



## From Pigovian Analysis to Property Rights Theory

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The past 20 years have seen the emergence of the study of property rights as a distinct new approach to the analysis of economic behavior. From a historical perspective, two aspects seem remarkable:

(1) the birth of the approach can be 'traced to a single contribution, namely, Coase's article on the "Problem of Social Cost," published in 1960. For a decade its development was shaped by a small number of scholars within a distinct school

(2) the approach explicitly proposes a view of the problem of External Effects that is irreconcilable with the view of standard neoclassical analysis, usually labelled "Pigovian" analysis. During the past decade, the property rights approach has been applied to a wide variety of economic problems, authors from a number of schools of analysis have discussed it, and attempts to integrate it into standard analysis have been made. This rapid growth toward a full-blown theory makes it worthwhile to focus on the period during which the approach was still contained to a few actively collaborating authors in order to gain a better understanding of the theoretical structure of the approach.

In the, first section, the analytical changes introduced by Coase's paper are discussed. In the second section, the clarification of the new concepts during the following decade, 1960-69, is discussed.

## I.

1. In Pigou's "Wealth and Welfare" (1912), the first explanation of the problem of Social Cost based on accepted economic theory can be found. Pigou constructs a model in which Social Cost is interpreted as the divergence between "Social Net Product" and "Private Net Product." The results of actions involving such a divergence are called "External Diseconomies." In Pigou's model, an optimal allocation of resources is achieved by placing taxes and bounties on economic actions that have been identified as causing External Diseconomies. Pigou's model, although an apparent offspring of Marshall's analysis of External Economies, didn't get off the ground for almost half a century. One reason quite clearly lies in the fact that, during the first half of this century, the problem of "damage done to surrounding woods by sparks of railway engines" (Pigou 1928: 136) was considered to be far less worthy of attention than the problem of unemployment, for example. In addition, Pigou's theoretical groundwork proved to be shaky: Young (1913) right away pointed out that Pigou had confused rents and social costs; a few years later, Knight (1924) pointed out that Pigou had neglected the "social function of ownership" that provides the stable time horizon necessary for an allocation of resources to the highest-valuing bidder. Pigou was forced to drop his example of trucks using two roads, one of them wide but poorly surfaced, the other in good condition but limited in capacity and therefore congested.

2. The analysis of External Diseconomies was abandoned until, in the 1950's, the problem forced its way back to academic attention. "Social Costs" became obvious to the most cursory observer when the use of resources once considered free led to social conflicts and serious inefficiencies of allocation. Most studies of the problem fell back on Pigou's approach, and many still continue to do so. For example, Meade's (1952) discussion of External Economies and Diseconomies (formalized as variables of the production function) featured taxes and subsidies to correct such effects. The key had remained the same as in Pigou's model: productive activities— in this case the pollination of fruit tree blossoms by bees — lead to conflicting optimizing decisions by the bee keepers and apple growers; the "State" is introduced as a third — qualitatively different — entity that offsets potential losses of social product by changing the parameters of honey and apple production. Since governments indeed collect and distribute subsidies, such an approach appears plausible.

3. Coase, too, uses Marshallian partial analysis; economic subjects are limited to representative firms. Within this model, a "technical problem of analysis" (p. 1) is to be solved; the problem is caused by "actions . . . which have harmful effects on others" (p. 2).

And yet, Coase's presentation of "The Problem of Social Cost" had to appear new and different. In Pigou's model, it is all a question of repairing a disturbance of the allocative system; the "State" is called upon as the repairman. The "State" is introduced as a concept that serves to measure the direction and the degree of a disturbance by apportioning taxes and subsidies. In Coase's view, the parties to a conflict are parties to "a problem of reciprocal nature:" like players in a game without a referee, the parties have to strike some sort of compromise in order to settle their conflicts.

Coase focuses on the relationship between firms. His paradigmatic example is very similar to Meade's, only that the bee keepers have turned to cattle ranchers and the apple growers have turned to farmers. He recognizes that the relationships between ranchers and farmers are characterized by something called "liability." In other words, in most cases of valuation conflicts there is a mutual understanding by both parties to the conflict as to who "can be held liable" to bear the cost of an extra-market "exchange" of resources between the parties. The state is not interpreted as an administrator, collecting taxes and doling out subsidies, but as a legislator or a judge, clarifying the boundaries of liability between parties whenever these boundaries are contested by at least one of the parties.

Coase provided a number of examples to illustrate this function of courts in settling conflicts of liability between producers. But the main theoretical difficulty was, of course, the introduction of liability into an

economic analysis. Coase introduced liability through the following theorem

“...the ultimate result (which maximizes the value of production is independent of the legal position if the pricing system is assumed to work without cost” (Coase 1960:8).

Thus, a connection is established between the “legal position” and the cost functions of the firms under consideration. These “costs of the pricing system” are called “transaction costs” and are described as follows:

“In order to carry out a market transaction it is necessary to discover who it is that one wishes to deal with, to inform people that one wishes to deal with and on what terms, to conduct negotiations leading up to a bargain, to draw up the contract, to undertake the inspection needed to make sure that the terms of the contract are observed, and so on” (Coase 1960:15).<sup>1</sup>

4. At first glance, the proposition that optimal allocation is independent of the “legal position” under the condition of zero transaction cost appears rather trivial. The heart of the matter, however, is the implication that optimal allocation depends on the legal position when the transaction costs are not zero. What would be the use of proposing a new cost category if, as a rule, this category were assumed to be zero? The Coase Theorem introduces not one, but two new variables into the model: the privileges and duties that constitute the legal position of a firm and the transaction costs incurred when changing legal positions and when carrying out market exchanges.

Coase provided little detail for the two central concepts of his approach. Only by implication does it become clear that the “legal position” is thought of as a set of rights. When these rights are thought of as production factors, as Coase suggests (p. 44), then the link between rights and their cost is of the same kind as that between other factors of production and their cost.

The concept of transaction cost is a means of comparing alternative arrangements of legal positions, i.e., of evaluating such arrangements with respect to their allocative efficiency. Quite obviously, there is no way to compensate for all “harmful” extra-market exchanges when transaction

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<sup>1</sup> It may be recalled that a very similar category of cost had been proposed by Pigou under the label of “cost of movement.” (See Pigou 1928: 146-50 and 498-505.)

costs are positive. The goal, therefore, is the choice of a social arrangement that “avoids the more serious harm” (p. 2). The assumption of different possible total arrangements, by consequence, questions the optimality of competitive private markets. Coase observes that specific productive activities are carried but within firms, others between firms, and again others by the superfirm called “State.”<sup>2</sup>

In no case can there be an a priori judgement as to which form of “legal position” approaches allocative optimum more closely. Thus the structure of all institutional arrangements for carrying out exchanges is brought into the scope of economic analysis. The preferred arrangement is chosen only when the costs of transforming a presently existing arrangement into a proposed arrangement are considered to be sufficiently low. The critique of the Pigovian approach in cases of high transaction costs can be condensed into one sentence: “It would cost too much to put the matter right” (Coase 1960: 39).

5. An additional perspective on the difference between Pigovian and Coasean analysis is gained by comparing the economic environments in which the two authors lived. In Pigou's time, it seemed reasonable to assume that legal structures are constant with respect to the time period considered relevant for economic investigations. Knight did point out the “social function of ownership” in allocating resources, but his remark was intended to reaffirm the boundaries of economic theory, not to question them. In Coase's time, a distinction between rights and productive factors on the grounds of differing temporal extensions had become obsolete. While studying the operations of the Federal Communication Commission (Coase 1959), Coase observed economic transactions that extend over years and that demand intensive lobbying in order to be accomplished. Radio stations, for instance, spend much time and effort to maintain or receive licenses. He also observed legal norms that have, in some cases, been standardized as temporarily limited rights of use. Licenses for the use of certain frequencies of the electro-magnetic spectrum are one example. It follows that firms acting in such environments consider the manipulation of right structures relevant for production, as well as the optimization of production within an accepted structure of rights as alternative courses of action.

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<sup>2</sup> Here is a point of confusion: “State” in this context means “Government.” Later on, Coase made it very clear (Coase 1974) that he distinguished rigidly between the State as an enforcer of rules and the Government as one element in the set of firms.

## II.

1. There was no immediate response to Coase's article. In 1964, Demsetz's paper on "the Exchange and Enforcement of Property Rights" appeared, followed by "Some Aspects of Property Rights" (1966) and a first attempt at formulating a "Theory of Property Rights" (1967). Alchian's discussion of "Some Economics of Property Rights" appeared in 1965 in a little-known Italian journal. More influential was the prominent treatment of the new concept in his textbook (1967). During the last two years of the decade, both authors began to widen the scope of the property rights approach and employed it to problems as diverse as the transaction costs in the New York Stock Exchange (Demsetz 1968) and the recovery of the U.S. Economy in the 1930's (Alchian 1969); the approach also proved to be applicable to an analysis of tenant-farmer sharecropping contracts in China (Cheung, 1968, 1969). The approach probably enjoyed a strong "oral tradition" within the Chicago School during that decade.

The inclusion of property rights in a textbook supports this assumption. Note also, that all three authors are or have been associated with the University of Chicago: Harold Demsetz was a member of the faculty, Armen Alchian a former member of the faculty and Steven Cheung a graduate of its Department of Economics.

Towards the end of the decade, contributions by authors outside of the Chicago School began to appear. A legal scholar's comment on the Coase approach (Calabresi 1968) and a "Legal-Economic Engineering Study" (DeVany et al. 1969) are mentioned as examples. Quite pragmatically, the study ignores all these extensions in order to be able to concentrate on the elaboration of the two newly suggested variables, property rights and transaction costs.

2. A first step was the identification of the subset of all those rights that may affect resource allocation. Elements of that subset are called "property rights." (Recall that Coase does not use that term in his paper.) Property rights are "the expectations a person has that his decision about the use of certain resources will be effective" (Alchian 1967:158). Quite often, "bundles" of property rights are the object of economic exchanges; for instance, the transfer of a share of stock is much less a transfer of material resources than 'a transfer of specific controls over resources. In fact, many of the exchanges of goods and especially services are exchanges of property rights. Those property rights that remain unchanged during the course of a transaction also influence the result of the transaction. For instance, the absence of a law against stealing bicycles or the inadequate enforcement of such a law in a community would certainly lower the prices for bicycles. In consequence, "every question of pricing is a question of

property rights" (Alchian 1967:59). Property, then, is defined as the sum of all those limitations within which economic actions take place. As a rule, these limitations pertain to the environment of that resource: it is against the law to throw bricks into the windows of a restaurant, but it is legal to open another restaurant on the opposite side of the street (Demsetz, 1966).

From this point of view, the consideration of property rights gains an unsuspected urgency: it seems that property rights are not just another variable that may or may not be used to fine-tune established results; property rights are an indispensable prerequisite for any statement on optimal allocation: "We cannot analyze the way a person uses resources without first specifying the nature of his property rights" (Cheung 1968: 1120).

3. The change of property rights, be they the object within or the system surrounding a transaction, involves costs. These costs need to be determined if alternative strategies for change are to be compared. Demsetz (1964) distinguished between costs that are connected with the execution of an exchange (exchange costs) and costs that are connected with the enforcement of the terms of the contract explicitly or implicitly agreed upon with the exchange (police costs). In both categories, the costs may be too high to make a formulation of conditions of exchange a worthwhile activity. This is why air, water and other natural resources have remained free-access resources (to be distinguished from "common" resources characterized by complex rights of use within a given community).

Note that the distinction between exchange costs and police costs is not simply a convenient practical differentiation. The two categories are sharply distinct with respect to their temporal dimension. Dales (1975) has expressed this point quite vividly by using the terms, "time-and-trouble costs" and "system costs."

4. Coase's alternative total arrangements in the productive sector are now extended to all economic activities. Transaction, merger and no action are alternatives, and their allocative optimality depends on the costs that are connected with their initiation and maintenance (Demsetz 1964). For instance, "... the practice of sale-in-combination may overcome many instances of high exchange costs" (Demsetz 1964:22), and public agencies may have low transaction costs in negotiating the allocation of public goods (Demsetz 1966).

With these elaborations the stage was set for a more formal extension of standard economic theory: (i) more than one possible structure or system of property rights and (ii) positive transaction costs are assumed. These assumptions are made for all economic agents. This constitutes an

important extension of Coasean analysis: not only the behavior of firms – the agents of the productive sector – but also the behavior of households or individuals – the agents of the consumptive sector – depends on the specification of property rights. In consequence, it can be explained how individuals carry out transactions in the structure of a private firm, a public agency, a stock company of a feudal agricultural society – to cite only the examples of institutional organization considered by the three authors under investigation.

At the time, the formulation of a more general theory of property rights appeared imminent. Demsetz even dared a first hypothesis concerning the emergence of property rights: “Property rights develop to internalize externalities when the gains of internalization become larger than the cost of internalization” (Demsetz 1967:350). But property rights and transaction costs proved to be more alien to standard economic analysis than the early authors had suspected.

5. The time lapse of a decade puts into focus not only the basic theoretical structure of the early property rights approach, but also the biases common to the three authors discussed above. The most obvious one is the shared conviction that “the valuation power of the institution of property is most effective when it is most private” (Demsetz 1964:19). Such an assumption helps to make the definition of property rights operational, but it prohibits the explanation of transactions in economies that are predominantly organized in non-private institutions of property. Alchian, for instance, is puzzled by the very existence of socialist states, since “private property rights are rights not merely because the state formally makes them so but because individuals want such rights to be enforced” (Alchian 1965a: 817). Sticking closely to Alchian’s own definition of property rights, the explanation becomes obvious: if property rights are expectations concerning the use of resources, then privacy is just one quality of such expectations. Once a specific system of property rights has been established, certain rights will develop a high degree of exclusivity and transferability and individuals will be able to optimize within this given system, no matter what political label is attached to the rights of that system.

Another blind spot of the early authors is even more instructive. If property rights are indeed a prerequisite for any economic decision and not just another variable, then it is hard to understand that they received little or no attention by economists. It “is a genuine puzzle to me why economics has no ‘field’ . . . devoted to ‘property rights’”. The closest thing to it is the field known as comparative economic systems; yet even there the fundamental rôle of the particular set of property rights, as a specification of the opportunity set of choices about the use of resources,



seems inadequately recognized” (Alchian 1965b: 40). Demsetz adds: “Economists seem to have forgotten about the possibility of . . . systematic analysis . . . of property rights” (Demsetz 1964: 14). Surely, Demsetz did not consider “forgetfulness” a sufficient answer to the puzzle. Alchian points to Adam Smith's remarks on the topic; for Marx, “property relations” were the very basis of the production process; the German Historicists had emphasized the study of property rights and John R. Commons's brand of economic theory was concerned expressly with transactions and property rights. However, all attempts to integrate property rights into standard economic models have failed.

The explanation of the “puzzle” goes back to Pigovian analysis. Recall Pigou's “private” and “social” supply curves: Knight had made it clear that “ownership” was a part of the environment of an economic model. Therefore, it was methodologically correct to treat property rights as exogenous parameters of economic models; in fact, the theoretical advances of the first half of this century are a result of this “turning inwards...toward the maximizing problem of a decision making entity” (Buchanan 1975: 225). However, such a limitation of research is only tolerable during an era when the actual behavior of the institutions assumed to be constant justifies the simplification sufficiently. Alchian, Demsetz and Cheung had difficulties understanding the structural reasons for neglecting the study of property rights because, to them, an integration of property rights into standard models seemed to be fairly easy. They parceled property rights into variable units, to be thought of as some license or certificate. Thus, they lost sight of the fact that an endogenization of a subset of property rights does not take care of the more basic problem: when institutional change becomes habitual, then the variability of the environment of resource allocation processes can no longer be neglected.

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