Uncertain Externalities, Liability Rules, and Resource Allocation: Comment

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In a recent article in this Review, Peter Greenwood and Charles Ingene (hereafter G-I) deny the validity of the Coase Theorem when applied to an uncertain world that contains no stock market. Recall that the theorem maintains that resource allocation is neutral with respect to liability rules. The gist of their argument follows. Suppose firm A, whose profits are deterministic, is legally permitted to pollute firm B, whose profits are stochastic. Since there are no transaction costs by assumption, firm B has the incentive to bribe firm A to reduce its polluting activities. Because firm B is liable for the damages, which are stochastic ex ante, the bribe will reflect firm B’s degree of risk aversion. If, on the other hand, firm A must legally recompense firm B for the damages, firm A will bribe firm B to reduce its operations and, consequently, lessen the damages. Since firm A is legally bound to insure the damages, in this case the bribe will reflect firm A’s degree of risk aversion. In the absence of a stock market which reconciles differential risk preferences, liability rules will have an asymmetrical impact on resource allocation. Therefore, in the presence of risk and the absence of transactions costs and a stock market for risk sharing, resource allocation is dependent on liability rules.

We will show that the G-I argument has little merit in a world of zero transaction costs. Just as the lack of a market for the externality does not preclude exchange (or bribery) in the standard Coase scenario, the absence of a stock market does not preclude risk sharing in an uncertain world. We will illustrate the G-I argument and our counter-argument by an example.

Suppose firm A, the polluter, can produce one more unit of output at a marginal profit of $50. The additional output has a negative impact on firm B’s profits. Let us first suppose that the damages are $60 certain. Thus, if firm A is liable for the damages, the marginal unit is not produced. If firm B is liable, it bribes firm A and again the output is not produced. If the damages are only $40 certain, a similar argument would show that, independent of the liability rule, the marginal unit is produced. Both cases illustrate the Coase Theorem at work.

Now, suppose the damages are uncertain, that is, distributed according to some known probability distribution. Firm B evaluates the potential damages at $75 in certainty-equivalent terms. Firm A is less risk averse and evaluates the damages at $40 in certainty-equivalent terms. Greenwood and Ingene would argue as follows. If firm A is not liable, firm B will try to bribe firm A. The minimum bribe firm A will accept is $50 and the maximum bribe firm B will offer is $75. Clearly, there are gains from trade and the marginal unit is not produced. If firm A is liable, the damages are valued at $40, marginal profit is $50, and the unit is produced. It would appear that the differential risk preferences vitiates the Coase Theorem.

We are able to counter the G-I argument by noting that firm A has the additional (and profitable) option to assume the liability when firm B is liable. In other words, firm A will write a (costless) contract to insure firm B against the damages for a mutually satisfactory fee of between $40 and $75. In fact, a bargaining solution which does not lead to an insurance contract is generally (Pareto) suboptimal. To see this, suppose that, in the absence of such a contract, firm B would have bribed firm A by the maximum $75 so that the marginal unit

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1This assumption is made for simplicity of exposition. Clearly, both firms’ profits could be stochastic.
would not be produced. But if firm A insures firm B for $70 and produces the marginal unit, then firm A would gain $80: $50 in marginal profits plus the $70 insurance fee minus $40 for damages. Firm B also benefits by losing only $70 instead of $75. If, on the other hand, firm A would have accepted the minimum bribe of $50, both firms could be made better off if the insurance fee is $45. Firm A would gain $55 and firm B would forfeit $45 instead of $50. Therefore, independent of the liability rule, the marginal unit is produced and the Coase Theorem holds.

Although we assumed above that firm B is more risk averse than firm A, a similar argument would prevail if firm A is more risk averse than firm B. Suppose that firm A evaluates the damages at $75 and firm B at $40 in certainty-equivalent terms. Greenwood and Ingene would argue that, if firm B is liable, the marginal unit is produced since firm B is unwilling to bribe more than $40. If firm B is not liable, firm A will not produce the unit since the damages are evaluated at $75 while marginal profits are only $50. The Coase Theorem does not appear to hold. However, if firm B insures firm A for a fee of between $40 and $50, both firms can be made better off. Again, independent of the liability rule, the unit is produced.

Greenwood and Ingene also maintain that, even if there is a stock market, the Coase Theorem is not valid in the presence of indivisibilities: “An autonomous manager who receives a significant segment of his income from the firm will obey his own, not the market’s, risk measure. Similarly, if ‘...some shareholder [holds] a large block of stock...’ the firm should use his, not the market’s, risk measure” (p. 303). Although the G-I arguments are compelling, the logic is faulty. If, in fact, all transactions are costless, so is monitoring the activities of the so-called autonomous manager. Therefore, even if his risk preferences (or preferences for perquisites) differ from that of his shareholders, the manager would be unable to effect his ambitions. In a transaction-costless world, the autonomous manager is a contradiction in terms.

A similar criticism applies to the dominant shareholder notion. In a world of zero transactions costs, contracts will be written for every contingency and state of nature so that markets will be complete. In such a world, a well-known unanimity theorem obtains, namely, that all shareholders will be unanimous about the firm’s investment or production decisions. Therefore, even if there is a dominant shareholder, his preferences and those of the other shareholders will coincide. Similarly, if two firms merge, the preferences of both sets of shareholders will coincide so that resource allocation is independent of who controls the corporation.

The upshot of our criticism of the G-I article is that the Coase Theorem is far more robust than they think, primarily because of the powerful assumption of zero transactions costs.

REFERENCES

