

Suggested Answers for 2023 A-Level H2 P1 Qn 2: Economic impact of an ageing population

(a)	With reference to Extract 5:	
(i)	Calculate and compare the old-age dependency ratio for Singapore in 1990 with that in 2020.	[3]
	<p>Old-age dependency ratio in 1990 = $164000/17200 = 10$</p> <p>Old-age dependency ratio in 2020 = $614000/26260 = 23$</p> <p>The old-age dependency ratio for Singapore in 2020 is higher than that in 1990.</p>	
(ii)	Explain one reason for the change in the old-age dependency ratio for Singapore between 1990 and 2020.	[2]
	The old-age dependency ratio for Singapore increased from 1990 to 2020 because the resident population aged 65 years and over increased at a faster rate compared to the resident population aged 20-64 years. This is seen from Table 2 where the resident population aged 65 years and over increased by around 274% which is higher than that of the resident population aged 20-64 years of around 53%.	
(b)	Explain how the changes in the populations of countries shown in Figure 3 might affect aggregate supply and aggregate demand in those countries.	[4]
	<p>Figure 3 shows a projected decline in the population of those countries from 2006 to 2030 by several millions.</p> <p>The labour shortage that follows could lead to rising pressure on wages as firms compete for the limited amount of labour. The rise in wages could lead to a rise in production costs at every given output level, causing a fall in short run aggregate supply (SRAS). Furthermore, the smaller labour force means a lower number of units of labour, possibly leading to a fall in productive capacity and hence, long run aggregate supply (LRAS).</p> <p>A projected decline in population also means that the consumer base is smaller. Consumer expenditure (C) falls as demand for perishables and durables fall. This will lead to a fall in aggregate demand (AD) as it comprises of C.</p>	
(c)	With reference to Extract 5, explain why firms may choose to 'cut investment in the domestic economy substantially, even as interest rates fall'.	[3]
	<p>Whether a firm decides to invest and how much to invest by depends on its expected rate of returns. The returns or profits that a firm reaps is given by total cost (which includes borrowing costs i.e., interest payments) subtracted from total revenue.</p> <p>According to Extract 5, firms might believe that output and consumption growth slows following an ageing population. This will mean that they believe that revenues are expected to increase at a lower rate as they project output sold to increase at a lower rate. In the case that firms adopt a more pessimistic outlook, they may project revenues to fall as there could be the belief that elderly individuals withhold their spending as they become more frugal. Hence, even if interest rates fall (meaning that cost of borrowing falls), it could be that expected revenues fall by a greater extent than the fall in cost, leading to a fall in the expected rate of returns and resulting in firms cutting investment.</p>	

(d) Discuss whether the benefits to an economy of having an ageing population outweigh the costs. [8]

Command	Discuss whether – Balanced answer with judgement as to whether the benefits outweigh the costs
Start Point	Ageing population
End Point	Benefits/costs to an economy
Content	AD/AS, 4 macroeconomic objectives
Context	An economy

Requirement 1: An ageing population brings about benefits to an economy

With an ageing population, there could be an increase in government expenditure (G) and C as suggested in Extract 7 especially if governments are able to encourage a habit of saving and lifelong learning amongst older workers via intentional policy measures. There will then be an increase in AD from AD_0 to AD_3 . Firms find that there is a decrease in unplanned inventories and hence increase production in the next period, assuming economy is operating below full employment level Y_{FE} . This will in turn increase the amount of labour they employ, since labour is a form of derived demand. The rise in national income will lead to a further rise in induced consumption due to the multiplier effect. Hence real national income increases by a multiplied amount from Y_0 to Y_1 , leading to actual growth. As labour is a derived demand, there is a fall in demand-deficient unemployment.

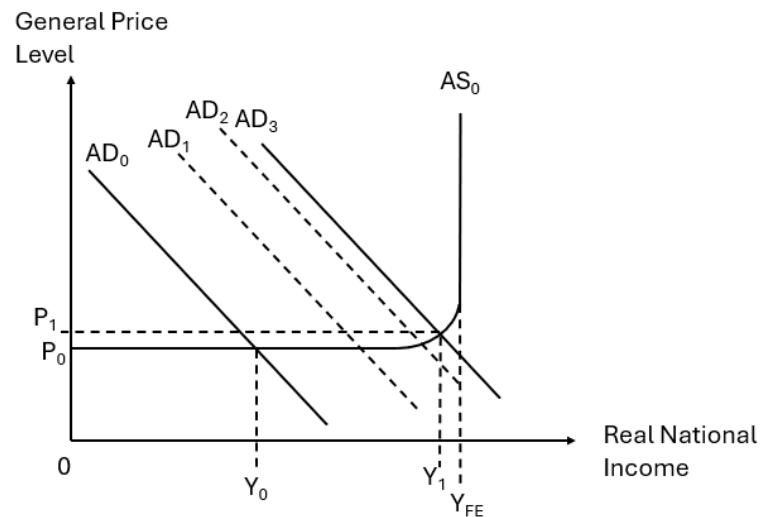


Figure 5

Requirement 2: An ageing population brings about costs to an economy

With an ageing population, there will be an increase in G on the elderly in the form of payments like “pensions, health care, and long-care” as mentioned in Extract 5. These payments comprise a “large portion of government budgets”, meaning that there will be a significant opportunity cost incurred as this significant amount of G that could have been spent on other sectors like education is foregone. Furthermore, this will lead to strain on the government budget.

Furthermore, the labour force will be projected to shrink with an ageing population assuming that the inflow of labour is outweighed by the outflow of labour as older workers leave. This will lead to a fall in the quantity of labour. Productive capacity falls as there will be a decrease in the amount of goods and services an economy that can be produced by fully utilising the factors of production. LRAS falls and shifts from AS_0 to AS_1 as shown in Figure 6 below. The full employment level of national income that

can be attained has decreases from Y_{F1} to Y_{F2} , leading to a fall in potential growth. Assuming that the economy is operating along the intermediate range, there is negative actual growth from Y_0 to Y_1 and there are lesser quantities of goods and services produced within the economy. As labour is a derived demand, unemployment increases as well.

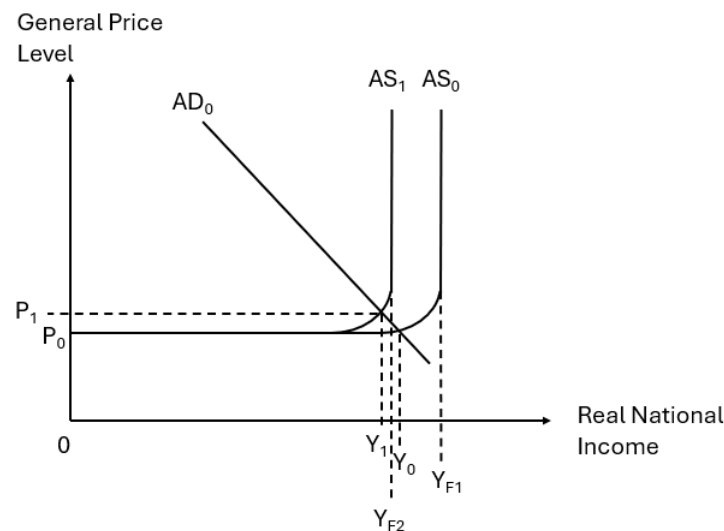


Figure 6

Evaluative Conclusion

In conclusion, whether the benefits of an ageing population outweigh the costs depends on the context of the country. In countries where the elderly finance a greater proportion of their personal consumption like in the US compared to European countries where there is a greater reliance on public sector transfer payments, it is likely that the opportunity costs incurred from spending on the elderly are greatly diminished and it is more likely that the costs of an ageing population are outweighed by the benefits.

Whether the benefits of an ageing population outweigh the costs also depends on the quality of governance which will determine the extensiveness and robustness of policies implemented. In Singapore, the tendency for older individuals to invest in human capital is amplified with a national lifelong learning scheme implemented. The extent of government spending required on the elderly is diminished via the implementation of a retirement savings scheme to reduce the amount of spending that the government has to undertake to finance the personal consumption spending of the elderly. Where quality of governance is relatively high, the benefits of an ageing population are amplified and the costs of an ageing population are diminished via more conscientious policymaking. It will thus be more likely that the benefits of an ageing population outweigh the costs.

Level of Response and Descriptors		Marks
L2	Developed analysis of how an ageing population can be both beneficial AND costly for an economy.	4 – 6
L1	Underdeveloped analysis of how an ageing population can either be beneficial OR costly for an economy.	1 – 3
Evaluation		
E	Evaluative marks will be awarded for a conclusion reached on whether the benefits to an economy of an ageing population outweigh the costs, or vice versa, after consideration of the analysis provided.	1 - 2

(e) Discuss whether immigration is the best way of promoting economic growth in an economy with an ageing population.

[10]

Command	Discuss whether – Balanced answer with judgement as to whether immigration is the best way of promoting economic growth
Start Point	Immigration vs. alternative policy
End Point	Economic growth – Actual and potential
Content	AD/AS
Context	Economy with an ageing population

Requirement 1: Immigration is a good way of promoting economic growth in an economy with an ageing population

As seen from Extract 8, immigration involves the facilitating the influx of individuals seeking to establish residence within an economy via a change in the “rules regarding rights of access to the country and permission to participate in the labour market.”

With immigration, there is an increase in quantity of labour within the economy. This translates to an increase in demand for goods and services, both perishables and durables. C rises as spending on items like food, appliances and transport increases. There will then be an increase in AD from AD_0 to AD_3 as seen in Figure 7. Firms find that there is a decrease in unplanned inventories and hence increase production in the next period, assuming economy is operating below full employment level. This will in turn increase the amount of labour they employ, since labour is a form of derived demand. The rise in national income will lead to a further rise in induced consumption due to the multiplier effect. Hence real national income increases by a multiplied amount from Y_0 to Y_1 , leading to actual growth.

Also, with immigration, there is a rise in the quantity of labour, bringing about increased productive capacity as there will be an increase in the amount of goods and services an economy that can be produced by fully utilising the factors of production. $LRAS$ increases and AS shifts from AS_0 to AS_1 as shown below. The full employment level of national income that can be attained has increased from Y_{F1} to Y_{F2} , leading to an increase in potential growth.

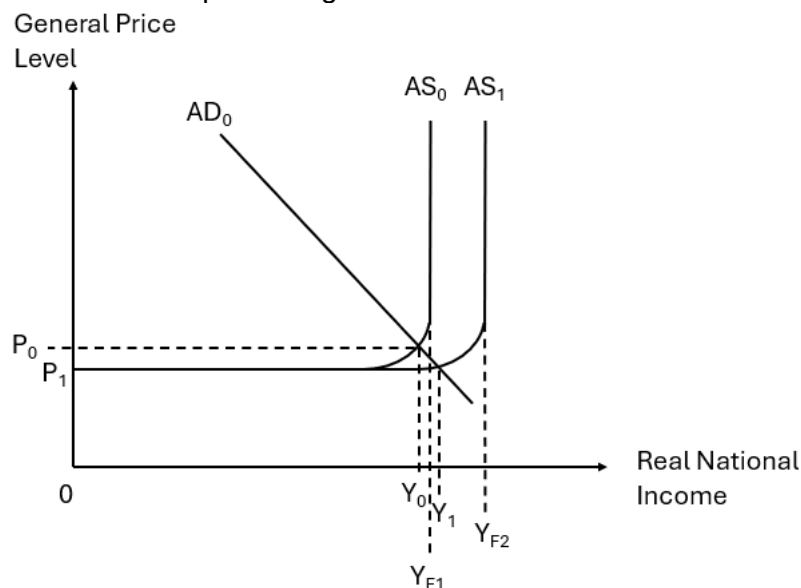


Figure 7

(Can also bring in impact on SRAS where COP falling due to in wage rates falling with an increase in supply of labour, bringing about actual growth)

Intermediate Evaluation

According to Extract 8, “high-income countries such as the UK, the US and Japan risk being overwhelmed by their ageing populations”. This is supported by Figure 3 where we see significant projected declines in the populations of several countries due to ageing populations. Immigration would be effective in promoting economic growth because it addresses the issue of an ageing workforce in the most direct manner by replenishing the ageing and eventually shrinking workforce with younger units of labour. Immigration also has the added advantage of addressing the strain of an increasing age dependency ratio has owing to increasing welfare expenditure as stated in Extract 8 by reducing the age dependency ratio itself.

Requirement 2: Supply-side policies like SkillsFuture are also good ways of promoting economic growth in an economy with an ageing population. (can also bring in monetary policy and fiscal policy)

As seen from Extract 7, supply-side policies like SkillsFuture can be considered to promote economic growth in an economy facing an ageing population. SkillsFuture entails the provision of subsidies to Singaporeans aged 25 and above for them to undertake skills training. This in turn influences the SRAS and LRAS. By improving the skillsets of the workforce, human capital is enhanced. Skilled workers are more productive and efficient, which reduces the overall cost of production, leading to an increase in SRAS. The overall fall in production costs translates to an overall fall in final prices of goods and services produced and hence GPL (downward movement along AD_0). A lower GPL will trigger the wealth (real balances) effect, interest rate effect and the foreign sector (international substitution) effect, hence leading to actual growth as shown in Figure 8 below, leading to a rise in real national income.

In addition, SkillsFuture can improve labour productivity and quality of labour. Thus, even with the same number of workers employed, each unit of labour will now be able to produce more output per man hour. Such a policy results in higher productive capacity, an increase in the amount of goods and services an economy can produce by fully utilising the factors of production. This expansion in productive capacity allows the economy to increase its LRAS. The full employment level of national income that can be attained has increased from Y_{F1} to Y_{F2} , leading to an increase in potential growth.

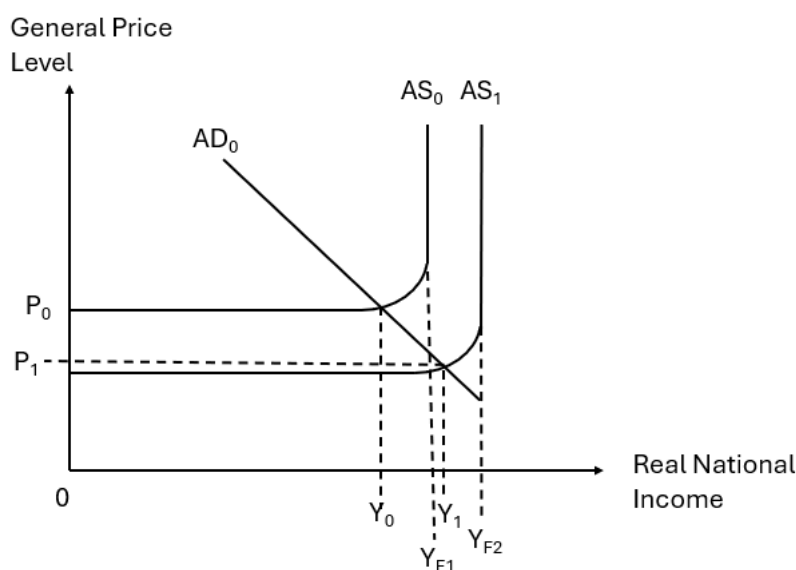


Figure 8

Intermediate Evaluation

However, supply-side policies could be limited in their effectiveness of promoting economic growth. As stated in Extract 8, even if older workers continue staying in the workforce with continual upgrading, the workforce will still be projected to shrink with an ageing population. This means that rather than promoting economic growth, supply-side policies like SkillsFuture can at best only mitigate the contractionary effect on economic growth arising from an ageing population.

Summative Conclusion

Immigration is arguably the most direct way to promote economic growth in an ageing population because it directly addresses the problem of a shrinking workforce by replenishing the workforce. As suggested in Extract 8, productivity gains arising from supply-side policies have to be substantial to offset the contractionary effects of an ageing population and hence in themselves are likely to be insufficient. Immigration as a policy, however, cannot be implemented in an unconstrained manner owing to the social tensions that it will give rise to. Hence, the best way to promote economic growth in an ageing population would be to employ a combination of both policies where we directly address the root cause of possibly declining economic growth, a labour force projected to be on the decline owing to an ageing population, with immigration as well as to optimise the returns from the growing proportion of elderly workers by continually upskilling them to maximise the duration of their stay in

Level of Response and Descriptors		Marks
L2	Developed analysis of how immigration and one other alternative policy can promote economic growth in an economy with an ageing population.	5 – 7
L1	Underdeveloped analysis of how immigration and one other alternative policy can promote economic growth in an economy with an ageing population.	1 – 4
Evaluation		
E2	For an evaluation that justifies if immigration is the best way of promoting economic growth in an economy with an ageing population.	2 – 3
E1	For an evaluation/judgement that is unsubstantiated.	1

the labour force.