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## *A transaction cost theory of exchange*

My theory of institutions is constructed from a theory of human behavior combined with a theory of the costs of transacting. When we combine them we can understand why institutions exist and what role they play in the functioning of societies. If we add a theory of production we can then analyze the role of institutions in the performance of economies.

The costliness of information is the key to the costs of transacting, which consist of the costs of measuring the valuable attributes of what is being exchanged and the costs of protecting rights and policing and enforcing agreements. These measurement and enforcement costs are the sources of social, political, and economic institutions. The rest of this chapter concentrates on economic exchange; in Chapter 6 I will build a model of political exchange from the same building blocks.

The costliness of economic exchange distinguishes the transaction costs approach from the traditional theory economists have inherited from Adam Smith. For 200 years the gains from trade made possible by increasing specialization and division of labor have been the cornerstone of economic theory. Specialization could be realized by increasing the size of markets, and as the world's economy grew and division of labor became ever more specific, the number of exchanges involved in the performance of economies expanded. But the long line of economists who built this approach into an elegant body of economic theory did so without regard to the costliness of this exchange process. An exchange process involving transaction costs suggests significant modifications in economic theory and very different implications for economic performance.<sup>1</sup>

<sup>1</sup>The transaction cost approach is consistent only in its agreement on the importance of transaction costs; it is far from unified in other respects. The approach developed here might most appropriately be characterized as the University of Washington approach, originated by Steven Cheung (1974, 1983) and elaborated, modified, and developed at the University of Washington, most notably by Yoram Barzel (1982, 1989) but also by Keith Leffler (with Klein, 1981), Masanori Hashimoto (1979), and

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Wallis and North (1986), measuring the size of transaction costs that go through the market (such as costs associated with banking, insurance, finance, wholesale, and retail trade; or, in terms of occupations, with lawyers, accountants, etc.) in the U.S. economy found that more than 45 percent of national income was devoted to transacting and, moreover, that this percentage had increased from approximately 25 percent a century earlier. Thus the resources of the economy consumed in transacting are of considerable magnitude and growing. Because transaction costs are a part of the costs of production, we need to restate the traditional production relationship as follows. The total costs of production consist of the resource inputs of land, labor, and capital involved both in transforming the physical attributes of a good (size, weight, color, location, chemical composition, and so forth) and in transacting – defining, protecting, and enforcing the property rights to goods (the right to use, the right to derive income from the use of, the right to exclude, and the right to exchange).

Once we recognize that the costs of production are the sum of transformation and transaction costs, we require a new analytical framework of microeconomic theory.<sup>2</sup> However, our concern in this study is a theory of institutions, and although that focus inevitably overlaps with some fundamental issues in microeconomic theory, to explore systematically the implications for the latter theory would take us in another direction. Our initial question, however – why is it costly to transact? – is common both to the restructuring of microtheory and to a theory of institutions.

### I

As we saw in Chapter 2, in “The Problem of Social Cost” (1960) Ronald Coase made clear that only in the absence of transaction costs did the neoclassical paradigm yield the implied allocative results; with positive transaction costs, resource allocations are altered by property rights structures. Neither Coase nor many of the subsequent studies of transaction costs have attempted to define precisely what it is about transacting that is so costly, but that issue is central to the issues of this study and I now turn to it. I begin by exploring the costliness of measurement (holding enforcement costs constant) and then in Section III examine the costs of enforcement.

We get utility from the diverse attributes of a good or service or, in the case of the performance of an agent, from the multitude of separate

Douglass North (1981, 1984). Other approaches, notably that of Oliver Williamson, will be contrasted with the approach developed here.

<sup>2</sup>For the beginning of such a theory, see Barzel (1989).

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activities that constitute performance.<sup>3</sup> This means, in common sense terms, that when I consume orange juice, I get utility from the quantity of juice I drink, the amount of vitamin C it contains, and its flavor, even though the exchange itself consisted simply of paying \$2.00 for fourteen oranges. Similarly, when I buy an automobile, I get a particular color, acceleration, style, interior design, leg room, gasoline mileage – all valued attributes, even though it is only an automobile I buy. When I buy the services of doctors, their skill and bedside manner and the time spent waiting in their offices are part of the purchase. When as chairman of an economics department I hire assistant professors, not only the quantity and quality (however measured) of their teaching and research output (again, however measured), but a multitude of other aspects of their performance are also hired: whether they prepare for and meet classes on time, provide external benefits to colleagues, cooperate in department affairs, do not abuse their positions vis-à-vis students, or call friends in Hong Kong at departmental expense. The value of an exchange to the parties, then, is the value of the different attributes lumped into the good or service. It takes resources to measure these attributes and additional resources to define and to measure rights that are transferred.

The transfers that occur with an exchange entail costs that result from both parties attempting to determine what the valued attributes of these assets are – attributes that, because of prohibitive measurement costs, have remained poorly delineated. Thus, as a buyer of oranges I attempt to purchase an amount of juice, an amount of vitamin C, and the flavor of oranges, even though what I purchased was simply fourteen oranges for \$2.00. Similarly, when as a potential buyer I look at an automobile, I attempt to ascertain whether it has the attributes important to me in a car. The same holds for the purchase of a doctor's services, about which I try to ascertain information on skill, bedside manner, and office waiting time.

From the particulars in the foregoing illustrations we can generalize as follows: commodities, services, and the performance of agents have numerous attributes and their levels vary from one specimen or agent to another. The measurement of these levels is too costly to be comprehensive or fully accurate. The information costs in ascertaining the level of individual attributes of each unit exchanged underlie the costliness of this aspect of transacting. Even if all exchanging individuals had the same objective function (for example, jointly maximizing the wealth of a firm that employed them), there would still be the transaction costs involved in acquiring the necessary information about the levels of attributes of each exchange unit, the location of buyers (sellers), and so forth. But, in fact

<sup>3</sup>For this extension of consumer theory see Lancaster (1966), Becker (1965), Cheung (1974), and Barzel (1982), among others.

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there are asymmetries of information among the players, and these and the underlying behavioral function of individuals in combination produce radical implications for economic theory and for the study of institutions.

I take up the issue of asymmetry first. In the foregoing illustrations, the seller of oranges knew much more about the valuable attributes of the oranges than the buyer, the used car dealer knew much more about the valued attributes of the car than the buyer (Akerlof, 1970), and the doctor knew much more about the quality of services and skill than the patient. Likewise, prospective assistant professors know much more about their work habits than does the department chairman or, to take another example, the purchaser of life insurance from an insurance company knows much more about his or her health than the insurer does.

Not only does one party know more about some valued attribute than the other party, he or she may stand to gain by concealing that information. According to a strictly wealth-maximizing behavioral assumption, a party to exchange will cheat, steal, or lie when the payoff to such activity exceeds the value of the alternative opportunities available to the party. Indeed, this assumption was the basis of Akerlof's famous article on lemons (1970), of the dilemmas posed by adverse selection in the purchase of life insurance, of problems of moral hazard (Holmstrom, 1979), and of a multitude of other issues that have emerged in the literature over the last dozen years in what is called the New Industrial Organization literature. Although it is sometimes in the interests of the exchanging parties to conceal certain kinds of information, at other times it is in their interests to reveal information. With this background we can develop some generalizations about the measurement aspects of a transaction cost model of exchange.

## II

Consider first the standard neoclassical Walrasian model. In this general equilibrium model, commodities are identical, the market is concentrated at a single point in space, and the exchange is instantaneous. Moreover, individuals are fully informed about the exchange commodity and the terms of trade are known to both parties. As a result, no effort is required to effect exchange other than to dispense with the appropriate amount of cash. Prices, then, become a sufficient allocative device to achieve highest value uses.

To the Walrasian model, which includes the maximizing behavior of individuals, the gains that result from specialization, and the division of labor that produces exchange, I now add costs of information. As noted above, these include the costs of measuring the valued attributes of goods

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and services and the varying characteristics of the performance of agents. The net gains from exchange are the gross gains, which are the standard gains in neoclassical theory and in the international trade model, minus the costs of measuring and policing the agreement and minus the losses that result because monitoring is not perfect. On a common sense level, it is easy to see that we devote substantial resources and efforts to the measurement, enforcement, and the policing of agreements. Warranties, guarantees, trademarks, the resources devoted to sorting and grading, time and motion studies, the bonding of agents, arbitration, mediation, and of course the entire system of judicial process all reflect the ubiquity of measurement and enforcement.

Because it is costly to measure the valued attributes fully, the opportunity for wealth capture by devoting resources to acquiring more information is ever present. For example, the seller of a commodity such as fruits and vegetables may find it too costly to sort and grade them precisely. On the other hand, a buyer may find that it is worthwhile to devote time to picking and choosing among the fruit and vegetables available. In this case the seller has put into the public domain the variability of attributes that can in part be captured by the buyer devoting time and effort to sorting them out. The same can be said for the purchaser of a used automobile or the purchaser of medical services of doctors. Because of the enormous variety in the characteristics and the costliness of measuring attributes of goods and services and the performance of agents, the ideal ownership rights, with respect to these assets and resources, may take a variety of forms. In some cases, the ideal form is that the rights be divided among the parties. The buyer of a durable good, for example, may own some rights; others remain with the manufacturer in the form of guarantees of performance.

As a generalization, the more easily others can affect the income flow from someone's assets without bearing the full costs of their action, the lower is the value of that asset. As a result, the maximization of an asset's value involves the ownership structure in which those parties who can influence the variability of particular attributes become residual claimants over those attributes. In effect they are then responsible for their actions and have an incentive to maximize the potential gains from exchange. The rights to an asset generating a flow of services are usually easy to assure when the flow can be easily measured, because it is easy to impose a charge commensurate with a level of service. Therefore, when a flow is known and constant, it is easy to assure rights. If the flow varies but is predictable, rights are still easy to assure. When the flow of income from an asset can be affected by the exchange parties, assigning ownership becomes more problematic. When the income stream is variable and not fully predictable, it is costly to determine whether the flow is what it

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should be in that particular case. In such an instance, both parties will try to capture some part of the contestable income stream.

### III

So far the emphasis of the analysis has been on measurement. It is, however, measurement plus the costliness of enforcement that together determine the costs of transacting. If we return to the Walrasian model described above, we assume that there are no costs associated with enforcement of agreements. Indeed, as long as we maintain the fiction of a unidimensional good transacted instantaneously, the problems of policing and enforcement are trivial. But when we add the costs of acquiring information and, specifically, of measuring, the problems become major ones. It is because we do not know the attributes of a good or service or all the characteristics of the performance of agents and because we have to devote costly resources to try to measure and monitor them that enforcement issues do arise.

One issue is that of policing agents. The most extreme example concerns the relationship between a master and slave. There is, in fact, an implicit contract between the two; to get maximum effort from the slave, the owner must devote resources to monitoring and metering a slave's output and critically applying rewards and punishments based on performance. Because there are increasing marginal costs to measuring and policing performance, the master will stop short of perfect policing and will engage instead in policing until the marginal costs equal the additional marginal benefits from such activity. The result is that slaves acquire certain property rights in their own labor. That is, owners are able to enhance the value of their property by granting slaves some rights in exchange for services the owners value more. Hence slaves became owners too. Indeed it is only this ownership that made it possible for slaves to purchase their own freedom, as was frequently done in classical times and even occasionally in the antebellum South.<sup>4</sup>

Although the slave example is an extreme form, the agency issue is ubiquitous in hierarchical organizations. The problems of monitoring and metering the various attributes that constitute performance of agents mean that, in contrast to the standard neoclassical frictionless model of workers being paid the value of their marginal product, they are paid this cost minus the resource costs of monitoring and policing.<sup>5</sup> In the above illustration I implicitly introduced property rights when I referred to the

<sup>4</sup>See Barzel (1977) for a detailed elaboration of this argument.

<sup>5</sup>Jensen and Meckling in a well-known essay (1976) have elaborated on the agency costs involved in monitoring, policing, and the shirking of agents.

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concept of a master owning a slave; and in all discussions of principal/agents and the monitoring problem, we assume that the principal has the power of disciplining the agent and therefore of enforcing agreements. Likewise, the agent can monitor the principal and enforce his or her end of the agreement.

Enforcement can come from second-party retaliation. It also can result from internally enforced codes of conduct or by societal sanctions or a coercive third party (the state).

But one cannot take enforcement for granted. It is (and always has been) the critical obstacle to increasing specialization and division of labor. Enforcement poses no problem when it is in the interests of the other party to live up to agreements. But without institutional constraints, self-interested behavior will foreclose complex exchange, because of the uncertainty that the other party will find it in his or her interest to live up to the agreement. The transaction cost will reflect the uncertainty by including a risk premium, the magnitude of which will turn on the likelihood of defection by the other party and the consequent cost to the first party. Throughout history the size of this premium has largely foreclosed complex exchange and therefore limited the possibilities of economic growth.

## IV

We are now ready to explore the relationship among the behavioral assumptions developed in Chapter 3, the characteristics of transacting as developed in the previous sections of this chapter, and the institutional structure of a society.

Property rights are the rights individuals appropriate over their own labor and the goods and services they possess. Appropriation is a function of legal rules, organizational forms, enforcement, and norms of behavior – that is, the institutional framework. Because with any property rights structure transaction costs are positive, rights are never perfectly specified and enforced; some valued attributes are in the public domain and it pays individuals to devote resources to their capture. Because the costs of transacting have changed radically throughout history and vary equally radically in different contemporary economies, the mix between the formal protection of rights and individual attempts to capture rights or devote resources to individual protection of their own rights varies enormously. We have only to compare property rights in Beirut in the 1980s with those of a modern small-town U.S. community to cover the spectrum. In the former, most valuable rights are in the public domain, to be seized by those with the violence potential to be successful; in the latter the legal structure defines and enforces a large share of rights and those

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valuable rights in the public domain tend to be allocated by traditional norms of behavior. The difference between these two is a function of the institutional structure in each.

Institutions provide the structure for exchange that (together with the technology employed) determines the cost of transacting and the cost of transformation. How well institutions solve the problems of coordination and production is determined by the motivation of the players (their utility function), the complexity of the environment, and the ability of the players to decipher and order the environment (measurement and enforcement).

The institutions necessary to accomplish economic exchange vary in their complexity, from those that solve simple exchange problems to ones that extend across space and time and numerous individuals. The degree of complexity in economic exchange is a function of the level of contracts necessary to undertake exchange in economies of various degrees of specialization. Nonspecialization is a form of insurance when the costs and uncertainties of transacting are high. The greater the specialization and the number and variability of valuable attributes, the more weight must be put on reliable institutions that allow individuals to engage in complex contracting with a minimum of uncertainty about whether the terms of the contract can be realized. Exchange in modern economies consisting of many variable attributes extending over long periods of time necessitates institutional reliability, which has only gradually emerged in Western economies. There is nothing automatic about the evolution of cooperation from simple forms of contracting and exchange to the complex forms that have characterized the successful economies of modern times.

Institutions structure economic exchange in an enormous variety of forms that do, however, fall into general types that are consistent with the transactions cost model of exchange. The kind of exchange that has characterized most of economic history has been personalized exchange involving small-scale production and local trade. Repeat dealing, cultural homogeneity (that is a common set of values), and a lack of third-party enforcement (and indeed little need for it) have been typical conditions. Under them transactions costs are low, but because specialization and division of labor is rudimentary, transformation costs are high. The economies or collections of trading partners in this kind of exchange tend to be small.

As the size and scope of exchange have increased, the parties have attempted to clientize or personalize exchange. But the greater the variety and numbers of exchange, the more complex the kinds of agreements that have to be made, and so the more difficult it is to do. Therefore a second general pattern of exchange has evolved, that is impersonal exchange, in which the parties are constrained by kinship ties, bonding, exchanging



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hostages, or merchant codes of conduct. Frequently the exchange is set within a context of elaborate rituals and religious precepts to constrain the participants. The early development of long-distance and cross-cultural trade and the fairs of medieval Europe were built on such institutional constructs. They permitted a widening of the market and the realization of the gains from more complex production and exchange, extending beyond the bounds of a small geographic entity. In early modern Europe, these institutions led to an increasing role of the state in protecting merchants and to the adoption of merchant codes as the revenue potential of such fiscal activities increased. However, in this environment the role of the state was at best ambiguous, because the state was as often an increasing source of insecurity and higher transaction costs as it was protector and enforcer of property rights.

The third form of exchange is impersonal exchange with third-party enforcement. It has been the critical underpinning of successful modern economies involved in the complex contracting necessary for modern economic growth. Third-party enforcement is never ideal, never perfect, and the parties to exchange still devote immense resources to attempting to clientize exchange relationships. But neither self-enforcement by parties nor trust can be completely successful. It is not that ideology or norms do not matter; they do and immense resources are devoted to attempting to promulgate codes of conduct. Equally, however, the returns on opportunism, cheating, and shirking rise in complex societies. A coercive third party is essential. One cannot have the productivity of a modern high income society with political anarchy. Indeed, effective third-party enforcement is best realized by creating a set of rules that then make a variety of informal constraints effective. Nevertheless, the problems of achieving third-party enforcement of agreements via an effective judicial system that applies, however imperfectly, the rules are only very imperfectly understood and are a major dilemma in the study of institutional evolution.

Thus, it should be readily apparent that to develop a model of institutions, we must explore in depth the structural characteristics of informal constraints, formal rules, and enforcement and the way in which they evolve. Then we shall be in a position to put them together to look at the overall institutional makeup of political/economic orders.