Law and Economics: Introduction

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Overview

Introduction

- How do we conceive the law?
  - Formalism.
  - Realism.
- Law and Economics.

Introduction

- How do we conceive the law?
  - Formalism.
  - Realism.
- Law and Economics.

Analytical Toolkit

- Theory of competitive markets.
- Strategy.
- Welfare Theorems.
- Theory of incomplete markets:
  - Market failures.
  - Regulatory intervention.

Basic legal institutions

- Property.
  - Coase theorem.
- Torts.
- Contracts.
  - Formation.
  - Remedies.
- (If time allows it): Theory of the firm and basics of empirical analysis.

Legal Theories

Formalism (Concepts)

- **Major premises**: legal concepts (e.g., negligence, possession, good faith).
- **Minor premises**: facts of the case.
- **Syllogistic Reasoning**:
  - All men are mortal.
  - Socrates is a man.
  - Therefore, Socrates is mortal.
- It is a deontologist approach –> presumption that legal concepts are universally right.

Formalism (Criticism)

- Law as self-referential system –> the answer is always within the system (almost like a form of Platonism).
- Mechanical jurisprudence:
  - Formalistic architecture;
  - Obligation and right in terms of correlatives;
  - Interpretation is the only thing that matters.
- Not experience-based –> not empirical based!

Realism (Concepts)

- In a nutshell: deciding a case so that its outcome best promotes **public welfare** in non-legalistic terms.
- It is experience and policy based (see Holmes: "the life of the law is not logic, but experience").
- Note: a realist decision is more likely to be judged **sound** or unsound than **correct** or incorrect.

Realism (Criticism)

- It is not self-referential, but looks at society and social sciences to understand what the problem is.
- **Consequentialist approach** –> good law is what promotes good consequences in practice.
- Problem: **indeterminacy** and therefore too much judicial discretion.

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Law and Economics

Law and Economics (1)

- It is a **consequentialist approach** to the law –> legal institutions should be assed based on their economic impact.
  - Good legal rules are those producing efficient economic consequences.
- It is a **functional approach**.
  - For example, for law and economics the function of tort law is not to correct the injustice of damage (formalist/deontologist approach), but to minimize the number of accidents.

Law and Economics (2)

- Origins of law and economics:
  - **Coase** (Coase Theorem, 1960) –> Legal entitlements should be allocated as to minimize the impact of externalities.
  - **Calabresi** (The Cost of Accidents, 1970) –> Negligence and strict liabilities rule should be applied so to minimize the social cost of accidents.
  - **Posner**(The Economic Analysis of Law,1973) –> All legal institutions should be conceived based on their efficiency properties.

Utilitarianism and Welfarism

- **Utilitarianism** holds that the moral worth of an action (or of a practice, institution, law, etc.) is to be judged by its effect in **promoting happiness** –> "the surplus of pleasure over pain" aggregated across all of the inhabitants of society.
- Economics holds that a policy, law, etc. is to be judged by its effect in promoting "welfare".
- Utility synonym of welfare for law and econ?
  - No, as law and econ refers to a definition of **measurable welfare** –> happiness might not be measurable.

Positive Law and Economics

- Answer the question whether the status quo is efficient.
- It is an incomplete jurisprudential theory, as there is no primitive theory of rights.
  - **Example 1**: If A is made B's slave, she may not be able to buy her freedom from B, so the right to A's labor, if initially vested in B, will remain there and this solution will be efficient.
  - **Example 2**: If A is initially assigned the right to his own labor, B may not be willing to pay the price necessary to induce A to part with that right. The initial assignment will again be the final assignment and again will be efficient - but it will be a different assignment than if B had been granted the right initially.
- Positive law and economics only considers consequences of initial assignments of rights , where these assignments are taken as given.

Normative Law and Economics

- Answers the question: how the rights (and entitlement) **should** be initially allocated and how they should look like?
- Examples:
  - **Torts**: from an efficiency perspective, should a victim have the right to enforce damages against the tortfeasor and how?
  - **Contracts**: from an efficiency perspective, should a contract be enforceable? Should the non-breaching party have a remedy against the breaching party and how this remedy should look like?
  - **Corporations**: from an efficiency perspective, should the shareholders be protected by limited liability?

Law and Economics: Theory of Markets

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Economics

Subject

- Economics studies how society manages its **scarce resources**.
  - Scarcity means that society has limited resources and therefore cannot produce all the goods and services people wish to have.
  - Management of scarce resources requires **decision-making**.

The Incentive Principle

- Ultimately, economics studies **human behaviors**.
- Individuals face tradeoffs. How they behave?
- The general idea is that rational individuals **respond to incentives**.

The Opportunity-Cost Principle

- When resources are scarce, individuals optimize their choices.
- They **compare costs and benefits** of their decisions
- If individuals have a budget constraint, choosing X might involve giving up Y –> in this sense Y is the opportunity cost of X.
- General idea: any decision has either a direct or an opportunity cost.

Golden Rule in Economics

- People think at the margin.
- The decision to choose one alternative over another occurs when that alternative's (marginal) benefits exceed its (marginal) costs.

Allocation

Goals

- The primary goal of economics is understanding how to allocate resources efficiently –> **allocative efficiency**.
- Resources: goods, services, labor, capital, land, ..., everything.
- Compare with Locke's "**no-waste condition**".
- Should resources be also allocated in a just way? –> **distributive efficiency**.
  - The problem here is on the meaning of justice.
  - We don't have a clear (i.e., unified) theory of distributive efficiency.

Efficiency Conceptions

- We have two major conceptions:
  - **Pareto efficiency**, which is based on a voluntary conception of exchange; and
  - **Kaldor-Hicks efficiency**, which is based on a non-voluntary conception of exchange.

Pareto Efficiency

- An allocation (of resources) is Pareto optimal (efficient) when **no alternative allocation exists under which**:
  - **no agent is worse off**; and
  - **(at least) one agent is better off**.
- Example: *Status-quo* Jon has 5 units and Ann has 7 units of utility (utils).
  - *State I*: John has 4 units and Ann has 7 utils.
  - *State II*: John has 4 units and Ann has 10 utils.
  - *State III*: John has 5 units and Ann has 8 utils.
- What alternative state is a Pareto improving?

Kaldor-Hicks Efficiency

- An allocation (of resources) is **Kaldor-Hicks efficient** if it brings about the maximal level of utils in aggregate.
- What about *State II*?
  - Jon is worse off but Ann is (much more) better off.
  - Ann's gains more than compensate Jon's losses.
- State II is Kaldor-Hicks efficient –> compensation effect such that the total pie (the joint utility of Jon and Ann) is bigger.

Pareto vs. Kaldor-Hicks

- **Any Pareto improvement is Kaldor-Hicks efficient but not the opposite**.
  - *State III* is a Pareto improvement but also Kaldor-Hicks efficient –> bigger pie: from $5+7$ to $5+8$.
  - *State II* is Kaldor-Hicks efficient but not a Pareto improvement.
- However, if under State II Ann gives 1 unit back to John, the allocation becomes 5 and 9 and then Pareto efficient.

The Invisible Hand

The Invisible Hand (1)

"He generally, indeed, neither intends to promote the public interest, nor knows how much he is promoting it. . . . ***he intends only his own gain, and he is in this, as in many other cases, led by an invisible hand to promote an end which was no part of his intention****. Nor is it always the worse for the society that it was no part of it.* ***By pursuing his own interest he frequently promotes that of the society more effectually*** *than when he really intends to promote it."*

The Invisible Hand (2)

"Whoever offers to another a bargain of any kind, proposes to do this. Give me that which I want, and you shall have this which you want, is the meaning of every offer; and it is in this manner that we obtain from one another the far greater part of those good offices which we stand in need of. ***It is not from the benevolence of the butcher, the brewer, or the baker that we expect our dinner, but from their regard to their self-love, and never talk to them of our own necessities but of their advantages****."*

Analysis

- Individual gains motivate individual actions.
- But self-interested individual actions promotes social welfare (i.e., the common good).
- Metaphysical implication: **heterogony of ends**.
  - action puzzle?
  - causation puzzle?
  - **coordination puzzle**?

Failure of Inidividual Coordination

Strategic Games

- Strategic Game is a model of interacting decision-making.
- Decision-makers as **players**.
- Each player has a set of possible **actions**. The model captures **interaction** between the players by allowing each player to be affected by the actions of all players, not only her own action.

Definition

- A strategic game consists of:
  - a set of players;
  - for each player, a set of actions;
  - for each player, preferences over the set of action profiles.

Prisoner's Dilemma

- Two suspects in a major crime are held in separate cells.
- There is enough evidence to convict each of them of a minor offense, but **not enough evidence to convict** either of them of the **major crime** unless one of them acts as an informer against the other (finks).
- If they **both stay quiet**, each will be convicted of the minor offense and spend one year in prison.
- **If one and only one of them finks**, she will be freed and used as a witness against the other, who will spend four years in prison.
- **If they both fink**, each will spend three years in prison.

Modeling

- **Players**: Two suspects.
- **Actions**: Each player's set of actions is {Quiet, Fink}.
- **Preferences**: Suspect 1's ordering of the action profiles, from best to worst, is:
  - **(Fink, Quiet)** (she finks and suspect 2 remains quiet, so she is freed);
  - **(Quiet, Quiet)** (she gets one year in prison);
  - **(Fink, Fink)** (she gets three years in prison);
  - **(Quiet, Fink)** (she gets four years in prison).
- Suspect 2's ordering is (Quiet, Fink), (Quiet, Quiet), (Fink, Fink), (Fink, Quiet).

Payoff Specification

- **Player 1**:
  - $u_1(Fink, Quiet) = 3$
  - $u_1(Quiet, Quiet) = 2$
  - $u_1(Fink, Fink) = 1$
  - $u_1(Quiet, Fink) = 0$
- **Player 2**:
  - $u_2(Quiet, Fink) = 3$
  - $u_2(Quiet, Quiet) = 2$
  - $u_2(Fink, Fink) = 1$
  - $u_2(Fink, Quiet) = 0$

		Suspect 2	
		Quiet	*Fink*
Suspect 1	*Quiet*	2, 2	0, 3
	Fink	3, 0	1, 1

Computing Equilibrium Strategy

- When Suspect 2 plays Quiet, Suspect 1 prefers Fink.
- When Suspect 2 plays Fink, Suspect 1 prefers Fink.
- When Suspect 1 plays Quiet, Suspect 2 prefers Fink.
- When Suspect 1 plays Fink, Suspect 2 prefers Fink.

Remarks

- When individuals **make their own interest**, there is a **coordination failure**.
- Coordination failure leads to **welfare destruction**.
- Howe can be possible that the invisible hand brings about the common good?
- Interaction of two brings about inefficient outcome, while interaction of many brings about efficient outcome?

General Equilibrium Theory: Preliminaries

Description

- General equilibrium is a powerful analytical tool that **links consumption** (exchange economy) **with production** (production economy) for every market.
- It studies:
  - how interaction of the individuals (and firms) forms a set of prices;
  - how the individuals exchange (and firms produce) at these prices; and
  - what allocation of resources this interaction brings about.

Price Formation

- General equilibrium studies how prices are formed.
- What we need to **assume** in economics is: the structure of preferences and technology.
- Determining prices is the solution of a general equilibrium problem.
- **Caveat**: the price of labor is the wage the firm pays to workers The wage is a price for the firm.

Preferences

- Individual have preferences, which are **dispositions to desires**.
- Preference is the order that an individual gives to different alternatives.
- Rational individuals have **preference relation** complying with the axioms of choice.

Preference Relation Axioms

- **Definition of binary relation**: an individual either prefers x to y or is indifferent between x and y. A binary relation has to comply with the following axioms:

1. **Complete relation**: for any pair of x and y either $x \gtrsim y$, or $y \gtrsim x$ or both. Completeness says that an individual should be able to compare any two possible outcomes and state whether she is indifferent between the two, or has a definite preference for one of them, in which case she should be able to state which is the preferred outcome.
2. **Reflexive relation**: $x \gtrsim x$. Reflexivity says that every outcome is weakly preferred to itself.
3. **Transitive relation**: for any triple of x, y, and z, if $x \gtrsim y$ and $y \gtrsim z$ then $x \gtrsim z$. Transitivity is needed under any reasonable interpretation of what a preference relation means –> without the assumption of transitivity, it is unclear what a player means when he says that he prefers z to x.

Utility Function

- A **preference relation** can be represented through **utility function**.
- A **function**: $u : (commodities) \rightarrow number$ is a utility function representing preference relation $\gtrsim$.
- The utility function preserves the order of preferences:
  - $x \gtrsim y \iff u(x) \geq u(y)$.
- Saying that an individual is ordering preferences (under a budget constraint) is equivalent to say that she is maximizing her utility under her budget constraint.

General Equilibrium Theory: History

Description

- Soviet Union success: success of planning.
- Cold war and **ideological war**.
- The Cowles Foundation for Research in Economics.
- Kenneth Arrow and Gerard Debreu.
- Important philosophical problem: is, at least at the level of the theory, Smith's conjecture correct?
    - Influence of logical positivism.

First Welfare Theorem

Institutional Assumptions

- **Individual property rights are defined**: individuals have the right to use and transfer commodities and to exclude the others from usage without consent.
- **Simple contracts are defined**: individuals can enforce simple contracts by means of specific performance.
- No other relevant institutions are necessary.

First Welfare Theorem

Theorem

Under certain assumptions (no externalities, symmetric information, no taxes, no transaction costs), ***any competitive equilibrium*** *(allocation)* ***is optimal*** *(efficient).*

- Basic assumption is **local non-satiation**: more is better –> consumer always prefers $10 + X$ units of something to 10 units of the same thing.
- **Competitive equilibrium**:
- Consumers maximize their utility under their **budget constraint**.
- Producers maximize their profits under their **technological constraint**.
- **There exists** a complete set of prices such that all markets clear. (i.e., all resources are allocated).
- The competitive allocation is optimal in the Pareto sense.

Discussion

- Idea that free exchange leads to optimal (i.e., Pareto efficient) allocation.
- Mechanism (*pure exchange economy*):
  - All the individuals in the society will exchange goods as want as they wish.
  - They will stop exchanging when they cannot improve their welfare (equilibrium).
  - But if they cannot improve their welfare, it means that the allocation is Pareto optimal.
  - The same for firms: they will stop producing when they cannot improve their welfare (equilibrium).

Analysis of the Mechanism

- **Excess demand function** for every commodity has to be zero, otherwise unbalance between demand and supply of commodities.
- The Walrasian auctioneer announced a set of prices (set 1).
- Agents in the economy manifest their willingness to trade at set 1. If excess demand function is zero, the process stops, otherwise,
- The Walrasian auctioneer announced a new set of prices (set 2) ...
- The process ends when there is a set of prices that makes that excess demand function for every commodity equal to zero.
- **Remarkably**: individual are not permitted to exchange at a price different from the equilibrium price (Arrow and Hahn, 1971).

Theoretical Point

- Strong theoretical point in favor of **free market economy**.
- Prices (which are endogenously determined) efficiently coordinate the economy for the allocation of the resources –> overcome Prisoner's Dilemma problem.

Drawbacks

- **Problem 1**: A competitive equilibrium may not exist –> the Theorem does not apply.
- **Problem 2**: Relaxing some assumptions, if a competitive equilibrium exists, it may not be optimal –> allocative efficiency is not guaranteed.

Second Welfare Theorem

Second Welfare Theorem

Theorem

*Under certain assumptions (no externalities, symmetric information, no taxes, no transaction costs, and **convexity**), any Pareto efficient allocation can be decentralized as a competitive equilibrium (with **transfers**).*

- **Convexity**:
  - Preferences: individuals don't prefer extreme bundles of goods. Regularity.
  - Technology: no innovation (no sunk investments).
- Reverse of the first?
- What does it mean?

Intuition: the Problem

- Assume that there are three possible Pareto optimal allocations:
  - Allocation I: Jon has 7 utils and Ann has 3 utils;
  - Allocation II: Jon has 1 utils and Ann has 9 utils.
  - Allocation III: Jon has 5 utils and Ann has 5 utils.
- How can we implement Allocation III?

Intuition: The Solutions

- **Solution 1**: Plan the economy and distribute directly the goods at centralized level.
  - The government directly distributes the goods so that Ann and Jon have the utility distribution achieved under Allocation.
- **Solution 2**: Use markets.
  - The government redistributes *ad hoc* the initial endowments to Jon and Ann .
  - Then Jon and Ann exchange in the market .
  - They will exchange the goods in a way such that they will end up with Allocation I.
- Solution 2 is provided by the Second Welfare Theorem.

Central Messages

- Since the market can get the economy to the efficient frontier, wealth redistribution is the only justification for government intervention.
- The second welfare theorem suggests that we can separate efficiency concerns from distributional concerns.

Law and Economics: Theory of Incomplete Markets

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(In)complete Markets

Complete Markets and Contracts

- If we introduce **uncertainty**, agents (of the economy) can get perfect insurance by trading –> securities which pay when a particular state realizes.
- Market is complete when the number of A-D securities equals the number of states (market completeness condition) –> **Perfect insurance** against uncertainty.
- When markets are incomplete agents cannot get perfect insurance and therefore consumption preferences cannot be separated by production preferences –> Problem of **existence** and **multiplicity** of equilibria.
- **Complete contracts** mean that agents in the economy can ex-ante write a complete state contingent plan of actions.

Incomplete Markets: Market Failures

- Another way to say that markets are incomplete is saying that markets fail: they don't bring about efficient allocation outcomes.
- There several sources of market incompleteness:
  - **exogenous factors** –> some markets do not exists as individuals can't or don't know how to create a competitive market.
    - externality.
    - public good.
    - market power.
    - bounded rationality.
  - **endogenous factors** –> for some reasons individuals (even if perfectly rational) don't have enough information to create a competitive market.
    - asymmetric information.
- In general, we say that one of these factors exists, markets fail (to exist in the competitive sense).
- When markets are incomplete, competitive equilibria are not efficient anymore and government regulation can improve allocative efficiency.

General Idea

- **General idea of competitive equilibrium**: in competitive equilibrium, we have one price for each good and competitive prices are determined by competitive behaviors.
- **General idea of market failures**: we have **bad prices** or **missing prices** (missing markets).

Externality

Intuition

- **Bad externality**: the good is a bad –> Jon is polluting and Ann is suffering Jon's emissions.
  - Jon is producing a bad externality.
- **Good externality**: the good is a good –> Jon is playing nice music and Ann enjoys his music.
  - Jon is producing a good externality.
- **Pecuniary externality**: there is something wrong with the price system in coordinating individual behaviors.
  - Atomistic behavior and fire sale.

Conceptualization

- In competitive equilibrium, trade is always voluntary:
  - Consumer's preferences are defined solely over the set of goods she might herself decide to consume.
  - Production of a firm depends only on its own input choices.
- However, in some circumstances consumers and firms may be directly affected by actions of other agents in the economy –> there may be external effects from activities of others.

Definition

*An **externality** is present whenever the well-being of a consumer or the production possibilities of a firm are directly affected by the **actions of another agent** in the economy.*

The Missing Price Problem

- In the presence of externalities, the producer is not paying for the cost she imposes on third parties.
- There is a **missing market** or a **missing price**.
- As a result, there can be excessive production of "bads" (e.g., pollution) –> inefficient allocation.

Solution

- **Regulation**: e.g., government puts a cap on production or emissions.
- **Pigouvian Taxation**: government taxes final good in order to induce firms to reduce activity and therefore the level of externalities.
- **Creating a market**: government imposes payment of a price for the externality (think to "green permits").
- **Distributing Legal Entitlements**: Government redistributes legal entitlements to individuals so to induce efficient bargaining e.g., if firm pollutes, residents are given right of action against it.

Public Goods

Intuition

- There is one apple. If Ann is eating the apple, Jon cannot eat it –> the apple is a **private good**.
- There is one street. Ann is driving in the street. Jon can drive as well –> the Street is a **public good**.
- What is the problem with public goods?
- Public goods posses the feature that they are **non-depletable**.
- Consumption by one individual does not affect the supply available for other individuals –> **consumption is not rival and excludable**.

Definition

*A **public good** is a commodity for which use by one agent does **not preclude use by other agents**.*

The Problem

- Would Ann or Jon buy a public good knowing that Jon can consume it without paying for it?
- Would anyone buy a public good knowing that all the others can consume it without paying for it?
- **Would a firm produce a public good** knowing that none is willing to pay for it?

The Free-Rider Problem

- Each consumer has an incentive to enjoy the benefits of the public good provided by others –> free-riding.
- Similar to the case of externalities, in the presence of public goods consumers are not paying for the cost of the good they consumes.
- There is, again, a missing market or a missing price again.
- As a result in a free-market economy, without external corrections, there will be **underproduction** of public goods inefficient allocation.

Solution

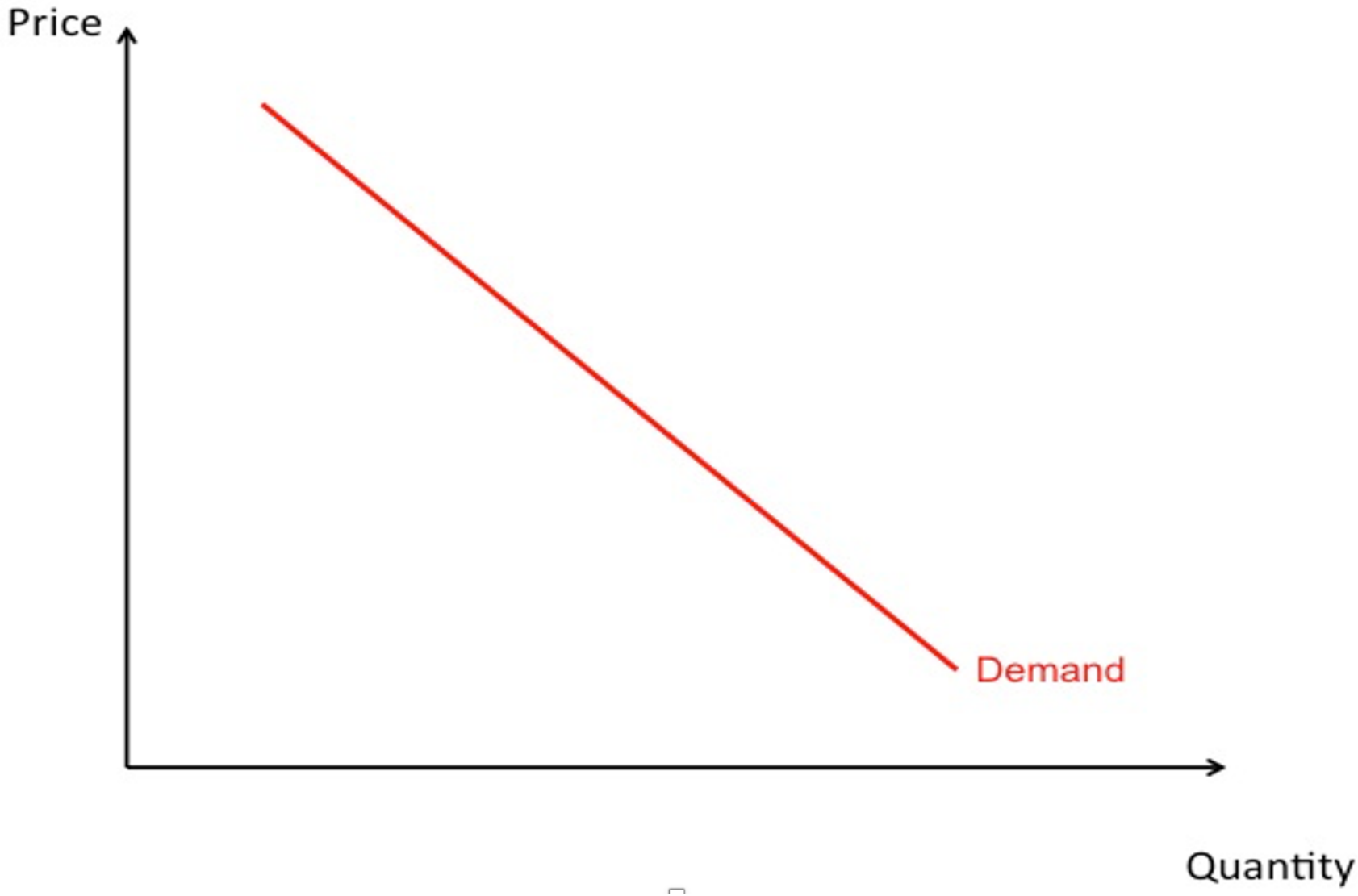
- **Direct Government Production**: Government directly produces public goods –> defense, streets, infrastructures in general.
- **Indirect Government Production**: Government provides incentives to individuals to promote production of public goods –> donations to entities producing public goods are tax-deductible –> charter schools.
- **(Semi-)Privatization of Public Goods**: Government gives the producer of a public good authority to exclude individuals from consumption unless they pay a price –> e.g., a firm constructs a highway and passing cars have to pay a fare.

Market Power

The Law of Demand

- It is the fundamental law in a market economy.
  - Lower price –> higher willingness to spend of consumers.
  - Exception: Some goods (Giffen goods) violate the law of demand –> Irish Potato in 19th Century.

The Law of Demand



Consumer Surplus

- **Consumer surplus**: is the amount a buyer is willing to pay for a product minus the amount the buyer actually pays.

Example

My willingness to pay for a nice car is \$20,000. If the price is \$15,000, I receive consumer surplus for \$5,000.

Firm Surplus

- **Firm surplus**: is the amount equal to the price a seller receives from a consumer minus the price that the seller is willing to sell that product.

Example

Seller receives \$20,000 for a product from a consumer. The seller is willing to sell that product at \$10,000. Seller receives \$10,000 of surplus.

Market Pricing Mechanism

- Firms produce to maximize profits Π, where $\Pi = R - C$.
- In a competitive economy, firms produce until price equals marginal cost, so that we have $\Pi = 0$.
  - If a firm produces more –> loss.
  - If a firm produces less, there will be another firm willing to produce some extra unit (i.e., first firm will lose customers).

Competition vs. Market Power

- In a competitive market firms are **price-takers** –> they cannot influence market prices.
  - Firms cannot make the price because otherwise other firms will capture their consumers.
- In a non competitive market, firms are price-makers –> allocation (quantities produced) are distorted.

Monopoly

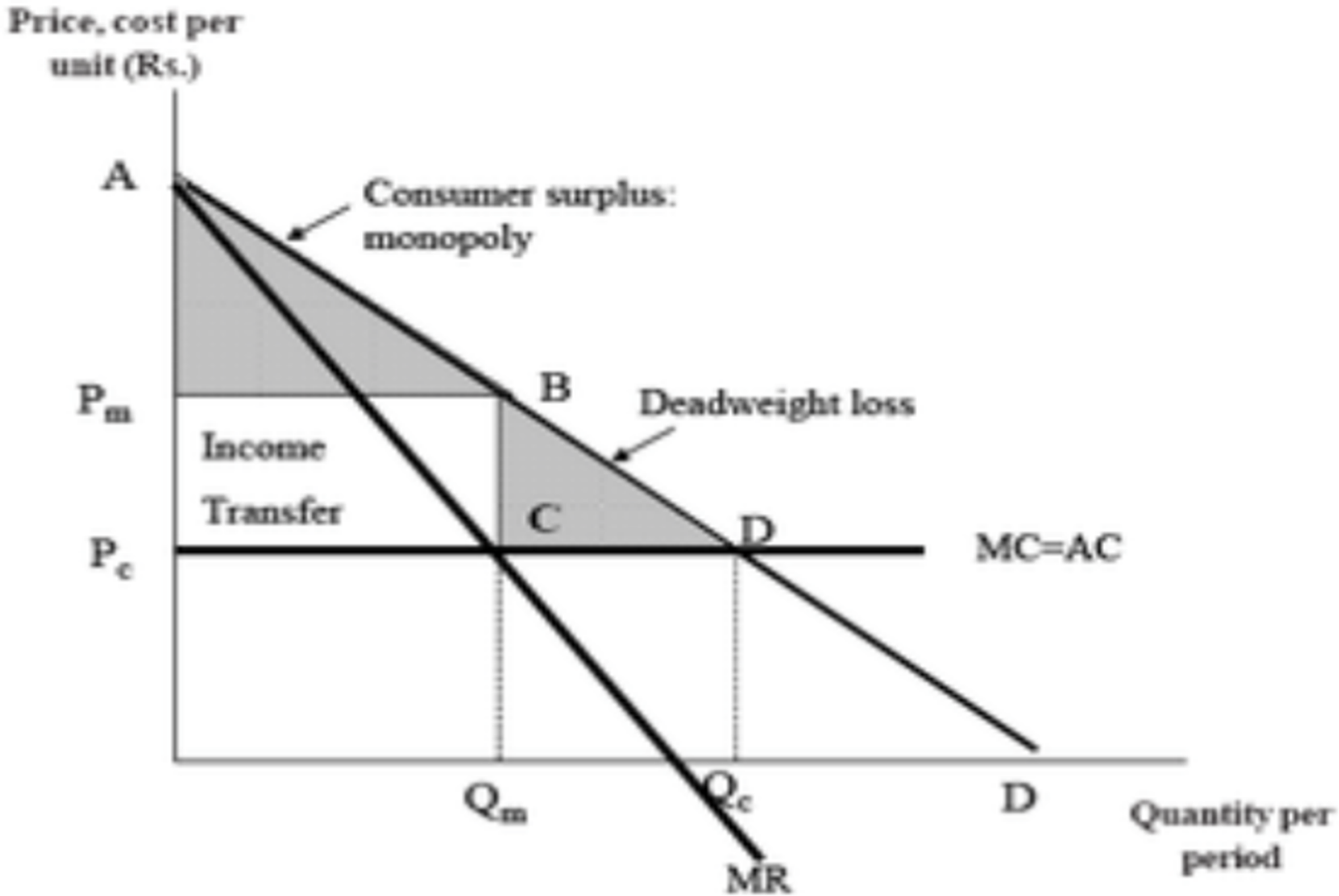
Monopoly

- Paradigmatic case of market power –> one firm has all the power!
- One monopolist and many consumers.
- **Monopolist** (the sole producer) **distorts produced quantity to the bottom to maximize profits**.
- Distortion is individually efficient for monopolist.
- Distortion is socially inefficient.

Competition v. Monopoly

- Under perfect competition, firms produce until **price** equals **marginal cost** of production.
- Basic idea of monopoly: reduce quantity to raise price –> apply law of demand.
- Under monopoly, the firm distorts the quantity to the bottom so to maximize profits **marginal revenues** equal **marginal costs** .

Competition v. Monopoly: Visualization



Remedy

- Antitrust intervention is the standard remedy.
  - Sanction **collusive agreement** to fix prices.
  - Prevent **monopolization** by one firm.
  - Control **mergers** big –> firms tend to monopolize the market.

Bounded Rationality

The Problem

- Do people make **fully** rational decisions in economics?
- The Welfare Theorems presuppose that consumers and firms are utility and profit maximizers, respectively.
- This means that they are perfectly rational and capable of making very **complicated computations**. Is it true?
- From empirical and experimental observations, there is no consistent evidence of individual behavior based on utility maximization.

Theory

- Bounded Rationality [Simon, 1947; March & Simon, 1958].
- It is concerned with rational choice but it takes into account the cognitive limitations of the decision maker.
- It is concerned with human decision-making processes.
- Humans have limitations of both:
  - Knowledge and computational capacity.
  - For discovering alternatives.
  - Computing their consequences under certainty or uncertainty.
  - And making comparisons among decisions and outputs (i.e., tradeoff analysis).

Consequences

- If consumers and firms imperfectly maximize, prices are unstable (unreliable).
- **Competitive equilibrium is no longer optimal**.
- Note: also a planner is limited by bounded rationality, so there is no normative solution to the problem.

Asymmetric Information: Moral Hazard

General

- With complete markets the characteristics of agents, their actions, and goods they exchange are known to market participants.
- What about if one agent does not know what the other is doing (moral hazard) or what her characteristics are (adverse selection)?
- **Moral Hazard**:
  - Ann has hired Jon for her store and delegated him some tasks.
  - She does not know whether Jon is behaving or misbehaving:
  - Hidden Action –> Moral Hazard.
- **AdverseSelection**:
  - Ann needs to hire a worker for her store.
  - She may hire Jon, but she does not know whether Jon is a good or a bad worker:
  - Hidden Type –> Adverse Selection.

Example

- Firm –> Worker.
- Bank –> Borrower
- Buyer –> Seller
- Client –> Lawyer
- Wife –> Husband!

Moral Hazard: Example

- Ann (the principal) wants to hire Jon (the agent) to perform a task. During the employment, Ann does not observe if Jon is behaving or not –> Jon has *private information*.
- If Jon behaves (i.e., exerts high effort), Ann receives utility of \$1,000.
- If Jon misbehaves (i.e., exerts low effort), Ann receives utility of \$0.
- Behaving costs \$100 to Jon.
- How can Ann induce Jon to behave?

Moral Hazard: Solution?

- **Solution 1**: Assume Ann pays Jon \$90 to perform the task, will Jon behave?
- **Solution 2**: Assume Ann pays Jon \$110 to perform the task, will Jon behave?
- **No**:
  - After receiving the payment (even a very high payment!) from Ann, Jon can save the money of high effort (i.e., \$100).
  - In other words, because he receives the payment from Ann for sure and *Ann cannot observe his action*, the dominant strategy for Jon is misbehaving.
  - Is moral hazard solvable?

Moral Hazard: Providing Incentives

- Ann needs to provide incentives to Jon.
- For example, Ann can propose a simple payoff-contingent contract to Jon:

  "Dear Jon, as payment for the task I am requiring you to do, I will pay you 15% of my realized utility."

- What does that mean?
  - If Jon misbehaves, Ann receives \$0 and Jon receives 15% of \$0!
  - If Jon behaves, Ann receives \$1,000 and Jon receives 15% of \$1,000, which is \$150. However, (remember) behaving costs \$100 to Jon. This means that Jon receives a net utility of \$50 from behaving.
  - Now for Jon behaving becomes individually efficient –> the **contract is incentive compatible**.

Asymmetric Information: Adverse Selection

Adverse Selection: Example

- Ann wants to buy a used car and does not know if the car is good or a "lemon" –> Jon, the seller, has this *private information* instead.
- The car is good with probability 50%, in which case it provides utility of \$1,000; the car is a lemon with probability 50%, in which case it provides utility of \$400.
- What's the maximum price Ann is willing to pay?
- If Ann buys a car from Jon her expected value is: (50% $\times$ \$1,000) + (50% $\times$ \$400)=\$700 Ann is willing to pay up to \$700.
- What's the problem with that?

Adverse Selection: Result

- We have one price for two goods –> **Pooling equilibrium**.
- Both good cars and lemons are sold at the same price, because the buyer is asymmetrically informed with respect to the seller.
- **Inefficiency**: cross-subsidization –> sellers of good cars indirectly pays sellers of lemon.

Adverse Selection: Market Breakdown

- Now assume that the seller of a **good car** is willing to sell it at **no less than $800**, while the seller of a **lemon** is willing to sell it at **no less than $300**.
- Under perfect information, both good cars and lemons are sold:
  - $1,000>$800.
  - $400>$300.
- Under asymmetric information, instead sellers of good cars will never sell them, because $700<$800.
- As a result, **only sellers of lemons are willing to sell cars** in the market.
- This implies that the **market for good cars breakdowns** –> Missing market –> Missing price –> Inefficiency.

Adverse Selection: Remedy

- Assume that a seller sells a car plus insurance on car quality.
- How does this contract change the adverse selection problem?
- The **seller of a good car is willing to provide insurance on car quality** –> his expected cost of insurance is low.
- The **seller of a lemon is not willing to provide insurance on car quality** –> his expected cost of insurance is high.
- Now the market is able to separate (i.e., screen) seller of good cars from sellers of lemons –> **Separating equilibrium**.

Coda: Incomplete Markets

Negative Results (Geneakoplos and Poliemarchakis)

- Geneakoplos and Poliemarchakis –> **when markets are incomplete**:
  1. A competitive equilibrium does exist, but additional assumptions are required.
  2. With no additional assumptions, the number of equilibria can explode.
  3. **All competitive equilibria are suboptimal**.
  4. Under some conditions, **all competitive equilibria are constrained Pareto suboptimal**.

Law and Economics: Private Law

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Property

PROPERTY

1. **Definition and L&E Justification**
2. **The Coase Theorem**
3. **Property Rules v. Liability Rules**

Property: Economic Justification

PROPERTY RIGHTS

- Bundle of rights that includes:
  - **Possessory Rights** – rights to use things (subject to limitations) and exclude others from use
    - Diff. btw owning a house and renting?
  - **Right of Transfer**
    - **Both are required for property!**

WHY PROPERTY?

They increase social welfare, but how?

- **Short Answer**: incentives to work!
- **Example 1**: Individuals can work either 0, 1, 2, or 3 hours, and each hour an individual works she produces one unit of output.
- *See Table 1.*

Table 1: Hours, Output, and Social Welfare				
Hours of work	Output	Utility from output	Disutility from work	Social welfare
0	0	0	0	0
1	1	10	6	4
2	2	18	13	5
3	3	24	22	2

OBSERVATIONS

- Social welfare is maximized if each individual works two hours.
- Working the first hour is beneficial since it augments utility by 10 and involves disutility of only 6 (net: 4).
- Working a second hour raises an individual's welfare further because it increases utility by 8 and increases disutility by only 7 (net: 1).
- Working a third hour would increase utility by only 6 and involve greater disutility of 9 (net: -3).

No Property Rights

- **Example 2**: Modify Example 1 by assuming that each individual will lose half of what she produces to others who can take that amount.

- Then each individual will choose not to work at all, for the situation facing each individual will be as follows.

- *See Table 2.*

Table 2: Hours and Output in the Absence of Property Rights				
Hours of work	Retained output	Utility from output	Disutility from work	Individual welfare
0	0	0	0	0
1	.5	5	6	−1
2	1	10	13	−3
3	1.5	14	22	−8

OBSERVATIONS

- Here an individual will not even work the first hour because she will be able to keep and consume only .5 units of output, and therefore enjoy utility of only 5, which is less than the disutility of work of 6, and so forth (net: -1).
- Imagine that reality is in between Example 1 and Example 2 → incentives to work will be proportional to the the output that an individual is able to retain.

Other Advantages of Property Rights

1. Incentives to maintain and improve things → same reasoning.
2. Incentives to transfer things → recall reasons for trading.
3. Avoidance of dispute and of efforts to protect or to take things → waste of resources.

IMPLICATIONS

1. Well define property rights are a precondition for a **market economy** → welfare theorems do not hold if property rights are not well defined.

2. Well defined property rights are essential to provide **individual incentives** → Without property rights individuals would not do much as they anticipate future expropriation.

3. **Problem:** taxation! From an economic perspective taxation weakens property rights as a third party can appropriate part of the individual's output.

PROPERTY

1. **Definition and L&E Justification**
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3. **Property Rules v. Liability Rules**

The Coase Theorem

COASE THEOREM: CONTRACT VERSION

- **If transaction costs are zero**, the initial allocation of property rights (or more in general of legal entitlement) is irrelevant as the parties will be able to efficiently reallocate property rights by **contract**.
- Intuition: Don't leave money on the table.

EXAMPLE

- Consider a factory whose smoke causes damage to the laundry hung outdoors by five nearby residents. In the absence of any corrective action each resident would suffer $75 in damages, a total of $375. The smoke damage can be eliminated in either of two ways: a smokescreen can be installed on the factory's chimney, at a cost of $150, or each resident can be provided an electric dryer, at a cost of $50 per resident.
  - **Question 1**: What is the efficient solution?
  - **Question 2**: Does the solution depends on the original allocation of property rights (initial entitlements)?
  - **Question 3**: Is it achievable by contract?

ANSWERS

- **Answer 1**: The efficient solution is clearly to install the smokescreen because it eliminates total damages of $375 by an outlay of only $150, and it is cheaper than purchasing five dryers for $250.
- **Answers 2 and 3**: According to the Coase theorem → **No** and **Yes**, respectively, but how does it work?

Restating The Question

- **Coase Question**: Does the efficient outcome result if the right to clean air is assigned to the residents or if the right to pollute is given to the factory?
- We have two possible cases.

CASE 1

- If there is a right to clean air, then the factory has three choices:
  1. pollute and pay $375 in damages;
  2. install a smokescreen for $150; or
  3. purchase five dryers for the residents at a total cost of $250.
- The factory would install the smokescreen, the efficient solution.

CASE 2

- If there is a right to pollute, then the residents face three choices:
  1. suffer their collective damages of $375;
  2. purchase five dryers for $250; or
  3. buy a smokescreen for the factory for $150.
- The residents also would purchase the smokescreen.

LESSON

The efficient outcome will be achieved regardless of the assignment of property rights (legal entitlements)

COASE THEOREM: REGULATION VERSION

- If transaction costs are positive, the initial allocation of property rights (or more in general of legal entitlement) **does matter.**

- Intuition: We can't rely on contract → therefore we should allocate property rights (legal entitlements) in the efficient way.

Transaction Costs

- Cost of time to bargain over contract.
- Costs to specify contract.
- Costs to enforce a contract.
- Asymmetric information.

PROPERTY

1. **Definition and L&E Justification**
2. **The Coase Theorem**
3. **Property Rules v. Liability Rules**

Property Rules vs. Liability Rules

CALABRESI & MELAMED, 1972

- What is a property rule? What is a liability rule?
- Short answer:
  - a **property rule** is the right to obtain an injunction (i.e., stop someone from doing something) to protect one's entitlement.
  - A **liability rule** is the right to ask damages when that entitlement is infringed upon.

PROPERTY RULE

- Consider two parties: A and B.
- Assume A has a property rule, meaning that she can stop B from doing something.
- **Example**: A has the right to stop B from polluting.
- Who has the property right?
- Answer: A has the property as B cannot do her activity, unless A consents.

LIABILITY RULE

- Consider two parties: A and B.
- Assume A has a liability rule, meaning that she can ask B damages if B continues doing something.
- **Example**: A has the right to ask B damages if B pollutes.
- Who has the property right?
- Answer: B has the property as B can continue her activity as long as B pays damages to A.

COMMENTARY

- A system based on property rules is typical of a liberal state
  - System based on voluntary transactions.
  - Entitlement is attributed by state but then value and use is left to holder
- A system based on liability rules is typical of a social democrat state
  - System based on involuntary transactions.
  - Value of entitlement is determined by state.

Torts

1. **Structure & Function**
2. **Automobile Accidents**

Torts: Structure and Function

Theories of Torts

- Corrective Justice Approach
- Distributive Justice Approach
- Law and Economics Approach

CORRECTIVE JUSTICE APPROACH

1. A injured B (damage);
2. B pays damages to A;
3. 2. corrects the injustice of 1.

- Hegelian juxtaposition → the law of Torts remedies the injustice suffered by the victim.

DISTRIBUTIVE JUSTICE APPROACH

- Use the law of torts to redistribute resources within society.
- **Limit damages** that injured workers can ask → distributive strategy → from working class to firms
- **Increase damages** that injured workers can ask → opposite distributive justice strategy → from firms to working class

LAW AND ECONOMICS APPROACH

- Function of Torts is to minimize social costs of accidents.
- How?
- By inducing parties (i.e., the tortfeasor always and the victim sometimes) to take optimal level of precautions.

Social Cost of Accidents

- First element: expected value of damage → probability p that damage D occurs: $p \times D$.
- Second element: precautions adopted by tortfeasor (C_T) and victim (C_V).
- Objective of law and economics of tors: minimize $p \times D + C_T + C_V$.

Structural Elements

Action (by tortfeasor)

Damage (to victim)

Causation: Action → Damage

Fault is optional:

- Required for negligence liability;
- Not required for strict liability.

Torts

1. **Structure & Function**
2. **An Application: Automobile Accidents**

Automobile Accidents (I)

Efficient Liability Rules

Questions:

1) How do liability rules affect behaviors?

2) How do we choose efficient liability rules?

EFFICIENT LIABILITY RULES - EXAMPLE

- Driver has three choices (where only speed matters for expected harm):
  - drive rapidly;
  - drive moderately; or
  - drive slowly.
- Each choice results in some benefit to the driver and some expected accident cost to the pedestrian.
- Driver's benefit from driving faster might be the dollar value she places on saving time.
- Pedestrian's harm also is assumed to have monetary value.

Automobile Accident Example — Driver's Care Affects Expected Accident Cost

Behavior of Driver	*Benefit to Driver*	*Expected Accident Cost to Pedestrian*	*Benefit Minus Cost*
Drive rapidly	$120	$100	$20
Drive moderately	$80	$40	$40
Drive slowly	$50	$20	$30

Strict Liability or Negligence

1. **Strict Liability**: tortfeasor is liable regardless of her care.
2. **Negligence**: tortfeasor only liable if she does not meet required standards of care.

STRICT LIABILITY

- Under strict liability, driver will be made liable for the pedestrian's accident losses **regardless of the driver's care.**
- Thus, for each action, the driver's benefit net of her expected liability payments is the same as the last column in the table.
- Driver therefore will choose to drive **moderately** (efficient outcome).

STRICT LIABILITY: COMMENTS

- Strict liability results in efficient behavior → it forces the tortfeasor to take into account all of the adverse effects of (we say **"internalize"**) her behavior on the victim.
- For strict liability to be efficient, however, the court must be able to obtain correct information about the victim's damages.
  - Why?

NEGLIGENCE

- Under negligence, the driver will be made liable for the pedestrian's accident losses only if the driver does not meet **some standard of care**.
- Suppose this standard is determined by the care that would be taken if the driver acted efficiently.
- In the example, this corresponds to driving at moderate speed.

NEGLIGENCE

- Under standard of care for driving moderately, driver would be liable for the pedestrian's accident losses only if the driver chooses to drive rapidly.
- In that case her benefit net of her expected liability payments is $20 (a $120 benefit less a $100 expected liability payment).
- If he drives moderately, it is $80 (just the benefit because there is no liability), and if he drives slowly it is $50 (again, just the benefit).

NEGLIGENCE: COMMENTS

- Under negligence with this standard of care, driver will choose efficient outcome.
- Rule of negligence leads to efficient outcome because the **injurer prefers to comply with the standard of care — to avoid having liability** increase from zero to the victim's damages if the standard is violated — and the standard is selected to correspond to the desired behavior.
- For negligence to be efficient, it is necessary for the court to have enough information to determine efficient outcome so that standard of care can be chosen to correspond to it (**more information**).

Torts

1. **Structure & Function**
2. **An Application: Automobile Accidents**

Automobile Accidents (II)

Efficient Liability Rules

Questions:

1) How do liability rules affect behaviors?

2) How do we choose efficient liability rules?

Automobile Accident Example — Driver's Care Affects Expected Accident Cost

Behavior of Driver	*Benefit to Driver*	*Expected Accident Cost to Pedestrian*	*Benefit Minus Cost*
Drive rapidly	$120	$100	$20
Drive moderately	$80	$40	$40
Drive slowly	$50	$20	$30

PEDESTRIAN'S CARE

- In many accident situations, problem is not just to control the injurer's behavior (unilateral precautions).
- In general, both injurer and victim can affect the probability and the magnitude of the harm (**bilateral precautions**).
  - For example, pedestrian can walk rather than run while crossing a street, or cyclist can wear a protective helmet.
- When both injurer and victim can affect the expected harm, the issue is how to induce **both parties to take appropriate care.**

EXAMPLE: ASSUMPTIONS

- Pedestrian has one choice: to walk or to run.
- If she walks, then her expected accident loss is:
  - $100 if driver drives rapidly;
  - $40 if driver drives moderately; and
  - $20 if driver drives slowly.
- If the pedestrian runs, her corresponding expected accident losses are $110, $50, and $30 → running is assumed to raise the expected harm by $10 regardless of the driver's behavior.

Automobile Accident Example — Driver's Care and Pedestrian's Care Affect Expected Accident Cost

Behavior of Driver	*Benefit to Driver*	*Expected Accident Cost to Pedestrian (Depending on Pedestrian's Behavior)*	*Benefit Minus Cost (Depending on Pedestrian's Behavior)*
Drive rapidly	$120	$100 (walks) $110 (runs)	$20 (walks) $10 (runs)
Drive moderately	$80	$40 (walks) $50 (runs)	$40 (walks) $30 (runs)
Drive slowly	$50	$20 (walks) $30 (runs)	$30 (walks) $20 (runs)

PROBLEM – DRIVER'S SIDE

- Efficient solution to the accident problem now involves a **specific action both by the driver and the pedestrian.**
- If pedestrian walks, the problem is the same as before (drive moderately).
- If the pedestrian runs, benefits minus costs also are maximized when the driver drives moderately.
- Thus, **regardless** of pedestrian's behavior, efficient solution involves driving moderately.

PROBLEM – PEDESTRIAN'S SIDE

- Running rather than walking increases pedestrian's expected harm by $10 (regardless of the driver's behavior).
- Running provides additional benefits to the pedestrian valued at $5.
- Thus, given these costs and benefits, efficient solution involves pedestrian walking.

STRICT LIABILITY

- Driver's benefit net of his expected liability payments corresponds to the last column in previous table.
- **If pedestrian walks**, relevant values are $20, $40, and $30, depending on whether the driver drives rapidly, moderately, or slowly.
- Driver therefore would choose to drive moderately.
- **If pedestrian runs**, corresponding values are $10, $30, and $20, and driver also would choose to drive moderately.
- Thus, regardless of pedestrian's behavior, strict liability will lead the driver to behave efficiently because strict liability forces driver to internalize all costs!

STRICT LIABILITY

- **However**, rule of strict liability will not be efficient with respect to pedestrian's behavior.
- Because pedestrian will be fully compensated for her losses, she will ignore these losses when deciding whether to walk or to run → she only will consider $5 extra benefit from running → pedestrian therefore will choose to run even though running increases expected accident costs by $10.

CONTRIBUTORY NEGLIGENCE

- **Injurer is strictly liable unless the victim is contributorily negligent.**
- Assume standard of care applicable to pedestrian correspond to the efficient behavior of pedestrian → walking.
- If the pedestrian walks, she is not contributorily negligent, so the driver will be strictly liable.
- If she runs, she is contributorily negligent, so **the driver would be free of liability** and pedestrian will have to bear her own losses.

CONTRIBUTORY NEGLIGENCE

- **Idea is to add standard of care for pedestrian (victim) too**
- While running rather than walking provides additional benefits valued at $5, it increases the expected accident cost born by the pedestrian from zero to $110, $50, or $30, depending on whether driver drives rapidly, moderately, or slowly.
- As a result, pedestrian will choose to walk in order to avoid having to bear her own losses → given this choice by pedestrian, driver will be strictly liable. We already have seen that this will lead the driver to choose to drive moderately.
- Both parties act efficiently

NEGLIGENCE

- Assume driver is negligent only if she drives rapidly.
- If pedestrian runs, driver's benefits net of her expected liability payments are \$10 if she drives rapidly (\$120 − \$110), \$80 if she drives moderately (\$80 − \$0), and \$50 if she drives slowly (\$50 − \$0).
- Thus, driver will choose to drive moderately regardless of what the pedestrian does.
- Because driver will not be negligent, pedestrian will bear her own losses → she will then compare \$5 extra benefit from running to \$10 increase in expected accident costs and will choose to walk.
- Thus, rule of negligence will lead both parties to take an efficient amount of care.

COMMENTS

- Under negligence rule it is not necessary to add a defense of contributory negligence to induce the victim to take proper precautions.
- If contributory negligence defense was added, it would not affect the conclusion that both parties will take an efficient amount of care!
  - Victim would meet standard of care applied to her to avoid being contributorily negligent and having to bear her own losses.
  - Given that victim is not contributorily negligent, injurer will meet the standard of care applied to him to avoid being negligent and having to compensate victim for her losses.

Thank You

Interim Contract Interpretation

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Litigation and Interpretation

- Why sophisticated parties litigate contracts instead of renegotiating?
  - Interpretation problem.
- **Classic approach**: Interpretation as a party type issue.
  - Courts do not know party types.
- **New approach**: Interpretation (also) as a court type issue.
  - Parties do not know court type.
  - Which kind of evidence will a court admit?
  - Doctrines application in light of evidence.

The Interpretation Problem, Revisited

- **Problem**: Under information asymmetry on court type, parties may have *inconsistent* second order beliefs (i.e., disagree) on court interpretation and expected litigation payoffs.
- **Equilibrium**: parties may litigate even when they are equally informed on their types and there are gains to share from renegotiation.
- **Solution**: interim interpretation.
  - Remedies allowing parties to ask court to anticipate interpretation.
  - Forms: **declaratory judgement** and/or (reformed) **reformation**.
  - General Goal: help prevent breach (rather than intervening after breach), by enabling courts to serve an **epistemic coordination function**.

Aside: The Interpretation Mechanism

- **Mechanism**:
  - Court's space of action is (to large extent) disposable by contracting parties.
  - Idea: Myerson's Generalized Principal-Agent Problem –> court as a *correlation device.*
- Efficiency can be improved if courts act as active players of the parties' contract framework (the "mechanism").

From Accuracy to Coordination

- Interpretative goal (classic approach): tradeoff b/w *accuracy* and *writing and adjudication costs*.
  - **Contextualism.**
  - **Textualism.**
- When issue of court type is added to issue of party type, interpretation problem becomes more complex.
  - **More evidence increases accuracy** but does not just *raises* ***costs***, it also *increases* ***uncertainty*** on court type and hence likelihood that parties may have inconsistent beliefs on court adjudication outcomes.
- Interpretative primary goal: coordination.

Unavoidable Contextualism

- Incorporating issue of court type provides further argument for textualism.
  - Textualism reduces court discretion and hence likelihood of coordination problem.
- Textualist rule alone, however, cannot fully solve the problem of court type.
  1. Parties may lack ability to dispose of interpretative rules, e.g. CA.
  2. Space of court discretion is never empty, e.g. NY.
  3. Parties may choose contextual evidence as a default.
  4. **Modern relational contracts** –> textualism excluded by nature of the exchange rather than by law (e.g., framework contracts, managerial contracts, etc.).

Interim Interpretation

- Ask court to reveal its type *before a breach occurs*.
  - Interim interpretation commits the court to same evidentiary base and same application of doctrine in case of future litigation.
- Two forms:
  1. **Declaratory judgement**, stating court authoritative opinion (no enforceable rights).
  2. **(Reformed) Reformation**, not to correct mistake but to conform a contract to unanticipated situations.
- Response to parties' epistemic conflict that causes coordination to fail.

Example: Setting

- Buyer and Seller: contract for producing a software: B and S.
- After signing, B develops new operating system, so it would be desirable (efficient) that software be compatible with new system: w_1 and w_2.
- Contract is silent, but parties have *informally* agreed on compatibility. However, compatible software is more costly: $c_2 > c_1$.
- **Interpretation problem**: can S deliver w_1 at c_1?

Example: Problem

- In cases of unavoidable contextualism, parties will be uncertain about:
  1. evidence court will admit (e.g., text or context).
  2. application of doctrines (e.g., pre-existing duty rule and *Brian Contr. v. Brighenti*).
- If parties have divergent beliefs on 1 & 2 (i.e., **different distributions about the court type**), they might end up litigating, even when they perfectly know the substance of their exchange and would both gain from renegotiation.
  - Perfect information on the *economic* fundamentals: $v(w)$ and $c(w)$.
  - Imperfect information on the *legal* fundamentals: litigation payoffs.
- Imperfect information on the legal fundamentals can be modeled as a **court type problems**: parties have different beliefs on the court type (e.g., textualist-like vs. contextualist like).

Example: Solution

- Under interim interpretation, **court** reveals 1 & 2 (i.e., **reveals its type**).
- Parties will have common beliefs.
- Acting on these beliefs, parties will always renegotiate, when there are gains to share.
  - **If court admits oral modification**, e.g., under *Brian Contr.,* parties will execute the interpreted - and socially desirable - contract.
  - **If court does not admit oral modification**, buyer will offer transfer for extra cost of compatible software.
- **Efficient Coase bargaining** is ensured.

Interim Interpretation in Different Economies (1)

- **Exchange economy**:
  - Parties' relevant action is trading the good.
  - *Too good to be true*: parties efficiently renegotiate, regardless of court accuracy.
  - **II –> Court acts as a pure correlation device.**
- **Investment economy**:
  - Value of parties' exchange also depends on ex-ante specific investments.
  - Unverifiability –> *underinvestment*, if party anticipates counterparty's attempt to renegotiate the deal ex-post (hold-up problem).
  - If courts are not systematically mistaken (good accuracy), interim interpretation reduces size of *renegotiation surplus* and *underinvestment*.
  - **II –> Court acts as a correlation devise and fact-finder.**

Interim Interpretation in Different Economies (2)

- **Modern relational contracts (collaborative economy)**:
  - Relationships where parties cannot know exactly what their obligations will be given the nature of the project (high bilateral uncertainty).
  - Loose obligational content *and* high asymmetric information.
  - Both party type and court type issue.
  - **II –> Court will act as a mediator:**
    - either through an information-forcing mechanism in the access to II, if information is verifiable;
    - or by proposing **forward-looking assessment of the parties' arrangement that removes uncertainty** on the parties' rights and facilitates voluntary disclosure of information.
- **Risk averse economy**:
  - Risk averse party willing to accept less money because "certainty equivalent" reduces uncertainty they discount.
  - Interim interpretation reduces uncertainty but not if publicly announced, so "private access" to interpretation.
  - **II –> Court acts as party's legal adviser.**

Investment Economy: Illustration

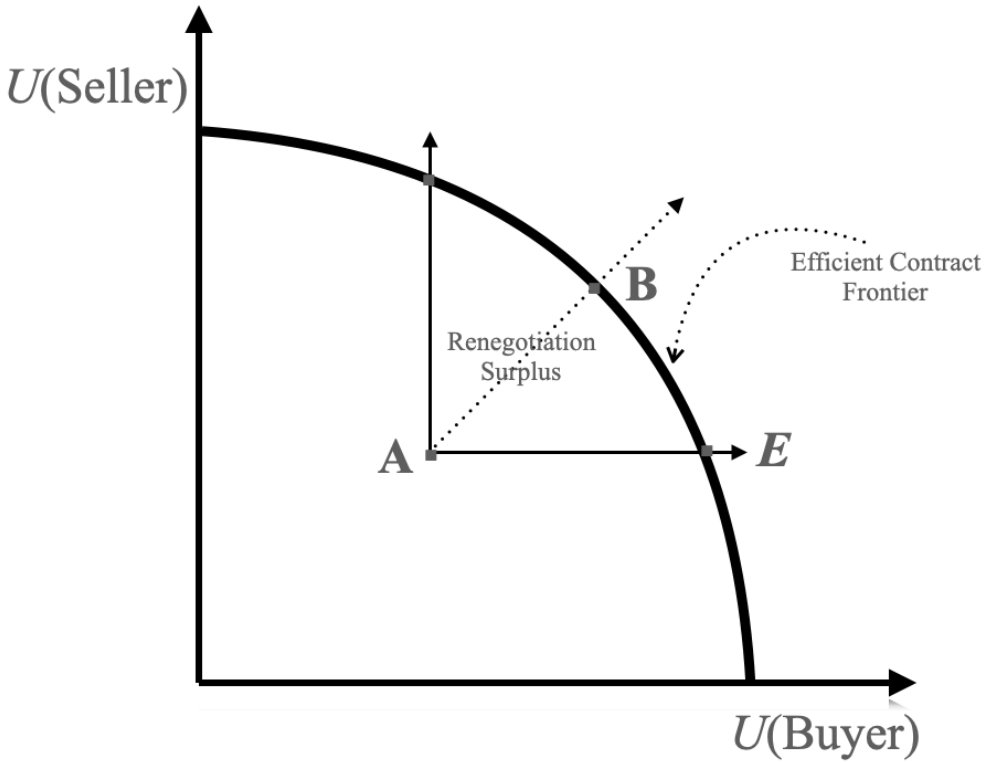

Figure 1: Renegotiation without Interim Interpretation

- **A**: original contract in the **Bargaining Set**.
- **B**: renegotiation of **A**.

Renegotiated Contract with Interim Interpretation

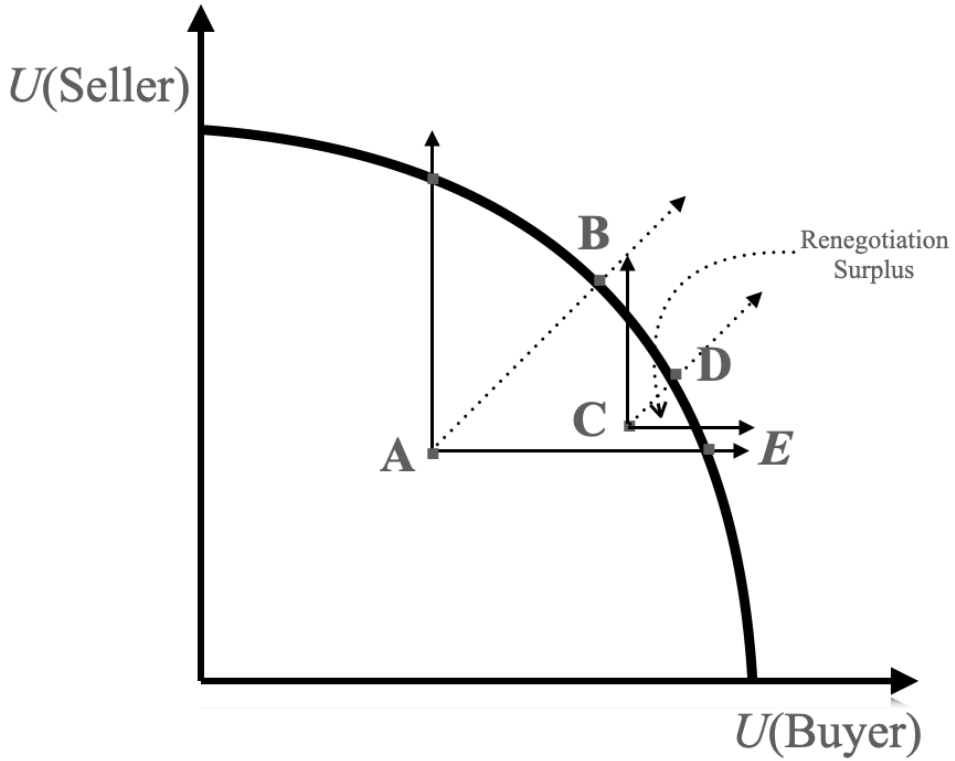

Figure 2: Renegotiation with Interim Interpretation

- **A**: original contract.
- **B**: renegotiation of **A**.
- **C**: interim interpretation of **A** (**C** is *reformed* contract).
- **D**: renegotiation of **C**.


Thank You!