Positive and Negative Externalities

A-LEVEL & IB ECONOMICS
Lesson Structure

- Private, External and Social Costs/Benefits
- Externalities and Market Failure
  - Negative Production Externality
  - Negative Consumption Externality (not for Edexcel)
  - Positive Production Externality (not for Edexcel)
  - Positive Consumption Externality
- Government Intervention for Externalities
  - Taxes
  - Subsidies
  - Regulations
Oil Spills EVERYWHERE!

Oil is leaking all over the world

This is still bad even though oil was very cheap earlier this year...
Oil Spills as an Externality

If the leakage is from an oil tanker, the *producer* will be the oil exploration company, and the *consumer* will be the oil refinery. However, many *third parties* are adversely affected in an oil spill (e.g. fishing & tourism industries, wildlife seers), which oil companies may not have to be responsible for.

A *third party* is defined as an individual or organisation that is not involved within the transaction of the good/service.

An *externality* occurs when consumption or production of a good has a positive or negative effect on 3rd parties.
Oil Spills as an Externality

This means the actual **social cost** of producing oil is much higher than the **private cost** of extraction for the oil exploration company. Hence, oil exploration companies tend to **overproduce** oil despite society may prefer for them to extract less, causing a **negative production externality**.

**Marginal social cost (MSC)** is the total cost society incurs from producing the next unit of the good. This includes the private cost of producing the oil.

**Marginal private cost (MPC)** is the cost a firm incurs from producing the next unit of the good. It is the cost of extracting the oil in this case.
Some other types of negative externalities...

Pollutionwatch: air pollution in China falling, study shows

Annual deaths have dropped to 1990 levels after 2013 peak thanks to concerted action in key cities
In a negative production externality, the firm incurs lower cost than society as they do not need to pay for external costs (e.g. environmental pollution). This is indicated by having MPC on the right of MSC (remember supply shifts to the right when cost is lower).

Benefits (demand) is not affected and will still be aligned, hence marginal social benefit (MSB) = marginal private benefit (MPB).
To optimise their total benefit, the firm will produce the quantity indicated at the private optimum where MPC=MPB (Q2). This is higher than the desired amount of output for society at Q1, where MSC=MSB.

Hence, the total benefit for society is not maximised as MSC is higher than MSB at Q2. In the oil spill example, this is because the firm does not need to pay for the negative consequences dealt to third parties when extracting (producing) oil.
As a result, there is a social welfare loss indicated by the shaded area, due to the over-production of oil in the society’s perspective. Less oil should be produced as the social cost of producing one unit is currently higher than the social benefit received, meaning it is not allocative efficient.
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Does Social Media Create Externalities?

Social media are interactive computer-mediated technologies that facilitate the creation or sharing of information, ideas, career interests and other forms of expression via virtual communication networks. [Wikipedia]

People also search for:

- Marketing
- Technology
- Advertising
- Video
- Internet

Employees spend over 32% of their time on social media daily for personal work: study

On an average of 2.35 hours are spent accessing social media at work every day according to a TeamLease World of Work Report

The New York Times

Facebook Moves to Stop Election Misinformation

The social network said it would block new political ads in late October, among other measures, to reduce misinformation and interference.

1 week ago

The Washington Post

Teens spend nearly nine hours every day consuming media
Does Social Media Create Externalities?

The manipulation of voting through the selling of social media ads, affecting social institutions and election legitimacy can be argued to be a negative production externality...

Yet, the consumption of social media can also be regarded as a negative consumption externality, given employees may be affecting the profits of their employers, which is a third party...
Negative Consumption Externalities

There is an **overconsumption** of social media as the individual derives a higher benefit from consuming the product than society. There is a negative effect incurred for employers (third parties), which employees do not have to pay for.

Hence, private benefits of consumption (MPB) is higher than social benefits (MSB) for social media consumption at work.
Costs are not affected and will still be aligned, hence marginal social cost (MSC) = marginal private cost (MPC).

Finally, there is a social welfare loss indicated by the shaded area, as the market is over-allocating the amount of cigarettes in the market. The quantity being transacted (Q2) is higher than the market equilibrium quantity. This means it is not allocative efficient.
Negative Consumption Externalities

As shown in the diagram, the market is allocating quantity of cigarettes at \( Q_2 \), but not \( Q_E \). This means it is not allocative efficient and caused the shaded welfare loss.

If it were allocative efficient, marginal social cost would equal marginal social benefit (MSC=MSB) with quantity at QE. This point is called the social optimum.
Typical Negative Consumption Externality

“One in 10 people in a hospital bed are alcohol-dependent and one in five are harming themselves by drinking”

“...the NHS estimates that the cost of treatment (for drinking habits) runs to £3.5bn a year”

“The NHS long-term plan will expand specialist alcohol care teams in hospitals across the country to tackle problem drinking and prevent 50,000 admissions over the next five years.”

Demerit goods are defined as goods that detrimental and socially undesirable to us. They are usually over-consumed in society. Thus they generate negative consumption externalities.
Some positive externalities of social media, when they produce advertising for companies?
- Free calls/communication tool
- Free entertainment... especially in the comments section
- Free distribution of knowledge, skills and expertise

How do we even start to understand the social costs and benefits technology brings? The problem perhaps is that tech companies are still incentivised by its private costs/benefits to shareholders?
We can explain social media as a positive production externality given its merits of providing free services from the production of advertising space for brands.

Positive production externalities are comparatively harder to think about and relatively uncommon in exams...
Positive Consumption Externalities

Coronavirus vaccine: 8,000 jumbo jets needed to transport doses globally, says IATA

Governments are told they must plan now for the "mission of a century" to ensure a vaccine reaches every corner of the globe.

Face masks could be giving people Covid-19 immunity, researchers suggest

Mask wearing might also be reducing the severity of the virus and ensuring that a greater proportion of new infections are asymptomatic.
Positive Consumption Externalities

When you buy a mask, you are benefiting others by reducing the risk of getting them infected. As a result you are benefiting a third party, and of course saving the NHS money and capacity!
Merit goods are defined as goods that are beneficial and socially desirable to us. Hence they are usually under-consumed in society, generating positive externalities.
In a positive consumption externality, consumption of the good will bring about positive effects on third parties. This means to maximise society’s benefit, we need to consume the good more.

Currently, the good is being under-allocated and under-consumed in the market. The shaded area is the potential welfare gain if consumption increases from the original quantity (Q₁) to the social optimum (Q₂).
Externalities are Market Failures

Why are externalities market failures?

Externalities prevent markets from operating at the social optimum point (where demand = supply), meaning they do not have allocative efficiency, thus leading to welfare or deadweight loss.

What has to be done when there’s market failure?

G___________ I____________
Tackling Negative Externalities

What can the gov do?

- Regulation (and fines)
  Regulatory bodies for specific industries can help monitor and fine companies if they generate negative externalities and try to avoid the cost. In this example, BEIS investigated BP... but spent £50K doing so resulting in government failure

- Legislation
  Ban the demerit good, or pass laws punishing negative externality creators
Taxing Negative Externalities

- **Taxes**
  Taxes reduce the profits of suppliers, reducing production and shifting supply to the left. We can see market quantity reducing from $Q_1$ to $Q_2$, back to the socially optimum amount, hence clearing out the welfare loss. But how can the gov know the right amount of tax?

- **Minimum Price**
  Similar to taxes, min price can reduce market quantity back to the socially optimum amount when implemented at price $P_2$.

- **Advertising/Education**
  Gov can sponsor campaigns to educate consumers regarding detrimental effects of demerit goods – this aims to reduce demand to the point where quantity drops to $Q_2$. 

![Diagram of Negative Production Externality Example](image-url)
Tackling Positive Externalities

What can the gov do?

- **Regulation & Legislation**
  You can be required by law to consume certain goods, making them mandatory, hence increasing quantity supplied in the market and solving the market failure... but how much should the government provide?

- **Advertising/Education**
  Gov can sponsor campaigns to educate consumers regarding beneficial effects of merit goods, which would increase quantity demanded to reduce the negative consumption externality.
Subsidizing Positive Externalities

What can the gov do?

- Subsidies
  Subsidies can help increase supply of the good, when the gov covers part of the production/consumption cost. This increases profits in the industry and shifts supply outwards. We can see market price decreasing, and an increase in quantity to the social optimum \(Q_2\), solving the market failure.

- Maximum Price
  The gov can also set a price ceiling to force the price down to \(P_3\), which will increase quantity consumed in the market, however how may this affect profits of supplier and sustainability of the industry?