Lecture 18 – Land use externalities and the Coase theorem

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1 Introduction to the final week

1. Land use, externalities, and land use controls
   (a) Overlaps: Congestion, building codes
   (b) More detailed discussion of land use regulation
   (c) Coase theorem

2 Land use, externalities, and land use controls

1. Topics
   (a) Started course with discussion of why cities form
      i. Positive externalities play role
      ii. Negative externalities play role
      iii. Little discussion of regulation, government, or institutions.
   (b) Then looked at location choice, transportation, and housing
      i. Pure model with no externalities
      ii. Congestion in transport
      iii. Externalities in housing
   (c) A lot of local government policy and law deals with solving disputes and problems caused by or related to local externalities
      i. Congestion, fire hazard, pollution
      ii. Land use, property right disputes
      iii. New runway at Heathrow
   (d) Basic land use externality: My use of land affects your utility
      i. Land assembly problem

A. Everyone in community might benefit if they all agree to invest part of property in new road or shopping mall. But no one can agree on how to share the cost
B. How do you assemble the land for the project

ii. Build shopping mall destroy parks
iii. Public facility location choice, where to put an incinerator, a landfill for waste disposal, or an airport
iv. Cement factory noisy and very dirty
v. Large apartment building creates congestion in traffic and parking, noise, crime. Plus may change architectural character of neighbourhood. This last point could be a good thing or a bad thing.
vi. If schools (or other public services) are paid for by council tax, residents of apartment building may not pay fair share
vii. Build a coal mine under someone's house, house falls down, who to blame
viii. Build a house on top of coal mine, house falls down, who to blame
ix. Mobile phone tower is ugly

(e) Array of policies attempting to deal with above issues

i. Taxation of harmful activity, or subsidy not to engage
ii. Subsidy of beneficial activity or tax on failure to perform
iii. Government investment in /provision of public facilities
iv. Location specific regulations on types of activities
A. Zoning and building code
B. Planning law
C. Building codes (performance based vs specific technology based)
v. Property law, defines property rights over various aspects of land and property. Determines rules as to how land can be used and traded, determines procedures to settle disputes.

3 Coase theorem

1. Discussions about externalities relate to the question of how to deal with situations where one person's activity affects another's welfare in a manner that is not transmitted through the market.

2. These can be interpreted as a failure to completely define property rights.

3. Zoning or planning laws define property rights by limiting the rights of land owners to use their land. These limitations proscribe activities that have harmful external effects on others

4. Pigouvian taxes also define property rights. A Pigouvian tax is a tax charged to an activity that charges a person for the harm they do to others because of externalities. A congestion tax is an example of a Pigouvian tax. The property right, is the right to use the road or engage in the activity, if you pay the tax.

5. Property rights for land are more complicated to define then property rights for simple goods like apples, pencils, or clothing. It is relatively costless to use these simple goods without causing any external affects. Property rights for apples give you the right to do whatever you want with the apple as long as you don't cause any external harm to anyone else. It is relatively simple to define property rights for apples. It is also relatively easy to enforce property rights to apples. Finally, it is relatively costless to buy and sell apples. Trading costs are very small.

6. Markets work well when property rights are simple to define, easy to enforce, and trading is costless

    (a) Markets may have problems when one of those conditions is not met

7. The problem then is determining the appropriate institutional, legal, economic, and political mechanisms to deal with these issues. The paper by Coase, "The problem of social cost," published in the 1960 *Journal of Law and Economics*, discusses this point. Though the paper does not contain a theorem of the following sort. An idea emerged from this paper that has come to be known as the Coase Theorem. The idea is the following.

8. In an economic environment where:

    (a) Property rights are defined completely

    (b) Property rights are costless to enforce

    (c) Transaction/bargaining costs are zero

9. Then the following outcome will be obtained

    (a) Bargaining will lead to an efficient outcome despite any externalities and regardless of the allocation property rights

    (b) Different allocations of property rights will generally result in different distributions of wealth

10. Example

    (a) Two people live next to each other. Each owns their property.

    (b) Person A runs a dry cleaner. Fumes and noise from dry cleaner reduce welfare of person B.

    (c) Suppose bargaining costs are infinite so no bargaining takes place.

(d) Imagine two legal rules that define the property rights relevant to this situation. Legal rule 1 is a "No Liability" rule. Under this legal rule, Person A is not liable for any harm imposed on person B. Person A has the right to freely use their land and pollute as much as they want. Without bargaining, person A will maximise profits from dry cleaning and will produce too much pollution because they will not take into account the negative effects of pollution on B. Person B will act to minimise the harm they suffer perhaps by keeping their windows shut even at the height of the summer. Consider legal rule 2, a "Full Liability" rule. Under this rule, person A is liable for the full amount of any damages the pollution from the dry cleaning causes to B. Person A will reduce the amount of pollution they create to avoid compensating B. B will increase activities that might make them more susceptible to harm from the pollution. They might leave their windows open all the time regardless of the fact that this might increase the costs to the drycleaner. They will be fully and completely compensated for all damages. In this case, there may be too little pollution created. It might increase social efficiency to increase the amount of pollution or require person B to close their windows on days when the dry cleaner is very busy.

   i. Obviously, the dry cleaner prefers legal rule 1 while person B prefers legal rule 2.

   ii. While these legal rules will not lead to the most socially efficient outcome, it may the case that one or the other leads to a more efficient outcome than the other.

(e) Suppose bargaining costs are zero.

(f) In this case, under the "No Liability" rule, person B has an incentive to pay the dry cleaner to reduce the amount of pollution. If such a reduction is efficiency improving, by definition, B can pay the dry cleaner to reduce pollution somewhat and still benefit because the increased utility from the lower pollution will more than compensate for the amount he must pay to reduce the pollution. The predicted outcome is that B will pay A to reduce the amount of dry cleaning to the efficient level. B will also increase activities that increase the amount of harm caused by the pollution, like leaving windows open. B will choose the efficient level of such activities because, they must pay to reduce A's drycleaning. This rule leads to an efficient outcome.

(g) Under the "Full Liability" rule, an efficient outcome will also be achieved. Person A will pay person B for any damage caused by the pollution. Person A will also pay person B to keep their windows shut on some days to reduce the damage caused by pollution.

(h) Both rules lead to an efficient outcome when costless bargaining is possible. Legal rule 1 is more beneficial to person A. Legal rule 2 is more beneficial to person B.

(i) The activities of both person A and person B affect social efficiency. Person A's level of pollution harms B. Person B's level of activity affects how harmful the pollution is.

11. Other examples

(a) Property rights can be defined for the right to smoke in a restaurant or to give people the right to a smoke free restaurant

(b) Property rights to owners of historic houses can be defined to give the owner the right to freely alter or destroy the house. Thus, giving other people no rights over the house. Or, they can be defined so that the owner is free to alter the house subject ot restrictions that preserve the historic character. This gives other people the right to enjoy the beauty or historic character of the house.

(c) Property rights for railroads could be defined using a "No liability" legal rule so that they are not liable for damages caused to neighboring farmland. Or, a "Full Liability" rule could be defined so that the railroads are fully liable for all damages. The railroad chooses how many trains to run. The trains might cause damage to neighbouring farms, perhaps because they cause fires. The farmers choose whether to farm the land closest to the railroad intensively or not. If they farm the land intensively, fires generated by the trains cause more damage.