THE UNIVERSITY OF QUEENSLAND
AUSTRALIA
CREATE CHANGE

ECON2030 - Microeconomic Policy

Tutorial 2: Environmental Policy

Tutor: Francisco Tavares Garcia

THE UNIVERSITY OF QUEENSLAND AUSTRALIA

Assessments

Assessment Task	Due Date	Weighting	Learning Objectives
Report Written assessment	TBC. 22 Aug 13:00:00; 12 Sep 13:00:00; 3 Oct 13:00:00; 17 Oct 13:00:00; 7 Nov 13:00:00	100% 4 Assessments	1, 2, 3

R1.1/R1.2: *"Climate deal struck after Labor and the Greens reach safeguard mechanism agreement"* (ABC, 2023). Provide the economic background of the Safeguard Mechanism. Provide a critical economic appraisal of the mechanism on reaching Australia's climate goals. What would you propose as a better economic policy?

Deadline R1.1: 22nd August 2023; before 13:00

Deadline R1.2: 12th September 2023; before 13:00

Written Assessment

Application for Extension

A penalty of 10% of the maximum possible mark allocated for th

Assessment details and sample assessment

Attached Files: Sample assessment-sample solution.pdf (8
ECON2030 - Written Assignment Rubric -FIN
Chat GPT outputs.pdf (70.514 KB)
Student information written assessment 20

ECON2030 Assessment Questions / Cover Sheet

Attached Files: ECON2030 Cover Sheet (21.018 KB)
Response template - Submit with final draft
Assessment Questions 2023.pdf (200.779 K
Chat GPT template.docx (16.005 KB)

Please make sure that a copy of the ECON2030 coversheet i

THE UNIVERSITY OF QUEENSLAND, SCHOOL OF ECONOMICS

ECON 2030: Tutorial 2

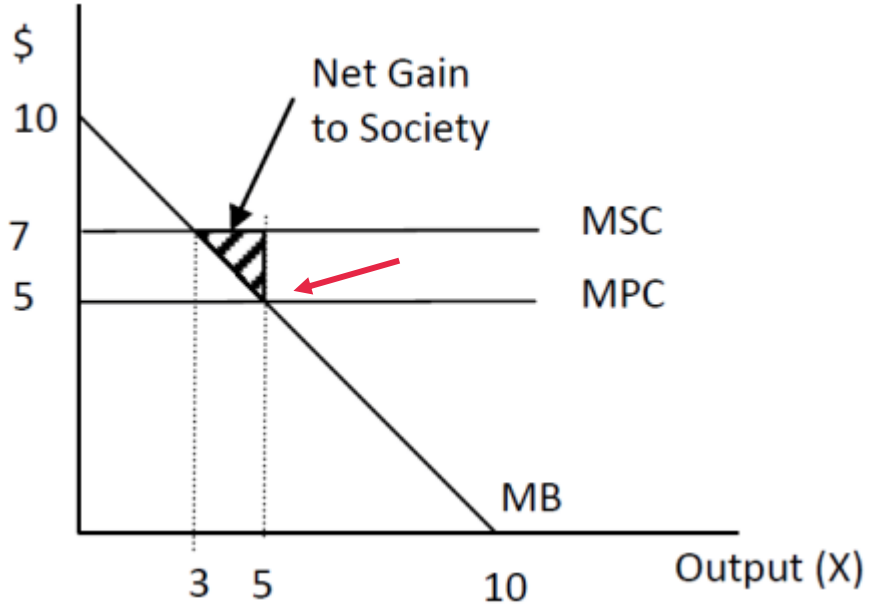
Environmental Policy

1 Market Failure, Pigouvian Tax

The private marginal benefit for commodity X is given by $10 - X$, where X is the number of units consumed. The private marginal cost of producing X is constant at \$5. For each unit of X produced, an external cost of \$2 is imposed on members of society. Support your answer with an accurately drawn graph and numerical calculations.

a) In the absence of any government intervention, how much X is produced?

MB = 10 – X
MPC = 5



MB = MPC
10 – X = 5
X = 10 -5 = 5 units.

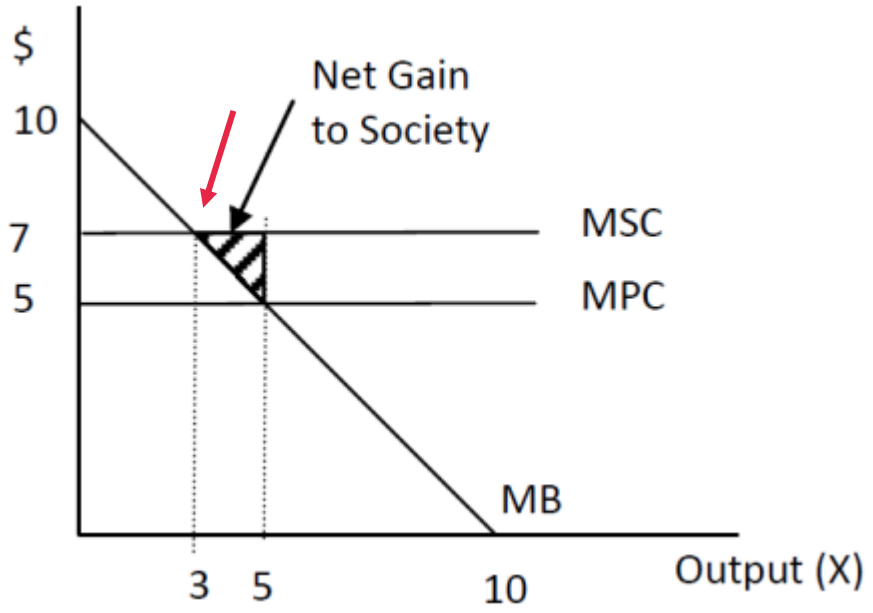
1 Market Failure, Pigouvian Tax

The private marginal benefit for commodity X is given by $10 - X$, where X is the number of units consumed. The private marginal cost of producing X is constant at \$5. For each unit of X produced, an external cost of \$2 is imposed on members of society. Support your answer with an accurately drawn graph and numerical calculations.

b) What is the efficient level of production of X?

MB = MSC
= MPC + MD
10 - X = 5 + 2
10 – 7 = X

X^* = 3 units.

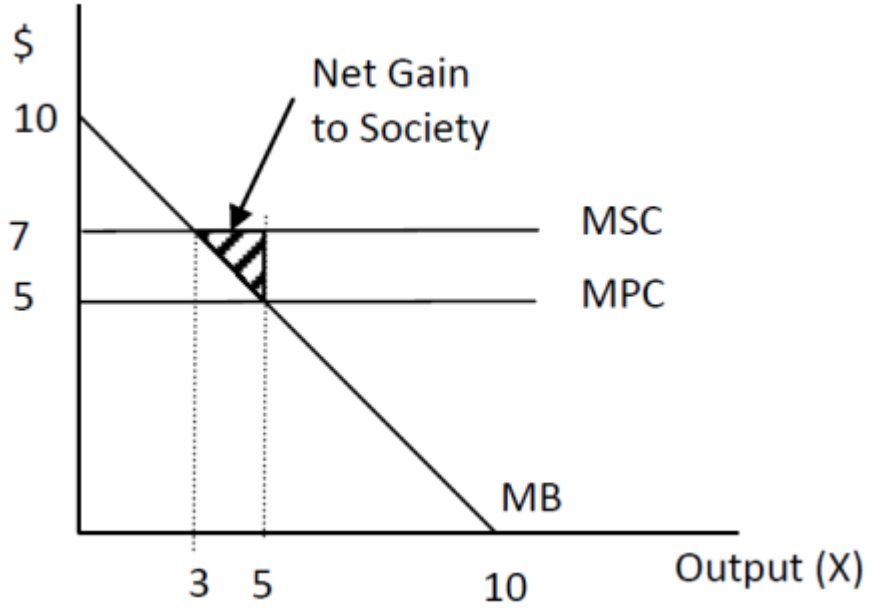


1 Market Failure, Pigouvian Tax

The private marginal benefit for commodity X is given by $10 - X$, where X is the number of units consumed. The private marginal cost of producing X is constant at \$5. For each unit of X produced, an external cost of \$2 is imposed on members of society. Support your answer with an accurately drawn graph and numerical calculations.

c) What is the gain to society involved in moving from the inefficient to the efficient level of production?

The triangle area
(7-5) * (5-3) / 2 = 2.



1 Market Failure, Pigouvian Tax

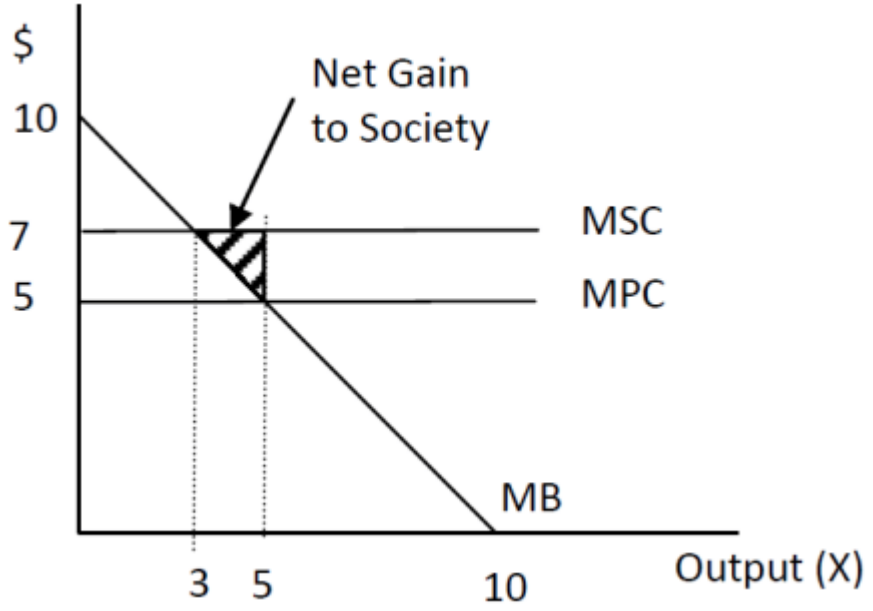
The private marginal benefit for commodity X is given by $10 - X$, where X is the number of units consumed. The private marginal cost of producing X is constant at \$5. For each unit of X produced, an external cost of \$2 is imposed on members of society. Support your answer with an accurately drawn graph and numerical calculations.

d) Suggest a Pigouvian tax that would lead to the efficient level. How much revenue would the tax raise

Pigouvian tax – tax per unit of X produced

Tax = MD(Q*)

MSC – MPC = \$7 – \$5 = \$2 per unit.



Revenue = \$2 x 3 units = \$6

2 Bargaining and the Coase Theorem

Smith can operate her sawmill with or without soundproofing. Operation without soundproofing results in noise damage to her neighbour Jones. The relevant gains and losses for Smith and Jones are listed in the table:

	without soundproofing	with soundproofing
Gains to Smith	150 pw	34 pw
Damages to Jones	125 pw	6 pw

a) If Smith is not liable for noise damage and there are no negotiation costs, will she install soundproofing? Explain.

	without soundproofing	with soundproofing
Gains to Smith	150 pw	34 pw
Damages to Jones	125 pw	6 pw

150 – 125 = $25 34 – 6 = $28

The total net benefit is higher with soundproofing, and it is therefore the efficient solution.

The amount of money Jones must pay Smith to compensate her for lost earnings is less than the cost Jones must pay to do so.

b) How, if all, would your answer differ if the negotiation costs of maintaining an agreement were $4 per week? Explain.

	without soundproofing	with soundproofing
Gains to Smith	150 pw	34 pw
Damages to Jones	125 pw	6 pw

150 – 125 = $25 34 – 6 - 4 = $24

With these negotiation costs, Smith will not put in soundproofing.

c) Now suppose Jones can escape the noise damage by moving to a new location, which will cost him $120 per week. With negotiation costs again assumed to be zero, how, if at all, will your answer to part (a) differ? Explain.

	without soundproofing	with soundproofing
Gains to Smith	150 pw	34 pw
Damages to Jones	125 pw	6 pw

moving
150 pw
120 pw

150 – 125 = $25 34 – 6 = $28 150 – 120 = $30

Jones will move.

3 Market Failure, Pigouvian taxes, and Subsidies

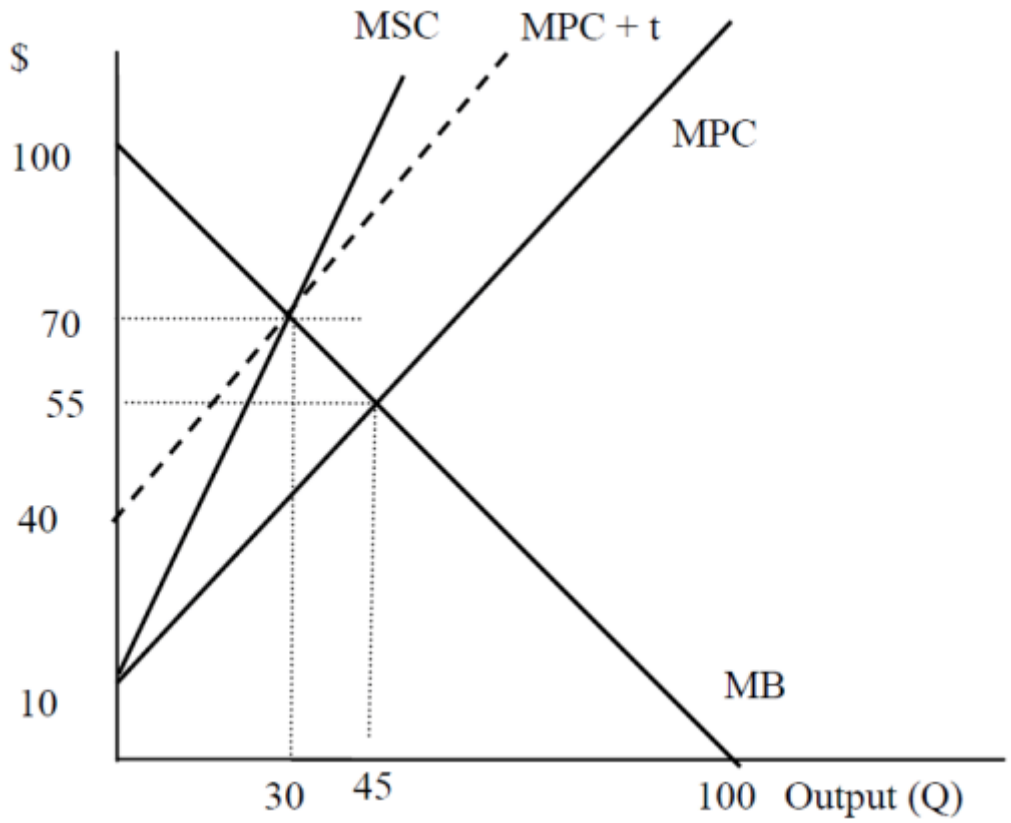
In a market for dry cleaning, the inverse market demand function (i.e. the private marginal benefit) is given by $P = 100 - Q$ and the (private) marginal cost of production for the aggregation of all dry-cleaning firms is given by $MC = 10 + Q$. Finally, the pollution generated by the dry cleaning process creates external damages given by the marginal external cost curve $MD = Q$.

Illustrate your answers graphically.

a) Calculate the output and price of dry cleaning if it is produced under competitive conditions without regulation.

MB = 100 – Q
MPC = 10 + Q

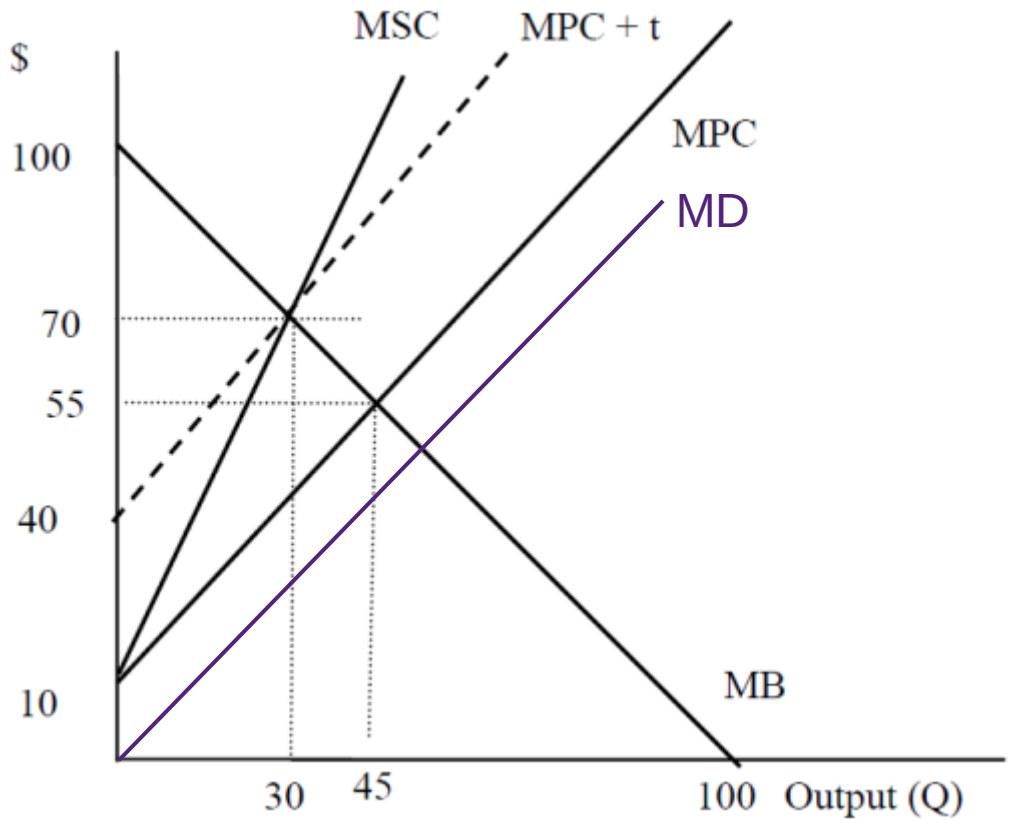
MB = MPC
100 – Q = 10 + Q
100 – 10 = Q + Q
90 = 2Q
Q = 45



b) Determine the socially efficient price and output of dry cleaning.

MD = Q
MSC = MPC + MD
= 10 + Q + Q
= 10 + 2Q

MSC = MB
10 + 2Q = 100 – Q
2Q + Q = 100 – 10
3Q = 90
Q = 30



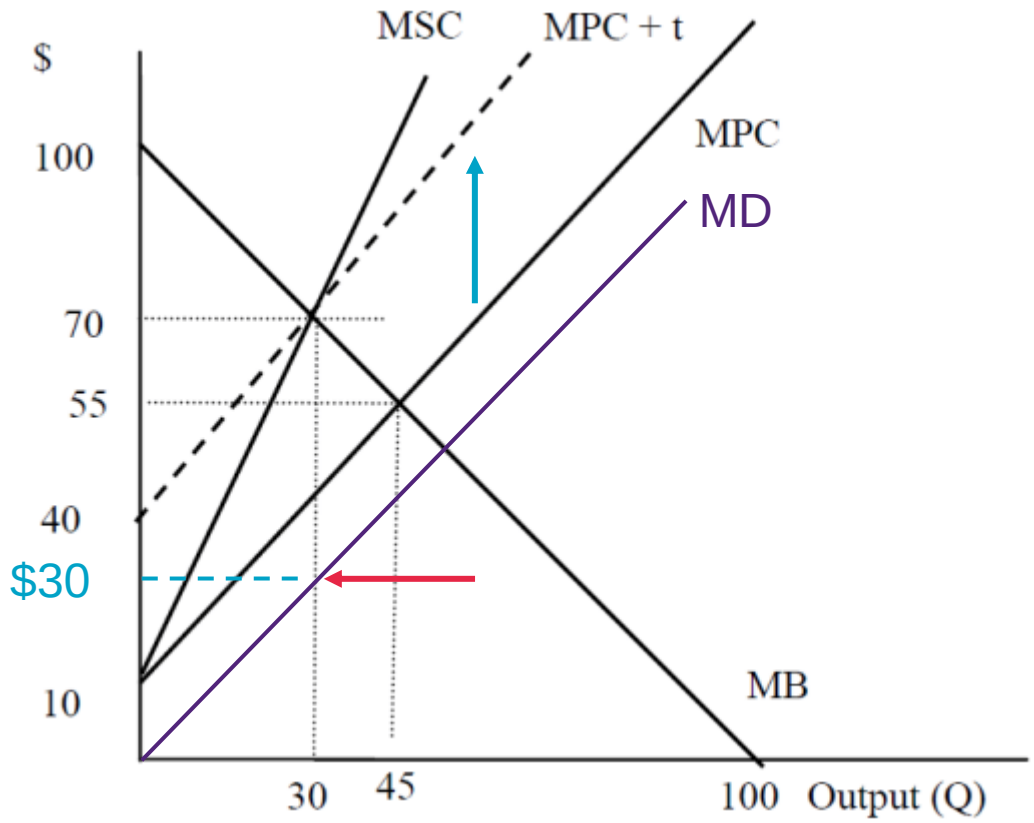
MB = 100 – Q
= 100 – 30
= 70

$Q^* = 30 \quad P^* = 70$

c) Determine the (Pigouvian) tax that would result in a competitive market producing the socially efficient output.

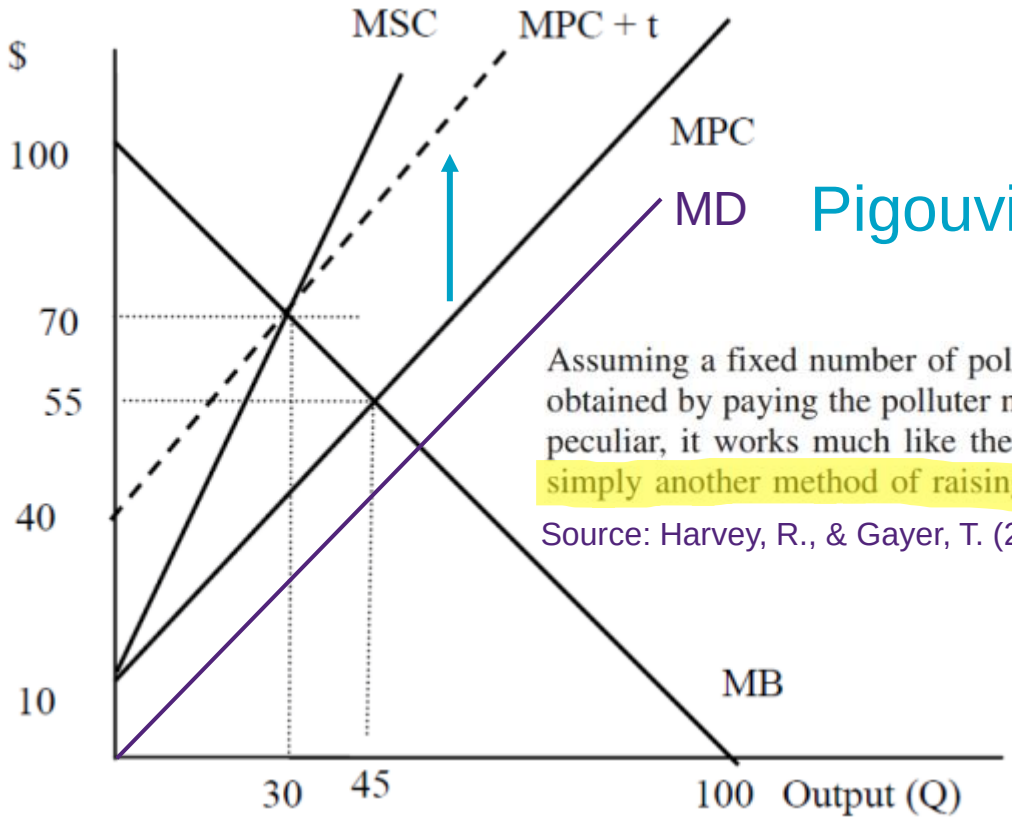
Tax = MD(Q*)
= MD(30)
= 30

$30 per unit of output.



d) Suppose instead that the government chooses to use a Pigouvian subsidy instead. What level of the subsidy would it use and what would the outcome be? What is the total amount of the subsidy paid to dry cleaning firms?

$30 per unit of output reduced.



Pigouvian subsidy

Assuming a fixed number of polluting firms, the efficient level of production can be obtained by paying the polluter not to pollute. Although this notion may at first seem peculiar, it works much like the tax. This is because a subsidy for not polluting is simply another method of raising the polluter's effective production cost.

Source: Harvey, R., & Gayer, T. (2013). *Public finance*. McGraw-Hill Higher Education.

4 Applying the Coase Theorem

For each of the following situations, is the Coase Theorem applicable? Why or why not?

a) A farmer who grows organic corn is at risk of having his crop contaminated by genetically modified corn grown by his neighbours.

Alternative solution: Coase theorem

- Coase challenged Pigouvian view: existence of externality does not need government intervention.
- Affected parties could work out the problem without government help.
- Coase argued than an *efficient* level of pollution can be achieved by relying on polluter and suffer bargaining over set of well defined pollution rights

Important assumptions:

1. Well defined property right (enforceable in court)
2. No informational deficiencies (no moral hazard adverse selection)
3. Small transaction costs

Yes.

b) In Brazil it is illegal to catch and sell certain tropical fish. Nevertheless, in some remote parts of the Amazon River, hundreds of divers come to capture exotic fish for sale on the international black market. The presence of so many divers is depleting the stock of exotic fish.

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No. Since this is illegal, the divers are probably not willing to negotiate.

Also, monitoring and enforcing fishing laws in remote parts of the Amazon forest might be too expensive.

c) In the state of Washington, many farmers burn their fields to clear the wheat stubble and prepare for the next planting season. Nearby city-dwellers complain about the pollution.

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No. Too many people involved to have a private negotiation.

d) Users of the Internet generally incur a zero incremental cost for transmitting information. As a consequence, congestion occurs, and users are frustrated by delays.

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Thank you

Francisco Tavares Garcia | Tutor
School of Economics

Reference

Harvey, R., & Gayer, T. (2013). *Public finance*. McGraw-Hill Higher Education.

CRICOS code 00025B