Review of Last Week

Problem: External costs not included in the calculation

Pigou’s solution: Impose the cost on the actor

Coase’s Critique

Nothing works—Pigou might make the higher cost avoider liable.

Everything works—given transactions

It all depends on transaction costs

Instead of focusing on the technical nature of the cost

Focus on why people can’t bargain to take account of it

Applying Coase to the legal system

– Court decides who is the lowest cost avoider
  • Tells him what to do (regulatory solution)
  • Makes him liable (Pigouvian solution)
  • Requires that the court at least knows the damage. or …
– Court makes general rules designed to assign liability to the party who will usually be the lower cost avoider
  • Coming to the nuisance as an example
    – Is it the right answer—second mover is the lower cost avoider?
    – Perhaps not if later use is predictable.
  • Last clear chance as a similar rule

– Bright line rules vs standards.
  • Bright line minimizes uncertainty, litigation costs, but …
  • May give the wrong answer sometimes.
  • Suggests that the technology of adjudication is key but not much thought about.

– Defining property rights
  • Legal rules determine what bundle of rights go with ownership of land (or other things)
  • First step: Is right A most valuable to the person who has right B? Put them in the same bundle and no transaction is needed.
  • Walking and cultivating
  • If right A might be most valuable to the holder of B or of C—adjacent landowners—which is how likely, and how hard is it to move from one to the other?
  • If we guess wrong, are we better off solving the problem by
    – Transaction—property rights or
    – Court estimate—liability rights.
Coase’s Other Points
(In the Article)

- Existence of inefficiency relative to the outcome produced by a perfectly wise planner doesn’t necessarily mean you are doing anything wrong and government should step in—may still be the best real world option.
- “Government stepping in” isn’t well defined. Someone has defined the rights you start with, probably the government.
- And the market is operating on the basis of those rights.

Basic assumptions

- Railroad, wheat farmers, sparks, fire—technical assumption
  - Railroad can put on spark arrester
  - Farmers can grow clover
  - So each can adjust at some cost
  - And the fires happen if neither does.
- One railroad and 100 farmers, which will be relevant to transaction costs.

What Chapter 5 is Doing

- Imagine that you are designing a law code after reading Coase
- How would you figure out what the rules should be?
- Chapter 5 shows you, for one very simple set of legal questions

Two Legal Questions

- Who has the right and …
- Is it a property right or a liability right
- Put differently
  - Who gets to decide something, and …
  - Who bears the resulting costs of fires.
- If the railroad has a property right to throw sparks, they decide spark arrester and costs of fires are left where they lie.
- If the Farmers have a liability right against sparks, railroad decides spark arrester but does bear costs of fires.
- If the Farmers have a property right against sparks, they decide and don’t bear costs.
- If the Railroad has a liability right, farmers decide but are liable for the cost they have imposed on the railroad.
We can imagine additional legal rules

- There are really three costs involved:
  - Fires
  - Spark Arrester
  - Lost revenue due to switching to clover.
- And two decisions
  - Spark arrester or not
  - Wheat or clover
- For instance, the railroad could have the right to tell the farmers which crop to grow.
- And, perhaps, be liable for the lost revenue due to switching to clover.

Alternatives We Consider

- Railroad has the property right
- Farmers have the property right
- Farmers have the liability right
- (Railroad has the liability right)

Spaghetti Diagram

1. Property right by Railroad
2. Property right by Farmers
3. Liability right by Farmers
4. Liability right by Railroad

A: Sparks+Wheat = Fires
B: Sparks+Clover = no Fires
C: No Sparks+Wheat = no Fires
D: No Sparks+Clover = no Fires
Farmers have the property right

- If spark arrester is optimal, happens immediately
- If sparks are optimal …
  - Requires a transaction
  - Blocked by the holdout problem
  - If it happens, farmers can now choose wheat or clover

Farmers have the liability right.

- If sparks plus wheat plus fire is optimal, it happens
  - Railroad pays damages
  - Provided the court can calculate damages correctly
  - And with litigation costs.
- If sparks plus clover is optimal, it doesn’t happen without transaction
  - May happen if railroad pays farmers to switch
  - No big transaction problems except
  - Litigation costs, possible error
- If spark arrester is optimal …
  - Happens immediately
  - Provided the court is expected to get costs correctly
Railroad has the liability right

Any farmer can enjoin but must compensate
(Incomplete Privilege)
– If spark arrester is optimal, may not happen
  because
  • Public good problem among the farmers
  • If one enjoins he pays, others benefit.
– If no spark arrester, get wheat or clover
  whichever is optimal.
– And if no spark arrester is optimal, get it.

Step back and look at the situation
• If you are almost certain what is optimal,
  easy to choose a rule.
• If not you have to estimate probabilities
  of outcomes being optimal, of being
  blocked, of not being blocked but
  transactions being costly.
• For the latter you need a better theory of
  both transactions and litigation than we
  have.
General Procedure

- If we start with this rule, how do we
- Get to whichever result is efficient
- And what makes it costly or prevents it

So we have an answer for the general problem
- The full solution requires more knowledge than we have, but with what we know
- It should at least give us qualitative results
  - Situations with large numbers on one side strengthen the case for one rule against another
  - Cases where one side can almost always solve the problem at lower cost than the other strengthen …
  - Cases where damages are easy (hard) to measure strengthen the case for one side (the other side).
  - Etc.

Fifth rule—Pigouvian tax, not liability

- Farmers can throw sparks but…
  - They have to pay for the cost of the resulting fires
  - Not to the farmers but to the state
- Looks perfect, until …
  - Railroad bluffs farmers into switching to clover.
  - Ultimately a litigation/regulation error.
  - Liable for the damages from fire but not the cost of switching to clover
- Also Coase + Pigou is too much of a good thing
  - Even if sparks are optimal, may not get them
  - Because a spark arrester both saves the fine and might get partly paid for by farmers
  - Double counting
  - Not much of a problem here because the public good problem actually helps.
Another possible legal rule

- Majority or supermajority for group
  - To solve some farmers problems
    - Farmers can enjoin but must pay, or ...
    - Farmers must bribe RR to put on smoke arrester
  - Unitization of oil fields
    - I pump oil from the well on my property
    - Oil flows in from under your property
    - So it is in the interest of each of us to pump too much
    - Unitize the field, treat it as joint property of all of us
  - Creates other problems—corporate law.
    - The corporation is the joint property of the stockholders
    - Someone has to run it
    - How do you prevent the executives from stealing the stockholders blind?

Property or Liability rules

- Property right, first approximation: Enough punishment to deter
  - In the discussion of criminal law it gets fancier than that
  - And property rights are sometimes violated
  - But this will do for the moment
- Liability right: Punishment equal to damage done.

- With only liability rights and a perfect court system, no problem
  - Any time you want something and think it is worth more to you than to the owner
  - You take it
  - And the court sends you a bill
- With only property rights and zero transaction costs, no problem
  - Any time you want something, you offer to buy it
  - And if it is worth more to you, there is some mutually acceptable price
  - Where “something” can be a right as well as an object
  - Indeed, always is—buying an object means buying some rights wrt the object
  - But not all. Examples?
    - Gun
    - Book.

- Property rules make sense when
  - transaction costs are low
  - litigation cost or error (including the cost of catching the violator) high
- Liability rules with assumptions reversed
- Judgment call in intermediate cases.
Fines: Another Alternative

- Advantage: "Victim" has incentive to take precautions
  - Since if the event happens, he bears the full cost
  - As well as the person responsible bearing the full cost
- But if transaction costs are low between parties
  - The person who pays the fine has an incentive
  - To bargain with the potential victim to get him to take precautions
  - And in that case using a fine results in double counting
  - Which may mean an inefficiently high incentive to prevent
- Why should the victim report the accident if only a fine?
  - He doesn't get any compensation
  - The other party pays the fine
  - And it's easier to bargain with the other party than the state
  - Is there another reason to report the accident?

Coase Article

- Coase Article: Classic article that laymen can read.
  - The problem associated with an externality is jointly caused—the result of actions by both parties.
  - Farmer and cattleman, outcome does not depend on who is liable
    - But bargaining, attempted extortion, etc., is possible
    - His farmer cultivating land not worth cultivating in order to be paid to stop.
    - Loosely analogous to my railroad leaving off the spark arrester
    - More precisely, to a railroad with the right via liability running a train not worth running in order to be paid by the farmers to stop doing so.
    - Two points that should be obvious to those with an econ background
      - Opportunity costs are costs
      - Marginal costs determine action.
    - So Coase's result holds when everything has been bargained through.
      - i.e. in a zero transaction cost world.
    - "Employs factors of production" terminology means
      - Inputs used to produce (say) grain
      - Which could be used to produce something else
      - So we subtract their value in calculating the net gain from producing
      - Noneconomists often confuse value of output with net gain, ignoring costs

Fact specific information determines the right rule

- In this sort of case, how many parties on each side?
- How likely is it that one party will be the lowest cost avoider? The other party?
- How hard is it to use a court to measure damages?
- Which may be an argument for
  - Freedom of contract
  - Industry arbitration systems

Farmer and Rancher

<table>
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<th>Size of herd</th>
<th>Total crop loss</th>
<th>Marginal crop loss</th>
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<tbody>
<tr>
<td>1</td>
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<td>4</td>
<td>10</td>
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</tbody>
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- If rancher is liable for damages
- No fence
  - Increase herd until cost of additional damages
  - At least equals gain from additional steer
If Rancher Liable

• Either don’t fence
  • Increase herd until increased damage from one more animal
  • At least balances revenue from one more animal
  • In which case farmer ignores damage in deciding how much to plant
  • Since he will be fully compensated
• Or fence
  • If the cost of the fence is less than
  • The amount of damages paid without a fence?
  • Not quite right …

With a fence

• Marginal cost of damage is now zero for an additional steer
  • So add steers as long as net revenue increases
  • Compare profit doing that with
  • Profit in the no-fence case
  • And choose whichever gives higher profit.

If Rancher not liable

• Farmer will pay rancher to keep his herd down
  – Up to the damage done for each extra steer
  – So not getting that payment is a cost, foregone revenue, for the rancher
  – So he sets the herd size as before, or
• If the cost is greater than the cost of a fence
  – Farmer builds the fence, and
  – Rancher expands his herd, since now no cost.
• So the same result
  – Whether or not the rancher is liable
  – “Open range” vs “Closed range.”

Bargaining between them

• Suppose planting some tract is
  – Worth doing if compensated for damage
  – Not worth doing if not compensated
  – Rancher will pay farmer not to plant it
    • Less than damages would be
    • More than profit after receiving damages would be
• Suppose planting some tract is
  – Not worth doing even if compensated
  – Farmer might plant it for a while
  – In the hope of being paid not to
The Rancher is not liable

• The more steers, the more damage
  – So farmer is willing to pay rancher
  – To keep down the size of his herd
  – And rancher, by having one more steer, forfeits
    the money he could have been paid not to
    have it.
• And farmer will fence
  – If that costs less than damage plus payment to
    the rancher
  – And if he fences, rancher will now expand his
    herd as before, with no marginal cost of
    damage

Coase on Pigou

• His railway situation was
  – Not the "state of nature"
  – But the result of explicit state action, and …
• Was not necessarily a bad thing
  – If transaction costs low, get the efficient outcome
    either way
  – If high, we don’t know if liability for fires
    • Is good because it produces spark arresters
    • Is bad because it prevents switch to clover
    • (In Coase’s example, take land out of cultivation)

Coase’s Railroad case

• 1 train produces $150, 2 produce $250
• Each train costs $50 to run
• Transaction costs are high
• If RR not liable
  – Each train produces $60 damage
  – Better not to have second train, but
  – Will have it. Inefficient outcome
• If RR liable
  – Each train produces $120 damage, since farmers have
    no incentive not to plant crops that will burn
  – Now have no trains
• Depending on the detailed assumptions, the first
  situation might be better or worse than the second.

A second feature of the usual treatment of the problems discussed in this article is that the analysis proceeds in terms of a comparison between a state of laissez faire and some kind of ideal world. This approach inevitably leads to a looseness of thought since the nature of the alternative being compared is never clear. In a state of laissez faire, is there a monetary, a legal, or a political system, and if so, what are they? In an ideal world would there be a monetary, a legal, or a political system, and if so, what would they be? The answers to all these questions are shrouded in mystery and every man is free to draw whatever conclusions he likes.

Actually very little analysis is required to show that an ideal world is better than a state of laissez faire, unless the definitions of a state of laissez faire and an ideal world happen to be the same.
The question at issue is not whether it is desirable to run an additional train or a faster train or to install smoke-preventing devices; the question at issue is whether it is desirable to have a system in which the railway has to compensate those who suffer damage from the fires which it causes or one in which the railway does not have to compensate them.

... Should we conclude from this that the total product would be greater if there were no fines for failing to obey traffic signals? The Pigovian analysis shows us that it is possible to conceive of better worlds than the one in which we live. But the problem is to devise practical arrangements which will correct defects in one part of the system without causing more serious harm in other parts.

**Coase gives more cases with the same logic**

- Confectioner/doctor
- Bleaching coconut matting
- Blocking the draft of a chimney.
  - Who “caused” the nuisance? Both. so
  - Each should bear the full cost—and will under either rule with bargaining.
- Jolly Anglers brewing.
  - Confined channel of air is presumptively property, by rule of lost grant belonged to the brewer.
  - So the verdict is the opposite from that in the chimney case—which also involved blocking an (unconfined) channel of air.

**Judge Uke Story**

- Poor student adds flavor to his rice by eating it next to the cookshop, enjoying the delicious smell of baking food
- Cookshop owner notices, and sues
- Verdict?

"The sound of the coins pays for the smell of the food"
• We aren't used to thinking about negative damage suits for positive externalities—which are rare but exist.
  – Consider a doctor who treats an unconscious accident victim
  – And sends him a bill for services
• Is Coase right in this case?
  – If baker cannot force student to pay, but …
  – Payment would affect baker's behavior
  – Bargaining will get the same result.
• As Coase points out
  – Pigou’s treatment of the smoking chimney
  – Treats pollution control as producing a positive externality, hence deserves a bounty
  – Rather than preventing a negative, to be taxed
  – Illustrating the symmetry of the situation

Judge’s grounds for deciding the cases may seem irrelevant to economist, but ...
• Perhaps all that matters is a predictable rule, (reduce uncertainty and rent seeking) and judges have one.
  – The rule needs to give an answer to questions—which "confined channel" does.
  – If the judge cannot tell who is the highest valued user, and …
  – Private transaction costs are low, then …
  – We want an arbitrary property rule if measuring damage is hard,
  – An arbitrary liability rule if it is easy.
• Perhaps rule is proxy for relevant considerations, as
  – Coming to the nuisance.
  – Maybe a confined channel of air is better defined so easier to transact over, giving property rule rather than a liability rule?

A firm is one solution to the transaction costs of the market
• Consider a shopping mall.
  – The owner provides free parking, and makes his money back in store rentals.
  – He figures out what mix of stores, restaurants, etc. will make people want to come, and so maximize the total return
  – He keeps the public areas clean
  – In fact, he provides a centralized alternative to nuisance law, government, etc.
  – And he also must choose among
    • Regulatory (must put restaurants in the food court)
    • Pigouvian (measures traffic brought in through random polls, gives rent reduction to the stores that people come to visit)
    • Coaseian (simply gives out long term leases, lets tenants bargain among themselves to get stores with synergy adjacent, etc.)
• Whether it makes more sense to solve problems by putting both actors into one firm depends on the tradeoff between administrative costs of the firm and alternative market costs.

Government regulation is another solution
• Which has its own costs and errors, and so may give worse results than the other solutions
• Or better.
And a final solution is to do nothing

- Some problems cost more to cure than the cure is worth.
  - That is how we deal with lots of externalities
  - Positive ones like beautiful buildings, and
  - Negative ones like people wearing ugly clothes.

Where transaction costs are high

- Court decisions matter, and cases suggest at least some general recognition of reciprocal problem and cost/benefit issues.
  - In the limit of infinite transaction costs, we are back in a Pigouvian world
  - With the Coaseian critique about double sided causation still valid
  - Property rule if it is clear what the right answer is
  - Liability rule if it is unclear what the right answer is, but damages can be measured.

Additional points in the article

- Common law of nuisance v statute.
  - Statute may extend or reduce the coverage of the law of nuisance.
  - What we observe is frequently government authorised, not the result of lack of regulation
  - And perhaps should be.

- What is owned is a right, not a thing. For instance, the right to produce pollution

If factors of production are thought of as rights, it becomes easier to understand that the right to do something which has a harmful effect (such as the creation of smoke, noise, smells, etc.) is also a factor of production. Just as we may use a piece of land in such a way as to prevent someone else from crossing it, or parking his car, or building his house upon it, so we may use it in such a way as to deny him a view or quiet or unpolluted air.

The cost of exercising a right (of using a factor of production) is always the loss which is suffered elsewhere in consequence of the exercise of that right—the inability to cross land, to park a car, to build a house, to enjoy a view, to have peace and quiet, or to breathe clean air.