1. INSTITUTIONS AND PROSPERITY

The idea that “institutions matter” for understanding variations in the economic performance and evolution of countries is increasingly supported by empirical research. For example, Rodrik and others report estimates of “…the respective contributions of institutions, geography, and trade in determining income levels around the world…” and they argue that the results “…indicate that the quality of institutions ‘trumps’ everything else…” (2002: Abstract); and Acemoglu and Johnson have found “…robust evidence that property rights institutions have a major influence on long-run economic growth, investment, and financial development…” (2003:p.39).

That idea has yet to lead to a theory of institutions, one that answers hard questions: Why have societies evolved along distinct institutional trajectories? How will societies that failed to adopt the institutions of more successful ones respond to environmental changes? Will they converge to a global arrangement? Will institutional diversity continue to evolve? Aoki (2001) has developed a framework for addressing them. Building on Greif’s idea of an institution as equilibrium strategies of the players of a game, Aoki relies on the theory of evolutionary and repeated games to give the following notion of an institution:

An institution is a self-sustaining system of shared beliefs about how the game is played. Its substance is a compressed representation of the salient, invariant features of an equilibrium path, perceived by almost all the agents in the domain as relevant to their own strategic choices. As such it governs the strategic interactions of the agents in a self-enforcing manner and in turn is reproduced by their actual choices in a continually changing environment. (Aoki 2001:26 and 185).

In Aoki’s framework, the relevant unit of analysis is the domain as composed of a set of agents and sets of feasible actions open to each agent in successive periods. First, he identifies what institutions can become viable in some basic types of domains as defined by two dimensions: a fixed or a variable number of agents, and the symmetry or asymmetry of the action sets across agents. Second, he constructs a generic framework for comparative analysis that supports that
notion of institutions and allows us to link games across different domains to give rise to new forms of institutions and across time by introducing the agents’ revision of their subjective game models as a mechanism of institutional change. Finally, Aoki applies his framework to the analysis of corporate governance institutions in different economies. He highlights the diversity of institutions, partly determined by complementarities with institutions in other domains, and their evolution. He concludes by arguing for the continuous evolution of diverse institutions, despite forces to converge into one global arrangement.

Only other applications will tell whether Aoki’s approach is appropriate to develop the idea that “institutions matter” into a theory. One key application relates to the state as a viable institution. Aoki suggests that the nation-state emerges as a third-party mechanism for protecting property and enforcing contracts, but the viability of any particular state is conditioned to resolving Weingast’s fundamental political dilemma of protecting property from government. By conceptualizing states as stable multiple equilibria of a game in the polity domain, the government and the private agents can settle on a certain order between them and to which the government itself is subject to. Thus, he distinguishes between the state as an order and the government as an organization. He then analyzes three prototype modes of the state as stable outcomes of a game in the polity domain—the predatory, collusive and democratic states—which I propose to use as a framework to assess the protection of property from stationary bandits, to use Olson’s evocative term for autocracy (2000).

This paper outlines the application of Aoki’s framework to the analysis of the protection of property. I look first at a basic setup in which an army may emerge to protect property against plundering by foreigners, and then at how property may be protected against extortion by the stationary bandit. To conclude, I point out the relevance and some implications of the proposed analysis.

2. THE VIKINGS ARE COMING!

To understand the stationary bandit I look for a setup in which he could have emerged as an institution. Thus, I look at the complementarities between the equilibria of a commons game in the domain of customary property rights (Aoki, 2001: ch. 2) and the equilibria of a Vikings game in the conflict domain (not considered by Aoki). Agents—villagers in one game and Vikings in the other—do not strategically coordinate their choices across the two domains, but the choices in one are parametrically affected by the choices in the other. According to Aoki’s idea of institutional complementarity, it is possible that “one type of institution rather than another becomes viable in one domain when a fitting institution is present in another domain, and vice versa” (Aoki, 2001:225).

For generations villagers have been catching rabbits and playing the same game to decide what amount each one can catch every season. Assuming incomplete information and applying Young’s evolutionary bargaining model (1998:ch. 8), a stochastic process of catching over some time can lead to a
convention about the division of a fixed number of rabbits (the number that can be caught without depleting their capacity to reproduce) among the villagers. Thus, a generically stable convention—one relatively most difficult to upset by mistakes or experiments as it becomes infinitely more frequently observed than all others—may be established implying a larger share of catches for less risk-averse villagers with a higher level of information-gathering capacity. Its establishment amounts to the emergence of a stable customary property-rights rule (Aoki, 2001: section 2.1), a source of some spontaneous order.

Let the village be rich enough to be a lucrative object of plundering, and let the Vikings be the roving bandits interested in plundering villages (on Vikings as rational bandits, Kurrild-Klitgaard and Svendsen, 2003). Some Vikings may want to settle down in the villages and become stationary bandits to extort the villagers. Why and how do some roving Vikings become stationary bandits? Even if extortion is much more profitable than plundering, it is not a sufficient condition and perhaps not even necessary. For the roving Vikings, a village is like a common resource, so they have to compete among themselves for plundering it and the competition may lead to over-plundering. Among other factors, the technology of exclusion is critical in order to explain the switch to stationary banditry: each Viking’s net benefit from plundering depends on his ability to exclude his competitors. In some situations, settling down in a village may be a cost-effective way to exclude all others. As the village’s “owner” the stationary bandit will find it in his own interest to enforce a convention regulating rabbit-hunting as effectively as possible and to extort villagers at the optimal rate in the Laffer’s curve (Grossman, 2001). By fighting rivals to death or by colluding with them, some Vikings become stationary bandits. The conflict among rival Vikings may end with a winning party or an agreement to exploit a third party, or it may become never-ending (Skarpedas, 2003). In any case, both the dynamics and the eventual ending of the conflict have implications for the villagers as interested third parties, to the point of questioning the assumption of no strategic interaction among all interested parties.

The Vikings upset the village’s order. Let the village be rich enough to consider a defense, so the threat of plundering triggers a demand for protection that may lead to the rise of a new institution, the army. Why may the army succeed in some villages and fail in others? For the villagers, protection against plundering by foreigners is a non-rival good and its production is subject to the logic of collective action (not a rival good with the negative, deflection externality of protecting property from theft; Anderson and Bandiera, 2003). The analysis has to consider two factors. First, the successful provision of protection depends on the army’s ability to deter aggressors and defend the village from attacks, so the village has to meet one of two conditions for its independence. It has to have the ability to make aggression unaffordable or infeasible, or at least the ability to make it undesirable by denying the aggressor the benefit of his action (McGuire, 2001). The conditions are met only if the village’s wealth (measured by the surplus over survival needs) is sizable enough to acquire the technology of defense relative to the wealth and technology of potential aggressors. Failure to meet both conditions leads to unions with other villages or to migration or to capitulation to the aggressors.
In a world of distant villages, poor villages may realize that the benefit of union is too low and the cost of migration too high, so accommodating the stationary bandit is the best choice (leading perhaps to the jungle economy as defined by Piccione and Rubinstein, 2003).

Second, even if the independence conditions are met, villagers can fail to agree on establishing an army. Although the standard issues of collective action, in particular free riding, may not be as decisive as in other non-rival goods, the rise of the army poses a threat of extortion to villagers’ property and they must be assured that they will be able to control it. This assurance means that the villagers have the ability to make extortion unaffordable or infeasible or at least the ability to deny the army the benefit of extortion, so their threat of coordinated resistance is credible. The second amendment to the U.S. constitution provides such assurance: A well regulated Militia, being necessary to the security of a free State, the right of the people to keep and bear Arms, shall not be infringed. It is not easy to determine the conditions for this and other mechanisms to be cost effective, however. In particular, is a high degree of equality in the distribution of property rights –most villagers have the right to catch the same number of rabbits– necessary for the village to pay willingly to the army for its protection services and to prevent extortion? In her analysis of the mafia, Bandiera (2002) provides evidence of a positive relation between land fragmentation (a proxy for equal distribution of property rights) and the mafia’s payoffs, but this is because of the negative externality of protection from theft. Since protection against plundering is a non-rival good, Olson’s collective-action predictions hold: if all players are identical, they will not contribute to its provision; if they are not identical, the large may be exploited by the small; and the larger the size of the group, the lower the incentives to contribute (Sandler and Arce, 2002). Thus, since the need to control the army reduces the benefit of the pure public good, it may exacerbate differences in the net benefit of contributing to its provision between the large and the small, and an army may be established only in villages where property is highly concentrated.

As long as the stable customary property-rights rule reflects differences in the villagers’ abilities and preferences, the institutional arrangement is most likely to evolve towards a property regime supported by an army when the village’s income is high and property concentrated. Indeed, this arrangement can lead to extortion of one group by another within the village, and analytically it does not matter whether the stationary bandit is a villager or a foreigner.

3. **Taming the Vikings**

By definition, if the one with the greatest capacity for violence imposes his rule over others, an order can emerge, one in which the ruler extorts the villagers. This predatory state becomes self-enforcing if two conditions are met. First, villagers fail to coordinate their resistance because the cost for each one to cooperate with others is greater than the deadweight loss from extortion (Aoki, 2001:154). Second, the ruler is able to commit credibly not to revert to plundering (say by “arming his
subjects” as in Machiavelli’s advice, Azam, 2002). A stationary bandit—the predatory state’s ruler—is better than roving bandits, but he has a hard time to secure and extend his tenure, a main driving force of his actions. A ruler is limited by rivals seeking rents, especially his impatient heirs and others close to him, and the competition is likely to increase the deadweight loss for a given revenue from extortion (Klick, 2002). Thus, the loss may eventually exceed the cost for some people to resist extortion. Although the stationary bandit may block his rivals, the predatory state is hardly robust enough to claim that it “...is reproduced by [all agents’] actual choices in a continually changing environment”, as Aoki’s notion of an institution requires. To check its robustness the analysis has to take account of that rivalry and its related competition as well as the potential for resistance by at least some villagers (Grossman, 2001).

Let me now assume that the villagers are divided into two groups of agents. If one group realizes that the deadweight loss of extortion exceeds the cost of resisting it, then the ruler will find it in his own interest to bribe this group to not cooperate with the other villagers to resist extortion (Aoki, 2001:155). The stationary bandit and a group may then agree on a ruling coalition to extort the other villagers, and as long as the ruler is able to commit himself credibly not to cheat on his partners, the collusive state can become self-enforcing. For this state to be robust, in addition to Aoki’s conditions—one group loses the incentive to cooperate with others because of the ruler’s bribe and the excluded villagers do not find it worthwhile to cooperate and resist– the ruler must commit himself credibly not to cheat on his partners. Indeed, the ruler’s ability to enter into this commitment is related to the size of the minimum coalition to secure revenue from extortion. The collusive state implies a division of the village into a ruling coalition with power—with the ability to impose costs on others—and the other villagers. The arrangement resembles the predatory state: the ruler is committed not to revert to plundering by assuring the support of some villagers with an interest in extorting but not plundering other villagers. In other words, the ruler agrees to limit his power by sharing it with the smallest number of villagers that may block his attempts to revert to plundering, and as long as the parties believe the coalition has a high probability of survival, the agreement will continue to be honored.

The collusive state can change in different directions. When the incumbent ruling coalition reacts to environmental changes, neither a reversal to the predatory state nor a continuous march toward a democratic state is the inevitable outcome. Rivalry within the incumbent coalition can trigger changes in its leadership but hardly lead to its breakdown. Shocks, that is, large environmental changes, may create conditions for increasing the size of the coalition, but also for changing its composition without any meaningful increase in size. Most breakdowns in the ruling coalition are temporary, and when they happen, new coalitions take over. Starting with the collusive state, a major shock may precipitate either an involution toward the predatory state or an evolution toward the democratic state if threats of resistance force a continuous enlargement of the ruling coalition to stop exclusion (as in Gradstein, 2002; also Grossman, 2001). In particular, the pressure of population growth and migration on natural resources may lead to resistance and perhaps to
the enlargement of the ruling coalition. Albeit not an inevitable outcome, some form of democratic state may emerge, implying the dilution and dispersion of the revenue from extortion.

It is tempting to argue that differences in some original setup of countries—particularly in land distribution—explain differences in long-run performance. The state has been evolving for a long time, however, and few countries (say North) can claim to have contained the stationary bandit and to be democratic in Aoki’s sense (or an agent of citizens, Grossman, 2001). Institutional explanations of North’s success point to a consensual society where political order is based on social cooperation: citizens agree on how government should be organized, and they are willing both to live under the decisions made by such a government and to defend government as an organization against abuse by political officials (D. North and others, 2000). This remarkable degree of consensus is part of North’s original setup and therefore is left unexplained (Grossman, 2001). To become a self-sustaining system of shared beliefs as in Aoki’s notion of an institution, such consensus should have developed pari passu with the enlargement of the ruling coalition, but its study assumes an understanding of temporal and cross-sectional linkages of institutions that Aoki’s framework is now starting to discover (2001:ch. 10; see also Greif, 1998).

4. **North vs. South**

My short story about the Vikings’ role in triggering new institutions of property is intended to illustrate the relevance of Aoki’s game-theoretic framework for institutional analysis. Recent contributions provide many insights to revise how the institutional arrangements of nation states and property have been changing in parallel, albeit with diverse forms across countries. Together they provide a different angle to understanding the issues facing countries where new generations of Vikings are yet to be tamed.

If “institutions matter”, differences in prosperity across countries can be explained by differences in their institutions. In my story, the differences between countries that have contained the stationary bandit (North) and those that have yet to do it (South) are not rooted in the original setup from which property and nation states emerged, but in the responses to environmental changes over long periods of time. A shock may bring the collapse of the old regime but does not determine the new institutional arrangement. Some views on the differences between North and South conclude that fixing the latter’s institutions—to be like North’s in some original setup—is necessary for prosperity. In my story, it is not a question of transplanting North’s institutions, but of how a system of shared beliefs—as in Aoki’s notion of an institution—emerges in support of removing barriers to the enlargement of the ruling coalition.
REFERENCES