



**Anderson Junior College**  
**JC2 2018 H2 Economics**  
**Preliminary Examination**

**Case Study Question 1 – Aging population: Burden or opportunity?**

a	<p><b>From Extract 1, Identify and explain a factor that could be responsible for the upward trend in Japan's health spending shown in Figure 1.</b></p> <p>Aging population (Ext 1) → increase in demand → increase in P and Q → increase in spending</p>	[2]
b	<p><b>With reference to data, discuss the likely effects of a shrinking workforce in Japan and technological advancement on the robotics market.</b></p> <p>Shrinking workforce (Ext 1) → fall in supply of labour → wages increase          Thus demand for robotics which are substitute for labour will increase (Ext 4: funding development of elder care robots to help fill a projected shortfall of specialised workers) → shift DD curve to the right</p> <p>Tech advancement → fall in unit COP → more profitable → increase in SS → shift SS curve to the right</p> <p><b>P1: increase in DD &gt; increase in SS → equilibrium P and Q increase</b>          It takes time to develop and create robotics suitable for different types of healthcare services, coupled with the aging population. It is likely that increase in demand will outweigh the increase in supply in the SR. Hence, equilibrium price and quantity will increase (Fig 1).</p> <div data-bbox="331 1211 1189 1691"> <p style="text-align: right;">Fig. 1: Market for Robotics</p> </div> <p><b>P2: increase in DD &lt; increase in SS → equilibrium P falls, Q increases</b>          Once the technology is fully developed, they may be able to produce more robotics. Hence it is likely that increase in supply will outweigh the increase in demand in the LR. Hence, equilibrium price will decrease while equilibrium quantity will increase (Fig 2).</p>	[8]

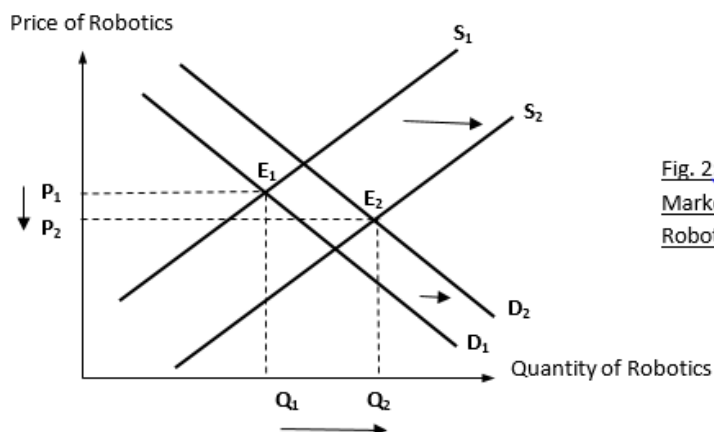


Fig. 2:  
Market for  
Robotics

### Evaluation

Ext 2: With the rapidly aging population and, as the robotics are seen as a close substitute to the workers, demand for the robotics will increase significantly. However, given the existing technology, supply of robotics is unlikely to increase significantly. Hence the increase in demand is still likely to persist and outweigh the increase in supply. Hence, equilibrium price and quantity will increase.

Level	Knowledge, Application, Understanding and Analysis	Marks
L2	An answer that clearly discusses the different impact on the robotics market	4 – 6
L1	An answer that is descriptive without much economic framework linking the factors to the robotics market	1 – 3
<b>Evaluative comment</b>		
Up to 2 further marks for an evaluative appraisal of possibly which factor is the most significant and hence eventual impact on the market		

**c Explain two possible changes that may occur to the demand curve of healthcare workers given the introduction of robots.**

**[4]**

Robots are deemed as substitutes for healthcare workers (Ext 4: development of elder care robots to help fill a projected shortfall of 380,000 specialised workers) → increase in supply of robots causes fall in price of robots → increase in quantity demanded of the robots → fall in demand for the healthcare workers → leftward shift of the demand curve.

With the introduction of robots, there are now more substitutes available, therefore demand for healthcare workers also becomes more price elastic/less price inelastic → demand curve becomes gentler / less steep.

**d What is the main characteristic of a normative economic statement? Identify one example of such a statement from Extract 3.**

**[2]**

A normative economic statement expresses value judgements (opinions) about economic fairness or what the outcome of the economy and policy measure(s) *ought to be*.

	<p>One example is “So, Japan’s demography, paradoxically, is not an onus, but a bonus”.</p> <p>Other accepted statements:</p> <ul style="list-style-type: none"> <li>- “Prime Minister Shinzo Abe said Japan’s aging, shrinking population was not a burden, but an incentive to boost productivity through innovations.”</li> <li>- “I have absolutely no worries about Japan’s demography.”</li> </ul>	
<b>e</b>	<p><b>Is a publicly funded nursing facility an example of a public good? Provide reasons for your answer.</b></p> <p>Public goods exhibit both characteristics of non-excludability (NE) and non-rivalry (NR) in consumption.</p> <p>Excludability → an elderly’s consumption of the nursing facility is made contingent on payment, while other individuals who do not pay for the nursing facility can be effectively excluded from enjoying the benefits → can exclude non-payer from staying in the public nursing home</p> <p><b>AND</b></p> <p>Rivalry in consumption → the consumption of the nursing facility by one elderly reduces the amount of benefit that is available to others.</p> <p><b>Concluding statement</b> → since publicly funded nursing facilities do not fulfil characteristics of NE and NR, they are not an example of public good.</p>	<b>[4]</b>
<b>f</b>	<p><b>Discuss the factors that the Japanese government should consider in allocating resources towards the development of elder care robots.</b></p> <p>The objective of a government is to maximise social welfare, which is achieved when production takes place up to the quantity where marginal social benefits (MSB) is equal to marginal social cost (MSC).</p> <p>In deciding how to allocate its resources towards development of robots for elder care, the Japanese government would consider various factors such as its constraints, the benefits and costs from allocating additional units, as well as gather information and consider the perspectives of relevant stakeholders.</p> <p>One factor that the Japanese government needs to consider is the constraints it faces, as the constraints will limit the available choices and their associated benefits and costs. These constraints include the budget constraint and the priority of economic aims. For example, if Japan is facing budget deficit, the amount of resources that they can allocate to the development of elder care robots will be limited. Moreover, it also depends if they have other pressing issue such as worsening of growth which would require them to allocate resources towards, hence fewer resources available for the development of elder care robots.</p> <p>Another factor that the Japanese government needs to consider will be the benefits from the development of elder care robots such as achieving efficiency and equity in the economy. Positive externality could arise due to the consumption of elder care robots such as easing the manpower shortage and promoting higher rates of economic growth as the younger generation would be more able to focus better at work and be more productive once their parents are cared for by these robots, (Ext 4: “robotics expertise to help</p>	<b>[10]</b>

	<p>cope), resulting in under-consumption of elder care robots. Hence, allocating recourse to the development of elder care robots would help to achieve allocative efficiency. In addition, the development of elder care robots by the government would also ensure that people who require it will be able to access it such as the lower-income elderly, hence achieving equity.</p> <p>Another factor that the Japanese government needs to consider will be the benefits from the development of elder care robots such as achieving economic growth. The government could generate export revenue from the sale of elder care robots (Ext 4: potentially lucrative export industry). With increasing export revenue, net exports will increase, <i>ceteris paribus</i>. Hence aggregate demand will increase, leading to multiplied increase in real national income, hence achieving actual growth.</p> <p>Another factor that the Japanese government needs to consider will be the costs from the development of elder care robots such as the cost of development (Ext 4: high costs, safety issues and doubts). Development of elder care robots will incur high costs such as recruiting the professionals and purchase of high technology material such as microchips. They will also need to spend on research and development to ensure that the robots are safe for usage. Moreover, they will need to increase production for the rapidly aging population. Hence production cost is likely to increase significantly which will be a strain of the budget.</p> <p>In addition, the government will need to consider the opportunity cost incurred. If they were to allocate the resources to the development of elder care robots, it will mean that they have fewer resources available for other areas such as education and healthcare, hence worsening the efficiency in other markets like education.</p> <p>Another factor that the Japanese government needs to consider will be the perspectives of others such as the consumers who are the elderly in this case. Elder care is typically seen as a job which requires a human element (Ext 4: a job typically seen as requiring human touch), and if the consumers are not receptive to this idea, there may be low demand for such elder care robots. In this way, the government should not allocate much resources to this development. On the other hand, there is generally warm reception to robots by many Japanese (Ext 4: “many Japanese see them positively”). There may be an increase in demand, and hence the government should be allocating more resources towards the development.</p> <p>Finally, after determining the MSB and MSC, the Japanese government would weigh them to make its decision. It would allocate resources towards developing more robots if the marginal social benefit is greater or at least equal to the marginal social cost as the addition to total benefit is greater than or at least equal to the addition to total cost. This would then allow it to maximise social welfare.</p> <p><b>EV: Make a stand and justify</b></p> <p>In conclusion the Japanese government makes decisions by considering the factors that affect their costs and benefits and then weigh MSB and MSC to allocate resources to maximise social welfare.</p> <p>The most significant factor may be constraint that the Japanese government</p>	
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is facing. If they are facing a budget deficit or facing more pressing issues such as slow growth, shrinking workforce and tax base (Ext 1), they may want to focus on boosting economic growth first. With economic growth, it will allow them to collect more tax revenue which could then be channelled to developing elder care robots eventually.

The most significant factor would also depend on whether the Japanese government has implemented other policies to improve the economy concurrently. It is very likely that the government may be looking at other macroeconomic stabilisation and growth policies while addressing the issue of an aging population and promoting elder care. This being the case, the most significant factor to consider would then be the perception of the public towards elder care robots or the direct benefits that elder care robots might have on the healthcare sector, rather than unintended positive impacts on the wider economy (because the latter would not be obvious).

**Mark scheme:**

Level	Knowledge, Application, Understanding and Analysis	Marks
L2	An answer that clearly explains the different factors that a rational manufacturer would have to consider, including the constraints, benefits and costs.	5-7
L1	An answer that is descriptive without much economic framework linking the factors to be considered to costs and benefits.	1-4
<b>Evaluative comment</b>		
Up to 3 marks for an evaluative comment on which factors are the most significant or how the factors may evolve given a change in the external environment, etc.		

**Question 2: Issues in Trade and Protectionism**

(a)	<b>Explain whether Figure 2 suggests a growing trend towards protectionism.</b>	<b>[4]</b>
	<p>Protectionism is a trade policy whereby the government shelters domestic industries from foreign competition through the imposition of trade barriers on foreign goods and services.</p> <p>P1: Fig 2 suggests growing trend towards protectionism</p> <ul style="list-style-type: none"> <li>Overall increase in nontariff barriers.</li> </ul> <p>P2: Fig 2 doesn't suggest growing trend towards protectionism</p> <ul style="list-style-type: none"> <li>Global export volume has been showing positive growth which means that the export volume has been increasing, a sign of freer trade and not growing protectionism.</li> <li>The no. of nontariff barriers has largely fallen since the peak in 2012 thus the world may be moving away from protectionism instead of towards it.</li> <li>Though nontariff barriers may have increased, tariffs may have fallen by a larger extent. Thus, information in fig 2 is not sufficient to determine whether there is a growing trend towards protectionism.</li> </ul>	
(b)	(i) <b>Using a diagram, explain how the imposition of a tariff leads to deadweight loss.</b>	<b>[5]</b>
	<p>Domestic supply and demand are represented by S and D respectively. We assume the country is too small to affect world prices. It is a price taker.</p> <p>The world price is <math>OP</math> and world supply (<math>W_s</math>) to the country is perfectly price elastic. At <math>P</math>, <math>Q_1</math> is demanded, <math>Q_0</math> is supplied by domestic producers and thus, <math>Q_0 Q_1</math> is imported.</p> <p>If the government now imposes a tariff of <math>PP_1</math>, the price of this commodity in the domestic market increases to <math>OP_1</math>, and total consumption decreases to <math>OQ_3</math> while domestic output increases to <math>OQ_2</math> and <math>Q_2 Q_3</math> is imported.</p>	

		<p>The imposition of the tariff imposes a cost on society. Consumers now have to pay a higher price and consumer surplus falls from DCP to DAP<sub>1</sub>. <b>The cost to consumers is the loss of consumer surplus equal to PP<sub>1</sub>AC.</b></p> <p>However, PP<sub>1</sub>EG is the gain in surplus for producers and EABF is the tax revenue gained by the government.</p> <p>Thus, the remaining areas EFG and ABC <b>represent the deadweight loss</b> to society.</p>	
	(ii)	<b>Analyse the possible arguments as to why the US would place tariffs on imported goods and consider which argument might be more justified.</b>	<b>[8]</b>
		<p>Argument 1: <b>Protect against low-wage workers/ protect home employment</b></p> <p><b>Argument for:</b> Extract 6 states the need to protect American workers against competition from low-wage countries like Vietnam and Malaysia. Countries such as the US where the people enjoy high wages have often felt threatened that their standard of living would be undermined by the import of cheaper goods from low-wage countries. Without protection, the local industries may be edged out and have to close down, resulting in the fall in employment and standard of living. To protect their jobs, they may press for higher tariffs and other means to keep out the goods.</p> <p><b>Argument against:</b> Though such protection benefits high wage workers, it encourages inefficiency and consumers will be denied the opportunity to buy from cheaper sources of supply. If the country has lost its comparative advantage, it should re-look these industries and if necessary, let them shut down to divert resources to other more productive uses.</p> <p>Argument 2: <b>Reduce a persistent Balance of Payments (BOP) deficit</b></p> <p><b>Argument for:</b> Figure 3 shows that US's current account has consistently been in a deficit from 2001 to 2016, likely due to excessive import expenditure over export revenue. This is likely to lead to a persistent BOP deficit which may cause increasing foreign debt resulting in external instability and making the US economy more vulnerable to speculations against the US dollar. Hence there is a need to place tariffs on imported goods to reduce the import expenditure. By improving the current account position, it will also lead to an improvement in the BOP position, ceteris paribus.</p> <p><b>Argument against:</b> The policy of reducing imports is often referred to as a 'beggar-thy-neighbour' policy. This is because the country solves its own problems by passing them on to others. Furthermore, the effectiveness of such</p>	



		<p>policy depends on the price elasticity of demand and supply of the imported goods. The balance of payments problem may not be corrected by increasing the prices of these imports. Moreover, its trading partners may retaliate and hence negate the effectiveness of the protectionist measures.</p> <p><b>Argument 3: Prevent dumping</b></p> <p><b>Argument for:</b>  Extract 6 mentions China being a currency manipulator. If this is true, China's exporters have an unfair advantage since a weaker currency will allow its exports to be sold at prices below the marginal cost of production, which is dumping. American firms may thus be driven out, causing unemployment and Chinese firms may gain monopoly power in US. This may result in market dominance which will increase productive and allocative inefficiency due to a lack of competition. Protection from such unfair competition would be justified based on the market distortions which can result in long-term inefficiencies.</p> <p><b>Argument against:</b>  It is difficult to prove that China is a currency manipulator and its low prices may in fact be due to its comparative advantage. If this is so, placing tariffs on imported goods would only cause US consumers not to be able to enjoy goods at a lower price, causing consumer surplus to be lower and also causing greater deadweight loss in society (as explained in b i).</p> <p><b>Evaluation: Consider which argument is more justified:</b></p> <ul style="list-style-type: none"> <li>• The arguments that China is a currency manipulator or home employment in the US has suffered due to the competition from low-wage workers are difficult to prove and require more data or information to determine.</li> <li>• In contrast, it is clear from Figure 3 that US is indeed suffering from a large and persistent current account deficit which needs to be tackled.</li> <li>• Therefore, the argument to reduce the BOP deficit might be more justified, at least in the short run.</li> <li>• However, in the long run, protectionist measures will only distort the true costs and differences in comparative costs between countries, causing the benefits that can accrue due to free trade to be reduced. The root cause why US is suffering from a BOP deficit has to be determined and if it is due to a loss of comparative advantage (CA), US should use supply-side policies instead to directly tackle the problem rather than seeking to protect the inefficiency.</li> </ul>	
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(c)		<b>Use aggregate demand and supply analysis to explain how it is possible that “deflation takes root in the city state” (Extract 7).</b>	<b>[3]</b>																		
		<p>Deflation is where there is a sustained fall in the general price level.</p> <ul style="list-style-type: none"><li>• Extract 7 mentioned that the biggest risk is a sharper than expected global slowdown. A global slowdown will lead to a fall in global demand for Singapore’s exports, resulting in a fall in (X-M) and a fall in AD. If this persists, there will be a sustained fall in the GPL.</li><li>• Extract 7 also mentioned lower oil prices which will result in a fall in cost of production for many goods and services since oil is a main source of energy. This will lead to an increase in SRAS which will again lead to a sustained fall in GPL if oil prices continue to fall.</li><li>• Therefore, these above factors may cause deflation to take root in the city state.</li></ul>																			
(d)		<b>With reference to data, assess the extent to which the Singapore government’s approach to international trade may need to be adjusted in response to the withdrawal of the US from the Trans-Pacific Partnership.</b>	<b>[10]</b>																		
		<p>Overview</p> <table><tr><td><p><b><u>Thesis: Need to adjust</u></b></p><ul style="list-style-type: none"><li>• Reasons → negative impact on the withdrawal of USA from the TPP in Singapore</li><li>• Limitations of existing policies eg. Gradual and modest appreciation</li><li>• Adjust to solve the root cause of the problem brought by the issues from TPP:<ul style="list-style-type: none"><li>- Weaken the ER</li><li>- Use more SS-side policies</li></ul></li></ul></td><td><p><b><u>Anti-thesis: No need to adjust</u></b></p><ul style="list-style-type: none"><li>• Reasons → extensive bilateral agreements in place</li><li>• Effectiveness of current policies to address the negative impact eg existing FTAs, gradual modest appreciation</li></ul></td></tr></table>	<p><b><u>Thesis: Need to adjust</u></b></p> <ul style="list-style-type: none"><li>• Reasons → negative impact on the withdrawal of USA from the TPP in Singapore</li><li>• Limitations of existing policies eg. Gradual and modest appreciation</li><li>• Adjust to solve the root cause of the problem brought by the issues from TPP:<ul style="list-style-type: none"><li>- Weaken the ER</li><li>- Use more SS-side policies</li></ul></li></ul>	<p><b><u>Anti-thesis: No need to adjust</u></b></p> <ul style="list-style-type: none"><li>• Reasons → extensive bilateral agreements in place</li><li>• Effectiveness of current policies to address the negative impact eg existing FTAs, gradual modest appreciation</li></ul>																	
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		<p><b><u>Thesis: Needs to adjust</u></b></p> <p>The withdrawal of the US from the TPP means fewer trading activities, assuming that the increase in X is greater than the increase in M, there might be a fall in (X-M). Capital may also be less mobile, causing a fall in FDI into Singapore. Overall, actual growth and BOP position may worsen.</p> <p>According to Extract 8, the current approach taken by the Singapore government is gradual, modest appreciation. This aims to curb inflation but is less relevant as the economy is facing negative inflation. The falling oil prices (Extract 7) also means that Singapore is unlikely to face a threat of imported inflation.</p> <p>On top of that, Extract 6 mentioned that “ the withdrawal of the US also represent a loss of opportunities for ...Malaysia...” → Given that the economic growth of Malaysia may be affected and it is Singapore’s third largest export partner (Table 1) → Singapore’s export revenue and thus growth may further weaken with negative inflation worsening.</p> <p><b>Exchange rate policy</b> Should consider allowing SGD to weaken. Assuming MLC holds since there are many close substitutes available from neighbouring countries, (X-M) will increase, AD increases, RNY increases. This helps to compensate the loss in (X-M) due to the withdrawal of US from the TPP.</p> <p><b>SS side policies</b> Need to use more SSP to enhance export competitiveness and maintain or create new CA (non-price competitiveness).</p> <p>Extract 9 warns that Singapore will lose its competitiveness if productivity growth lags behind wage growth. Singapore thus needs to enhance productivity growth to lower the unit cost of labour which reduces the average cost of production and can then be translated to lower prices of our exports. A more productive workforce can also help to attract investment from other countries such as China and Japan.</p> <p>More effective use of technology in new areas of growth can create new CA can improve the non-price competitiveness of our exports leading to an increase in demand for our exports.</p> <p><b><u>Anti-thesis: No need to adjust</u></b></p> <p><b>Trade Policy</b> Singapore has numerous FTAs with most TPP members and Asean and it also continues to sign new FTAs with other countries. Extract 6 states that the economic impact for Singapore would be limited given that it already has an open economy and extensive bilateral agreements in place - including an existing FTA with US. These allow the Singapore economy to diversify into other regions and enjoy the benefits from specialisation and trade as well as maintain our export revenue even with the withdrawal of the US from the TPP.</p> <p>Furthermore, from table 1, US is Singapore’s third import partner but our</p>	

fifth export partner where US share of total Singapore exports is less than 7%. This may then suggest that the impact on (X-M) is less significant.

**Gradual and modest appreciation with reduced slope**

Since the MAS has already reduced the slope of the exchange rate as suggested in Extract 8, there is no need for further change as a gradual and modest appreciation of the exchange rate is still needed to control imported inflation, given that we are small economy, heavily reliant on imports. The lower oil prices may also not persist as OPEC may restrict supply or demand may increase with countries seeing stronger growth.

**Possible EV:** May not need to adjust because overall impact on SG is likely to be small. SG already has existing FTAs with many countries, including US. As long as Singapore is able to maintain her CA and establish new CA, the withdrawal of the US from TPP might not necessitate a change in her existing macroeconomic policies. That said, it is difficult to identify new areas of growth. Also, its indirect impact on Singapore can be substantial.

Mark scheme		
L2	Well-developed discussion on the reasons or current measures and policies that need to be adjusted by Singapore	5-7
L1	Brief explanation on the reasons or current measures or policies that needs to be adjusted by Singapore. May contain conceptual errors	1-4
Evaluation		
E2	Evaluation based on economic analysis (whether to adjust approach)	2-3
E1	Mere statement without economic analysis	1