2.10 Teacher view

Market failure — asymmetric information (HL)

Index

The big picture

Real-world issue 2: When are markets unable to satisfy important economic objectives – and does government intervention help?

One of the most important assumptions of free-market economics is that there is perfect information. This has been a cornerstone of economic theory for 200 years, ever since Adam Smith first published his ideas about how markets work.

But what happens when there is no perfect information? Does it matter if consumers have more information than producers, or if producers have more information than consumers?

Asymmetric information is the concept that explores situations where there is not perfect information. It is an extremely important concept, and Nobel prizes in economics have been awarded to economists who have published papers on this topic.

Figure 1. The sale of used cars is an example of asymmetric information.

Credit: Getty Images tomeng

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A typical example of when the producer has more information than the buyer is the second-hand car market. If you are buying a second-hand car, how do you know the answers to the following questions:

- Has it been in any accidents?
- What repairs has it had?
- What is the quality of any repairs made?
- How did previous owners drive the car? Were they careful and slow, or haphazard and risky?

The economist George Akerlof wrote about this in a famous paper called *The Market for Lemons: Quality Uncertainty and the Market Mechanism*, published in 1970.

In this subtopic, we will explore two types of information asymmetries: adverse selection and moral hazard; and what the government can do to solve the problem.

Concept

Choice
Efficiency

The assumption of perfect information being available to all participants in a free market enables the best choices to be made. Markets will only be efficient if all participants know enough information to make the best rational decisions. For consumers and producers, this means knowing all the costs and benefits of each decision, and subsequently being able to maximise their utility (satisfaction) and profit respectively. Asymmetric information in markets causes poor choices to be made and thus markets to be inefficient.

Consider the following: how do you know that your dentist has told you the truth when you needed treatment? If you had to pay for braces, for example, how do you know the price was quoted correctly?

Student view

2. Microeconomics / 2.10 Market failure — asymmetric information (HL)

Asymmetric information

Section Student... (0/0) Feedback Print (/study/app/pp/sid-186-cid-754025/book/asymmetric-information-id-30498/print/) Assign

In addition to externalities and public goods, discussed in subtopics 2.8 (/study/app/pp/sid-186-cid-754025/book/the-big-picture-id-29875/) and 2.9 (/study/app/pp/sid-186-cid-754025/book/the-big-picture-id-30425/), there is another important example of market failure. It is when economic

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decisions are made based on incomplete information. This happens when not all of the parties involved in a transaction have perfect knowledge or all the information to make an economic decision.

If all buyers and sellers were aware of every single product available at every level of price, we would have allocative efficiency. However, in reality this is not the case, which creates a market failure.

Important

Free market theory assumes that all participants have perfect information. In reality, this is rarely the case.

When one party in an economic transaction has access to more or better information than the other party, we say that there is asymmetric information.

When this happens, the market outcome will not be the most efficient one, as the decisions are made based on incomplete information. This means that consumers are not getting the maximum benefits they could and producers are not making maximum profits.

In most cases of asymmetric information, the producer has more information than the consumer. They can therefore charge a higher price than the socially optimum amount. However, there are also cases where the consumer has more information than the producer, which enables them to pay less than the socially optimum price. From society's point of view, there is an over-allocation of resources to the production of the good when the producer has more information than the consumer. When the situation is reversed, there is an under-allocation of resources.

Student view

Figure 1. Car insurance is a common example of asymmetric information.

Credit: Getty Images ferrantraite

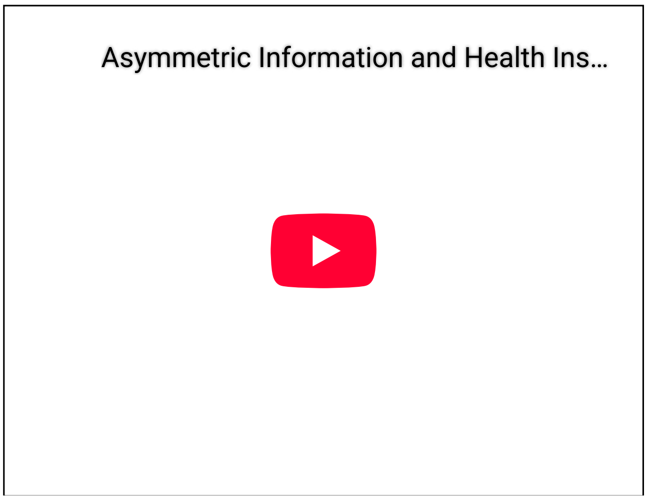
A good example of when the consumer has more information than the producer is when individuals purchase insurance. The consumer has better information about their own behaviour than the insurer. Consumers can lie to insurers about how they behave, or they might change their behaviour after they purchase insurance, and it is difficult for insurers to monitor them. For example, a driver might purchase car insurance based on being a steady and considerate driver, but the driver might start driving faster and more carelessly, and the insurer might not find out. This is an example of what economists call moral hazard, which we will discuss further in the coming sections.

Other examples of underallocation of resources caused by consumers having more information than producers:

- Consumers may be able to take advantage of producers. If consumers know more about the quality or value of a product than producers, they may be able to negotiate a lower price or demand a higher quality product. This can lead to producers making less profit or even going out of business.

- Producers may be less likely to innovate. If producers know that consumers have more information about their products, they may be less likely to invest in research and development. This can lead to a slower pace of innovation and fewer new products being developed.

Another industry that often suffers from asymmetric information is health insurance. Watch the following video about asymmetric information and health insurance.



Theory of Knowledge

One of the many causes of the Financial Crisis of 2008 (https://www.investopedia.com/ask/answers/050515/how-did-moral-hazard-contribute-financial-crisis-2008.asp)was asymmetrical knowledge. In some cases, banks issued loans to homeowners who could not afford it. It seems banks were unable to evaluate the riskiness of the loans.

For almost 200 years, economics was dominated by free market theory. One of the pillars of free market theory is the assumption of perfect information. Perfect information means that consumers and producers have perfect knowledge of price, costs and can fully evaluate risk

Knowledge question: To what extent is perfect knowledge a reasonable assumption?

3 section questions

Adverse selection

The first of the two types of information asymmetry is adverse selection. This type of information asymmetry describes a situation in which one participant has more information before the transaction occurs.

Important

It is important to remember that adverse selection occurs before the transaction, which is easily confused with the type of asymmetric information we will discuss next.

One example of this is an all-you-can-eat buffet. Customers with big appetites will be charged the same price as customers with small appetites, and will use that information to take advantage of the amount of food on offer. The restaurant can't tell who has a big or small appetite. However, it is more likely that people with large appetites will go to all-you-can-eat buffets, and so the restaurant loses.

Figure 1. Restaurants selling all-you-can-eat buffets can suffer from adverse selection.

Credit: Getty Images Jure Gasparic/EyeEm

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Another example of adverse selection can occur in insurance. If insurance companies do not ask probing questions about people's lifestyles to ascertain whether people live healthily or not, then health insurance prices will be the same for people living healthy lifestyles as for people who have less healthy lifestyles or underlying health conditions. People who think their health is at risk due to a less healthy lifestyle or existing health conditions will be more likely to buy health insurance. They will also be more at risk of illnesses and accidents, which will increase the costs to the insurance company. This means that insurance companies will want to increase the prices of their health insurance, making it unnecessarily expensive for people with healthy lifestyles to purchase insurance. Consequently, there is adverse selection, as people who are less healthy will buy health insurance.

The market for lemons

George A. Akerlof's paper *The Market for Lemons: Quality Uncertainty and the Market Mechanism*, published in 1970, was one of the first academic papers published on the topic of information asymmetry. It is about the sale of poor-quality second-hand cars.

Figure 2. In the US, 'lemon' is slang for a low quality second hand car.

Credit: Getty Images hdagli

Student view

In the US, 'lemon' is a slang term for a bad car, whereas a 'peach' is a high quality car. Akerlof stated that unknowing buyers will only pay a price that averages out the prices between the 'lemons' and the 'peaches'. This price will be higher than the price should be for 'lemons', and lower than the price should be for 'peaches'. As a result, sellers with 'lemons' are more likely to bring cars to the market than sellers with 'peaches', and the market will only be supplied with 'lemons'. Akerlof concluded that the price mechanism has failed to allocate resources efficiently.

3 section questions

2. Microeconomics / 2.10 Market failure — asymmetric information (HL)

Moral hazard

The second of the two types of information asymmetry is called moral hazard. This type of information asymmetry describes a situation in which one participant takes on more risky behaviour because they do not pay the consequences of that increased risk. A major difference between adverse selection and moral hazard is that, in the case of adverse selection, the participant has more information *before* the transaction takes place; in moral hazard, the asymmetric information changes their behaviour *after* the transaction has occurred.

Be aware

Adverse selection and moral hazard are easily confused with each other. Adverse selection takes place before the transaction; moral hazard occurs after.

The origin of the term is thought to come from 17th century insurance companies. While the use of the word 'moral' implies something bad or unethical taking place, this isn't necessarily the case.

One example of moral hazard occurs, once again, in insurance. Some customers behave more riskily because they know that they are insured. If drivers are involved in an accident and they have insurance, then they only pay a fraction of the costs resulting from the accident. Because they know this, they might take more risks when driving, compared to if they were uninsured.

However, it is important to remember that we do need an insurance system to spread the significant costs of car repairs that people wouldn't otherwise be able to afford, despite the possibility that some drivers may take on more risk.

Figure 1. An aerial view of the financial district of New York.

Credit: Getty Images Tetra Images

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Financial markets also experience many examples of moral hazard. One example is that lenders are always able to avoid holding debt by selling it when they need or want to, and they pass on the risk of holding the undesirable assets. It is important to be clear that this behaviour isn't necessarily unethical – a bank can engage in riskier lending or investment practices and still operate within the law. Transactions only become unethical when assets are sold to participants who are misled.

Worked example 1

State whether the following examples are categorised as adverse selection or moral hazard.

- A dentist advising on treatment
- A worker applying for and getting a job that they know they will not be good at
- Someone applying for a credit card without a credit limit

Example	Type of asymmetric information	Reason
A dentist advising on treatment	Adverse selection	Here the dentist possesses more information than the patient before the transaction occurs.
A worker applying for and getting a job that they know they won't be good at	Adverse selection	Here the employee has more information prior to the transaction. Potentially, the employer suffers higher costs because they have unknowingly hired the wrong person.
Someone applying for a credit card without a credit limit	Moral hazard	Being issued a credit card without a limit may make someone make rash spending decisions after the credit card has been awarded. Bankruptcy laws exist to support people in financial difficulties, and their debt can be written down or off. This is the reason banks do limit people's spending.

Student view

The principal—agent problem

Another source of moral hazard occurs due to the principal–agent problem. The principal–agent problem occurs when a person can make decisions on behalf of another person. The most commonly cited example is the relationship between a manager and an owner of a business.

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The owner of a business is interested in growing the size of the business and earning profits from the business. The manager of the business is usually paid with a salary, not with profits from the firm, so their incentives are different from those of the owner. Additionally, the manager will think about their own success in the business, as well as the welfare of other employees. The manager of the business may take more risk than the owner would, because their salary does not depend on future business earnings. One way to solve this problem would be to reward the manager with profits from the firm.

2 section questions

2. Microeconomics / 2.10 Market failure — asymmetric information (HL)

Government responses to asymmetric information

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To solve this market failure, the government can try to increase the amount of information consumers have about different products and regulate the market so that producers can't take advantage of consumers' lack of knowledge. The government can achieve this through:

- Legislation: for example, adding health warnings on cigarette packets
- Regulation: for example, monitoring the quality of service provided by healthcare services

Legislation

Legislation refers to laws enacted by lawmakers of a country. The main goal of legislation that combats information asymmetry is to prevent the incomplete sharing of information. Governments can legislate to force consumers and producers to disclose all relevant information without hiding or forging it.

Student view

The main method of combating adverse selection in the insurance industry is to make it illegal for customers to give fraudulent information. Applicants cannot lie about whether they smoke or not when applying for health insurance. Of course, it is very difficult to know whether people are telling the truth, and so fraud should have serious consequences to deter fraudsters.

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Figure 1. Drugs and medicines have been the subject of significant legislation to prevent the misselling of them to the public and preventing asymmetric information.

Credit: Getty Images Mareen Fischinger

Most countries will enforce legislation regarding the information supplied by producers about the nature of the goods and services they sell. Have you ever heard of the phrase ‘snake oil salesman’? This phrase has come to mean deceptive marketing employed by people selling products. The origin of the phrase is from the US during the late 1800s. Chinese immigrants to the United States used snake oil as a treatment for arthritis, because the high omega-3 content was able to treat inflammation. Wanting to capitalise on the effectiveness of this medicine, but not being able to source Chinese water snakes, some people began marketing other ingredients as snake oil instead. Eventually, the US government needed to clamp down on the sale of products being sold that contained none of the advertised ingredients. The Food and Drug Act of 1906 was an early attempt to legislate against deceptive marketing. Today in the EU, it is required that all ingredients of food products are correctly listed on the product’s label in order of volume (so the first ingredient in the list is the most prominent in the product).

Student
view

International Mindedness

Legislation regarding the quality of products has consequences for international trade. Countries with differing levels of protection for customers would not be able to trade with each other unless these standards were aligned. These types of standards were a key feature of the Brexit negotiations between the European Union and the United Kingdom from 2017 onward.

One significant problem with legislation is that the government can change it, although not very easily. For example, the Glass–Steagall Act was enacted in 1933 after the Wall Street crash. It was largely responsible for the separation of commercial and investment banking practices so that consumer deposits were protected from being used for risky investments by banks. However, after a

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period of financial deregulation under successive governments since the 1980s, the Glass–Steagall Act was repealed by the Gramm–Leach–Bliley Act in 1999. Many argue that allowing these earlier protections to be removed eventually led to the 2008–09 global financial crisis.

Activity

There is a lot of legislation in place to protect consumers in financial markets from sellers taking on too much risk. One example in the EU is that all consumer deposits are protected up to the value of EUR 100 000.

Spend a little time researching to find more of these in class or as homework.

Case study

Can we trust organic or natural industrial standards?

In many consumer goods industries, specific words are used to convince us to buy more of the products. For example, organic food, or makeup made with natural substances. But what do these terms mean, and can we trust firms when they use them?

According to the Encyclopaedia Britannica (https://www.britannica.com/topic/organic-food), the term 'organic' means that 'food is grown without the use of synthetic chemicals, such as human-made pesticides and fertilizers, and does not contain genetically modified organisms (GMOs)'. The market for organic food is now a multi-billion dollar industry, and consumers are increasingly aware of modern food production techniques and their impact on their own health and the environment. Since the 1990s, countries have set out organic food standards that are legally enforced, although these vary in their comprehensiveness. Companies cannot claim that something has been grown or farmed organically when it hasn't been. However, having products vetted by organic standards agencies costs money, and many small businesses may not have to abide by the legislation.

Source: Adapted from Organic Food (http://www.britannica.com/topic/organic-food), Britannica.

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Figure 2. A farmer with his chickens outdoors.
Credit: Getty Images Fertnig

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Questions to consider:

- Besides the word organic, what other words are used by companies to convince us of the merits of their products (such as in the food or cosmetics industries)? What do these words mean?
- Do companies have to prove anything when they make certain claims about their products?

Table 1. Advantages and disadvantages of legislation.

Advantages	Disadvantages
Cost-effective	Government can change legislation
Improves transparency of information	Can take time to enact
	Is subject to political debate
	Needs to be enforced

Regulation

Regulation refers to the monitoring of industries by government agencies. It is also possible that industries self-regulate.

As we have seen, the finance sector is particularly susceptible to the problem of asymmetric information. Both buyers and sellers can be responsible for sharing incomplete information before and after the transaction has occurred. In particular, financial innovation since the 1990s has made it even more difficult for participants to fully understand financial market transactions. Countries therefore employ regulation, usually done by specific regulatory authorities, to oversee and monitor financial corporations. See **Table 2** below for some examples of financial regulatory bodies in different countries.

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Regulation is important to ensure that laws are enforced and legislation is being adhered to. It is costly, as governments will need to spend tax revenues on departments that will undertake the regulation of specific industries. However, it is a good way to hold companies to account and enforce change. For example, to prevent utilities companies (that are natural monopolies) from burdening consumers with unreasonably high prices and complicated bills, governments of most countries will have regulators in place to oversee these industries.

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Figure 2. The Securities and Exchange Commission in Washington, USA.

The energy regulator in the United Kingdom, Ofgem, has implemented a price ceiling on the price of energy and severely limited the pricing strategies that companies can adopt. It was well known that energy bills in the country were overly complex, and that consumers couldn't easily understand what they were paying for or whether they were paying the best price for their household energy use. It was also clear that decreases in wholesale energy prices didn't seem to be passed on to consumers. Energy bills also steadily rose in price over a long period of time to become unaffordable for many. The price cap aims to make household bills more affordable for consumers, and companies are also restricted to a range of four different tariffs that consumers can choose from.

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Watch the following video in which Ofgem informs consumers about some of these measures.

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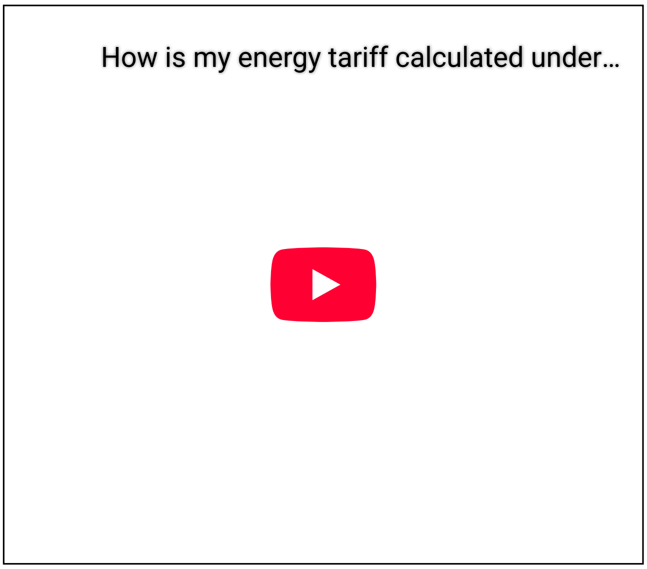

Table 2. Financial conduct authorities in different countries.

Regulatory body	Country
The Financial Conduct Authority	United Kingdom
Securities and Exchange Commission	United States
Financial Services Agency	Japan
Autorité des marchés financiers	France
China Banking Regulatory Commission	China

⚠ Be aware

Remember that legislation and regulation are not the same thing. Legislation refers to the laws implemented by governments; and regulation refers to the monitoring and management of markets in order to enforce legislation.

Student view

Table 3. Advantages and disadvantages of regulation.

Advantages	Disadvantages
Often necessary to enforce legislation	Expensive
Effective in holding companies to account	Investigation into malpractice will take time
	Subject to political debate

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Advantages	Disadvantages
	Departments can experience internal problems

Provision of information

The final measure the government can take is to directly provide information to consumers. This is particularly easy for industries that it regulates, such as energy or telecoms. For example, government ministers or state agencies can appear on news media to disseminate information to consumers to help correct information asymmetries, or government offices can publish videos and pamphlets to improve the amount of information available to consumers. Many governments also use social media and advertisements to reach as many people as possible.

Examples of information provision by the government include public health campaigns, information about city planning and public projects, public tenders and changes of legislation or regulation. All of these increase the information available to the public, lessening the problem of asymmetric information.

For example, in 2020 during the COVID-19 pandemic, the government of France used its Instagram account to disseminate information about how to use a protective face mask, as well as how to recognise one that has been tested and proven to work. This reduced the information asymmetry consumers could have faced when shopping for a face mask.

Governments can also provide information about the employment services they run, such as Singapore has done. The video below is part of the government's campaign to inform citizens about upskilling and employment opportunities.

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Video 2. How? Can! (Part 1).

More information for video 2

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Table 4. Advantages and disadvantages of provision of information.

Advantages	Disadvantages
Cheaper	Might not always be as effective as strong intervention
Empowers consumers to make their own decisions about what is best for them	Still carries an opportunity cost

3 section questions

2. Microeconomics / 2.10 Market failure — asymmetric information (HL)

Private responses to asymmetric information

Section Student... (0/0) Feedback Print (/study/app/pp/sid-186-cid-754025/book/private-responses-to-asymmetric-information-id-30519/print/) Assign

The government doesn't have to be the only one to intervene. Affected stakeholders, such as firms, can institute changes themselves to improve information asymmetries. There are two main methods: by signalling and by screening. The difference between the two is who acts first.

Signalling

Signalling as a solution to information asymmetries was first proposed by Michael Spence (another Nobel Prize winner in this field). In cases of adverse selection, in which participants have asymmetric information before the transaction, the party with more information can communicate, or signal, which 'type' they belong to. In the example of the all-you-can-eat buffet that we discussed previously, people could signal to the restaurant whether they have big or small appetites.

Student view

A more realistic example would be when hiring new employees. Firms will want to hire people with particular skills. Prospective employees have the ability to signal themselves by highlighting their particular skill sets and qualifications in their CVs (resumes). Qualifications can be verified and there will be consequences for anyone making fraudulent claims on their CVs when applying for a job.

To solve the problem of 'lemons' in the used car market, sellers should find some way of providing a guarantee of the quality of the car. This is why you can buy used cars as well as new cars from BMW dealerships, for example. The brand endorses the quality of the car, and is able to offer customers their support in the form of warrantiesand vehicle checks.

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Figure 1. Official dealerships selling second-hand cars can improve the quality of information.

Credit: Getty Images Maskot

Table 1. Advantages and disadvantages of signalling to improve asymmetric information.

Advantages	Disadvantages
Can be cost-effective if providing the signal doesn't require any further action	There must be consequences for inaccurate information
Increases the amount of information available to all participants	Takes time for the newly provided information to be taken up
Improves market efficiency	

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Screening

Screening was first proposed by Joseph Stiglitz. The party without information needs to be able to cause the other party to reveal their information. As with signalling, screening is most effective in dealing with problems of adverse selection.

Be aware

Signalling and screening are very similar. The main difference is that signalling is done by the participant with more information, and screening is done by the participant with less information.

Returning to the above example of recruitment, employers can insist that prospective employees have certain qualifications before they will interview them; for example, by requiring that all applicants have degrees or can speak a particular language. This significantly narrows the number of shortlisted candidates. However, requiring that a candidate comes from a particular calibre of university or scored well in their exams isn't a foolproof method of finding good candidates. Candidates from poorer backgrounds who would be equally suited to the job might not have the opportunity to attend good schools or want to take on student debt to be able to attend university.

Another method of screening is for firms to offer a range of products, so that the participants with more information select the option that is best for them. For example, insurance companies offer products that appeal directly to more or less risk-averse customers, perhaps by making customers pay something towards the damage of the car in the event of an accident.

Table 2. Advantages and disadvantages of screening to improve asymmetric information.

Advantages	Disadvantages
The participant with less information is acting and may be more likely to trust the information.	Can still select the wrong participants
Increases the amount of information available to all participants	
Improves market efficiency	

Student
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Exam tip

As with all evaluative essays, essay structure is one of the most important things to master in your preparations. You need to practise planning lots of essays during your DP so that you can do it quickly in the exam. If you were asked about asymmetric information, which real-world example would you build your answer around? It is important to contextualise the entire

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response if you want a high mark.

4 section questions

2. Microeconomics / 2.10 Market failure — asymmetric information (HL)

Checklist

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What you should know

By the end of this subtopic **2.10 Market failure — asymmetric information**, you should be able to:

- Define the terms asymmetric information, adverse selection, moral hazard, signalling and screening.
- Explain, using examples, that market failure may occur when one party in an economic transaction (either the buyer or the seller) possesses more information than the other party.
- Explain, using examples, the concept of adverse selection.
- Explain, using examples, the concept of moral hazard.
- Evaluate possible government responses, including legislation, regulation and provision of information.
- Explain and evaluate possible private responses to asymmetric information, such as signalling and screening.

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2. Microeconomics / 2.10 Market failure — asymmetric information (HL)

Investigation

Section Student... (0/0) Feedback Print (/study/app/pp/sid-186-cid-754025/book/investigation-id-30521/print/) Assign

Real-world issue 2: When are markets unable to satisfy important economic objectives – and does government intervention help?

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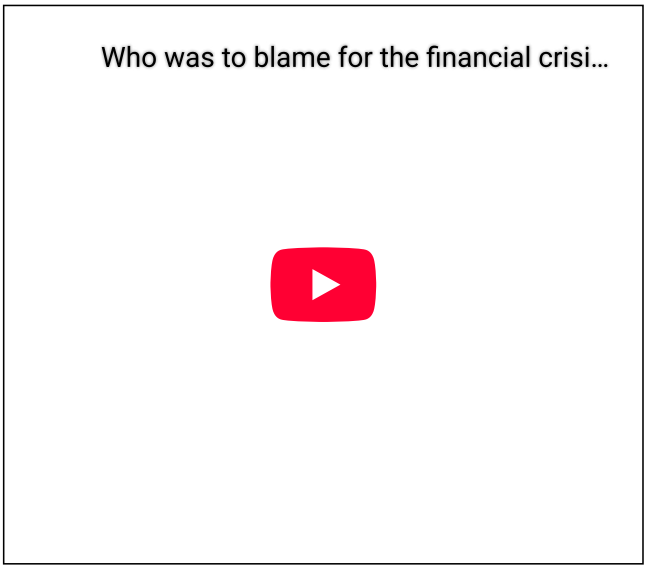

The financial crisis of 2008–09 was a situation in which many information asymmetries took place, of all the types that we have discussed in this subtopic. Watch the video above, which explains how the financial crisis happened, and read the following articles before completing the questions below.

- Adverse Selection and Financial Crises, Koralai Kirabaeva, Bank of Canada Review, winter 2010–2011 (https://www.bankofcanada.ca/wp-content/uploads/2011/02/kirabaeva.pdf)
- The most memorable phrase of the financial crisis taught us the wrong lesson, Nikhil Sonnad, Quartz, 13 September 2018 (https://qz.com/1387808/the-financial-crisis-in-2018-the-lessons-of-too-big-to-fail-and-moral-hazard/)

Answer the following questions.

1. With reference to the concept of adverse selection, explain how mortgage lending practices caused asymmetric information.
2. With reference to the concept of moral hazard, discuss the bailout programmes of governments during the financial crisis of 2008–09.

You should approach these questions as you would a part (b) in Paper 1, worth 15 marks. You must use as much real-world information as you can to support your essays.

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