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Governance, trade, and investment ☆

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ABSTRACT

Imperfections in the rule of law create new problems of contractibility, in addition to the familiar one of unverifiability of information. Alternative social institutions for governance of property and contract arise but are also imperfect, and can interact well or poorly with the formal state institutions. Security of property and contract is especially problematic for foreign traders and investors. This paper considers some theoretical analysis of such situations. The game-theoretic ideas and methods range from simple two-stage games with strategic moves to bilateral and multilateral repeated games with added issues of asymmetric information and imperfect communication.

1. Introduction

In the standard game-theoretic formulation of contract theory, the contracting parties' stipulated actions can be conditioned on any information that is verifiable to the judge responsible for enforcing the contract. In most of these models, such a judge is simply assumed to exist, to be available should a dispute arise, and to perform his function efficiently (and usually costlessly). In most economic analyses, property rights are likewise assumed to be well defined and protected. In reality, the institutions of property right and contract enforcement are imperfect: costly, inexpert, inexperienced, biased, or corrupt. In some countries, the very governments and their agents who are supposed to protect property and enforce contracts are the worst predators. Therefore governance deficiencies become causes of non-contractibility separate from, and perhaps more basic than, the usual cause, namely non-verifiability.

In such situations, traders and investors construct alternative mechanisms based on ongoing relationships, whether bilateral or multilateral ones in social networks, and the associated norms of behavior, channels for communicating information about the identity and reputation of members, and sanctions for violation of norms. These cannot usually deliver first-best outcomes, and sometimes reinforce but sometimes conflict with the imperfect formal governance provided by the state, but they can often improve upon the highly imperfect status quo. Theoretical models of such alternative modes and institutions of economic governance combine ideas from the theory of repeated games and the theory of games with asymmetric information and contract theory. Overviews of the issues, and some illustrative models are in Dixit (2004, 2009).

These problems become even more serious when the transactions cross international boundaries. Governments may violate the rights of foreigners with less fear of domestic political consequences (indeed sometimes in expectation of positive domestic political benefit) than they would violate their own citizens' and supporters' rights. Courts may be biased in favor of nationals, explicitly or implicitly. In any case, the fear of this may deter foreign traders and investors from

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undertaking transactions where the local government has more opportunities to intervene, and entering into contracts that carry significant risk of dispute requiring recourse to courts. There are international forums for commercial dispute resolution, but these are also costly, time-consuming, and sometimes lacking in the expertise needed to render accurate judgments. Therefore the alternative institutions based on relationships, norms, and networks acquire even greater importance in international trade and investment. Here I focus on some models that illustrate the problems and some solutions. Some of the ideas are simple enough (such as commitment in a two-stage game) that a mere outline will enable the reader to construct the details; in other cases the models need to be developed more fully.

I focus on models that highlight the applications of game theory to issues of international trade and foreign direct investment in situations of imperfect governance, leaving out many models of substantive interest which involve only the decisions of a single actor or a competitive equilibrium. Even within this restriction, I will develop in detail only one illustrative model of each kind, one for trade and one for FDI. Then I will give very brief accounts of some other models. Discussions of broader issues and related empirical evidence can be found in Dixit (2011).

2. International trade

The model I have chosen to illustrate the themes is an adaptation of that in Anderson and Young (2006) and Anderson (2009). In my version, foreign sellers run the risk that domestic buyers will repudiate their contracts if circumstances make it unprofitable for them to go through with the promised purchases. In the original papers the situation is more symmetric and not inherently linked to international trade and the domestic buyer versus foreign seller distinction, but that context makes the weakness of governance especially pertinent as explained above.

A relatively small number (in a sense to be made precise later) of foreign sellers are contemplating entering a market. Each seller has one unit of the good (or service), and his cost of supplying it to this market is c. To enter the market, the seller must incur a sunk cost. Sellers are ranked by the order of increasing entry cost, that of the qth seller is given by $T^S(q)$. The buyers have willingness to pay drawn from a density $f(b)$ and cumulative distribution function $F(b)$, over the support $[b_{\min}, b_{\max}]$. To avoid inessential complications I assume $c < b_{\min}$.[1] The buyers also have to incur sunk entry costs, ranked in increasing order and given by $T^B(q)$. The sellers and buyers are all risk-neutral.

The market has two parts, contract and spot. Each trader can decide which part to enter, if either. However, we will see that all sellers will find it optimal to take the contract route. The contract price p^c will be determined in the equilibrium.

Buyers have a more active role in the process. The sequence of events is shown in Fig. 1. First each buyer decides whether to enter, and if so, chooses the mode, contract or spot. Those who choose contract will be matched with sellers at random. Then each buyer will find out his individual willingness to pay b, and based on this, decide whether to honor or default on the contract. We will see that if this is below a threshold to be determined, he will choose to default. In this case, with probability θ a court will nevertheless force him to comply. Thus θ measures the quality of governance.

Sellers are themselves not allowed to repudiate their contracts; this could be because the home country courts are biased and will always rule against a seller who tries to repudiate.[2] Sellers whose contracts are repudiated go to the spot market. Buyers who repudiated contracts, and buyers who chose the spot mode at the outset, form the other side of this market. It is assumed that there are more of these buyers than sellers. The buyers are matched to the available sellers at random. Thus each buyer has a probability $\pi < 1$ of finding a seller. The value of π will be determined in equilibrium. In each pair on the spot market, the available surplus $(b-c)$ is split; a fraction ω goes to the seller and $(1-\omega)$ to the buyer, where ω is the exogenous bargaining power of the seller. Buyers on the spot market who are not matched to any seller get zero surplus.[3]

Begin the analysis by considering a buyer who has entered and chosen to sign a contract. After realizing his b, fulfilling the contract gives him surplus $(b-p^c)$. If he defaults on the contract, with probability θ the court will force him to fulfill it, and with probability $(1-\theta)$ he can escape to the spot market, meet another random seller with probability π, and get surplus $(1-\omega)(b-c)$. Therefore he will choose default if

$$b - p^c < \theta(b-p^c) + (1-\theta)\pi(1-\omega)(b-c),$$

or

$$b - p^c < \pi(1-\omega)(b-c),$$

or

$$b < b^* \equiv \frac{p^c - \pi(1-\omega)c}{1-\pi(1-\omega)}. \tag{1}$$

[1] Anderson and Young (2006) also allow c to be random, but that is not essential for my purpose.

[2] Anderson and Young (2006) allow sellers to default, but show that in the case of their "excess demand equilibrium," which is also the case I consider, no seller will choose to default. They also allow renegotiation of repudiated contracts and prove that it will not occur in equilibrium. Again, to save space I simply assume it away.

[3] An alternative specification would be to make the spot market a standard competitive market with an equilibrium price p^s. Buyers with willingness to pay $b > p^s$ succeed and get surplus $b - p^s$; each seller gets $p^s - c$. However, assumption of such an organized market is somewhat contrary to the context of a country with poor governance. Also, this set-up precludes the coexistence of contract and spot markets in equilibrium. Details are left for interested readers.