Chapter Summaries
Chapter 8: Nonexclusive Goods

Chapter 8 discusses the most pervasive externality, the nonexclusive good, of which
defense or national security is the outstanding example.

1. A nonexclusive good has the property that once anyone buys it, everyone consumes
    the full services provided by the good, whether they want to or not. Nonexclusive
    goods are called public goods for this reason, in contrast to private goods, whose
    services are exclusive to whoever purchases them.
2. Nonexclusive goods cannot be marketed because the utility-maximizing strategy is to
    free ride on the purchases of others. Therefore, no one has an incentive to buy the
    good. The good must be provided by the government.
    The two main questions associated with nonexclusive goods are: 1. How much of the
    good should the government provide? and 2. How should people be asked to pay for
    the good? The chapter considers these questions in order, using defense as the
    example.
3. The government must try to find the so-called pseudo supply and demand
    equilibrium, the equilibrium quantity that would arise if defense could be marketed
    competitively.
4. The supply curve has the standard interpretation of showing the marginal cost of
    producing defense at every level of output.
5. The market demand curve is the *vertical* summation at each output of the individual
    demand curves for defense. The market demand curve for private goods is a
    horizontal summation of the individual demand curves because price is the same for
    everyone. The vertical summation for nonexclusive goods occurs because it is the
    government's choice of output that is the same for everyone.
6. At the pseudo supply and demand equilibrium, the sum of the consumers' marginal
    values at the chosen output equals the marginal cost of supplying the goods.

    Alternatively, the *Samuelson Rule* holds at the efficient quantity: $\sum_{h=1}^{H} MRS^h = \text{MRT}$,

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where the MRS for each person h and the MRT are defined relative to a reference private good whose price and marginal cost equal one.

7. Erik Lindahl described a means of achieving the efficient outcome that is analogous to the Walrasian auctioneer for private goods. The auctioneer calls out a quantity, notes the marginal cost, and assigns taxes to each individual such that they all would choose the selected quantity based on their demand curves for the good. The quantity is adjusted until the taxes chosen in this manner add to the marginal cost of supplying the good. The taxes are equal to the consumers' marginal values or MRS for the good, and are called *Lindahl prices*. Unfortunately, the incentive to free ride would undermine this kind of auction.

The chapter then turns to the question of how to ask people to pay for a nonexclusive good such as defense.

8. Lindahl prices equal to the individuals' marginal values or MRS are often held up as an ideal solution to the payment question, for two reasons. One is that they provide a simple test for whether the government has selected the efficient output. The other is that they are considered to be fair in the sense that they are consistent with the benefits-received principle of paying for publicly provided goods.

9. *The benefits-received principle* says that people should pay for publicly provided goods in proportion to the benefits that they receive from the goods. This principle is widely held in the U.S., no doubt because the market system operates according to the benefits-received principle. In addition, the prices of private goods equal the marginal benefits, or MRS, so that Lindahl prices for nonexclusive goods are the natural counterpart to competitive market prices for private goods.

10. The text identifies three problems with the competitive pricing analogue for nonexclusive goods:

   a. In a two-good example with a Hawk and a Dove in terms of their demands for defense, if the taxes are Lindahl prices equal to each person's MRS, then the Hawk may have to pay the entire cost of the defense budget; worse, the Hawk may also have to subsidize the Dove for the Dove's dislike of defense on the margin. These possibilities arise because quantity, not price, is the same for everyone, and people's willingness to pay on the margin for that quantity can be very different.

   b. Lindahl prices are not necessary for efficiency. The government must simply choose a quantity of defense. If it happens to choose the efficient quantity, then any lump-sum tax, such as a tax on age, will suffice to pay for defense because it maintains efficiency by keeping the economy on its utility possibilities frontier. The fairness of the lump-sum tax is not an issue, because any unwanted distributional implications will be taken into consideration by the distribution

branch when it taxes and transfers lump-sum to satisfy the interpersonal equity condition for a social welfare maximum: Equalize the social marginal utilities of income across all people.

c. The benefits-received principle has no standing in mainstream public sector theory as a principle of end-results equity. The interpersonal equity principle that comes from the social welfare function is the only equity principle. If the benefits-received principle is useful, it is only for achieving efficient allocations, which Lindahl pricing would do if it could be applied.

The chapter next considers the *mechanism design problem* applied to nonexclusive goods such as defense. Here the issue is to overcome the free rider problem and induce people to reveal their true preferences for defense.

11. A mechanism that works is the Clarke tax, in which each person is assigned a tax share to pay for defense and asked to give their demands for defense to serve as a starting point. Then one person is chosen and asked if he wants to change the initial quantity that is based on the demands of all the other individuals. If he wants to change the quantity, he pays an additional tax equal to the sum of the consumer surpluses lost by all the other individuals in changing the quantity. The additional payment is the Clarke tax. The selected individual has an incentive to choose the output he truly prefers under this mechanism. By selecting each person individually in sequence, the efficient allocation is achieved once everyone has been selected.

12. The Clarke tax mechanism shares two features of many truth-revealing mechanisms in other contexts. One is coercion – people are required to participate in the mechanism. The other is that it is unrealistic – no government would choose to allocate defense by means of the Clarke tax mechanism.

The chapter concludes with a discussion of the laboratory experiments that economists conduct to see if people really do *free ride* with nonexclusive goods.

13. The basic experiment is structured such that the subjects are given tokens each round that they can use to purchase a private or a nonexclusive (public) good. The return to the individual from purchasing the private good exceeds that of purchasing the public good, but the overall return to the public good is larger than the private return. This happens because all participants receive a return when a token is used on a public good. The efficient solution is for everyone to use all the tokens on the public good each round. But the private incentive is to purchase the private good each round and try to free ride on others buying the public good. In fact, subjects typically do allocate some of their tokens to the public good each round; they do not entirely free ride. The percentage given to the public good does decrease in the later rounds, however.

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14. The experiments show that framing matters. Given two identical experimental structures, the subjects allocate more tokens to the public good if the instructions indicate the general good done by purchasing the public good (positive framing) than they do if the instructions indicate the general harm done by purchasing the private good (negative framing).