiscal policy (F/P), interest rate centred monetary policy (i/r M/P), as well as trade policies – signing of more free trade agreements (FTAs) and exchange rate centred monetary policy (ER M/P).

Thesis: SS-side policies are effective in addressing the twin problems of high inflation and BOT deficit

SR cost cutting measures → address high cost-push inflation

<P> SR cost cutting measures that aim to reduce firms' unit cost of production (COP) can help to alleviate high cost-push inflation. <E&E> Developed countries annually provide \$13 billion in subsidies and protection to encourage biofuels production⁵. During the global oil inflation where oil per barrel hit US\$100 and US\$150 in 2007 and 2008 respectively due to greater DD in emerging and developing economies, reflected by upward shift of aggregate supply (AS) to AS_2 as they are major factors of production (FOPs) used in many industries, the US govt apportioned 17,895 million dollars in energy-related subsidies and support to encourage the production of oil and biofuel to meet the huge rise in DD.⁶



⁵ <http://www.un.org/esa/socdev/rwss/docs/2011/chapter4.pdf>

⁶ <http://www.eia.gov/analysis/requests/subsidy>

Diagram 1: impact of short-run SS-side policy on the US economy

Such subsidies help to lower oil and biofuel firms' unit COP, and firms incentivised by the profit motive, will be more willing and able to step up the production of oil and biofuel, leading to a rise in supply. Thus, the economy faces a downward shift in AS from AS_2 to AS_3 , where more output can be produced for any given FOP. As firms' unit COP falls, the general price level (GPL) rises to P_3 instead of P_2 (due to the rise in oil prices) since firms pass on these cost savings to consumers in the form of lower prices, alleviating cost-push inflation.

In the US, the amount of money the federal government forfeits via subsidies has risen steadily over the past five years. These include tax breaks (where U.S. oil and gas companies are given tax deductions to attract investment into an industry deemed high risk and to promote employment), incentives for production on federal lands and state subsidies for oil, gas and coal production etc., where the total value amounts to \$21.6 billion for 2013.⁷

SR cost cutting measures → address BOT deficit

<P> SR cost cutting measures that aim to reduce firms' unit COP help to address BOT deficit. <E> As explained earlier, due to the oil subsidy, the price of US goods rises to a smaller extent, and are thus more price competitive relative to goods produced by other countries that are also adversely affected by the global oil inflation. Hence, given a price elastic demand for US exports due to the many available substitutes in the global market, the quantity demanded for US exports rises more than proportionately, leading to a rise in TR_X . Simultaneously, due to the substitution effect, US consumers switch away from the relatively more expensive imports to the relatively cheaper domestic goods, assuming they are close substitutes of each other and a price elastic demand for imports, leading to a fall in TE_M . Coupled with a rise in TR_X , there is a reduction in BOT deficit.

OR students can explain export subsidies implemented by different governments, such as Japan's highest farm subsidies especially for rice in the world as well as U.S. heavy subsidies on grains, oilseeds, cotton, sugar and dairy products where U.S. farm programmes cost about \$20 billion per year in government budget outlays in recent years⁸. Similarly, such export subsidies help to reduce firms' unit COP and BOT deficit as analysed earlier.

LR SS-side policies → address high inflation

<P> LR SS-side policies that aim to alleviate SS bottlenecks in the economy help to reduce high inflation in the LR. <E> Govt expenditure on education, training as well as research and development (R&D) programmes such as building of schools, training centres and R&D facilities boosts aggregate demand (AD) to AD_2 in the SR and AS in the LR. Education and training ensure that workers are equipped with the necessary skills for the rapidly changing global economy, raising workers' employability and productivity, thereby increasing the amount of output produced within a shorter time, raising AS. Investments in R&D capabilities and institutes stimulate the pace of technological advancements and breakthroughs, raising AS. With a more productive workforce and technological improvements within the economy that attract foreign direct investments (FDIs) due to the higher expected rate of returns on investments, AD and AS rise further via more capital accumulation.

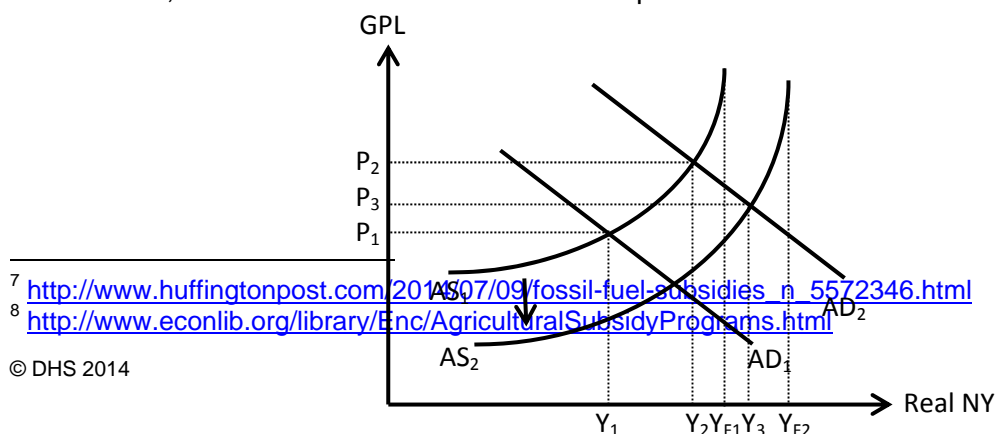


Diagram 2: Impact of LR SS-side policies on the economy

With a fall in unit COP and a rise in productive capacity of the economy, AS shifts downwards and rightwards to AS_2 . This relieves structural bottlenecks / rigidities within the economy, thus allowing the economy to experience non-inflationary economic growth as firms pass on the fall in unit COP to consumers as lower prices, represented by the minimal rise in GPL from P_1 to P_3 instead of P_2 .

<E> For e.g. USA Office of Career, Technical, and Adult Education (OCTAE) administers, coordinates programmes that are related to adult education and literacy, career and technical education, as well as community colleges. OCTAE builds public support for community colleges as centres of innovation and providers of excellent education and training that are affordable and accessible to all citizens⁹. The Organisation for Economic Cooperation and Development report findings state that USA spent more than \$11,000 and beyond \$12,000 per elementary student and per high school student in 2010. When researchers factored in the cost for programs after high school education such as college or vocational training, the United States spent \$15,171 on each young person in the system — more than any other nation. In contrast, the average OECD nation spent only \$9,313 per young person¹⁰. The US and Japan spend an approximate 5.3% and 3.6% of GDP on all education respectively¹¹.

<E> The U.S. remains the world's largest R&D investor with projected US\$465 billion spending in 2014, which is a globally competitive level of research intensity equal to 2.8% of US GDP. Japan, the world's third largest R&D investor, is projected to spend an estimated US\$165 billion in 2014 that is equivalent to 3.4% of its GDP¹².

Such substantial govt expenditures are likely to boost productive capacity to a large extent, reducing inflationary pressures significantly.

Anti-thesis: SS-side policies are not the most effective in addressing the twin problems of high inflation and BOT deficit

Ineffectiveness of SS-side policies to address high inflation

<P> SR cost-cutting measures may be ineffective in addressing the problem of high inflation.

<E> The energy-related subsidies led to farmers devoting large parts of their agricultural crops to biofuel production, causing the SS of land and resources available for food production to be reduced correspondingly. This led to a significant rise in unit COP for food industries and many retail stores that sell these final food products to the end consumers. In order to protect profit margins, these producers partially cut back on production and partially pass on as higher prices to consumers. Since AS continued to shift upwards from AS_3 to AS_2 in Diagram 1, GPL rose back to P_2 or even higher if the fall in AS due to fall in food production exceeds the rise in AS due to the oil subsidy. <E> In mid-2008, the world experienced large spikes in key global food prices. The World Bank Food Price Index rose by 60% in the course of just a few months of 2008, and international prices of maize, rice,

⁹ <http://www2.ed.gov/about/offices/list/ovae/index.html>

¹⁰ <http://www.cbsnews.com/news/us-education-spending-tops-global-list-study-shows>

¹¹ <http://www.oecd.org/edu/EAG2012%20-%20Country%20note%20-%20Japan.pdf>

¹² http://www.battelle.org/docs/tpp/2014_global_rd_funding_forecast.pdf

and wheat rose by 70%, 180% and 120% respectively, compared to the mid-2007.¹³ <L> Hence, SR cost-cutting measures may be ineffective in mitigating high inflation, and in worst case scenario, may worsen inflation, if the govt. policy causes unintended consequences.

<P> LR SS-side measures may also be ineffective in reducing high inflation. These policies may have a long gestation period, since it takes time to construct the required infrastructure, and to train, educate workers with the relevant skills as well as to conduct successful R&D. In the SR, these policies may not be immediate / timely in reducing high inflation, and are therefore ineffective. In addition, these policies may worsen the high inflation problem in the SR as they cause DD-pull inflation. From Diagram 2, the rise in AD to AD_2 causes unplanned disinvestments, and firms step up production. In the process employ more FOPs, thus bidding up factor prices due to greater competition for FOPs. This causes firms' unit COP to rise, and to protect profit margins, firms pass on cost increase to consumers as higher prices, leading to a rise in GPL from P_1 to P_2 in the SR. Especially since the economy is overheated / lacks spare capacity, this policy may have adverse impact on inflation.

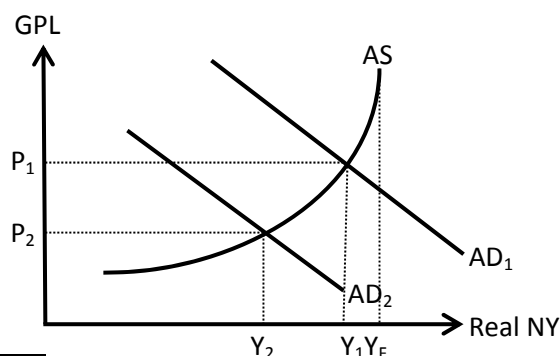
Ineffectiveness of SS-side policies to address BOT deficit

<P> Export subsidies may be ineffective in addressing the problem of BOT deficit. <E> This measure is a beggar-thy-neighbour policy which benefits domestic country at the expense of trading partners, and thus be viewed as a form of protectionist measure, inviting retaliation from trading partners. Since export subsidies lead to trading partners' goods to be less price competitive, their BOT is likely to worsen ceteris paribus. Hence, trading partners may implement similar protectionist measures, offsetting the initial price competitiveness of exports and domestic goods, resulting in no improvement in BOT for the initial country that implements export subsidies. <E> For instance, apart from Japan and US that subsidise their exports, South Korea and Taiwan also have farm support, alongside many other economies such as Norway, Switzerland, and Iceland, with average subsidies of about 65-75% of the value of production, European Union with average subsidies of about 35% of the value of production as well as Australia and New Zealand with the lowest subsidy rates of less than 4%.¹⁴ As such, the BOT deficit of Japan and USA may not be reduced despite spending large amounts of govt budget on export subsidies.

The govt may implement DD-mgmt policies to address the twin problems, such as contractionary i/r M/P or F/P, which are expenditure reducing policies.

Effectiveness of DD-mgmt policies to address high inflation

<P> Contractionary i/r M/P may be effective in reducing high inflation. <E> The Central Bank of US, Federal Reserve, may reduce the money supply within US, which raises i/r in the US. This raises the cost of borrowing for households and investors, deterring them from taking up loans to purchase big-ticket items such as properties and cars as well as to invest respectively. Furthermore, the savings to returns increase, thereby raising the opportunity cost of consumption, incentivising households to save more and consume lesser. With a fall in consumption and investment, AD falls from AD_1 to AD_2 .



¹³ <http://www.worldbank.org/en/results/2013/04/11/global-food-crisis-response-program-results-profile>

¹⁴ <http://www.econlib.org/library/Enc/AgriculturalSubsidyPrograms.html>

Diagram 3: Contractionary DD-mgmt policies on the economy

With a fall in AD, unplanned investments occur, signalling firms to cut back on production. In the process, they lay off workers and employ less FOPs, reducing the intense competition for FOPs due to a fall in derived DD for FOPs. This reduces firms' unit COP, and thus relieves DD-pull inflation within the economy, as firms pass on fall in costs as lower prices to consumers, as seen from a fall in GPL from P_1 to P_2 .

<P> Contractionary F/P may be effective in reducing high inflation. <E> The govt may cut back on govt expenditure and raise taxes to cool down the economy. When the govt taxes more on income and corporate profits (\uparrow income tax and \uparrow corporate tax respectively), households' disposable incomes fall and firms' post-tax profits fall respectively. Households have lesser willingness and ability to buy goods and services leading to a fall in domestic consumption, and firms have lesser willingness and ability to invest due to the lower net expected rate of returns on investments. Both consumption and investment fall causing AD to fall since they are components of AD. As explained earlier, DD-pull inflation is curbed.

Effectiveness of DD-mgmt policies to address BOT deficit

<P> Contractionary DD-mgmt policies may be effective in reducing BOT deficit. <E> As the fall in AD due to contractionary DD-mgmt policies leads to a fall in employment of FOPs, factor incomes paid to labour falls, and hence they spend lesser on goods and services, causing a fall in income-induced consumption. This is the **multiplier effect**, and the process continues until any further fall in income-induced consumption is too insignificant to generate any further fall in employment and real national income. Thus, as the AD continues to fall further, the fall in income leads to fall in purchasing power, which results in a fall in DD for imports, causing a fall in TE_M . Ceteris paribus, BOT deficit declines.

Effectiveness of DD-mgmt policies to address high inflation and BOT deficit

<P> Contractionary DD-mgmt policies may be ineffective to reduce inflation and BOT deficit. <E> If the high inflation stems from an overheated economy signifying strong economic growth (EG), the rational expectations of consumers and investors that the future EG remains high may cause them to still borrow to finance their spending and investments despite higher i/r, since they are able to pay the higher interest payments given a strong EG. <L> This interest inelasticity of consumption and investment due to strong consumer and business confidence / sentiments, renders the contractionary M/P to be ineffective to reduce AD by a large extent, and hence unable to curb DD-pull inflation.

<E> Likewise, a rise in taxes may not deter consumption and investment since households and investors are optimistic about future outlook of the economy. <L> Thus, contractionary F/P may be ineffective to reduce AD by a large extent, thus unable to curb DD-pull inflation.

<E> If AD does not fall or falls by a small extent, the fall in DD for imports will be limited as the fall in purchasing power is small. Hence, contractionary DD-mgmt policies may be limited in effectiveness in reducing BOT deficit.

Note: candidates may also explain the use of contractionary M/P centred on ER or trade policies to address the twin problems.

Conclusion

Conditional evaluation: Whether SS-side policies are most effective in addressing the twin problems depend on the following criteria:

- (1) Root cause or source of the inflation – is the inflation demand-pull or cost-push in nature? If it is the former, SS-side policies may be less effective compared to DD-mgmt policies, since they do not target the root cause of the inflation problem. Especially if it is a monetary inflation phenomenon caused by excessive increases in money supply, the most effective policy is contractionary i/r M/P. If it is imported inflation, the most effective policy will be ER centred M/P (assuming the country has a fixed or managed float ER system), where the country should revalue or appreciate its currency to make imports relatively cheaper. If it is cost-push inflation, SS-side policies may be more effective.
- (2) Root cause of the BOT deficit – is the BOT deficit due to loss of comparative advantage (CA) in the production of low-end labour intensive products because of the emergence of low cost competitors like China and Vietnam? Or is the BOT deficit due to excessive import expenditure due to easy credit as a result of loose M/P? If it is the former, LR SS-side policies that help to regain CA or to gain new niche areas / CA in other industries for the economy may be more effective in tackling the BOT deficit. If it is the latter, contractionary i/r M/P may be more effective in reducing BOT deficit.
- (3) Characteristics of the economy – is it a small and open economy that depend heavily on trade vs. a large and less open economy that depend more on domestic consumption? If it is the former, contractionary ER centred M/P may be more effective in reducing DD-pull inflation since exports take up a relatively greater percentage of the GDP, and thus AD may fall by a larger extent. If it is the latter, contractionary F/P or contractionary M/P may be more effective in reducing DD-pull inflation since domestic consumption takes up a relatively greater percentage of the GDP, reducing AD by a bigger extent.

Tinbergen's theory of economic policy (or Tinbergen's rule) states the necessary equality of number of instruments (policies) to the number of targets (goals / aims of the government). More targets than instruments makes targets incompatible (or some goals will not be achieved). More instruments than targets makes instruments alternative; that is, one instrument may be used instead of another or a combination of others, depending on the effectiveness of an instrument in attaining each of the targets.¹⁵ In this case, given the twin problems of high inflation and BOT deficit, there should be at least two policies implemented to address these twin problems. Hence, it will be advisable to implement a multi-pronged approach / combination of DD-mgmt and SS-side policies to alleviate the twin problems both in the SR and in the LR.

L1	<ul style="list-style-type: none"> ➤ May show some understanding of the question. ➤ May make serious conceptual errors. ➤ Does not address the question, e.g. explains side effects of policies 	1 – 5
L2	<ul style="list-style-type: none"> ➤ Undeveloped analysis on the policies in addressing the twin problems of high inflation and BOT deficit, covering either breadth OR depth: <ul style="list-style-type: none"> - Breadth: explains at least two policies without analysing ineffectiveness of policies OR covers different types of inflation - Depth: rigorous analysis of policies, explaining the ineffectiveness of at least two policies in addressing one problem with the aid of diagrams ➤ Shows limited application to real-world context. 	6 – 8
L3	<ul style="list-style-type: none"> ➤ Well-developed analysis on the policies in addressing the twin problems of high inflation and BOT deficit, covering both breadth AND depth, with three policies analysing their effectiveness and ineffectiveness in 	9 – 11

¹⁵ Adapted from <http://www.garfield.library.upenn.edu/classics1986/A1986C401200001.pdf>

	addressing the twin problems and covers at least two types of inflation. ➤ Shows application to real-world context. ➤ Each policy does not need to address both problems.	
E1	Unexplained judgement on which type of policies are the most effective in addressing the twin problems.	1 – 2
E2	Above judgement supported with economic analysis.	3 – 4