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Getting the Properties Right to Secure Property Rights: Dixit's *Lawlessness and Economics*

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> . . . we think of good economic institutions as those that provide security of property rights . . . [Daron Acemoglu, Simon Johnson, and James Robinson 2004, p. 9]
> But nothing is implied about the actual form that property rights should take. [Dani Rodrik, Arvind Subramanian, and Francesco Trebbi 2002, p. 21]

1. *Introduction*

A consensus is building within the economics profession that good institutions are the key to long-run economic growth.[1] An older consensus defines good institutions as those that secure property rights.[2] These two consensus positions are stated especially clearly in the recent paper by Acemoglu, Johnson, and Robinson quoted above.

Unfortunately, consensus is lacking on exactly how property rights are secured by any given set of institutions. The role of formal, legal institutions versus informal "institutions" is especially unclear.[3] In the paper quoted above, Rodrik, Subramanian, and Trebbi (p. 23) make this point by contrasting China with Russia:

> China still retains a socialist legal system, while Russia has a regime of private property rights in place. Despite the absence of formal private property rights, Chinese entrepreneurs have felt sufficiently secure to make large investments, making that country by far the world's fastest growing economy over the last two decades. In Russia, by contrast, investors have felt insecure, and private investment has remained low. Our institutional quality indicators bear this out, with Russia scoring considerably lower than China despite a formal legal regime that is much more in line with European norms than China's.

By his choice of title, *Lawlessness and Economics: Alternative Modes of Governance*,

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[1] See Robert E. Hall and Charles I. Jones (1999), Daron Acemoglu, Simon Johnson, and James A. Robinson (2001, 2002), William Easterly and Ross Levine (2003), and David Dollar and Aart Kraay (2003). For a recent dissent, see Edward L. Glaeser, Rafael La Porta, Florencio Lopez-de-Silanes, and Andrei Shleifer (2004).

[2] See James M. Buchanan and Gordon Tullock (1962), Douglass C. North and Robert P. Thomas (1973), and North (1981, 1990).

[3] Justin Yifu Lin and Jeffrey B. Nugent (1995, pp. 2306–07), define institutions as "a set of humanly devised behavioral rules that govern and shape the interactions of human beings, in part by helping them to form expectations of what other people will do." In this definition, the "behavioral rules" do not need to be enacted into law or even codified in writing.

Avinash K. Dixit makes it clear that his book will be primarily concerned with what can be accomplished without recourse to the formal legal system. He states at the beginning (p. 4):

> The processes of creating the institutions and the apparatus of state law, and of improving them to the point where they function well, are slow and costly. But it is not always necessary to create replicas of Western-style legal institutions from scratch; it may be possible to work with such alternative institutions as are available, and build on them. Of course, to do this we must have a good understanding of how various institutions of governance work, and of how they interact with each other and with an imperfect state law where that exists. My aim in this book is to contribute to the improvement of this understanding.

Specifically, Dixit (p. vii) defines the field to which he is contributing as the study of "alternative institutions that support economic activity when a government is unable or unwilling to provide adequate protection of property rights and enforcement of contracts through the machinery of state law." We should note that most of Dixit's book is about governance in the sense of ensuring honesty in exchange or enforcement of contracts, rather than about property rights in the sense of control of assets or absence of expropriation. The distinction is easily blurred—if I buy from you on credit and then fail to pay, I have expropriated your property. The distinction is also commonly elided in the literature I have cited here.

In the next section of this review, I will discuss the plan and method of Dixit's book. In section 3, I will evaluate the core analytical contributions of the book and, in the brief concluding section, I will address the relevance of the book for policy.

2. *Plan and Method of Book*

Lawlessness and Economics consists of an introductory chapter, four chapters that develop models and results, and a concluding chapter. Each of the four analytical chapters begins with a thorough overview of the relevant literature, with the result that in addition to its original contributions the book also serves as a thoughtful literature review for the field of governance in less developed and transition economies. After the literature review, one or more models is presented. Technical modeling details and proofs are confined to appendices for each chapter, making for relatively easy reading. The book provides those who explore the appendices with many good lessons in how to apply game theory. Each analytical chapter concludes with a section entitled "Assessment and Prospects" in which Dixit evaluates what his models have accomplished and what remains to be done.

At the end of the introductory chapter, Dixit explains his approach to theoretical modeling (p. 22): "a theoretical model should not merely reproduce as results the factual observations of case studies that the model was constructed to explain in the first place; it should yield some new results or hypotheses that can then be compared with other facts . . . I attempt to live up to the self-imposed criterion of asking the models to deliver more than just the facts they were rigged to explain; sometimes I even succeed." In the "Assessment and Prospects" sections, Dixit is true to his word. I found this self-evaluation at the end of each analytical chapter to be both accurate and useful, and would like to see it more widely practiced. In this regard, the book makes an important contribution to expositional method in addition to the value of its content.

The titles of the four analytical chapters are, in order, "Private Ordering in the Shadow of the Law," "Relation-Based Contract Enforcement," "Profit-Motivated Contract Enforcement," and "Private Protection of Property Rights." There is a progression toward increasing "lawlessness": the "shadow of the law," meaning recourse to the courts as an outside option, disappears from the next two chapters; and

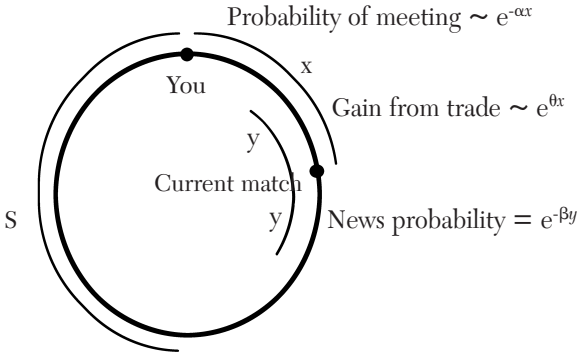

Figure 1. Source: Dixit (2004)

in the last analytical chapter the threat of "unlawful" behavior has escalated from cheating to expropriation. In my view, the contributions of the first and last analytical chapters are more pedagogical than original. Much of the material consists of exposition or reworking of the models of others, and the original material is less fully developed. For this reason, I will devote the bulk of my discussion to the middle two analytical chapters and merely summarize the first and last analytical chapters.

3. *Relation-Based and Profit-Motivated Contract Enforcement*

The first analytical chapter (chapter 2) could have been called "Principal–Agent Relationships in the Shadow of the Law." After a short initial subsection on bilateral bargaining in an economic dispute with recourse to the law as an outside option, Dixit turns to analysis of a principal–agent relationship in which not only are the agent's actions unobservable but the principal's outcome is imperfectly verifiable. A formal contract based on lower-quality publicly verifiable information acts as a fallback in the event of cheating within the relationship. Much of the analysis parallels George Baker, Robert Gibbons, and Kevin J. Murphy (1994, 2002) and Baker (2002). The last analytical subsection of this chapter considers binding arbitration in a similar principal–agent model, where now only the principal (instead of both the principal and the agent) observe the principal's outcome, and the arbitrator's decision is enforced by the courts.

Chapters 3 and 4 on relation-based and profit-motivated contract enforcement, respectively, constitute the core of the book in my opinion. They are linked by use of the prisoner's dilemma game as the basic modeling unit. In this connection, Dixit has provided an excellent review of the extensive form of the prisoner's dilemma game in the introductory chapter of the book.

The main features of the model of chapter 3 can be understood with the aid of figure 1, which is reproduced from page 69 of the book. A continuum of traders is uniformly distributed around a circle with circumference 2*S*, where the shortest arc distance between two traders is a measure of the geographic or socioeconomic distance between them. Each trader is randomly matched with another in two separate time periods, the present and the future. The future creates the possibility of punishment that can sustain honesty in the present.[4] My probability of meeting another trader decays exponen-

[4] In the appendix to chapter 3, Dixit shows how game theoretic sleight-of-hand can be used to expand the prisoner's dilemma game so that cooperation is an equilibrium even with finite repetitions.

tially with distance at rate α and my potential gains from meeting with another trader increase exponentially with distance at rate θ, with $\alpha > \theta > 0$. If I cheat my current match, the probability that a third person finds out decays exponentially with distance *from my current match* at rate β. One can think of this decay as resulting from increased time and effort needed to learn from more distant traders, though there are no explicit costs of sharing information in the model.

It can be shown that there exists an equilibrium distance X between traders such that honesty prevails for all shorter distances and cheating prevails for all longer distances.[5] The intuition is that the further away is my match, the less likely it is that information on my cheating will get back to someone with whom I will trade in the future. Moreover, there exists an S^* such that honesty prevails over the full circle (i.e., $X = S$) for $S < S^*$ but not for $S > S^*$.

Dixit then analyzes what happens to the extent of honesty X as the economy expands, i.e., as S increases. Surprisingly, X *declines* as S increases beyond S^*, for plausible parameter values.

The intuition is that a trader the same distance away from me is less well-connected to traders close to me than he was when S was small: the economy has become more "anonymous." Dixit goes on to show that, as S grows large, the extent of honesty can asymptote to a positive value or decline to zero.

It follows that a formal monitoring system that reports any trader's cheating to all for a constant marginal cost c must become superior to informal governance for S large enough and c small enough.[6] We then observe the following for the expected payoff to any trader as the economy expands. Initially the extent of honesty expands pari passu with the economy and the payoff increases monotonically because the potential gains from trade increase. When S expands beyond S^*, the extent of honesty falls and so does the payoff. When the payoff falls by the amount c, formal governance can replace informal governance, after which the payoff again increases monotonically with expansion of the economy (see figure 3.5, p. 75 in Dixit's book). We thus have the very suggestive result that growth of per capita income in an expanding economy may stall as informal governance starts to fail but formal governance is not yet efficient.

One cannot praise the model of chapter 3 too highly. First, empirical researchers have always understood that, as a community that is informally governed grows, the efficacy of communication among its members must decrease thereby diminishing the effectiveness of the community in accomplishing its tasks, but this has never been modeled and instead has been left to ad hoc functional forms.[7] Second, there has been much discussion of how policies that work for the transition from agricultural to semi-industrialized economies do not necessarily work for the transition from semi-industrialized to developed (e.g., Rodrik 2003), so that countries can get stuck in semi-industrialization (Latin America), but this is the first convincing formal model I have seen of such a phenomenon. Third, all of these results and insights are generated by a model of remarkable parsimony and hence flexibility.

Nevertheless, there remains room for improvement. An important weakness of the model is that the parameter β, the rate at which the probability that information spreads to third parties declines with distance, is made to bear too much weight. A

[5] It is assumed that the payoff from mutual cheating is greater than the payoff from not playing at all, so trade still occurs when the distance between the matched traders is greater than X.

[6] Since the formal information service displaces informal information sharing, it eliminates the dependence of honesty on distance between traders. Clearly the system of informal information sharing will dominate for an economy with $S < S^*$ because traders will behave honestly for all realized distances and do not have to pay c.

[7] David M. Gould (1994) and James E. Rauch and Vitor Trindade (2002) take this ad hoc approach to diminishing returns for informally governed communities that increase international trade.

small enough β can make S^* so large that informal governance dominates formal governance for any real-world economy, whereas a large enough β can make S^* so small that informal governance is almost useless. Lack of understanding of the determinants of β may therefore vitiate the utility of Dixit's analysis.

The examples of China and Russia demonstrate that this is not a purely academic criticism. If we accept the implication of Rodrik, Subramanian, and Trebbi (2002) above, informal governance gives Chinese investors the security they need to make investments anywhere in their country.[8] Yet China is also the world's second largest economy, so its example suggests that the limits to informal governance are irrelevant for almost all countries. [9] How can the decay of information be so attenuated that effective informal governance can be sustained in an economy as vast as China's? One possible answer is the small-world phenomenon, the remarkably short number of steps between a given individual and a random stranger via individuals who know each other. First demonstrated empirically in the classic study by Stanley Milgram (1967), the small-world phenomenon has been formalized by Duncan J. Watts and Steven H. Strogatz (1998) in a manner that intriguingly suggests a natural extension of Dixit's model. To bring out the parallels between the analyses of Dixit and of Watts and Strogatz, I have reproduced an illustration from their article (p. 441, figure 1) as figure 2. In the left-hand panel of the figure, each agent arrayed around the circle is connected only to his four nearest neighbors, so that for information to diffuse from a given agent beyond his nearest neighbors it must travel around the circle much as in Dixit's model of figure 1 above. In the right-hand panel of the figure, a few connections have been randomly "rewired" to cut across the circle, opening up potential shortcuts for diffusion of information. Watts and Strogatz show that, for generic "regular" networks, a small amount of rewiring that leaves each agent's "neighborhood" almost undisturbed causes a dramatic fall in the average number of steps between any agent and a random stranger: the small-world phenomenon.

One way in which a small-world network structure consisting of sparsely linked neighborhoods or clusters might arise is described by James E. Rauch and Joel Watson (2004). They note the tendency of entrepreneurs to start firms by spinning off from "mother firms," so that each mother firm gives rise to a cluster of entrepreneurs who know each other's needs and capabilities. These clusters become sparsely linked by the relatively few successful business relationships formed across clusters by entrepreneurs with no prior knowledge of each other, relationships that were motivated by search for gains from trade across clusters. Rauch (2001, sections 3 and 4) surveys work that describes how ethnic groups form transnational small-world networks known as "trade diasporas." Certain groups migrate and found place-of-origin business organizations that serve as geographic clusters and are sparsely linked by relatively few long-distance relationships, often within extended families.

The example of China suggests that the parameter β in Dixit's model can be very small, and the small-world phenomenon provides a potential explanation for a small β. For evidence suggesting that β can be very large, we turn to Russia and specifically the Russian credit card market. Alya Guseva and Akos Rona-Tas (2001) note that Russian banks tended to screen credit card applicants on the basis of personal connections rather than standardized assessments of creditworthiness because the chaotic economic situation in Russia during the 1990s

[8] Alternatively, China's "socialist legal system" could be much more effective than we think, despite not being "in line with European norms." Differences in tax collection systems between China and Russia could also be important.

[9] The ranking is by PPP gross national income, from World Bank, *World Development Indicators*.

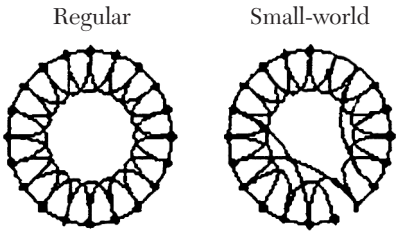

Figure 2. Source: Watts and Strogatz (1998)

reduced the ability to accurately calculate risk. This method of screening might have been able to sustain a larger credit card market if, as in Dixit's model, banks reported on defaulters to each other, giving credit card users the incentive to repay or be blacklisted. However, the Russian banks did not do so because, in part, they worried that pooling financial information would result in attempts by rivals to lure away their best customers (Guseva and Rona-Tas 2001, p. 631). The result was a small and fragmented credit card market.

The example of the Russian credit card market suggests that the level of what is sometimes called "generalized trust" can significantly affect the level of β and hence the extent of informal governance. [10] According to Guseva and Rona-Tas, the level of trust between Russian banks was low because in the past they had competed in part by using the mass media to spread doubts about each other's financial condition.

To summarize, it may be necessary to have a model of the ease of diffusion of information in an economy to, in turn, make Dixit's model of informal governance operational in real world settings. Determinants of the ease of information diffusion would include the graph of links between agents in the economy and the history of past interactions among agents that affects their willingness to trust each other with information.

The other parameter in the model of chapter 3 that could benefit greatly from "unpacking" is c, the cost per trader of a formal monitoring system. Summarizing the cost in this way is an acceptable simplification if the monitoring system is analogous to a credit-history agency, as Dixit suggests (p. 74). Business disputes in the real world, however, can be much more complicated than simple default, and a trader can behave badly without actually breaching his contract. Word of this bad behavior can be spread informally, but a formal monitoring system that reports it may be subject to legal sanctions. Hence the real alternative to informal governance may not be reporting to a formal monitor but taking business disputes to the courts. We are then back in the world of chapter 2, with bargaining in the shadow of the law. In short, an attempt to merge the first, most simple model of chapter 2 with the model of chapter 3 may be worthwhile. The parameter c could then be replaced by the costs to the defendant and plaintiff of using a court of law (respectively denoted by C_D and C_P in chapter 2).

The model of chapter 3 is one of relation-based contract enforcement in the sense that information on past cheating is revealed to traders who are "close" to the trader who was cheated and it is one's desire to trade with these "related" third parties in the future that keeps one honest in the present. In chapter 4, Dixit turns to profit-motivated contract enforcement. In the first part of the

[10] Toshio Yamagishi and Midori Yamagishi (1994) define this as a positive cognitive bias in the evaluation of strangers.

chapter, he analyzes a situation in which a private intermediary, labeled Info, provides an information service like that supplied by the hypothetical formal monitoring system of chapter 3, revealing whether traders have cheated in the past. For simplicity, the relational structure of figure 1 is removed, so that every pair of traders is identical and information does not diffuse to third parties. Dixit looks for an equilibrium in which everyone is Info's customer, Info reveals his information truthfully and does not engage in any extortion or double crossing, and customers play cheat against anyone Info reveals has cheated in the past. He shows that such an equilibrium exists under conditions that are mostly uninteresting, though they do suggest that competition, by shortening Info's expected lifespan, may undermine his incentives to behave honestly (a rather standard result that nevertheless bears repeating).

In the second part of chapter 4, Dixit analyzes the situation in which the intermediary, now labeled Enfo, inflicts a dire punishment on anyone who cheats his customer in mob-enforcer fashion. Not surprisingly, the added powers of Enfo relative to Info increase the range of parameter values for which an equilibrium exists in which everyone is Enfo's customer and everyone including Enfo behaves honestly. By the same token, Enfo has the potential to charge a higher fee and will do so if he is a monopolist. In fact, Enfo's fee exceeds the social gain made possible by his intermediation, so traders may be left with less than the payoff they would have received without any intermediation at all. This occurs because the social gain is the difference between the mutual honesty payoff and the mutual cheating payoff, whereas in the Enfo equilibrium traders do not even have the option to cheat and receive the mutual cheating payoff, so they either become Enfo's customers or do not trade at all.

The Enfo equilibrium may be a realistic description of what actually happens in the case of "failed states." It could also be a way of describing a predatory state, but Dixit reserves this term for a state that engages in direct expropriation of property, which he discusses in chapter 5. He thereby wisely avoids the deep question of exactly how citizens gain control of the state so that it charges less than a monopoly fee for its enforcement services.

The explicit treatment in chapter 5 of property rights, in the sense of protection from expropriation, is something of an anticlimax. The first two analytical subsections summarize the work of others. The third proposes the interesting idea that the predatory state, when assumed to be a "stationary bandit" (e.g., the Ottoman Empire), can be analyzed by analogy to the James A. Mirrlees (1971) model of optimal taxation by a benevolent government. However, this idea is not developed very far.

4. *Lessons for Policy?*

In the concluding chapter of his book, Dixit states (p. 150), "neither empirical nor theoretical research has yet advanced to the point of offering clear or confident policy recommendations for the process of institution-building or reform." He makes clear in the subsequent discussion that his own work is included in this assessment. Nevertheless, Dixit's book will widen the field that policy-oriented researchers scan from interventions that supplant private-sector governance to interventions that make it more effective. Policy-oriented or not, scholars hoping to make a contribution in the area of governance in less developed countries would do well to begin with this brilliant book.

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