

## **ACJC Preliminary Examination 2017 Paper 2 Question 2**

### **Question 2**

Consumers' demand for a good or service is often distorted by imperfect information. Some examples of such markets are medical services, infant milk powder and home appliances.

- (a) Explain how different types of imperfect information can lead to an inefficient allocation of resources. [10]
- (b) Discuss whether subsidies should be implemented to achieve an efficient allocation of resources in markets where imperfect information exists. [15]

### **Suggested Approach**

- (a) **Explain how different types of imperfect information can lead to an inefficient allocation of resources.** [10]

- Students should make use of the examples given in the stem to help them answer the question
  - Students should attempt to classify the types of imperfect information as:
    - Missing or lack of information
    - Inaccurate or persuasive information
    - Asymmetrical information (between doctor and patient, home appliance manufacturer and consumers)
  - With each type of imperfect information, student need to show how consumer's demand will be distorted or under reflected in the market leading to possible under- or over- consumption of some goods or services
- 
- Imperfect information in
    - Medical services
      - Consumers do not have information about the preventive medical services they may need e.g. childhood immunisation, overseas travel vaccinations
      - A doctor have more information than patients in about the number and type of tests and treatments needed for the patient
    - Infant formula milk
      - What basic nutrients and how much of the nutrients are safe for infants
      - Advertisements in infant milk powder market often mislead parents psychologically, into believing that a particular brand is better than another
    - Home appliances
      - Lack of information on energy consumption of home appliance
      - Lack of information on electrical safety level of home appliances
  - Missing or lack of information
    - For preventive childhood immunisations, (eg. Against Tuberculosis, Hep B, measles, mumps and rubella ...) parents do not have access (unable to understand medical literature) to the medical information about the benefits of such immunisation and when best for an infant to have them.
    - Such information may be made available only to those parents who are able and willing to pay for paediatrician fees

- Due to the lack of information, it is likely that the market demand for childhood immunisation is lower than if the information is made available. i.e.  $DD_{\text{without info}}$  will be lower than  $DD_{\text{with info}}$ . (draw a simple DD-SS diagram to illustrate)
  - Market equilibrium for the consumption of childhood immunisation will be lower than that which will maximise consumers' welfare
  - Lack of information in this case has led to an under allocation of resources to the childhood immunisation market
  - This argument can also be applied to home appliances in terms of information on energy consumption
- Inaccurate or persuasive information
    - Infant milk powder
    - Producers often aggressively advertise their infant milk powder with messages and claims that will appeal to parents, making them believe they are giving the best to their children and these messages and claims are unsubstantiated
    - E.g. 'Premium Formula Milk', 'better immunity'
    - Causes demand for a particular firm's infant milk powder to be higher than it should be i.e.  $DD_{\text{perceived}}$  to be greater than  $DD_{\text{actual}}$  hence consumer paying a higher price for infant milk than the benefits the consumer had expected to enjoy (price paid is higher than actual benefits received)
    - Successive persuasive advertisements hence leads to overconsumption of such goods leading to loss of consumers' surplus.
    - Inaccurate persuasive information thus leads to over allocation of resources to the production of those goods
- Asymmetric information
    - doctor has more information than patient
      - doctors, to increase their revenues, can prescribe more medication and/or tests than needed for the patient and the patient does not have the expertise to know the better
      - demand for medication and/or tests will be higher than is needed for the patient
      - patients end up consuming more medical services than is necessary for them
      - consumers incurs a loss of consumer welfare as the additional benefit derived from the additional medication / tests will be lower than the additional costs incurred
      - unethical doctors will thus cause an overconsumption of medical services leading to too much resources being allocated to medical services
    - manufacturers of home appliances knows how safe their products are but consumers do not know
      - manufacturers of less safe home appliances will be able to willing to supply their home appliances at a lower price than manufacturers of home appliances that are safer
      - consumers do not have information about how safe home appliances from the different manufacturers are hence no way to compare to make rational decisions to maximise their satisfaction from their purchase
      - consumers without the information on the level of safety of the product will thus be willing to pay a lower price than they would for home appliances compared to if they had the information

- asymmetric information in this case would lead to the home appliance market adversely selecting less safe home appliances than the safer ones
- the lower price consumers are willing to pay will not attract manufacturers of safer products to enter the market
- in this case, the market would have failed as it would have under allocated resources to the firms producing safer home appliances where consumers would have increased their consumers' surplus by purchasing the safer home appliance

## Mark Scheme

### Question 2a

Level	Description	Mark
3	<ul style="list-style-type: none"> <li>• explain well how imperfect information leads to inefficient allocation of resources</li> <li>• good use of examples for illustration (can use examples beyond what is provided in the stem)</li> <li>• consistent application of economic concepts for analysis of imperfect information</li> <li>• at least 3 types of imperfect information discussed with 2 types well analysed</li> </ul>	8 - 10
2	<ul style="list-style-type: none"> <li>• largely descriptive explanation with some application of economic analysis</li> <li>• weak ability to follow through explanation to explicitly show how resources are inefficiently allocated</li> <li>• at most 2 types of imperfect information are well explained or 3 types with weak explanation</li> <li>• examples may be present but not used effectively</li> </ul>	5 - 7
1	<ul style="list-style-type: none"> <li>• a listing of the different types of imperfect information</li> <li>• examples are stated rather than used for illustration</li> <li>• unexplained statements i.e. lacking in reasoning</li> </ul>	1 - 4

(b) **Discuss whether subsidies should be implemented to achieve an efficient allocation of resources in markets where imperfect information exists.** [15]

- to achieve an efficient allocation of resources in markets where imperfect information exists, government should address the provision and access of accurate information to consumers
- if subsidies is to be provided to consumers, they should be given to lower the cost of obtaining relevant information for them to make rational decision
- in the case of market for medical services where there exists doctor-patient asymmetric information, **government can provide subsidies to basic health screening at government hospitals**
  - the government will provide guidelines about the number of basic tests items that consumers need to take to give them sufficient information about their general health status
  - a subsidy for basic health screening at government hospitals will lower the price and increase the number of consumers taking only the test items that they need and reduce the consumption of unnecessary additional test items (*include a subsidy diagram*)
  - further medical testing may be taken consumers based on their basic health screening reports
  - with subsidies, doctors in the private sector will thus have less power to cause consumers to over consume medical service in this area
  - this will cause less resources to be allocated in the health screening market and more allocated to other areas of medical testing
  - the success of this policy of subsidy is constrained by the integrity of the government and its financial capability
  - the stronger the integrity of the government the more likely consumers will respond to the policy without reservations
- in the case of market for infant milk powder where there is a lack of accurate information, government should subsidise some producers of infant milk powder
  - government can endorse the nutritional value of these producers of infant milk powder to be safe and 'as good as others' for infants
  - subsidies will enable these government endorsed producers to cover their costs of production and costs of advertising (educating the public about optimal nutritional for infants)
  - with a subsidy given to these producers together with government endorsement and public education, the lower price of these infant milk powder will attract some to switch away from the more costly but equally nutritional infant milk powder
  - subsidies in this case, will allow for more resources to be channelled to these government endorsed products where less affluent consumers are able to enjoy increase in consumer's surplus increasing their welfare
  - the government should only subsidise these producers for a short period of time. Once consumers take to these government endorsed infant milk powder and the psychological battle for these products to be as good as the branded ones are won, the subsidy may be removed as these producers will have sufficient consumers to make at least normal profits
- the above examples show how subsidies can achieve efficient allocation of resources in markets with imperfect information, it is also clear that its effectiveness is conditional on government's ability to provide accurate information

- in the case of safety of home appliances where there is a *lack of information*,
  - it may be possible for consumers to pay for safety reports on testing of home appliances by independent firms to enable these consumers to make decisions that will lead to efficient allocation of resources
  - such information may be considered a public good with free ridership problem as the test results of the different home appliances will be spread to many (non-excludable) very quickly and easily
  - there is no incentive for consumers to want to pay for such reports and safety of home appliances is important to all and increases society's welfare
  - providing safety information on home appliances for all is therefore the best policy to achieve efficient allocation of resources in this market
  - instead of subsidising consumers to purchase safety reports, the government should set up a testing and **regulation** body to establish a **minimum safety standard** for home appliances and to provide such information to consumers so consumers may make decisions based on more accurate information
  - in Singapore, all home appliances that passes a minimum safety standard will have a 'SAFETY Mark' indicated on them and those without the indicator (SAFETY Mark) are deemed less safe
  - also applicable for information on energy consumption of home appliances
- in the case of overseas travel vaccinations, government provides **travel vaccination advice** and **public education** to allow consumers to make informed decisions
  - the demand for travel vaccinations will increase with such information being made available thus increasing resources being allocated into this market
  - the increase in demand will also lead to an increase in consumer welfare
- in the case of misleading advertisements, besides setting up stringent **rules and regulations** to prevent misleading advertisements, the government should also step in to provide accurate information through public education (the case of infant milk powder, healthy food)
- with imperfect information in markets, the most appropriate policy should be to ensure accessibility to accurate information hence setting up rules and regulations and public education should be more effective than subsidy in most cases
- decision-making considerations – 'should' or 'should not'
  - financial cost of long term subsidy vs cost of setting up rules, regulation and guidelines and set-up and operating costs of watchdog bodies (monitoring) and institutions to establish and maintain standards
  - relative effectiveness of subsidy vs other measure where subsidy is applicable

## Mark Scheme

### Question 2b

Level	Description	Mark
3	<ul style="list-style-type: none"> <li>well-developed explanation of how measure will achieve efficient allocation of resources (accurate reference to question)</li> <li>good use of examples for illustration (can use examples beyond what is provided in the stem)</li> <li>good economic analysis of policies / measures discussed</li> <li>consistently addressing the question of 'should'</li> <li>well balanced discussion</li> <li>at least 3 well discussed measures including subsidy</li> </ul>	8 - 10
2	<ul style="list-style-type: none"> <li>largely descriptive with some application of economic analysis</li> <li>contrived application of subsidy or textbook explanation of use of subsidy</li> <li>examples may be present but ineffectively applied</li> <li>limited analysis and discussion, mainly explanation of measures</li> <li>discussion may be balanced but lack depth</li> <li>poor reference to question: 'should'</li> <li>at most 2 measures (including subsidy) are well explained or 3 measures but poorly explained</li> </ul>	5 - 7
1	<ul style="list-style-type: none"> <li>a listing of the different measures</li> <li>examples are stated rather than used for illustration</li> <li>largely a display of knowledge without reasoning, mainly unexplained statements</li> </ul>	1 - 4

### Evaluation

Level	Description	Mark
3	<ul style="list-style-type: none"> <li>well considered conclusion that is built upon earlier discussion</li> <li>a well-structured essay that addresses the question</li> <li>judgements made based on economic analysis</li> </ul>	4 - 5
2	<ul style="list-style-type: none"> <li>weak attempt at conclusion to address 'should'</li> <li>some attempt at providing reasons for evaluative statements</li> </ul>	2 - 3
1	<ul style="list-style-type: none"> <li>unsupported statement of judgement</li> </ul>	1

## Question 6

The “fourth industrial revolution” characterised by artificial intelligence, robotics and Internet of Things (IoT) will see robots manufacture cars and drive them, 3D machines print products and call centres being handled by virtual agents. Singapore’s ageing population is a cause for concern in an increasingly digital and technology-driven economy.

- (a) Explain the potential benefits and challenges of free trade agreements for an economy. [10]
- (b) In view of the ‘fourth industrial revolution’, discuss whether the macroeconomic and trade policies adopted by the Singapore government need to be adjusted to maintain a current account surplus in its balance of payments. [15]

### Suggested Approach

- (a) **Explain the potential benefits and challenges of free trade agreements for an economy.** [10]

### Suggested Approach

- As free trade agreements are a double-edged sword, students can explain each potential benefit against its challenge instead of structuring an answer where all benefits are explained first followed by all challenges
- Time is more efficiently used when students adopt a benefit1 – challenge1, benefit2 – challenge2,.. approach
- Students should use countries at different stages of economic development or with different characteristics as examples for illustration

Benefits	Challenges
<p>Consumers enjoy lower prices and more variety of goods</p> <ul style="list-style-type: none"> <li>• Increase consumer surplus and consumer welfare</li> </ul>	<p>Challenge to reduce the potential increase in structural unemployment in industries that produces goods that are substitutes to the cheaper imported goods and prevent market dominance</p> <ul style="list-style-type: none"> <li>• Consumers switch from domestic goods to import substitutes</li> <li>• Less efficient firms may make losses and shut down</li> </ul> <p>Potential development of market dominance</p> <ul style="list-style-type: none"> <li>• ‘Dumping’ by trade partners or imports from trade partner with strong comparative advantage may lead to market dominance</li> </ul>
<p>Producers enjoy lower cost of production through cheaper imported of raw materials</p> <ul style="list-style-type: none"> <li>• Increases price competitiveness of exports and domestic substitutes of imported goods</li> <li>• Increase profitability of firms</li> </ul>	

<p>Lower or removal of protectionistic barriers for exports lead to increase in export demand</p> <ul style="list-style-type: none"> <li>• Increase in export demand allows firms to specialise and enjoy economies of scale</li> <li>• Increase the profitability of exporting firms and those firms in the industries that support these firms</li> </ul>	<ul style="list-style-type: none"> <li>• as firms increase their scale of production, there is threat of diseconomies of scale as production exceeds the minimum efficient scale output level</li> <li>• this poses a challenge to firms to overcome the threat or rising unit cost of production to remain price competitive</li> </ul>
<p>economy can specialise and depend on the export of goods with comparative advantage for economic growth, these industries will enjoy higher profits and wages</p>	<p>If an economy has few industries with comparative advantage, they will be vulnerable to the external shocks in these industries</p> <p>Challenge is to be more resilient and less dependent on a few industries for economic growth</p>
<p>Improves the current account balance (increase a current account surplus or decrease a current account deficit) through increase in export revenues</p>	<p>Challenge for an economy is to develop sufficient industries with comparative advantage to ensure its export revenues to be greater than its import expenditure</p>
<p>Lower cost of production arising from FTAs can increase SRAS contributing to lowering or keeping inflation rates low</p>	<p>Depreciation of an economy's currency or inflation in FTA countries can cause increasing import prices</p> <p>Challenge to reduce the effects of rising import costs to raising domestic inflation rates</p>
<p>Increase in export markets with increase in export revenues (such that <math>X - M &gt; 0</math>) increases AD generating increase in employment, economic growth and household incomes which will through the multiplier effect, generate further increase in domestic consumption and national output. Positive economic sentiments will encourage more consumption and investments contributing to further economic growth</p>	<p>As economy expands and operates closer to its productive capacity, the challenge for the economy is to prevent high rates of inflation or keeping inflation rates within their targets (healthy and low inflation rates)</p> <p>Whilst FTAs can bring about economic growth, it can also bring about negative economic shocks for an economy, causing falling AD and eventually recession in the economy</p> <p>The challenge for the economy will thus be to ensure it is able to sustain its economic growth.</p>

## Mark Scheme

### Question 6a

<b>Level</b>	<b>Description</b>	<b>Mark</b>
<b>3</b>	<ul style="list-style-type: none"><li>• well explained benefits and challenges of FTAs to an economy</li><li>• well-structured answer</li><li>• benefits are well classified: consumers, firms and economy</li><li>• ability to analyse the relationship between benefits and challenges</li><li>• excellent economic analysis</li><li>• well applied to countries at different stages of economic development or with different characteristics</li></ul>	<b>8 - 10</b>
<b>2</b>	<ul style="list-style-type: none"><li>• largely descriptive explanation with some application of economic analysis</li><li>• lacking in organisation of ideas, answer lacks structure</li><li>• may not see relationships between benefits and challenges</li><li>• lacking in application to real world</li></ul>	<b>5 - 7</b>
<b>1</b>	<ul style="list-style-type: none"><li>• a listing of the benefits and challenges</li><li>• poorly or no organisation of ideas</li><li>• unexplained statements i.e. lacking in reasoning</li></ul>	<b>1 - 4</b>

- (b) In view of the ‘fourth industrial revolution’, discuss whether the macroeconomic and trade policies adopted by the Singapore government need to be adjusted to maintain a current account surplus in its balance of payments. [15]

### Suggested Approach

- students need to analyse the question well and take note of the key phrases that defines the question
    - **fourth industrial revolution**: decision of whether to make adjustments to policies should be considered in view of the effects and impact of this revolution
    - policies **adopted** – refers to CURRENT policies
    - **adjusted** – not about implementation of policy but making changes to existing policies hence arguments should be on why CHANGES need to be made or not instead of why the policy should be adopted or not
    - remember the **end point** of your arguments: MAINTAIN a current account surplus
- 
- as an introduction,
    - students may clarify what is the fourth industrial revolution
    - briefly, how this revolution is relevant to (or impact) Singapore
  - effects and impact of fourth revolution on Singapore
    - the fourth industrial revolution basically means more advanced, intelligent and sophisticated technology will be driving the next wave of innovations in both production methods and products
    - impact on production
      - use of robotics in manufacturing and service sectors
        - substituting robots for labour
        - traditional labour intensive manufacturing may now be less labour intensive and more capital intensive with more consistency in productivity in terms of quantity and quality
        - narrows the comparative disadvantage that Singapore has in some light manufacturing industries which Singapore can now develop as an area of comparative advantage or at least is able to support some domestic firms operating in these industries
      - 3D machines print products
        - Eliminates the need for expertise to modify, calibrate and maintain machines to produce precision and customised products for prototyping or for consumption
        - lowers personnel cost of production of such precision and customised products
      - call centres being handled by virtual agents
        - reduction in outsourcing of provision of such services to low wage labour abundant countries
      - Internet of Things (IoT)
        - Eliminates or reduce the need for brick and mortar shop fronts for commerce and retail

- Increases productivity and lowers cost of production for all services that can be conducted online 24/7
  - Allows for just-in-time orders and decreases the need for large inventories hence cutting warehousing costs
  - Efficient logistic solutions lowers cost of production as movements of inputs to finished products are made more efficiently
- Impact on product and service markets
  - Consumer electronic devices with more processing power
  - Robotics and its related markets
  - Data storage and internet related hardware and software
  - Data analysis and software programming services
  - . . .
- Singapore's current account surplus is contributed, to a large extent, by a surplus in the balance of trade in goods
- (Policy targets) To maintain a surplus in the BOP current account, Singapore has to maintain its strong surplus in the balance of trade in goods and improve its balance of trade in services (currently a small deficit) and also to reduce the deficit in the primary balance
- to maintain a strong surplus in the balance of trade in goods
  - Singapore's comparative advantage is determined by the skill level of her labour force and level of technology that the economy can harness and adopt
  - Singapore's comparative advantage lies in its state of technology which means she will lose them as fast as new technologies emerge hence, Singapore needs to be in the forefront of technology for her export goods and services to be relevant and competitive
  - With the fourth industrial revolution, Singapore needs to create new areas of comparative advantage as new products and new production methods have to be adopted for Singapore's exports to remain competitive in the world markets
- Review of trade policies
  - Continue to remain a free port with no protectionistic barriers to trade (except for some areas like the car market) as Singapore is dependent on imports of raw materials and semi-finished goods to value-add to them for re-export
  - If goods from other countries can be imported freely into Singapore, it is likely that our trade partners will reciprocate by allow Singapore's good to have easier access to their markets
  - Continue to sign free trade agreements with countries from different regions to diversify our export markets (from emerging countries to developed countries)
  - As Singapore is small and lacking in resources, she is dependent on imports for consumer goods and inputs for production, hence, it is extremely crucial for her export revenues to be very large to support her import expenditure
  - Ensuring a large external market is therefore a necessity for Singapore with or without the fourth industrial revolution
- Review of macroeconomic policies (should be confined to those that will have an impact on maintaining a BOP current account surplus)
  - To maintain and increase **export competitiveness**
    - Fiscal policy – government expenditure

- Adjustment – divert more or increase expenditures in ICT infrastructure to enable firms to adopt up-to-date technologies to ride the wave of the fourth industrial revolution
  - To lower cost of production and improve price competitiveness of exports
- Fiscal policy – tax concession, subsidies, corporate tax rate
  - Continue to keep corporate tax rate competitively low to encourage foreign direct investments or foreign collaboration and joint ventures with domestic firms to leap frog into the fourth industrial revolution (to benefit from the transfer of knowledge and expertise of successful firms of the ‘new’ industries)
  - Adjustment - Tax concessions to be given to new firms or start-ups in industries that will develop and export products or services that leverage on technologies of the fourth industrial revolution
  - Adjustment – divert more funds for subsidies to encourage
    - adoption of up-to-date technologies
    - innovation to create new or enhance existing products and services (creating new areas of comparative advantage) for the fourth industrial revolution
- monetary policy – continue to be centred on exchange rate as the balance between export prices and import prices in favour of export competitiveness continues to be relevant and necessary to maintain a current account surplus
- create a complementary labour force to **support new export industries**
  - adjustment – increase or higher subsidies for skills training in areas related to the fourth industrial revolution to attract more to move out of current industries to new industries
- to improve **primary income balance** (reduce deficit)
  - Fiscal Policy – government expenditure
    - Adjustment – increase expenditure to set up institutions or departments to provide consultancy and expertise to help local firms go regional i.e set up branches in emerging economies
  - Emerging economics are playing catch-up in the technology race hence it should be profitable for established local technology related firms to venture abroad
  - Target successful local firms in technology related industries or technology based service industries (banking, accounting . . .) to venture abroad
  - Increase in primary income inflow to reduce the deficit in this account balance
- points of evaluation
  - the speed at which new technologies and new products are created makes it difficult for firms and the labour force to catch up, the government will need to put in place aggressive campaigning and adopt moral suasion (soft approach) measures to get firms and individuals to respond, with more urgency, to the government’s policy to realise the intended outcomes of the macroeconomic policies
  - Singapore with her greying population, will find it difficult to increase occupational mobility from the old economy to the new digital and technology-driven economy, more must be done to change the mindset of older workers to want to be reskilled for the fourth industrial revolution

- the fourth industrial revolution should be advantageous to Singapore
  - production will be more capital intensive and Singapore is facing declining growth in her labour force hence increasing labour cost may not be a constrain for firms and export price competitiveness may be enhanced
  - to create comparative advantage in service industries that is digital and technology driven as it requires labour skilled in those areas of which Singapore has control over and has in relative abundance compared to the other resouces
- it is difficult for the government to identify which industries should be supported (through subsidies and tax concessions) as it is difficult to predict which new technology or new product will be successful and will remain profitable in the long run to contribute to maintaining a surplus in the trade in goods account

## Mark Scheme

### Question 6b

Level	Description	Mark
3	<ul style="list-style-type: none"> <li>well-developed explanation of policies and their intended outcomes (policy targets)</li> <li>good use of examples for illustration</li> <li>good economic analysis and discussion of policies with judgement</li> <li>consistently addressing the question: fourth industrial revolution, need for adjustments, BOP current account surplus</li> <li>well-balanced discussion (with and without need for adjustments)</li> <li>at least 2 well discussed macroeconomic policies and trade policies</li> </ul>	8 - 10
2	<ul style="list-style-type: none"> <li>largely descriptive with some application of economic analysis</li> <li>some discussion of policies but may not follow through with judgement on need for adjustment</li> <li>discussion may be balanced but lack depth</li> <li>poor reference to question: fourth industrial revolution and Singapore</li> <li>at most 2 policies are well explained or 3 policies but poorly explained (a mixture of macro and trade policies or only macro policies)</li> </ul>	5 - 7
1	<ul style="list-style-type: none"> <li>a listing of the different macro and trade policies</li> <li>discussion is related to but no reference to question</li> <li>largely a display of knowledge without reasoning, mainly unexplained statements</li> </ul>	1 - 4

### Evaluation

Level	Description	Mark
3	<ul style="list-style-type: none"> <li>well considered conclusion that is built upon earlier discussion</li> <li>a well-structured essay that addresses the question</li> <li>judgements made based on economic analysis</li> </ul>	4 - 5
2	<ul style="list-style-type: none"> <li>weak attempt at conclusion to address question</li> <li>some attempt at providing reasons for evaluative statements</li> </ul>	2 - 3
1	<ul style="list-style-type: none"> <li>unsupported statement of judgement</li> </ul>	1