



Anderson Junior College
JC2 2015 H1 Economics
Preliminary Examinations

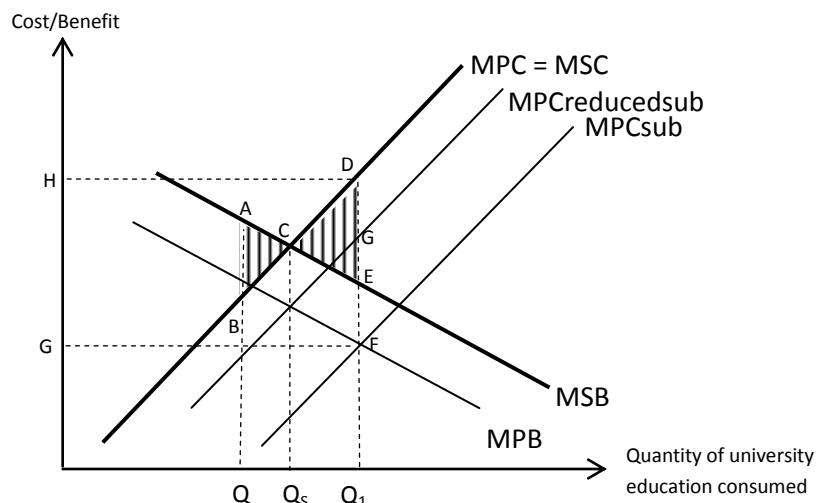
CSQ 1 Changes in Higher Education

(a)	i. With reference to Figure 1, compare the trend in government expenditure on primary and university education in Singapore between 1998 and 2013.	[2]
	<ul style="list-style-type: none"> • Similarity: Both government expenditure on primary and university education in Singapore increased between 1998 and 2013. (1m) • Difference: The increase in government expenditure on university education was greater than that on primary education. (1m) <p><u>Other possible answers:</u></p> <ul style="list-style-type: none"> • Increase in expenditure on primary education was gradual while increase in expenditure on university education saw more fluctuations. 	
	ii. Explain one possible reason for the difference observed in (a)(i).	[2]
	<p>The number of students entering university in Singapore has increased more than the number of students entering primary school which has remained relatively stable due to the low birth rate. In contrast, the proportion of students who qualify for a place at the local universities has increased significantly over the years.</p> <p><u>Other possible answers:</u></p> <p>The expenditure on university education on a per student basis has increased more than that for primary education due to the significant increase in expenditure on creating the new universities as well as on research and other facilities in the universities.</p>	
(b)	Using evidence from the extracts where possible, explain two reasons why there was a considerable increase in university undergraduates in the UK, despite the rise in university fees.	[4]
	<p>The increase in university undergraduates in UK, despite the rise in university fees is likely due to a change in the non-price determinant of demand for university education in UK.</p> <p>Increase in demand for university education due to “high-quality teaching” (extract 1) would likely cause a change in taste and preference for it. Due to such improvement in the quality, there would be an increase in the willingness to enroll for university.</p> <p>“rising birth rate” (extract 1) would likely lead to an increase in population size. Due to a larger population, there would likely be an increase in the demand for university education.</p> <p>Price elasticity for supply for university education is likely to be relatively price elastic, due to low marginal cost required to expand the enrollment.</p> <p>Thus, the significant increase in demand due to changes in population and taste and preference would likely lead to considerable increase in university undergraduates in UK, despite the rise in university fees.</p>	

(c)	With reference to extract 3 where applicable, comment on the validity of the concerns of UK leaving the European Union from the perspective of the UK government	[4]
	<p>UK leaving the European Union would likely lead to an increase in unemployment, as “EU students currently generate more than £2.2bn for the economy and create 19,000 jobs” (Extract 3). This would lead to a fall in the export revenue of UK as there would be a decrease in the EU students due to tougher visa checks on them. The likely fall in export revenue would cause a fall in AD. The fall would lead to an increase in the level of unemployment in UK and fall in actual growth.</p> <p>In addition, there could also be a fall in potential growth if UK leaves the EU since “the European Union supports research, knowledge, innovation and technology”. Leaving the EU might lead to a fall in EU support and funding in these areas, thereby leading to a fall in the quality of factors of production in the long run. This will reduce the productive capacity of the economy.</p> <p>On the other hand, UK leaving the EU would mean that UK does not have to contribute to the EU budget anymore and it could have more to spend on boosting government expenditure within its own economy. UK could also sign more unilateral free trade agreements on its own without being restricted by the pace of EU in terms of opening up to global trade. These can possibly boost AD more, leading to an increase in actual growth employment, especially in the long term, compared to staying in the EU.</p>	
(d)	i. With reference to the extracts provided, explain why governments subsidise university education.	[4]
	<p>Governments should intervene in the market for university education as there is market failure due to the presence of positive externalities</p> <p>Consumers of university education only consider the private benefits of consuming university education, such as “higher starting pay and successful careers after graduation”(extract 2). They also consider the private costs of university education, which includes the price of university education. However, they do not take into account the positive externalities, such as university education leading to cutting-edge research discoveries, contributing to economic growth (Extract 3), thus improving the purchasing power of those who do not consume university education.</p> <p>As consumers of university education are self-interested, they only consume university education up to the point where private marginal benefit is equal to private marginal cost so as to maximise their net benefit. However, at the free market equilibrium, due to the presence of the positive externalities, society values each additional unit of university education more than what it would cost society to consume. This results in a deadweight loss to society, which could have been better off if more university education were consumed.</p> <p>Resources are thus under allocated to the consumption of university education and thus</p>	

	governments should subsidise university education.	
	ii. 'A generation ago, students paid nothing for university education'. Comment on the advantages of this approach.	[6]
	<p>When students paid nothing for university education, this suggests that there was a subsidy provided by the government. This full subsidy provided by the government can be evaluated on grounds of efficiency and equity.</p> <p>A key advantage of this approach is that the access to university education is no longer subjected to the ability of students to pay. It is inevitable that income inequality will exist in the market for university education. By providing university education for free, willing students from poorer backgrounds are also able to enjoy the benefits of university education, such as the opportunity to gain employment with higher wage rates. Hence, this would result in a more equitable distribution of university places and an equitable distribution of income as these students earn higher incomes in the future.</p> <p>Another advantage of such an approach is that there is a more efficient allocation of resources towards the attainment of university education. As explain in d(i), positive externalities from higher education result in the under-allocation of resources to university education and subsidies are thus required. As illustrated in figure 1, if the $MPB = MPC = 0$ at Q_s, the amount of subsidies required would be equivalent to the full amount of positive externality at Q_s and education should cost nothing to achieve allocative efficiency.</p> <p>However, if the level of MPB was at MPB' and university education was provided for free, there will be an over-consumption of university education beyond the social optimal level of consumption (consumption will be at $Q_1 > Q_s$). As such, providing university education for free would lead to an over-allocation of resources to the attainment of university education and a resultant net cost to society by the triangle CDE.</p>	

	<p>Furthermore, the government provision of a full subsidy has led to a case of government failure where the government's efforts in correcting the under-consumption of university education, has led to a larger deadweight loss to society than before. For example, resources that could have been diverted to other markets in the economy to support the consumers from low income backgrounds are now over-allocated to the market for university education. Hence, this may lead to worsening equity as well as inefficiencies on the economy level.</p> <p>Moreover, since university education is free for consumers, universities may not have the ability to deliver higher quality teaching or improve teaching facilities for students. For instance, by levying a £9000 fee would allow universities to deliver high-quality teaching, with many institutions now planning to invest more in improved teaching facilities. Hence, providing university education for free may result in a loss of students' welfare due to the sluggish development.</p>	
(e)	Discuss if you would recommend UK's policy approach to reduce subsidies to university education for Singapore.	[8]
	<p>As explained in (d) (ii), subsidies are provided to reach the socially optimal level of university education. In Singapore, the Government continues to provide a high level of subsidies (75% or more of the cost of education for general courses) whereas the UK Government has been reducing subsidies and increasing fees from zero to £9,000 in 2012.</p> <p>UK's policy approach may be recommended as significant benefits of a university degree accrue to the individual in terms of "higher starting pay and successful careers after graduation" while the positive externalities are smaller. In other words, PMB is large while the extent of the EMB is small. In such a case, the Singapore government may have overvalued the amount of positive externalities and over-subsidised university education. This will lead to over-consumption of university education at Q_1 beyond the socially optimal level of consumption Q_s, resulting in net cost to society by the triangle CDE.</p> <p>Furthermore, overconsumption of university education can result in dilution of the value of university degrees and even future under- and unemployment of university graduates. Therefore, to achieve efficiency both in the short-term and in the long-term, the Singapore government should reduce subsidies by the amount GF to reach socially optimal level of university education.</p>	



Also, given that university fee increases have generally been “below the average annual inflation rate in Singapore”, the subsidy (area HDFG) that has to be provided by the government “may not be sustainable in the long term and should rise in line with inflation”. Furthermore, the ageing population in Singapore would require increasing healthcare expenditure and to maintain fiscal sustainability, it is recommended that Singapore reduces subsidies for university education.

Nevertheless, the positive externalities in Singapore from higher education may be larger than other countries. Increased knowledge capital of university graduates help to drive productivity gains which spill over and raise wages even for non-university graduates. In a resource-scarce, knowledge-based economy like Singapore, university education is crucial in driving economic competitiveness, allowing it to compete on the frontier of innovation in an increasingly dynamic global environment. Thus, if the positive externalities are indeed high in Singapore’s case and the current subsidy levels are equivalent to the amount of positive externalities, UK’s policy approach to reduce subsidies would not be recommended as it is inappropriate to the context of Singapore and would instead lead to welfare loss.

In addition, if subsidies were reduced, lower-income groups may not be able to afford university education or may decide not to pursue university education as they have heavy financial responsibilities that compel them to enter the labour market as soon as possible. With the rich students receiving university education and thus higher pay and successful careers in future while the poor students continue to only be engaged in low-wage jobs, the income inequity in Singapore will worsen. Reducing subsidies is thus not recommended.

However, “Ivy League members are entirely independent of the US government, yet operate a system of social outreach that no government could rival”. Thus, it is still possible for Singapore to reduce subsidies and leave universities to “use ingenious fundraising techniques to roll in resources” like in the US while working with the various institutions to publicise existing “financial assistance schemes”, and to encourage more students from low-income families to take them up. This would ensure that eligible students are receiving the available support and not unduly burdened by the financing of their education.

	<p>On balance, it is still recommended that Singapore reduces across-the-board subsidies to everyone and provide more targeted assistance instead where “bursaries and loans are given to low-income families that require them while rich students pay the full cost of education”. This will not only help to reduce the government spending on subsidies which can then be diverted to funding other social expenditure with higher net benefit but also reap greater “value relative to investment” as the positive externalities from allowing talented and motivated low-income students to earn university degrees before joining the labour market may be larger than that for a well-off student. Such an option would be more equitable, efficient and make better use of taxpayers’ money.</p>	
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CSQ 2: Uncertain US Economic Recovery

(a)	(i)	Compare the trend of unemployment rate and inflation rate in the US from 2011 to 2014.	[2]
	<p>From Table 1</p> <p>(S): Both unemployment rate and inflation rate generally decreased.</p> <p>(D): Unemployment rate has been consistently decreasing while inflation rate experienced an increase from 2013-2014</p>		
	(ii)	Explain one possible reason for the US wanting to raise interest rates.	[2]
	<p>Either one will do</p> <p>Reason 1: Raising i/r will help to prevent C and I from increasing too rapidly, thereby preventing inflationary pressures</p> <p>Reason 2: Raising i/r will cause the USD to appreciate, thereby preventing imported inflation as import prices will now be lower with a stronger USD.</p>		
(b)		Explain the economic rationale for specialisation and exchange between US and its trading partners.	[4]
	<p>Specialisation and exchange occurs between US and its trading partners because there are economic gains which can be explained by the theory of comparative advantage.</p> <p>The theory of CA states that if there are differences in comparative costs of production between countries, specialisation and exchange will result in higher world output and a greater consumption for both countries. For US, they have comparative advantage in the production of high technology goods such as computers, microchips as they incur lower opportunity costs in production to a more skilled workforce. On the other hand, countries such as Vietnam have comparative advantage in the production of agricultural products such as rice due to a favourable climate. Thus, US will specialize in the production of high technology goods while Vietnam will specialize in the production of agricultural products. After specialisation, both countries will then exchange their goods, with terms of trade between the opportunity costs of production of both countries. After exchange, both countries will be able to consume outside their PPC and enjoy a higher material standard of living.</p>		
(c)	(i)	Explain how an increase in interest rate will cause the external value of the US dollar to increase.	[2]
	<p>Increase in interest rate will lead to an increase in short term capital inflows which will result in rise in demand for US currency. Thus, the external value of the US dollar will rise/ appreciate.</p>		
	(ii)	With reference to Table 2, assess the extent to which standard of living in different countries will improve with an increase in interest rate in the US.	[8]
	<p>Standard of living (SOL) refers to the level of subsistence and comfort in everyday life enjoyed by a community. To ascertain standard of living, there's a need to look at both the material as well as non-material aspects. Material standard of living looks at material comfort as measured by the</p>		

goods and services available to the population while non-material standard of living looks at the intangible aspects that make up human life, such as leisure, safety, physical health, environmental quality issues, etc.

An increase in interest rate in the US will lead to an appreciation of US dollar as explained in part (i). Hence, the foreign price of US exports rises and domestic price of imports into US falls.

P1: SOL in some countries will improve to a greater extent

As the domestic price of imports into US is lower, US consumers will switch to purchasing imports. This result in an increase in US's import expenditure which will mean an increase in export revenue of US's trading partners.

From Table 2, Vietnam's export to US takes up 16.5% of GDP which is relatively significant as compared to other countries. Hence export revenue for Vietnam will increase by a greater extent as compared to other countries. Thus, net exports increase, ceteris paribus. Real national income increases, leading to an increase in **material SOL** by a greater extent as they are able to consume more goods and services.

With economic growth in Vietnam, more resources are likely to be allocated to improve the healthcare facilities and education services. This would lead to longer life expectancy, lower mortality rate and higher literacy rate, hence improving the **non-material SOL** significantly.

However, with increased production in the economy, this may lead to more pollution which will worsen the quality of life for the people, thus lowering **non-material SOL**.

P2: SOL in other countries will improve to a smaller extent

However, if the export takes up a relatively insignificant percentage of GDP, the impact of increase in export revenue on GDP is minimal.

From Table 2, Russia's export to US takes up 1.2% of GDP which is the least as compared to other countries. Hence export revenue for Russia will increase by a smaller extent, hence increasing real national income and thus **material SOL** by a smaller extent.

Alternative P2: SOL in other countries will not improve

However, SOL may fall due to increase in interest rate in US. Appreciation of USD means that foreign price of exports increases. This means that for countries which imports from US, they will face a higher imported price.

From Table 2, Singapore's import from US takes up 9.9% of GDP which is the most as compared to other countries. Higher price of US's imports into Singapore will increase cost of production in Singapore, resulting in a fall in SRAS and hence real national income. Thus, **material SOL** decreases in Singapore.

With a fall in real national income, there may be lesser resources allocated to improve healthcare facilities and education services, hence leading to lower life expectancy and literacy rate and thus **non-material SOL**.

Evaluation:

	<p>On the whole, it is difficult to assess the overall effect on the SOL in different countries due to missing information in Table 2. More information will be required to have a comprehensive assessment of the SOL. Information such as the income distribution for the trade between the affected countries and US is required. If the gain from the export revenue is only limited to those in the export industry which is not distributed across the economy, the SOL of each person may not increase at all. Hence it is difficult to assess if the SOL has actually improved. Comprehensive measures such as GINI coefficient and Human Development Index could be included for better assessment of SOL in the countries.</p> <p>In addition, whether SOL improves in different countries depends on the existing policies in the countries. If the countries already have existing policies to address the various issues in the country such as pollution, the non-material SOL may not deteriorate as much.</p>		
(d)	(i)	Explain why “the economic recovery in the US is underway, yet uncertain”.	[4]
	<p>As shown in extract 4, there was an increase in consumption expenditure due to higher consumer confidence as well as an increase in government defence spending. This leads to an increase in AD and hence real national income, indicating a US economic recovery is underway.</p> <p>However, the recovery is uncertain as the US is still vulnerable to external shocks. For example, as stated in extract 4, a slowdown in its trading partners will mean that there will be a fall in demand for US exports, which will reduce AD and result in a fall or even negative growth.</p>		
	(ii)	Discuss the relevance of the US economic recovery on whether the Russian government should focus on lowering inflation.	[8]
	<p>Russia is suffering from falling economic growth rates, a high inflation rate as well as a worsening current account, as shown in Table 3. Thus, Russia has to make a choice on whether to focus on lowering, or to focus on other issues. Russia may choose to focus on lowering inflation as a high inflation rate can lead to fall in purchasing power and a fall in the standard of living in Russia. In addition a high inflation leads to unstable prices and profits for investments and will worsen the outflow of FDI from Russia.</p> <p><i>(Note: It is possible to argue that Russia should not focus on lowering inflation and use this as a basis for further discussion.)</i></p> <p>P1: US economic recovery is a relevant factor</p> <p>US economic recovery will bring about an increase in demand for Russian exports, thereby increasing AD and if the increase is substantial, this will create upward pressure on GPL. Even though US may not a main trading partner of Russia, the recovery of US will also bring about recoveries in other world economies who may be bigger trading partners of Russia, such as China. The recoveries of these economies will thus bring about higher export demand, which may translate to higher demand pull inflation in Russia. Thus, Russia should focus on reducing inflation</p> <p><i>(For students whose premise is that Russia should not focus on inflation, they could argue for the following under P1)</i></p>		

A US recovery will have little direct impact on Russia since Russia's exports to US takes up only 1.2% of country's GDP as shown in Table 2. Hence, even if US were to recover and import more from other countries, Russia's AD is unlikely be affected much. Thus, there is no need for the Russia government to focus on inflation)

P2: US economic recovery is not a relevant factor

As stated in extract 4, the US economic recovery is uncertain. Thus, it may be too risky for Russia to base its economic decision on a US economic recovery when it cannot be sure if the economic recovery is going to happen. Thus, the US economic recovery will not be a relevant factor on whether the Russian government should focus on inflation.

P3: Other factors are more relevant

Conflict in macroeconomic objective: If they focus on addressing inflation→ result in conflicts with other goals: growth. This will exacerbate the situation in Russia which is already is already experiencing falling growth rate.

Relative severity of the problem: Although growth is declining in Russia, it is still positive. On the other hand, the inflation rate is high and continues to increase. Thus there may be a more urgent need to reduce inflationary pressures in the country.

Expectations of future commodity prices: As Russia is a leading producer of commodities (Extract 6), the fall in commodity prices is one of the major factor why Russia is suffering a fall in economic growth. If commodity prices are expected to increase in the future, the Russian economy should recover without government intervention. Thus, the Russian government could focus on reducing inflation rather than growth, which will worsen if commodity prices increases.

EV: As a major world economy, the US economic recovery will affect many countries, either directly or indirectly. The interconnectedness of the world economies will surely mean that Russia must take into account the state of the US recovery. However, it will be difficult to decide which the most relevant factor is as some of the factors discussed above are interconnected. For example, A US economic recovery will increase the demand for commodities, leading to an increase in prices. Thus, even though the expectation of future commodity prices may be an important factor, this expectation is also dependent on the US economic recovery.

3. In Singapore, the retail price of a pack of 20 cigarettes has gone up from \$2.80 in 1987 to \$11.00 in 2012 – almost a 300% increase.

Source: ASEAN Tobacco Tax Report Card, May 2013

- (a) Using demand and supply analysis, explain the possible reasons for this significant increase in price. [10]
- (b) Discuss the effectiveness of the policies the Singapore government currently adopts to improve resource allocation in the market for cigarettes. [15]

Suggested Answer 3(a)

Over a span of 25 years, the price of cigarettes has risen drastically. The equilibrium price of cigarettes is determined by market forces of demand and supply and changes in either one or both factors can cause the price of cigarettes to increase. Demand refers to the quantity which a consumer is able and willing to buy at each and every price level, in a specified time period, *ceteris paribus*. Supply refers to the quantity which a producer is able and willing to sell at each and every price level, in a specified time period, *ceteris paribus*. When the price of cigarettes increased three-fold, this can be explained by **a fall in supply** of cigarettes and **a rise in demand** for cigarettes.

The rise in demand for cigarettes could be due to a myriad of reasons, one of which being the **increase in income levels of consumers in Singapore over the years**. Assuming that cigarettes, like many other goods, are normal goods, when an individual's income goes up, his ability to purchase goods and services, including cigarettes, increases. Even young people who do not yet earn an income are receiving more pocket money from their parents these days, so they can better afford the habit of smoking.

Another likely reason for the rise in demand for cigarettes is the shifting **preference towards smoking**, especially amongst young people. More and more youths are influenced or pressured by their peers to begin smoking so as to gain social acceptance and affirmation. This is shown by the increase in the number of daily smokers among young adults aged 18 to 29 from 12.3% in 2004 to 16.3% in 2011. There can also be an increase in the number of older adults turning to smoking because of the increase in stress and personal problems faced over the years.

Finally, the demand for cigarettes could increase simply because the **population size has increased** in Singapore. From about 2.8 million in 1987, the population size in Singapore has since grown to 5.3 million in 2012. With more people living and working in Singapore, it is natural that the demand for cigarettes will increase.

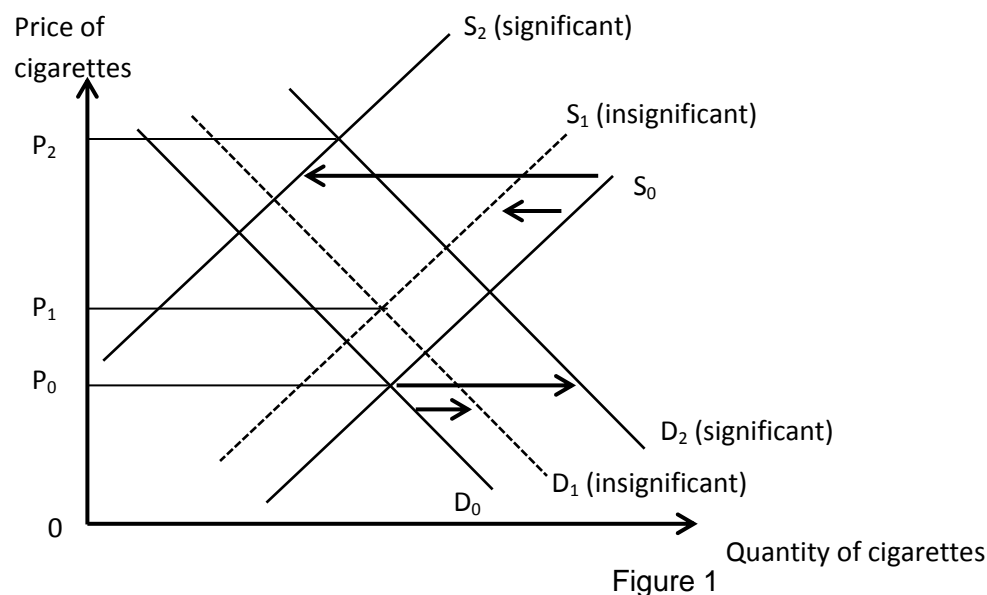
In summary, the above reasons supporting the rise in demand will cause a rightward shift in the demand curve.

The primary reason for the fall in supply of cigarettes is the **increase in excise tax levied on tobacco products by the Singapore government** over the years. An excise tax is an indirect tax that is levied on the sale of specific goods and services, such as alcohol and tobacco, because of the harmful effects that can arise from excessive consumption or indulgence. It is typically a per unit tax, costing a specific amount for a volume or unit of the item purchased. Singapore's excise tax has increased considerably from \$34 per kg of cigarettes in 1987 to \$255 per kg of cigarettes in 2003. To make the excise tax even more impactful and onerous to bear, this was subsequently levied on a per

gram basis reaching \$0.35 cents per gram of cigarettes in 2012.

Other possible reasons behind the fall in supply of cigarettes could be an **increase in costs of production** attributable to higher labour and rental costs.

In summary, the above reasons supporting the fall in supply will cause a leftward shift in the supply curve. However, to account for the very significant increase in the price of cigarettes, the rise in demand and fall in supply need to be very large as well.



With reference to Figure 1, the larger the extent of the shifts of the demand and supply curves, the more significant the price increase will be (i.e. OP_2 versus OP_1). While it is hard to ascertain if the rightward shift of the demand curve is by a large or small extent, more certainty can be said for the supply of cigarettes. Given the substantial rise in excise duty on cigarettes over these 25 years, the fall in supply can be said to be very significant and this forms a strong contributing factor for the significant increase in price of cigarettes.

Alternatively, the concept of **price elasticity of demand** can be used to explain for the significant increase in cigarette price. Price elasticity of demand measures the responsiveness of the quantity demanded of a good to a change in the price of the good itself, *ceteris paribus*. Demand for cigarettes is likely to be price inelastic due to its addictive nature. Once a person picks up smoking, it becomes a habit that is very difficult to break.

With reference to Figure 2, assuming no change to demand yet, a fall in supply results in a more steep increase to price OP_2 as compared to the case where demand for cigarettes is price elastic which results in a less steep increase to price OP_3 .

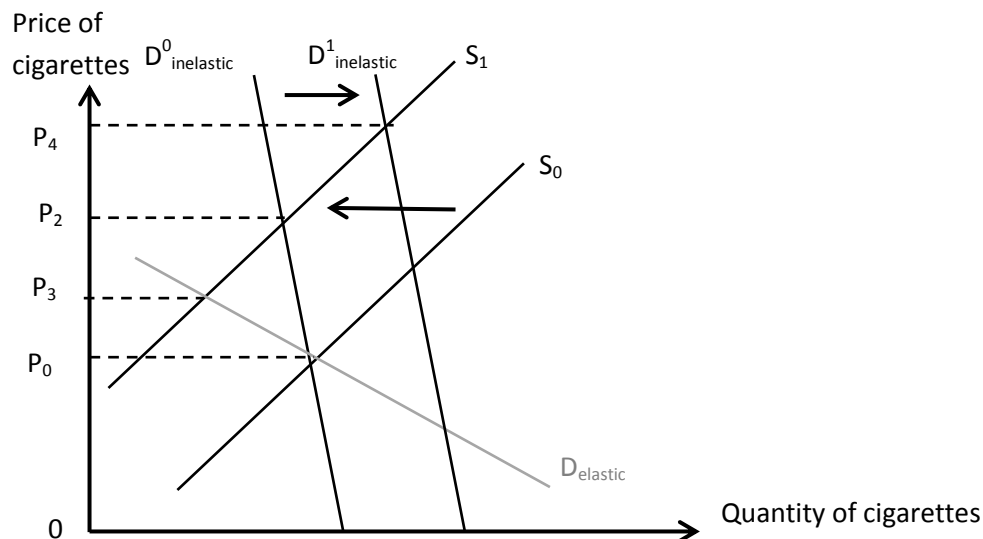


Figure 2

Now with an increase in demand, $D^0_{inelastic}$ shifts to the right to $D^1_{inelastic}$. At the initial equilibrium price (P_0), quantity demanded exceeds quantity supplied. This shortage causes an upward pressure on price as consumers compete for the existing quantity of cigarettes available by bidding up the price. At the same time, according to the law of supply, producers will increase the quantity supplied of cigarettes due to the higher price. This process is represented by the movement along the demand and supply curves, and will continue until there is no shortage and no upward pressure on price. The combined effect of the rise in demand and fall in supply of cigarettes results in a significant increase in the price of cigarettes.

The inelastic nature of the demand curve results in the price of cigarettes to increase by a larger extent to OP_4 . Had the demand curve been more price elastic, even with the same extent of rightward shift, the price of cigarettes would not have risen to such a great extent.

Suggested Answer 3(b)

The Singapore government currently adopts several policies to improve resource allocation in the market for cigarettes due to **market failure reasons**. Market failure refers to the circumstances in which distortions prevent the price mechanism from allocating resources efficiently.

Cigarettes are deemed by the Singapore government to be **demerit goods** as the consumption of cigarettes exhibits **negative externalities**. Negative externalities refer to incidental costs to third parties that are not taken into account by those who are involved in the activity. A smoker will only take into account his private costs (price of the packet of cigarettes and own smoking-related health problems) and private benefits (satisfaction derived from smoking). However, he does not consider the negative externalities that would be generated by his smoking. There are many ill effects imposed on passive smokers that come from the exposure to second-hand smoke, such as diseases

like lung cancer, ischemic heart disease, asthma attacks, childhood respiratory disease and sudden infant death syndrome. The social cost from undertaking the activity is the private cost faced by the smoker as well as external costs accruing to third parties and this social cost can potentially be a huge sum of money. A 1997 study published in the Singapore Medical Journal in 2002 estimated that smoking cost the Singapore economy around \$839 million annually.

The presence of negative externalities will lead to divergence of private cost and social cost (Figure 3).

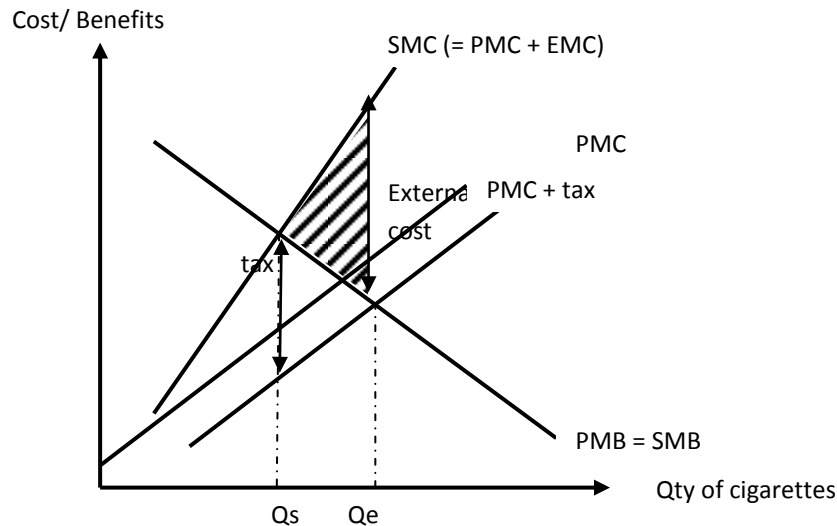


Figure 3

The problem of market failure arises because the negative externality is underpriced by the price mechanism. Private optimum occurs at Q_e where PMB (the benefit to the individuals of smoking the last unit of cigarette) equals PMC (the cost to the individual of smoking the last unit of cigarette).

But the socially efficient level is where $SMC = SMB$ i.e. at output Q_s . Therefore, there are too many scarce resources devoted to the consumption of cigarettes. There will be over-consumption of cigarettes because society values an extra unit of cigarette less than what it would cost society to consume it. The shaded area represents the welfare loss to society as a result of this over-allocation of resources. Society as a whole could be made better off if the current level of cigarettes were reduced to socially efficient level at Q_s . Thus, the current policies that the Singapore government adopts generally aim to bring the level of cigarettes consumed down to somewhere closer to Q_s .

One of the current policies that the Singapore government adopts to improve resource allocation is a tax. The government had recently raised tobacco tax by a further 10% in 2014, bringing the total to 71%.

To achieve the socially efficient level of consumption of cigarettes at Q_s , the tax levied has to be equal to the external marginal cost at Q_s (see Figure 3) in order to effectively internalize the negative externality. When internalized by the individual smoker, this will increase his private marginal cost of smoking and shift the PMC upwards to $PMC + tax$ resulting in a reduction of cigarettes smoked to

the socially efficient level of Qs.

A tax creates incentives to decrease consumption as smoking is now more expensive. Higher taxes are especially effective in reducing tobacco use among lower-income groups and in young people who are just starting to earn a salary. This is because demand for cigarettes is likely to be price elastic for these groups of smokers, as a more expensive pack of cigarettes would take up a larger proportion of their lower income. The disproportionately large number of lower-income smokers in Singapore means that a tax can be a very effective policy. In fact according to the World Health Organisation (WHO), for every 10% increase in the price of cigarettes, smoking drops by 4% to 8%, depending on how affluent the country is.

In addition, a tax has an added advantage of giving the Singapore government the option of using the tax revenue collected to fund smoking cessation clinics, educational campaigns, free health scanning, etc, further driving home the health detriments of smoking. The latest tax hikes on cigarettes and tobacco can in fact net the Singapore government \$70 million more a year.

Unfortunately in reality, it is very difficult to accurately measure the exact amount of EMC incurred by third parties. Underestimating the EMC will result in insufficient tax imposed to correct the market failure. Overestimating the EMC will lead to too high a level of tax leading to consumption below the socially efficient level and there will still be deadweight loss. A tax would also not work very well if demand for cigarettes is price inelastic – since they are habit forming. Thus, people who are already heavy smokers or who can well afford to pay, may not be responsive to the increase in price of cigarettes. In Singapore, the root cause of smoking could be linked to a social issue - rising delinquency among youths – which may be more effectively addressed with education than with draconian measures like a tax.

The Singapore government also relies on tough legislation and regulation to curb the consumption of cigarettes. In 2010, rules were tightened to suspend or revoke retailers who sold cigarettes to underage smokers of their tobacco retail licences. This came in addition of a fine of up to \$5,000 for the first conviction, and up to \$10,000 for subsequent convictions. Young people under 18 caught using, buying or being in possession of tobacco products may be fined up to \$300 if found guilty. Smoking is also prohibited at air-conditioned workplaces, educational institutions, bus shelters, interchanges, public pools and toilets, community clubs, open-air stadiums and even in entertainment outlets. Other forms of regulation that target consumption include the control of advertisements. These measures aim to bring the consumption of cigarettes closer to the socially efficient level, assuming the government has a good idea of ascertaining where that is.

Rules are relatively simple to stipulate and easy to administer and those who do not obey will be severely punished or fined which is a form of direct control. It is also better to enforce penalties than to slap a heavy tax on cigarettes because a heavy tax would encourage the formation of black markets, which would give smokers cheap access to contraband cigarettes.

Still, there must be rigorous enforcement, which would mean large amount of manpower needed, to ensure that these regulations are complied with. This imposes a severe drain on resources. Moreover, there are loopholes in these regulations. For example, persons below 18 years of age may try to beat the system by asking their older friends to buy cigarettes for them. The government

would also need to be mindful of the backlash from businesses, whose patronage and hence income will be badly affected by these laws.

Market failure can also be caused by imperfect information – smokers may be unaware of the short- and long-term health risks associated with smoking. As such, the Singapore government has also been actively involved in providing public education workshops and initiating public campaigns about the harmful effects of smoking. For example, the "I Quit" campaign is fronted by the Health Promotion Board to encourage smokers to stop smoking for 28 days and to have a healthier smoke-free lifestyle. Ideally armed with more information about the harmful effects of smoking, the individual's perceived PMC would now be more attuned to a much-higher actual PMC, resulting in a lower level of cigarettes consumed.

Education is seen as a more personable and humane approach than tax and legislation. If the educational messages get through to people, they are more likely to quit smoking willingly on their own accord and the effect would be much more lasting.

However, changing people's mind-set is a difficult and long-term endeavour especially since smoking is highly addictive. Education may only work for smokers who already have the intention to quit but not for others. And when pitched inappropriately, it can turn people off. Like legislation, this approach can be a drain on government resources. Money could have been spent on other areas of development of the economy.

To conclude, the effectiveness of the current policies depends on many factors such as the target group of consumers and the degree of urgency as resources are limited and hence there is a need to be strategic about the choice of policies. For example, if underage smoking is the main problem, a tax may be more effective since it hits them where it hurts most - their wallets. If the objective is to quickly bring down the number of smokers notwithstanding any age groups, then tough enforcements are the way to go. Ultimately, in view of the strengths and weaknesses of each policy, it is more sensible to implement a combination of policies that targets both production and consumption of cigarettes, and which takes into account the short-term and long-term effectiveness of each policy.

4. (a) Explain the key determinants of sustained growth in Singapore. [10]
- (b) With reference to Singapore, evaluate the current policies to maintain sustained economic growth. [15]

Suggested Answer 4(a)

Sustained economic growth refers to both increases in actual and potential growth that contributes to a continuous increase in the real national income (output) of country over time. In other words, sustained growth can only be achieved via a continuous increase in AD and LRAS. Actual growth refers to the percentage annual increase in the level of national output that is actually produced by the economy. Potential growth refers to the percentage annual increase in the capacity of the economy to produce.

One key determinant of sustained growth in Singapore is the inflow of foreign direct investment (FDI) due to government policies. Government policies of providing investment grants for new investment projects will have the tendency to stimulate investment expenditure. Likewise, the reduction in corporate tax rates will lead to higher **after-tax profits**, which will in turn lead to an increase in investment expenditure. For example, the **Singapore government** has always **pursued a policy of maintaining low corporate taxes to attract businesses** to invest in the Singapore economy. In fact, with a low corporate tax rate of 17%, Singapore corporate tax rate is the third lowest in the Asia-Pacific region after Hong Kong (16.5%) and Macau (12.5). A higher FDI inflow results in increased spending on capital goods like plant, equipment, machinery and building. This leads to an increase in AD as I is a component of AD, increasing real national income and achieving actual growth.

Another key determinant is due to higher export revenue due to the signing of more FTAs. The Singapore government has pursued a **policy of freer trade** by signing more Free trade agreements (FTAs) to achieve economic growth beyond its domestic economic resources. In an FTA, tariffs and quotas are removed between the signatories but retained outside the FTA for other countries. This provides producers in Singapore with an enlarged market for their goods and leads to an increase in demand for exports. There could also be an **increase in foreign direct investment (FDI)** into Singapore as a result of the signing of more FTAs as foreign firms would want to locate their production facilities in Singapore so as to take advantage of the access to a greater number of export markets. In addition, if Singapore maintains a strong and comprehensive network of FTAs with many countries, other countries would have greater incentives to ship their goods through Singapore and hence **generating export revenue** for Singapore, so as to bypass higher protectionist barriers in their final destination markets. These factors will help to increase AD and achieve actual growth.

Additionally, **a high level of investment expenditure will increase the size of capital stock assuming that there is positive net investment.** Usage of machines can bring about higher level of productivity and more output can be produced with the same amount of labour resources. Physical capital accumulation also increases the productivity of labour though a more efficient combination of labour and capital factors of production. Thus, a higher level of investment brings

about increased quantity and quality of an economy's factors of production, raises the ability of the economy to produce more, increases the productive capacity and achieves potential growth.

Moreover, a higher foreign direct investment could be in the area of research and development. In the longer term, **R&D efforts can also raise innovation and production capabilities**. Technological improvement can be either invention, which is the creation of new knowledge and new techniques of production or innovation, which is the application of new technology to the production processes. These can lead to greater productivity and hence more efficient usage of resources. This increase in productive capacity will result in an increase in the potential output, achieving potential growth.

Another key determinant of sustained growth in Singapore is improved labour productivity.

Increase in labour productivity can be achieved via training and upgrading of skills. This can be done through measures such as **subsidies on education**, training workers with new knowledge/skills, tax incentives/subsidies to encourage firms to mechanise and conduct R&D etc. For example, the Workforce Development Agency (WDA) in Singapore provides a range of training programmes which aims to build up the foundational and industry-specific skills. The Singapore government has also adopted schemes like Continuing Education and Training (CET) and has committed \$2.5 billion over the period of 2010 to 2015 to drive productivity growth with a designated target of 2% productivity growth per annum. The increase in labour productivity also increases the productive capacity of the economy, thereby helping to achieve potential growth in the long run. In conclusion, the main determinants causing a sustained economic growth are factors that will result in an increase in AD and AS. In Singapore, this can be due to our ability to attract foreign direct investment in our country and/or an improvement to the quality of the resources such as labour productivity.

Suggested Answer 4(b)

As mentioned in part a, one supply side policy used by Singapore to maintain sustained economic growth **is the increase in labour productivity** which can be achieved via training and upgrading of skills. This can be done through measures such as **subsidy on education**.

This policy is particularly effective as it **target the root cause of the problem** as Singapore has a problem of low productivity (ranging from -0.8 to 2.3% from 2011 to 2014). Coupled with an ageing population, there will be a fall in the availability of resources and as well as a higher cost of labour when the supply of workers decreases. This will lead to a fall in the productive capacity of the country in the long run. Thus to ensure that growth is sustained, one way is to enhance the **quality** of the workers via increasing their productivity. This increase in labour productivity helps to increase the productive capacity of the economy, thereby helping Singapore to achieve potential growth in the long run.

However, one limitation of training and education is that it needs a **long gestation period** and its success hinges on the receptiveness of the workers. Though CET was implemented from 2010; its success has largely been limited with productivity falling in certain years. In Singapore, workers who are **structurally unemployed** tend to be older workers who have little or no relevant skills to survive

in industries that are our new areas of comparative advantage. However, **due to their age**, many of these workers **may not recognise** that they could benefit from retraining programmes, and thus they might refuse to accept help in this way. Hence the increase in potential growth could be limited.

Other than improving productivity, the **government has also engaged in supply side policies such as spending on infrastructure building** especially in specific infrastructure development aimed to **create new comparative advantage** in new areas of manufacturing industries such as the development of Jurong Island for petrol-chemical industries, Tuas biomedical park for pharmaceutical industries, and Biopolis to encourage R&D. This will expand the range of economic activities to replace the declining industries that have lost their comparative advantage. The development of such infrastructure attracts inflow of established foreign firms into the country. With the entry of the foreign firms, there is further transfer of technology contributing to faster process and product innovation. The transfer of knowledge that may also occur due to this could help to scale up the competency/skill level of the local workers hence increasing the productive capacity of Singapore, leading to potential growth.

In the long run, supply side policies to create new areas of growth may be effective in achieving full employment as export demand for the knowledge based sectors tends to be less income elastic, hence export revenue will be affected to a lesser extent with a world-wide recession. With the increase in G on infrastructure and with a more productive workforce, Singapore is more likely to be able to continue attracting more FDI to create more employment opportunities. This achieves more actual and potential growth, thus **achieving a sustained economic growth**.

The supply side policy of the provision of infrastructure to develop new areas of CA is pertinent for Singapore in the midst of globalisation. With the emergence of China and India and many other low-cost economies, **Singapore is losing comparative advantage** in areas that were previously her mainstay, such as low end manufacturing industries. As such she has to create new areas of comparative advantage for export industries, such as pharmaceutical, biomedical and precision engineering, so as to ensure that there is a sustained growth.

However, supply – side policies have **limitations**. Supply-side policies tend to be **long term and uncertain** in their measurable outcome as they require structural changes to be made to increase aggregate supply in the economy. Identifying new areas for development is also difficult given the rapid change in technology and world supply conditions.

Other than supply side policies, another current policies to maintain sustained economic growth **is the signing of more FTAs, as mentioned in part (a)**

This policy is particularly effective as Singapore is one of the world's most trade dependent nations. In 2013, Singapore had the world's highest trade to Gross Domestic Product (GDP) ratio, with imports and exports amounting to about 3.5 times the value of the GDP. Singapore, with a small domestic market, is able to benefit from the signing of FTAs as it allows us to **tap into foreign markets**. Foreign companies may choose to **use Singapore as a springboard/gateway to other economies** where Singapore has FTAs with; this would ensure that they are able to benefit from the FTAs signed between Singapore and other countries. Given that FDI made up a large component of

I in AD, trade policy is effective in contributing to actual growth for Singapore.

However, a greater reliance on **external demand** from adopting more free trade agreement also makes Singapore and other small countries vulnerable to effects of an external downturn. For example, Singapore was the **first East Asian country to go into a recession in 2009** due to the global slowdown arising from the US Financial Crisis. There was a significant decrease in global demand, resulting in a fall in net exports which hit Singapore especially hard, in view of the small domestic demand and heavy dependence on exports for growth. Thus, actual growth could be impacted more adversely during economic downturn.

One other policy that Singapore has adopted is to adopt a modest and gradual appreciation of the exchange rate. This helps to **improve price stability, enable more stable profits** and attract foreign direct investment. A gradual appreciation would lower domestic price of imports. This significantly reduces the general price level of the economy as much of the households and firms in Singapore depend on imports for final goods and services. This lowers imported inflation and helps achieve **price stability** in Singapore, thereby enabling more stable profits. This boosts **business confidence and investment**, especially in industries where a stronger Singapore dollar helps to lower productions costs. **The higher investment will promote growth** and create employment opportunities as AD increase. This will generate a multiplied increase in national income (actual growth) and increase national output. Firms will demand for more labour to meet the higher demand and hence creating more job opportunities. In the long term, LRAS increases with capital accumulation from the investment. **Potential growth ensues.**

However, the policy fails to address the dampening impact on Singapore's export competitiveness in the service sector which contributes about two thirds of its national income. A strong Singapore dollar would hurt Singapore's exports of services as they do not benefit as much from lower imported input prices as manufactured goods do. This could lead to a significant fall in net exports and a fall in Singapore's actual economic growth.

In conclusion, there is no single best policy to achieve a sustained economic growth. The government has to use a combination of demand management policies, supply side policies and trade policy to ensure that actual and potential growth go hand in hand.

While pursuing a sustained economic growth, the government also has to bear in mind the opportunity costs of current growth and the possible ills that accompany economic growth such as income inequality and higher levels of pollution. Therefore, the desired growth levels and the appropriate policies to achieve the desired growth levels is a normative decision that the government has to make. Additionally, the Singapore government should have **policies to curb these problems** that may arise due to sustained economic growth. For instance, the government can provide subsidies to low-income households to help them cope with the rising cost of living and to have measures to help the children of these households climb the social ladder (e.g. bursary). All in all, though attaining a sustained economic growth is good, achieving an inclusive growth would be even better.