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NTU Homework 01: Hold-up problem

Q: Consider a potential trading relationship in which a supplier may provide one unit of a good to a buyer. At time $T = 0$, the buyer makes an investment of I dollars. At $T = 1$, the seller's cost to produce the good c is drawn from [0,1] according the the distribution function $F(c)$. After the realization of c, both parties decide whether to trade. If trade occurs, the two parties write a contract that stipulates the transfer price p, and the supplier must produce the good at cost c and deliver it to the buyer. Let $v(I)$ be the buyer's valuation of the good. Suppose $v(I)$ is increasing and concave for all $I \geq 0$, i.e., $\frac{dv}{dI} > 0$, and $\frac{d^2 v}{dI^2} < 0$. The two parties are risk neutral. Suppose that I, v, and c are observable to both parties whenever they are realized; however, they are not verifiable by a court, so that a contract cannot be written contingent on them. (Assume that an interior solution for the investment exists for any problems that you encounter.)

a) Characterize the (efficient) trading rule and the investment level that maximizes the total expected gains from trade.

b) Suppose after the realization of v the two parties bargain over the gains from trade according to the Nash bargaining solution. Characterize the equilibrium trading and investment decision.

c) What if the buyer makes a take-it-or-leave-it offer in the bargaining? Repeat the same exercise as in (b).

Prior to the investment decision, the two parties write a contract specify (p, d), where p is the price the buyer pays to the seller in case of trade, and d is the damage that the seller must pay to the buyer in case of his breaching the contract (i.e., refusing to produce the good at trading price p). There is no damage against the buyer if she breaches the contract.

d) Evaluate the performance of the expectation damages rule.

e) Evaluate the rule in which both parties can specify any fixed pair (p, d) in their best joint interest. Compare the outcome with that of (d).