Range Wars: The Rancher and the Farmer

Professor Coase employs the classic example of the rancher and the farmer to illustrate how bargaining can internalize externalities. The rancher and the farmer share a common boundary that is easily traversed by the rancher’s cattle. When the rancher’s cattle stray onto the farmer’s land, the cattle destroy part of the farmer’s crop. The damage to the farmer can be measured by his lost economic profits. The following example is similar to the one examined by Professor Coase.

As illustrated below, the farm and the ranch share a common boundary. To prevent the cattle from wandering onto the farmer’s land either the farm or the ranch must be entirely enclosed by a fence.

Assume the annual cost to the farmer, Jack, for building and maintaining a fence around the farm is $10,000 annually. Because the ranch covers a larger area, it would cost the rancher, Jill, $20,000 annually or twice as much to enclose the ranch. Neither the farmer nor the rancher can trespass on the other’s land to build a fence without the consent of the other party.

If either fence is built, annual lost economic profits of $16,000 in damaged crops will be eliminated. The rancher, however, could eliminate much of the damage to the farmer’s crops by hiring an additional cowhand for an annual wage of $5,000. If the additional cowhand is hired, the farmer’s annual loss in destroyed crops is reduced to $7,000. Hiring a second cowhand would not further reduce damages. The following table summarizes the potential damages and costs.

<table>
<thead>
<tr>
<th>Option</th>
<th>Cost of Cowhand</th>
<th>Cost of Fence</th>
<th>Crop Damage</th>
</tr>
</thead>
<tbody>
<tr>
<td>No fence or cowhand</td>
<td>$0</td>
<td>$0</td>
<td>$16,000</td>
</tr>
<tr>
<td>Fence farm</td>
<td>$0</td>
<td>$10,000</td>
<td>$0</td>
</tr>
<tr>
<td>Fence ranch</td>
<td>$0</td>
<td>$20,000</td>
<td>$0</td>
</tr>
<tr>
<td>Hire cowhand</td>
<td>$5,000</td>
<td>$0</td>
<td>$7,000</td>
</tr>
</tbody>
</table>

Your essay should respond to Parts 1, 2 and 3 below in your essay. The other questions may be reviewed in class.

1. What is the efficient solution to the problem confronting the rancher and the farmer? Should the cattle be allowed to stray, should a cowhand be hired, or should a fence be built? Explain
I. Property – The Coasian Bargain

The efficient solution does not depend on the allocation of property rights. The efficient solution is not the solution that is best for only the farmer or only the rancher. It is the one that is best for society as a whole. This is the solution that produces the given output at the least cost (which is also the solution that produces the greatest output at the given cost). It is the solution that would exist if all externalities were internalized. All externalities would be internalized if one entity owned both the farm and the ranch. Accordingly, the efficient solution will maximize the joint profits (the sum of profits) generated by the rancher and the farmer.

2. Assume that transactions costs are zero. In light of the Coase theorem, how might the farmer and the rancher resolve this trans-boundary dispute under each of the following assignment of rights? Explain the cooperative and non-cooperative solution. If there is an opportunity for the participants to engage in a mutually beneficial trade, specify the range of potential dollar settlements. Should the range of possible outcomes equal the cooperative surplus? What is the maximum offer that would be made by the party without the right, and the minimum offer that would be accepted by the party with the right? Given the three different allocations of rights, does the allocation influence the result? Why or why not?

I. Farmer’s rights to damages: The rancher must reimburse the farmer for any lost profits due to straying cattle and the resulting crop damage. (In the West this was termed “closed range.”) Assume the farmer has no duty to mitigate damages.

II. Rancher’s rights: The rancher has no obligation to keep her cattle from straying. He does not have to compensate the farmer for any damage caused by straying cattle. (In the West this was termed “open range.”)

III. Farmer’s right to an injunction: The farmer can obtain a court order to keep the cattle from damaging his crops. If the rancher does not comply, the farmer can ask the court to shut down the ranch.

[A court order that either prohibits or compels a party to do something is called an injunction. Under the farmer’s right to an injunction it is assumed the farmer could go to court for an order prohibiting the rancher from damaging his crops. The farmer may choose not to exercise this right upon receiving sufficient compensation from the rancher.]

Variations on a Theme

3. Suppose transactions are not costless. There are negotiation costs, contracting costs and enforcement costs. Think of these costs as a wedge between the price one party pays and the other party receives. Like a sales tax, who actually pays the transactions cost has no impact on the cost burden. To make this simple, assume the buyer of the right always pays the transactions costs.

a) If these costs were $1,000 per year how might this change your pervious analysis?

b) If these costs were $5,000 per year, how might this change your pervious analysis?
4. Suppose the farmer’s rights to damages is the property rule, but that we impose upon the farmer the duty to mitigate damages.

5. The original cost of fencing is based upon an old style post and rail construction. Suppose there is a remarkable new discovery called “barbed wire” that reduces the annual cost of fencing by 50%. How might this affect future relations between the farmer and the rancher?

6. Based upon your analysis, from an efficiency perspective does it matter which system of rights prevails?

7. Suppose the ranch was in existence before the farm. The farmer was a latecomer to the neighborhood. Would this affect the efficient result? Would this affect your preference for one system of rights over another?

8. Suppose a conglomerate took over control of both the ranch and the farm. What would it do to resolve this problem?

9. Does the distribution of rights affect the long-run consequences for the farmer and the rancher? How?

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