**Question 2: Economic growth and digital transformation**

**Table 2: Selected economic indicators for China and Singapore (2015-2017)**

|  |  |  |  |
| --- | --- | --- | --- |
|  | **2015** | **2016** | **2017** |
| **China** |  |  |  |
| Real GDP annual growth rate (%) | 6.9 | 6.7 | 6.7 |
| Rate of unemployment (%) | 4.1 | 4.0 | 3.9 |
| Annual rate of inflation (%) | 1.4 | 2.0 | 1.6 |
| Consumption (% of GDP) | 52.8 | 54.0 | 53.2 |
| X+M (% of GDP) | 36 | 37 | 38.1 |
| Gini Coefficient | 0.462 | 0.465 | 0.467 |
| Human Development Index (Ranking) | - | 86 | 86 |
|  |
| **Singapore** |  |  |  |
| Real GDP annual growth rate (%) | 2.9 | 3.0 | 3.7 |
| Rate of unemployment (%) | 1.8 | 1.9 | 2.2 |
| Annual rate of inflation (%) | -0.5 | -0.5 | 0.6 |
| Consumption (% of GDP) | 47.3 | 46.8 | 46.0 |
| X+M (% of GDP) | 329.4 | 304.5 | 318.8 |
| Gini Coefficient | 0.463 | 0.458 | 0.459 |
| Human Development Index (Ranking) | - | 8 | 9 |

Source: *Various*

**Extract 6: China’s economic slowdown and rebalancing**

China has so far managed a gradual economic slowdown. Looking at the demand-side of growth, investment has long been a major driver in China. A gradual rebalancing from investment-driven to consumption-driven growth is needed to avoid any further over-allocation of capital and its negative consequences, such as excess capacity in the economy.

While this rebalancing started a couple of years ago, the most recent Government Work Report reiterate the importance of boosting consumption. Consumption tends to be a more stable driver of growth than investment, being less prone to boom-and-bust of business cycles. In recent years, consumption has become the major driver of growth in China, overtaking investment. Nevertheless, the overall contribution of consumption to growth has been relatively stable in the past few decades. Thus, although rebalancing is under way, its pace is relatively slow. This may relate to still very strong motives to save money related to social security coverage that is only partial and the varying quality of public healthcare and education services provided across China. These factors force people to save for their old age, in case of illness or for their children’s education, and so there is lower consumption.

The key question therefore is how to realise the consumption potential in China. Important prerequisites are high employment rates and rapidly growing incomes. While the unemployment rate has long been low in China, there is less information about underemployment, particularly in rural areas, where, by definition, all people are employed. Income growth has been strong in past years, though in 2016 it was relatively weaker, especially in urban areas. The good news, however, is that rural incomes have been continuously growing faster than urban ones, thereby reducing the urban-rural income divide.

Source: *The Telegraph,* 15 March 2017

**Extract 7: Digital China**

China has around 700 million internet users and 282 million digital natives (internet users less than 25 years old) eager to adopt new technology. The massive scale of the Chinese market and a supportive regulatory and supervisory environment in the early years of digitalization made China a global leader in frontier industries such as e-commerce and financial technology.

Digitalisation will continue to transform the Chinese economy by improving efficiency and softening the slowing growth as the economy matures. Over the past decade, China has become a leading global force in several areas of the digital economy. For instance, in e-commerce, only about a decade ago China accounted for less than 1 percent of the value of worldwide transactions; that share is now more than 40 percent. Some early investors in leading Chinese e-commerce players are estimated to have earned returns of thousands of times their initial investment. In mobile payments, penetration among China’s internet users has grown rapidly, from just 25 percent in 2013 to 68 percent in 2016. In 2016, the value of China’s mobile payments related to consumption by individuals was $790 billion, 11 times that of the United States.

The Chinese government spent 430 billion yuan in 2015 to beef up the nationwide internet infrastructure. Another 700 billion yuan will be spent on this effort in 2016 and 2017, and an additional 140 billion yuan will be invested in improving rural internet connectivity until 2020. Putting all these internet-related policies in place could help provide economic growth momentum for China in the years ahead. The internet and its related technologies will change the nature of economic growth, especially as labour costs increase and the country’s population ages. They will create new markets for innovative products and services.

Just a decade ago, there were fewer than 100 million internet users in mainland China, and the penetration rate was just 7 percent. Now, the penetration rate has reached nearly 50 percent.

Sources: *McKinsey Report 2017* and *South China Morning Post,* 3 February 2018

**Extract 8: Singapore - Slower growth expected in 2018**

Growth this year is expected to be slower, The Ministry of Trade and Industry's (MTI) said. The Singapore economy, which grew 2.4 percent in 2016, picked up pace in 2017 on the back of surging global demand for electronic gadgets.

Government forecasters are estimating growth of 1.5 to 3.5 percent in 2018. Externally-oriented services sectors such as finance and insurance, transportation & storage and wholesale trade are expected to benefit from firm external demand, although their pace of growth is also likely to ease in 2018. The MTI said Singapore's external demand outlook is likely to be weaker this year compared with last year. Some risks remain - including concerns over protectionist sentiment and trade policies especially in the United States.

Source: *The Business Times,* 14 February 2018

**Extract 9: Digital transformation in Singapore**

Given the possible external challenges, the Singapore economy may have to turn towards domestic drivers for growth. This will be led by the ongoing expansion in services arising from the digital transformation of the economy. Digital transformation in the economy will add an estimated US$10 billion to Singapore's GDP and increase GDP growth at an annual rate of 0.6 percent by 2021. These findings come from a study by tech giant Microsoft and market researcher International Data Corporation Asia.

As digital technologies continue to play a bigger role in the economy, digital products and services created directly through the use of digital technologies - such as cloud-related products and artificial intelligence (AI) - are poised to make up 60 percent of the country's GDP by 2021, up from 10 percent in 2017. Digital transformation holds additional economic benefits such as increased educational and training opportunities, the creation of higher-value jobs, and opportunities to take up digital-related freelance work.

Microsoft Singapore's managing director said: "Singapore is clearly on the digital transformation fast track. At the same time, businesses in Asia-Pacific are increasingly deploying emerging technologies such as AI as part of their digital transformation initiatives, and that will accelerate growth even further.”

To date, Singapore’s internet penetration rate has reached 82 percent, which is much higher than the global average rate of 50 percent.

Source: *The Business Times,* 21 February 2018

**Extract 10: Digital transformation challenges Asia's inclusive growth**

Inclusive growth entails maintaining growth that creates employment opportunities and helps in reducing poverty. It means the poor can have access to essential services in health and education. It includes providing equal opportunity, empowering people through education and skill development. Some say that digital transformation can play a powerful role in fostering inclusive growth.

However, in the course of digital transformation, income disparity could grow, especially in developing Asian countries where the income gap and inequality in opportunities to access education have been persistent. Digital transformation, characterised by developments of a range of new technologies, is likely to result in job displacement in the labour-intensive industries. Consequently, white-collar workers with sought-after intellectual qualities would be offered higher salaries and benefits, compared to less educated and low-skilled labourers, intensifying the income gap. And, income disparity occurs not only between countries but also within countries because of the unequal provision of education services, especially between rural and urban regions.

Therefore, as long as changes in education do not catch up with technological advancements, the skill-biased technological transformation would affect people with insufficient or unsuitable education, perpetuating the vicious cycle of poverty and inequality. Thus, in order for the workforce to be fully and equally prepared for the technological revolution, increased education spending is an essential condition.

In Singapore, one key area of focus for policymakers will be how to make sure no one is left behind. Several key measures have been put in place in recent years, chief among them being SkillsFuture. Its initiatives, aim to provide a range of opportunities for workers to continue their education and training so that they can improve their skills and incomes throughout their careers. Other measures target improving the position of lower-paid workers and those who have retired from the workforce.

Sources: *The Straits Times*, 27 Sep 2015 and 13 May 2017

**Questions**

|  |  |
| --- | --- |
| **(a)** | With reference to Table 2: |
|  | **(i)** | Compare the changes in Real GDP for China and Singapore over the period indicated. [3] |
|  | **(ii)** | State and comment on the likely relationship between Singapore’s Real GDP growth rate and inflation rate between 2016 and 2017. [3] |
| **(b)** | Using AD/AS analysis, explain **two** intended consequences of rebalancing in the Chinese economy and use an AD/AS diagram to explain why rebalancing might not remove the ‘excess capacity’ in the Chinese economy. (Extract 6) [7] |
| **(c)** | Using Extracts 9 and 10, explain and comment on the impact of digital transformation on the various types of unemployment. [8] |
| **(d)** | Discuss whether Asian economies can achieve inclusive growth through digital transformation. ……………………………………………………………………………………………………………[10]  |
| **(e)** | **(i)** | From Table 2, identify and explain **one** indicator that is most useful in assessing standard of living. [2] |
|  | **(ii)** | Discuss the view that governmental efforts to promote digital transformation is the best approach to achieve faster growth in standard of living for a country. [12] |

[Total: 45]

|  |  |  |
| --- | --- | --- |
|  |  |  |

**(a)(i) Using Table 1, compare the changes in Real GDP for China and Singapore over the period. [3]**

***Requirement: Meaningful comparison of Real GDP changes with at least one similarity and two differences.***

* *Both* economies experience increase in Real GDP. *[1m - similarity]*
* *However*, China experienced faster Real GDP increase as compared to Singapore. *[1m – first difference]*
* And, China’s Real GDP increases at decreasing rate whereas Singapore’s Real GDP increases at increasing rate. *[1m – second difference]*

**(a)(ii) State and comment on the likely relationship between Singapore’s Real GDP growth rate and inflation rate between 2016 and 2017. [3]**

***Requirement: Identify relationship and comment on likely reason(s).***

* Positive relationship *[1m]*
* An increase in GDP growth rate is likely to be caused by rising AD (i.e. actual growth). With the Singapore economy likely to be operating near/at full employment, an increase in AD would lead to demand-pull inflation, as the economy encounters supply bottleneck. *[up to 2m for elaborated comment]*

**(b) Using AD/AS analysis, explain two intended consequences of rebalancing in the Chinese economy and use an AD-AS diagram to explain why rebalancing might not remove the ‘excess capacity’ in the economy. (Extract 6) [7]**

***Requirement for first part: Explain two intended consequences, supported by evidence. [Up to 4 m]***

(i) **To reduce excess capacity**

* Investment used to be the traditional ‘engine of growth’ in China, boosting actual growth.
* However, concurrently, it has led to over-allocation of capital goods in the economy resulting in excessive spare capacity.
* *As mentioned in Extract 6: Rebalancing is needed to avoid any ‘further over-allocation of capital… (reducing) excess capacity in the economy’.*
* Hence, a gradual reduction in investment expenditure to reduce the excess productive capacity is necessary.
* At the same time, a corresponding rise in consumption is required to better utilize the existing spare capacity.

(ii) **To achieve more stable economic growth**

* On the other hand, consumption-led growth tends to be more stable as compared to investment driven growth.
* *As mentioned in Extract 6: ‘Consumption is less prone to ‘boom-and-bust of the business cycle’*
* With consumption replacing investment as the ‘growth driver’, it would lead to less drastic economic upswings and downswings. Thus minimizing any adverse consequences such as heightened cyclical unemployment during downturns.

***Second part : Explain how rebalancing might not remove excess capacity [Up to 3m]***

* Investment has previously created excess capacity in China, and while consumption has increased, it has not reached its ‘full potential’ due to high savings rate in China.
* As a result, the overall rise in AD is probably still insufficient to utilize the spare resources and achieve the full employment output.
* Thus, the excess capacity has not been removed in China. (Refer to diagram.)

**Insert AD-AS diagram showing excess capacity.**

**(c) Using Extracts 9 and 10, explain and comment on the impact of digital transformation on the various types of unemployment. [8]**

***Requirement of Question:***

***Explain how Structural, Demand-deficient and Frictional unemployment can be impacted using relevant evidence [Up to 6m]. And, comment on the likely extent and/or nature of the impact [Up to 2m].***

**(i) Explain likely impact on Demand-deficient Unemployment**

* Extract 9 stated that: *“As digital technologies continue to play a bigger role in the economy, … creation of higher-value jobs”*
* The increase in G, I on internet infrastructure and boost C through e-commerce, leading to overall increase in AD.
* AD increases leads to unplanned decrease in stocks. As firms increase production levels in the next period, they would hire more workers, leading to an increase in employment.
* Thus, reducing Demand-deficient unemployment.

**(ii) Explain impact on Structural Unemployment**

* As mentioned in Extract 9: *“increased educational and training opportunities”*
* This is likely to reduce Structural unemployment - Increased skills training and education – Re-skilling workers to take up new digital jobs created.
* However, when the workforce is not suitably trained and educated, Digital transformation (DT) may lead to job replacements and skills mismatch. (Extract 10)
* The resultant impact is inconclusive.

**(iii) Explain impact on Frictional Unemployment**

* DT can possibly reduce Frictional unemployment.
* Workers in between jobs or fresh graduates searching for work can take up digital ‘freelance jobs’ (Extract 9), assuming that they are suitably equipped.
* With better internet connectivity, job information is made more available thus reducing imperfect information in the job market. *(This point is not directly provided in Extract but acceptable as an inference.)*

***For evaluative comments, candidates can briefly comment on which type of unemployment is more impacted and nature of impact etc.***

* E.g. Exact impact on structural unemployment seems less certain as it depends on the workers’ ability to take on new digital jobs created. This depends on education level of workforce and presence of relevant government policies such as SkillsFuture to upgrade skills level.

**(d) Discuss whether Asian economies can achieve inclusive growth through digital transformation. [10]**

***Requirement of Question:***

***Discuss whether Asian economies like Singapore and China can achieve various aspects of inclusive growth via digital transformation in the economy. To achieve sufficient scope, answers should tackle adequate aspects of Inclusive Growth and various ways digital transformation by which can impact inclusive growth.***

***Introduction***

* Inclusive growth (IG) means sustained economic growth that creates employment opportunities and helps in reducing poverty. It means having access to essential services in health and education by the poor. It includes providing equality of opportunities, empowering people through education and skill development.
* Asian economies in this context refers to China, a large developing economy and Singapore, a small and relatively developed economy. As indicated by the relatively high Gini Coefficient in Table 2, both Asian economies are facing challenges in inclusive growth.
* Based on the evidence in various extracts, Digital transformation (DT) is unparalleled in terms of the scope, scale, and speed in transforming the Asian economies. The impacts of the digital technologies are generally felt across many sectors of the economy and has extensive impact on IG.

***Thesis – Asian Economies can achieve IG as economic growth is boosted***

* It can be argued that Asian economies like China and Singapore can achieve IG through DT due to sustained economic growth.
* Extracts 7- 10 indicate that DT can cause significant rise in various components of AD leading to increase in real national income leading to Actual Growth. For instance, in China:
* *There was rapid rise in consumption as indicated in Extract 7, mobile payments’ penetration rate which would enhance consumption spending has grown from just 25% in 2013 to 68% in 2016.*
* *There was also significant increase in government spending as the Chinese government spent 430 billion yuan in 2015 to beef up the internet infrastructure. (Extract 7)*
* In totality, there would be a significant increase in autonomous spending and aggregate demand in China due to DT which generated a more than proportionate increase in the national income via the multiplier effect.
* Through generating economic growth, DT can generate funds for Asian governments to implement fiscal measures to improve IG.
* Actual growth caused by DT can generate increase in household income. And with progressive tax structure, this means larger tax revenue collected by the governments to fund the improvements in merit goods and social securities standards for the poor.
* This is especially needed in China given its uneven spread of economic benefits across such a vast and diverse economy.
* Tax revenue collected can also be used to fund education and skills training (like SkillsFuture in Singapore) for the lower-skilled workers to adapt to the new digital technologies, ensuring that they do not fall behind in terms of skill-set and improve wage growth.
* Cumulatively, the above fiscal measures would reduce income gap and enhance access to merit goods for the poorer segment of the population.
* In addition, China’s rural ‘internet connectivity’ would be extensively boosted by 2020 (Extract 7).
* This can bring about substantial gains in terms of consumption (via mobile payments and ecommerce) on the demand-side and better labour market information flow in the rural areas on the supply-side.
* This rise in connectivity and boosted consumption can help to create jobs and improve productivity gains in rural areas.
* Also, China can reduce its rural ‘underemployment’ as the internet connectivity improves which is made possible by improving better information flow in the labour market. Under-utilized labour in the rural areas can be better employed and channeled towards the emerging digital sector.
* These improvements in connectivity and productivity can generate potential wage growth for the workers in the rural areas and reduce rural-urban income gap.

***AT - Economies may not achieve IG due to Income divide / Structural un+***

* On the other hand, it can be argued that IG cannot be achieved via DT alone, especially as Extract 9 expresses strong evidence that DT might actually worsen income inequality.
* DT might result in tech firms gaining excessive market power and wealth, leading to a greater share of the gains from economic growth to be concentrated with these larger firms rather than shared with the rest of the society.
* And, instead of achieving IG, DT might cause job losses in the traditional non-digital sectors.
* For instance, the more traditional industries like brick-and-mortar retail stores can be replaced by ecommerce, which would be more skill-biased and require more educated and IT-trained workers.
* Wage gaps between the skilled and unskilled can worsen, deteriorating IG.

***Possible Evaluation/Conclusion***

* Therefore, whether IG can be achieved in the Asian economies very much hinges on the pervasiveness of DT and presence of government policies to manage the potential shortcomings in these economies.
* Both China and Singapore seems well poised to achieve IG due to the pervasiveness of digital penetration in the economies and their strong economic fundamentals.
* Nonetheless, being a relatively developed and small (and nimble) economy, Singapore seems to in a stronger position to tap on DT.
* For instance, Singapore’s education standard is extremely high by international standards, and its internet penetration is almost complete. With absence of any poor rural population, IG can be more easily achieved.
* Also, Singapore government is forward-looking and has implemented effective policies like SkillsFuture to minimize any fallout from DT like structural unemployment.
* In contrast, China’s economy is much bigger and more complex.
* And IG is potentially hampered by the patchy standards of merit goods and substantial rural-urban income divide.
* To fully realize IG, larger Asian economies like China need stronger government interventions to strengthen its enabling conditions for IG, such as like education standards and improving income redistribution policies (like increasing corporate taxes for tech firms). This is to ensure that the massive rural populations and lower income groups do not fall behind economically.

 **(e)(i) From Table 1, identify and explain one economic indicator that is the most useful in assessing standard of living. [2]**

The Human Development Index (HDI). *[1m]*

HDI is a composite index of life expectancy, education, and per capita income indicators. Thus HDI is the most useful indicator for SOL as it encompasses both material and non-material indicators for standard of living. *[1m]*

**(e)(ii) Discuss the view that governmental efforts to promote digital transformation is the best approach to achieve faster growth in standard of living for a country. [12]**

***Introduction***

* The issue at hand is to discuss the view that promoting digital transformation (DT) by governments can achieve *faster growth* in living standards based on the information provided.
* On whether DT is the *best approach*, at least one alternative approach should be discussed.
* *‘Faster growth in SOL’* would entail *more rapid improvements* in the SOL, in the material as well as non-material aspects.

***Thesis 1 – DT can be a good approach to achieve faster growth in SOL***

***Thesis 1a – Faster growth in Material aspects of SOL***

* It can be argued that DT can lead to *faster growth* in material aspects of standards of living.
* This is best indicated by a *rapid rise* in the Real GDP per capita.
* Extracts 7 - 10 indicate that DT can cause significant rise in various components of AD. Putting the mentioned demand-side changes together, there would be a significant increase in autonomous spending in China which generated a more than proportionate increase in the national income via the multiplier effect *(Actual growth as presented in part d).*
* In order to properly judge the improvements in material aspects of SOL, we need data for Real national income per capita. The real per capita national income figures are obtained by dividing GDP by the population size.
* Based on the data, Asian economies’ population growth is slowing/decreasing and this is likely to lead to a faster increase in per capita national income.
* This means higher purchasing power for the average resident to enjoy a larger basket of goods and services, enhancing the SOL in the material aspects.
* Hence, given the significant rise in real national income and coupled with the aging population, it is likely that there is a *faster growth* in SOL due to DT.
* Furthermore, DT becomes even more important in accelerating per capita national income and material aspects of SOL as China is facing slowing growth due to ongoing rebalancing efforts and weakening external outlook.

***Thesis 1b – Improvements in the Non-material aspects of SOL***

* To be more holistic in assessment, the discussion of SOL should always include the non-material aspects of life.
* Though the information given did not directly include that, we can infer from a few pieces of evidence.
* In Extract 7 expressed the view that digitization can help to improve efficiency and we can infer that productivity should increase. This increase in output per worker should lead to shorter working hours and more leisure time, indicating a higher non-material SOL.
* Extract 7 also mentioned that more innovative products can be created via DT. For instance, through AI and cloud computing technologies. This can cause consumers to gain *non-price* benefits, for example, wider product choices and greater convenience due to the innovations leading to better SOL non-materially.

***AT1 - Limitations of DT in promoting faster growth in SOL:***

* However, even when real GDP per capita increase with DT, if there is worsening income distribution, we cannot say then that the average resident is better off. There are indications that income distribution might be adversely affected by DT. As stated in Extract 10, DT could cause income disparity to grow, especially in developing Asian countries where income gap and unequal access to education is persistent.
* Besides, there is time lag in DT which might delay the growth of SOL. In Extract 9, it was mentioned that in Singapore, 0.6% GDP growth can only materialize in 2021 and digital technologies are only poised to make up 60% of Singapore’s GDP in the year 2021. Time lag can seriously hamper faster growth of SOL.
* Also, DT cannot directly solve China’s incomplete coverage of social security and merit goods insufficiency especially in rural areas affects non-material aspects of SOL (Extract 6)

***AT2 – Alternative policy to achieve faster growth of SOL***

* Hence, due to time lag and various limitations of DT, faster growth of SOL is not guaranteed.
* Instead, implementation of timely Expansionary Fiscal Policy to boost income and enhance merit goods can probably achieve growth in SOL in a shorter timeframe as compared to DT.
* For instance, a fall in income tax rate will increase the disposable income of consumers, so purchasing power increases, which in turns increases the consumption. This can more directly impact SOL materially as compared to DT as the government put more disposable income into the hands of residents directly.
* On the other hand, increase in government expenditure on education and health services can more directly impact the non-material aspect of SOL.
* However, while the effectiveness of Expansionary FP sounds promising, the adverse impact of Asian economies’ ageing population (Extract 7) on the effectiveness of FP cannot be ignored.
* Ageing population reduces the scope for expansionary FP due to diminishing tax revenue and increasing government spending on benefits and healthcare for the senior citizens.

***Overall Evaluation / Conclusion***

* In the short run, to achieve faster growth in SOL, *more timely and expedient* fiscal intervention seems necessary as DT takes time to materialize and permeate its full benefits in the economy.
* However, in the current climate of economic slowdown and ageing population, fiscal intervention in raising SOL would not be sustainable in the long run.
* Thus, DT still is the best approach in the long term due to its pervasiveness and transformational effects on many sectors in the economy.
* But in the short-term, fiscal intervention seems unavoidable.
* And, government might need to find creative solutions (like raising GST) to fund the fiscal interventions to ensure faster growth of SOL in the short term.