Problem: Externalities

Risk Aversion

Risk Aversion=Declining Marginal Utility of Money

Chapter 6: Economics of risk

Why is this here?

Economics of insurance provides a context for analyzing such questions

Considerations include

Moral Hazard: Take 1

If your factory is insured against fires

If you are risk averse, you should buy insurance but not lottery tickets

Lottery-insurance paradox

If you are risk averse, you should buy insurance but not lottery tickets

If you are risk preferring, you should buy lottery tickets but not insurance

Yet some people buy both.
Moral Hazard: Take 2

- Is Moral Hazard a bug or a feature?
  - Perhaps the insurance company is better qualified than you are to decide how to keep your factory from burning down—and sets conditions for insurance
    - This works for precautions they can observe, such as a sprinkler system
    - But not for how well you enforce rules against smoking
  - Service contracts insure against small losses, which seems to make no sense
    - But Sears is more expert in getting your appliance fixed than you are
    - And the service contract makes it in their interest to have it done right and cheaply
  - We are back to Coaseian double causation.
    - We want you to have an incentive to take precautions, not break appliances, etc.
    - But we want someone else to also have an incentive to deal with the same problems
  - Putting the incentive where it does the most good

Coinsurance

- Insure the factory for 70% of value
  - I get most of the risk aversion gain, and …
  - Still have an incentive to take at least the most useful precautions
    - I.e. the ones where benefit >> cost
  - More generally, the least bad solution
    - Might be to give each party some of the incentive
    - So that each will take those precautions that have a large benefit/cost ratio
    - Less inefficiency from failing to take precautions that are only barely worth taking
    - Arguably, that's how tort law works
      - Despite the bumper sticker
      - Few of us actually want to be run into

A general point

- Getting an incentive wrong by $10
  - Is usually much less than ten times as bad
  - As getting it wrong by $100
  - Because the larger error both results in more wrong choices and
    - Choices that are more wrong

- Consider taxation
  - A ten times higher sales tax on books
    - Not only discourages about ten times as many sales
    - It discourages readers who really like books
    - As well as those for whom a book is barely worth buying
  - Which is an argument for taxing
    - Lots of things a little
    - Instead of a few things a lot

Adverse Selection

- Market for lemons
  - Seller of a car knows if it is a lemon or a creampuff
  - Buyer does not, so offers the same price for both
  - The owner of a lemon is more likely to accept that price
  - So accepting is evidence the car is a lemon, so
  - Buyers offer a price lower than the average value of cars
  - And now even fewer of the good cars sell

- What is the problem?
  - Not “it sells at the wrong price” (distribution) but “it doesn’t sell” (allocation, efficiency)

- Solution? Seller provides a guarantee.
  - Which brings back moral hazard.
    - Why should I take good care of the car?
    - If something goes wrong, the seller will have to pay for it
Consider the Case of Genetic Testing

• Assume we have a good test for how bad a risk you are—how likely to die or have expensive medical problems.
  – Insurance companies would like to know
  – So would you
  – In part to decide whether to buy insurance
  – Think of it as “bad heart (genes)” vs “good heart”

• We could let insurance companies
  – Insist on a test before insuring you
  – Or offer lower rates if you have been tested and are low risk.

• We could forbid them from doing so
  – But let individuals get tested
  – What are the consequences?

• We could ban the test for everyone
  • Which alternative is best? Why? Might we be better off if the test was never invented?

Insurance companies can require testing

• You cannot insure against being born with a bad heart
  – Just as you cannot now insure against being born poor
  – Because the outcome is known before you buy the insurance

• You could refuse to be tested and try to buy insurance
  – But the insurance company will conclude that you probably got tested, discovered you were a bad risk
  – And that’s why you don’t want them to test you
  – And they will price your insurance accordingly

• Can insure against residual (non-genetic) risk
  – At a low price if you have a good heart
  – At a high price if you have a bad heart

Nobody can use it (or it doesn’t exist)

• Insurance Companies may not
  – Require the test, nor …
  – Charge more to those who refuse

• What happens?
  • Insurance company charges assuming you have an “average” heart?
  • You can still get tested, not tell them the result
    – If you have a bad heart
      • Insurance is a good deal
      • So you buy it
    – If you have a good heart, bad deal, don’t buy it
    – So mostly the people who buy insurance have bad hearts

• The insurance companies discover this
  – If you buy insurance you probably have a bad heart
  – So they should charge everyone who buys accordingly
  – Making insurance an even worse deal if you have a good heart
  – Adverse selection at work

• You cannot insure against having a bad heart
• And can only insure against non-genetic risk if you have a bad heart³
• What if insurance company
  – Knows if you have been tested
  – Can condition price accordingly

• If you have been tested, you can either
  – Let them know the result (or retest you)
  – Or let them assume you have a bad heart and charge accordingly
• If you have not been tested you can prove it
  – So they offer you insurance at the “average” price
  – Since you have an average chance of a bad heart
• If you want to insure against a bad heart, you
  – Buy insurance before you are tested
  – Then get tested if you want the information
• Now you can insure against both genetic and residual risk
• Clearly the best alternative--but may not be possible

Legal Rules to Think About

• I rent a house
  – It burns down
  – Should I or the owner bear the cost?
• I buy land from John
  – Paying with lead bars plated with gold
  – I sell the land to Bill
  – The fraud is discovered--but I’ve vanished
  – Who owns the land?
• I forge a deed to John’s land
  – Use the forged deed to sell the land to Bill
  – The fraud is discovered, I have vanished
  – Who owns the land?
• What are the common law rules? Why?

Review: Insurance

• Idea of risk aversion in money.
  – Not dislike of risk, but
  – Declining marginal utility of income.
  – Provides one reason to have insurance.
• Moral hazard is a reason not to have it
  – Since insurance creates an externality
  – Which leads to inefficient choices
  – Which you eventually pay for
• But also a reason to have it, since
  – Sometimes insurer can control risk better
  – Put the incentive where it does the most good.
    • Insurance company vs big firm with lots of factories.
    • Sears vs the individual owner of an appliance
    • Or to control adverse selection. Auto repairs.
• Adverse selection
  – Asymmetric information means that
  – Some worthwhile transactions don’t happen
    • Can’t sell a cream puff
    • Unless you are willing to accept a mostly lemon price

Genetic Testing

• With nobody testing
  – Genetic risk is insurable.
  – Residual risk is insurable, but …
  – You cannot know genetic problems and take precautions
• If you can test and insurer can require test
  – Genetic risk is not insurable
  – Residual risk is, and you can know your genetic problems
• If you can test, insurer can’t
  – Adverse selection may eliminate the insurance market
  – For all save the ones with the worst genes
  – Who can still insure against residual risk
• If you can test but the fact you did is public
  – Insure against genetic risk before testing
  – Then test if you want the information
  – You get insurance against both risks and you know
Chapter 7: Ex Post Ex Ante

- General issue
  - Judging decisions by probability going in or outcome afterwards
  - Punishing or rewarding
- Employment: Pay by output or by input
  - Commission system solves the monitoring problem
  - But you may starve
  - And output isn’t always observable
- Air pollution—“output”? = “sick people due to your pollution.”
  - But effluent fees are payment by output, if output is pollution
  - Effluent fees are ex post control of pollution
  - Ex ante of pollution damage
  - There may be multiple layers of output
- Speeding ticket is by input to accidents, but …
  - Not by input to speeding (baroque trumpet music)
  - And some layers may be easier to observe than others

My analysis

- Implicit assumptions
  - Output is easier to measure from the outside than input
  - Input easier to measure from the inside (by actor) than from the outside.
  - Probabilistic process, such that input only sometimes produces output.
- From which it follows that:
  - Ex post gives you a better control over inputs, via incentives for actor to control them, but …
  - Also gives you larger punishments with lower frequency.
  - Trade off those two in deciding which you prefer

Punishment Costs

- Fines
  - I pay a $100,000 fine, the court collects it, net cost zero?
  - No—because of risk aversion
  - I face a negative lottery (one chance in 1000 of a $100,000 fine) which I would pay $150 to avoid, since I am risk averse
  - The court receives a positive lottery it would pay only $100 for.
  - Punishment cost $50
- Execution
  - I face a negative lottery I would pay $2000 to avoid (one chance in 1000 of death, value of my life to me $2,000,000)
  - The state has a positive lottery with zero value
  - Punishment cost $2000
- Imprisonment
  - I face a negative lottery I would pay $50 to avoid (1/1000 of year in jail)
  - Court has a negative lottery with $20 cost
  - Punishment cost $70
Implications for the Law

- If an offense does little damage
  - Ex post punishment is small, inexpensive
  - So use ex post enforcement
- Tort law uses fines (i.e. damage payments)
  - So risk aversion cost but otherwise cheap punishment
  - no punishment for attempts, so
  - Pure ex post system
- If an offense does a lot of damage
  - Use ex ante to get the punishment down to the fine level
  - But use some ex post as well--just not too much
- Are there any pure ex ante cases?
  - Speeding ticket plus damages if you crash combines post and ante, but ...
  - Pollution regulation, with civil immunity if you obey it?
  - How about tort law under a negligence standard?

Attempts

- Why punish unsuccessful attempts?
  - I aimed at John but hit a tree
  - Both John and the tree are fine--what’s the problem?
- As an odd sort of ex ante punishment
  - Shooting at someone is an input to hitting him
  - Five years for attempted murder, 20 for murder
    - Means five years as the ex ante punishment for trying
    - And fifteen more as the ex post for succeeding
- Why not punish successful attempts more instead?
  - Punishment costs?
  - As usual, we are combining ex ante and ex post
  - Arguably, we can’t get adequate deterrence with pure ex post
- Why punish impossible attempts?
  - “Sticking pins in a voodoo doll” doesn’t make death more likely
  - But “trying to kill someone in a way that might not work” does
  - So it depends on how people interpret the legal rule
  - “Voodoo attempts” vs “Impossible attempts”

Insurance: Post->Ante

- Suppose we have a pure ex post system
  - If you are responsible for an auto accident
  - You pay the full cost of fixing both cars
- I can convert it into ex ante, by
  - Buying insurance
  - And having the insurance company make rules, such as speed limits
- Or a mixture, if they don’t insure the full amount
- It is in my interest to choose the optimal system--all the costs end up as mine
  - Since we are assuming that the victim is fully compensated
  - Hence enforcement costs, risk aversion, damage
  - All come out of my pocket
- Of course, insurance companies then need their own traffic cops to enforce the contract. Subcontract?
Summary

• The idea—control input vs control output
• The advantage to output
  – Easier to measure actual damage than expected damage
  – Gives actor an incentive to monitor himself
  – Use his private information, but …
  – That might be a liability if his private information is wrong.
• The advantage to input
  – Can use smaller punishment, which may be more efficient
  – Note that the question is whether punishment cost is more or less than
  – Proportional to amount of punishment
  – Can impose the court’s view of the causal relationships—which could be
    good or bad.
• In practice, often do both—speed limit and tort liability.
• Also, since output of one act is input of another, same law
  might be both
  – Speed limit is ex ante in our sense, but …
  – Ex post if you think of controlling speed by brake, accelerator, … 25