

2015 specification
First exams in 2017 (2016 for AS)

Data Response Case Studies

For AS/A level Year 1 AQA Economics

Microeconomics: The operation of markets and market failure

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Teacher's Introduction

This resource is designed to be used for teaching AQA AS/A Level Economics. The resource consists of 13 Data Response Case Studies intended for students to complete as homework tasks. The case studies are presented in specification order, collectively covering each topic in the AS/A Level specification. Each case study contains detailed information (including diagrams and data), and tasks and questions.

The 'Use the data' tasks focus particularly on quantitative skills, and the 'Test your knowledge and application skills. The extended-response questions are an opportunity for higher-level analysis and evaluation skills. Most of the questions given are in exam-style questions to this style except in the case of the extended-response questions provided for all tasks and questions.

Reading through each study and answering the questions is expected to take 20-30 minutes. Extended-response questions at the end of each case study. One option for using this resource is to read the study in class and set the exam-style evaluation question as homework.

This resource will help prepare students for the Paper 1 component of the AS and A Level Economics and stimulate an interest in the real-world applications of microeconomics. Each case study introduces the student to a fascinating array of contemporary microeconomic issues.

I hope this resource helps you to bring economics to life for your students.

Case Study	Spec ref
1. Innovation at Ford	3.1.3.2 – specialisation, division of labour
2. Black gold	3.1.2 – price determination
3. The UK dairy market in decline	3.1.2 – price determination 3.1.3 – production, costs and revenue
4. Football ticket prices	3.1.2 – price determination
5. Organic food vs Poundland	3.1.2 – price determination
6. Online news vs print news	3.1.2 – price determination
7. The UK housing market: pulling up the ladder?	3.1.1.1 – economic methodology negative externalities
8. Market power: Gazprom	3.1.4 – competitive and consumer behaviour
9. Quasi-public goods	3.1.5.3 – public goods, private provision
10. Should the government tax sugar?	3.1.5.8 – government intervention
11. Solar panel subsidies	3.1.5.8 – government intervention
12. A minimum price for alcohol?	3.1.5.8 – government intervention
13. Reforming the NHS	3.1.5.9 – government failure

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Innovation at Ford

This case study requires knowledge of Section 3.1.3.2 – specialisation, division of labour

In the early twentieth century, the automobile manufacturer Ford was witness to the increase in Ford's profits over time, compared to modern-day equivalents.

Figure 1: net profit (pre-tax)

	Ford (\$million, 1910)		Volkswagen (€billion)
1910	4.2	2010	7
1911	7.4	2011	11.3
1912	13.1	2012	11.5
1913	26.5	2013	11.8
1914	30.4	2014	12.7
1915	36.9	2015	-1.7*

*Third quarter only

Source (Ford 1910): 'Did Henry Ford Pay Efficiency Wages?'

Of course, the figures are not directly comparable but the percentage change in the period 1910–1915 far exceeds that of most modern-day companies. As the automobile market was booming, there are two main explanations for Ford's success: the production process and so-called 'efficiency wages'.

Improvements in technology meant that Ford's workers could operate on a production line (inspired by Smith's pin factory idea). Ford's competitors were also able to benefit from the reason that Ford was able to excel above its competitors was through

Standard economic theory would suggest that a firm would only increase its wages if it sought to attract higher-skilled workers, but in this case that doesn't seem to hold true. Although increasing the wage (to around twice the market rate) did increase Ford's costs, this was more than offset by improvements in productivity. Between 1913 and 1914, production increased by 15%, despite reducing the number of workers by 14% and cutting the number of working hours in a day (although part of this may be due to improvements in technology / production methods).



One of the big problems Ford had in the year prior to the wage change was high absenteeism (around 10%), perhaps because working in a car factory was so unpleasant. After the wage change, absentee rates fell to only 2.5%, and the number of discharges (firing of workers) were so keen to keep their jobs.

Ford saved a lot of money at the time by dramatically reducing their turnover. This can partially be explained by an economic downturn at the time, there does

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that paying a higher wage incentivised workers to stay with Ford and increase productivity. This was particularly important for Ford, since on an assembly line the efficiency depends on the speed of every part of the line.

Some have argued that Ford's experience provides evidence for raising the minimum wage. This is not necessarily the case, however, since Ford's policy was that their wages were high *relative to their competitors*. If every industry had a minimum wage, the incentive effects for workers probably wouldn't be as strong.

Use the data

- (a) Calculate the percentage change in profit for Ford between 1912 and 1915.
(b) Calculate the percentage change in profit for Volkswagen between 2010 and 2015.
- Why did Volkswagen's profit fall so much in 2015? (If you don't know – look it up.)
- Name one disadvantage of specialisation in the automobile industry, and explain the problem.
- Which of the four factors of production do you think contributed most to Ford's success?

Test your knowledge...

- Show the effect of specialisation in the automobile industry using a production possibility frontier. The number of cars on the x-axis (horizontal axis) and number of other goods on the y-axis. Assume that productivity in other industries remains the same.
- Show the effect of high worker productivity on a demand and supply diagram.

Extended-response question

- Assess the pros and cons of specialisation in the teaching profession (e.g. with a range of subjects rather than a range of subjects).

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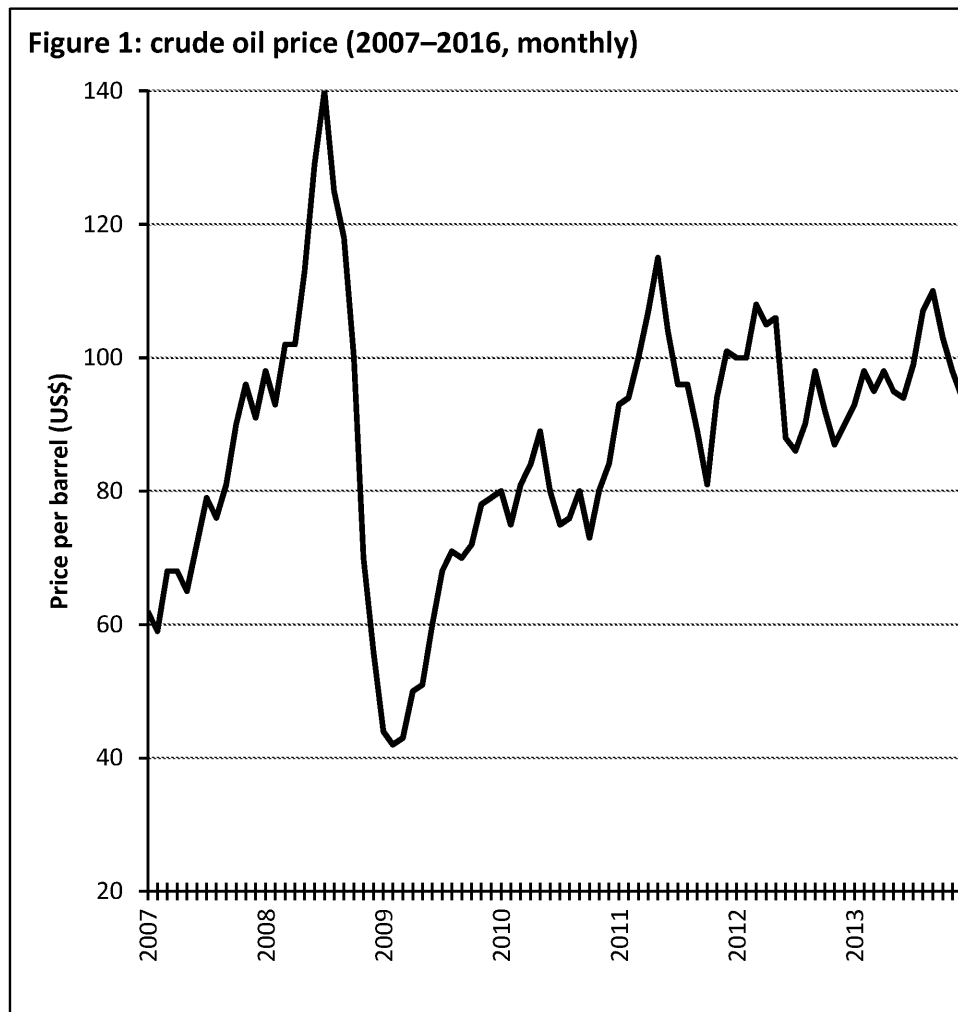


Black Gold

This case study requires knowledge of Section 3.1.2 – price determination

Investing in commodities is a big business. Speculators vie to predict price movements in all sorts of commodities such as gold, meat and coffee – but prices are often very difficult to predict. The price of the most valuable commodity of them all, oil, is notoriously unpredictable.

Swings in crude oil prices not only decide the fate of investors and oil companies, they can also have a huge impact on whole economies, particularly those that rely on oil production as a main source of income. Figure 1 shows the world price of oil since 2007:



The volatility in the oil price can be explained through simple demand and supply. In 2008 global financial crisis, a fall in demand was the key reason for the price drop. In 2009 global demand is still somewhat weak, and there is a growing interest in alternative energy sources. The main explanation for the more recent price drop (2015 onwards) is that supply has increased significantly.

Advances in technology have allowed production of shale oil in the US to increase. The relaxing of economic sanctions in Iran has also enabled them to increase production. In addition to this, oil production by OPEC members (Organization of the Petroleum Exporting Countries) such as Saudi Arabia has remained high. Some argue that since OPEC countries have low marginal costs, they are trying to force their competitors out of the market by deliberately increasing production.

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If this is the case, they may well be succeeding. British Petroleum (BP) is one of its total employees), and many other large oil companies are cancelling Russian and Venezuelan economies, which are heavily dependent on oil exports.

Obtaining estimates of the price and elasticities of demand and supply for oil is generally accepted that the demand for oil is price inelastic (particularly in the short run). Supply has become less price inelastic as the number of different methods of production has expanded.

Use the data

1. Using Figure 1, estimate the percentage decrease in the oil price from the start of 2014 to the start of 2016.
2. Why is the price elasticity of demand for oil expected to be lower in the short run than in the long run?

Test your knowledge...

1. Explain how a growing interest in the renewable energy sector would be expected to affect the demand for oil.
2. Based on the information in the article, use demand and supply diagrams to show the effect on the oil market:
 - (a) During the financial crisis
 - (b) After 2015

Extended-response question

1. Suppose that a technological breakthrough made a particular type of renewable energy source more cost-effective. Using a diagram, evaluate the effect of this development on the market for oil.

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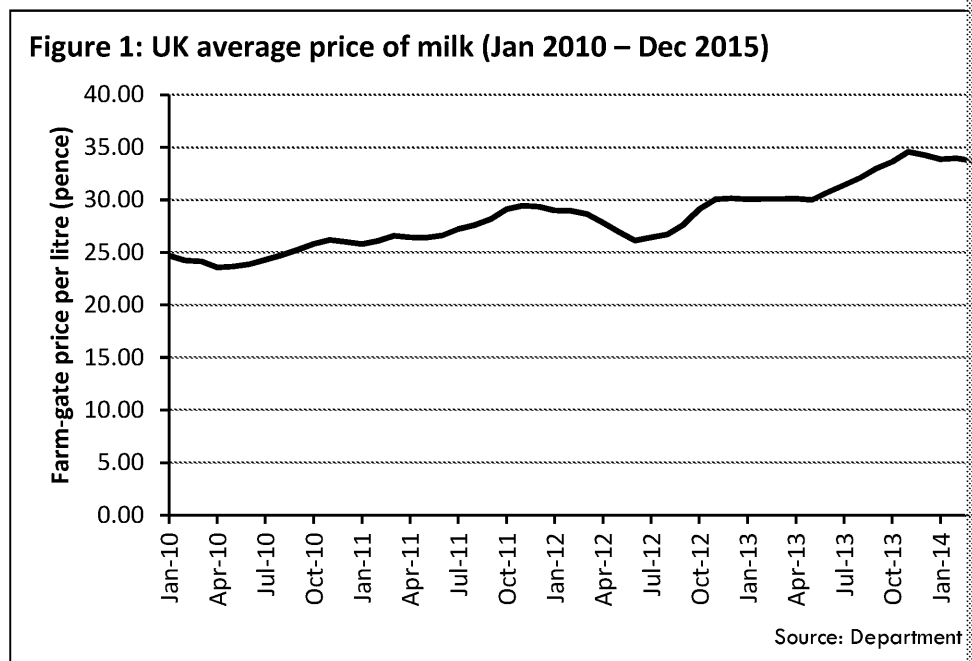
The UK Dairy Market in Decline

This case study requires knowledge of Section 3.1.2 – price determination in a production, costs and revenue.

Dairy farmers in the UK had a very rough year in 2015. In January, First Milk, a large dairy processor that farmers sell their milk to, ran into financial problems, resulting in a two-week delay in payments to farmers. Following this, throughout the year various factors have combined to reduce the price of milk. This has meant that many farmers now operate at or below their costs of production.



Figure 1 shows UK milk prices over time. This is the 'farm-gate price' – the price at which farmers sell milk to dairies (who then process the milk and pass it on to retailers). As such, the farm-gate price is typical supermarket:



One of the reasons why prices are so low is that there is an excess supply of milk, partly due to good weather conditions (farmers were affected by few droughts and there was a bumper grass harvest).

The fall in supply has been coupled with a fall in global demand: the slow economic recovery has reduced their demand for all sorts of goods including milk, and economic sanctions have prevented them from importing milk from UK producers. Domestic demand for milk consumption in the UK has fallen by 18% over the last 20 years.

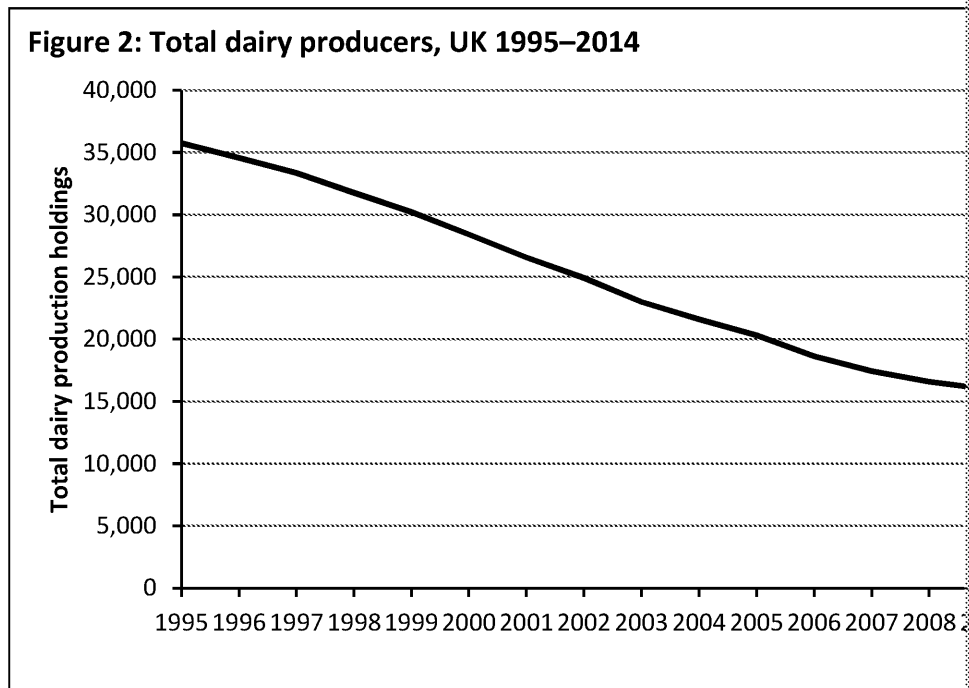
Other factors hurting UK producers have been price wars in UK supermarkets. Some supermarkets price milk very cheaply to attract people into the shop to buy higher value items (in some cases, milk has been cheaper than water). This has also hurt farmers.

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These factors forced some UK dairy farmers out of the market in 2015. This is a trend across the industry, as Figure 2 shows:



Another reason for the decline in the fortunes of dairy farmers could be changes in consumer preferences. Between 2013 and 2015, the market value of nut- and seed-based milk alternatives increased by 177%. Consumers are willing to pay more for these alternatives.

Some commentators argue that milk has been homogenised and treated so long that consumers are no longer aware that there can be a great variety of different tastes between natural and processed milk (the pasteurisation process kills off bacteria in milk by heat treatment) started as a wartime necessity for protection against disease. Nowadays milk still tends to be produced as cheaply as possible with little regard for quality. Perhaps this matters less in the UK where milk is usually added to tea, coffee or cereal, but the lack of variety in taste may be another reason why the industry is in decline.

Use the data

1. State the three functions of the price mechanism.
2. Look at Figure 1. Estimate the percentage change in price between the peak in 2015.
3. 'If the number of dairy producers in the UK is falling, the price of milk will rise.'

Test your knowledge...

1. Show the effect of a fall in demand and an increase in supply on the market for milk.
2. Identify one possible fixed cost and one possible variable cost for dairy farmers.
3. If demand for milk is price elastic, what does this suggest about the average revenue curve?

Extended-response question

1. Evaluate whether the rise of milk alternatives, which sell for much higher prices, is good or bad for milk producers.

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Football Ticket Prices

This case study requires knowledge of Section 3.1.2 – price determination

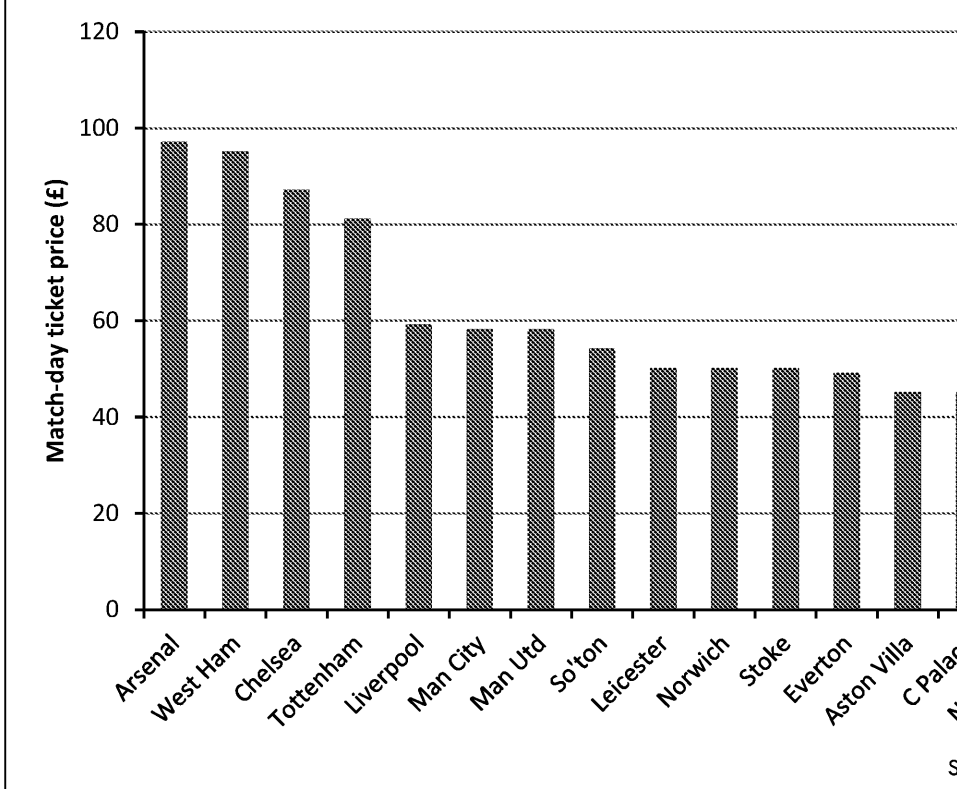
Football is the world’s most popular sport. Consequently, there is an awful lot of money involved.



When it comes to pricing match-day tickets, football clubs have something of a dilemma. On the one hand, seats for Premier League matches are rarely left empty, so increasing the prices should be a guaranteed way to increase revenues (and revenue is very important for staying competitive, particularly for attracting and retaining top players and managers). However, raising prices too much for football can be a fundamental part of their lives. For many fans, watching substitute for attending the game in person.

Liverpool experienced this first hand in February 2016, when they increased expensive tickets from £50 to £77. Over 10,000 Liverpool fans walked out in protest – so Liverpool’s owners reversed the decision.

Figure 1: Match-day ticket prices (Premier League clubs)



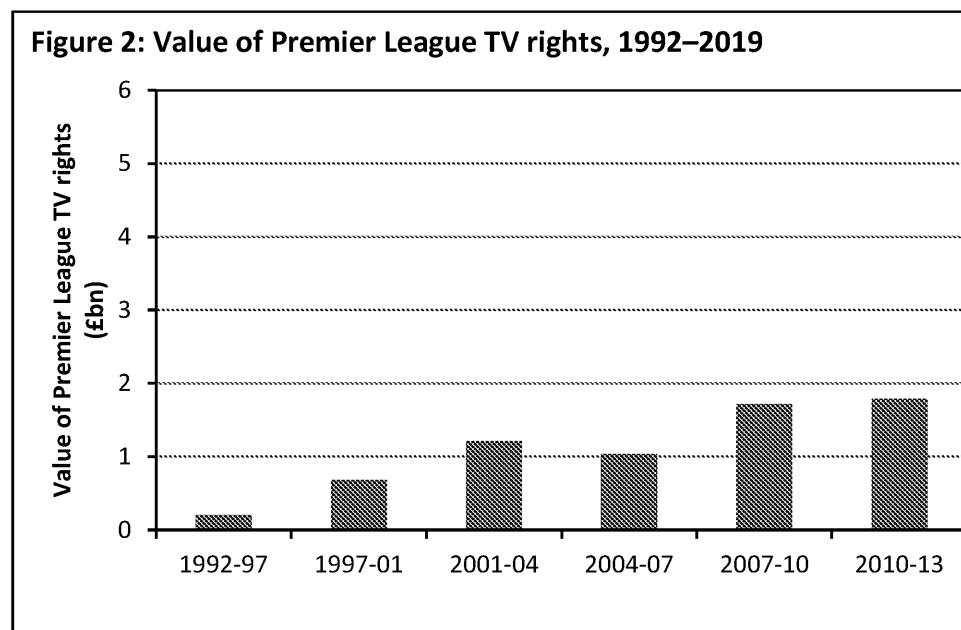
The proportion of a club’s revenue that comes from ticket sales varies: Liverpool’s is around 10% (increasing the price of tickets seems like a guaranteed way of increasing revenue, but it often results in seats left unsold for Premier League clubs). Although this figure is often lower for other clubs (Manchester City’s is around 7%), it still represents a valuable source of finance.

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However, fans have argued that since revenues from TV deals are increasing, the value of televised football has increased significantly. Figure 2 shows that the value of televised football has increased significantly since 1992.



For 2016–19, Sky and BT both increased their bids for the TV rights significantly in the years to claim the market.

Given this windfall for clubs, some argue that it is only fair that this translates into higher ticket prices. But from a purely economic motive, clubs might be tempted to stick with current prices. Demand for tickets will stay strong, and that it could give them a competitive edge.

Use the data

- According to standard economic theory, are Premier League tickets priced at their equilibrium market price?
 - In this case, which of these are true?
 - There is an excess of supply over demand
 - There is an excess of demand over supply
- Why do you think ticket prices are so much higher for Arsenal, West Ham, and Chelsea than other clubs? (Hint: you need to know where these clubs are located to answer.)
- In economics we usually assume that firms aim to maximise profits. Do you think football clubs do?

Test your knowledge...

- Suppose a football club increased its ticket prices by 20%, and demand for tickets fell by 10%.
 - Calculate the price elasticity of demand.
 - What does this value suggest about the elasticity of demand for football tickets?
- Draw the market for football tickets using a demand and supply diagram. Assume that supply is perfectly inelastic and demand is relatively inelastic.
 - Using your diagram from part (a), show the effect of an expansion in the market for tickets.

Extended-response question

- Discuss the argument that clubs should increase prices to the market equilibrium.

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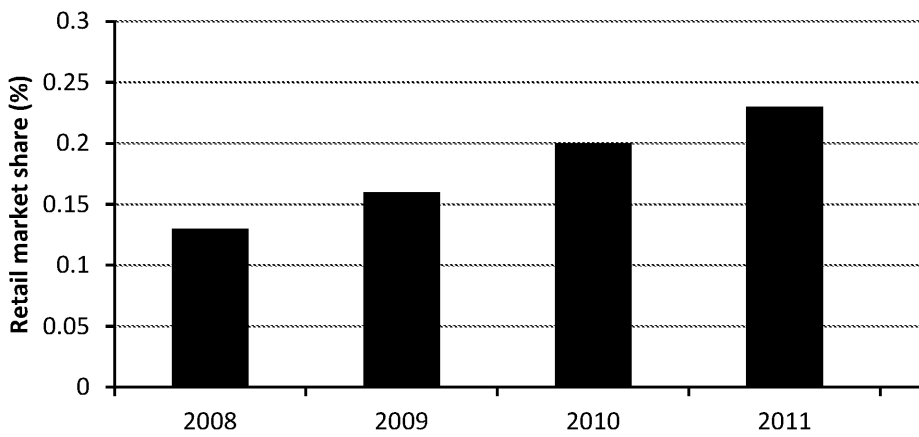


Organic Food vs Poundland

This case study requires knowledge of Section 3.1.2 – price determination in a competitive market – and the concept of income elasticity of demand.

The global financial crisis of 2008 caused a recession in the UK. People's income fell, leading to a sharp decline in consumer spending. This created winners and losers in the business world. One of the winners was the discount retail market, as people adjusted their shopping habits to focus on value. Poundland is a prime example: between 2008 and 2013, its total sales jumped from £1.1bn to £3.6bn. Figure 1 shows Poundland's changing share of the total retail market over this period (the total retail market was worth £360bn):

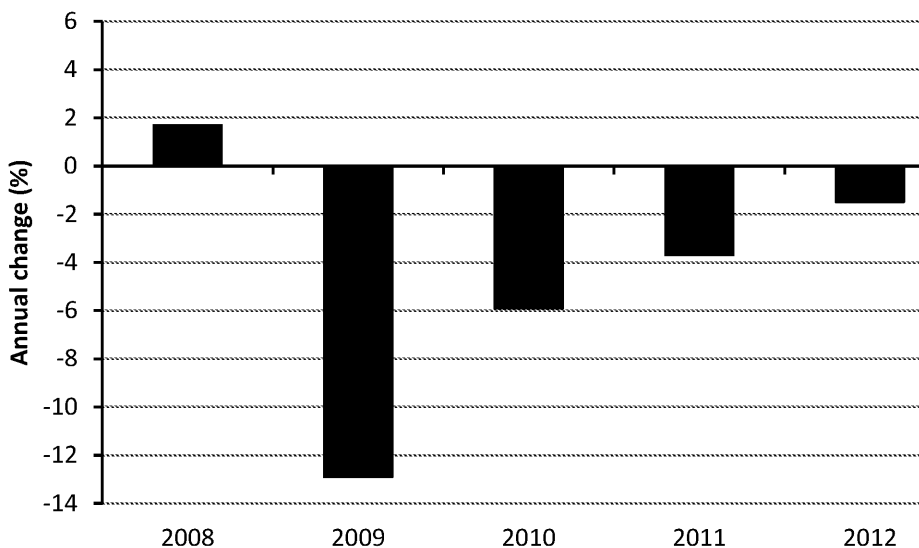
Figure 1: Poundland's market share (2008–2013)



Interestingly, the performance of Poundland (and other discounters such as Aldi and Lidl) has stayed strong long after the economic recovery. This could indicate a shift in consumer preferences, perhaps a feeling among households that incomes haven't recovered sufficiently.

In contrast to the discount retailers, purveyors of pricier products have had a harder time. Figure 2 shows the changes in total sales of organic produce in the UK between 2008 and 2012 (total sales in 2014 were £1.86bn, on par with 2009 levels):

Figure 2: UK organic market, total sales



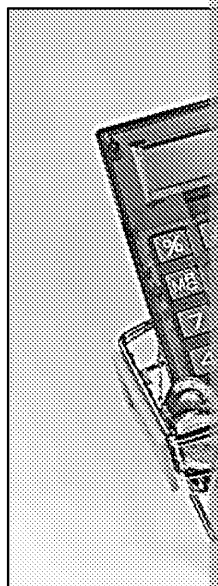
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The UK organic market was hit hard by the recession, recording four consecutive years of negative sales growth. That trend does seem to be reversing now though, and many analysts are confident of strong growth in the coming years.

Notably, the organic markets in some other countries were not as badly affected: Germany and France saw consistent growth in the organic market, despite the global recession. This is partly due to different consumer tastes (in France, almost 9 out of 10 people consume some organic products), but also due to larger-scale production in these countries. In the UK, rising demand for organic products has yet to be met with increased domestic supply.



Use the data

1. Using the information in the article, calculate Poundland's share of the retail market.
2. What would you expect the income elasticity of demand for Poundland's products to be?
3. Why might consumers be happy to continue shopping at discount retailers during a recession?

Test your knowledge...

1. (a) Suppose consumer incomes fell by 5% in 2009. Using Figure 2, calculate the income elasticity of demand for organic produce.
(b) Explain whether your answer to part (a) is also true for France.

Extended-response question

1. Assess the likely impact of a significant rise in consumer income on the market for organic goods.

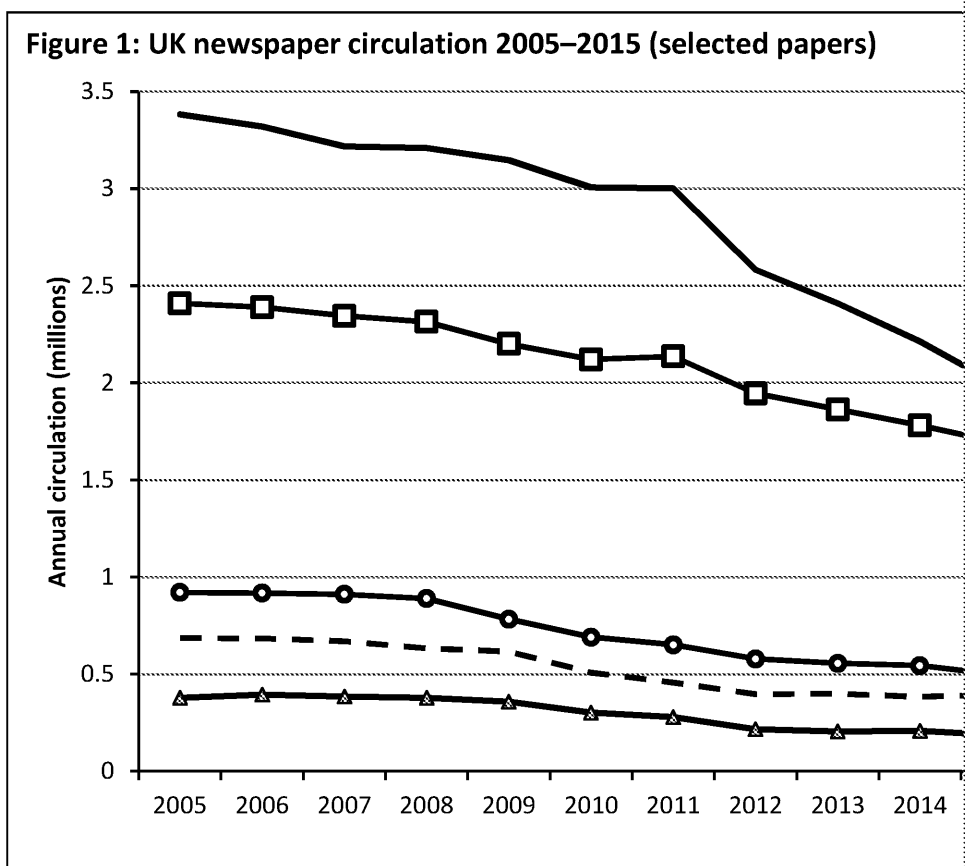
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Online News vs Print New

This case study requires knowledge of Section 3.1.2 – price determination in a competitive market – and the concept of cross elasticity of demand.

The news market has been reshaped dramatically in the past few decades as new digital news services have emerged. As online news has grown, newspaper circulation in the UK has fallen. Figure 1:



All of these papers offer online news as well as print news. Some of them require a subscription to access the rest (*Daily Telegraph*, *The Times*). This has been done successfully by *The New York Times* in the US. Others post their content for free, using advertising revenues to fund it (*Daily Mail*, *The Guardian*, *The Sun*). The former, as explained by Andrew Miller in 2013, they would not be implementing a digital audience first.

So if free digital news is so abundant (particularly with the BBC, which is government funded), why has paper circulation not evaporated completely? There are some arguments to suggest that online news and print newspapers are not perfect substitutes.

Firstly, some content is quite exclusive or technical (e.g. *Financial Times*, *The Economist*) and cannot be easily accessed for free – so it would make sense that the print versions (or the paid online services) of these types of publications have been protected. Also, some consumers do not have access to the Internet and cannot swap their paper newspapers for online services.

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There is also some evidence that readers who use actual newspapers retain more concentration than those who use online news. For one thing, in paper newspapers it is easier to find important news stories (i.e. more important news stories come nearer the front of the paper), since most news items are stand-alone, it is harder to determine their importance on online news services are more likely to break up their articles with advertisements on another page – both of these could weaken the reader's concentration.

Ultimately, some readers just prefer reading something on paper than reading something on a screen who prefer hard copies of books to digital versions. As such, the print news industry is likely to remain alive and well for the foreseeable future.

Use the data

1. State two goods that you think are stronger substitutes than online news are.
2. Look at Figure 1. Which type of newspaper has declined more in recent years or broadsheets?
3. Using Figure 1, estimate the decrease in the total circulation of the five newspapers between 2010 and 2015.
4. Based on the article, why might some publications be better off using a paywall?

Test your knowledge...

1. (a) State the formula for cross elasticity of demand.
(b) Suppose the cross elasticity of demand between online news and print newspapers increased by 6%, calculate the change in demand for print newspapers.
2. Using the article, explain two reasons why the online news and print newspaper industry is likely to remain alive and well for the foreseeable future.

Extended-response question

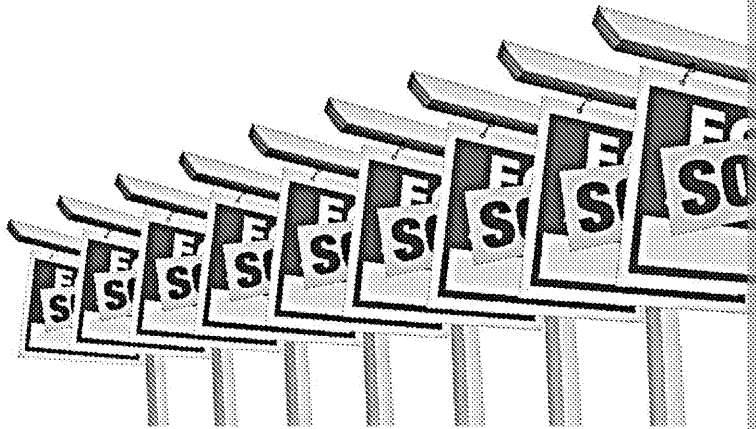
1. Assess the extent to which a fall in the price of tablets/e-readers would affect the demand for online news.

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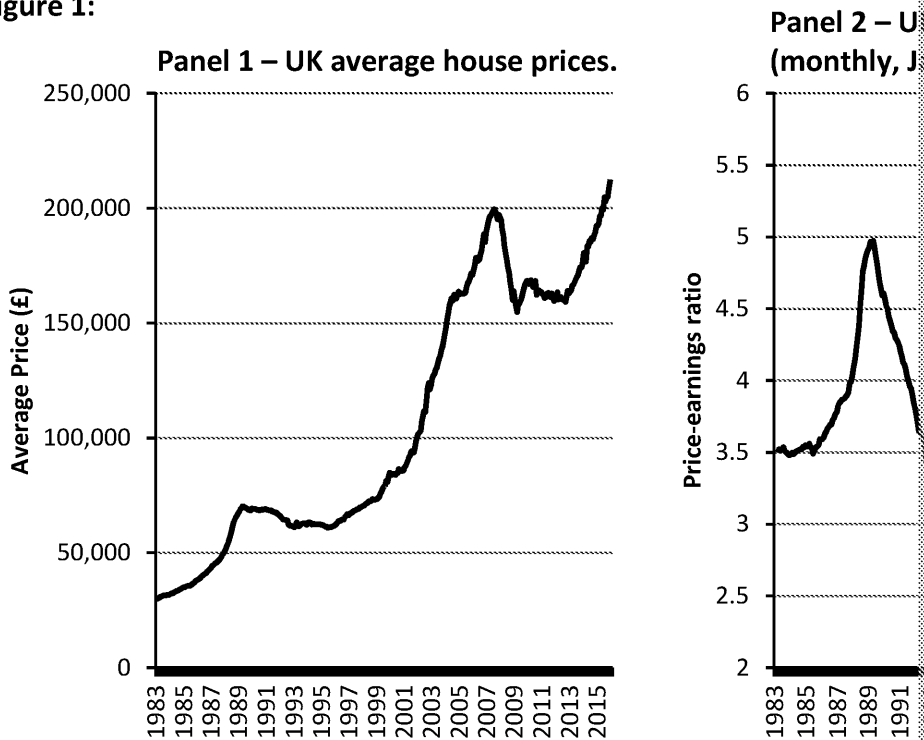
The UK Housing Market: Pulling Up t

This case study requires knowledge of Section 3.1.1.1 – economic methodology and externalities.



Why are house prices in the UK so high? In popular areas such as London, the price range of those on average salaries. *Ceteris paribus* (other things being equal) are rising naturally due to changes in the population: via ageing and immigration of people living alone. However, the main cause of the soaring prices is a lack of supply. In a speech in November 2015, George Osborne (the Chancellor) described housing as one of 'the great social failures of our age'.

Figure 1:



Note: price earnings ratio = price ÷ earnings, where earnings = average earnings for men in full-time employment.

One problem is the lack of skilled workers in the housing industry. Although the industry has contributed strongly to the construction sector, there is an acute shortage of plasterers, bricklayers and electricians. This has been blamed on a culture where these and vocational training in general are seen as second-rate, even though

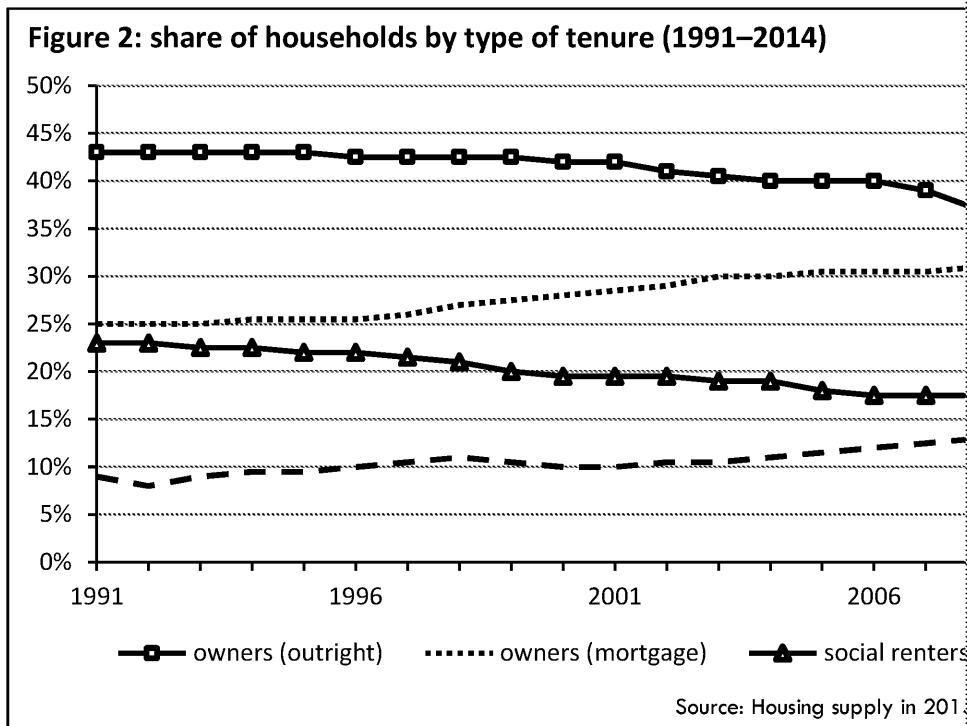
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rewarding and valuable for the economy. A second barrier to expanding the 'belt' system that protects the countryside from urbanisation: this is highly

The excess of demand over supply has made it much harder for young people to get on the housing ladder. More young people in their 20s are staying with their parents or renting. This has led to a change in the composition of housing tenures over time:



As social rent housing and outright home ownership have declined, private home ownership (via a mortgage) has increased.

Government policy on this issue has included the 'help to buy' scheme, which provides financial assistance from the government, in the form of a loan. The government has also relaxed planning rules, allowing 200,000 homes for new buyers to be built by 2020 (with capped prices to make them more affordable). Since homes are by far the most expensive asset most people will make in the UK, making these policies work is of paramount importance.

Use the data

1. Look at Figure 2. By how much did private renting change between 2001 and 2014?
2. The two panels in Figure 1 show that both the average price of a home and the average number of new homes built increased in the last few years. What can you infer about average earnings?

Test your knowledge...

1. Is George Osborne's statement in the first paragraph positive or normative?
2. (a) Explain what is meant by a negative externality.
(b) How could negative externalities arise from the building of new houses?
(c) Show this using a diagram.

Extended-response question

1. Discuss whether the government's policy to relax planning rules and build new homes is a good idea for the UK.

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Market Power: Gazprom

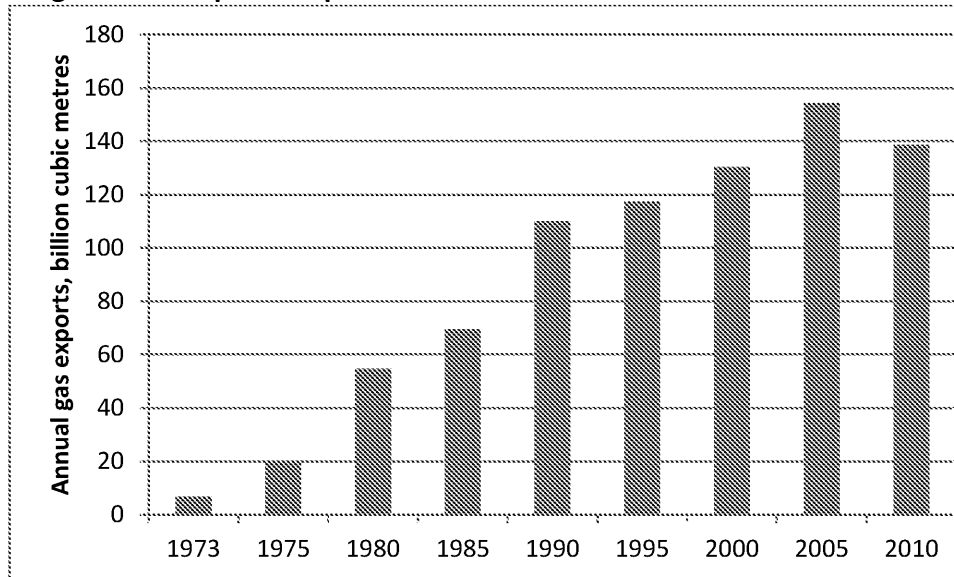
This case study requires knowledge of Section 3.1.4 – competitive and

In economics we can distinguish between competitive markets and market monopoly power. A highly competitive market (such as the agricultural market where farmers try to sell their wares and no one farmer has a particular advantage) tends to lead to low prices for consumers and tight profit margins for producers. A market with monopoly power might be able to overcharge consumers and make

Most of the time, monopolies can't exist: either they become the target of market forces and dilute their market power. There are some potential candidates for monopoly power though, including Gazprom, the Russian gas company.

Gazprom is the largest company in Russia, and the largest gas producer in the world. Its exports to Europe reached an all-time high in 2015, as Figure 1 shows:

Figure 1 – Gazprom exports to EU countries



Gazprom meets around 20% of the demand for gas in Europe, which makes it such an important industry. There is concern that Gazprom's size has restricted the market, particularly in Central and Eastern European economies (including Hungary and Bulgaria), leading to higher prices for consumers. EU regulators have made claims, but it is a delicate matter given the political tensions between the EU and Russia.

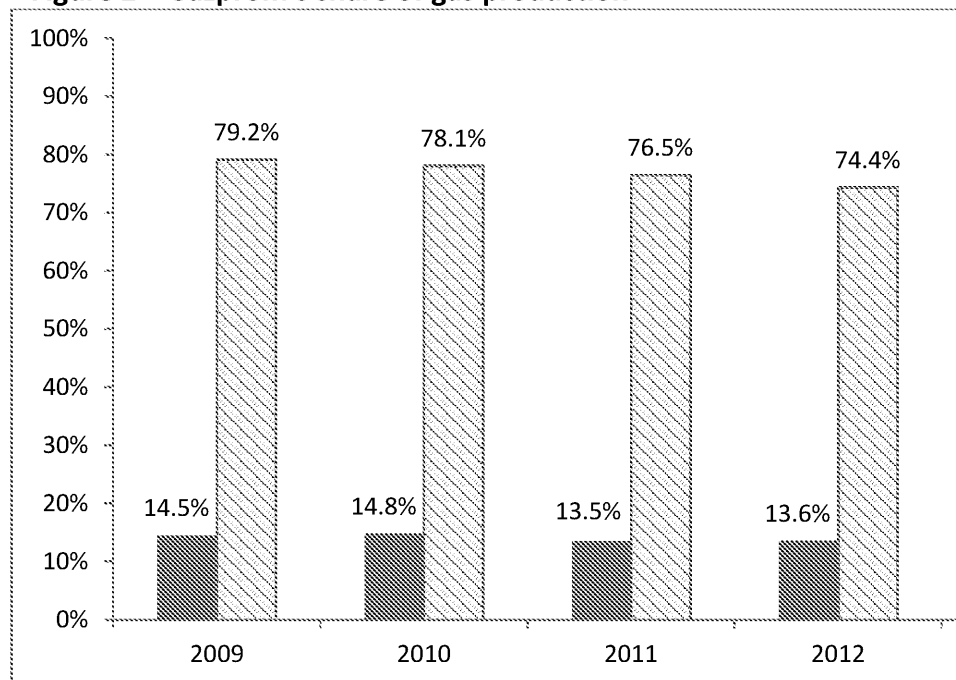
Despite Gazprom's apparent monopoly power, some recent observations suggest that its power is diminishing. In April 2016, the first export of liquefied natural gas from the US to Portugal, due to an oversupply of gas in the US (which means low prices), is mostly due to the shale gas revolution, which has transformed the US into an energy market (possibly at the cost of environmental damage).

This development could lead to a more competitive energy market and lower prices, although it is not clear yet whether or not this will be a severe blow to the

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Figure 2 – Gazprom’s share of gas production

Note: Figure 2 indicates that in 2009 79.2% of Russia gas was produced by Gazprom, and Gazprom

Use the data

1. Look at Figure 1. Why might Gazprom’s exports have fallen between 2005 and 2012?
2. Based on Figure 1, can you tell whether or not Gazprom made higher profits in 2005 or 2012?
3. (a) According to Figure 2, if Gazprom produced 400 billion cubic metres of gas in 2013, how much gas was produced in Russia in 2013?
(b) How much was produced in the world in 2013?

Test your knowledge...

1. State two possible objectives of firms.
2. Using a diagram, explain how a monopoly can benefit from economies of scale.

Extended-response question

1. Explain the likely effect of the US entering the gas market on prices for consumers and profits for Gazprom.

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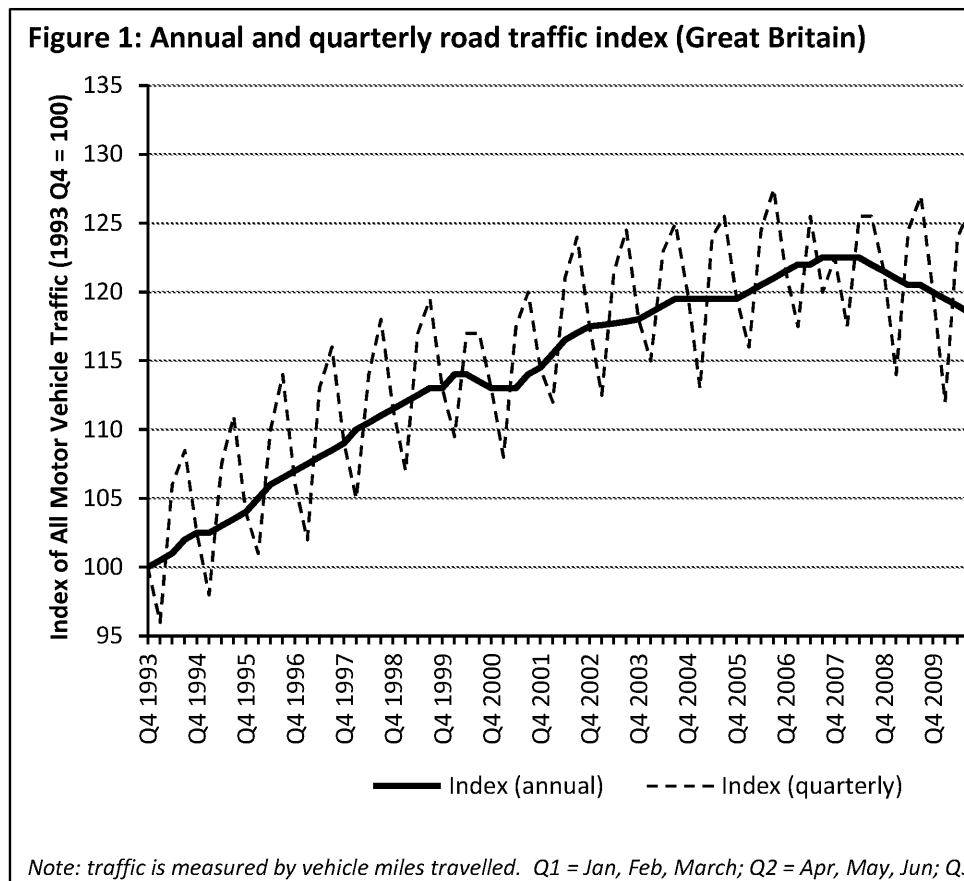
Quasi-public Goods

This case study requires knowledge of Section 3.1.5.3 – public goods, private
One of the graphs also requires interpretation of index

Public goods are usually provided by the government rather than the free market: a typical example is national defence. Some goods are not quite as pure-public in the same way as national defence: these are known as 'quasi-public goods'. In the UK, some quasi-public goods provided by the government have been under increasing strain over the past few years.



Roads



Road traffic was at its highest level ever in 2015, due to a growing economy. Van (or light commercial vehicle) traffic in particular rose significantly, peaking in 2015, due to online shopping and delivery.

Excessive congestion can be very damaging for the economy, in terms of business and time wasted. It has been casually observed that traffic in busy cities is worsening, and the statistics in Figure 1 would seem to support this.

It would be costly for the government to improve the road system: perhaps it would be improved when technology for driverless cars advances.

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Police force

Figure 2: changes in total government spending on the police

	Average annual percentage change		
	1995–96 to 2000–01	2000–01 to 2005–06	2005–06 to 2010–11
Total spending	1.4%	4.1%	1.4%

Figures are in real terms (adjusted for inflation).

As part of the coalition government's austerity policies to balance the budget, a total of 14% between 2010–11 and 2014–15. The formula for allocating government spending across different areas is very complex, so some police forces were cut more severely than others.

There were plans to cut the police budget further from 2015–2020, but the government made an unexpected U-turn in November 2015 (during the Autumn Statement). Following the terrorist attacks in Paris and a rise in domestic cyber-crime, the Chancellor decided to reverse the cuts. This may also have been influenced by the strong economic recovery at the time.

Hopefully this change in policy will allow the police service to continue to provide a high quality of service to the public.

Use the data

- Look at Figure 1:
 - Explain why the quarterly road traffic figures follow a 'saw-tooth' pattern.
 - Explain why annual road traffic might have fallen after around Q4 2007.
 - If total vehicle miles was 300 billion in Q4 1993, roughly how many miles were driven in Q4 2007?

Test your knowledge...

- Explain the two main characteristics of public goods.
- Are roads an example of a pure-public good? Explain why or why not.
 - Is policing an example of a pure-public good? Explain why or why not.

Extended-response question

- Examine why public goods such as roads and the police force are unlikely to be provided by a free market.

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Should the Government Tax Sugar

This case study requires knowledge of Section 3.1.5.8 – government intervention in indirect taxation.

The government taxes certain products because they are deemed damaging. Examples in the UK include tobacco and alcohol, which have well-known health effects when consumed in excess.

Figure 1: Current UK tax rates on tobacco and alcohol (not including VAT)

Tobacco		
Cigarettes (pack of 20)	16.5% of retail price plus £3.79	Beer (2.8%–7.5% ABV)
Hand-rolling tobacco	£4.64 on a 25g packet	Wine (still 5.5%–15% ABV)
		Spirits

Source: <https://www.vat.gov.uk>

In 2014–2015, the government raised £10.5 billion from alcohol and £9.6 billion from tobacco – together these account for around 4% of total government tax revenue (almost as much as taxes on fuel). Taxes on these sorts of products serve a dual purpose: firstly to reduce consumption, and secondly to generate tax revenue.



The government is reviewing whether to add sugar to the list of goods it taxes. The argument is that excessive consumption of sugar leads to greater strain on the NHS, particularly through conditions such as diabetes (which is estimated to eat up a whopping 10% of total NHS spending). With an ageing population, NHS spending is only one action to reduce sugar-related illnesses could be important. Providing information about eating too much sugar may not be enough – people may need a monetary incentive to change their habits.

However, this would almost certainly be an unpopular measure since – rightly so – such a large part of many people's diets. The government would think twice about a sugar tax, as they risk being seen as running a 'nanny state' and a possible compromise would be to tighten the requirements on the amount of sugar sugary drinks can contain.

The real question economists have to answer is how effective different measures are at reducing sugar consumption.

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Use the data

1. Suppose the price of a pack of 20 cigarettes is £8. Calculate the proportion (assuming no VAT).
2. Are there any dangers of having high rates of tax on cigarettes?
3. How much tax would you pay for half a litre of 4% ABV strength beer?

Test your knowledge...

1. What kind of market failure do goods such as tobacco and alcohol create?
2. Suppose that a higher tax rate increases the price of alcohol by 5%, and demand falls by 10%.
 - (a) Calculate the price elasticity of demand.
 - (b) Is this elastic or inelastic?
3. Explain the possible implications of a sugar tax for inequality.

Extended-response question

1. Discuss the effectiveness of introducing a tax to reduce consumption of sugar. Give a clear answer.

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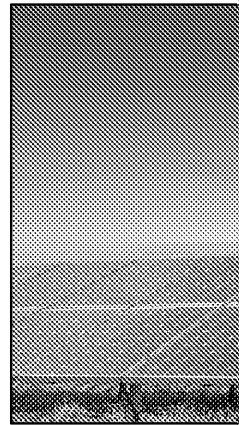


Solar Panel Subsidies

This case study requires knowledge of Section 3.1.5.8 – government intervention subsidies.

One of the ways a government can intervene in markets is through subsidies. The idea is usually to help nurture an industry of strategic importance, or to ensure the supply of certain goods and services.

Recently there has been controversy over cuts to solar panel subsidies in the UK. In December 2015, the government announced that it would cut the FIT (feed-in tariff) scheme by almost two-thirds, and introduce a cap of £100m a year. The FIT scheme is an unusual form of subsidy: it pays households (via energy suppliers) for electricity generated by solar panels, at a rate of 12.4p per kWh. Following the cut, this has fallen to 4.39p per kWh: the cut was originally 84%, but it was changed following criticism. People who purchased solar panels before the cut benefit from the higher rates.



The government's argument was that subsidising the scheme was costing £7 per household each year, since improvements in technology have led to the cost of installing a solar panel system to drop significantly over the past few years (from £5,000–8,000). The government acknowledges that cuts to the system are being made in the industry: between 9,700 and 18,700 households.

The announcement has been met with fierce criticism by environmental groups (including Greenpeace, which coincided with the Climate Summit in Paris) and others. They argue that solar panels are not cheap enough to operate without support, and point out that fossil fuel industries receive much larger subsidies.

In the UK, subsidies for fossil fuel producers (often in the form of tax breaks) were worth an average of \$9bn (roughly £6bn) in 2013 and 2014 according to the Overseas Development Institute. The bulk of these subsidies come in the form of tax relief for the costs of decommissioning oil rigs. Subsidies are set to increase, the idea being that it will encourage more production for consumers.

There are concerns about the UK's ability to meet its environmental targets. The UK's aviation industry also benefits from an estimated £10bn a year in fuel subsidies, with aviation being widely regarded as the most polluting form of transport.

Fossil fuel subsidies are considered particularly harmful in developing countries, where consumers see little or no benefit (since so few own cars or home appliances). China and Indonesia are scaling back these types of subsidies.

Figure 1: Subsidies for fossil fuel industries, G7 countries

Country	Canada	France	Germany
National Subsidies (annual average, \$bn)	2.7	0.125	2.8

Note: recent changes to UK policy (increases in subsidies) are not captured here.

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Use the data

1. Assuming that there are 25 million households in the UK, calculate the following in the article:
 - (a) Find out the estimated total cost of the subsidy per year (before the cut)
 - (b) How much more is this than the new cap on spending?
2. Look at Figure 1. How do the UK's fossil fuel subsidies compare with the other countries?
3. Using the information in the article, what would be the value of the solar panel subsidy if the original 84% planned cut had gone through?

Test your knowledge...

1. Explain two disadvantages of using subsidies.
2. Name one way other than subsidies in which the government could encourage investment in renewable energy.

Extended-response question

1. Evaluate the case for increasing subsidies on solar panels.

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A Minimum Price for Alcohol

*This case study requires knowledge of Section 3.1.5.8 – government intervention in markets.
The focus is on price controls.*

Consumption of alcohol has negative externalities (it is a demerit good). The socially optimal level of alcohol consumption is less than the current level of alcohol consumption.

Alcohol is already taxed (see Figure 1 in Sugar case study), but the Scottish Government wants to go further and introduce a minimum price for alcohol to curb excessive consumption.

In 2012, the Scottish Parliament passed legislation that would impose a minimum price on alcohol. This would mean, for example, that a two-unit pint of cider or beer would have to cost at least £1 and a litre bottle of vodka at 40% ABV would have to cost at least £9 since proposed a 50p tax rates as well. The idea is that this would reduce consumption among the heaviest drinkers (who are likely to choose very cheap alcohol).

In England, David Cameron considered the idea of a 40p minimum price, but on legal grounds that there wasn't enough evidence that it would reduce consumption. The Scotch Whisky Association (SWA) also raised legal grounds, arguing that it would restrict competition between producers and consumers.

After some deliberation, the European Court of Justice (ECJ) argued that there were other measures that could achieve the same result without restricting trade. The matter is not yet completely settled, it has returned to the Scottish courts to be successfully argued that the policy is the best way to target heavy drinkers (possibly in conjunction with higher existing taxes).

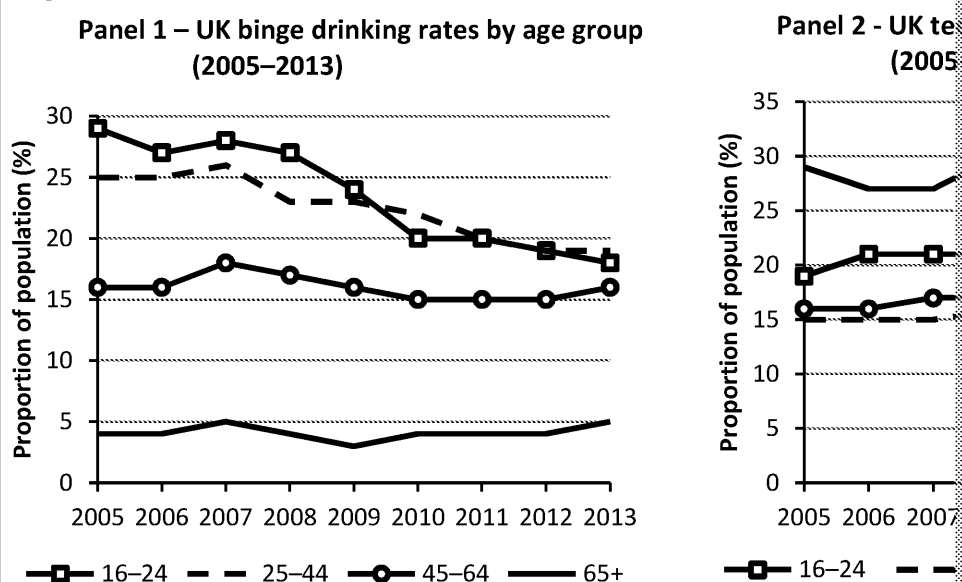
The statistics in Figure 1 suggest that people in the UK are gradually moderating their drinking habits. The average number of people who drink no alcohol at all (teetotalers) increased between 2005 and 2013, while the average number of binge drinkers fell from 25% to 18%.

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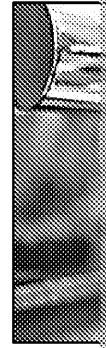
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Figure 1:



Participants were asked about their drinking habits in the past week. Binge drinking is counted as five or six units (for women) on a single day. Men tend to binge drink more than women (18% of men).



Nevertheless, since alcohol contributes so much to health problems in the UK (in Scotland the cost has been estimated at around £900 per adult), there may well still be a case for introducing a minimum price. The economic arguments around this issue are important. If economists could accurately predict how different government policies on alcohol would affect consumer behaviour, it would be much clearer whether the policies would be good ideas or not.

Use the data

1. The passage states that with a minimum price of 50p per unit, a one-litre bottle would cost at least £20. With a minimum price of 40p per unit, what would a bottle of 44% strength whisky cost?
2. In your opinion, does Figure 1 suggest that we should be concerned about health problems?
3. Look at Figure 2. Which age group recorded the greatest increase in teetotalism?

Test your knowledge...

1. Show the effect of imposing a minimum price on alcohol using a demand and supply diagram.
2. Give an example of a merit good, and explain why merit goods might be under-consumed.

Extended-response question

1. Evaluate the effectiveness of imposing a minimum price on alcohol to reduce alcohol consumption.

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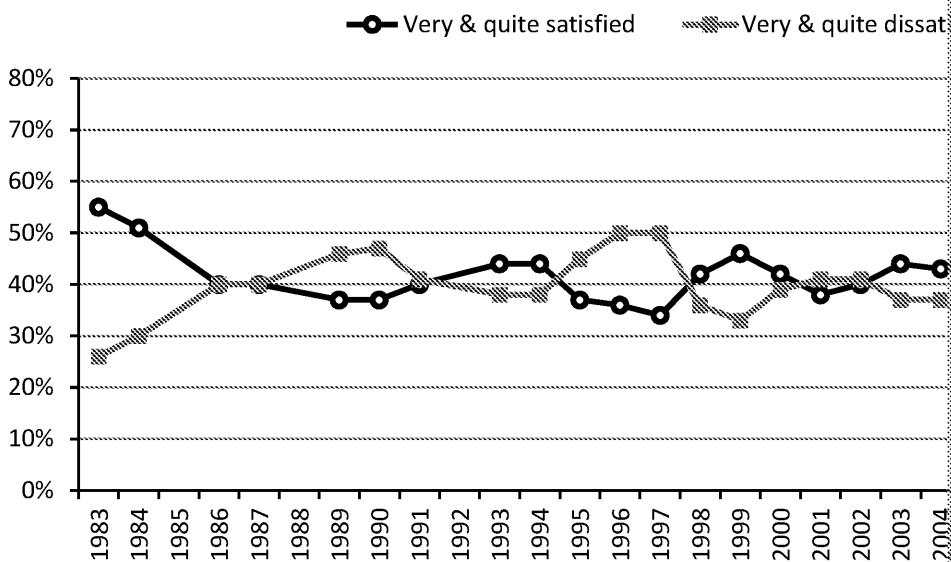


Reforming the NHS

This case study requires knowledge of Section 3.1.5.9 – government

In the UK, if any of our institutions is a sacred cow, it is the NHS. The vast principle that healthcare should be free at the point of use.

Figure 1: satisfaction with the NHS 1983–2014

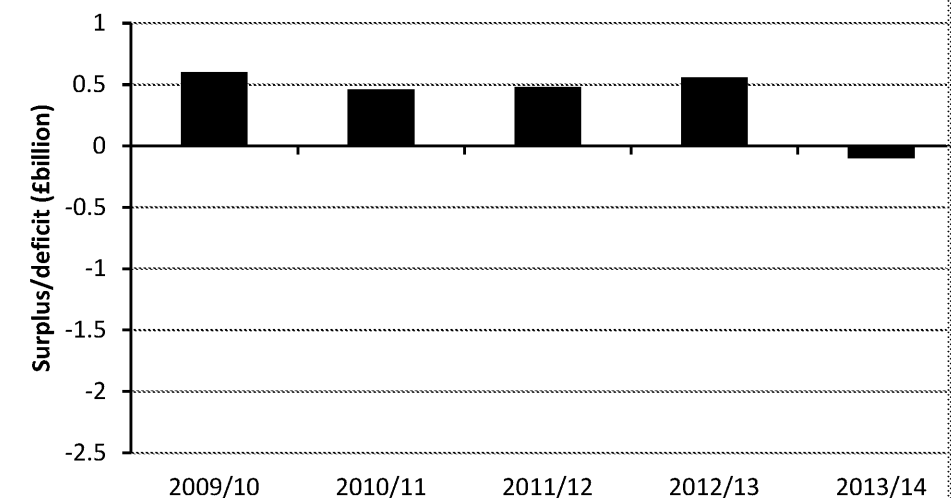


(Note: numbers don't add up to 100% because the remainder are undecided. Question not asked in 1983. Question asked: 'All in all, how satisfied or dissatisfied would you say you are with the way in which the NHS is run nowadays?')

Despite this, there are concerns about the sustainability of the NHS in its current form. Each year government spending each year goes towards the NHS, and with the ageing population and rising rates of obesity in the UK (already the highest in Western Europe), the NHS is likely to rise unless economic growth increases just as rapidly or government policy changes.

Figure 2 shows how well (or poorly) the NHS has met its budget requirements. The figure for 2015/16 is somewhat alarming (especially since it is a relative deficit of £0.93bn was recorded for April–June 2015 alone).

Figure 2: NHS trusts end-of-year financial results



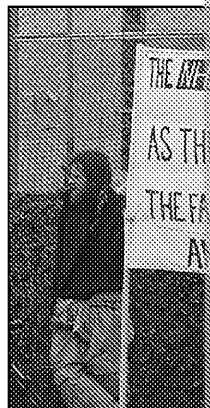
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This could be partially explained by a slowdown in government spending on the NHS (which has risen in real terms every year since 2011, but only very slightly), as part of the more general cuts to public spending. Another explanation is the difficulty of recruiting staff, meaning that more had to be spent on agency workers to plug the gap. However, many commentators are beginning to think that the underlying model is unsustainable.



This deterioration in the NHS's finances has coincided with the ongoing row about junior doctors' contracts. If an agreement can't be reached, the NHS may struggle even more to maintain sufficient staff levels and keep up regular services.

So what potential reforms could be introduced to combat these problems, and what are the obvious reforms (e.g. clearing out superfluous layers of management) that have already been tried?

One option could be to introduce a small charge for visits to the GP. This would reduce the number of visits and missed appointments (the average person has about five GP visits per year), which would increase revenue for the service. Another possibility could be to cut down the number of people who are deemed to be their own fault, e.g. smokers. This would save money on health care. There are also moral objections to this course of action. Another idea is to integrate primary care services with care services for the elderly or disabled, which are currently separate. Streamlining the interactions between these two services could lead to big savings.

Alternatively, the government could simply raise taxes. If the public wishes to maintain the current standards of service, this may be inevitable, given the increasing costs of health care.

Use the data

- Suppose total government spending in 2015/16 was £750 billion. Using the data in Figure 1 and Figure 2, calculate the size of the NHS's deficit as a percentage of its total government spending.
- The article states that the NHS recorded a deficit of £0.93bn in April–June 2016. Is this likely to be higher or lower than this for Jan–March 2016?
 - Given this, does the prediction of a £2.2bn deficit for 2015/16 seem like an overestimate or underestimate?

Test your knowledge...

- Using Figure 1, describe the trends in NHS satisfaction between 2000 and 2016.
- Define the term 'government failure'.

Extended-response question

- Discuss the effectiveness of introducing a £5 charge for visits to the GP, using the data in Figure 1. Does this represent a government failure?

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Answers

Mark scheme: extended-response questions

25 marks

Level of Response	Response
5	Strong answer with well-grounded evaluation <ul style="list-style-type: none">• Clear understanding of the economic ideas• Applied accurately to the question, using supporting data well• Sound, well-reasoned analysis• Strong, well-supported evaluation
4	Strong answer, with some good evaluation <ul style="list-style-type: none">• Clear understanding of the economic ideas• Applied accurately to the question, using supporting data well• Some sound, well-reasoned analysis• Reasonable evaluation content, with some support
3	Reasonable answer, but poor evaluation <ul style="list-style-type: none">• Adequate understanding of the economic ideas• Satisfactorily applied to the question, using some supporting data• Adequate analysis, might be underdeveloped or lacking in depth• Reasonable attempt at evaluation, but lacking support for a judgement
2	Fairly weak answer <ul style="list-style-type: none">• Limited understanding of economic ideas• Loosely applied to the question• Limited analysis, may be unfocused or incorrect• Limited attempt at evaluation, likely to be unsupported
1	Weak answer <ul style="list-style-type: none">• Poor understanding of relevant economics• Very poor analysis• Unsupported or irrelevant evaluation

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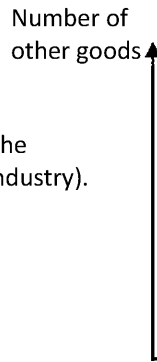
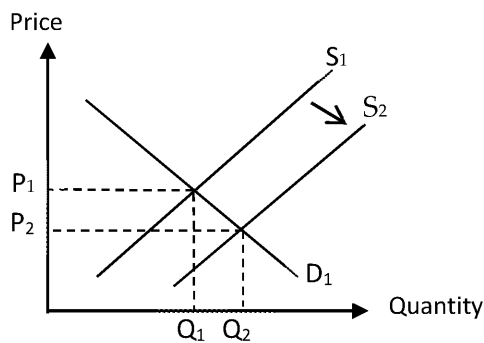
Case Study 1 – Innovation at Ford

Data response questions

- (a) 102.29%
(b) 61.4%
- VW’s profit fell massively as a result of the emissions tests scandal in September 2015.
- One of the big disadvantages of specialisation is that workers get fatigued / bored or over again. Ford tackled this by offering very high wages, encouraging them to maintain that there are other disadvantages of specialisation, but this is the one that relates to health.
- Of the four factors of production (land, labour capital, enterprise), capital probably had the most success (the machines used on the assembly line). You could also argue that it was their rivals, as this is what the article is mostly concerned with.

Test your knowledge...

- Your PPF should show a pivot outwards of the PPF as shown in the graph (right). 1 mark for labelling axes correctly, 1 mark for showing initial PPF, 2 marks for showing pivot out (1 mark if you showed a parallel shift out – right idea but not quite correct, as the question assumes production increases only in the automobile industry).



- You should show a shift to the right of the supply curve, showing a higher market price and higher quantity (left). 1 mark for correct labelling, 1 mark for identifying the new equilibrium.

Extended-response question

- In this case, one advantage of specialisation is that teachers should become experts in their subject, teaching it all the time. After several years of teaching, a teacher should be familiar with the subject and be better able to tackle them than if they covered a wide range of subjects. However, it could be argued that teachers may lack a certain breadth of knowledge for them to make important links between subjects (after all, different subjects are taught in different years). Furthermore, it is possible that specialisation would make a teacher tired of their subject, teaching the same things year on year. It is also possible that teachers may get overly attached to their subject (e.g. in economics, new developments occur regularly) – but this could also be true for other subjects. Another disadvantage of not specialising teachers is that it might be hard to recruit teachers in different subjects: teaching could be of a lower standard in a teacher’s less-preferred subject.

Case Study 2 – Black gold

Data response questions

- At the start of 2014 the price was just under \$100 a barrel (say \$98), and at the start of 2015 the price was just under \$40 a barrel (around \$37). This is a fall of around 62% $[(98 - 37) \div 98]$. 55–70%
- In the short run, we assume that consumers can’t change their habits quickly (e.g. the cost of transport from a car to something else), so they don’t respond to changes in oil price (oil price is inelastic). In the long run, consumers can change their behaviour more, but demand for oil has few good substitutes.

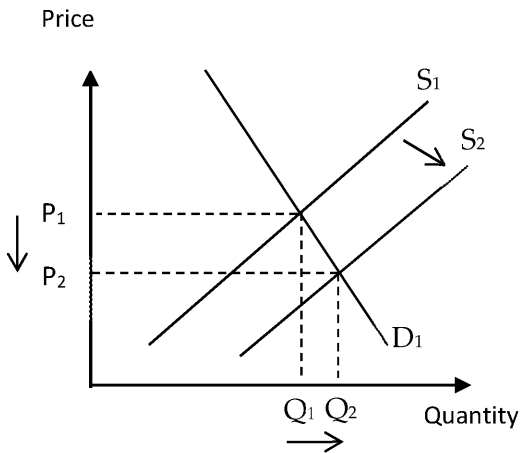
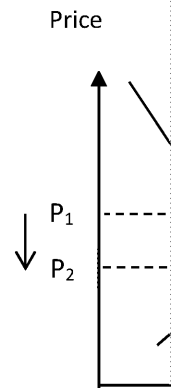
Test your knowledge...

- Renewable energy is a substitute for oil in many cases, so a growing interest in the environment is expected to reduce the demand for oil. (1)

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2. (a) This diagram (right) should show a shift to the left in demand, resulting in a fall in price and quantity. 2 marks for correct labelling, 2 marks for showing shift correctly.



- (b) This diagram (left) should show a shift to the right in supply, resulting in a fall in price and quantity. 2 marks for correct labelling, 2 marks for showing shift correctly.

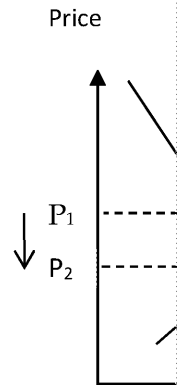
Note that in these diagrams demand is assumed to be inelastic, but this is not necessary.

Extended-response question

1. Renewable energy is an alternative source of energy to oil, so in economics terms we call it a substitute. Since the price of this substitute has fallen, demand for oil will shift to the left, as shown.

The shift in demand reduces the quantity and price of oil in the market. There are some additional points you could make for evaluation marks:

- There might be a time lag between the introduction of this new technology and a change in demand for oil; it takes time to switch between the two types of energy sources.
- Demand for oil might become more price elastic, since there is now another viable substitute good.
- The size of the change in demand depends on how cheap and clean the new technology is.



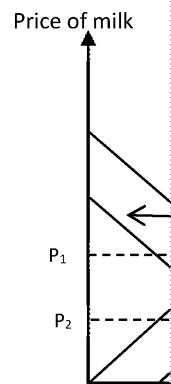
Case Study 3 – The UK dairy market in decline

Data response questions

1. The three functions are: rationing, incentive and signalling.
2. At its peak the price of milk was just under 35p per litre (say 34.5p). By Dec 2015, the price had fallen to 24p per litre. The percentage change is: $((34.5 - 24 \div 34.5) * 100 = 30\%$ fall in price (accept 27–33%)
3. This statement might be partially true, but the number of dairy producers is not the only factor. Examples of why this statement might not hold include:
 - The number of dairy farmers may be falling but if the remaining farmers increase production, the total supply will not rise
 - If people's demand for milk falls, this could offset the effect of a fall in the number of producers
 - If supply from foreign milk producers remains high, prices may not increase

Test your knowledge...

1. Your diagram should look something like that on the right: price should definitely have fallen, but quantity may have risen or fallen (or remained unchanged, as in this diagram) depending on the size of the shifts in demand and supply. In your answer you must clearly show the change in equilibrium from A to B. 1 mark for labelling axes, 1 mark for shift in supply, 1 mark for shift in demand, 1 mark for change in equilibrium.



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- Possible variable costs could include: cost of food for the cows, utility bills (this on the type of tariff), transport costs, and labour costs. Fixed costs (costs that do not include: cost of land, utility bills, and cost of certification (e.g. for organic farming) are variable depending on the situation (e.g. cost of buying cows might be fixed or variable). Give an example for each type of cost.
- Since the demand curve is equal to the average revenue curve (1), this suggests that the demand curve is relatively flat (1). In other words, average revenues fall only gradually as output increases.

Extended-response question

- There's no right answer to this. On the one hand, it might be bad for milk producers if consumers substitute even when the price is higher – this could be an indication that our demand curve is relatively flat. On the other hand, it could indicate a gap in the market – if dairy farmers can create a product that is better than your average milk (in terms of taste, quality, etc.) then consumers may be willing to pay a higher price. The answer should look at both sides of the argument.

Case Study 4 – Football ticket prices

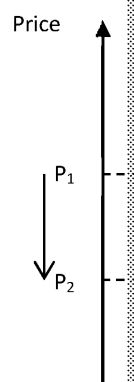
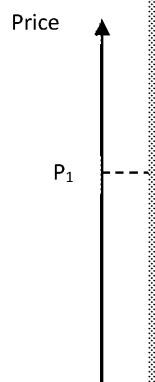
Data response questions

- The tickets are below the market price.
 - (ii)
- These clubs are based in London, where living costs are much higher than the rest of the country. This could explain why they charge higher ticket prices.
- There is no right answer to this. If clubs were profit maximisers, we would expect them to charge higher prices (although arguably they already are high). However, they may anticipate that charging higher prices will lead to lower profits in the long run, so perhaps keeping prices relatively low. Alternatively, some clubs may genuinely care more about the welfare of their fans than maximising their profit. It probably depends on the club in question.

Test your knowledge...

- $$PED = \frac{\% \Delta QD}{\% \Delta P} = \frac{-4}{20} = -0.2$$

1 mark for method, 1 mark for answer.
 - Since the value is between 0 and -1, this indicates that demand is inelastic. (1)
- Your diagram should look something like this (top right):
1 mark for labels, 1 mark for inelastic demand curve, 1 mark for perfectly inelastic supply curve, 1 mark for showing the equilibrium price and quantity.
 - Your diagram should show a shift to the right in supply, resulting in a fall in price and an increase in quantity (as shown in diagram bottom right).



Extended-response question

- The argument from the football clubs' perspective could be that increasing ticket prices will increase revenues, allowing the club to invest for the future (e.g. buy more players, expand youth programme, expand stadium size, etc.). Furthermore, at the market equilibrium level, all of the tickets should still be sold. In this case, then, the market would be economically efficient.

This argument seems sensible when applied to normal markets, but you could argue that it doesn't seem to work in this case: as Liverpool's experience shows. The price rise might lead to a backlash from fans, who might not buy tickets even if they could as a protest (higher ticket prices could be regressive, i.e. unaffordable to lower-income fans). This is a way in which this differs from a normal market: usually in economics we assume that consumers are not concerned with the outcomes of others.

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Case Study 5 – Organic food vs Poundland

Data response questions

- Figure 1 shows that Poundland had a 0.28% share of the retail market in 2013, and the value of the retail market in 2013 was £360bn. Therefore, Poundland's market share (rounded). Answers from 0.95–1.05bn are acceptable.
- Poundland's products are likely to be inferior goods (i.e. after a fall in income, demand falls). The income elasticity of demand should be negative.
- There is no right answer to this: there are many possible explanations. One could be that discount retailers found that they were happy with the quality of these goods, and that this way. Another could be that the end of the recession hasn't seen incomes rise so consumers change their habits.

Test your knowledge...

- (a) $YED = \frac{\% \Delta QD}{\% \Delta Y} = \frac{-12.9}{-5} = 2.58$ (1 mark for formula, 1 mark for answer – from the graph). Since $2.58 > 1$, this means that organic produce is a luxury good (demand falls more than proportionally). (1)

(b) This is not true for France, since the article states that there was consistent growth in the recession (i.e. demand increased despite a fall in income), so organic produce is not a luxury good in France.

Extended-response question

- Your answer should first note that demand for discount goods would be expected to fall and demand for organic goods would be expected to rise (since they are luxury goods). Some ways in which you could evaluate this answer:
 - The passage states that discount retailers such as Poundland have continued to grow during the recession. This may indicate that consumers are favouring these discounters over organic goods (change in tastes). However, you could also argue that a significant rise in income during the recession (change in tastes). However, you could also argue that a significant rise in income during the recession (change in tastes).
 - The change in the market for organic food will also depend on people's tastes or French consumers, are not convinced that organic food is worth paying more for. This is because consumers, are not convinced that organic food is worth paying more for extra income elsewhere.
 - The answer depends on the size of the increase in income, and whether that increase is due to consumers or not.

Case Study 6 – Online news vs print news

Data response questions

- There are any number of possible answers; for example, you might have: Pepsi and other branded products (e.g. breakfast cereal), different brands of toothpaste, different brands of washing powder.
- Tabloids (e.g. *The Sun*, *Daily Mail*) have declined more than the broadsheets (e.g. *The Times*, *The Guardian*) in relative terms. There are many possible reasons for this: perhaps online tabloid content is more appealing, or perhaps the privacy/phone-hacking scandal surrounding *The News of the World* affected the buying of tabloids.
- In 2005, the circulation of each newspaper (in descending order) was roughly: 3.4m, 2.8m, 2.4m, 1.8m, 1.4m, 1.2m, 0.8m, 0.4m, 0.3m, 0.2m. This sums to 7.8m in total. By 2015, the circulations were roughly 2m, 1.7m, 0.5m, 0.4m, 0.3m, 0.2m, 0.1m, 0.1m, 0.1m, 0.1m. This total is 4.5m. This is a fall of around 3.3m copies, or a 38.5% fall (answers between 2.7m and 4.5m are acceptable).
- Some news content is easier to access for free than others. Publications which offer free access (e.g. *The Daily Mail*) are more likely to have customers willing to pay for a subscription, while those which offer paid access (e.g. *Financial Times*) are more likely to have customers willing to pay for a subscription, since information elsewhere. If *The Daily Mail* started charging for access to its website, it would lose much success, since similar content can be found elsewhere for free.

Test your knowledge...

- (a) $XED = \frac{\% \Delta QD \text{ of Good A}}{\% \Delta P \text{ of Good B}} = \frac{0.7}{6} = (+) 4.2\%$ (1)

(b) Change in demand for online news = $(0.7 \times 6) = (+) 4.2\%$
- Possible reasons: reading print newspapers improves information retention, online news is more convenient, with adverts, online newspapers may require readers to click to another page, some readers prefer reading a paper copy of something to reading online.

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Extended-response question

1. A fall in the price of tablets/e-readers would make online news more accessible to more people, reducing the 'price' of online news.

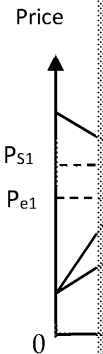
Based on this, we would expect that demand for online news would go up, and demand for print news would fall (since it is a substitute good). There are several factors which might influence the size of the price fall.

- The size of the price fall.
- The extent to which people switch to using tablets/e-readers (i.e. the price elasticity of demand for e-readers).
- Many people already have laptops or smartphones that they might use to read news, so the demand for print news might not be affected by this price change.
- Many people will simply prefer print news, regardless of the cost of devices to read it.

Case Study 7 – The UK housing market: pulling up the ladder?

Data response questions

1. In 2001, private renting only made up around 10% of tenures, and by 2014 this had increased to almost 20%. This is a doubling of the share of tenures (or a 10 percent point increase).
2. This suggests that average earnings have not changed much over the period (if average earnings had increased in line with house price increases, we would expect the price-earnings ratio to be flatter).



Test your knowledge...

1. This statement is normative, since it is a value judgment (even though many would agree with it!) (1)
2. (a) A negative externality is the cost to third parties that is not reflected in the price of a good. (similar definition acceptable) (1)
 (b) Negative externalities could arise from housebuilding via destruction of the natural environment, for example. (1 mark for each)
 (c) 1 mark for correct axes, 1 mark for showing MSC and MPC (they do not have to be shown), 1 mark for showing how the social equilibrium price and quantity are determined, 1 mark for showing welfare loss.

Extended-response question

1. The benefits of this scheme would be that more new homebuyers would be able to buy homes, which should increase the standard of living of those affected, and it may boost economic growth. The downside is the increased immobility of labour.

On the other hand, the fact that existing planning rules will have to be scrapped suggests that there are external costs to building these homes. This could negatively affect the quality of life in the area. It could be an opportunity cost to this scheme if the government subsidises the low price of the homes. In your conclusion, you could be either for or against the policy, so long as your arguments are clear.

Case Study 8: Market power: Gazprom

Data response questions

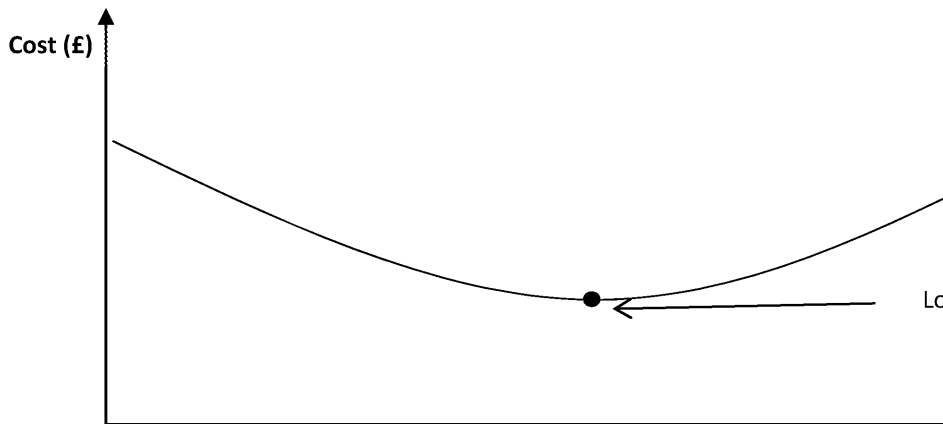
1. This was around the time of the financial crisis, which would have meant that gas prices (including gas) would have fallen. This is the most likely explanation of why Gazprom's profits were high.
2. This can't be inferred from the graph. Although Gazprom was producing more gas, for example, prices were low or costs were high.
3. (a) 549 billion cubic metres (400 divided by 0.729 to the nearest billion)
 (b) 2,963 billion cubic metres (400 divided by 0.135 to the nearest billion)

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Test your knowledge...

- Possible objectives include: profit maximisation, growth, survival, increasing market maximisation, satisfying, maximising social welfare (1 mark for each up to two).
- Your diagram should show the long-run average cost curve for a firm:



At high levels of output the firm can achieve low average costs due to economies of productively efficient, potentially passing on these cost savings to consumers in the scale (which is when an increase in inputs leads to a greater than proportional rise in resources, e.g. financial economies (buying raw materials in bulk), managerial economies marks for diagram, 3 marks for explanation).

Extended-response question

- Your answer should explain that the entry of the US into the gas market should make competitive markets are associated with lower prices for consumers and lower profit (Gazprom). However, this depends on several factors.

Firstly, it may not have been the case that Gazprom was exploiting its market power in its market position to improve innovation it could have been beneficial for consumers, to recognise somewhere that not all monopolies are bad for consumers). It may also have been the case that the EU were controlling Gazprom's market power to a certain extent (the fact that they have at least evidence that they are aware of their market power).

The impact of the US's entry into the market will also depend on how sustainable it is. If the US, it may no longer be willing to export gas to the EU. Similarly, if the supply of gas is not sustainable, it may not be able to contribute to the export market.

Case Study 9 – Quasi-public goods

Data response questions

- This pattern arises because traffic is higher in the summer months (Q2 and Q3).
 - This was the period of the recession: road traffic might have fallen as people chose to walk/cycle rather than use cars. The number of vehicles used to transport goods and services in the economy slowed down.
 - The index for Q4 2015 is around 124, and the index for Q4 1993 is 100, so this represents an increase of 24%. $300 \text{ billion miles} \times 1.24 = 372 \text{ billion vehicle miles}$ is a reasonable and acceptable.

Test your knowledge...

- Public goods are non-excludable (1). This means that one person's consumption of the good does not prevent another person (who hasn't paid for it) from consuming that good (1). Public goods are also non-rival (1), which means that one person's consumption of the good does not diminish another person's ability to consume the good (1).
- Roads would seem to be non-excludable (1), since one cannot be prevented from using that road. However, they are not completely non-rival (1), since if too many people use the road, it becomes congested. Therefore, roads aren't a pure-public good (1), they are a quasi-public good (1).
 - As with roads, police services seem to be non-excludable (1), but they are also non-rival (1). There are only a finite number of police officers on the job at any one time, so if too many people need help, they will not be able to help everyone. Therefore, policing isn't a pure-public good (1).

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Extended-response question

- At the start of your answer you could explain that public goods have the characteristic of non-excludability in consumption. Public goods have a high private cost but a relatively low social cost. For example, if every person pays for all the roads in the UK, it will cost them a huge amount, but they will all benefit: everyone else will 'free ride'.

You could mention that individual roads could be private (or a small-scale 'police' for the road system as a whole would not be able to function effectively if it were private).

Case Study 10 – Should the government tax sugar?*Data response questions*

- The tax is 16.5% of the retail price plus £3.79. 16.5% of £8 is £1.32, so the total amount of tax is £5.11. The total price (rounded to the nearest whole number) is £13.90.
- Two of the main dangers are: (1) that if people are addicted to smoking, their income will rise and they will buy more cigarettes; (2) a rise in imported/smuggled cigarettes that avoid the tax.
- At 4% ABV, total tax is $18.37 \times 4 = 73.48$ pence per litre. For half a litre, the tax would be 36.74 pence.

Test your knowledge...

- These types of goods create negative externalities: this is when the social cost of consumption is greater than the private cost (sometimes these types of goods are called 'demerit goods').
- (a) $PED = \frac{\% \Delta QD}{\% \Delta P} = \frac{-2}{+5} = -0.4$ (1 mark for method, 1 mark for answer)
(b) This indicates that demand for alcohol is inelastic (since $-1 < PED < 0$) (1)
- It's possible that the sugar tax could be regressive: i.e. poorer people spend a larger proportion of their income on sugar. This is because a sugar tax would be a fixed amount, rather than means tested (which is based on the person's income). This would worsen inequality. This does depend on the behaviour of consumers: if families were to substitute other goods that weren't taxed, this wouldn't be a problem (up to four).

Extended-response question

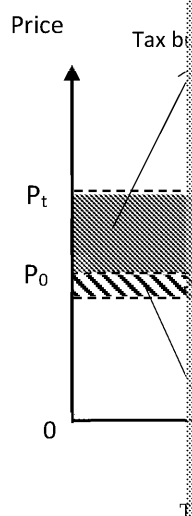
- With this question the main point you should discuss is how the price elasticity of demand for sugar will affect the success of the policy. If demand is price inelastic, the diagram should look something like that on the right.

Since demand is price inelastic, the tax increases the price from P_0 to P_t , but quantity demanded only falls a small amount from Q_0 to Q_t , with much of the tax burden falling on the consumer. Since the whole purpose of the tax is to reduce consumption, in this case the tax is ineffective. It may have regressive effects on the incomes of those who consume a lot of sugar.

As an evaluative point, you could argue that the government could use the tax revenue to help fund greater NHS spending.

You should identify that if demand were elastic, then the result would be different: in this case, a tax would significantly decrease sugar consumption (which is the intended effect).

You may argue that a tax would be more effective if it were combined with other measures to reduce sugar consumption, such as an information campaign on the dangers of excessive consumption. Another alternative to regulating the amount of sugar food producers are allowed to use in their food is a tax on sugar (which is a better alternative to the tax).

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Case Study 11 – Solar panel subsidies

Data response questions

- (a) According to the article, the subsidy costs households £7 each, so for 25 million households that's £175 million.
 (b) The new cap is £100 million, so this is £75 million more.
- The UK has significantly higher subsidies than all other G7 countries except for the USA (considering that the USA's GDP is several times larger than the UK's, so as a proportion of the most out of these countries).
- The original subsidy was 12.47p per kWh. A cut of 84% would mean that the new subsidy is 2.13p per kWh ($12.47 - (0.84 * 12.47)$).

Test your knowledge...

- One disadvantage is that it can encourage inefficiencies in firms (1), another is that it increases government spending (1).
- Possible answers include: information provision, funding research into solar panel technology, increasing consumer income (1 mark for correct point).

Extended-response question

- The main advantage of increasing subsidies is that it leads to more energy generation and avoids most of the negative externalities associated with fossil fuel energy generation (negative externality from production diagram).
 Another argument in favour would be that even if costs to the taxpayer are higher in the short term, it leads to lower prices in the long term once the benefits of renewable energy are realised.
 You should explain the disadvantages of subsidies you stated in question 2: it may encourage inefficiency and an opportunity cost involved with the subsidy.
 You could mention that the case for subsidising solar panels depends on whether that is the best energy source (you don't need to discuss any of the science behind this: you could say that windpower may be more effective).

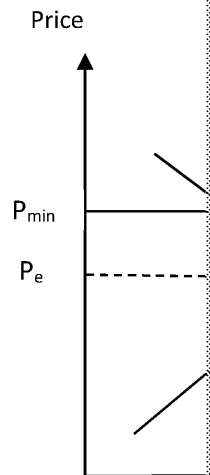
Case study 12 – A minimum price for alcohol?

Data response questions

- This can be broken down into stages (which don't have to be done in this order): if the price is set at 50p per unit rather than 50p, then a litre of 40% spirit would have to be at least £16 (4/5 of 20). Then if it were 44% strength, it would have to be at least £12 (3/4 of 16). So the final answer is £13.20.
- This question is very subjective, there's no right answer. You might think that the price is too high, so we should be worried. You might think that the proportion isn't too bad, and that's fair (but we can't know for sure whether they will keep falling or not). Of course it's a fair price for people who drink moderate amounts very regularly, which could be just as damaging as drinking too much.
- The 16–24 age group saw the greatest rise in teetotalism; an eight percentage point increase.

Test your knowledge...

- Your diagram should show the minimum price imposed above the market equilibrium (1). This leads to an excess of supply over demand (between Q_d and Q_s) (1). 1 mark for correct axes, 1 mark for supply and demand curves. Note that for this question the elasticities of the curves don't matter.
- Possible examples of a merit good include: education, healthcare, museums, libraries, in-work training schemes (1) (other answers acceptable if justifiable). Merit goods are goods that have positive externalities, and the benefits from merit goods are likely to be underestimated by consumers (1). This lack of awareness/information about the nature of merit goods (and the fact that positive externalities are usually not included in the price) can explain why they are underprovided in a free market (2).



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Extended-response question

1. After discussing the effect of imposing a minimum price (see diagram in part 1), and has negative externalities, the key point you should discuss for this question is the price elasticity of demand. Based on the diagram in part 1, if demand is highly inelastic then the minimum price will result in a small change in quantity demanded. If this is the case, the policy is likely to be unsuccessful (more government in revenues, but drinkers will still consume more than the socially optimal quantity). On the other hand, if the price elasticity of demand is relatively elastic, then demand will be more successful.

Some other points you could mention in your answer include:

- In reality, it is likely that different groups of people will have different elasticities of demand.
- The effect of the policy will depend on how much higher the minimum price is. A higher price would change demand more, but it would also penalise occasional/moderate drinkers.
- You could mention the effect on businesses: it would be good for pubs (who price above the minimum) but bad for supermarkets (who probably charge prices below the minimum). This is the SWA's argument: businesses that provide cheap alcohol would have less room to raise prices, usually bad for consumers).
- You could include an externalities diagram, but it is not required.

Case Study 13 – Reforming the NHS*Data response questions*

1. The passage states that roughly 18% of government spending goes towards the NHS. If the total budget was £750bn, this would be £135bn ($0.18 * 750$). The deficit was about £2.2bn, which is 1.6% of the budget ($2.2 \div 135 * 100$). Any answer between 1.5 and 1.7% is acceptable.
2. (a) It would be expected that the deficit would be higher because Jan–March are the months with the most health problems (assuming that NHS budgets are not automatically adjusted for seasonal variations).
(b) Given this, the £2.2bn seems like an underestimate. If each three-month period adds up to £3.72bn for the year: way more than predicted, especially if the winter months are the most expensive.

Test your knowledge...

1. In this period the proportion of people saying they were quite or very satisfied increased from 70% in 2010, before falling slightly (1). On the other hand, the proportion of people saying they were not satisfied fell to a low of around 18% in 2010, before picking up again slightly (1). (You don't need to mention the marks: but you must mention whether the trends are going up or down.)
2. Government failure is where an intervention by the government results in a net welfare loss (i.e. where the intervention by the government creates inefficiencies / market failures).

Extended-response question

1. Some of the benefits of this policy are already mentioned in the article: it should reduce the number of missed appointments or missing their appointments, and it should raise revenue for the NHS. It should also reduce the costs for the NHS by reducing pressure on GPs.

However, there are ways in which this policy could introduce government failure. For example, it could lead to genuine health problems from going to the doctor, perhaps making their conditions worse in the long run (or causing unnecessary deaths).

You could evaluate this point by arguing that the charge could be means tested (i.e. based on income), so that everyone could afford to go to the doctor if they needed to.

Another potential problem would be administrative costs for implementing such a policy. These would be higher if the charge were means tested.

You could evaluate the policy by arguing that £5 is too high or too low (e.g. you could estimate the total cost by multiplying the price by the average number of visits and the size of the population: $5 * 5 * 65 \text{ million} = \text{£}1.6\text{bn}$, assuming that the number of visits does not change). Since the deficit is £2.2bn, you may argue that this is not high enough, or you may argue that it is a good starting point.

A good answer should discuss both the benefits and the costs of the policy, and evaluate the overall impact.

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