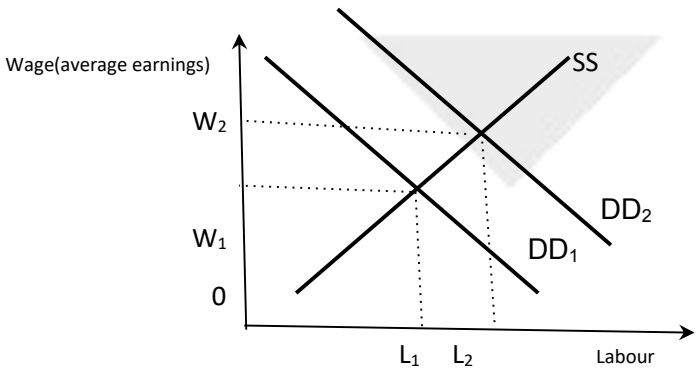
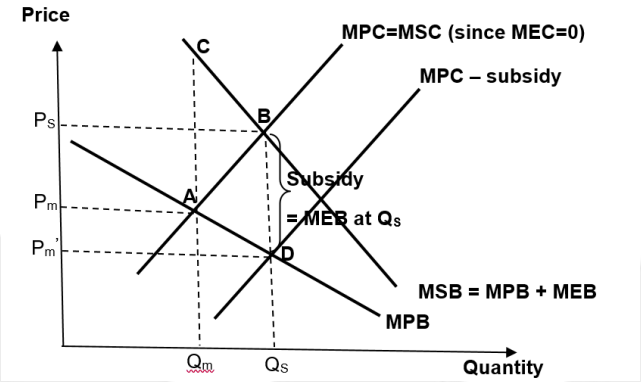
2023 A-Level Case Study Question 1

(a)	With reference to Figure 1, compare the potential benefits for a graduate in the US with a Bachelor's degree to a school leaver who has a High School Diploma. [2]
	The average weekly earnings for a graduate in the US with a Bachelor's degree is **higher** than a school leaver with a High School Diploma. [1] The rate of unemployment for the former is **lower** than the latter. [1] Note: Two differences are provided since there is no similarity.
(b)	With reference to Extract 1 and using a supply and demand diagram, explain **one** possible reason for the higher average earnings of graduates with a Professional degree compared to those with a Bachelor's degree. [3]
	Assume that the supply of graduates with Professional degree is the same as supply of labour with a Bachelor's degree. Since **rate of unemployment** for graduates with a Professional degree (3.1%) is lower than graduates with a Bachelor's degree(5.5%), this suggests that the demand (DD_2) for graduates with a Professional degree is **higher** than graduates with a Bachelor's degree (DD_1). [1] The higher demand for graduates with a Professional degree compared to graduates with a Bachelor's degree could be due to the **higher level of productivity** of the former compared to the latter. [1] As shown in the diagram below, the average earnings of graduates with a Professional degree is **higher** (W_2) than graduates with a Bachelor's degree (W_1). 

	Explanation of diagram [1] Note: The question stated 'a supply and demand diagram' hence only one diagram is used (although 2 DD-SS diagrams should be shown). Alternative answer: The marginal private cost for higher education is higher as suggested in Extract 1 where in para 2, these cost includes explicit costs like tuition fees and also implicit cost of wages forgone. The higher private cost will cause supply of workers with a Professional degree to be lower than the supply of workers with a Bachelor's degree. Hence, wages for workers with Professional degree will be higher compared to that of a Bachelor's degree, assuming same demand.
(c)	'Opportunity costs may make even free schooling unaffordable for some families.' (Extract 4) Explain **one** example of an opportunity cost that might make free schooling unaffordable. [3]
	Opportunity costs measure the cost of making a **choice**, in terms of the **next best alternative foregone**. [1] For children from poor families, they have the choice of either attending school or work. If they choose to attend school, they would forgo the next best alternative, which is the **number of work hours forgone**. [1] Although schooling could be free, these poor families would **forgo the earnings from work**. This implies that free schooling is unaffordable for poor families. [1]
(d)	Explain how asymmetric information may lead to wrong choices in the market for education. [4]
	Asymmetric information arises when the economic agents (e.g. consumers and producers) involved in the transaction do not have the same amount of knowledge, resulting in a distortion of incentives and inefficient market outcomes. Adverse selection occurs when a good is mainly bought or sold by a certain segment of the more informed party that would harm the uninformed party. [1] Education providers have more information regarding the quality of education than parents. In order to profit from the provision of education, the providers might hide some of the information they have about the quality of education from potential parents/children. [1] Potential parents/children take this into consideration in the decision-making process, and tend to lower the price that they are willing to pay for education in view of the possibility that they would be getting poor quality education (inferred from Extract 4, para 4). At this lower price, good education providers are unwilling to provide their services, resulting in an education market where only lower quality education is provided. [1]

	Asymmetric information thus results in the market for education adversely selecting against higher quality education in favour of lower quality education. [1]
(e)	The government of a low-income country wishes to increase spending on education. With reference to Table 1, discuss whether the government should concentrate this increase in spending on primary education. [8]
	The increase in government spending on education is **assumed to be the increase in government subsidies on education**. The discussion is based on the concepts of **positive externalities,** where the free market equilibrium price of primary education is deemed to be **high** while quantity of primary education consumed is **low**. <u>R1: The government of a low-income country should concentrate this increase in spending on primary education.</u> The private return of primary education for low-income countries is 25.4% while the **social return of primary education is 22.1%, which is the highest** compared to secondary and higher education. Primary education has the highest MEB compared to secondary and higher education, this implies that there is a highest level of divergence between marginal private benefit (MPB) and marginal social benefit (MSB), since MSB=MPB+MEB, resulting in the largest DWL amongst the three. Hence, the government should concentrate the spending on primary education in terms of subsidy to eliminate the DWL. As shown in the diagram below, the government of a low-income country might give a subsidy to producers corresponding to the external marginal benefit i.e. **subsidy = MEB at Qs** on each unit of primary education produced. This shifts the MPC downwards so that the new MPC, which equals **MPC – subsidy, coincides with the MPB at Qs.** Hence, the new market equilibrium quantity where MPB = MPC – subsidy, now coincides with the socially efficient quantity **Qs, where MSB = MSC**. If the subsidy accurately reflects the external marginal benefit, the price consumers are paying for primary education is now **lower at Pm'**, compared to Pm before the subsidy. **To encourage more families to send their children for primary education**, the government of a low-income country should concentrate this increase in spending by **increasing subsidies on primary education**.



R2: The government of a low-income country should not focus increase spending on primary education.

Since the private return for primary education is **high** (25.4%), the low income group **has the incentive** to consume primary education even without government subsidy. In addition, the private cost of primary education is **low** hence without government subsidy, primary education **should be affordable** among the low income group. Therefore, the government of a low-income country **should not focus increase subsidies on primary education**.

Summative Conclusion

While primary education can be argued to be affordable to the low income group, the marginal external benefits are likely to be higher than estimated. The marginal external benefits for education could be **50% higher than estimated** (Extract 2) thus this imply that the **MEB at Qs is likely to be underestimated**. If the government of a low-income country **aims to achieve the socially efficient level of consumption (Qs)**, the amount of subsidy ought to be higher than estimated. Since there are **large external benefits to society and MEB at Qs is likely to be larger than estimated**, the **government of a low-income country should concentrate this increase in spending on primary education through the increase in subsidies**.

Alternative:

- Government should not focus the spending on primary education alone and should instead also spend on secondary and higher education.
- Since the actual MEB may be even higher (50%) than what table 1 indicated, for all levels of education: reduced mortality rate, low crime rate. And in extract 1, 3rd paragraph, government can receive higher tax revenue if more people get higher education. Spending on higher education helps to fund for itself and others in the longer term.

(f)	Discuss whether equity issues are more important than market failures as a reason for the government to intervene in the market for education. [10]

Government may intervene in the market for education due to **equity issues or market failures**. The discussion of market failures is based on **imperfect information and positive externalities** in the consumption of education.

R1: Equity issues are important consideration for government to intervene in the market for education.

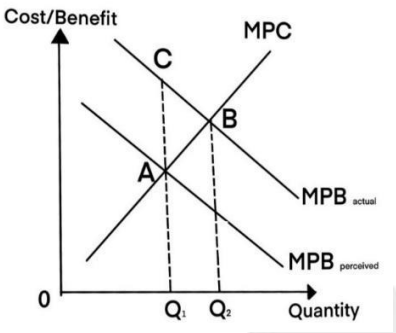
Using information from **Extract 4,** the demand for education among the poor families is likely to be very low as the **opportunity cost** of sending their children to attend schools is very high. Without government intervention, the **free market will fail to allocate resources to those who are unable to pay** thus the children from poor families will not receive education although it is considered a basic necessity.

Table 1 shows that the **private return to primary education is very high** (around 25% to 28%) for low-income, middle-income and high-income countries. For middle-income and high-income countries, the private return to primary education is the highest compared to secondary and higher education. The statistics shows that government ought to intervene to ensure that **children from poor families are able to receive at least primary school education**.

Hence due to **equity issues**, government has to intervene to ensure that children from poor families receive primary education.

R2: Market failures (imperfect information and positive externalities) are important consideration for government to intervene in the market for education.

Consumers may **underestimate their actual marginal private benefits from education due to imperfect information** (Extract 4). Parents may only consider the benefits in terms of knowledge acquired by their children but **did not consider the benefits in terms of better job prospects and higher average earnings**. Hence the **actual Marginal Private Benefit (MPB) lies above the perceived MPB**. With reference to diagram below, the equilibrium quantity of education consumed is at Qm, which is lesser than Qm' if parents are fully aware of the actual benefits of education. By increasing consumption from Qm to Qm', Area Qm'QmCB is the additional total private benefit gained while Area Qm'QmAB is the additional total private cost incurred. Since total private benefits gained exceeds the total private costs incurred, area ABC represents the **welfare loss due to under-consumption of Q1 – Q2**. Since at the **individual level**, parents do not make optimal choices on the equilibrium quantity of education due to imperfect information and suffer from welfare loss, at the **collective level**, there is also **failure in the market** as the demand for education will be lower under imperfect information than under perfect information, leading to **underconsumption and deadweight welfare loss in the market** as well. Hence there is market failure when imperfect information exists.



Due to **positive externalities**, the free market equilibrium quantity of education Qm where MPB=MPC, is lower than the socially efficient quantity Qs where MSB=MSC, as shown in the **diagram in part (e).** This **under-consumption would also result in a deadweight welfare loss shown by area ABC.**

Hence due to **market failures,** government has to intervene to increase the number of children enrolled to schools to receive education.

Summative Conclusion

The **perceived MPB could be lower than actual MPB**, especially in low-income countries (Extract 4) where the proportion of poor families is likely to be very high. **Acquiring primary education is a pre-requisite** for a student to pursue secondary education and eventually higher education. Without primary education, it is impossible for a person to acquire higher level of knowledge, hence higher earnings in the future.

Moreover, as stated in Extract 2, there are **positive externalities in the consumption of education**. The government **subsidies** to correct the positive externalities will **also lower the price** of education, including primary education. This will make primary education more affordable for the poor families, which helps to **achieve equity**.

Since government intervention to correct market failures can also help to achieve equity, therefore market failures are more important than equity issues as a reason for the government to intervene in the market for education.

2023 A level CSQ2 Answers

(a) With reference to Extract 5:

(i) calculate and compare the old-age dependency ratio for Singapore in 1990 with that in 2020. [3]

- old-age dependency ratio in 1990 = 164/1720*100 = **9.5** [1]
- old age dependency ratio in 2020 = 614/2626*100 = **23** [1]
- The ratio has increased by **more than 2 times**. [1]

(ii) explain one reason for the change in the old-age dependency ratio for Singapore between 1990 and 2020. [2]

Singapore's ageing population is growing **faster** (with an increase of 3.7 times in residents aged 65 years & older) than the labour force (with an increase of only 1.5 times in residents between 20 – 64 years).

[1m – faster, 1m – evidence]

(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]

There is a projected **decline** in populations of countries shown in Figure 3. With a fall in population, the quantity of factors of production i.e. labour will fall, leading to a **fall in aggregate supply**. [2]

With a fall in population, the number of consumers falls leading to **consumption fall** and firms may choose to **cut investment** (Extract 5) given the fall in expected returns due to the shrinking market size, leading to a **fall in aggregate demand**. [2]

(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]

Firms may choose 'to cut investment' if they think that output and consumption growth will slow in response to an ageing population. Hence, due to **pessimism and poor outlook**, the **marginal efficiency of investment (MEI) has fallen** drastically. [1]

As interest rates (r) fall, the cost of borrowing falls, less investment will have expected rate of return more than cost of borrowing, hence investment is supposed to increase. [1]

However, as long as **MEI<r**, i.e. expected returns is less than cost of investing, investment will fall. [1]

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

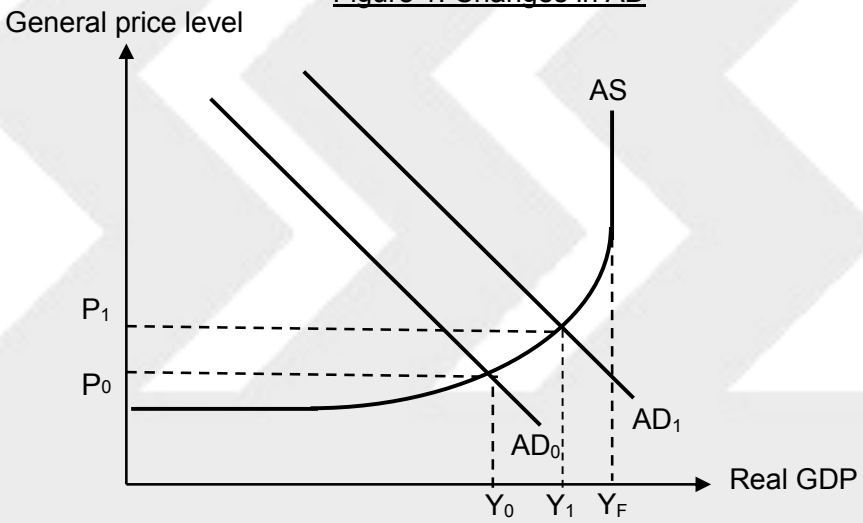
Introduction

An ageing population could bring both benefits and costs to an economy by affecting mainly actual and potential growth.

R1 (Thesis): Benefits of an ageing population

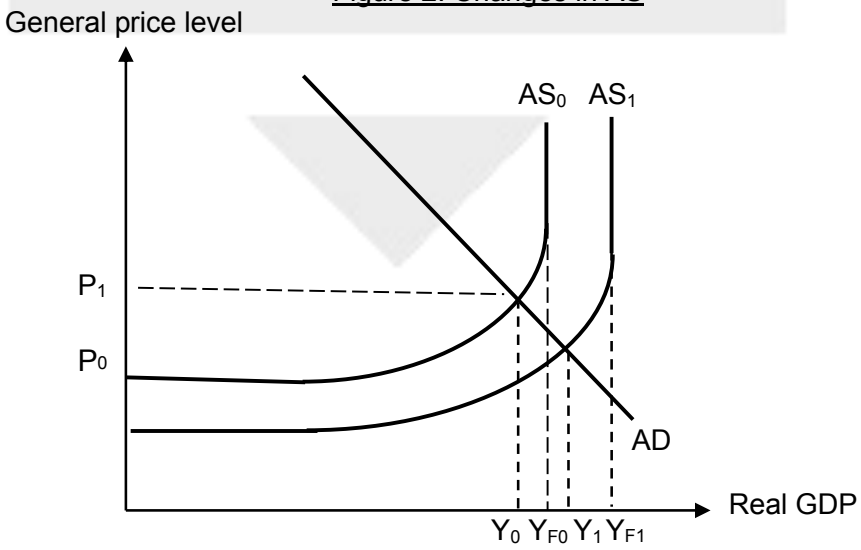
- As mentioned in Extract 7, an economy with an ageing population can benefit from an **accumulation of wealth and savings, which provides funding for investment**, leading to an increase in AD from AD_0 to AD_1 as shown in Figure 1, and real GDP increases by a multiple from Y_0 to Y_1, via multiplier effect. This will lead to **higher actual growth**. **Employment will also increase** as firms hire more workers to produce the increase in output.

Figure 1: Changes in AD



- If **older individuals invest in their human capital** (Extract 7), productivity will increase, leading to an increase in AS from AS_0 to AS_1, as shown in Figure 2. Real GDP increases from Y_0 to Y_1 and full employment output increases from Y_{F0} to Y_{F1}, leading to **higher potential growth**.

Figure 2: Changes in AS



R2 (Anti-thesis): Costs of an ageing population

- However, the elderly will have **less/no income** and will spend less, leading to a **fall in consumption**. Moreover, **investment might fall** as analysed in part (d). Overall, AD will fall from AD_1 to AD_0, as shown in Figure 1, or increase at a slower rate, leading to a **slowdown in actual growth** (Extract 5: the growth of GDP slows).
- An ageing population will also mean that the **labour force becomes smaller** as more people retire. This will lead to a fall in AS from AS_1 to AS_0, as shown in Figure 2, or slower increase in AS, leading to a **fall or slowdown in potential growth**.
- Moreover, as mentioned in Extract 5, an ageing population puts **budgetary pressure** on the government. Taxes might need to be raised leading to less disposable income and a fall in consumption. Again, this will impact AD negatively. Alternatively, benefits for the elderly might need to be reduced, leading to fall in welfare and possible societal problems.

Evaluative conclusion/ Stand:

In my opinion, the **costs of an ageing population outweighs the benefits**. This is because one of the main benefits of AD increasing due to **increase in investment might not materialise** as firms may choose to cut investment instead due to pessimism as mentioned in Extract 5 and analysed in part (c). Moreover, **unless there is active government intervention** to encourage the elderly to go for retraining to increase their productivity, the **likelihood of older individuals taking the initiative to invest in their human capital is low**.

MARK SCHEME:

Level	Descriptors	Marks
L2	**Breath** Covers both benefits and costs of an ageing population **Depth** Applies relevant economic concepts or theories Explains with rigour and details Supports arguments with relevant case evidence	4 - 6
L1	Lacking in any of the L2 criterions	1 - 3
E2	Makes a clear, justified and convincing stand based on both benefits and costs; synthesis arising from analysis of both benefits and costs and prior evaluation with reference to case material where appropriate	2
E1	Makes a stand but the substantiation is weak	1

(e) Discuss whether immigration is the best way of promoting economic growth in an economy with an ageing population. [10]

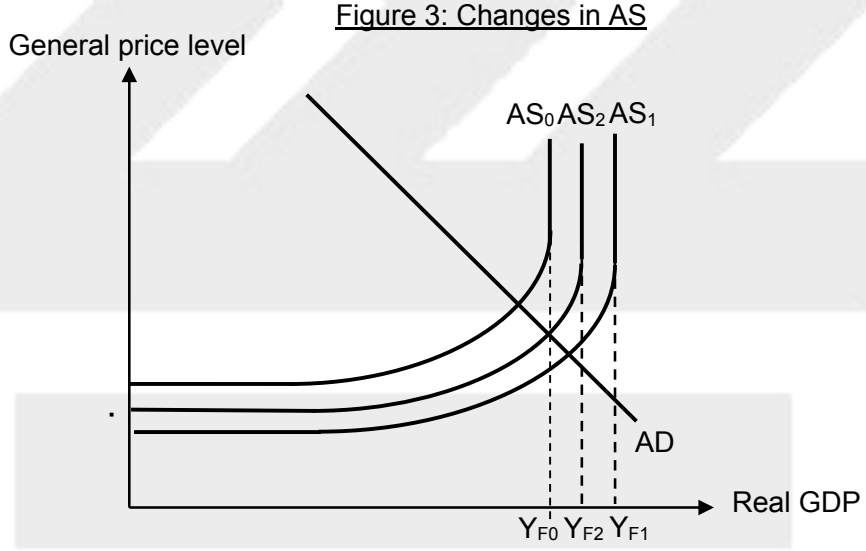
Introduction

As analysed in part (d), ageing population will likely lead to slower actual growth and potential growth. This answer will discuss whether immigration or investment in education is the best way of promoting economic growth in an economy with an ageing population.

R1: Immigration is one way of promoting growth in an economy with an ageing population

- With immigration, **consumption will increase** and firms may **increase investment** if MEI increases, leading to an increase in AD from AD_0 to AD_1, as shown in Figure 1 (in part d), and multiple increase in real GDP from Y_0 to Y_1, leading to **higher actual growth**.
- With immigration, the **quantity of labour increases**, and the **quality of labour may also increase** if the country attracts foreign talent. This will help to prevent the fall or slowdown in the increase in AS, and hence **reduce the adverse impact on potential growth**. As shown in Figure 3 (with reference to part d and Figure 2), with immigration, AS might only fall from AS_1 to AS_2 instead of AS_0, and full employment output might fall only to Y_{F2} instead of falling to Y_{F1}.

Figure 3: Changes in AS



Ev1 (Limitations):

- However, as mentioned in Extract 6, more than 20 countries were projected to experience population decline by 2030, hence, countries will find it i**ncreasingly challenging to find and attract migrant workers**.
- Moreover, if a country has too many migrant workers, it will face more **societal problems** if the migrant workers are unable to assimilate into society.

R2: Investment in education is another way of promoting growth in an economy with an ageing population

- By investing in education to get more people into work (e.g. increasing the number of women entering) as mentioned in Extract 8 and **increasing the productivity** of the labour force, the quantity and quality of the factors of production will increase, leading to an increase in AS from AS_0 to AS_1, as shown in Figure 2 (in part d). Full employment output increases from Y_{F0} to Y_{F1}, resulting in **higher potential growth**.

- As income is **projected** to increase, expected income increase, **consumption will increase**, leading to an increase in AD from AD_0 to AD_1 as shown in Figure 1 (in part d) and real GDP increases by a multiple from Y_0 to Y_1, resulting in **higher actual growth**.

Ev2 (Limitations):

- However, investment in education requires **huge funding** from the government and requires a **change in mindset** of the population to increase their education level and/or to retrain.
- It also **takes time** for education to yield results.

Optional: R3: Increasing retirement age is another way of promoting growth in an economy with an ageing population

- By increasing retirement age, the elderly will stay in the labour force longer, which will help to slowdown the decline in labour market participation, and prevent the fall/ slowdown in AS, and hence reduce the impact on potential growth
- As the elderly expect to earn income, consumption will not fall and may even increase, leading to positive impact on AD and hence actual growth

Ev3 (Limitations):

- However, as mentioned in Extract 8, 'labour market participation would still eventually decline and … remain below current levels, even if more women worked and more older people stayed in work for a longer time period'. Hence, increasing retirement age is only a temporary solution to prevent the fall in AS.

Evaluative conclusion/ stand

- In my opinion, given that the world population is projected to decline, **immigration** and increasing retirement age are only **temporary solutions** to increase the quantity of labour to prevent the fall or to encourage the increase in AS. The **best solution is to invest in education**. This is because not only will it encourages more people (e.g. women) to enter the workforce, it will also increase the quality of the labour force, leading to greater increases in AS. If the **investment in education incorporates investment in technology, the productivity gains will be significant** and may offset the decline in population/ increase in ageing population.

MARK SCHEME:

Level	Descriptors	Marks
L2	**Breadth** Covers at least 2 ways to promote growth in an economy with an ageing population, one of which must be immigration Covers both actual and potential growth **Depth** Applies relevant economic concepts or theories Explains with rigour and details Supports arguments with relevant case evidence	4 - 7

L1	Lacking in any of the L2 criterions	1 - 3
E3	Makes a clear, justified and convincing stand based on at least 2 ways; synthesis arising from analysis of at least 2 ways and prior evaluation with reference to case material where appropriate	3
E2	Evaluation of both ways with reference to case material where appropriate	2
E1	Evaluation of one way with reference to case material where appropriate	1