Name:_____ Centre No. / Index No.:_____/_____ Class:_____

PIONEER JUNIOR COLLEGE, SINGAPORE
JC2 PRELIMINARY EXAM 2018
Higher 2

ECONOMICS 9757/01

Paper 1 13 September 2018

2 hours 15 minutes

Additional Materials: Answer Paper

*PJC/9757/Paper 1/ 2018

READ THESE INSTRUCTIONS FIRST

Write your Centre number, index number and name on all the work you hand in.
Write in dark blue or black pen on both sides of the paper.
You may use a soft pencil for any diagrams, graphs or rough working.
Do not use staples, paper clips, highlighters, glue or correction fluid.

Answer **all** questions.
At the end of the examination, fasten all your work securely together.
Fasten your answers to each question SEPARATELY.

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

If there are part questions you did not attempt, please write the question number and part in the margins before you submit your answers. *(i.e. if did not complete 2b, indicate 2b in the margin of the answer script that you submit for question 2.)*

You are advised to spend several minutes reading the question and planning your answers before you begin writing.

You are reminded of the need for good English and clear presentation in your answers.

This document consists of **8** printed pages and **2** blank pages.

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Answer **all** questions.

Question 1: Disruption in the oil market and a new low price norm

Extract 1: Opec cartel and its Vienna deal

Ever since the collapse in crude prices in 2014, the big oil-producing countries have plotted a way to regain control and improve their battered finances. But agreeing which countries would bear the pain of the steepest production cuts had proved an insurmountable challenge. That barrier proved less formidable once prices stayed persistently low into 2016. With a recovery in the crude market nowhere in sight, finally one member after another fell into line at Vienna – and crucially Russia, a non-Opec producer, agreed to a cut of its own.

The first coordinated action by the Opec members in eight years has definitely set a new price outlook for the commodity. The longer-term impact on oil price will depend on the implementation of the accord, and discipline in sticking to the accord.

But few in the oil business expect a return to the prices which dominated the early part of the decade, including the most recent peak of $114 two years ago. It is the emergence of shale drilling through fracking– where pumping a mixture of chemicals, water and sand into dense rock releases trapped oil – that has prevented Opec from controlling supply and demand in the way it did in the past.

Analysts says a general lack of global demand for oil is another downward pressure on prices. A history of Opec governments cheating to improve their revenues – by pumping more oil in contravention of production cuts – is also likely to undermine efforts to cut output, they say. Saudi Arabia, which has long been the main producer and most powerful political operator in the Opec cartel has dug deep into its reserves to make up the shortfall in its public finances following two years of low prices. It hoped to cripple the US frackers by holding down prices. Under that plan, it would then have ratcheted them up again with a well-timed production squeeze. But the US industry has not collapsed and Saudi Arabia has seen its budget ravaged as prices stayed low, forcing the government to cut subsidies and services. Russia, which is not an Opec member and produces about as much oil as Saudi Arabia, counts as a further reason for caution. It is supposed to announce production cuts next week but analysts are skeptical there will be a significant move to cut production when oil revenues make up most of the Russian government's income.

Enforcement of the Vienna deal is the key to preventing oil prices from falling again. But the interaction of supply and demand, most of it outside Opec's control, means that for the next couple of years, prices are probably going nowhere fast.

Source: *The Guardian,* 03 December 2016

Extract 2: Canada will tax carbon emissions to meet Paris climate agreement targets

Canada will impose a tax on carbon emissions starting in 2018 as part of its efforts to meet targets set by the Paris climate change accord. The provinces and territories can either put a direct tax on carbon emissions of at least $10 Canadian ($7.60) a ton or adopt a cap-and-trade system. "There is no hiding from climate change," Trudeau told the Commons. "It is real and it is everywhere. We cannot undo the last 10 years of inaction. What we can do is make a real and honest effort – today and every day – to protect the health of our environment, and with it, the health of all Canadians."

The pricing carbon pollution will give Canada a "significant advantage" in building a cleaner economy, compel businesses to develop innovative ways to reduce emissions, and create hundreds of thousands of clean technology jobs. However, it is believed that this new tax will damage the economy. The bottom line is that the economy, already hurting from a downturn in

commodity prices, will be one of the hardest hit by a new federal carbon tax because of our trade-exposed resource industries."

Source: *The Guardian*, 3 Oct 2016

Figure 1: Oil price and Opec production

Source: *U.S. Energy Information Administration*

Extract 3: The new norm of low oil price

The current low oil price environment looks as if we have entered a new normal of lower oil prices that will impact not just oil and gas producers but also every nation, company, and person depending on it. This new normal is the result of the oil business being disrupted.

The U.S. shale revolution will be difficult to replicate, but traditional oil producers like Saudi Arabia are diversifying into shale-gas production and other forms of renewable energy so that they can diversify their energy mix and continue to export oil in spite of their soaring domestic demand for power. National oil companies and major oil and gas firms are also starting to change their ways. To compete with shale drillers, conventional oil players are improving their field productivity by focusing their resources on more easily recoverable reserves while integrating their technology, operations and organizations more closely.

At the other end of the spectrum, net oil importing nations are benefiting from a significant boost to their fiscal strength and current account balance. India's fiscal deficit has improved since the country saved nearly $70 billion on importing crude and other petroleum products in 2015. The government was able to completely remove subsidy on petrol and diesel, and can now redeploy that $70 billion into productive efforts. The true challenge will be how to support poor households when prices start rising again.

For net oil importers such as Singapore, when the oil price fell to below US$50 a barrel, electricity tariffs in Singapore between July 2014 and March 2015 were reduced by 9.3 per cent. However, it was one of the worst years for the petrochemical industry, even though the industry had the benefit of lower input prices. Due to low global demand, the firms over-invested and could not run at capacity. Other indirect impact come through the weakening Malaysian ringgit, which has declined 12 per cent against the Sing dollar over the last year. The Malaysian economy is highly dependent on oil, and the oil price situation has caused its currency to depreciate against that of key trading

partners. This affects Singapore businesses, especially in cases where their Malaysian counterparts fail to make timely payments.

One other interesting issue is what consistently affordable oil means for renewable energy. Many national policies and growth projections on increasing the use of renewables were made under the assumption of very expensive, depleting oil reserves. While this changes the value proposition of renewables and countries may be tempted to reassess their strategies, two trends continue to favor renewables: first, the continuous technological advancement and cost reduction in renewable sources such as solar and onshore wind keeps those sources of energy competitive; second, the commitments of both developed and developing countries to cut CO2 emissions during the recent COP21 summit in Paris would require a balanced energy mix that includes renewables.

Source: Harvard Business Review (online), March 28 2016

Extract 4: Renewable energy – Lets do it right

The development and deployment of new technologies to deliver the world's energy needs from renewable sources are essential if we are to reduce our dependency on fossil fuels. To stop or reverse climate change and to provide the world's growing human population with the energy it needs, then hydro-, oceanic, wind and solar power must to be part of the mix.

But renewable energy is not the silver bullet that will help us overcome the barriers to building a cleaner, better and sustainable future. Regardless of how it is produced, electricity has to be transmitted from where it is generated to the homes, offices, factories, hospitals and schools where it is needed. This requires a substantial infrastructure of pylons and cables, which leave their mark on the landscape. This can have detrimental effects on wildlife habitats and migration routes.

Source: *Convention on the Conservation of Migratory Species of Wild Animals,* 22 October 2017

Questions

(a) Referring to Figure 1, explain the relationship(s) between the trend in oil price and that of OPEC oil production from 2004 to 2016 [4]

(b) Falling oil prices impacted countries differently.

(i) Explain the macroeconomic impact of falling oil prices on both oil importing and exporting countries. [4]

(ii) Explain whether a complete removal of subsidy on petrol and diesel will affect total expenditure of motorists in India. [4]

(c) Discuss the extent to which OPEC is able to effectively cut production to raise price. [8]

(d) The increased use of renewable energy helps to reduce carbon emission and improve economic efficiency in resource allocation.

Discuss whether government should continue to promote the use of renewable energy. [10]

[Total: 30]

Question 2: The impact of trade and automation on jobs

Extract 5: Trade in the balance

Economists tend to argue that trade does far more good than harm. Yet new research reveals that for many, the short-term costs and benefits are more finely balanced than textbooks assume.

David Autor of MIT, David Dorn of the University of Zurich and Gordon Hanson of the University of California, San Diego, provide convincing evidence that workers in the rich world suffered much more from the rise of China than economists thought was possible. In their most recent paper, published in January, they write that sudden exposure to foreign competition can depress wages and employment for at least a decade.

Trade is beneficial in all sorts of ways. It boosts variety: Americans can shop for Volvos and Subarus in addition to Fords. Yet its biggest boon, economists have argued, is that it makes countries richer. Trade creates larger markets, which allows for greater specialisation, lower costs and higher incomes.

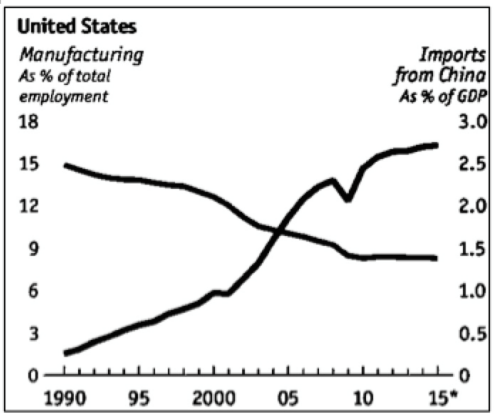
Economists have long accepted that this overall boost to prosperity might not be evenly spread. Some research papers pointed out that trade between an economy in which labour was relatively scarce (like America) and one in which labour was relatively abundant (like China) could cause wages to fall in the place that was short of workers. Yet many were sceptical that such losses would crop up much in practice. Workers in industries affected by trade, they assumed, would find new jobs in other fields.

For a long time, they appeared to be right. In the decades following the second world war, rich countries mostly traded with each other, and workers prospered. Even after emerging economies began playing a larger role in global trade, in the 1980s, most research concluded that trade's effects on workers were benign. But China's subsequent incorporation into the global economy was of a different magnitude. From 1991 to 2013 its share of global exports of manufactured goods rocketed from 2.3% to 18.8%. For some categories of goods in America, Chinese import penetration – the share of domestic consumption met through Chinese imports – was near total.

The gain to China from this opening up has been enormous. Hundreds of millions of Chinese have moved out of poverty thanks to trade. A recent NBER working paper suggests Americans will benefit too: over the long run trade with China is projected to raise American incomes. In parts of the economy less susceptible to competition from cheap Chinese imports, the authors argue, firms profit from a larger global market and reduced supply costs, and should also gain – eventually – from the reallocation of labour away from shrinking manufacturing to more productive industries.

But those benefits are only visible after decades. In the short run, the same study found, America's gains from trade with China are extremely small. The heavy costs to those dependent on industries exposed to Chinese imports offset most of the benefits to consumers and to firms in less vulnerable industries. Competition from Chinese imports accounted for a significant of the decline in employment in manufacturing in America between 1990 and 2007.

The costs of Chinese trade seem to have been exacerbated by China's large current account surpluses: China's imports from other countries did not grow by nearly as much as its exports to other countries. China's trade with America was especially unbalanced. Between 1992 and 2008, trade with China accounted for 20-40% of America's massive current-account deficit; China imported fewer goods from America than vice versa.



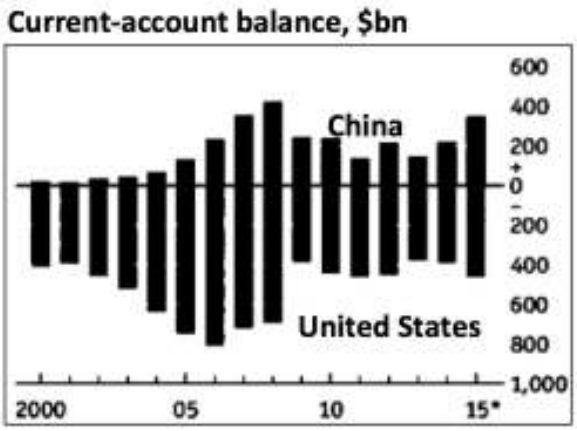


Figure 2 **Figure 3**

Source: *The Economist*, 06 Feb 2016

Extract 6: Most US manufacturing jobs lost to technology, not trade

A focal point of president-elect Donald Trump's campaign, that manufacturing jobs have left the US in droves as a result of bad trade deals, could be based on a faulty premise.

The US did indeed lose about 5.6m manufacturing jobs between 2000 and 2010. But according to a study by the Center for Business and Economic Research at Ball State University, 85 per cent of these jobs losses are actually attributable to technological change — largely automation — rather than international trade. The think-tank found that although there has been a steep decline in factory jobs, the manufacturing sector has become more productive and industrial output has been growing.

The Americans are producing more with fewer people. US factories have been achieving this by gradually replacing human labour with robots. Automation has transformed the American factory, rendering millions of low-skilled jobs redundant. Fast-spreading technologies like robotics and 3D printing will exacerbate this trend. The Boston Consulting Group has estimated that while "a human welder today earns around $25 per hour, including benefits, the equivalent operating cost per hour for a robot is around $8. The extra cost of maintaining a robotics system — installation, maintenance and the operating costs — should be amortised, according to the group, over a five-year period.

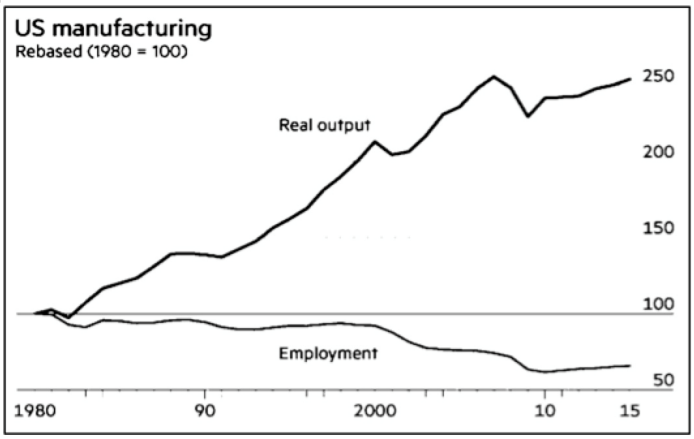


Figure 4

Nevertheless, trade with China and other countries did contribute to job losses to some extent. Research by the Ball State University found that 13 per cent of the overall job losses in

manufacturing had resulted from trade. Another, more recent, MIT study estimated that rising Chinese imports from 1999 to 2011 cost up to 2.4m American jobs. Overall though, what this suggests is that one of the new administration's main policy aims, increasing trade protectionism, is unlikely to override the larger forces of automation and the transition to a digital economy.

Source: *FT.com*, December 03, 2016

Extract 7: In Japan, the rise of machines solves labor shortage

The rise of the machines in the workplace has U.S. and European experts predicting massive unemployment and tumbling wages. Not in Japan, where robots are welcomed by the Government as a way to handle the country's aging populace, shrinking workforce and public aversion to immigration. Japan is already a robotics powerhouse. The Government launched a five-year push to deepen the use of intelligent machines in manufacturing, supply chains, construction and health care, while expanding the robotics markets from ¥660 billion to ¥2.4 trillion by 2020. The labour shortage is such an acute issue that companies have no choice but to boost efficiency. By 2025, robots could shave 25 percent off of factory labour costs in Japan, says the consulting firm.

Source: *Bloomberg*, 14 September 2015

Extract 8: Automation the future of Singapore economy

With automation, Singapore's economy can maintain a Singaporean core in the face of a local workforce on the verge of shrinking, while not relying on foreign labour for growth. Automation provides crucial interim alleviation for the negative effects of the manpower crunch. Automation can also help to raise productivity in the long run. But, it is still crucial for workers to upgrade their skills to keep up with this automation in industries. Singaporean workers increasingly need to learn to be able to handle automated technology, so that automation can serve its purpose – to benefit productivity.

Source: *The Straits Times*, 30 April 2016

Extract 9: Singapore Budget 2016: Robots and start-ups - to transform Singapore Inc

Finance Minister Heng Swee Keat announced a slew of measures under the Industry Transformation Programme that will help companies and industries automate, innovate, expand overseas and procure financing. Some of these measures are:

- Support for automation: A new Automation Support Package will be introduced for a period of three years. It will cover (i) Grant support for the roll-out or scaling up of automation projects at up to 50 per cent of project cost, with a maximum grant of $1 million (ii) Investment allowance of 100 per cent for automation equipment, in addition to the existing capital allowance.

- More robots at work: The National Robotics programme - more than $450 million has been set aside in the next three years for the development and adoption of robots. These robots will be used in sectors such as healthcare, construction, manufacturing and logistics.

- Help workers 'adapt and grow': will help Singaporeans adapt to changing job demands and grow their skills. Separately, the Government will set up TechSkills Accelerator, a new skills development and job placement hub, to help workers in the information and communications technology sector learn new skills quickly.

- Deepening innovation capabilities: Up to $4 billion under the Research, Innovation and Enterprise 2020 Plan will be directed to industry-research collaboration. The Government will provide a top-up of $1.5 billion to the National Research Fund in 2016 to support these initiatives.

Source: *The Straits Times*, March 24 2016

Questions:

(a) **(i)** State the relationship between manufacturing employment (as a % of total employment) and imports from China (as a % of GDP). [1]

(ii) Explain how changes in imports from China have contributed to the change in manufacturing employment. [3]

(b) Compare the change in China's current balance between 2010 and 2015 with that of the US over the same period. [2]

(c) Explain whether an increase in trade between China and the US would result in higher standard of living in the US. [6]

(d) Assess the extent to which automation is the main cause of unemployment in an economy. [8]

(e) Discuss the most appropriate policies that the US and Singapore should adopt to tackle unemployment. [10]

[Total: 30]

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2018 PJC JC2 Prelim Exam H2 Econs Paper 1

Question 1: Disruption in the oil market and a new low price norm

(a) Referring to Figure 1, explain the relationship(s) between the trend in oil price and that of OPEC oil production from 2004 to 2016. [4]

Suggested answer:
Overall, there exist a positive relationship between oil price and OPEC oil production with the exception of from 2010 to early 2016 where there exist an inverse relationship between the two.
The positive relationship is due to the increase in demand which outweighs supply of oil from OPEC, resulting in an overall rise in both price and equilibrium quantity.

The negative relationship is due to OPEC increased supply of oil, holding demand unchanged, oil prices fall.

(b) Falling oil prices impacted countries differently.

(i) Explain the macroeconomic impact of falling oil prices on both oil importing and exporting countries. [4]

Suggested answer:
Many oil exporting countries such as Russia, a fall in oil prices reduces price of exports. Given that the price elasticity of oil is inelastic, it will lead to a less than proportionate rise in quantity demanded, leading to a fall in export revenue. Assuming import expenditure remaining unchanged, this reduces AD and through the multiplier effect will result in multiple fall in real GDP in the short run.

Oil importers such as India benefited from a falling oil price. As oil is a main source of energy, a fall in oil prices will reduce cost of production for most if not all industries. This shifts SRAS to the right, reducing GPL and increase real GDP.

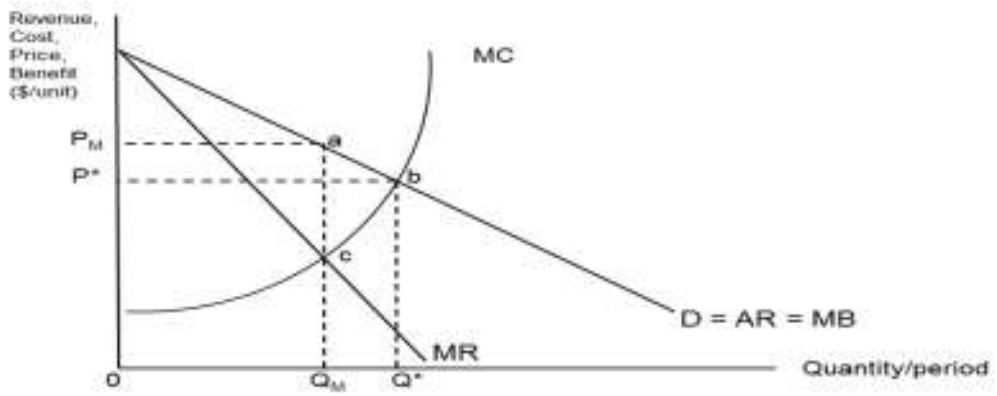
(ii) Explain whether a complete removal of subsidy on petrol and diesel will affect total expenditure of motorists in India. [4]

Suggested answer:
Total expenditure is obtained by taking price times quantity sold. Given that the price elasticity of demand for petrol and diesel is less than one, a complete removal of subsidy will result in a rise in cost of production, shifting supply curve to the left, resulting in an increase in price and a less than proportionate fall in quantity demanded, resulting in a rise in total expenditure.
However, given that price of oil has been falling (a raw material needed to produce petrol and diesel), a complete removal of subsidy may not necessary result in a rise in total expenditure if the amount of subsidy removed is less than the fall in price of petrol and diesel. Total expenditure of households may actually fall rather than rise.

(c) Discuss the extent to which OPEC is able to effectively cut production to raise price. [8]

Suggested answer:
Price of oil is determined by the demand and supply of oil in the world market. The extent to which OPEC is able to effectively cut production to raise price will depend on its ability to control supply and demand for oil.

As OPEC members controls more than half of the world oil supply, it has a large market share and hence possess significant market power to cut production to increase price.



In the absence of OPEC, socially optimum output is at Q* where MC = AR(P). Profit-maximising cartel to maximize profit would restrict output to produce at Q_M where MC = MR and charges the maximum possible price it can, P_M (indicated by DD curve).
Hence by restricting output to Q_M, OPEC is able to charge a higher price at Pm instead of P*

However, this require coordinated action by the Opec members and discipline in sticking to the agreed production quota. A history of Opec governments cheating to improve their revenues – by pumping more oil in contravention of production cuts – is likely to undermine efforts to cut output, Furthermore, OPEC must also be able to limit the production of oil due to the emergence of shale drilling through fracking in the US. Based on extract given, OPEC has not been able to do so. To effectively control supply, OPEC also needs the cooperation of Russia, which is not an Opec member but produces about as much oil as Saudi Arabia to cut production. However, this may not be forthcoming when oil revenues make up most of the Russian government's income.

Hence OPEC attempt to restrict output may be offset by an increase in production by OPEC members and non OPEC members. This may hence limit her ability to increase price.

On the demand side, continued low growth around the world, is holding back demand for oil. Hence despite a fall in production by OPEC, if the fall in demand exceeds that of fall in supply, equilibrium price will still fall.

Hence, as OPEC is unable to control world supply and demand for oil, it is to a small extent that it will be able to raise price through a cut of its own production.

(d) The increased use of renewable energy helps to reduce carbon emission and improve economic efficiency in resource allocation.

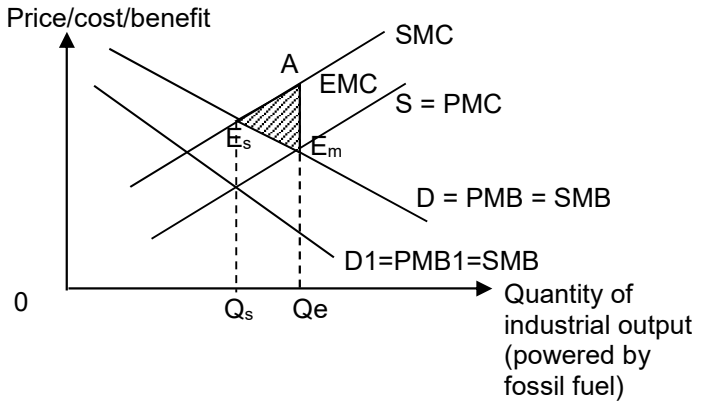
Discuss whether government should continue to promote the use of renewable energy. [10]

Suggested answer:

Government should promote the use of renewable energy as it can help the economy achieve the microeconomic aim of efficiency and macroeconomic aims of price stability and sustainable economic growth. However, whether it should continue to promote usage of renewable energy depends on the overall impact of renewable energy usage compared to the oil (fossil fuel) usage on the micro- and macro- economic aims in the new oil low price environment. It also depends on how long-lasting is the low oil price environment.

The market for industrial production can fail due to the existence of negative externalities. These negative externalities arise because of the usage of fossil fuel in industrial production. The negative costs can manifest in the form of reduced crop harvests due to global warming to the farmers (3rd party) who are not involved in the manufacturing process powered by fossil fuel. There is a divergence between PMC & SMC by the amount of EMC at Qe. Market equilibrium output is achieved at Qe (where PMC =PMB) while socially optimal output is at Qs (where SMC =SMB). Since Qe > Qs, there is overproduction of industrial output and deadweight loss is resulted. Market fails in the market of industrial output powered by fossil fuel.

With increased usage of renewable energy instead of fossil fuel to produce industrial goods, the amount of carbon emission will fall. Extent of EMC will fall, causing SMC to shift downwards towards PMC, reducing the problem of overproduction and deadweight loss.



There has been increased technological improvement in harvesting renewable energy and this has reduced cost, making renewable energy price more competitive to that of fossil fuel. This can enhance the competition in the market of energy on the whole, reducing price of all forms of energy. With lower energy prices, lower income households will be able to afford energy with less/ no government subsidies. This reduced the need for government to subsidize the use of energy, allowing the government resources to be better spent elsewhere. In addition, with lower energy cost, firms will find it more profitable to produce and AS curve will shift downwards, increasing real income, employment and reducing general price level. At the same time, with increased usage of renewable energy, the country can better cut CO2 emission level to meet the commitment made to COP21 summit in Paris. Economic growth in the country will be more sustainable as increased output produced will bring along with it less significant economic problems on the environment particularly for the future. This can increase the standard of living for the current and future citizens.

However, increased usage of renewable energy requires increased infrastructural for the transmission of this clean energy from its sources to the factories and homes. The building of

these infrastructural requires the massive clearing of land and destruction of wildlife habitats. The clearing of arable land could reduce the potential harvest for farmers (3rd parties). Economic growth will also be unsustainable as the output are made at the expense of natural habitat of the future generation. The use of the land for renewable energy could also be better used for residential or commercial purposes.

However, the damage made on the environment from continued release of CO2 gases into the atmosphere through the use of fossil fuel should be more significant than the damage caused from the making of initial infrastructural for transmission of renewable energy. Thus, the use of renewable energy should still be promoted as use of renewable energy is still at its infancy stage and the environmental cost of fossil fuel outweighs that from the use of renewable energy by a large margin currently.

Government should not continue to promote the use of renewable energy since the price of fossil fuel has reduced significantly with the reduced market power of OPEC cartel and the emergence of shale drilling. With the norm of fossil fuel prices being low, there is little incentive for profit-orientated firms to switch from fossil fuel to being powered by renewable energy. In addition, fossil fuel producers are also improving their fields productivity, making price of fossil fuel cheaper overtime. Thus, economy can enjoy non-inflationary growth in the future without the need to switch to renewable energy. Thus, government need not continue to encourage the use of renewable energy towards this macroeconomic aim in the short term.

However, it all depends on the how long the price of fossil fuel is likely to last. In event there are new developments in the current low oil price environment, fossil fuel (oil) price may increase and renewable energy may be in favour again. It may be too late to start encouraging the use of renewable energy as it takes a long time for the development and subsequently adoption of renewable energy for consumers and industries. Thus, in the long term, government should still encourage the use of renewable energy, albeit at a lower priority.

Government should encourage the use of renewable energy to a socially optimal level for the economy to bring about micro- and macro- economic aims. However, whether there is a need continue encouraging the use of renewable energy depends on the sustainability of low oil (fossil fuel) price environment as well as the overall net assessment of increased renewable usage on the overall aims of the government.

Question 2: The impact of trade and automation on jobs

(a) **(i)** State the relationship between manufacturing employment (as a % of total employment) and imports from China (as a % of GDP). [1]

Suggested answer:

There is an **inverse relationship** between manufacturing employment (as a % of total employment) and imports from China (as a % of GDP).

(ii) Explain how changes in imports from China have contributed to the change in manufacturing employment. [3]

Suggested answer:

As China has an abundance of low cost labour, it has a comparative advantage (1) in the production of low cost, labour intensive consumption goods and this has resulted in the replacement of US domestic production of these goods with imported goods from China. This has caused a fall in the manufacturing employment in the US as imports from China increases. (2) (As show in Figure 1)

(b) Compare the change in China's current balance between 2010 and 2015 with that of the US over the same period. [2]

Suggested answer:

From 2010 to 2015,

1) Between 2010 to 2015, China Current accounts were always in surplus whereas US Current accounts were always in deficit. (1)
2) China Current accounts surplus has increased while US Current accounts deficit was relatively constant / has increased slightly. (1)

(c) Explain whether an increase in trade between China and the US would result in higher standard of living in the US. [6]

Suggested answer:

With an increase in trade between China and USA there would be an increase in imports and exports between the two countries. US firms are able to enlarge its global market and increase its total revenue and hence profits by exporting to China. With an increase exports, there would be an increase in AD and via the multiplier effect, there would be a larger increase in real output and hence real national income (NY). With an increase in real NY, there would be an increase in income per capita (assuming that the rate of population increase in USA is slower than the rate of increase in real NY) and an increase in purchasing power and hence an increase in SOL.

And with an increase in export and real output, there would be an increase in demand for labour. This would result in an increase in the wage rate for labour. Income of workers would increase and hence purchasing power increase and hence increasing the SOL of US workers.

An increase in trade would also imply increase competition and hence increased variety of goods and services at lower prices available for consumers. This would increase consumer surplus and hence consumer welfare and an increase in SOL for USA.

However, on the other hand, with increased trade and increased competition, firms which are not competitive may be driven out of the market. As shown in Figure 3, the US is facing a trade deficit with China which imply that the US is importing more from China than its exports to China. This may imply that the US does not have a comparative advantage in the production of certain goods and services, such as labour intensive goods. It may result in the fall in demand for the US goods and a fall in

demand for labour the US. This may worsen the SOL in the US. And if these lower skilled workers are unable to find jobs in other sectors of the economy due to a lack of the necessary skills, it may result in income inequality among the workers who possess the necessary skills and those who do not.

In conclusion, whether an increase in trade between China and USA would result in higher SOL in the USA would depend on how it could contribute to the economic growth of USA and its possible impact on employment opportunities for consumers in the USA.

(d) Assess the extent to which automation is the main cause of unemployment in an economy. [8]

Suggested answer:

Automation is the main cause of unemployment in the economy.

Automation of industries has resulted in the replacement of human labour with machinery and robots. This has not only resulted in the retrenchment of the excess workers, it has also resulted in a decrease in demand for labour. Hence, causing unemployment to increase. This is shown in Figure 2 where there was an increase in output but there is a fall in employment in the US manufacturing sector.

Furthermore, automation results in structural unemployment. Due to the adoption of new technology, high-skill workers are highly demanded. Those who have been made redundant do not have the skills and knowledge that match the requirements of jobs available. Hence, they become structurally unemployment.

But automation can also help to boost employment. With automation, for example, has enabled US firms to be more productive and has increased industrial output. With the increase in productivity, it would result in an increase in real GDP and national income and hence purchasing power. This would result in an increase in consumption and an increase in demand for goods and services and more goods and services would need to be produced. This would result in an increase in investment and the demand for labour, especially in the services sector to service the increase demand for goods and services. In addition, with automation, there would be an increase in demand for higher skilled workers to enable the automation and to service and maintain the machinery. Hence, automation may result in the redundancy of the lower skilled workers but it would also create employment opportunities for the higher skilled workers. This would result in an increase in the type of unemployment, that is, structural unemployment rather than an overall increase in unemployment rate.

On the other hand, automation has been seen as a solution to countries such as Japan and Singapore to resolving the problem of an aging population and a shrinking workforce and its dependence on foreign labour and at the same time as a means to increase its productivity and the competitiveness of its economy.

In conclusion, the extent to which automation is the main cause of unemployment would depend on the nature / condition of the economy. To some countries where the majority of workers are employed in the manufacturing sectors, automation would have a larger impact on unemployment. To other countries such as Japan and Singapore which are facing a shortage of labour, automation is seen as a means to increase productivity and hence competitiveness. **(Evaluation)** Also, it should be noted that although automation may reduce certain jobs in the manufacturing sector, it may also increase job opportunities as the need for skilled workers increases. **(Evaluation)**

(e) Discuss the most appropriate policies that the US and Singapore should adopt to tackle unemployment. [10]

Suggested answer:

US faces problem of unemployment due to the opening up of its economy to international trade as well as automation. Inflows of cheap imports into the US market and automation have both resulted in loss of jobs in the US manufacturing sector and structural unemployment. Similarly for Singapore, the rise in automation can lead to job loss in the manufacturing sector and structural unemployment. As such, the governments needs to identify the appropriate policies to deal with the root cause of unemployment. These can be demand side and supply side policies to create new jobs and increase the demand for labour and to upgrade the skills of workers to meet the needs of the automated and capital intensive industries for higher skilled workers as both countries develop new niches of comparative advantage to remain competitive.

With the opening up of the economies for international trade, the US and losses its comparative advantage and losses its competitiveness in the production of certain goods and services. As domestic consumption were being replaced with imports, this has resulted in the closure of domestic industries and a fall in demand for labour and an increase of unemployment as workers are being retrenched. As stated in Extract 3, MIT study estimated that rising Chinese imports from 1999 to 2011 cost up to 2.4 million American jobs.

With the losses of jobs due to imports, there is a need for government to adopt demand side policy such as fiscal policy (FP) to attract new investment so as to create new job opportunities and increase the demand for labour. This can be done via a reduction in corporate tax rate. With a fall in corporate tax rate, after tax profits of firms would increase and this would be more attractive for firms to increase investment. With an increase in investment, there would be an increase in aggregate demand (AD) and via the multiplier effect, real output and real national income (NY) would increase by a greater extent. In order to produce the increase in real output, there would be an increased in demand for labour. Hence, this would help to resolve the demand deficit unemployment problem.

However, depending on the type of investment that the country may attract, the increase in job opportunities may not be significant. This is especially so if the investment is of a capital intensive nature and if the firms continue to replacing human labour with robots (as stated in Extract 2). However, more job opportunities can be created if the investment is in the tertiary service oriented industries such as the financial and healthcare industries where the personal human services are still required.

Hence, merely adopting FP to encourage investment my not be sufficient to reduce unemployment, especially structural unemployment that resulted from automation.

(Note: Candidates can also discuss the use of protectionistic measures such as tariff to reduce the consumption of imports and increase domestic production to save domestic jobs)

To resolve the problem of structural unemployment resulting from automation with the replacement of human labour with robots (Extract 2) it would be appropriate for the government to adopt supply side policies to upgrade the skills of the workers.

Workers being retrenched due to automation may not have the necessary skills to work in the new industries where different set or higher level of skills is required. These would require the intervention of both the governments of the US and Singapore to provide incentive to encourage or persuade the firms or workers to continuously upgrade their skills to meet the requirement of the new industries.

In the case of Singapore, to encourage the development of new comparative advantages with a knowledge based economy, a host of incentive packages have been implemented to help firms to automate, innovate and expand overseas and at the same time, upgrading the skills of workers. These include the Automation Support Package and the National Robotics

Programme as stated in Extract 5 as well as the SkillsFuture where every Singaporean above the age of 21 years old are entitled to a credit of S$500 for training purposes. With the appropriate supply side policies, the economy would be able to develop new comparative advantages and it would also increase the occupational mobility of workers as workers upgrade or acquire new skills to enable them to make a career switch and remain gainfully employed in the highly automated or capital intensive industries.

However, supply side policies are basically a long term policies and which require strong commitment and financial support from the government. Countries such as Singapore which have the necessary financial resources with its budget surpluses would face lesser headwinds to provide incentives for workers to upgrade their skills. The success of these policies would also very much dependent on the workers educational level and attitude towards training and re-training.

Thus to resolve the problem of structural unemployment caused by the replacement of workers due to automation, supply side policies are appropriate policies that the government should adopt.

In conclusion, with increased competition as a result of international trade as well as increasing automation by firms, both the US and Singapore governments needs to adopt a mixture of complementary policies to encourage investment in order to create more jobs opportunities and at the same time, help workers upgrade their skills to meet the needs of the new industries and to remain employable.

Name:_____ Centre No. / Index No.:_____/_____ Class:_____

PIONEER JUNIOR COLLEGE, SINGAPORE
JC2 PRELIMINARY EXAM 2018
Higher 2

ECONOMICS **9757/02**

Paper 2 Essays 18 September 2018

2 hours 15 minutes

Additional Materials: Answer Paper

*PJC/9757/Paper 2/ 2018

READ THESE INSTRUCTIONS FIRST

Write your index number, name and class on all the work you hand in.
Write in dark blue or black pen on both sides of the paper.
You may use a soft pencil for any diagrams, graphs or rough working.
Do not use staples, paper clips, highlighters, glue or correction fluid.

Answer **three** questions in total, of which **one** must be from Section A, **one** from Section B and **one** from **either** Section A or Section B.

Answer each question on a fresh sheet of paper.
At the end of the examination, fasten your answers to each question SEPARATELY.
The number of marks is given in brackets [ ] at the end of each question or part question.

If there are part questions you did not attempt, please write the question number and part in the margins before you submit your answers. *(i.e. if did not complete 2b, indicate 2b in the margin of the answer script that you submit for question 2.)*

You are advised to spend several minutes reading the question and planning your answers before you begin writing.

You are reminded of the need for good English and clear presentation in your answers.

This document consists of **3** printed pages and **1** blank page.

Pioneer Junior College **Ministry of Education**

Answer **three** questions in total.

Section A

One or two of your three chosen questions must be from this section.

1 Over the past decade, the average price of milk powder has risen about 120 per cent. Large milk powder companies such as Abbott and Nestle said it was due to research and development to improve formulas and rising costs. Aggressive advertisements have also led parents to choose 'premium' milk powder over standard milk powder. As milk powder is seen as a necessity for growth and development of infants in the early years, many have raised concerns over the large increase in price.

(a) Explain how the above-mentioned factors might have caused the price of milk powder to rise. [10]

(b) Discuss the measures a government can undertake to prevent prices of goods such as the milk powder from rising too high. [15]

2 Industries, from transport to retail, are being disrupted by new technologies and digital applications. Digital entrants are challenging the incumbents and threatening their bottom lines.

(a) Explain how advancement in technology may affect a firm's profits. [10]

(b) Discuss the extent to which the behaviour of firms is affected by contestability of market. [15]

3 There are various types of market failure. Market failure provides one of the major justification for government intervention in the economy.

Source: John Sloman, Economics, 6th Edition

(a) Explain how market dominance and immobility of factors of production in a country can lead to market failure. [10]

(b) Evaluate the policies currently used by the Singapore government to correct these types of market failure. [15]

Section B

One or two of your three chosen questions must be from this section.

4 Singapore had experienced annual deflation in a number of years, particularly during economic recessions in 2002, 1998 and 1986. However, the lower prices in 2015 and 2016 are due mostly to lower global crude oil prices and cheaper housing and utilities as well as transport costs.

Source: Adapted from Singapore Business Review 24 May 2016

(a) Explain why deflation might be a concern to a government. [10]

(b) Assess alternative policies that the Singapore government might adopt to manage the economy when faced with deflation. [15]

5 Singapore's economy expanded a faster-than-expected 1.8 per cent in the last quarter of 2016. Moving ahead, growth remains uncertain. Internally, Singapore has adopted a policy of restricting foreign labour and restructuring towards productivity-driven growth. Externally, higher US interest rate may lead to higher interest rates in Singapore.

Source: Adapted from Channel Newsasia, 3 January 2017

(a) Explain the possible conflicts in government macroeconomic objectives caused by a policy of restricting foreign labour and restructuring towards productivity-driven growth. [10]

(b) Assess the impact of higher US interest rate on Singapore's macroeconomic performance. [15]

6 For Singapore to continue to benefit from international trade, the government needs to use trade-related economic policies, such as free trade agreements (FTAs) and policies to stimulate export industries.

(a) Explain the determinants of the pattern of trade between Singapore and the rest of the world. [10]

(b) Discuss the options available to the Singapore government to ensure that it would continue to benefit from international trade. [15]

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PJC 2018 H2 P2 Question 1:

Over the past decade, the average price of milk powder has risen about 120 per cent. Large milk powder companies such as Abbott and Nestle said it was due to research and development to improve formulas and rising costs. Aggressive advertisements have also led parents to choose 'premium' milk powder over standard milk powder. As milk powder is seen as a necessity for growth and development of infants in the early years, many have raised concerns over the large increase in price.

a) Explain how the above-mentioned factors might have caused price of milk powder to rise in Singapore. [10]

b) Discuss the measures government can undertake to prevent prices of goods such as the milk powder from rising too high. [15]

Part (a)

As mentioned in the preamble, factors such as market dominance of large firms, demand and supply factors have caused prices of milk powder to rise by a large extent.

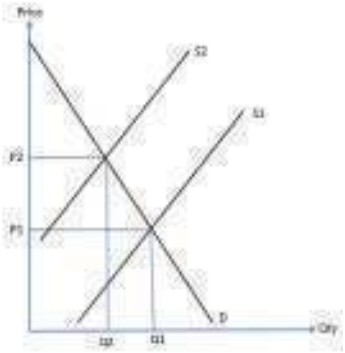


Fig 1: Fall in SS

The rise in cost of production would have caused the price of milk powder to rise over the past decade. Due to improved formulas and rising cost possibly due to labor and ingredient cost, the cost of producing milk powder would have risen. As shown in the diagram, as cost in the production of milk powder increases, firms are less willing and able to produce milk powder. Supply curve shift left from S1 to S2. Given that are only a few substitutes for different brands of milk powder and coupled with the fact that it is a necessity for growth and development of infants in the early years, demand for milk powder is price inelastic. As such, a fall in SS would result in price to rise by large extent and quantity to fall by small extent. Thus prices of milk powder have increased over the past decade.

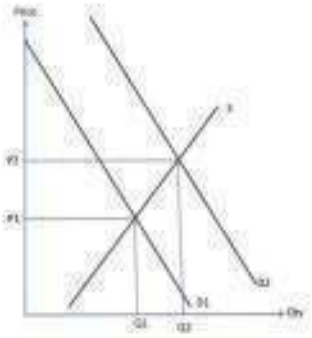
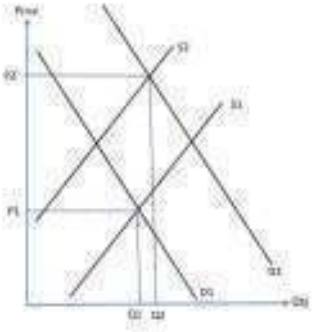


Fig 2: Rise in DD

Furthermore, due to aggressive advertisements, parents have a change in taste and preference towards the 'premium' milk powder over standard milk powder. As such, there is a rise in demand for 'premium' milk powder from companies such as Abbott and Nestle. As shown in the diagram, as more parents switch from standard milk powder to 'premium' milk powder, demand for milk powder would rise, shifting demand from DD to DD2. At the original price P1, a shortage was created as Qd was greater than Qs. This therefore create an upward pressure on the market price. Thus prices rose from P1 to P2 in response to the rise in demand for milk powder. As more parents change their taste and preferences for 'premium' milk powder, firms are also more entice to produce 'premium' range of milk powder so as to profit from the changing trends. As such, the rising demand for 'premium' milk powder have resulted in an overall rise price of milk powder in Singapore.



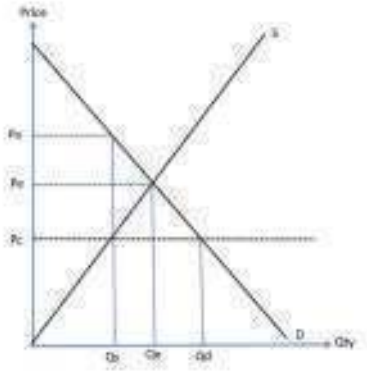
With the combined effect of a fall in SS, rise in DD and a price inelastic DD curve, price of milk powder will rise by a large extent. As shown in fig 3, the fall in SS and rise in DD would cause price of milk powder to rise by a large extent from P1 to P2. The extent of increase in price is further compounded by the price inelastic demand curve.

Fig 3: Combine effect of DD and SS

In conclusion, factors such as market power of large firms, nature of the good, rise in demand and rise in cost of production have resulted in the price of milk powder to rose by large extent over the past decade.

Part (b)

As prices of milk powder rose by 120 percent over the past decade, it is a concern to consumers as it affects the cost of living for parents with young children and infants. As such, the government can intervene with several measures such as price ceiling, introduction of new competitors in the market and increase information in the market to reduce the effects of aggressive advertisement for 'premium' milk powder.



Firstly, the Singapore government can enforce price ceiling over the price of milk powder. As the market price Pe is deemed too high, the Singapore government can impose a price ceiling Pc. By doing so, price of milk powder would only be allowed to be sold at a maximum of Pc which is lower than the market price. Thus, regardless of the factors influencing the price of milk powder in the market, price of milk powder will not exceed Pc.

Fig 4: Effect of price ceiling on market price.

However, a policy of price ceiling would create the problem of shortage as it is set below the market clearing price of Pe. As shown in the diagram above, at Pc, firms are only willing and able to produce at Qs while consumers are willing to and able to buy at Qd. Since Qd > Qs, there is a shortage. This would mean that not all consumers would be able to purchase milk powder despite the efforts in government to reduce price through a policy of price ceiling.

Furthermore, as price mechanism would cease to work in distribution of such a good to consumers, the government would have to step in to ration milk powder based on non-price rationing schemes like coupon, drawing lots or first-come-first serve basis. This is to prevent the problem of civil unrest arising from a shortage of an essential good such as milk powder. However, this not only creates inefficiency in allocation of such a good, it also wastes resources as government officials have to be deployed to the rationing of such a good. In addition, whether the price of milk powder can be kept at Pc would depend on whether the government would be able to prevent the emergence of black market. The black market might emerge to fulfill the needs of people who do not get the goods. At output Qs, consumes are willing to pay a maximum price of Pa, thus the maximum black market price will rise to Pa, defeating the original intention of preventing price of milk powder from rising to high.

Lastly, as milk powder are produced by foreign firms and imported into the country, a policy of price ceiling would be undesirable for as it limits the revenue and thus profits that they can earn from the sales of milk powder in Singapore. Hence, firms may deem Singapore market as unprofitable and thus withdrew the sales of milk powder in Singapore. This may worsen the original problem as when more firms exit the Singapore market, market supply of milk powder would fall and thus further raising the price of milk powder in Singapore. In addition, consumers in Singapore would be left with less variety and choices to choose from, further reducing their consumer welfare.

As such, given the limitations and undesirable consequences, price ceiling may not be a good measure for Singapore government to undertake and other policies such as an introduction of more competitors into the milk powder market.

The Singapore government can encourage more firms to produce and sell milk powder in Singapore. As such, market supply for milk powder would rise and thus reduce the market price of milk powder. For example, a

made-in-Singapore formula, Einmilk was introduced into the Singapore market for milk powder in light of the rise in price of milk powder. NTUC Fairprice supermarket is also exploring ways to bring in different brands of milk powder as well as introducing their own house-brand milk powder.

Furthermore, introduction of new competitors into the market would also increase the number of substitutes in the market for milk powder. With reference to Fig 3 in part a), demand for 'premium' milk powder would fall as more consumers would switch over to substitutes such as Einmilk. Demand for 'premium' milk powder would also become more price elastic due to the rise in number of substitutes. As such, market price would fall as existing firms lose their market power to new competitors. Thus, introduction of new competitors into the milk powder market through a relaxation of rules and regulation can help to prevent prices of milk powder from rising by large extent.

However, whether the introduction of new competitors into the milk powder market may successfully reduce market price of milk powder depends on consumer's perception.

Despite having more competitors in the milk powder market, consumers may not switch over to these new brands due to brand loyalty and the belief in having 'premium' quality milk powder for their infants so as to enhance their future development. Without better information, parents may rely on claims made by producers of milk powder, or be misled into using price as a proxy for the quality of the product. As such, demand for 'premium' milk powder may not change by large extent as consumers would still stick to those brands thinking that the higher priced milk powder are of better quality and are more superior compared to the cheaper and new milk powder brands such as Einmilk.

Furthermore, if firms continue with the aggressive advertisement and marketing tactics, consumers may continue to demand for 'premium' milk powder, perceiving other brands of standard milk powder as inferior quality even though there might not be any actual difference in quality of milk powder between the different brands. As such, the problem lies in the presence asymmetric information between the producers of milk powder and parents with infants as such advertisement may have excessively play up the benefits of the good without actual real benefits.

Thus despite having cheaper alternatives in the market for milk powder, market price of milk powder may not have lowered and consumers continue to suffer with high prices of milk powder. Hence, there is a need for government to intervene with other policies to ensure that consumers aren't exploited due to asymmetric information between the producers of milk powder and parents with infants.

To curb the problem of imperfect information between producers of milk powder and parents with infants, the Singapore government can implement policies such as education campaigns and screening policies to validate the claims made by producers of milk powder. The Singapore government can work with HPB to launch education campaigns to educate parents on the nutrition needs of infants so that parents are able to make an informed choice rather than to rely on claims of producers. Thus this would reduce the effect of brand loyalty that consumers have on 'premium' milk powder and would thus be more receptive of cheaper alternatives available in the market.

Furthermore, the government would require producers of 'premium' milk powder to validate the claims made so that the under-informed party (consumers) can get more information about the actual quality of the 'premium' milk powder. Thus, consumers are able to make a more informed choice on the different brands of milk powder. As such, demand for 'premium' milk powder may fall and become more price elastic thus reduce price of milk powder in the market. In addition, the positive CED values between standard milk powder and 'premium' milk powder may become greater as more consumers would perceive them as close substitutes. Thus 'premium' milk powder would be subjected to greater competition as a fall in price of standard milk powder would result in a more than proportionate fall in DD for 'premium' milk powder. Thus, this prevents prices of milk powder from rising too high.

However, such a policy would take time to see its effects as it takes time for government agencies to validate claims made by producers of milk powder. Consumers may also take time to change their perspectives of 'premium' brand milk powder as it is often difficult to change their perspectives given the importance of milk powder on the growth and development of their child. Thus, prices are likely to remain high in the short term

and would only start to decrease in the future when the effects of the policies have kicked in.

In conclusion, there are several measures that the government can undertake to prevent prices of milk powder from rising too high. Given the fact that Singapore imports majority of the foods products including milk powder, it is not possible to implement a policy of price ceiling as the unintended consequences are far too undesirable to manage. Thus, the policy of introducing new competitors into the market of milk powder and the policy of education campaigns and screening are much more appropriate as the root cause of the problem lies in the lack of cheaper substitutes and imperfect information between producer of milk powder and parents with infants.

PJC 2018 H2 P2 Question 2:
Industries, from transport to retail, are being disrupted by new technologies and digital applications. Digital entrants are challenging the incumbents and threatening their bottom lines.

a) Explain how advancement in technology may affect a firm's profits. [10]
b) Discuss the extent to which the behaviour of firms is affected by contestability of market. [15]

<u>Suggested answers:</u>

A firm's total profit is derived from total revenue minus total cost. With advancement in technology, it can affect both total revenue and total costs.

Advancement in technology like that of digital applications can disrupt the businesses and reduce their total revenue. Advancement in technology have allowed digital applications like that of rail-hailing booking applications of Uber to be developed. It has reduced the demand of traditional taxi service of Comfort Delgro. At the same time, there are more substitutes available for Comfort Delgro's taxi and its demand will become more price elastic. Thus, Comfort Delgro will see its AR and MR curves shifting downwards and becoming flatter. Since TR = P X Q, a fall in DD will reduce both P and Q and TR will fall.

[students can insert a dd/ ss or cost/ revenue diagram showing the effect on TR.]

As a result, its total revenue will decrease from advancement of technology that disrupt business with digital technologies.

On the other hand, technological advancement can also make a firm's product more differentiated and increases the firm's total revenue. With the development of technology eg with the development of internet and mobile devices, small firms can tap on more low cost avenues to market their products and reach out to their customers. Product information and review can be shared via social media or blog post. Large firms can tap on improvement in technology to conduct R & D on their product, allowing them to design more sophisticated products that improve on consumer satisfaction and stand out from its competitors. These strategies made with advancement in technology can increase demand of the firm's product. At the same time, PED and CED can also be reduced as the firm's product's perceived and/ or actual differences are emphasized. With the firm's demand curve shifted outward and made steeper, the firm will see an increase in total revenue. In addition, the firm can increase the price of its product and the quantity demanded of its product will fall less than proportionately, increasing the firm's total revenue. Even if the price of the substitute product were to fall, the fall in demand for the firm that has tapped on technology to brand its product will be by a small extent. Thus, total revenue can increase if firm position itself well to ride on the advancement in technology by differentiating itself better from its rivals.

Technological advancement can reduce costs of firm. Technology improvement has increases computer processing speed and storage capability eg cloud storage, allowing firm to manage larger amount of information at a much reduced costs. Improvements in communication made possible by the internet and devices like laptops and smart phones has streamline the communication processes firm has within and outside with suppliers and customers. The ability to tap on technology to mass produce has also allow firms to enjoy economies of scale. These can increase its efficiency in work processes and reduce units cost. In addition, technological advancement in the form of automation has reduced the need for labour in manufacturing process; significantly reducing costs for many manufacturing and logistic firms. The firm will see a downward shift of its AC and MC curves.

The firm's supply rise at each output level. Thus, technological advancement can reduce costs for firms in many aspects for firms of all sizes and industries.

For a firm that did not anticipate the disruptive forces of advancement in technology and did not make use of technology to reduce its costs, its total profits will likely fall. On the other hand, a firm that utilize technological advancement to increase its reach to its customers and differentiate its product as well as reduce its production cost will likely benefit significantly from the advancement in technology with an increase in total profits.

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b) Discuss the extent to which the behaviour of firms is affected by contestability of market. [15]

Suggested answers:

Contestable markets are markets dominated by one or few firms which are operating at competitive price and output levels due to the threat of potential competition/ potential entry of new firms. Contestability of market refers to the ease in which new firms can enter and exit the market. Such a market has no/low sunk costs to allow for the ease of exit. Sunk costs are costs that cannot be recovered when firm leave the industry. Behaviour of firms refers to its pricing and non-pricing behaviour. Non-price behavour will include marketing and research decisions. It is too a small extent that behavior of firm is affected by contestability of market as there are many other factors affecting the behavior of firms. The factors include actions of competitors and government regulation.

Behaviour of firms is affected by contestability of market. With low degree of contestability, monopolistic or oligopolistic firm would produce at the profit-maximising output where MR=MC. With high barriers to entry, monopolistic or oligopolistic firm will be able to earn supernormal in the long run. Degree of contestability of market has increased with digital applications and technologies lowering market entry barriers across many industries. For example, in the market of retail, non-traditional retailers have entered the retail markets through e-commerce. The taxi service digital applications that makes it easier to match the demand and supply of taxi services allows Uber to enter the oligopolistic market of ride-hailing. Even in traditionally high barrier to entry banking industry, digital technologies have allowed firm like Haier, which is traditionally a manufacturing firm, to offer convenient finance and payment services through its online platform. The increased market contestability has changed the way firms behave. Even through there might not be increased competition yet, the threat of firms entering the tradition industries will change the way firms behave.

With high degree of contestability, monopolistic or oligopolistic firm may limit its pricing below profit maximizing level in order to ensure that other firms are not enticed by the large supernormal profits and enter the industry. Instead, it will usually set a competitive price close to / at average cost such that it obtains only normal profit. Ie where AR=AC. However, if the digital entrant's AC is way above that of the incumbent firm, then the incumbent firm need not reduce its price all the way to below average cost. When competitors do enter their market, monopolists may take actions such as dumping or predatory pricing to drive competitors out of business despite having to make losses and may even attempt a hostile takeover of a competitor.

On non-price behaviour, incumbent firm may choose to make their product competitive and ensure the firm is efficient before any new competitor enter the market. It may do so through marketing strategies to create consumer loyalty before new entrants come their markets. At the same time, it may invest in R & D to streamline its production and improve their product. This will reduce their unit cost and make their demand price and cross inelastic. In face of potential competition, the incumbent firm will be better able to compete via price when it has kept its cost of production at efficient level. With a product that is unique, the incumbent's demand will fall by less than proportionately when new digital entrant enters the market. As for oligopolistic incumbent, it may choose to collude with another incumbent in the same industry to increase its market share so as to within any increased competition from potential entrant.

For firms in perfect competition and monopolistic competition market, they do not face the threat of contestability as the analysis of contestable markets is not designed for markets with large number of competitors.

Behaviour of firms in monopoly and oligopolistic industries are affected by contestability of market while that of firms in perfect competition and monopolistic competition are not.

Beyond contestability of market, actions of competitor within the same industry can also affect the behavior of a firm. In an oligopoly, a firm's price and non-price behaviour is influenced by the actions of its competitors to a large extent due to mutual interdependence. Increasing price will cause many of its customers to switch to rival firm's products since rival firm will keep prices at current levels. Should the firm lower price, the rival would also decrease it price so as not to lose market share. This would lead to a price war and thus quantity demanded of the firm's product would increase less than proportionately than the decrease in price. Hence there will be price rigidity in the market and the pricing behaviour of the oligopolistic firm is highly dependent on the actions of its competitors. This is especially true when the product involved is homogenous eg oil.

An oligopolistic firm's non-price competition behaviour is affected by the actions of its competitors to a large extent as well. Strategies include product differentiation, where firms aim to emphasize the differences of their products from the competitors'. This will help to build consumer loyalty to that particular firm and reduce the cross elasticity of demand of the firm's product with respect to its competitors. They conduct promotion campaigns and advertising activities and may even invest in research and development in order to develop improved products to gain a larger market share. Apple engages in extensive advertising and R&D to constantly develop and launch new versions of the iPhone to compete in the smartphone industry to gain market share over Samsung and XiaoMi. As Samsung and XiaoMi are continually developing new technology and improving their smartphones, the behaviour of Apple in developing the iPhone 5S with fingerprint recognition and high quality camera and video editing software in response to Samsung's face and eye recognition and waterproof smartphones highlight that in an oligopoly, a firm's non price behaviour is affected by the actions of its competitors.

As for monopoly, being the sole producer, it has no competitor in the market and will be more affected by potential rivals. Firms in monopolistically competitive market seldom take into consideration their competitors actions as each firm has insignificant market power and sells differentiated products. It is too difficult to track the changes in prices and advertising strategies of all the other firms in the monopolistic competitive market. Action of competitors can also affect the behavior of firm. This is evidenced in the case of oligopolistic firms.

The government can also play a part in affecting the behaviour of firms. For a natural monopoly, the government influences the firm's behaviour. A natural monopoly would have no competitors, and are often regulated by the government. Thus decisions made by the monopolist are usually within the limits set by the government to maximize their own profits. One example would be the provision of public utilities like Singapore Power or Public Utilities Board providing piped water to homes in Singapore where prices must be approved by the relevant authorities. To achieve allocative efficiency, government may also imposing MC-pricing to ensure that that monopolist set price and output level that can allow maximum welfare to be achieved in the society. Hence government regulation can also affect a firm's behaviour.

Behaviour of firm is affected by contestability of market to a small extent as there are many other factors that can affect the behavior of firms. Some of these factor include competitors' actions and government regulation. However, firms of larger scale of production in the oligopoly and monopoly market structure are more affected by contestability of market with rising trend of digital disruption. Smaller firms in monopolistic competition and perfect competition are not affected by contestability of market. But they can be affected by other factors. Market with higher sunk costs will also face less contestability and thus contestability of such market will affect the behavior of firms by a smaller extent.

PJC 2018 H2 P2 Question 3:

There are various types of market failure. Market failure provides one of the major justification for government intervention in the economy.

Source: John Sloman, Economics, 6th Edition

a. Explain how market dominance and immobility of factors of production in a country can lead to market failure. [10]

b. Evaluate the policies currently used by the Singapore government to correct these types of market failure. [15]

a) Explain how market dominance and immobility of factors of production in a country can led to market failure. [10]

Market failure occurs when the free market fails to achieve allocative efficiency. It fails when resources are not perfectly mobile, or when firms have market power.

Immobility of factors of production may lead to allocative inefficiency and hence market failure. Factors of production such as labour may be geographically or occupationally immobile.

Geographical immobility may occur because of the high cost of relocation. This prevents labour from moving from areas with high unemployment to areas facing a shortage of labour. As such, workers remained unemployed. The economy is producing within the PPC, i.e. there is unemployment. This leads to wastage of resources (productive inefficiency), and less resources are thus channelled into the production of goods and services that will lead to greater societal welfare. Productive inefficiency implies allocative inefficiency, with the former a prerequisite for the latter.

Occupational immobility occurs because of a mismatch between workers' skills and job requirements. Workers current specific job skill may not be able to respond easily to changing demand conditions. For example, retrenched workers from the electronics manufacturing industry in Singapore do not have the necessary skills required for them to find jobs in the growing infocomm sector (structural unemployment). Labour may thus be put to inefficient use, instead of being allocated into markets where the labour is needed most. There is thus inefficient allocation of resources, with too little resources being channelled into the infocomm sector in this example. Thus immobility of factors of production causes market to fail.

Market dominance may lead to allocative inefficiency and hence market failure.

Market dominance due to high barriers to entry allows existing firm to have a large market share and hence possess significant market power to set price. The firm faces a downward-sloping demand curve.

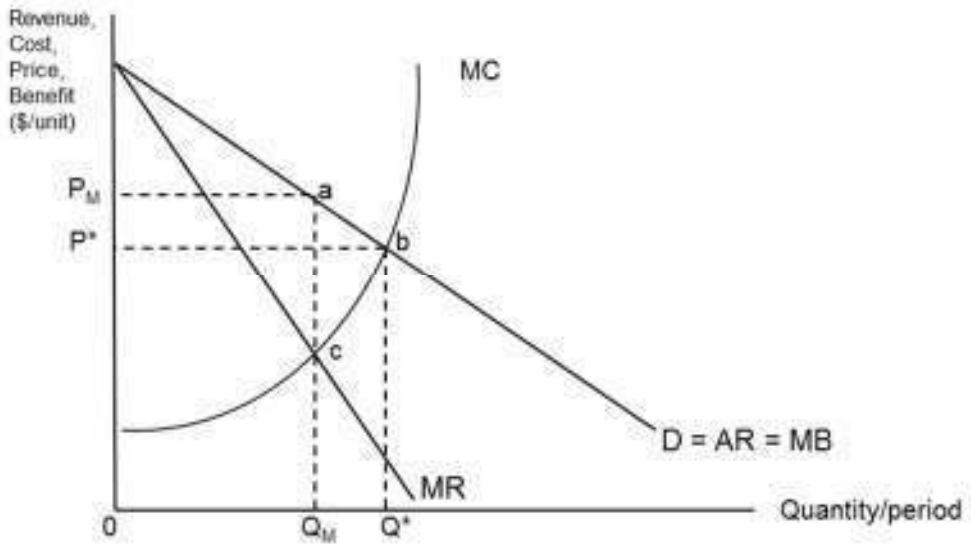

Fig. 1: Revenue and cost curves of a firm with market power

Profit-maximising firms would produce Q_M where MC = MR and charges the maximum possible price it can, P_M (indicated by DD curve).

However, in the absence of externalities, socially optimal output Q* is where MC = MB. Since Q_M is less than Q*, there is underproduction of the good by a firm with market dominance. Producing Q_M to Q* units incurs a total benefit of Area abQ*Q_M, and incurs a smaller total cost of Area cbQ*Q_M. There is thus welfare loss of Area abc (net benefit not gained) as too little resources is channelled into the production of the good. Market dominance thus causes market to fail.

Immobility of factors of production and market dominance may also lead to *inequity*.

In countries where the economy is transitioning between industries e.g. from secondary industries such as the manufacturing of textile to tertiary such as infocomm services, the income gap between workers in declining industries and growing industries is likely to grow. This is because demand for labour will be rising in the expanding industries thus driving up the wage rate while demand for labour in the contracting industries will be falling, pushing down wage rate. As long as labour is immobile, the wage gap will not be able to narrow. If workers are immobile, lacking the necessary skills or willingness to find jobs in growing industries, they may earn less and be less able to afford goods and services. This may result in a less equitable distribution of goods and services within a country.

In the case of market dominance, prices tend to be higher when firms have market power, i.e. P_M in Fig. 1 than without, i.e. P*. For necessities, e.g. electricity, this can lead to poor households being unable to afford the good, leading to a less equitable distribution of the good.

Firms with significant market share because of high barriers to entry are also likely to earn sustained supernormal profits. This can lead to greater inequity as the firm owners receive more profit at the expense of consumers, who may be earning lower income than the firm owners.

Conclusion

In conclusion, market fail due to market dominance and immobility of factors of production. Thus, government intervention is needed to reduce the extent of market failure in order to achieve efficiency.

Part (b)

Evaluate the policies currently used by the Singapore government to correct these causes of market failure. [15]

The Singapore government has intervened in these cases of market failure through the use of various policies. Policies used will be evaluated in terms of their effectiveness, taking into consideration any unintended consequences that may have resulted.

To deal with market dominance, anti-competition regulations have been implemented in Singapore to prevent dominant firms from anti-competitive behaviour. The Competition Commission Singapore (CCS) identifies firms that have violated the regulations, and have the capacity to impose fines and enforce regulations. This may include collusive agreements between dominant firms in an industry, or anti-competitive mergers that can led to a substantial lessening of competition. Collusive agreements can lead to prices being fixed or output restricted to increase prices, leading to an even greater degree of underproduction and higher prices for consumers. Anti-competitive mergers can lead to even larger firms that have greater market power, allowing them to charge higher prices.

An example of government intervention includes preventing Parkway Holdings from acquiring outpatient diagnostic chain RadLink Asia. This increases the level of competition between firms in Singapore, so that demand facing each firm will be lower and more price elastic because of increase substitutes. This will prevent firms from attaining higher levels of market power, which can cause markets to fail as explained in (a).

The Singapore government has also been encouraging competition to reduce market dominance in certain industries through deregulation. One such example is the deregulation of the telecommunications industry by allowing Starhub, M1 and recent addition TPG Telecom to enter the industry previously dominated by Singtel.

With new entrants into the industry, existing firm such as Singtel will face a falling and more elastic demand due to more substitutes available. Both output and prices that it can charge will also fall, making it more affordable for households to purchase the good or service.

However, if firms produce at a lower output, it can mean the loss of potential internal economies of scale (EoS). In particular, this applies to industries with significant internal EoS to be enjoyed, e.g. telecommunications where start-up costs are high. Spreading the high start-up cost over a larger output will lead to lower average costs. The loss of internal EoS may hinder the firms from competing with MNCs in Singapore, or with firms worldwide if the goods or services are exported. It may also lead to higher prices for households if the firms become less able to pass on cost savings to consumers.

As such, there is a need to strike a balance between liberalising the market and making sure firms can enjoy significant internal EoS to benefit society. To that end, the Singapore government has been effective in doing so as seen in its intervention in the banking industry. While it deregulated the banking industry by allowing the entry of more foreign banks, it also allowed some of the local banks to grow through mergers and/or acquisitions to reap internal EoS, e.g. spreading out of advertising cost, managerial internal EoS from having one manager oversee a bigger department.

Both deregulation and mergers are significant to keeping the power of oligopolies in check, which is likely the predominant source of issues of market dominance in Singapore.

n the case of public transportation (bus, train), prices are regulated to keep them affordable for the masses. This leads to a more equitable distribution of services.

However, this may hurt consumer welfare as it may cause public transport companies to have less incentive to improve on services as they earn less supernormal profits.

For industry such as rail transport which is a natural monopoly which have extremely high start-up cost, e.g. cost involved in the building of rail infrastructure, such that minimum efficient scale is reached at an output that is very large relative to level of market demand, encouraging competition is impossible since the presence of more than one firm will lead to losses for both.

Given that it is a natural monopoly, the Singapore government regulate through issuing only 1 license per track and regulated price in the industry to ensure that monopoly price is not being charged to protect consumers welfare. The government seems to have opted for AC pricing since MC pricing will lead to losses for the company.

While AC pricing means the government need not subsidise losses, the output produced is still not allocative efficient. However, the output where P = AC is larger than the output where MC = MR, and thus the new output has still led to improvements in efficiency.

Such regulations keep existing firms on their toes given that licences expire, and firms can be fined in the event of breakdowns.

Transport vouchers are also given to lower income households who qualified to help them cope with affording public transport services.

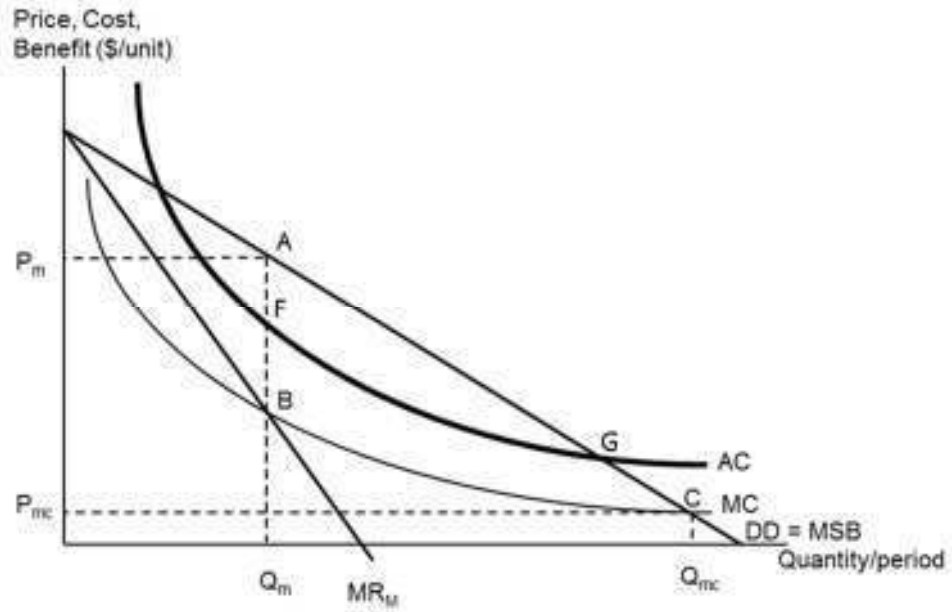

Figure 2: A natural monopoly e.g. rail transport in Singapore

Nationalisation such as for water is one other way the government tackles the issue of market dominance. With the government being the producer of the good or service, production is likely closer to socially optimal output (i.e. produce where P = AC to improve efficiency and avoid subnormal profits) since the government is not a profit-maximiser.

X-inefficiency due to lack of profit motive is not likely to be a significant issue for Singapore, since the government and state-owned firms are generally efficient and will seek to minimise cost.

Measures to deal with immobility of factors of production:
Geographical immobility is not a significant problem in Singapore, given the small size of our island and relatively well-connected transport system.

The key measure implemented in Singapore to tackle occupational immobility of labour is **subsidising training programmes**, e.g. SkillsFuture, to increase the skill level of workers. Subsidising training programmes encourage workers to go for training since it is now cheaper to do so. If successful, this can reduce the mismatch between workers' skill set and job requirements. This will help them transit to jobs that is required by society, improving on efficiency in the allocation of labour resources.

However, this is dependent on workers' willingness and ability to go for the training. This may be an issue particularly for older workers.

In spite of this limitation, skills retraining is still the right policy that the Singapore government has chosen to adopt over the other possible policies as it tackles the root cause of the problem. In particular, occupational immobility has become an issue of concern in recent years due to globalization which sees Singapore continues to transit into high-value knowledge based industries.

The increasing pace of globalisation may also mean that available jobs and their requirements may be changing faster than workers can train for. As such, there may still be a need for social safety nets to improve to help occupationally immobile workers cope with rising costs of living to ensure that they can still consume basic necessities.

To sum up, there is a great deal of government intervention in Singapore economy. Policies adopted so far have not only been appropriate in enhancing the competitiveness, efficiency in the market, but also ensure equity.

PJC 2018 H2 P2 Question 4:

Singapore had experienced annual deflation in a number of years, particularly during economic recessions in 2002, 1998 and 1986. However, the lower prices in 2015 and 2016 are due mostly to lower global crude oil prices and cheaper housing and utilities as well as transport costs.

Source: Adapted from Singapore Business Review 24 May 2016

a) Explain why deflation might be a concern to a government. [10]

b) Assess alternative policies that the Singapore government might adopt to manage the economy when faced with deflation. [15]

(a) Deflation is the sustained fall in general price level. Government will be more concerned with deflation if the deflation is caused by a fall in aggregate demand during economic recessions. The lower prices seen in 2015 and 2016 due to lower global crude oil prices are probably seen to be less concerned. However, the government will also need to assess whether this lower oil prices is due to oversupply of oil or a fall in world demand for oil due to worldwide recession in order to determine the impact on the economy.

For Singapore, a worldwide recession is likely to cause a fall in exports and hence a fall in in aggregate demand. This will result in a leftward shift in the AD causing the general price level to fall and also a fall in the real GDP. As demand for goods and services fall, firms will cut back on their production and this will lead to a fall in the demand for labour. Producers will start to retrench workers and this will lead to a rise in cyclical unemployment. To the producers, lower prices also cause uncertainties to the firms and firms will start hold back on investment resulting in a further fall in aggregate demand and higher unemployment.

Consumers, on the other, will benefit from the lower prices in the short run. Lower prices will allow consumers to buy more goods and services. There will be redistribution of income caused by a fall in general price level. To the saver, their savings will also increase in real value. This will increase their material standard of living. Fixed income earners will now enjoy higher real income and hence higher purchasing power to consume. Borrowers, on the other hand, will lose out as they have to repay their loans that have an increasing real value. However, in the long run, if prices continue to fall, consumers will hold back their consumption in anticipation of further fall in prices. This will result in firms cutting back on production and hence a fall in AD which results in higher unemployment. With lower or no income, consumers will cut back on consumption and this will result in a deflationary spiral which worsens the country's economic growth and rising unemployment, thus penalizing consumers.

To the government, lower prices creates uncertainties and will affect consumers and investors' confidence hence affecting the government's ability to achieve macroeconomic objectives such as sustained economic growth and low unemployment. Foreign firms are less willing to invest in the country given the bleak outlook and this will affect the country's capital account and balance of payments. Government also collects less tax revenue with falling incomes and profits and spend more on unemployment or welfare benefits which may end up worsening the budget balance. Lower tax revenue will also mean less expenditure on merit and public goods which will affect the citizens' standard of living.

In conclusion, it is important for the government to identify the cause of deflation and assess the impact on the economy and finally implement appropriate policies to manage the economy when faced with deflation.

(b) Deflation caused by a fall in AD is a concern to the Singapore government and hence the need to identify the root cause of this deflation. Deflation caused by a downward shift in AS may not be of a concern to the government as a fall in prices due to a fall in cost of production may actually be good to the economy, increase its export competitiveness and lower prices for the consumers, improving material well-being of SOL.

Singapore had experienced annual deflation in a number of years, particularly during economic recessions in 2002, 1998 and 1986 where there is a fall in AD. This is likely caused by a worldwide recession resulting in a fall in exports for Singapore. Exports forms a large portion of the overall AD. To deal with a falling exports, an appropriate policy will be monetary policy centred on exchange rate.

If deflation arise from a fall exports, depreciation of the currency may be appropriate to lower the price of exports. Depreciation will lead to a fall in the price of exports and rise in the price of imports. in net exports. Assuming demand for X and M is price elastic, a fall in price of exports will lead to a more proportionate rise in the quantity demanded for exports. Likewise, a rise in imports will lead to a more proportionate fall in the quantity demanded for imports. Hence, export revenue will rise and import expenditure will fall, this will lead to a rise in net exports and hence AD. A rise in AD will cause the general price level to rise assuming the economy is operating near full employment, hence, solving the problem of deflation.

However, Singapore do not have natural resources and needs to imports her necessity and raw materials. Hence, a depreciation of the currency may directly raise the cost of necessity goods which will lower the material aspect of the standard of living. At the same time, it will also increase the cost of production for firms due to higher import raw material prices. This will reduce the export competitiveness of the country.

Also, even with a depreciation of currency to increase net exports, foreigners may not buy Singapore's exports if their countries are facing a recession resulting in a fall in NY and hence monetary policy centred on exchange rate may not be effective. Hence, depreciation of exchange rate can only mitigate the negative impact of deflation but not eradicate it. It should be complemented with other policies such as the Job Credit scheme and expansionary fiscal policy.

In the short run, falling prices leading to cyclical unemployment poses an immediate problem to the government as it could further depress consumers' confidence and worsen the deflation. To deal with rising cyclical unemployment, government introduced Job Credit scheme in 2001 to preserve jobs. Job credit scheme is a direct subsidy from the government to the firms. This directly lower the cost of production for the firms, preventing firms from making loss thus helping firms to keep their workers. Government also increase subsidies for training and provide additional support for lower-income workers who face a reduction in pay during the downturn. Finally, the Government can also expand recruitment across ministries and statutory boards, for all levels of employees, and including mid-career professionals to boost employment.

However, it should be noted that the Job Credit scheme is very costly and may cause a strain on the government's budget. During a deflation where government is facing falling tax revenue due to falling economic growth and rising unemployment, the Job Credit scheme caused the government to incur a budget deficit which requires the government to either tap into their reserves or borrow. Fortunately, with the healthy reserves, Singapore government is able to avoid the need to borrow which will lead to a higher national debt penalizing future generations. As such, the Job Credit scheme is a useful short term policy to minimize the negative effect brought about by deflation.

If the deflation arises from a fall in consumption and investment due to pessimism, government may need to take the lead and increase government spending to compensate the fall in consumption and investment. An expansionary fiscal policy will be appropriate to increase AD. A fall in income tax will increase the disposable income of consumers and lead to rise in consumption. Likewise, a fall in corporate tax will increase the after tax profits for firms allowing the firms to reinvest these profits and hence spur growth. Through the multiplier effect, national income will rise by multiple times and hopefully this will regain confidence from the consumers and firms.

To attract investment, corporate tax is not the only factor given that Singapore has one of the lowest corporate tax around the region. Hence, other pro-investment policies are needed in order to attract investment. For example, giving tax holidays to retain the existing important industries (oil and gas, pharmaceutical, life science etc.), to provide infrastructure support, R&D subsidies to attract new

sunrise industries (cyber security, AI and automation) and so on.

Government can also increase public spending on infrastructures, healthcare and education. Big projects like new MRT lines, underground tunnels are often built during times of recession to improve economic outlook and build consumers and investors' confidence. This will, however, worsen the budget balance for the government. However, with greater foreign investment, this will lead to a more sustained economic growth for Singapore bringing about higher tax revenue and a healthy budget balance in the future.

Conclusion

Whether the Singapore government is able to manage her economy using appropriate policies when faced with deflation will depend on whether they are able to identify the root cause of the deflation and to manage the extent of the harmful effects of deflation. Most of the times, if deflation is caused by a worldwide recession, there is very little the government can do except to mitigate the effects by focusing on the immediate problem like cyclical unemployment and targeting at the long term economic growth. Based on past performances, Singapore has been able to make strong recovery from a recession and avoid the deflationary trap does show that the combination of exchange rate policy and fiscal policy focusing on supply-side effects have been effective in tackling deflation in Singapore.

PJC 2018 JC 2 H2 Paper 2 Question 5

Singapore's economy expanded a faster-than-expected 1.8 per cent in the last quarter of 2016. Moving ahead, growth remains uncertain. Internally, Singapore has adopted a policy of restricting foreign labour and restructuring towards productivity-driven growth. Externally, higher US interest rate may lead to higher interest rates in Singapore.

Source: Adapted from Channel Newsasia, 3 January 2017

(a) Explain the possible conflicts in government macroeconomic objectives caused by a policy of restricting foreign labour and restructuring towards productivity-driven growth. [10]

(b) Assess the impact of higher US interest rate on Singapore's macroeconomic performance. [15]

(a) Explain the possible conflicts in government macroeconomic objectives caused by a policy of restricting foreign labour and restructuring towards productivity-driven growth. [10]

[10]

Introduction

To achieved a more sustained economic growth, Singapore has adopted a policy of restricting foreign labour and restructuring towards productivity-driven growth. However, in the short run, this might conflict with her other macroeconomic objectives such as price stability and low unemployment.

Body

The policy of restricting foreign labour and restructuring towards productivity-driven growth leads to a healthier BOP and higher economic growth in the long run.

This is because by restricting foreign labour, this will decrease the supply of labour and increase the wage cost. Hence, firms will be incentivise to switch away from labour-intensive methods of production towards more capital-intensive method of production. In addition, Singapore government also encourages firms to make use of better technology in its production by giving more subsidies such as the Productivity and Innovation Credits. This will help to speed up production and increase the labour productivity of firms. With higher labour productivity growth than wage growth, the unit labour cost of firms will fall. This will lead to lower cost of production and hence lower price of exports. Assuming demand for exports is price elastic, the more competitive exports will bring about greater export revenue and hence Singapore's balance of trade will improve.

In addition, higher productivity with the use of better technology will increase the productive capacity of the economy shifting Singapore production possibility curve (PPC) outwards. With both higher AD and AS, Singapore 's will experience a more sustained economic growth.

Thus, a policy of restricting foreign labour and restructuring towards productivity-driven growth aims to promote a more sustained economic growth by reducing firm's reliance on labour and incentivizing firms to use better technology.

However, while the policy of restricting foreign labour and restructuring towards productivity driven growth leads to more sustained economic growth in the long run, it may conflict with the macroeconomic aim of price stability in the short run.

In the short run, it is likely that the restriction in foreign labour will cause wages to rise faster than labour productivity. This is because productivity takes a long time to increase. Efforts to improve the work flow and finding and implementing appropriate technology to speed up the work flow takes time. Hence, in the short run, while the wage cost has increased, labour productivity may not have increased. Hence, unit labour cost will rise. With the higher cost of production, the short run aggregate supply (SRAS) will fall causing the SRAS curve to shift upwards. This will lead to higher general price level resulting in higher cost push inflation.
Hence, in the short run, a policy of restricting foreign labour and restructuring towards productivity-driven growth may conflict with the macroeconomic objective of price stability.
Furthermore, the policy of restricting foreign labour and restructuring towards productivity-driven growth may also conflict with the aim of achieving full employment.
This is because with the restructuring towards productivity-driven growth, firms may adopt more labour-saving technology. This will lead to a falling demand for lower skilled workers and a higher demand for higher-skilled workers. The lower skilled workers may be less educated and thus lack the knowledge and skills to take up jobs take require knowledge of information technology. Furthermore, retraining to equip workers with new skills takes a long period of time and older and less educated workers may also be less receptive towards the use of technology. Hence, this may result in rising structural unemployment.
Hence, while the policy of restricting foreign labour and restructuring towards productivity-driven growth leads to more sustained economic growth, it may conflict with the aim of achieving low unemployment in the economy.
In conclusion, the policy of restricting foreign labour and restructuring towards productivity-driven growth is desirable to in achieving a healthier balance of payments and a more sustained economic growth for Singapore in the future, in the short run, there is likely to be higher inflation and unemployment. Hence, Singapore government should adopt policies to minimize these conflicts so that overall this policy is beneficial to Singapore's macroeconomic performance.

Interpret the Question – Part (b)
(b) Assess the impact of higher US interest rate on Singapore's macroeconomic performance. [15] **[15]**
Introduction
Singapore's economic growth remains uncertain due to the rising interest rate in US. This is because higher US interest rate may cause higher interest rate in Singapore as Singapore is an interest rate taker. However, the higher US interest rate also results in greater capital outflow from Singapore to US. This may result in a depreciation of Singapore dollar which may benefit Singapore. Thus, the net effect of higher US interest rate depends on whether the negative effect of higher Singapore interest rate outweighs the positive effect of a weaker Singapore dollar.
Body
Being an interest rate taker, Singapore interest rate tends to mirror foreign interest rate, particularly US interest rate. Hence, a higher US interest rate will lead to a higher Singapore interest rate.
With higher interest rate in Singapore, this will lead to higher cost of borrowing. Consumers will hence be less willing and able to consume big ticket items on credit. In addition, the opportunity cost of consuming rises and hence consumers are more willing to save rather than consume. Hence, consumption will fall. In addition, with the same expected returns to investment, a higher interest rate will lead to falling profitability of investment. Thus, firms are less able and willing to invest resulting in

a fall in I.

As C and I fall, Singapore's aggregate demand (AD) is likely to fall leading to a multiplied fall in the national income of Singapore due to the many rounds of fall in income-induced consumption.

The effect of a fall in AD on Singapore depends on the degree of resource utilization. If Singapore's economy operates at or near full employment, a fall in AD is actually beneficial to Singapore economy as it brings about a fall in general price level hence causing a fall in demand-pull inflation. However, if the fall in AD occurs when the economy is functioning below full employment, there will be a fall in real GDP and hence resulting in a fall in derived demand for labour causing higher demand-deficient unemployment in Singapore. This may be undesirable for the Singapore economy.

A rise in interest rate may also be undesirable for property buyers who purchase their houses through bank loan. The higher interest rate will result in higher interest payments for their monthly interest payments for their housing loan and hence will have less income to consume. If the interest rate were to rise by a large extent, this may cause a lot of property buyers to default on their housing loans and forcing them to sell off their properties at a loss. If many property buyers end up defaulting on their loans, this may result in rising bad debts of the banks, affecting the liquidity and stability of the financial sector. This is undesirable for the macroeconomic performance of Singapore economy considering that the financial sector is a major contributor to the economic growth of Singapore.

Hence, a rise in interest rate is likely to have negative consequences on the macroeconomic objectives of Singapore economy if Singapore is currently operating below full employment. In addition, depending on the extent of the rise in interest rate, there may be negative consequences on the stability of the property and financial sector of Singapore, hence bringing about negative consequences on the macroeconomic performance for Singapore.

On the other hand, a rise in US interest rate can be beneficial on the Singapore economy as it leads to capital outflow from Singapore to US, thus causing a depreciation of the Singapore dollar.

With a higher US interest rate, investors are more willing to put their money in US banks to earn a higher interest rate. Hence, they will be capital outflow from Singapore to US resulting in a larger supply of S$ in the foreign exchange market. This will cause the S$ to depreciate. With a depreciation of the S$, the price of Singapore export in US$ will fall while the price of Singapore imports in S$ will rise. Thus, quantity of exports will rise while quantity of imports will fall. Assuming Marshall-Lerner's condition hold in which the sum of price elasticity of demand for exports and imports is greater than 1, net exports of Singapore will rise and this is beneficial for Singapore's balance of trade. In addition, the rise in net exports will bring about higher AD and hence national income for Singapore assuming Singapore is currently operating below full employment.

Hence, a higher US interest rate can be beneficial in Singapore as it leads to a weaker S$ which will bring about higher net exports assuming Marshall-Lerner's condition is satisfied.

The net effect of a rise in US interest rate on the macroeconomic performance of Singapore depends on whether the disadvantage of a higher Singapore interest rate outweighs the advantage of a weaker S$.

Given that Singapore has a larger external sector than domestic sector, the weaker S$ is likely to have a strong positive effect on the Singapore economy than the negative effect caused by a higher Singapore interest rate.

However, there are other factors to consider.

Firstly, the central bank of Singapore -Monetary Authority of Singapore – may not allow the S$ to depreciate by a large extent for fear of imported inflation that it may cause. A weaker S$ may cause price of imported raw materials and foodstuff to rise and this may lead to higher cost of production for the import-dependent Singapore economy, causing higher imported inflation. Hence, due to the smaller extent of depreciation of S$, the negative effect of a higher Singapore interest rate may

outweigh the positive effect of a weaker S$.

Secondly, the depreciation of S$ may not have a strong positive effect on its balance of trade because the higher US interest rate may lead to even more capital outflow from other emerging economies such as Indonesia, India and Malaysia. These economies may experience a large depreciation in their currencies than Singapore. For example, although the S$ has depreciated against the US$ due to the higher US interest rate, the S$ has actually appreciated against the Malaysian ringgit. This is because the Malaysian ringgit has suffered a greater depreciation than the Singapore $ due to the rise in US interest rate. Hence, in such circumstances, although Singapore exports may gain greater export competitiveness vis-à-vis US goods, Singapore exports may not have lost export competitiveness vis-à-vis the other goods in the other emerging markets.

Hence, the negative effect due to a higher Singapore interest rate is stronger than the positive effect due to a weaker S$.

Conclusion

In conclusion, it is likely that Singapore may suffer a poorer macroeconomic performance due to the rising US interest rate. However, the extent of the negative impact depends greatly on the pace at which the US government increases its interest rate. Given that the US government has been increasing the US interest rate at a gradual pace, the negative effect on Singapore may be minimized. In addition, the Singapore government has also put in place cooling measures in the property markets to prevent excessive speculation in the property market so that when the interest rate does rise in the future, the property buyers will not be negatively affected, hence preventing the property and financial markets from being negatively affected. Thus, overall, the negative impact of the rise in US interest rate on Singapore economy has been minimal.

PJC 2018 H2 P2 Question 6

"If Singapore is to continue to benefit from international trade, the government needs to continue to use trade-related economic policies, such as free trade agreements (FTAs) and policies to stimulate export industries."

a) Explain the determinants of the pattern of trade between Singapore and the rest of the world. [10]
b) Discuss the options available to the government to ensure that it would continue to benefit from free trade. [15]

Pattern of trader refers to the type and quantity of exports and imports that a country trades with her trade partners. Some of Singapore major imports include labour intensive, lower value consumable products such as food and clothing. Singapore also import electronics, petroleum and chemical products and re-export some of these products as higher value added products to its trading partners. The main determinants of the pattern of trade between Singapore and the rest of the world include resource endowment which would determine its comparative advantage in the type of goods being produced.

Singapore with its small physical size with no natural resources, it does not possess any comparative advantage in the production of labour intensive goods such as textile and agricultural products.

According to the theory of comparative advantage states that a country would be able to benefit from trade by specializing in the production of goods and services in which it can produce at a lower opportunity cost. Singapore with its small physical size and small population size, it does not have any comparative advantage in the production of labour intensive goods and services such as textiles, clothing, food or agricultural products. As such, Singapore does not produce and almost import entirely all its consumable products from countries such as China, Malaysia and the rest of its trading partners which enjoy a comparative advantage in the production of these goods at a lower cost than Singapore.

On the other hand, with its highly educated and skilled labour force, Singapore have a comparative advantage in the production of higher value, knowledge intensive goods and services and traded these goods and servces with its trading partners. These include goods and services such as high end electronic products, petrol chemical products, pharmaceutical products as well as medical and financial services to its trading partners.

Hence, leveraging on its resource endowment, Singapore imports mainly goods and services which it does not have a comparative advantage in producing and export goods and services which it has a comparative advantage in producing.

Other than its natural resource endowment, government policies are also one of the determinants of the pattern of trade.

Given the limitation of a small physical size with a small population and no natural resources, and hence its inability to compete with its much better endowed and resources rich countries, the Singapore government has deliberately adopted policies to develop its niches of comparative advantage in the higher value, knowledge based industries. The government has adopted various policies such as tax incentives as well as education policies to ensure a highly educated workforce for the knowledge based industries. Through these policies, the government is able to make Singapore an attractive place for investment and determined the exports of Singapore. For example, although Singapore does not produce any oil, with the appropriate government policies, it was able to develop into one of the world's largest oil refinery centre and an exporter of all oil related and petrol chemical products. Singapore has housed all oil refinery and oil and chemical related industries in the same location some of the offshore islands which has allowed the development of the external economies of scale for these industries being located in the same location. This has helped to lower the cost of production for these industries and increased its productivity and hence allowing these industries to producing and exporting competitive priced products to the world.

Hence, even without the comparative advantage deriving from the endowment of natural resource, Singapore is able to develop its own niches of comparative advantage via appropriate government policies which has determined type of goods and services it export to the rest of the world.

Another factor which has also determined Singapore's pattern of trade is the location and proximity of its trading partners.

Most countries in the world tend to trade a lot more with its neighbouring countries and Singapore is no exception. Singapore largest trading partners tend to be those countries which are in close proximity such as Malaysia and Indonesia, although these countries may not possess the comparative advantage in the production of goods and services that Singapore imports from them. The likely reason is due to the lower transportation costs and lesser time taken for the delivery of the goods. Lower transportation costs and shorter delivery time taken would lower price of the goods and ensure the freshness of the perishable goods. All these would translate into lower prices and better quality products. Examples of such imports are water and agricultural products from Malaysia and natural gas from Indonesia. And due to higher transportation costs, Singapore imports of agricultural products from further apart countries such as Japan and USA tends to be of a higher quality and of a higher price range.

Hence, proximity of its trading partners would determine the type goods imported and exported by Singapore.

In conclusion, there are many factors which determine the pattern of trade with the rest of the world. Other than the 3 factors explained above, other factors which can influence the pattern of trade include trade policies of the government such as free trade agreement with other countries, protectionist measures, taste and preference of the consumers and even the changes in technology can affect the pattern of trade between countries.

For Singapore, with its exports of mainly knowledge based or capital intensive products and import of lower value, labour intensive products which it does not have any comparative advantage in producing, the total value of its exports is higher than its total value of imports, and as such Singapore is still able to achieve a balance of trade surplus (M>X).

a) Discuss the options available to the government to ensure that it would continue to benefit from free trade. [15]

Given the nature of Singapore economy – small physical size with no natural resources. Trade, inevitably has become the main engine of growth for the country. It is thus, not surprising that the total value of trade is more than 3 times the real GDP of Singapore. But trade by itself would not guarantee economic growth and development for the country unless it is able to benefit from trade. In order to ensure that it is able to be able to continue to benefit from trade, Singapore needs to ensure that the exports of its goods and services are relevant and competitive to its trading partners. And there are several options which the government can adopt to achieve this aim. Some of these policies such as fiscal and supply side policies required continual and substantial amount of commitment bare continual while some of the policies such as exchange rate policies may be situational in nature.

As stated by the theory of comparative advantage, each country should specialize in the production of goods and services in which it has a comparative advantage and consequently to enable a greater production and consumption of goods and services via trade.

But comparative advantage is a dynamic and revolving concept. With the opening up of countries such as China and Vietnam for trade, Singapore has lost its comparative advantage in the production of low value products to these countries. As such, Singapore needs to continually develop new comparative advantage in order to benefit from trade and one way to achieve this is via the adoption of fiscal and supply side policies.

The Singapore government has been adopting fiscal policy with competitive corporate tax rate to attract investment into Singapore. And this is complemented with a host of other tax incentives such as tax exemption and rebates to attract targeted higher value and knowledge based industries to invest in Singapore and help the economy in developing its comparative advantage in these industries such as the petrol chemical, pharmaceutical and the aerospace industries. Special areas have also been earmarked for the development of these different industries. For example, the Seletar area is designated for the development of the aerospace industry and some offshore islands are designated for the petrol chemical industries. As these industries are concentrated in a certain areas, they are able to reap the benefits of the external economies of scale and lower their costs of production and hence increasing their competitiveness.

Hence, in order to continually develop new comparative advantage for the production of goods and services, the government can adopt fiscal policies

However, with fiscal attract the new industries would not be sufficient to help in developing new comparative advantage and boosting Singapore exports competitiveness. It needs to be complemented with the appropriate supply side policies in the development of the workforce.

The Singapore government has implemented policies to encourage the life-long learning and continually upgrading of the skills of the workforce. One such policy is SkillsFuture where every adult above the 21 years of age are given a credit of $500 which they can use to offset the training courses they attended. For the companies, training expenses incurred for staff are allowed for tax deduction. Other incentives such as grants are also made available for firms to increase their productivity by upgrading and automating their production.

The development of the skills of the workers is necessary as the economy moves into the production of higher value and knowledge based products. With training, it helps to increase the productivity of firms as the workers acquire new skills in handling the new machinery, hence

lowering cost of production and increasing competitiveness of its exports. It also increases the occupational mobility of workers as the economy develops new comparative advantage as it moves towards the production of higher value goods and services.

Hence, the development of new comparative advantage of the economy is necessary in order for Singapore to continue to benefit from trade and this requires an adoption of a complementary of both the fiscal and supply side policies. And both policies would require a long term and heavy financial commitment by the government. In addition, it also essential for the government in correctly identifying the correct comparative advantage that the economy can develop.

Other than the fiscal and supply side policies, another option that the government can adopt in order to ensure the competitiveness of the country exports and hence benefit from trade is via the exchange rate policy.

The Singapore government has adopted a managed floating exchange rate system where the government allows the exchange rate to fluctuate within a certain band. It allows its exchange rate to appreciate to reduce the prices of imported raw materials to curb imported cost push inflation and reduce the cost of production which can increase the price competitiveness of Singapore's exports.

On the other hand, the Singapore government may opt to depreciate its currency is overvalued against its major trading partners which has reduced the export competitiveness of its goods and services. With a fall in the value of its currency, its exports become cheaper in terms of foreign currency, and this would increase the price competitiveness of a country's exports. And if the demand for the country's exports are price elastic, a fall in price would lead to a more than proportionate increase in quantity demanded and hence boosting the exports of the country.

Depreciating one's currency to increase its competitiveness can only be a short term strategy to boost its exports and benefits from trade. Such a strategy may invite retaliation where the trading partners may impose protectionist measures such as tariffs on the exports of the country. An example would be the frequent trade disputes between the US and China where the Chinese firms have been accused of having an unfair trade advantage due to the manipulation of its currency by the government. A more realistic and long term solution would be for a country to improve the quality or increase the productivity of its production to increase its competitiveness.

Other points that the government can adopt are trade policies such as the signing of free trade agreement with its trading partners.

A free trade agreement is a legally binding agreement between 2 or more countries to reduce or eliminate barriers to trade and investment. FTA would enlarge and secure the necessary markets for Singapore to make up for its lack of a large domestic market. Not surprising, Singapore is a participant to a number of free trade agreements with the different countries. FTA would result in greater trade as well as greater investment flows, hence affecting the economies of participating countries.

However, with the signing of FTA with other countries, it would also open up the Singapore's economy and subject the domestic firms to greater foreign competition. If the domestic firms are not competitive, it may drive out domestic firms, increasing the country's reliance on foreign firms for its economic growth. As such, to complement the signing of FTA, it is necessary that the government also adopt policies (such as supply side policies) to increase the productivity and competitiveness of domestic firms.

In conclusion, given its natural physical limits, free trade is necessary for the survival and growth of Singapore. However, it cannot be assumed that free trade would only bring forth benefits. It should be noted that with free trade, it would not automatically guarantee growth for

the economy and that not all countries would benefit equally from free trade. Thus, it would be necessary that the government adopt appropriate policies to mitigate the negative impact of free trade and ensure that the economy could benefit from free trade.