Econ 522 Review 1: Efficiency and Property Law

Spring 2014

This document is by no means comprehensive, but instead serves as a rough guide to the material we have discussed so far this semester. I would suggest that you use other study aids as well (such as the lecture slides, discussion handouts, textbook, and exams from previous semesters) in your study for the midterm.

1 Efficiency

- A **Pareto improvement** is a change that makes everyone at least as well off as before and at least one person better off.
- A **Kaldor-Hicks improvement** is a change that could be turned into a Pareto improvement by adding a set of monetary transfers. Hence, every Pareto improvement is a Kaldor-Hicks improvement as well.
- An allocation is **Pareto efficient** if there exist no Pareto improvements upon it.
- An allocation is **Kaldor-Hicks efficient** if and only if it is Pareto efficient. Why?
  - If an allocation is Kaldor-Hicks efficient, then there exist no Kaldor-Hicks improvements upon it. Since Pareto improvements are a subset of Kaldor-Hicks improvements, there cannot exist a Pareto improvement, and the allocation is Pareto efficient.
  - If an allocation is Pareto efficent, then there exist no Pareto improvements. Suppose there existed a Kaldor-Hicks improvement. Then there must exist some set of monetary transfers that when combined with the Kaldor-Hicks improvement forms a Pareto improvement. But such a Pareto improvement cannot exist. Then there cannot exist a Kaldor-Hicks improvement, and the allocation is Kaldor-Hicks efficient.
- An **externality** is an effect of an action, positive or negative, on the welfare of agents that do not participate in the decision of whether or not to take the action.
- **Public Goods** are nonrivalrous (my consumption of a good does not preclude your ability to consume it) and nonexcludable (I can't prevent you from consuming it). Public goods tend to be provided at an inefficiently low level if they are held privately.
- **Private Goods** are the opposite of public goods: rivalrous and excludable. Private goods tend to be utilized at an inefficiently high level if they are publicly available.

2 Property Law

2.1 Coase Theorem

- If property rights are well defined and tradeable, and transaction costs are low, then efficiency will obtain through voluntary trade, regardless of initial allocation.

2.2 Bargaining

- **Transaction costs** are divided by Cooter and Ulen into three types:
  - Search costs, i.e. cost of finding a counterparty to trade with.
  - Enforcement costs, i.e. costs of enforcing property rights.
  - Bargaining costs, such as private information, asymmetric information, uncertainty about the law and property rights, and large numbers of people.
- **Threat points** are agents' payoffs in autarky (that is, where no trade occurs). An agent must get a payoff at least as large as their threat point in order to agree to trade. This is the key insight to solving bargaining problems.

2.3 Remedies

- A **damages rule**, sometimes called a **liability rule**, enshrines in law a set price (the amount of damages) for violating someone else's property right. Injurers prefer a damages rule to an injunctive rule. Damages can be either temporary or permanent: Temporary damages only compensate for harm that has already occurred, but permanent damages also compensate for the present value of expected future injury.
- An **injunctive rule**, sometimes called a **property rule**, gives an individual an unassailable right to property; however, this right is tradeable. Violation of this right is treated as a crime. Injurees prefer an injunctive rule to a damages rule.
- **Inalienability** is like an injunctive rule, except that the property right is not legally tradeable.

2.4 Normative Coase/Normative Hobbes

- The **Normative Coase** approach is to minimize transaction costs to facilitate voluntary trade, and is suggested when transaction costs are low but it is costly to determine how much people value some right. Injunctive rules follow this approach.
- The **Normative Hobbes** approach is to allocate property efficiently so that no bargaining needs to occur for efficiency to obtain. Damages rules follow this approach.

2.5 Fugitive Property Rights

- A **first possession** rule gives the fugitive property to the first agent to possess or capture it, i.e. "fast fish, loose fish." A first possession rule is easier to apply, but results in inefficiently high investment in possessory acts.

- A **tied ownership** rule ties the ownership of fugitive property to the ownership of something else, i.e. "iron holds the whale." A tied ownership rule is complicated, but by creating well-defined property rights may encourage more efficient use of the resource.

2.6 Intellectual Property Rights

- **Patents** are issued for inventions. Such inventions must be novel, non-obvious, and have practical utility. Patents must be registered, but their validity remains uncertain until they are challenged in court.
- **Copyright** is a right over an artistic creation. One need not register a copyright. A copyright is narrower than a patent, but lasts longer.
- **Trademarks** are brand names and logos. They are valid in perpetuity, unless abandoned. Firms are barred from putting competitors' trademarks on their products, and from diluting the value of the trademark.
- **Trade secrets** are proprietary business information, and are protected against misappropriation.

There is a tradeoff when granting intellectual property rights: one inefficiency (inefficient incentives for innovation) is replaced with another (monopoly).

2.7 Adverse Possession

Adverse possession law concerns the rights of squatters. If an individual remains on someone else's property for a certain period without their consent, makes no effort to hide this fact, and their presence is contrary to the interests of the property owner, then they can gain legal title to the property.

2.8 Eminent Domain

Eminent domain law allows the government to seize private property for public use, but in the United States, the government is required to provide compensation for the property at fair market value.

3 Game Theory

3.1 Nash Equilibrium

A strategy profile is a **Nash equilibrium** if each player's strategy is optimal, given his opponents' strategies. To solve for pure strategy Nash equilibria, look for each player's best response to each of his opponents' actions, and then determine where the best responses coincide.

3.2 Extensive Form Games and Subgame Perfection

In an extensive form game, strategies specify a player's action at each of her decision nodes. A strategy profile is a **subgame perfect equilibrium** if it is sequentially rational; that is, each player's strategy is optimal *at each of her decision nodes*, given her opponents' strategies. To solve for pure strategy subgame perfect equilibria, use backward induction on the game tree.