



# POSITIVE EXTERNALITIES

## Notes

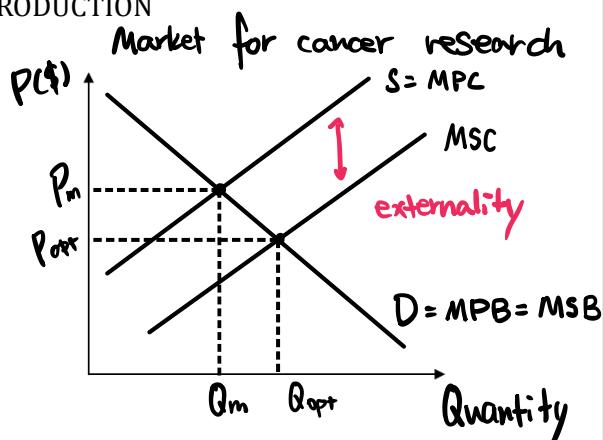
### WHAT ARE POSITIVE EXTERNALITIES?

- A positive externality happens when the side-effect on third parties are beneficial.
- There are two types of positive externalities:
  - Production
  - Consumption

### POSITIVE EXTERNALITIES OF PRODUCTION

- Occur when... a firm produces a good / service and there is a positive benefit to third parties
- Leads to a situation where... the cost to the private individuals is higher than the cost to society.
- Ultimately leads to deadweight loss (or potential welfare gain).

### MODELLING POSITIVE EXTERNALITIES OF PRODUCTION



### WHERE IS THE 3<sup>RD</sup> PARTY BENEFIT?

- Research and development of new technology by a firm:  
More technology for society.
- Universities publishing research from professors:  
Research and knowledge for society
- A lumber company re-planting trees:  
Improving clean air.
- Firms training workers that later switch jobs:  
More skills and talent for society.
- A chocolate factory that releases pleasant smells while producing:  
Good smell for societies

### SOLUTIONS TO POSITIVE EXTERNALITIES OF PRODUCTION

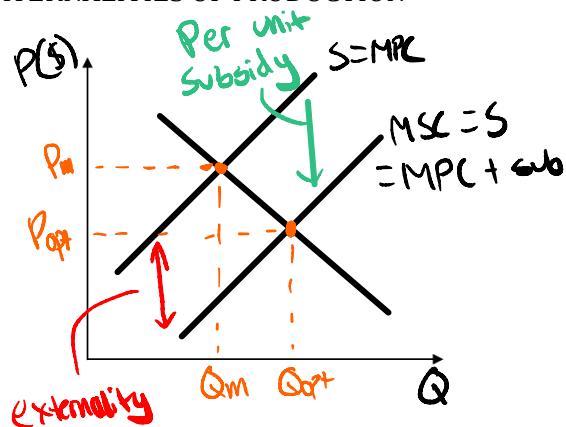
- Direct provision of a good or service.

Example: Governments often engage in R&D in medicine or pharmaceuticals.

- Subsidies

- Both solutions shift the supply curve to the right, ideally obtaining the allocative efficient equilibrium.

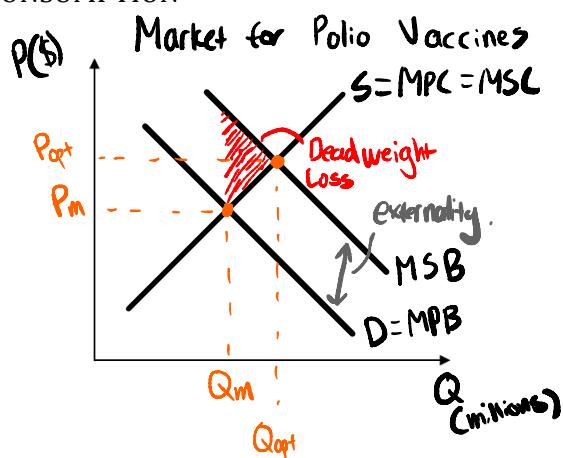
## MODELLING SOLUTIONS TO POSITIVE EXTERNALITIES OF PRODUCTION



## POSITIVE EXTERNALITIES OF CONSUMPTION

- Are benefits to third parties when a good or service is consumed.  
Leads to a situation where the benefit to society is greater than the private benefit to the individual.
- Ultimately leads to deadweight loss (or potential welfare gain).

## MODELLING POSITIVE EXTERNALITIES OF CONSUMPTION



## WHERE IS THE 3RD PARTY BENEFIT?

- Attending school and getting an education:

Using skills for societal benefit.

- Using healthcare services, such as a family doctor:

More healthy, able to be more productive, less sickness spread to others.

## THE CASE OF MERIT GOODS

- These are goods or services that are considered desirable for consumers + society by the government, but are likely underconsumed and under provided by the market.
- We call them merit goods, but they are usually services.
- Examples: hospitals, schools, sports facilities and operas.  
↳ Makes people culturally enriched.  
More happy, more productive.

## WHY ARE MERIT GOOD UNDERCONSUMED?

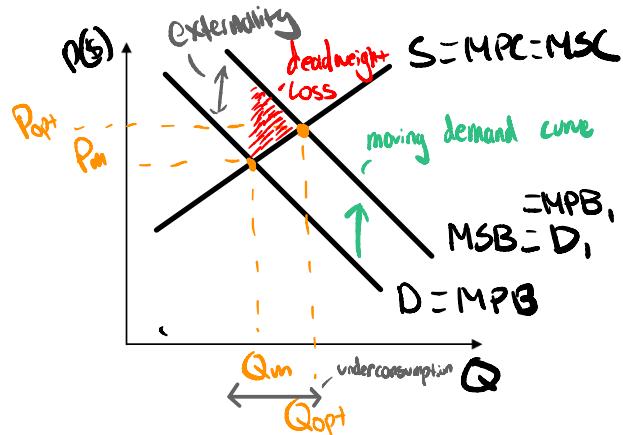
- Lack of recognition of positive externalities.
- Low levels of income and poverty.
- Consumer ignorance.

## SOLUTIONS TO POSITIVE CONSUMPTION EXTERNALITIES

1. Legislation
  - Example: Make education mandatory up to certain age.
2. Positive advertising
  - "You should consume this."  
Convince consumers it's in their benefit to consume.
  - Example:  
"Get vaccinated" advertisement campaigns.

## MODELLING SOLUTIONS TO POSITIVE CONSUMPTION EXTERNALITIES

# Market for Secondary Education



## SOLUTIONS TO POSITIVE CONSUMPTION EXTERNALITIES

### 3. Direct government provision

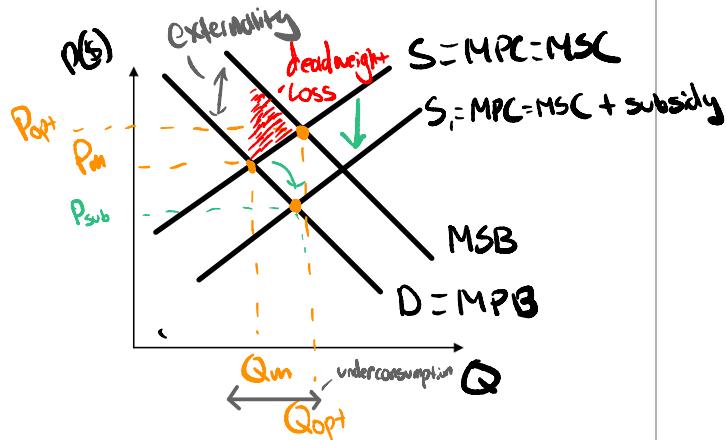
- Example: Ontario provides free education from K-12.

### 4. Subsidies

- Example: Ontario subsidizes the cost of University education.



## Modelling Solutions to Positive Consumption Externalities



# DATA RESPONSE PRACTICE: HPV VACCINE

In a data-response exercise (paper 2 of the IB examinations), you will receive a selection of text and a set of questions based on that text.

## PRACTICE DATA RESPONSE TEXT:

### HPV<sup>1</sup> vaccine: The growing campaign for including boys<sup>2</sup>

- ❶ It makes economic sense to give the HPV vaccine to boys, say advocates who are stepping up pressure on the Ontario government to fully subsidize school immunization programs against the common sexually transmitted virus. In Canada, the HPV vaccine is seen as a **merit good**, and girls between ages nine and 13 can receive a free HPV immunization no matter where they live.
- ❷ A Ministry of Health statement released last Wednesday referred to "economic and societal factors" as reasons the province is still considering whether to expand the program, without elaborating, beyond mentioning "cost-effectiveness and impact on the health system."
- ❸ Many doctors and researchers say arguments against providing the vaccine free to boys, based on cost, are unfounded. "The economics right now makes a lot of sense for funding boys," said Dr. Vinita Dubey, associate medical officer of health for Toronto Public Health. She said the cost would be "actually very minimal." The National Advisory Committee on Immunization (NACI), which helps to shape public policy, recommended in 2012 that the HPV vaccine should be provided to boys, just as it is to girls.
- ❹ Quebec policymakers decided four years ago that it would not be cost-effective to extend the free HPV programs to boys because so many girls already take part. But in 2013, when Alberta became the second province to offer HPV vaccinations to boys, its health minister referred to the importance of "today's investments" to reduce the "health-care costs of tomorrow." Those in the public health debate do point out that vaccinating girls also offers boys protection, with so-called "herd immunity."
- ❺ So how much <sup>expensive in</sup> does it cost? That number varies. An individual can expect to pay as much as \$200 for one injection of Gardasil 9. However, there are reports that school boards have been able to negotiate a lower price of between \$70 and \$90 for a single

<sup>1</sup> Human papillomavirus (HPV) refers to a group of more than 100 different types of related viruses, according to the Canadian Cancer Society. It's the most commonly transmitted STI. An HPV infection can cause cervical, anal, vaginal and penile cancers, among others.

<sup>2</sup> Adapted from: Ruryk, Jackie. "HPV Vaccine Only for Girls? Why It Makes Economic Sense to Include Boys." CBCnews, CBC/Radio Canada, 7 July 2015, [www.cbc.ca/news/health/hpv-vaccine-the-growing-campaign-for-including-boys-1.3127916](http://www.cbc.ca/news/health/hpv-vaccine-the-growing-campaign-for-including-boys-1.3127916).

dose of Gardasil 4 — the vaccine currently offered in Canadian schools and one that protects against four types of HPV shown to cause cervical cancer and anogenital warts. Merck and GlaxoSmithKline are selling their HPV vaccines for less than \$5 a dose to developing countries and there's room to lower the price in Canada. Federal officials can help lower the cost by lobbying pharmaceutical companies for better deals.

More equitable

Big

- ⑥ In the absence of vaccination, it is estimated that 75 per cent of sexually active Canadians will have a sexually transmitted HPV infection in their lifetime, according to NACI.

## QUESTIONS:

1. a) Identify two positive externalities associated with vaccines, as they are found in this article. [2 marks]
- b) Define the term **merit good** indicated in bold in the text (**paragraph ①**). [2 marks]
2. Using a MC/MB diagram, explain the market failure for vaccines illustrated in this case. [4 marks]
3. Using an MC/MB diagram, explain why a positive advertising campaign encouraging boys to get the vaccine may not be effective. [4 marks]
4. Using information from the text and your knowledge of economics, evaluate whether the Ontario government should fully fund school HPV virus immunization programs for boys. [8 marks]

**Hint:** for question 4 you are required to “evaluate” a government policy. Here is a helpful framework to help you evaluate:

- D Diagram
- E Explanations of the Diagrams
- E Examples – quotes from the text
- D Definitions of the one or two most important terms (not everything should be defined!)

The evaluation provided should be based on CLASSP:

- C Conclusion – it needs one!

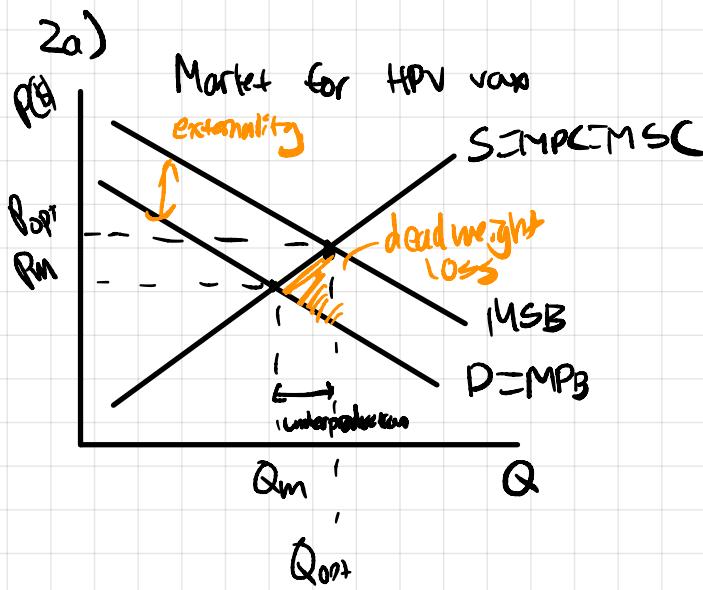
The conclusion should be proven by looking at **one or more** of the following:

- L Long-run and short-run implications
- A Assumptions made in the text
- S Stakeholder impacts
- P Pros and cons of a decision
- P Prioritization – what is the best argument?

# Practice Test

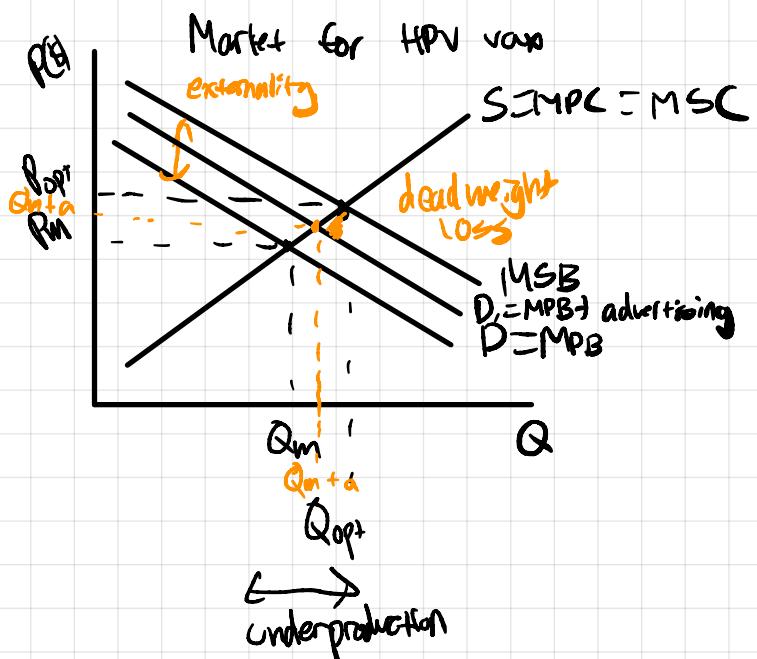
- la) Society benefits from less healthcare costs.  
Benefit from herd immunity
- lb) Merit goods are goods desirable for consumers and society but underproduced by the market.

likely to be



Market failure caused by positive externality of consumption because consumers don't recognize the pos external benefits.

$(Q_{opt} - Q_m)$  is the amount of quantity needed to produce so that allocative efficiency is reached and deadweight loss is removed.



Advertising can move demand up and reduce deadweight loss but may not be fully effective.

Some people's demand won't be changed by ads and so all of the deadweight loss isn't gone

$(Q_m, P_m)$  shifted to  $(Q_{m+ad}, P_{m+ad})$  which closer to  $(Q_{opt}, P_{opt})$  (optimal) but not perfectly allocatively efficient.

## **SYNTHESIS AND EVALUATION**

---

Synthesis and evaluation require that you use your critical thinking skills to come to some sort of **conclusion or judgement** in an essay based on an **analysis** of theory, facts, examples, models and other points.

**Analyzing** is drawing out the theory. To conduct an analysis, remember the acronym DEED: Definitions, Explanations, Examples and Diagrams.)



**Synthesis and evaluation** is drawing your conclusions and also challenging the analysis.

We recommend that you take one or more of the following approaches to synthesize and evaluate:

1. Provide a **conclusion**
2. Outline the **long-run and short-run** consequences
3. Critique the **assumptions** of a theory or model
4. Examine the impacts on different **stakeholders**
5. **Prioritize** the arguments
6. Review the **pros and cons**

**To approach your evaluation, think of the acronym CLASPP:** conclusion, long-run/short-run, assumptions, stakeholders, pros and cons, prioritization.

You must use at least one of these. - *always conclusion*



**REMEMBER: You analyze with DEED and then synthesize and evaluation with a CLASPP to hold it all together.**

Here are some important tips and questions you should ask yourself for each of the components of CLASPP:

### **Conclusions**

- What can we conclude from the theory (that you've explained in your analysis)?

### **Long-term and short-term effects**

- Is the change good in the short-term, but in a few years, it will have undesirable consequences?
- Will the policy be really hard on people in the short-run, but it fixes the long-term problem?
- Will this policy fix one problem, but create another?

### **Assumptions**

- Are there some assumptions being made, that the theory depends on that may not hold true? (e.g., although we assume ceteris paribus, the real world does not

work this way. Is there something that would change that would limit the effectiveness of the theory?)

- What are the weaknesses in the theory?
- What is unrealistic about the theory?

### **Stakeholders**

- Who are the winners and losers of this and why?
- What effects would a policy (e.g., an indirect tax) have on the government, consumers, producers and the rest of society?
- Policies (e.g., price ceilings) are often made with particular stakeholders in mind, so are there undesirable effects on other parties (i.e. price increases for consumers)?
- Is the policy great for some groups, but bad for others?

### **Prioritization**

- Which of the arguments presented are the most convincing and why?
- Is there an important normative (i.e. values aspect) that the theory doesn't consider?
- What are societies priorities in relation to what is being done?
  - o Discussing the priorities of a society, or the government is also a good way to keep things in perspective. A policy like subsidising schools is good for families, good for the long-term macro economy, but bad for tax payers who don't have children, what are the priorities as a society?

### **Pros and Cons**

- What are the advantages and disadvantages of this policy?
- What are the costs and the benefits of this policy?
- What are the arguments for and the arguments against this policy?

**Useful phrases to help with evaluation:** Employing the following phrases can be helpful in making evaluations in your commentary.

- On the other hand.....
- However, in the long/short term.....
- The most important cost is..... because....
- ..is somewhat insignificant compared to ...
- Other stakeholders such as....
- In reality the theory may not hold true because....
- This idea is often criticized for...