Introduction to Microeconomics

ECO1104 Section E, Fall 2012

(Lecture #16, Nov. 8)

Announcements

- ***Assignment #5:***
  - APLIA assignment #9, due Wed., Nov. 14th, at 11 p.m. (covers Chap. 10)

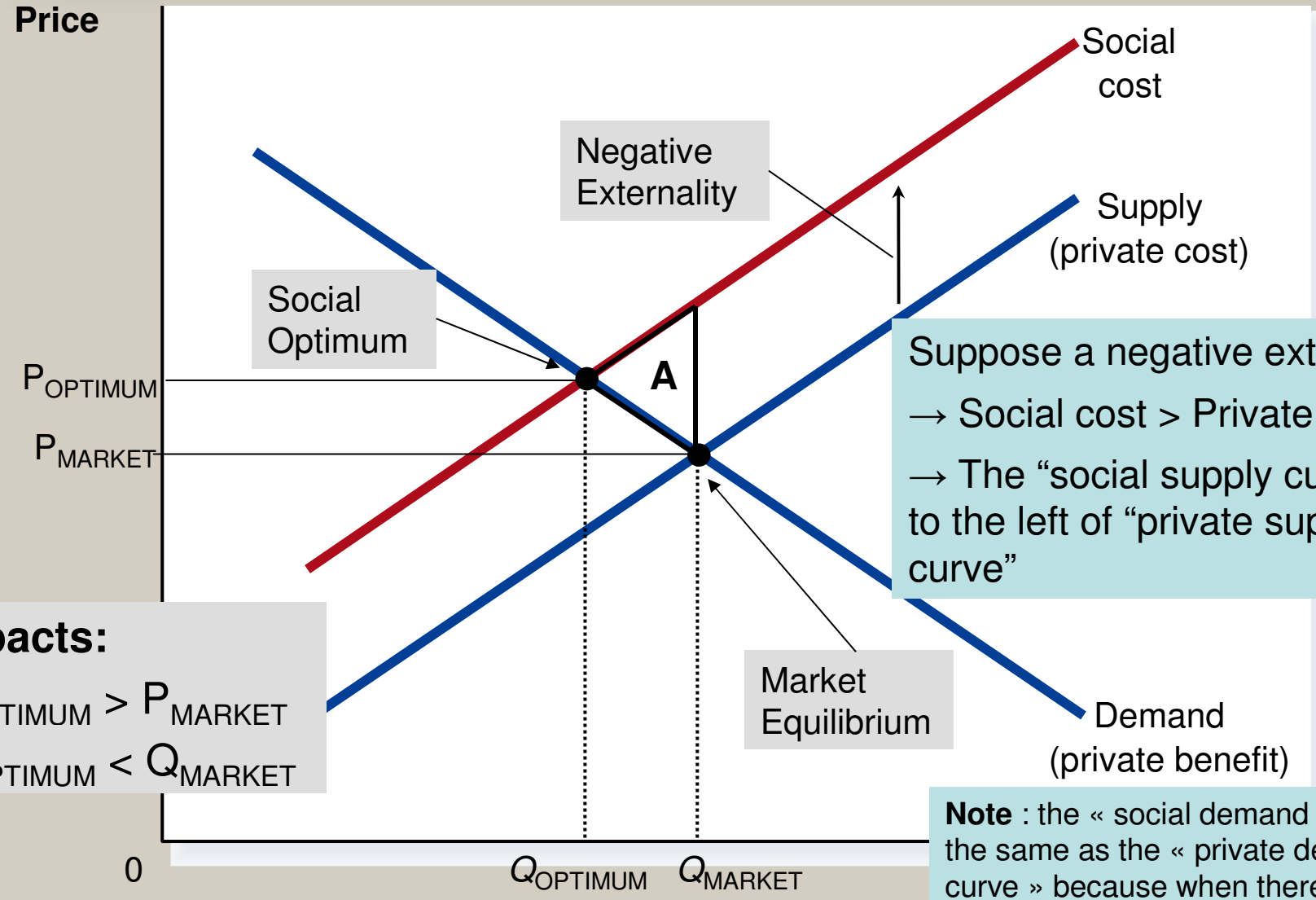
Second midterm :

- Nov. 20
- Chap. 7, 8, 10, 11

Last lecture…

- Started Chap. 10—Externalities
- *Negative externalities*
  - When social costs of an action are greater than private costs (e.g., smoking)
  - Market equilibrium quantity is greater than the socially optimal quantity, which means a welfare deadweight loss
- *Positive externalities*
  - When social benefits of an action are higher than private benefits (e.g., basic education)
  - Market equilibrium quantity is lower than the socially optimal quantity, which means a welfare deadweight loss

Welfare Impact of a Negative Externality—Impact of a Negative Externality on Optimum Price and Quantity (Fig. 10.2)



Suppose a negative externality

→ Social cost > Private cost

→ The "social supply curve" is to the left of "private supply curve"

Impacts:

$P_{OPTIMUM} > P_{MARKET}$

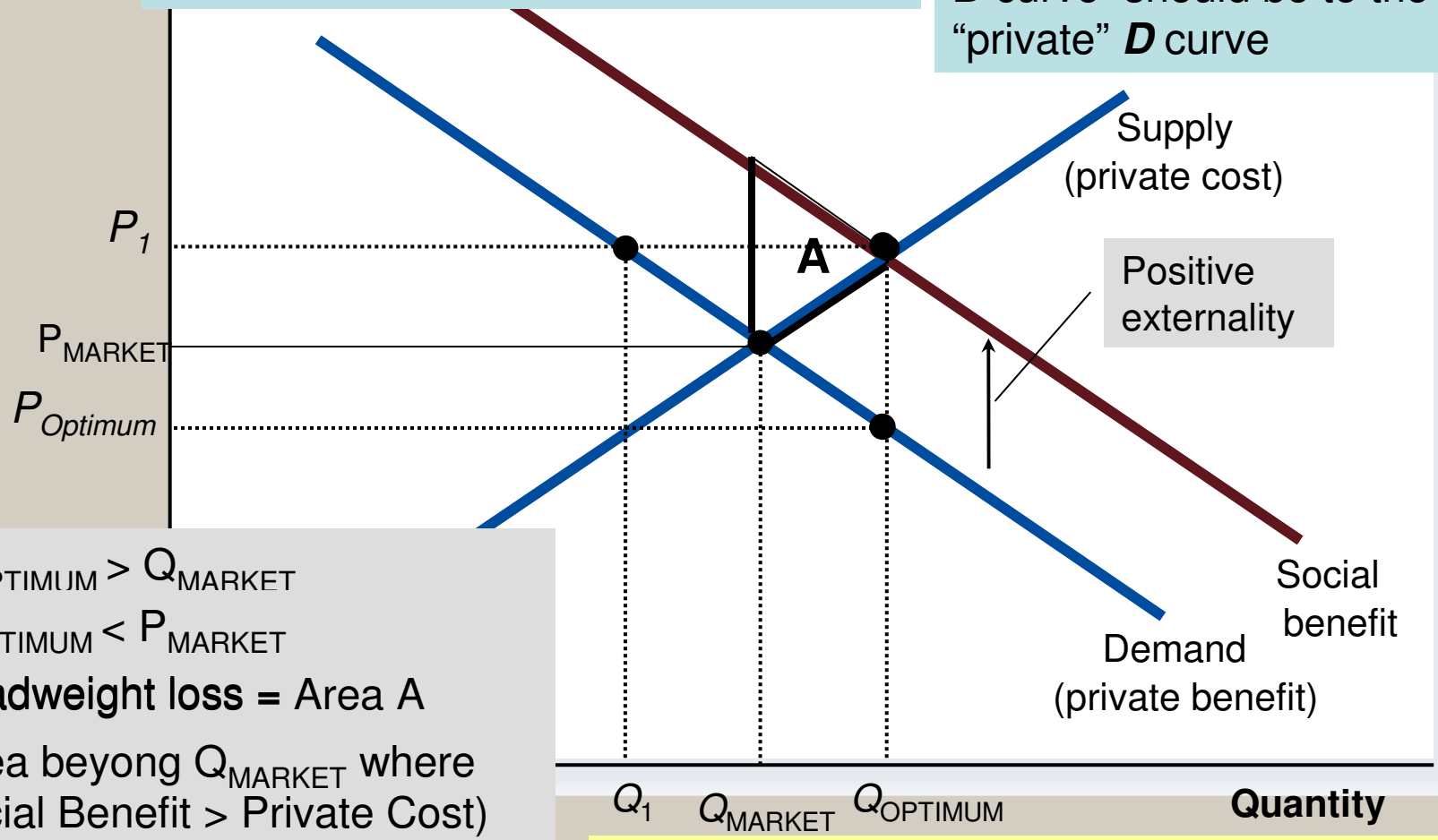
$Q_{OPTIMUM} < Q_{MARKET}$

Note : the « social demand curve » is the same as the « private demande curve » because when there is a negative externality, the social benefit is equal to the private benefit.

Welfare Impact of a Positive Externality (Fig. 10.4, p. 210)

Note : the « social supply curve » is the same as the « private supply curve » because when there is a positive externality, the social cost is equal to the private cost.

Suppose a positive externality
→ Social benefit > Private benefit
→ From a social point of view, the ***D*** curve should be to the right of "private" ***D*** curve



$Q_{OPTIMUM} > Q_{MARKET}$
$P_{OPTIMUM} < P_{MARKET}$
Deadweight loss = Area A
(area beyong Q_{MARKET} where Social Benefit > Private Cost)

Why isn't P_1 the optimal price? Because if the price is P_1, consumers will buy Q_1 not $Q_{OPTIMUM}$.

Today's lecture

- Finish Chap. 10—How to increase welfare when there are externalities?
- Start Chap. 11—Public Goods and Common Ressources (?)

Solving the Problem of Externalities—Private Solutions

- Government action is not always needed to solve the problem of externalities.
- Private solutions include :
  - Moral codes and social sanctions (“Do unto others as would have them do unto you.”)
  - Charitable organizations
  - Integrating different types of businesses
  - Contracting between parties

Solving the Problem of Externalities—Private Solutions

- *Coase Theorem*
  - a proposition that if private parties can bargain without cost over the allocation of resources, they can solve the problem of externalities on their own.
- Private solutions sometimes fail
  - because transaction costs can be so high that private agreement is not possible (ex., industrial pollution).
- *Transactions Costs*
  - costs that parties incur in the process of agreeing to and following through on a bargain.

Solving the Problem of Externalities—Public Policy Solutions

- When externalities are significant and private solutions are not found, government may attempt to solve the problem through . . .
  - command-and-control policies.
  - market-based policies.

Solving the Problem of Externalities—Public Policy Solutions

- Command-and-Control Policies
  - Usually take the form of regulations:
    - Forbid certain behaviors.
    - Require certain behaviors.
  - Examples:
    - Requirements that all students be immunized.
    - Stipulations on pollution emission levels set by Environment Canada.

Solving the Problem of Externalities—Public Policy Solutions

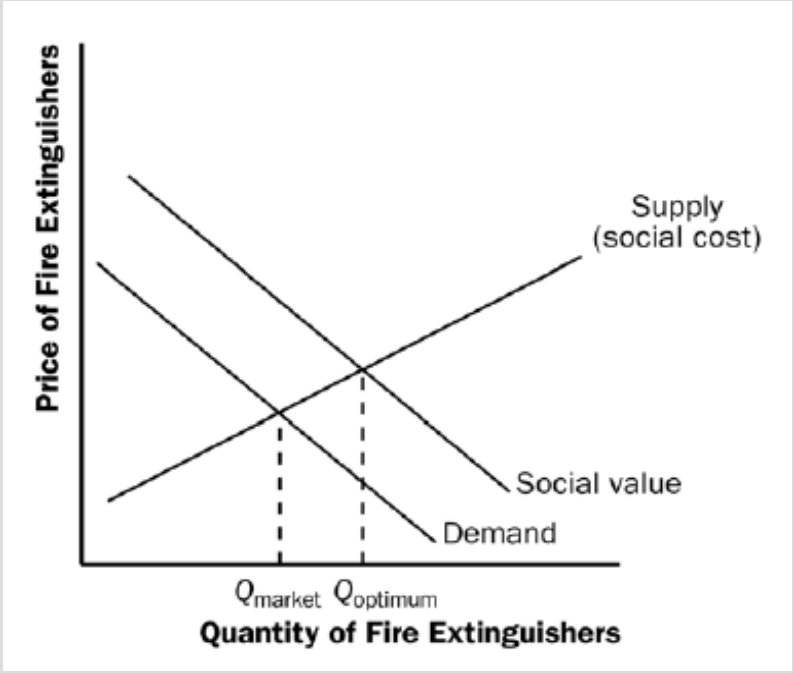
- **Market-Based Policies**
  - Government can use taxes and subsidies to align private incentives with social efficiency.
  - These measures "*internalize*" the externality as they give buyers and sellers the incentive to take into account the external effects of their actions..
  - For example, in the case of a negative externality, the government can impose a tax on the good equal to the externality, which decrease the production (and consumption of that good) and raise revenue. If the tax is set equal to the externality, then the equilibrium will equal the optimal equilibrium.
    - **Note:** *Pigovian taxes* are taxes enacted to correct the effects of a negative externality (Pigovian taxes actually increase total surplus).
  - Conversely, in the case of a positive externality, the government can provide a subsidy for the consumption (or production) of the good. This will increase the consumption (or production) of that good.

Example: MKMR, p. 225, #3

3. Consider the market for fire extinguishers.
   a. Why might fire extinguishers exhibit positive externalities?
   b. Draw a graph of the market for fire extinguishers, labelling the demand curve, the social-value curve, the supply curve, and the social-cost curve.
   c. Indicate the market equilibrium level of output and the efficient level of output. Give an intuitive explanation for why these quantities differ.
   d. If the external benefit is $10 per extinguisher, describe a government policy that would result in the efficient outcome.

a) Because even though people buy fire extinguishers for their own use, they prevent any fire from damaging the property of others.

b)



c) The quantities differ because in deciding to buy fire extinguishers, people don't account for the benefits they provide to other people.

d) Subsidize people $10 for every fire extinguisher they buy. This would shift the demand curve up to the social value curve, and the market quantity would increase to the optimum quantity

Solving the Problem of Externalities—Public Policy Solutions—Tradable permits

- Tradable pollution permits allow the voluntary transfer of the right to pollute from one firm to another (for example, one permit can allow the right to produce one ton of $CO^{2)}$.
  - A market for these permits will eventually develop.
  - A firm that can reduce pollution at a low cost may prefer to sell its permit to a firm that can reduce pollution only at a high cost.

Example: MKMR, p. 226, #8

	Cost of ↓ pollution	Current pollution
ACME	$10/tonne	100 tonnes
Creative	$100/tonne	100 tonnes
		200 tonnes

Objective: ↓ pollution by 150 tonnes.

a) If govt knew the cost

	Optimal Reduction	Cost ($)
ACME	100 tonnes	1000
Creative	50 tonnes	5000
Total	150 tonnes	6000

	Equal Reduction	Cost ($)
ACME	75 tonnes	750
Creative	75 tonnes	7500
Total	150 tonnes	**8250**

8. The Pristine River has two polluting firms on its banks. Acme Industrial and Creative Chemicals each dump 100 tonnes of glop into the river each year. The cost of reducing glop emissions per tonne equals $10 for Acme and $100 for Creative. The local government wants to reduce overall pollution from 200 tonnes to 50 tonnes.
   a. If the government knew the cost of reduction for each firm, what reductions would it impose to reach its overall goal? What would be the cost to each firm and the total cost to the firms together?
   b. In a more typical situation, the government would not know the cost of pollution reduction at each firm. If the government decided to reach its overall goal by imposing uniform reductions on the firms, calculate the reduction made by each firm, the cost to each firm, and the total cost to the firms together.
   c. Compare the total cost of pollution reduction in parts (a) and (b). If the government does not know the cost of reduction for each firm, is there still some way for it to reduce pollution to 50 tonnes at the total cost you calculated in part (a)? Explain.

Example: MKMR, p. 226, #8

	Cost of ↓ pollution	Current pollution
ACME	$10/tonne	100 tonnes
Creative	$100/tonne	100 tonnes
		200 tonnes

Objective: ↓ pollution by 150 tonnes.

c) Consider the case where the govt issues 50 pollution permits (1 permit allows 1 tonne) and sell them at an auction to the highest bidder.

Suppose that Creative chemicals will buy all of them at $11.

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   a. If the government knew the cost of reduction for each firm, what reductions would it impose to reach its overall goal? What would be the cost to each firm and the total cost to the firms together?
   c. Compare the total cost of pollution reduction in parts (a) and (b). If the government does not know the cost of reduction for each firm, is there still some way for it to reduce pollution to 50 tonnes at the total cost you calculated in part (a)? Explain.

Total cost = Cost of reducing pollution + cost of permits – govt revenue = $6000

	Reduction	Cost or reduction ($)	Cost or permits ($)	Govt revenue
ACME	100 tonnes	1000	0	0
Creative	50 tonnes	5000	550	550
Total	150 tonnes	6000	550	550

End Chapter 10