10. Public Goods

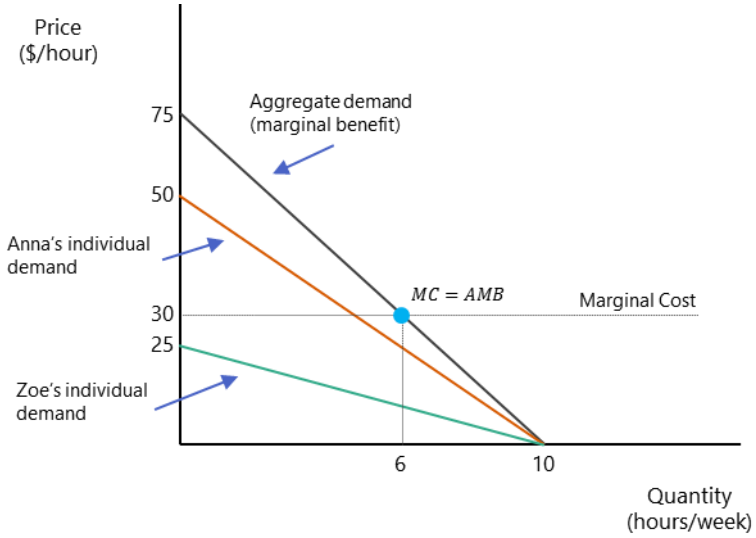
ECON1101 • KC Notes

10.1 Non-rivalry and Non-excludability

- **Non-rivalry**: one's consumption of the good **does not impede another's consumption (marginal cost of providing good to another individual = 0)**
    - Pay TV – as many people can watch a channel at once (but it is excludable due to cost of TV and subscription)
- **Non-excludability**: no one can be excluded from consuming the good
    - Congested walkway – you are not excluded to walk but extra users diminish your benefit
- **Pure public good**: good is **perfectly non-rivalrous and non-excludable**
    - Lighthouse, street lights, national defense
- **Impure public good**: good is non-rivalrous and non-excludable up to a point
    - Lecture theatre is non rivalrous until it is full

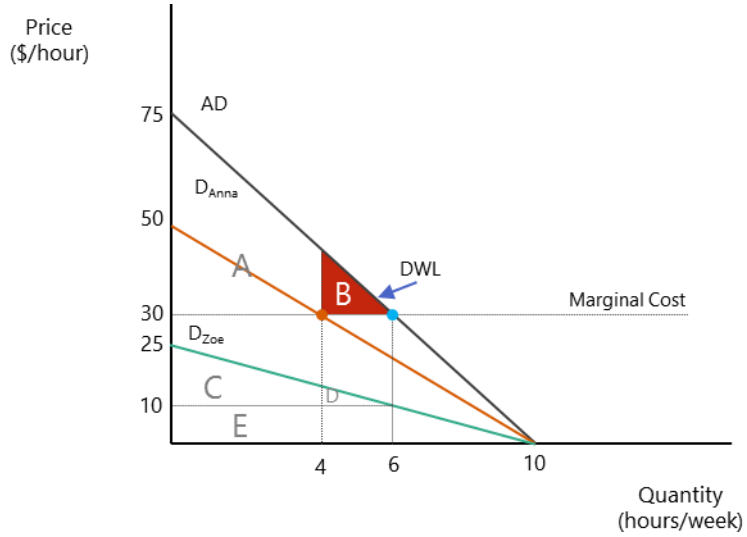
10.2 Aggregate Demand for Public Goods

- Because public goods are **non-rivalrous**, all members will gain benefit generated by each hour of consumption
- If there were two roommates with different quantities demanded for cleaning, **aggregate demand (marginal social benefit)** calculated by **summing vertically**
    - Set aggregate marginal benefit equal to the marginal cost (of cleaning)
    - This is the hours of cleaning that maximises efficiency
    - **Samuelson Condition**: the efficient quantity of a public good is found by setting the **sum of individual marginal benefits equal to marginal cost**



10.3 Market Provision and Free-riding

- If each member independently decides the hours, Anna will hire for 4 hours (when **her MB = MC**). Zoe would not hire as her demand curve is below the MC curve.
    - Zoey would **free-ride** the benefits
        - **<u>Free-riding</u>**: enjoying a good without paying for it, due to non-excludability. It resuts in **their under-provision** (not paying to increase surplus)
    - This will generate **dead weight loss B**



- **<u>Lindahl Prices Structure</u>**: each individual pays for the provision of a public good according to their marginal benefit (i.e. Zoey pays \$10, Anna \$30)
- Zoe's surplus, if she free-rides, is $C + E$. This is a lot more than if she pays \$10 to get with a surplus $C + D$.
    - Because of non-excludability, quantity provided would not be efficient, and is **a market failure (under-provision of public goods)**

10.4 Public Goods and Externalities, and Government Taxes

- Public goods are extreme cases of positive externality (the benefit is non-rivalrous)
    - Government intervention required to impose taxes to provide public goods
    - If government knew or **asked Anna and Zoe's Lindahl prices** they would be able to tax each
- Tax has two fairness principles:
    - Tax richer people
    - Pay-as-you-go taxes when they are less important considerations, such as tolls