EC202 Week 8

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Externalities and Public Goods

- Does the world in the previous few lectures sound too unrealistic?

- Trade is not always fair and perfect
  - Information asymmetry
  - Questionable utility functions
  - Behavioral choices
  - Waste

- Externalities
  - An externality occurs when a person's well-being or a firm's production capability is directly affected by the actions of other consumers or firms (rather than indirectly affected through changes in price).

- Public Goods
  - A good that is excludable and rivalrous is called a *private good*. A good that is non-excludable and non-rivalrous is called a *public good*.

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In-class Question

Q4. In the fireworks example of Lecture 7, Section 2.2, we change Andy's preferences to $u_A = c_A + 2\ln(1+f)$, while Bob still has preferences $u_B = c_B + \ln(1+f)$, where $f = f_A + f_B$. Each still face budget constraint of $c_i + pf_i \leq M_i$, where M_i for each $i \in \{A, B\}$ is high enough to ensure that each consume with $c_i > 0$.

a) Find the Nash Equilibria. What levels of M_A and M_B constitute "high enough" to guarantee that the Nash Equilibria are of this form?

b) Find the socially optimal level of fireworks by maximising the sum of utilities (assuming high M_A and M_B).

c) Derive and draw the demand curves of each player and the "aggregate demand" curve showing their combined marginal willingness to pay for an extra unit. Show the difference between fireworks being considered a public good and a private good.

d) Suppose $p = \frac{1}{2}$ is the market price at which Andy and Bob can buy any number of fireworks. Find the Lindahl Equilibrium.

e) Suppose $p = \frac{1}{2}$. Find the level of subsidy the government could introduce to correct this problem of underprovision of fireworks.

f) Alternatively the government considers giving Andy and Bob some fireworks. Is there a level of fireworks they could give that would give the socially efficient outcome?

g) Alternatively, suppose the government leaves it to Andy and Bob to sort out between them. Assume the conditions for the Coase Theorem holds. Find the set of possible agreements that might result. Is the Lindahl Equilibrium a member of this set? The algebra gets messy here due to the utility functions, so don't need to do the calculations, but explain what calculations you would do to answer this question.

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Further thoughts?

- To what extend does the existence of externality justify government intervention?

- To what extend does the public goods problem justify government intervention?

- What is a good policy?