University of Zurich

Faculty of Law

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Law & Economics

Economic Analysis of Law

Tort and Insurance Law

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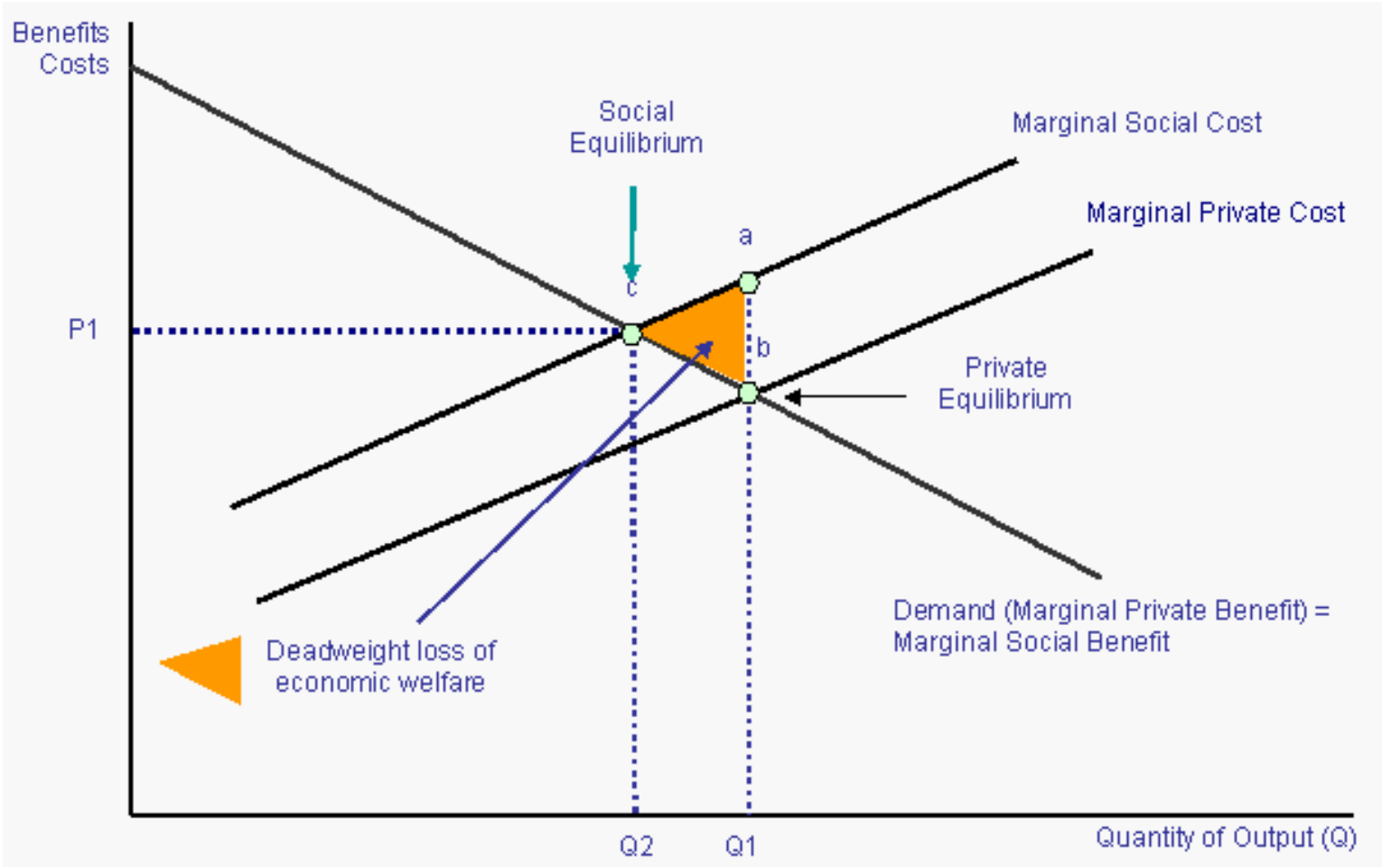
Introduction
Content

- **Externalities in general**
  - Torts
- **Tort externalities**
  - Coase – bargaining theory
  - Pigou – taxes
  - Regulation
  - Liability
- **Examples**

Externalities in General (1)

- **Definition**
  - Cost/benefit not included in the decision-making process of individuals, but assumed by others or by the society as a whole
  - Classic examples
    - Noise
    - Pollution
  - Tort
    - Theft
    - Accidents

Externalities in General



Tort - Conditions

- **Problems of illegal acts**
  - Unknown participants (and unknown number as well)
  - Different amounts of damage
  - Asymmetric information
- **Examples**
  - Accidents
    - Traffic
    - Product defects
    - Assault
  - Abuses/libels
  - Thefts

Externalities of Tort (1)

- **Coase**
  - Bargaining instead of property rights
  - Few participants
    - Bargain with whom?
    - Ex ante unknown victims
- **Pigou**
  - Atomistic quantity of injurer
  - Taxes amounting to external costs
    - Ex ante amount of costs?
    - Incentive effects of taxes?

Externalities of Tort (2)

- **Regulation**
  - „Bargaining“ with government
    - Permit
    - License
  - Classic Regulation
    - Prohibitions
    - Marginal values
  - Inalienability
    - Exorbitant external costs
    - Moral concerns

Externalities of Tort (3)

- **Liability**
  - Obligation to compensate
    - Ex Post – Taking costs into account
  - Individual decisions
    - Property rights allocated by court
  - Legal Standards
    - Strict liability
    - No liability
    - Duty of care

Liability/Tort law – In which Cases ?

- **Liability**
  - High transaction costs
  - Ex ante unknown costs
  - Ex ante unknown participants
  - Random events
  - Information asymmetry
  - Frequently relatively small external costs
  - Incentive effects
    - Aspect of lowest prevention costs

Liability for Thiefs?

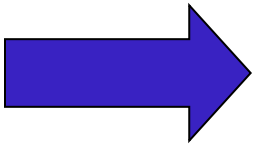
- **Value of the stolen goods**
  - Both parties ex ante known
  - Higher willingness of the thief than of the owner to pay for value of goods
  - Why no liability obligation for thieves?
  - Robbery would be efficient!
- **But:**
  - Coase: Bargaining is simpler
  - Two parties, low transaction costs
  - Not every thief is caught

Liability for Car Accidents? (1)

- **Value of damages**
  - Ex ante unknown to both
  - Parties ex ante unknown
- **Bargaining impossible**
- **Taxes for car accidents**
  - Many unknown causers
  - BUT: Inventive effects
    - Reckless driving!
    - Careless pedestrians!

Liability for Car Accidents? (2)

- **Regulations**
  - Admission for cars
  - Driver license
  - Traffic rules
- **Nevertheless accidents**
  - Stronger regulations?
    - Limitation of freedom
    - Cost-benefit relation



Liability for accidents

Economic Analyisis of Liability Content

- **Economic v. legal approach**
- **Liability**
  - Social costs of accidents
  - Decisions of economic actors
  - Incentives for caution
  - Negligence
    - The „Hand Rule“
  - Case groups
    - Bilateral negligence
- **Damage and compensation**

Economic v. Legal Approach (1)

- **Deliberate tort – „Strict Liability“**
  - Harm/damage
  - Causality
- **Not deliberate tort – „Negligence“**
  - E.g. risk liability
  - Negligence – duty of care
- **Typical examples**
  - Accidents
  - Product liability

Economic v. Legal Approach (2)

- **Tort Law – Liability**
  - Not deliberate tort – accidents
    - No contract
    - No property law
    - High transaction costs
    - But: Externalities
- **Damages = external costs**
  - Agents only consider their own costs
  - Internalisation through liability

Social Costs in Tort (1)

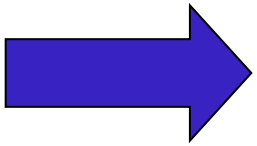
- **Social or total costs**
  - Accidental costs (external costs)
    - Injuries, material damages, etc.
    - Costs of traffic jams
  - Prevention costs
    - Control, education, security staff
    - Airbags, helmets, etc.
    - Slower product development

Social Costs in Tort Law (2)

- **Total costs**
  - Prevention costs + accident costs
- **Effect of costs**
  - Prevention costs reduce accident costs
- **How much should be prevented?**
  - Aim: Minimising the social costs

Social Costs in Tort Law (3)

- **Minimising social costs by law**
  - Develop law in a way giving incentives to changes behaviour:
    - Bargaining impossible
    - Accidents despite of rules
    - Taxes do not have incentive effects



Liability gives incentives

Economic Choice (1)

- **Driving faster than allowed?**
  - Benefit
    - Punctual at the appointment (100)
    - Enjoy fast driving (20)
  - Additional costs for the faster driving
    - Risk of self-inflicted accident (0.001 x 100‘000 = 100)
  - Without liability
  - Benefit 120 > 100 costs

Economic Choice (2)

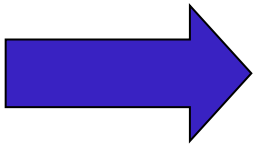
- **Liability for negligence**
  - Fast driving increases the risk of accidents also for third persons
  - External costs
    - Accident risk for pedestrians (0.0001 x 1‘000‘000 = 100)
- **Decision**
  - Benefit 120
  - Costs 100 + 100 = 200
  - Benefit 120 < 200 Costs

Incentives for Precaution (1)

- **Incentives for precaution**
  - Strict liability – perfect compensation
    - Injurer expects high costs
    - Efficient precaution measures
    - Victim: No precaution!
  - No liability
    - Victim expects external costs
    - Efficient precaution measures
    - Injurer: No precaution!

Incentives for Precaution (2)

- **Problems with „strict liability“**
  - Pedestrians cross streets with closed eyes
  - Pharmaceutical companies don't launch new products
- **Problems with „no liability“**
  - Banks do not apply security measures
  - Parking without caution



Negligence/duty of care

Incentives for Precaution (3)

- **Precaution**
  - In principle, liability obliges the injurer
  - But: also (potential) victims are able to take precautions
- **Who should take precaution?**
  - Both?
    - Marginal cost/benefit
  - **„Best cost avoider“**

Incentives for Precautions (4)

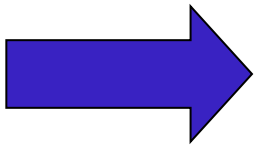
Accident (Costs x probability)	Precaution measures of victim	Precaution measures of injurer
Software failures	Data backup	Develop better software
Parking accident	Park at a safe place	Park with more care and slower
Side effects of medical treatment	Read the package information	Warnings, develop safer products
Head injuries caused by bicycle accident	Wear a helmet	Drive more carefully

Incentives for Precautions (5)

- **Software failure**
  - Precaution measures of producer
    - Develop a better software program
    - Cost of totally 100 millions (1 millions users)
    - Cost per user CHF 100
  - Precaution measures of user
    - Backup
    - Costs per user: CHF 1
- **Victim can be the „best cost avoider“**

Negligence – The „Hand Rule“(1)

- **Evidence of negligence**
  - Unilateral fault
  - Injurer acts negligently/careless
- **In which event is the injurer liable?**



The „Hand Rule“

Negligence – The „Hand Rule“ (2)

- **United States v. Carroll Towing Co. (1947)** (159F.2d 169)
  - Barge „Anna C“broke loose from New York Harbour and collided downstream with with a tanker which caused a leak to the Anna C.
  - The agent (bargee) of „Anna C“ who normally lived on the barge; was not on the barge this afternoon; between his leaving and the accident 21 hours passed.
  - The barge was secured correctly.
  - Because the bargee was not on the barge to seek help, „Anna C“ sank with its cargo.
- **Did the bargee act negligently?**

Negligence – The „Hand Rule“ (3)

- **Richter L. Hand:**
  - „..., to provide against resulting injuries is a function of three variables:
  - **(1) the probability that she will break away;**
  - **(2) the gravity of the injury, if she does;**
  - **(3) the burden of adequate precautions**.
  - Possibly it serves to bring this notion into relief to state algebraic terms: if the probability be called P; the injury, L; and the burden, B; liability depends upon whether B is less than L multiplied by P: i.e., whether B < PL“. (159 F.2d 169)

Negligence – The „Hand Rule“(4)

- **In general: B < P x L**
  - B = Burden to avoid the accident
  - P = Probability of the accident
  - L = Caused damage
- **The rule leads to an efficient judgement**
  - External costs are internalised
  - „Efficient“ accidents are admitted
    - Unpredictability
    - „Force majeure“ – natural forces

Application of the „Hand Rule“ (1)

- Davis v. Consolidated Rail Corporation (1986)
  (788 F.2d 1260)

- **Facts:**
  - Davis was an inspector of waggons of Contrail. On the day of the accident, Davis, driving a van that had the same colour as the Contrail vans used in the yard but that lacked the identifying „C“ painted on each Conrail van, arrived at the yard and saw a train coming from east heading west. He noticed that several of the wagons in the train were wagons that he was required to inspect. The train stopped and was decoupled near the front, the locomotive followed by several wagons, pulled away towards the west. The remainder of the train was stretched out over 1.2 km and because it lay on a curved section of the track, its rear end was not visible from the point of decoupling. An employee of Conrail saw Davis sitting in his van, didn‘t know who he was, thought it was strange he was there, but did nothing.

Application of „Hand Rule“(2)

- Shortly afterwards Davis began to conduct his inspections. This required him to crawl underneath the wagons to look for cracks. Unknown to Davis, a locomotive was coupled to the (eastern/other) end of the train. A crew of four people was ordered to move the train because it was blocking a switch. Two of the crew were in the cab of the locomotive, the other two were somewhere alongside the train. The records do not show where, but definitely not on the western end of the train, where Davis was. The crew moved the train, but without blowing the train‘s horn or ringing its bell. The only warning Davis had of the impending movement was the sudden rush of air as the air brakes were activated. He tried to scrabble to safety, but his legs were caught beneath the wheels of the wagon. One leg was severed just below the knee, the foot of the other leg was also sliced.

Application of „Hand Rule“ (3)

- **Davis brought a suit against Contrail charging negligence:**
  - 1) The employee Lundy having a radio set in his car should have alerted the train crew.
  - 2) The crew should have walked along the trains length to ensure that nobody is laying under the cars.
  - 3) The crew should have blown the horn and/or rang the bell before moving the train.

Application of „Hand Rule“(4)

- **„Hand Rule“:**
  - A defendant is negligent only if the burden of precaution measures is less than the magnitude of the loss if an accident that the precaution measures would have prevented occurs discounted (multiplied) by the probability of the accident : B < P x L.
  - 1) Employee – Radio
    - „A man is sitting in a car“
    - Must the crew expect the man crawling under the train?
    - Probability? B < P x L?

Application of „Hand Rule“ (5)

- 2) Walking the train‘s length
  - Costs
    - Train had 50 cars => Takes about an hour
    - Train stood on a switch => Movement urgent
  - Expected damage
    - Probability?
    - Concerned person

Application of „Hand Rule“ (6)

- **1) and 2)**
  - Burden to avoid the accident outweigh : B > P x L
  - Unimportant costs, expected damage is almost nil because the probability that someone is laying under the train is ~0%.

Application of „Hand Rule“ (7)

- 3) Horn and bell
  - Burden
    - Minimal, B ~ 0
  - Prevented damages
    - Horn and bell can be heard at great distances
    - They also warn the crew
    - They also warn people on, under or next to the waggons.
    - Probability of occurrence >0
    - P x L > 0 so B < P x L
- Hand Rule: Negligence
- Next time: Horn and bell should be used

Case groups (1)

- **Case group I: No negligence**
  - A. Injurer is „best cost avoider“
  - B. Victim is „best cost avoider“
- **Nobody would rationally try to prevent damages**
  - Liability does not have effect on accident costs

Case groups (2)

- **Case group II: Unilateral negligence**
  - A. Injurer is „best cost avoider“
    - Liability of injurer
    - Incentive for equal/similar injurer to be more cautious
  - B. Victim is „best cost avoider“
    - No liability of injurer
    - Incentive for equal/similar (potential) victims to be more cautious

Case Groups (3)

- **Case group III: Bilateral negligence**
  - A: Injurer is „best cost avoider“
  - B: Victim is „best cost avoider“
- **Both parties are able to prevent damages**
  - Decisions should minimise social costs:
    - Only one party is liable
    - OR: Both parties bear costs of harm

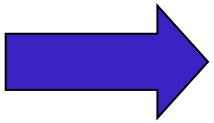
Bilateral Negligence (1)

- Butterfield v. Forrester (1809) (Court of King‘s Bench)

- „This was an action on the case for obstructing a highway, by means of which obstruction the plaintiff, who was riding along the road, was thrown down with his horse, and injured. At the trial [...], it appeared that the defendant, for the purpose of making some repairs to his house, which was close by the road side at one end of the town, had put up a pole across this part of the road, a free passage being left by another branch or street in the same direction. That the plaintiff left a public house not far distant from the place in question at 8 o‘clock in the evening in August, when they were just beginning to light candles, but while there was light enough left to discern the obstruction at 100 yards distance and the witness, who proved this, said that if the plaintiff had not been riding very hard he might have observed and avoided it:…

Bilateral Negligence (2)

- the plaintiff however, who was riding violently, did not observe it, but rode against it, and fell with his horse and was much hurt in consequence of the accident; and there was no evidence of his being intoxicated at the time. On this evidence Bayley J. directed the jury,...“
  - Lord Ellenborough C.J.:
  - “A party is not cast himself upon an obstruction which has been made by the fault of another, and avail himself of it, if he do not himself use **common and ordinary caution** to be in the right. In cases of persons riding upon what is considered to be the wrong side of the road, that would not authorize another purposely to ride up against them…”



„legal standard“ for precaution

Damage and Compensation (1)

- **Concept of indifference**
  - Perfect compensation
    - Indifference between no damages and compensation
    - Price of the perfect substitute
  - Necessary for internalising of external costs
  - Simple for tradable goods
    - Damage recognisable by market prices

Damage and Compensation (2)

- **Compensation of tradable damages?**
  - Compensation of death
  - „Hand Rule“
    - B = P x L
    - L = B / P
  - Example: airbag – car accident
    - Cost of airbag CHF 200 (B)
    - Probability (death) decreases by 0.0001
    - 200/0.0001 = L at least CHF 2 Mio.