Some uneasiness with the Coase Theorem

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Abstract

Allocation of property rights – and how they are to be defined – has important economic implications. Only in certain Santa Claus situations – constant returns to scale, infinite divisibility, free entry, dispersed ownership of each grade of factor, shared knowledge, complete markets – only then will Smithian self-interest be compelled to achieve Pareto-Optimality. To try to capture all that which contributes to deadweight loss under the verbal rubric of "transactions costs" weakens a useful concept without gaining understanding of incompleteness of markets, asymmetries of information, and insusceptibilities of various technologies to decentralized pricing algorithms.

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The Coase Theorem, I learn from The New Palgrave Dictionary (1987, Vol. I, p. 504), inspires wonder and admiration in "fresh" minds. Yet Ronald Coase never wrote IT down. When rash folk do try, Palgrave tells me, it "probably" turns out to be "false" or a "tautology"; and the something called "Coase Proposition" is to be apprehended by a series of examples.

If at first you don't succeed, try again. When I look up the see-also reference for Coase Theorem and read about Common Property Rights in Palgrave, I learn that non-dissipation of rent is what efficient societies need – and, by this stage, I have too little reward to go on reading.

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Perhaps I can do better reading George Stigler's Memoirs of an Unregulated Economist (Stigler, 1988)? George, whom we miss and revere in memory, devotes a chapter entitled "Eureka!" to the 1960 evening when Ronald Coase converted 20 Chicago-School skeptics to become believers in (what Stigler was to christen) the Coase Theorem. Stigler presumed to define what IT was: "When there are no transaction costs the assignments of legal rights have no effect upon the allocation of resources among economic enterprises" – Stigler goes on to say that this is a "reasonable and possibly even obvious [proposition] once it is explained." But I cannot find where Stigler has presented the explanation.

Something called "transaction costs" are part of the argument. In the 1960 evening's example, zero transaction costs meant that information was perfect for everyone. (Already this is a strange use of language. And substantively bad transaction-cost economics.) Ranchers A had cattle with a known propensity to wander and to trample Farmers B's crops. If one firm, GM or Mitsubishi, owned all farm and ranch lands, their operations-research experts could work out the maximum-net-profit configuration of geographical beef–cotton production. Considering only these lands and only the laborers on them, the collectivity that owns GM would maximize the $P_1Q_1 + P_2Q_2 - C_{12}$ $= \Pi$ profit at its optimality point. For this subset of the world, it is the only Pareto-Optimal point: any other point produces less swag to divvy up among this subset of producers; more swag can bribe resisters to go along to unanimous agreement; and then the MaxSwag of $(\Pi_R + \Pi_F = \Pi^*)$ gets somehow divided between Ranchers and Farmers as (Π_R^*, Π_F^*).

Follow the bare-bones logic of the above discussion and nothing institutional matters in economics. Always when you specify technology and tastes, out of the vast infinity of feasible vectors of economic variables, infinitely-most of the feasible configurations are Pareto-Non-Optimal. They involve "deadweight loss," in the sense that from what they mete out to all N persons, there exist possible vectorial movements that can make each one better off without hurting anyone – or, more weakly, can make some person(s) better off without hurting any other person. Property rights don't matter. If knowledge is perfect, by definition of our talking about "rational persons" they will somehow agree to end up at some (generically unpredictable?) Pareto-Optimal point.

Did 21 savants buy this palaver? Transaction Costs are indeed important. But there is much more in their absence than symmetries of knowledge among all economic agents. The usual boilerplate about the Coase Theorem and about Property Rights I find seriously defective in the analysis of transaction costs. My major critique cuts much deeper than this, however. But on the way to that let me tarry with some illuminating examples.

The Tragedy of the Commons is an economic parable about how, in the absence of land ownership and the levying of rent for land use, free-entry

labor will push and shove until on every acre average labor productivity is the same. But mathematical calculation tells that this will be a Non-Pareto-Optimal configuration in comparison with an allocation of labor that equalizes everywhere marginal labor productivity.

Is it obvious that propertyless laborers in an egalitarian utopia should vote to abolish a common land, turning over to others a rent collecting right? In the economists' version of the problem – where your work never tramples on mine – Samuelson (1974, 1990, 1992, 1993) and Weitzman and Cohen (1975) have shown that the extra production made possible by rent collection falls short of the product lost to the rent collectors – and that partway privatization can be worse than none. Workers would prefer a social compact in which regulators by fiat allocated laborers to achieve Equi-Marginal-Products; and then divvied up equally the total production, keeping "explicit rents at zero."

This example shows why transaction costs involve more than ignorance and knowledge. If I have knowledge of all technology and tastes, do I have perfect knowledge? Yes if I am God or Frank Ramsey. I can know all the mathematical functions needed for calculating the Newtonian maximum; but, as the old writers used to say, doing the algorithm may be work not fitting for a human. Hayek, or Lerner–Lange, could agree in this land case that the algorithm of laissez-faire is a dandy parallel-computation method for allocating resources. Pragmatically, property rights do affect resource allocations.

But what if we faced increasing returns to scale and integer-programming technology? At no stage in our early lives could Ronald or Paul know how to compute independently of property rights what Coase's unique Pareto-Optimum configuration is: we wait for a Ralph Gomory to teach us how. In real life what we can actually get to divide up will depend crucially on what the property and power relations happen to be and side payments are usually not present to obfuscate this. The Civil War was not aborted by purchase of the slaves and setting them free. If I go the road of buying off those who would burglarize me, I soon evoke a new supply of threatening burglars.

Rather than pursue a better handle on what it is that is involved in "transaction costs," let me use my limited time to identify and reject the dubious major premise of Coase argumentation.

1. Major doubt

Recall two Cournot producers of q_1 and q_2, who can each produce costlessly $0, 1, 2, \ldots$ units. Their combined supplies, $q_1 + q_2 = Q$, can be auctioned to myriad consumers at a price of P in accordance with a known demand function: $P = f(Q) = f(q_1 + q_2)$, where each collects Pq_1 and Pq_2. For simplicity let demand be linear: $f(Q) = 2 - Q$ so that the cost-free monopolist will best exploit consumers by selling $Q^* = 1$ unit. Cournot

correctly believed that each duopolist would be motivated to supply more than their quota under monopoly and would receive in profit less than one-half of the monopoly swag achievable when each brings only one unit to market. Coase and Stigler have to insist that together the duopolists will decide that only two units are to be produced. Why will these two free spirits agree on that? Stigler and Coase have to reply: "Because you are not rational if you don't agree in advance to achieve maximum profits obtainable for both of you."

Note that ex ante I have no way of knowing how you and I will share. Equally? Who guarantees that, even if we each have one nose? Am I a fool to hold out? My nuisance value is great: if willing to bear pain myself, I can guarantee that you will bear unlimited pain. Rather than get nought, you may acquiesce in my selling more than you.

Mathematically speaking, a one-time, two-person, non-cooperative, non-zero-sum game is indeterminate in solution. Its Cournot–Nash solution is only one possible solution. Generally speaking, that is not a Pareto-Optimal solution. Moreover, if Duopolist B could find out that Duopolist A follows a Cournot–Nash strategy, B's optimal q_1^* would not be that of the Cournot–Nash solution. (Caveat: when the same $[q_1 f(q_1 + q_2), q_2 f(q_1 + q_2)]$ game is played over and over again, the new game in the $[q_1(t), q_1(t+1), \ldots, q_2(t), q_2(t+1), \ldots]$ space may converge toward a Nash–Solution that is more nearly Pareto-Optimal.)

I doubt that one can usefully capture the content of the game-theoretic interactions between ranchers and farmers or parent and child under the rubric of "transaction costs." Is there some coherent proof that, without transaction costs, real-life rivals must find their way to Pareto-Optimal frontiers?

2. Discussion

Ronald Coase is, of course, better than is Stigler on Coase. Many disciples cheerfully agree: There is no Coase Theorem. The case of Zero Transactions Cost is a polar parable, and the great value of the new revelation comes in grappling with various degrees of transaction costs, in analyzing their complexities, in devising property rights and legal procedures that help to minimize social deadweight loss.

However, there is still needed – from the pen of Coase or anyone else – a coherent analysis of just what is afoot in the non-polar real world. Anecdotes do not a science make. If the polar cases, the easy cases, are defective in their purported analysis, then the subject is still in a primitive stage of development. The concepts of transaction costs – as for example the minimum quantum of time and effort needed in ordering more of an inventory,

which is basic to a realistic theory of inventory holding – are often clear cut in their usual applications. But it is a confusion to try to pigeonhole the intricacies of game-theoretic interactions under the rubric of differential-degree of property rights and of irreducible and reducible transaction costs.

In general, i.e., generically, there is an infinity of existent Pareto-Optimal states of the world; and almost all of them do involve different "allocations of resources among economic enterprises [and industries]." Only under Santa Claus specifications of conditions of "perfect competition" – constant returns to scale, partitionable ownership of inputs among numerous decentralized entities, spread of knowledge, ... – will real-world scenarios hone in on one determinate subset of that infinity. (In the Cournot duopoly myth, what Stigler considers the unique Pareto-Optimal state of the world – which is the uncountable infinity of solutions to the $q_1^* + q_2^* = 1$ ideal-monopoly solution – the myriad of consumers are losing so much that there exists an infinity of quite different truly Pareto-Optimal states of the world (involving $q_1^* + q_2^* = 2$): always the winning consumers could in principle bribe the disappointed exploiters into expanding their costless productions to that non-Stigler state. Will that happen? To whom or what ("the State?") do we give the property rights so that the Utopia (ill-defined) will prevail?

The Coase–Samuelson generation were brought up witnessing the great debate between von Mises and Lerner–Lange concerning the feasibility of socialist rational pricing to produce Utopia. (That was a reprise of earlier Pareto–Barone–Wieser–Taylor debates.) Many contemporaries believed Lerner–Lange triumphed in the debate. I came to believe that Friedrich Hayek was the true victor.

Under static conditions where all is known or knowable (to whom?), whatever optimal states laissez-faire might occasion, so could some computer solution or some algorithms of play the game of competition also achieve. But in the real world all is changing, even in the time it takes me to write this sentence. Hayek has been persuasive – not in Whig ideology or in declaring that moderate reform of laissez-faire leads inevitably down the road to totalitarian socialism but – in arguing that experience suggests that only with heavy dependence on market pricing mechanisms can there be realized quasi-efficient and quasi-progressive organization of societies involving humans as Darwinian history has equeathed them. If a reader does not find the Hayek dynamic arguments persuasive, I will not here argue the matter further.

My point is that the same thing applies to legal assignment of property rights. We have paradoxes in public-utility economics. In the Tragedy of the Open Road we encounter the Braess Paradox, in which supplying a new road segment leads under laissez-faire to a slower ride for everybody. We can contrive, in this instance, a variety of alternative property rights that would make for Pareto-Optimality. (One could be: give the State a right to impose

tolls; but constrain in the property-grant the right of the bureaucrats to deviate from the just-right pattern of tolls. Or contrive an equivalent Dutch Auction to pick a private monopolist with effectively the same property rights.) But in the time it takes me to write this paragraph, exogenous change and dynamic endogenous change will cause the data of the problem to change in such a way as to entail a different set of property rights. If the Social Contract makes all earlier property rights capable of being abrogated to adjust to new Pareto-Optimal needs, we are in the old quagmire of moral hazard, inverse externalities, and so forth. No doubt wise Twenty-First-Century Hayeks or Lerners will come forward to give persuasive counsel on how a Mixed Economy will want to compromise among divergent instrumentalities so as to optimize various definitions of social and individual welfares.

3. Summary

Allocation of property rights – and how they are to be defined – matters mightily. They are the chips in the game of dickering, threatening, and litigating. These processes are unavoidable. And it is only in my MIT seminar room that they go on all morning long in dry runs that converge to (an infinity of) Pareto-Optimal solutions; and that at high noon an omnipotent go-between finalizes at one of these calculated optima. In the real world rivalry is incessant. Only in certain Santa Claus situations – constant returns to scale, infinite divisibility, free entry, dispersed ownership of each grade of factor, shared knowledge, complete markets – only then will Smithian self-interest be compelled to achieve Pareto-Optimality.

To try to capture all that which contributes to deadweight loss under the verbal rubric of "transactions costs" weakens a useful concept without gaining understanding of incompleteness of markets, asymmetries of information, and insusceptibilities of various technologies to decentralized pricing algorithms.

The vogue of vulgar and vague Coaseism, one hypothesizes, is strongest among libertarians and other devotees of laissez-faire who believe to find in it ammunition against regulation and voters' activism. Whether this hypothesis is close to or wide off the mark is of no importance. What does matter is how much deadweight-loss obtains in real life.

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