Please check the examination details below before entering your candidate information

Candidate surname: StemUp Model Solution

Other names:

**Pearson Edexcel**
**International Advanced Level**

Centre Number:

Candidate Number:

# Wednesday 8 January 2020

Afternoon (Time: 1 hour 45 minutes)

Paper Reference **WEC11/01**

# Economics

## International Advanced Subsidiary
## Unit 1: Markets in action

**You must have:**
Source Booklet (enclosed)

Total Marks

## Instructions

- Use **black** ink or ball-point pen.
- **Fill in the boxes** at the top of this page with your name, centre number and candidate number.
- Answer **ALL** questions in Sections A, B and C.
- Answer **ONE** question in Section D.
- Answer the questions in the spaces provided
  – *there may be more space than you need.*

## Information

- The total mark for this paper is 80.
- The marks for **each** question are shown in brackets
  – *use this as a guide as to how much time to spend on each question.*
- Calculators may be used.

## Advice

- Read each question carefully before you start to answer it.
- Check your answers if you have time at the end.

*Turn over* ▶

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## SECTION A

**Answer ALL questions in this section.**

**Questions must be answered with a cross in a box ☒. If you change your mind about an answer, put a line through the box ☒ and then mark your new answer with a cross ☒.**

**1** Which **one** of the following will cause a movement along the demand curve in the market for rice?

- ☒ **A** An increase in the global population
- ☒ **B** An increase in real incomes
- ☒ **C** A decrease in the price of noodles
- ☒ **D** A decrease in the price of rice

**(Total for Question 1 = 1 mark)**

**2** Which **one** of the following is an advantage of a free market economy?

- ☒ **A** The profit motive gives firms the incentive to be more efficient
- ☒ **B** Public goods may be under-provided by the price mechanism
- ☒ **C** Goods may be over-provided compared with the social optimum level of output
- ☒ **D** Government intervention leads to the correction of market failure

**(Total for Question 2 = 1 mark)**

**3** Which **one** of the following is an example of market failure?

- ☒ **A** Government provision of flood defences that is greater than the social optimum output
- ☒ **B** Doctors prescribe too many medicines because the cost is covered by health insurance
- ☒ **C** Lower prices create an incentive for firms to switch production to more profitable activities
- ☒ **D** Unintended consequences that follow the introduction of an indirect tax

**(Total for Question 3 = 1 mark)**

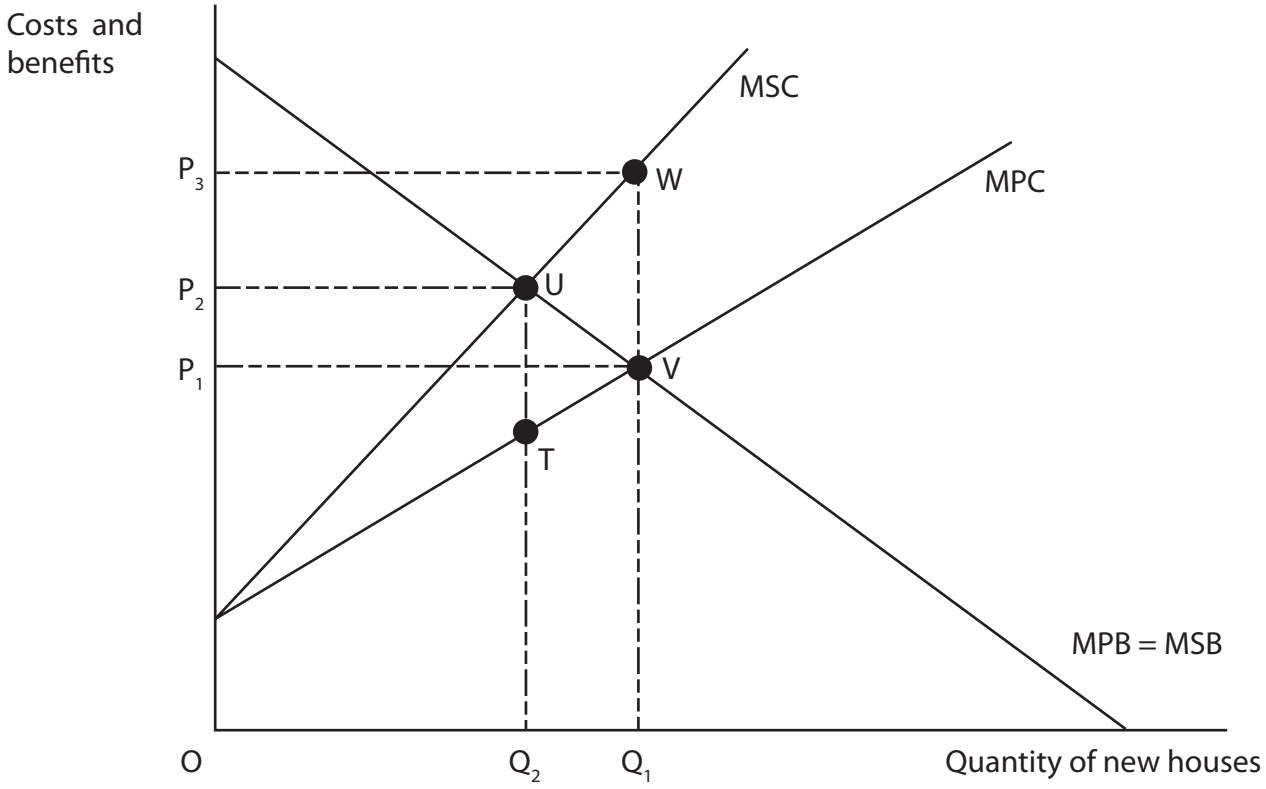
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**4** The diagram shows the market for new house construction.




The housing construction industry is a major source of pollution.

Which **one** of the following can be deduced from the diagram?

- ☒ **A** The social optimum output is $Q_1$
- ☒ **B** The market equilibrium output is $Q_2$
- ☒ **C** Welfare loss is shown by the area UVT
- ☒ **D** Welfare loss is shown by the area UWV

**(Total for Question 4 = 1 mark)**

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**5** The table shows the percentage of electricity generated by different sources for Portugal in 2016.

| | % |
|---|---|
| Coal | 22 |
| Gas | 22 |
| Hydro | 24 |
| Oil | 2 |
| Solar | 2 |
| Wind | 22 |
| Other renewable | 6 |

(Source: https://www.iea.org/countries/Portugal/)

Which **one** of the following can be deduced from the table?

☒ **A** Portugal generated 44% of its electricity from non-renewable sources

☒ **B** Portugal generated 50% of its electricity from renewable sources

☒ **C** Portugal generated most of its electricity from renewable sources

☒ **D** Portugal generated most of its electricity from non-renewable sources

**(Total for Question 5 = 1 mark)**

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**6** The table shows the estimated price elasticity of demand for air travel. Short-haul is air travel within the same continent and long-haul is air travel to a different continent.

| | **Estimates of price elasticity of demand** |
|---|---|
| Short-haul business travellers | -0.70 |
| Long-haul business travellers | -0.27 |
| Short-haul leisure travellers | -1.52 |
| Long-haul leisure travellers | -1.04 |

(Source: https://www.fin.gc.ca/consultresp/Airtravel/airtravStdy_-eng.asp)

Which **one** of the following can be deduced from the table?

☒ **A** An increase in the price of flights for long-haul business travellers will increase total revenue for airlines

☒ **B** An increase in the price of flights for short-haul leisure travellers will increase total revenue for airlines

☒ **C** Long-haul business travellers are more responsive to a change in price than short-haul business travellers

☒ **D** Long-haul leisure travellers are more responsive to a change in price than short-haul leisure travellers

**(Total for Question 6 = 1 mark)**

**TOTAL FOR SECTION A = 6 MARKS**

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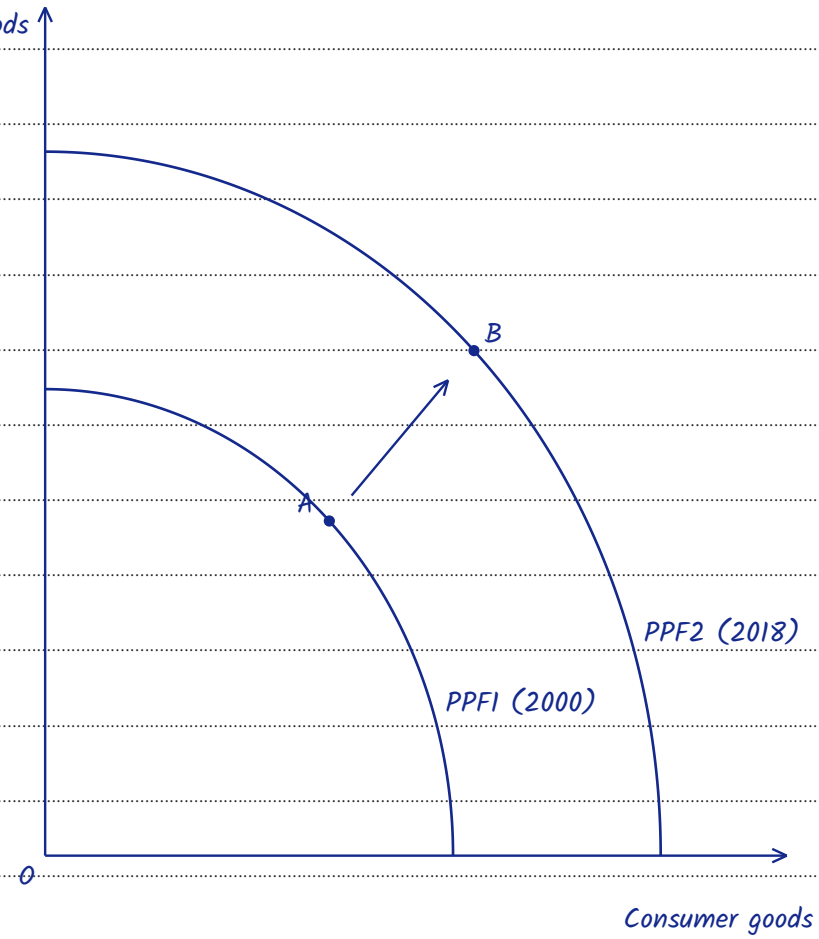
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## SECTION B

**Answer ALL questions in this section in the space provided.**

**7** In 2000 the population of Qatar was 592 267. By 2018 the population had increased to 2 694 849. Most of this growth was caused by immigration.

Draw a diagram to illustrate the impact of this change in Qatar's population on its production possibility frontier.




Qatar's population rose from 592 267 in 2000 to 2 694 849 in 2018, mostly through immigration. This increases the size of the labour force, so the quantity of factors of production rises and Qatar can produce more of both goods. Its productive potential increases, so the PPF shifts outwards (to the right) from PPF1 to PPF2.

**(Total for Question 7 = 4 marks)**

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**8** A report identified that Hong Kong is the city with the highest risk of experiencing a housing market bubble. House prices in Hong Kong increased by 10% per year between 2012 and 2018.

With reference to the Hong Kong housing market, explain what is meant by a 'market bubble'.

A market bubble occurs when the price of an asset, such as housing, is driven up by speculation: buyers expect prices to keep rising, so they buy now to make a capital gain, which pushes prices up further. Prices rise to an over-inflated level that is above the true (real) value of the asset, so the price is unsustainable. It is a type of market failure.

In Hong Kong, house prices increased by 10% per year between 2012 and 2018, so a house worth HK$1 million in 2012 would cost about HK$1.77 million by 2018. Much of this rise may be caused by expectations of further price rises rather than by real demand for homes.

The bubble is at risk of bursting: if confidence about future price rises is lost, or buyers can no longer borrow enough money, demand will fall sharply, so house prices in Hong Kong could collapse, leaving owners with homes worth less than their mortgages.

**(Total for Question 8 = 4 marks)**

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**9** In 2017 the Government of the Philippines imposed a 50% tax on the import of cars with a price above $74 000. Since then the Government has seized smuggled cars. For example, in July 2018, it removed 800 smuggled cars from the market.

Explain why this tax on imported cars is an example of government failure.

*Government failure occurs when government intervention in a market leads to a net welfare loss (a misallocation of resources) compared with the free market outcome. In this case it is an unintended consequence of the tax.*

*The 50% tax is very large: on a car priced at $74 000 the tax would be 50% × $74 000 = $37 000, so the car would cost $111 000. This creates a strong incentive for buyers to avoid the tax by smuggling cars into the Philippines, as shown by the 800 smuggled cars removed in July 2018.*

*Because these cars are smuggled, the Government loses the tax revenue it intended to raise, and it must spend money seizing them, which has an opportunity cost. There are also more unregistered cars on the roads whose owners do not pay road taxes, and they may not be safely maintained, putting other drivers at risk. So the intervention makes resource allocation worse, not better, which is government failure.*

**(Total for Question 9 = 4 marks)**

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**10** The table shows the gross weekly income for workers in the UK and the number of visits abroad by UK citizens in 2016 and 2017.

| | 2016 | 2017 |
|---|---|---|
| **Gross weekly income** | £539 | £550 |
| **Number of visits abroad by UK citizens** | 70.8 million | 72.7 million |

(Source: adapted from https://www.ons.gov.uk/ © Crown Copyright)

Based on the data in the table, calculate the income elasticity of demand for visits abroad by UK citizens. Show your workings.

*Income elasticity of demand (YED) = % change in quantity demanded ÷ % change in income*

*% change in quantity demanded = (72.7m − 70.8m) ÷ 70.8m × 100*

*= 1.9 ÷ 70.8 × 100 = 2.68%*

*% change in income = (£550 − £539) ÷ £539 × 100*

*= 11 ÷ 539 × 100 = 2.04%*

*YED = 2.68% ÷ 2.04% = +1.31 (2 d.p.)*

*YED is positive, so visits abroad are a normal good: as income rises, demand rises. As YED is greater than 1, demand is income elastic (a luxury good).*

**(Total for Question 10 = 4 marks)**

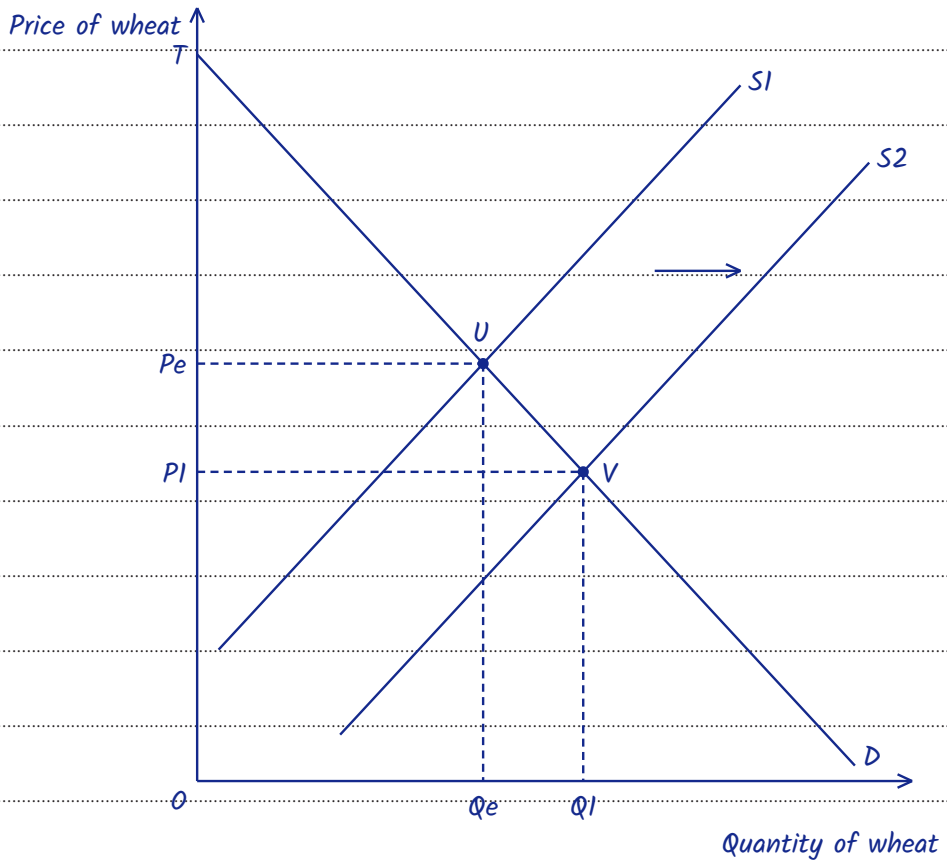
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**11** In September 2018 the global price of wheat decreased by 3%. This was caused by an increase in supply from the USA.

Explain the likely impact of this fall in price on consumer surplus in the market for wheat. Illustrate your answer with a diagram.

*Consumer surplus is the difference between the price consumers are willing to pay for a good and the market price they actually pay (the area below the demand curve and above the price).*




*The increase in supply from the USA shifts supply right from S1 to S2, so the price of wheat falls by 3% from Pe to P1 and quantity rises from Qe to Q1. Consumer surplus was originally area PeTU; it increases to area P1TV, a gain of area PePIVU, because existing buyers pay less and extra wheat is bought.*

**(Total for Question 11 = 4 marks)**

**TOTAL FOR SECTION B = 20 MARKS**

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**SECTION C BEGINS ON THE NEXT PAGE.**

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## SECTION C

**Study Figures 1 and 2 and Extracts A, B and C in the Source Booklet before answering Question 12.**

**Write your answers in the space provided on the following pages.**

**12** (a) Define the term 'substitutes' (Extract A, line 8).

**(2)**

(b) Explain what is meant by the term 'inelastic supply'. Refer to Figure 1 and Extract A in your answer.

**(4)**

(c) Analyse why the price of vanilla increased significantly between 2014 and 2018. Refer to Figure 2 and Extract A in your answer.

Illustrate your answer with a supply and demand diagram.

**(6)**

(d) With reference to Extract C, examine two microeconomic effects of Finland's decision to remove the sugar tax.

**(8)**

(e) Discuss reasons why the 'quantity of education is below the social optimum level' (Extract B, lines 2 and 3). Refer to external benefits in your answer.

Illustrate your answer with an appropriate diagram.

**(14)**

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**12** (a) Define the term 'substitutes' (Extract A, line 8).

**(2)**

*Substitutes are goods that serve the same need, so consumers can switch between them and receive similar benefits, for example natural vanilla and vanillin. They have a positive cross elasticity of demand: a rise in the price of one increases the quantity demanded of the other.*

(b) Explain what is meant by the term 'inelastic supply'. Refer to Figure 1 and Extract A in your answer.

**(4)**

*Inelastic supply means price elasticity of supply (PES) is between 0 and 1: a change in price leads to a less than proportionate change in quantity supplied.*

*Figure 1 shows that vanilla supply is price inelastic in both Madagascar (+0.48) and Indonesia (+0.52), as both values lie between 0 and 1. For example, a 10% rise in price increases quantity supplied in Madagascar by only 4.8%, so Madagascar's supply is slightly more inelastic than Indonesia's.*

*Extract A explains why: it takes three years for new vanilla plantations to mature, and few other countries have the right climate to grow the crop, so producers cannot quickly increase output when the price rises.*

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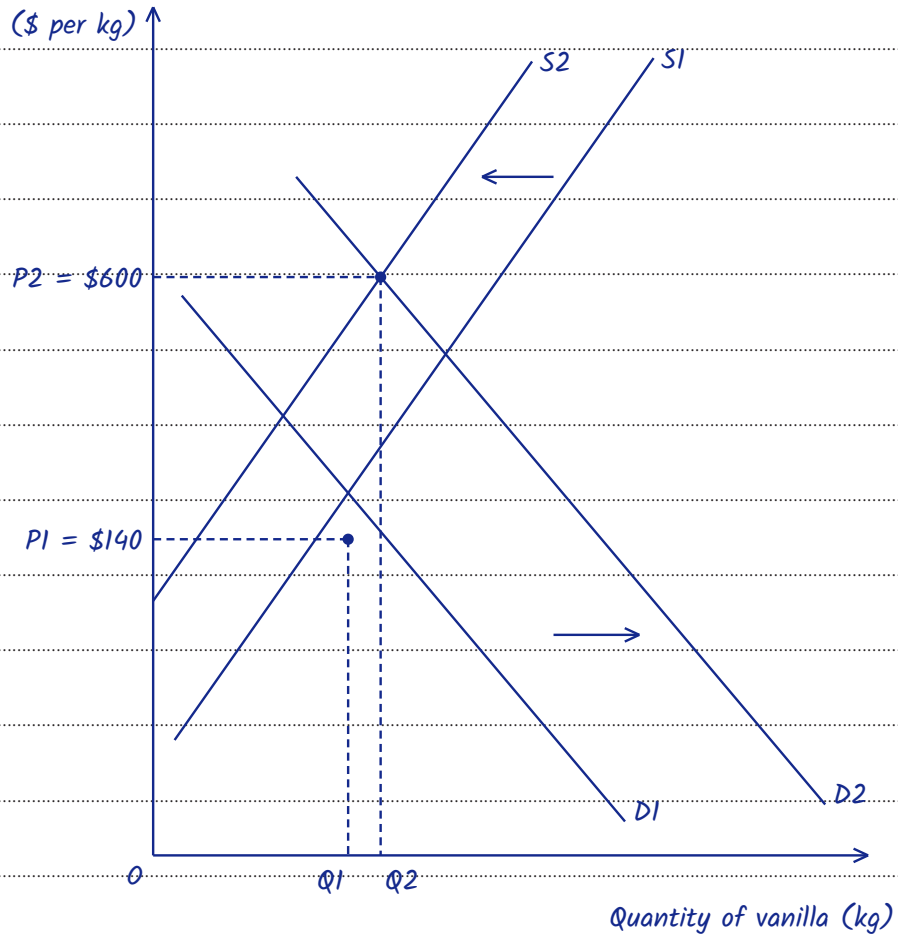
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(c) Analyse why the price of vanilla increased significantly between 2014 and 2018. Refer to Figure 2 and Extract A in your answer.

Illustrate your answer with a supply and demand diagram.

**(6)**

*Figure 2 shows that the price of vanilla rose from about $140 per kg in 2014 to $600 per kg in 2018, an increase of about $460, or 328.6%. This was caused by both a fall in supply and a rise in demand.*




*On the supply side, in 2017 a cyclone in Madagascar, which grows 80% of the world's vanilla, destroyed a large quantity of the crop. This shifts supply to the left from S1 to S2. Because supply is price inelastic (PES of 0.48) and some crops will not recover fully until 2020, farmers cannot respond quickly, so there is excess demand and the price is bid up.*

*On the demand side, consumers have shown an increased preference for natural vanilla over*

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artificial substitutes such as vanillin, and demand for ice cream, sweets, chocolate and cosmetics, which use vanilla as a key ingredient, has increased rapidly. Vanilla is in derived demand from these products, so demand shifts to the right from D1 to D2.

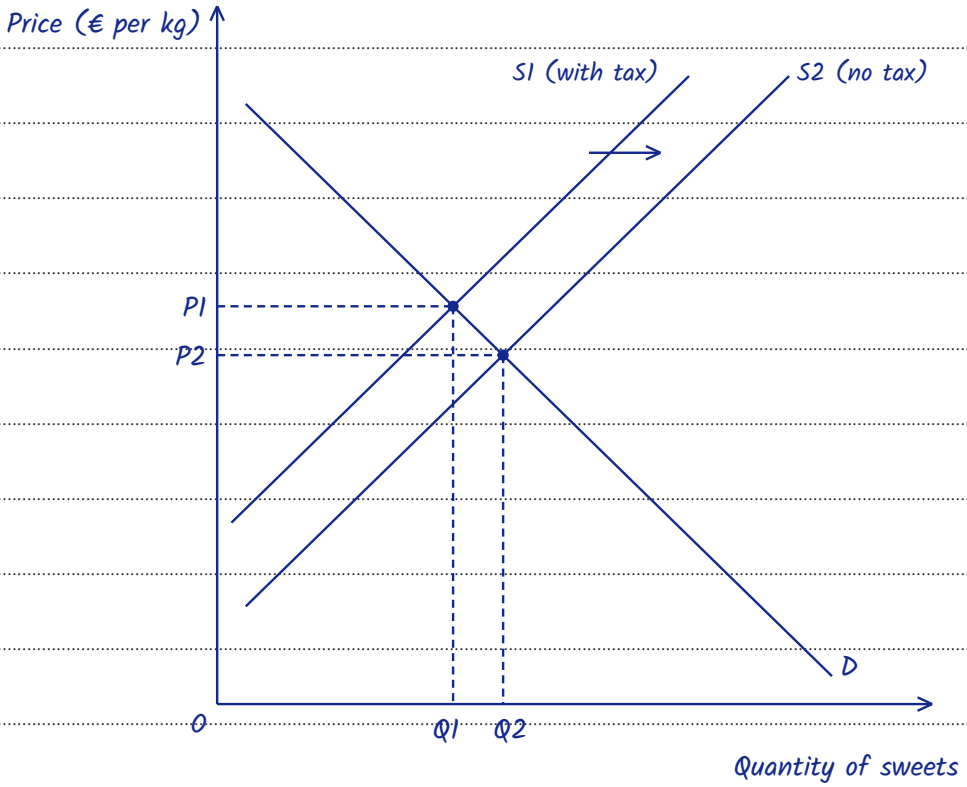
Together the fall in supply and rise in demand cause a large rise in the equilibrium price from P1 ($140) to P2 ($600). The effect on quantity depends on the relative size of the shifts; here demand rose by slightly more, so quantity rises a little from Q1 to Q2.

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(d) With reference to Extract C, examine two microeconomic effects of Finland's decision to remove the sugar tax.

**(8)**

An indirect tax is a tax on expenditure. Finland's sugar tax was a specific tax of €0.95 per kg or €0.11 per litre on sweets, chocolate, ice cream and fizzy drinks, so removing it in 2017 lowers firms' costs and shifts supply to the right from S1 (with tax) to S2 (no tax).




The first effect is that the price paid by consumers falls from P1 to P2 and the quantity of sugary products consumed rises from Q1 to Q2. Consumer surplus increases, and sweet, chocolate, ice cream and fizzy drink makers sell more, so their revenue and profits rise. However, the magnitude may be small: the tax only reduced consumption by about 5%, so removing it may raise consumption by only around 5%. Higher consumption could also bring external costs, such as more obesity and diabetes, raising health care costs for third parties, although these appear only in the long run and are difficult to measure.

The second effect is that the government loses tax revenue, estimated at €109 million per year.

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This reduces funds for public services, such as health campaigns to tackle obesity, or means taxes must rise elsewhere, which has an opportunity cost. However, removing the tax ends the unfairness that gave biscuit and cake makers a competitive advantage. They lose this advantage and may lose some revenue and profit, while sweet and chocolate makers gain, so the overall effect on producers depends on how far consumers switch between these products. On balance the loss of €109 million is probably the more significant effect, as the rise in consumption is likely to be small.

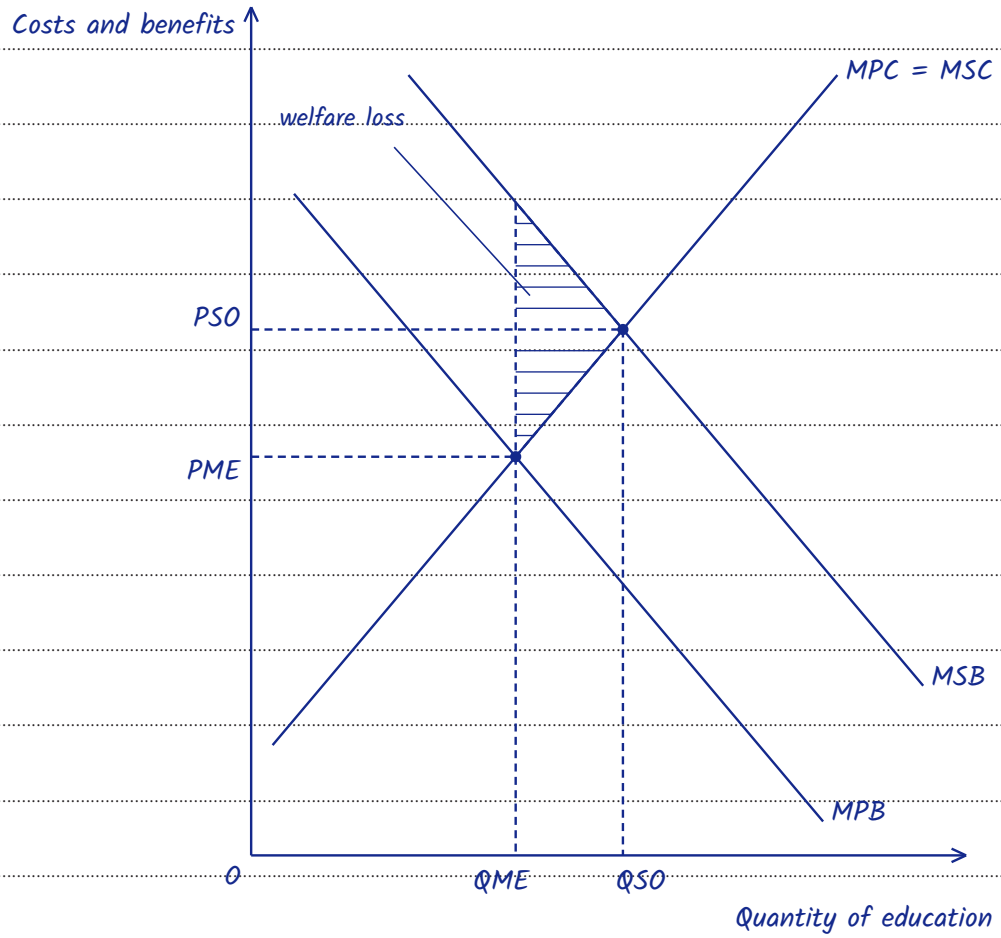
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(e) Discuss reasons why the 'quantity of education is below the social optimum level' (Extract B, lines 2 and 3). Refer to external benefits in your answer.

Illustrate your answer with an appropriate diagram.

**(14)**

External benefits are the positive spillover effects of consumption or production on third parties, who do not pay for them, so the marginal social benefit (MSB) is greater than the marginal private benefit (MPB). Education is a merit good with large external benefits.




The main reason is that consumers only consider their private costs and private benefits, such as higher lifetime earnings, and ignore the external benefits to society. These include a more productive and skilled workforce, new ideas and technology, better international competitiveness, less poverty and lower government spending on health care, welfare and prisons. Families in Madagascar consume where MPB = MPC, at QME, rather than the social optimum QSO where MSB = MSC. This under-consumption of QSO – QME creates the shaded welfare loss, shown by

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adults typically spending only 4.4 years at school. Many families may also suffer from information failure and undervalue even the private benefits of education.

A second reason is the high opportunity cost of education. Many families need their children to work to earn extra income: in 2012, 20 000 children aged 12 to 17 worked in vanilla production, 32% of the industry's workforce. After the cyclone, food prices rose significantly, which increased the need for children to work. The income lost by sending a child to school raises the private cost, so families choose even less education.

A third reason is the poor quality and limited supply of education. Many primary schools are in poor condition and overcrowded, teachers have limited or no training, schools are destroyed by annual cyclones and public funds for education have been reduced. This lowers the private benefit of attending school, shifting MPB to the left, so quantity falls further below the social optimum.

However, the importance of external benefits may be overstated. The magnitude of the welfare loss depends on how large the external benefits really are, and these are very hard to measure and value. Because schools are overcrowded and teachers untrained, the external and private benefits of an extra year in these schools may be small, so the gap between MSB and MPB, and the welfare loss, may be smaller than the diagram suggests.

Also, for many families low education is not really a choice caused by ignoring external benefits, but a necessity: when food prices rise, a child's wage from vanilla production may be needed to meet basic needs and survive. In the short run, the benefits of this income to a poor family may be greater than the lost benefits of education, although in the long run it keeps them in poverty.

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On the other hand, with only 4.4 years of schooling, the welfare loss in Madagascar could be significant, as the first years of education, such as literacy and numeracy, have the largest benefits. Many people still benefit from education, so even a small increase in quantity may bring large gains.

In conclusion, the failure to take account of external benefits explains why the free market quantity of education is below the social optimum, but in Madagascar poverty, the opportunity cost of child labour and the poor quality of schools are probably the more important reasons. Their effect has worsened since the cyclone, so the gap is likely to be largest in the short run.

**(Total for Question 12 = 34 marks)**

**TOTAL FOR SECTION C = 34 MARKS**

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**SECTION D BEGINS ON THE NEXT PAGE.**

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## SECTION D

**Answer ONE question from this section.**

**Write your answer in the space provided.**

**EITHER**

**13** Adam Smith identified that if workers completed every stage of production individually they would each produce 10 to 20 pins per day. The application of the division of labour in a pin factory enabled ten workers to produce 48 000 pins per day.

Evaluate the advantages of the division of labour in organising production.

**(Total for Question 13 = 20 marks)**

**OR**

**14** The European Union (EU) operates a tradeable pollution permit scheme which affects 12 000 businesses including energy producers, airlines and the steel industry.

Evaluate the use of tradeable pollution permits to reduce pollution.

**(Total for Question 14 = 20 marks)**

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**Indicate which question you are answering by marking a cross in the box ☒. If you change your mind, put a line through the box ☒ and then indicate your new question with a cross ☒.**

Chosen question number: **Question 13** ☒ **Question 14** ☐

Write your answer here:

The division of labour is where the production process is broken down into separate tasks and each worker specialises in one task, rather than one worker completing every stage of production.

Adam Smith's pin factory shows the scale of the advantage. If each of the ten workers made every pin individually, they would produce 10 to 20 pins each, so 10 × 10 = 100 to 10 × 20 = 200 pins per day. With the division of labour the ten workers produce 48 000 pins, which is 48 000 ÷ 10 = 4 800 pins per worker per day, between 240 and 480 times more.

The first advantage is a large rise in labour productivity. When one worker completes all stages, they must keep changing tools and moving around the factory, which wastes time. If one worker cuts the wire, another straightens it and another sharpens it, each uses only one tool and the half-finished pin comes to them, so no time is lost. Through repetition each worker becomes faster and more skilled at their task, becoming an expert, so output per worker per hour rises.

The second advantage is lower costs of production. If each worker is paid the same wage but produces 4 800 pins instead of 20, the labour cost per pin falls sharply, so average costs fall. Training costs also fall because each worker only needs training in one area rather than in all stages of production, and new workers can become productive quickly.

Lower average costs mean the firm can either earn higher profits or charge lower prices, which makes it more competitive and benefits consumers through cheaper goods and higher real incomes. Higher profits can be reinvested, which increases output further.

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A third advantage is that workers can be allocated to the tasks that best suit their skills and temperament, so resources are used more efficiently, and some may gain a sense of achievement from their part of production. Breaking production into simple tasks also makes it easier to use specialist machinery and to automate tasks, raising productivity further.

However, there are significant disadvantages that limit these advantages. Highly specialised work can become monotonous, boring and repetitive, so worker morale and motivation fall. Bored workers make more mistakes, so the quality of output may fall and more products have to be rejected, raising costs. Adam Smith himself recognised this problem and argued for the education of workers so that they would not be demoralised by their repetitive jobs.

Low morale may also lead to more absenteeism and higher labour turnover, so firms must spend more on recruitment and training to replace workers who leave, which offsets some of the cost savings.

There is also the problem of interdependence. If one stage of production stops, for example because a worker is absent or a machine breaks down, the whole production line can grind to a halt, because no other stage can continue without the half-finished product. So output becomes more vulnerable to disruption than when each worker makes the whole product.

Furthermore, the advantages depend on the type of production. Smith's pin factory involves simple, standardised products made in large quantities, so the gains are huge. Not all production can be broken down in this way: personalised services such as hairdressing, or small firms with low demand, cannot divide tasks so finely, so the gains are much smaller. The size of the market limits the division of labour, as 48 000 pins a day is only useful if they can be sold.

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Finally, because tasks become simple and repetitive, they can be replaced by machinery. This raises productivity for the firm, but it can lead to structural unemployment for workers whose narrow skills are no longer needed, making it hard for them to find other jobs.

In conclusion, the division of labour has major advantages in organising production, as the rise from 200 to 48 000 pins a day shows, mainly through higher productivity and lower average costs. However, the size of these advantages depends on the product, the size of the market and how workers are managed. Firms can reduce the disadvantages through job rotation, training and good working conditions, so overall the advantages are likely to outweigh the costs, especially for mass-produced goods, although in the long run more of these tasks may be done by machines.

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**TOTAL FOR SECTION D = 20 MARKS**
**TOTAL FOR PAPER = 80 MARKS**





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Pearson Edexcel International Advanced Level

# Wednesday 8 January 2020

Afternoon | Paper Reference **WEC11/01**

# Economics

## International Advanced Subsidiary
## Unit 1: Markets in action

**Source Booklet**
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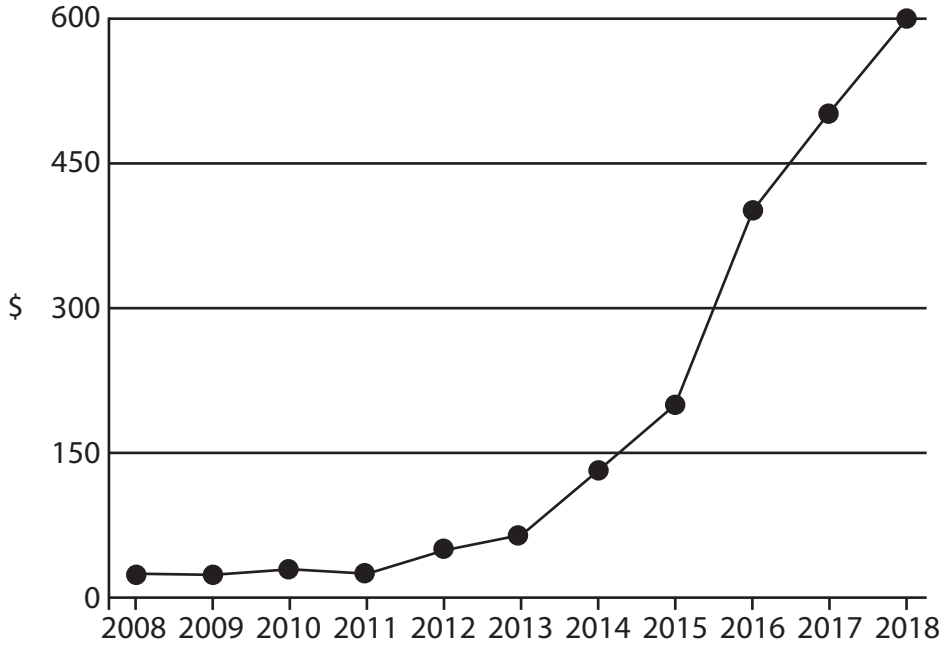
**Sources for use with Section C.**

**The markets for vanilla, education and sugar**

**Figure 1 Estimated price elasticity of supply for vanilla in Madagascar and Indonesia**

| | Madagascar | Indonesia |
|---|---|---|
| **Price elasticity of supply** | 0.48 | 0.52 |

**Figure 2 US$ price of vanilla per kilogram, 2008-2018**






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**Extract A Vanilla price increases**

Madagascar grows 80% of the world's vanilla. Few other countries have the climate to be able to grow the crop. Between 2008 and 2011 the price was so low that some vanilla growers stopped production and grew other crops instead. However, the price of vanilla increased significantly between 2014 and 2018.

In 2017 a cyclone in Madagascar destroyed a large quantity of the vanilla crop. As a result some farmers will not see their vanilla crops recover fully until 2020.

There are artificial substitutes for vanilla such as vanillin. However, in recent years, consumers have shown an increased preference for natural vanilla. Vanilla is a key ingredient used in ice cream, sweets, chocolate and in cosmetic products. The demand for all of these products has increased rapidly in recent years.

The high price attracted farmers in other countries, such as Uganda, to start growing vanilla. However, it takes three years for the plantations to mature and produce vanilla crops.

**Extract B Lack of education in Madagascar**

Adults in Madagascar have typically spent only 4.4 years at school. This quantity of education is below the social optimum level.

In 2012 it was estimated that 20 000 children aged 12 to 17 years old worked in the production of vanilla. This was 32% of the workforce employed in this industry. Many families need their children to work to earn an additional income. They cannot afford to lose this income by sending their children to school. Following the cyclone the price of food in Madagascar rose significantly. This increased the need for children to work.

Many primary schools are in a poor condition and are overcrowded. Teachers have limited or no training. Many schools are destroyed by the annual cyclones and public funds for education have been reduced.

**Extract C Sugar tax removed in Finland**

In 2011 the Government of Finland introduced an indirect tax known as a sugar tax on sweets, chocolate, ice cream and fizzy drinks. This was charged at €0.95 per kilogram or €0.11 per litre. The tax raised revenue for the government and decreased consumption of these products by approximately 5%.

In 2017 Finland removed the sugar tax. It had been criticised as being unfair. Manufacturers of biscuits and cakes had been unaffected by the tax giving them a competitive advantage over sweet and chocolate manufacturers. The tax revenue that would have been raised was estimated to be €109 million per year.



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**Acknowledgements**

Figure 1 adapted from Developing Countries In The World Economy, Volume 42 of World Scientific Studies In International Economics, by Jaime de Melo © WSPC - 2015, 2015, World Scientific https://books.google.co.uk/books?id=2mYGCwAAQBAJ&printsec=frontcover&dq=inauthor:%22De+Melo+Jaime%22&hl=en&sa=X&ved=0ahUKEwjV5tK3ueDdAhUrI8AKHWV5AJIQ6AEIMDAB#v=onepage&q&f=false

Figure 2 adapted from https://african-crossing.com/the-demand-for-vanilla/

Extract A adapted from https://agronomag.com/vanilla-price-hits-all-time-record-in-2018/

Extract B adapted from https://www.dol.gov/agencies/ilab/projects/madagascar-vanilla and https://www.unicef.org/madagascar/5559.html

Extract C adapted from http://www.loc.gov/law/foreign-news/article/finland-tax-on chocolate-and-sweets-to-be-eliminated-2017/