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The Causes of Institutional Inefficiency: A Development Perspective

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Abstract

The present paper intends to examine the four most important approaches to institutions as they now prevail in the economic literature. These are: the transaction-cost approach, the principal-agent approach, the equilibrium-of-the-game approach, and the evolutionary approach. Each approach will be succinctly presented and, in a second step, the question as to whether institutions can be inefficient is raised. If the answer is yes, then the reasons why will be addressed according to each case. The idea is that indeed an important cause of economic backwardness lies in the persistence of inefficient institutions and, therefore, the pertinence of the economic analysis of institutions should be judged in the light of its ability to explain the persistence of this institutional inefficiency.

Introduction

One of the basic lessons from growth experiences throughout the world since World War II is that differences in capital endowments do not take us very far in explaining income differences across countries. The prediction from Solow's model that, with high returns to scarce capital, poor countries should grow faster than rich countries, is not confirmed by the facts: when applied to the tropics, the old paradigm just does not work. In fact, since 1981, poor countries have not only failed to catch up with rich countries, but they have done worse (Easterly, 2001: 59-60). Accumulation of capital, and technical progress which is largely embodied in capital goods and often motivates physical investment, have clearly not succeeded in accelerating growth performances in poor countries as much as was hoped.

To account for the huge differences observed in the effectiveness of machine use, one must clearly look beyond the growth factors traditionally considered in economic theory, and inquire about the characteristics of the environment in which capital goods are being put to use. Policy, institutional, and geographic variables suggest themselves as the missing explanatory factors. Abundant empirical work in the form of cross-country econometric studies, however, seems to indicate that policy variables play a less important role in the long-term growth process than structural factors that cannot be easily changed by the power of man (or government), whether they originate in the geography or the history (reflected in institutions) of the country concerned (Kenny and Williams, 2001).

If institutions contribute significantly to explaining comparative growth performances, they must vary in their ability to promote economic progress. Moreover, insofar as these long-term performances have resulted in increasing regional disparities, we must infer that key institutions are more efficient in rich than in poor countries. Statements and conclusions according to which property

rights are less well established, or political institutions are less stable and less democratic, in the latter than in the former countries fit in with the new analytical framework.

The purpose of this chapter is to probe into the issue of inefficient institutions. Towards that end, I intend to look at the different strands that form the so-called New Institutional Economics (NIE), and raise the question for each of them as to whether institutions can be inefficient and, if yes, for what reasons. Four economic approaches are reviewed which regard and depict institutions as the outcome of individual interactions. These are the transaction-cost approach, the principal-agent approach, the equilibrium-of-the-game approach, and the evolutionary approach. The discussion will proceed in four successive sections, from Section 2 to Section 5. In each of these sections, the main features of the approach concerned – how institutions are defined and analyzed – will be summarized before addressing the issue of institutional efficiency proper. Section 6 will briefly conclude.

The transaction-cost approach (TC approach)

The transaction-cost approach is not only well-known, but is frequently considered to be the core approach of the NIE. A major reason for such a special treatment is historical: pioneers and advocates of this approach (Coase, 1960; Williamson, 1985; Barzel, 1989) have actually established and popularized the name of the NIE, helping to convey the message that economists have started again to be interested in institutions after an eclipse of almost one century (Platteau, 2000: Chap. 1).

The central concept in the TC approach, as the name indicates, is that of transaction costs. These are the costs that arise whenever agents want to make a deal, which does not need to take the form of a market exchange. In contrast to production costs which are costs arising from relations between individuals and things, transaction costs originate in relations between the individuals themselves (Matthews, 1986). Indeed, economic transactions would not be feasible if agents were unable to enter into contact with each other and to find ways to reach agreement. In short, transaction costs are "the costs of running the system: the

costs of coordinating and of motivating" (Milgrom and Roberts, 1992: 29).[1] What Paul Milgrom and John Roberts call motivation costs can be of two kinds. First, they may arise from informational incompleteness and asymmetries, – such as happens when the parties miss information needed to determine whether the terms of an agreement are mutually acceptable and whether these terms are actually being met. They thus follow from various kinds of incentive problems. Second, there are the costs resulting from imperfect commitment – characterized by "the inability of parties to bind themselves to follow through on threats and promises that they would like to make but which, having made, they would later like to renounce" (ibidem: 30).

In the TC perspective, the aim of institutions is to reduce transaction costs so as to allow agents to seize on economic opportunities, and an efficient institution is simply an arrangement that minimizes such costs, or one that maximises the joint wealth of all the parties concerned, net of transaction costs (see, e.g., Allen and Lueck, 2002: 4). Institutional arrangements aimed at reducing transaction costs are often called governance structures. For example, a capitalist firm is a governance structure that is characterized by hierarchical relationships between capital owners or their representatives and the workers or employees (Williamson, 1985). Indeed, a system of vertical relationships is often considered preferable to the alternative of relying on market relationships because dealing with suppliers and subcontractors entail too many risks and incentive problems, such as moral hazard and adverse selection. Employees may accept to be subordinated to the authority of the capital owners or their representatives if, in return, they receive the guarantee of a stable employment. On the other hand, the latter are willing to grant such job stability to their workers because their position of authority enables them to flexibly adjust the tasks to be accomplished to the current needs dictated by evolving market opportunities (Aoki, 1984: Chap. 2).

Or, to take another example, ownership regimes can be analysed as governance

1 For property rights' theorists, transaction costs correspond only to "the costs of enforcing and maintaining property rights, regardless of whether a market exchange takes place or not" (Allen and Lueck, 2002: 4, see also Barzel, 1989).

structures exhibiting different transaction cost characteristics that themselves depend on such things as the characteristics of the resource or asset considered, those of the social group concerned, the state of the technology, the degree of riskiness of the environment, etc (for a detailed analysis regarding property of natural resources, see Platteau, 2000: Chap. 3). Note that there is a clear distinction between the institutional environment, made of risk and informational characteristics, on the one hand, and governance structures, on the other hand. The efficient governance structure (the optimal institution) depends on the characteristics of the specific institutional environment in which it has to operate.

As emphasized by Milgrom and Roberts (1992: 33-35), there are two main problems with the TC approach. For one thing, it implicitly assumes that production costs and transaction costs are independent or separable, the former depending only on the technology and the inputs used and the latter depending on the manner in which transactions are organized. Two conceptually distinct operations are involved: the production costs are minimized through the choice of an appropriate technique and input mix, and the transaction costs are minimized through the choice of an appropriate institutional arrangement. In reality, it often happens that production and transaction costs depend both on the organization and the technology. When that is the case, the total costs of an economic activity cannot be minimized as though they were just the sum of production costs and transaction costs.

An immediate consequence of the above is that an institutional choice may be the outcome of a trade-off between technological and transaction cost considerations. To illustrate, consider the problem of the choice between a U-shaped and a star-shaped irrigation system, as depicted in Fig. 1 (where the U-shaped system is represented by solid lines and the star-shaped system by dotted lines). If we take the viewpoint of technology alone, the U-shaped system appears as the best option since it economizes on infrastructure-building costs (assuming that such costs are proportional to the length of the canal to build) compared with the star-shaped system. In our example, the total canal length under the former system is

measured by (Xa + ab + bc + Xd + de + ef), while under the latter it is equal to (XY + Ya + Yb + Yc + Yd + Ye + Yf), which is obviously larger. If, instead, the viewpoint of transaction costs is adopted, the star-shaped system appears as the most cost-effective solution. This is because the field of each farmer is directly connected to a canal, unlike the situation obtaining under the U-shaped system in which only the head-end farmers, with fields a and d, have a direct access to water. Farmers with fields b, c, e, and f depend on the goodwill of neighbours who precede them along the canal branch.

To mitigate the risk of opportunistic behaviour on the part of strategically located farmers, and thereby ensure equitable and reliable distribution of water, costs must be incurred that are not needed when access to water is secured on an individual basis. (Think of the costs required to organize, monitor and enforce a rotation system of access to water.) Which system, the U-shaped or the star-shaped, is more cost-effective overall –that is, which system minimizes the sum of production and transaction costs– is impossible to determine a priori. Choice will ultimately depend on the social capital of the rural community, as a greater amount of social cohesion within a group of water users reduces the transaction costs of collective action and, therefore, tilts the balance of (total) costs in favour of the technologically more cost-effective U-shaped system.

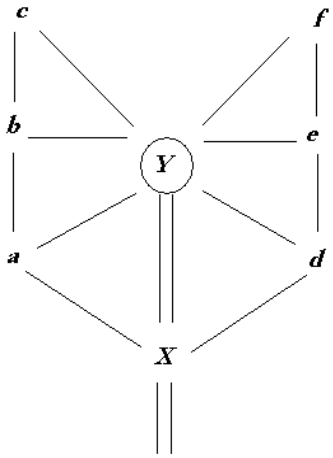

Figure 1 Illustrating interdependence between production and transaction costs: the U-shaped versus the star-shaped irrigation systems

The central lesson of this example is thus that, contrary to what the TC approach contends, there is no unique cost-effective institutional solution to a problem. Two implications follow. First, the most efficient solution in a given social environment may not be the most efficient in another environment. Second, when an environment is more favourable in the sense that less attention can be paid to transaction cost considerations, total costs generated by an economic activity will be lower. That there is no unique efficient institutional solution to a problem involving transaction costs is also at the heart of the second critique against the TC approach.

Even assuming that transaction costs are independent of production costs, the notion that efficient institutions minimize transaction costs is highly problematic. This is because many different institutional arrangements might be compatible with the efficiency criterion and, as a result, such a criterion considered alone is unlikely to be satisfactory (Milgrom and Roberts, 1992: 34). It is only under a set of restrictive assumptions - essentially the possibility of transfer payments, zero negotiating costs, ability to implement and enforce decisions reached in the bargaining process, and the absence of wealth effects – that the efficiency criterion can predict a well-defined institutional outcome. Indeed, with such assumptions, the Coase theorem and the efficiency principle[2] mean that institutional forms are determined to maximize the total value of the parties, taking into account transaction costs understood as the costs of managing the transactions (including the costs of writing and enforcing contracts, supervising workers, and resolving disputes). Or, in the other way around, these forms are determined to minimize transaction costs for any given production plan (implying that resource uses and the aggregate production costs are given).

In such a framework, since parties are assumed to be able to make unlimited transfer payments, the issue of distribution of value is completely separable from the issue of how value is created. Confronted with an institutional choice problem, the agents' only concern is to establish the (uniquely efficient) institution that

2 The efficiency principle simply states that, if people are able to bargain together effectively and can effectively implement and enforce any agreements they reach, they should be able to realize the gains resulting from a shift from an inefficient situation to an alternative that everyone would prefer (Milgrom and Roberts, 1992 : 24).

maximizes the total wealth available for sharing among themselves. In other words, the choice of the efficient institution does not depend on the a priori distribution of power between the parties involved. The latter will only affect the distribution of the costs and benefits (Milgrom and Roberts, 1992: 35-39).

The hypotheses underlying the TC approach are easily violated. Wealth effects are likely to be insignificant only when the sizes of the cash transfers are small relative to the agents' financial resources. Compensatory cash payments may be illegitimate according to cultural prescriptions or social norms. Negotiating costs are important if the number of agents is large and they have heterogeneous characteristics. Decisions reached through decentralized bargaining may be hard to implement and enforce. Finally, as Shapley and Shubik (1969) have shown, when there are more than two agents, a bargaining solution may not exist. More precisely, an efficient solution may exist in a game, but the parties will not be able to reach it through decentralized bargaining (the core being empty). Moreover, whether a bargaining solution is attainable or not may ultimately depend on the initial assignment of rights to the parties, that is, on the initial distribution of bargaining powers (Baland and Platteau, 1996: 51-52).

In the following, I discuss a number of situations where, for one or several of the reasons mentioned above, the Coasian framework is not a good approximation to reality. As a result, the efficiency and distributive issues are not separable, and no unique efficient institutional solution can be said to exist. Institutional choices can therefore be made that do not maximize the total value available to the parties concerned.

(1°) Consider an institutional change (e.g., a land reform) that is liable to increase the total value available to the agents but from which a subgroup of them (big landowners) are going to lose. If these agents belong toa powerful elite who have excessively benefited from the existing arrangement in the past, the potential winners (landless or small farmers) might well view any compensation to the losers as unfair or unjustified. In such circumstances, the preferences of the potential winners are not compatible with the requirement of the Pareto criterion since they would imply that the well-being of the potential losers will decrease

with the institutional change. Note also that, when the potential losers succeed in strategically strengthening their position so as to be able to ask for larger compensatory transfers from the potential winners, the latter are still more likely to resist the former's demand for compensation. If the existing elite is strong enough to block the change, the status quo, which does not maximize the total value, will continue to prevail. In the opposite case, a revolutionary situation will develop with all the costs that it necessarily entails. It needs to be emphasized that, in the above instances, pre-emption of efficient institutional change arises from the irrational behaviour of the potential beneficiaries of such change. If they were rational, indeed, they would not oppose the payment of compensatory transfers that would make them eventually better off. But ideological considerations and value systems (e.g., a notion of fairness) may outweigh rational calculus and drive agents to behave against their own material interests.

(2°) The potential losers may not trust the potential winners' promise to compensate them once the institutional change would have occurred. Realizing the transfers before the advent of the change is of no help: the inverse problem will arise since the potential winners may now fear that the incumbents will opportunistically collect the payment and, then, oppose the agreed change.

(3°) The agents may not be able to reach an agreement because their assessment of the costs and benefits of institutional change do not match. Potential losers may, in good faith, exaggerate the costs that they will have to bear and potential winners will refuse to compensate them on that basis. It could be contended that the former might also try to manipulate information and claim losses larger than in reality whereas the latter might manipulate information in the opposite direction. However, if agents are rational and have a perfect knowledge of the costs and benefits of the institutional change, such manipulation should only aim at influencing the distribution of these benefits and costs (through bluffing the other party), but can not have the effect of hindering the occurrence of an efficient change available.

(4°) In situations where the interests of a large number of individuals are involved, it is likely that only a subgroup of them will effectively communicate with

one another and participate in the bargaining process. In these conditions, the agreements reached will not reflect the interests of the people who were excluded from the discussions. Bargaining may then lead to an efficiency-enhancing change, but only relative to the small, effective group which was able to take part in the decision about what institution (or policy) to choose.

(5°) By positing zero negotiating costs, the Coasian framework gets rid of the leadership problem that may prevent a group of people from asserting their viewpoint and, perhaps, promoting an efficiency-enhancing institutional change. Acting as a leader involves non-negligible costs, and no member of a group may be willing to bear them. This happens if the payoff matrix of the leadership game has the same structure as the Prisoner's Dilemma (PD): everyone would prefer someone else to bear the costs of leadership and, as a result, everybody chooses to abstain from taking the initiative. In other words, leadership is a public good and the classic free rider problem is observed. If, however, the structure of the game is that of a Chicken Game (CG), a leader will emerge because, in this case, the individual benefit of collective action exceeds the cost of leadership even when it is borne by a single individual.

Thus, if the individual benefit from collective action is 20 utility units while the cost of leadership is equal to 30 units, we have a PD game, such as shown in Fig. 2 (assuming that, if both agents assume leadership, the cost is shared equally). If the cost of leadership is 10 instead of 30 units, we have the CG depicted in Fig. 3, in which there are two mismatch Nash equilibria in pure strategy: one agent assumes leadership and the other does not, but the theory does not allow us to say who will be the leader. Let us now assume that the benefits from collective action are asymmetric, such as posited in Fig. 4, where agent A (the "big guy") can earn 45 utility units from collective action compared to agent B (the "small guy") who earns only 15 units. The cost of leadership is 30 units, and is equally shared in the event that both agents act as leaders. There is now a unique Nash equilibrium ensuring that the benefits of collective action will be reaped, and it is the "big" agent who bears the cost of leadership.

		Agent B	
		Assume leadership	Eschew leadership
Agent A	Assume leadership	5,5	-10,20
	Eschew leadership	20,-10	0,0

Figure 2 A leadership game with the structure of a Prisoner's Dilemma

		Agent B	
		Assume leadership	Eschew leadership
Agent A	Assume leadership	15,15	10,20
	Eschew leadership	20,10	0,0

Figure 3 A leadership game with the structure of a Chicken Game

		Agent B	
		Assume leadership	Eschew leadership
Agent A	Assume leadership	30,0	15,15
	Eschew leadership	45,-15	0,0

Figure 4 A leadership game with a unique socially efficient equilibrium

To the extent that in small groups the cost of leadership is likely to be lower than the individual benefit while the opposite would obtain in large groups (say, because the cost of leadership increases with size), the CG would be characteristic of small groups, and the PD of large groups. One should therefore expect large groups to be at a disadvantage vis-à-vis small groups, and the interests of the latter to predominate over those of the former. For example, the interests of consumers tend to be under-represented relative to those of producers and, as agricultural protection policies and institutions attest, the effect of these unequal bargaining powers is often a situation that does not maximize total value (see Olson, 1982).

In conclusion, when the hypotheses underlying the Coasian framework are not valid, one can no more be certain that an institution that increases allocative efficiency constitutes a Pareto improvement. It is then incorrect to say that only efficiency considerations govern institutional choices, and that distributive choices are only secondary consequences of efficiency choices. In many instances,

institutions are the product of distributive conflicts and, depending on whether the preferences of the most powerful coincide with allocatively efficient institutions, the latter will emerge and persist or not (Knight, 1992).

In Spain during the early modern period (1500-1700), for example, the powerful shepherds' guild (the Mesta) successfully opposed the farmers' demand for secure and exclusive property rights in arable lands at a time when these lands became increasingly scarce and investments were socially profitable. As a matter of fact, shepherds did not want any curtailment of their customary rights to drive their flocks of migrating sheep across Spanish territory. If they came to acquire a strong bargaining position vis-a-vis the farmers, it is ultimately because their privileges were protected by the Crown which relied heavily on export taxes on wool for meeting its expenditures (North and Thomas, 1973: 128-29).

The principal-agent approach (PA approach)

For the PA approach, an institution is a contract, that is, an ex ante mechanism designed in such a manner as to induce an agent to behave spontaneously in accordance with the interests of a principal (for a detailed exposition, see, e.g., Furubotn and Richter, 2000: Chap.5). Whether explicit or implicit, the contractual arrangement is self-enforcing. Being unable to directly observe the agent's actions, the principal sets the terms of the contract by taking the former's optimising response into account and by ensuring that he will accept the contractual offer. Given the presence of informational asymmetries and the associated market imperfections, the institutions or contracts correspond to second-best optima. In fact, the efficiency losses that they entail is the equivalent of transaction costs under the TC approach. Note that the two approaches address essentially the same problem but from a different angle. While the TC approach considers the costs explicitly incurred to overcome coordination and motivation problems that arise in economic transactions (plus any lost gains from trade that result from the fact that incentive problems are imperfectly surmounted), the PA approach looks at self-enforcing mechanisms devised by principals to discipline agents when the latter's actions cannot be directly monitored. In other words, contracts are viewed

as mechanisms giving rise to incentives that substitute for direct monitoring.

Like in the Coasian framework underlying the TC approach, the optimal contract or institutional form predicted by the PA approach is unique. Yet, as aptly pointed out by Masao Aoki (2001: 18), the solution arrived at in the TC approach "is usually responsive not only to the technological environment but also to the 'institutional environments' hidden in parameters specifying the objective functions of the principal and agent, and the participation constraints describing the outside options of the agent". The results obtained under this approach may therefore be valid only relative to an implicitly assumed institutional environment of the domain considered, and "may not be exclusively technology-dominated, second-best solutions applicable anywhere".

Contracts in the above perspective often appear as the result of a deliberate will of the parties concerned. Users of the PA approach tend therefore to believe that people spontaneously choose optimal contracts, thus obeying to the prescriptions of theory. Note that the concept of constrained efficiency obtaining in the PA approach fundamentally differs from that chosen by strict adherents of the TC approach. For the latter, indeed, an optimal arrangement has the property of maximizing the expected value of the joint wealth of all the parties concerned, net of transaction costs (see supra). This is because they believe that competition among all parties (e.g., competition among farmers for land, competition among landowners for renters, and competition between on- and off-farm opportunities generally) is strong enough that only the most valuable contract or arrangement is chosen in the sense of being "naturally selected". In the words of two proponents of this orthodox TC approach: "it seems only reasonable to assume that contracts and organization are fundamentally driven to maximize wealth" (Allen and Lueck, 2002: 6).

For the proponents of the PA approach, by contrast, issues of surplus division are important. For example, in most PA models of sharecropping, following the tradition initiated by Joseph Stiglitz's seminal paper (1974), the landowner acting as the principal chooses a farming contract and the division parameters in such a way as to maximize his own utility subject to the optimizing behaviour of the

farmers with respect to their level of labour effort (the individual rationality constraint) and to the need to guarantee them their reservation utility (the participation constraint). If land is scarce, the landless farmers' reservation utility is low, allowing landowners to appropriate a large part of the surplus produced. The greater the scarcity of land the larger the discrepancy between the maximisation of the joint wealth of all the parties concerned, on the one hand, and the constrained maximisation of the principal, on the other hand.

Let us now return to the idea that people tend to select optimal contracts given the constraints which they are facing. If there exists a discrepancy between theoretical prediction and a set of empirical observations, the blame is typically put by proponents of the PA approach on policy failures and undue government interferences with the free will of the actors and the free play of market forces. For example, the low incidence of land-rental relative to land-sales contracts is ascribed to uncertain property rights and the fear of losing ownership control of the land by renting it out. Likewise, the low frequency or the absence of sharecropping contracts in risky tropical environments is usually traced back to harmful government prohibitions (Hayami and Kikuchi, 1981, 2000; Bliss and Stern, 1982; de Janvry et al., 2001).

It must be borne in mind that, even assuming the absence of any undue interference with the will of the parties involved, contracts can only be constrained or second-best optima (see above). What needs to be emphasized now is that the optimum can be quite severely constrained if several incentive problems plague a particular type of transaction and severely conflict with each other. Indeed, it may well happen that no contractual arrangement is available to solve the existing incentive problems in a satisfactory manner. Just assume that an absentee owner wants to rent out an asset to a renter. If there exist severe problems of risk (that no insurance market can guarantee against) or capital availability (that no credit market can address) combined with serious incentive problems such as labour-shirking, asset mismanagement, output under-reporting, and input over-reporting, no type of rental contract will allow the owner to overcome these problems in a satisfactory manner. As a consequence, he will be compelled to manage the asset

himself or to lay it unused. The argument can be easily summarized as follows: if the costs of measuring and dividing the output and the inputs are prohibitively high, only a fixed rent contract can enable an owner to control the associated risks of opportunistic behaviour. Yet, on the other hand, such a contractual form is ill-suited in a context of severe insurance and credit market imperfections, and is also the worst arrangement to counter the risk of asset mismanagement.

A striking illustration of such a possibility is provided by the situation prevailing in artisanal or small-scale fisheries all over the world (see Platteau and Nugent, 1992, for more details). In this sector, serious informational asymmetries prevent equipment owners from controlling risks of opportunistic behaviour on the part of boat captains and their crew. We know that, from the point of view of labour incentives, the fixed-rent contract is optimal: the user of the asset being a residual claimant in the case of such a contract, he will be spontaneously induced to work as hard as he would have done had the asset been his own property (see, e.g., Hayami and Otsuka, 1993). However, the presence of risk and pervasive imperfections in inter-temporal markets (credit and insurance markets) is likely to compel the captain to refuse a fixed-rent contract which has the effect of shifting all the risk of income fluctuations to him. Moreover, another incentive problem, the risk of asset mismanagement, is especially serious when the fixed-rent contract is employed. Since fishing assets (the boats or canoes themselves, but also the outboard engines and the fishing nets) are highly vulnerable to such a risk, the use of fixed-rent contracts is precluded, at least when these assets are used in the open sea.[3]

The contract that universally prevails in artisanal fisheries all over the world is the share contract, which makes sense in the light of the foregoing considerations. The efficiency loss, it would seem, consists of some amount of labour-shirking that is unavoidable since the share contract is not optimal as far as incentives to work are concerned (the worker obtains only a proportion of the marginal output resulting

3 During a survey which I made along the entire coastline of Senegal, the only fixed-rent contracts which I observed were in the estuarine fisheries located near Zinguinchor in Casamance. There, a dugout canoe can be obtained against a daily rent that is of a fixed amount. This exception actually confirms the rule since, in this case, there was absolutely no risk of asset mismanagement. Indeed, the canoes are just laid out side by side across the estuary and the nets are stretched underneath so as to form a tight weir into which prawns get entangled while swimming upstream. The passive use of the canoes and the fact that waters are sheltered from high winds reduce the risk of asset mismanagement to practically zero.

from an additional unit of effort). In fact, there is a loss of efficiency because a particular contract, the share contract, is required to perform several functions at a time, namely the exchange of fishing assets, partial insurance against the risk of income fluctuations, and mitigation of the risk of asset mismanagement. For first-best efficiency to prevail, a contractual arrangement can perform only one function, that for which it is explicitly designed (in this case, the exchange of assets). If there were perfect inter-temporal markets, there would be no need for asset exchange contracts to perform an insurance function.

Nothing is really surprising in the above conclusion. However, because other incentive problems undermine fishing contracts, the problem is far more complicated than what appears from this first discussion. In particular, the share contract in fishing is highly vulnerable to the twin risks of output under-reporting and input over-reporting, which is the same as saying that it is potentially subject to severe measurement difficulties that arise because the output and inputs have to be divided. As a matter of fact, it is rather easy for a captain and his crew to sell part of the fish catches overseas beyond the sight of the owner who waits for his boats on the beach with a view to supervising the marketing of the landings. Likewise, the captain may be tempted to over-report fuel expenses on the pretext that he had to take the boat far out into the sea in order to find fish. These risks are so serious that they have to be controlled in one war or another. Obviously, the fixed-rent contract is the ideal contract here since a captain would not derive any benefit from under-reporting output and over-reporting inputs when he is the sole residual claimant. Unfortunately, this contract is precluded on the grounds of considerations of risks of income fluctuations and asset mismanagement.

No contractual arrangement can therefore be found that solves the various existing incentive problems in an acceptable manner. The only solution left is clearly to remove the informational asymmetries that give rise to the uncontrollable risks of opportunistic behaviour on the part of the agent. That means that the owner himself, or one of his sons or close acquaintances, has to be on board to supervise all the fishing operations. It is therefore not surprising that family undertakings remain an essential characteristic of the artisanal fishing landscape.

Thus, in an unpublished study that I conducted along the Senegalese coastline, I found that in 80 percent of the fishing units the captain was either the owner or one of his close relatives (usually, a son or a son-in-law). In almost all the remaining instances, the captain was a close friend whom the owner considered as entirely trustworthy.

A contrario, it is revealing that, when in the late 1980s the government of Senegal launched its so-called "Maîtrisard" programme to help holders of law or economics and business degrees from the university to start a business in the fishing sector (this was a political step designed to placate the students from the university of Dakar who were almost continuously on strike asking for an employment guarantee upon getting their degree), the experience ended up in a glaring failure. When I inquired into the reasons for this failure, the aforementioned problems of output under-reporting and input over-reporting came on top of the difficulties mentioned by the new fishing entrepreneurs who were never on board their boats (they were not fishermen), and did not have any acquaintance in fishing communities on whom they could safely rely for performing captain functions. Fishermen candidly confirmed this diagnosis to me, counting with an evident pleasure the ease with which they could cheat these inexperienced young entrepreneurs promoted by urban-biased government policies. The few of them that stayed in the fishing business had actually sold all their fishing assets to concentrate their activities on transport (by refrigerated vans) and marketing.

Finally, it is worth remarking that contract theory can not account for the existence of rather uniform terms of contracts even while relevant personal characteristics of the agents (the endowments of the concerned parties, the opportunity costs they face for different inputs, their respective bargaining powers, their degree of risk aversion, and so on) differ. For instance, in a study of a village in Uttar Pradesh (India), it has been observed that landlord and tenant choose between a limited number of standardized sharecropping contracts, each entailing pre-specified input and output shares (Lanjouw and Stern, 1998: 468). Limited rationality considerations or social norms suggest themselves as plausible reasons for uniform contractual terms (see, e.g., Stiglitz, 1989: 22-23). Returning

to an already noted phenomenon, uniform contractual terms such as the fifty-fifty division rule are often interpreted as useful coordination devices that correspond to prominent focal points. An alternative argument is that a particular rule is uniformly chosen because it is perceived by many people to be fair, and people derive utility from treating others fairly (Young, 1998: 129-30).

The explanation based on focalness – contracts are rigid around a few focal shares – has been recently called into question by Allen and Lueck (2002: 88-92) on the basis of their own US data (from Nebraska and South Dakota), and a revisitation of the data (from Illinois) used by Young and Burke in their aforementioned article. Their point is that input-sharing terms are crucial in understanding the structure of sharecropping contracts. If they are overlooked, differences in output shares can be mistakenly attributed to regional custom based on soil quality (large differences in land quality lead to variations in focal shares across different regions), while they actually reflect differences in input-sharing that can themselves be predicted with the help of contract theory. On the other hand, discrete sharing rules that mimic simple fractions, as they are observed within a particular region, can be viewed "as rules that economize on measurement costs when measurement technology is imprecise" (ibid.: 91). As a matter of fact, although it is theoretically possible to have finer divisions in sharecropping contracts than those actually observed (e.g., a 52-48 division rule besides a 50-50 rule), it makes no sense to use them if the landowner is unable to know the exact relative contributions without incurring enormous monitoring costs.

The equilibrium-of-the-game approach (EG approach)

According to the EG approach, the major role of institutions is, by establishing a stable structure to human interactions, to reduce the uncertainties arising from incomplete information with respect to the behaviour of other individuals (North, 1990: 6, 25). Institutions are rules or humanly devised constraints that structure inter-individual relationships by allowing agents to form expectations about the behaviour of others and by thus facilitating coordination among them. If institutions constrain the choices of agents, the question naturally arises as

to how consistency can be induced in the players' beliefs regarding the emerging situation and in the actual situation created by their choices based on these beliefs (Aoki, 2001: 9). In other words, how can converging beliefs and coordinated actions be generated? The question is legitimate since, when choosing an appropriate equilibrium strategy, an actor ignores the equilibrium and is therefore not yet constrained by it.

Clearly, to resolve the above issue, a new definition of institutions is required. It is provided by Masao Aoki: an institution is "a self-sustaining system of shared beliefs" about a salient way in which a game is repeatedly played. This way of playing can be viewed as the rules of the game that are "endogenously created through the strategic interactions of agents, held in the minds of agents, and thus self-sustaining" (Aoki, 2001: 10). A complex feedback mechanism is therefore at work, since all the agents form their own action-choice rules in response to their subjective perceptions (beliefs) of others' action-choice rules, and it is only when these perceptions become stabilized and reproduced that their own action-choice rules also become stabilized and can thus serve as useful guides for playing the game. From there, it is rather straightforward that agents' beliefs and their strategic formation of action-choice rules can be regarded as being in Nash equilibrium. Indeed, as long as beliefs regarding others' actions are sustained, agents have no incentive to deviate from their own action-choice rule. As for the salient feature of an equilibrium, it may be tacitly recognized by the agents, or have corresponding representations outside their minds (ibidem: 10-11).

To sum up, an institution conceived as an equilibrium of a game is "a socially constructed reality" that helps coordinate the beliefs and actions (understood as strategic choices) of agents. This equilibrium state is being reproduced if actions are made on the basis of beliefs that stand confirmed once the actions of others become observable. As a result of this conception, institutions are seen as emerging endogenously from human interactions to constrain people's behaviour in a self-enforcing manner in a particular domain. In this way, they have the effect of linking up actions through time, with the past and the present serving as focal points for the future (Greif, 1997, 1998, forthcoming).

A direct implication of the EG approach is that the history and the culture (understood as a set of views and expectations regarding others' behaviour) of a society are embedded in its institutions. The fact that cultural beliefs are shared binds its members together. As a consequence, it is incorrect to say that explanations based on individual rational choice ignore the influence of community and history (Knight, 1992: 80-82).

Another implication is that the EG approach accounts for informal institutions, such as social norms and conventions. This follows from the definition of a social convention: a behavioural regularity that is self-perpetuating because individual expectations and behaviours are in equilibrium when a convention is well-established (Young, 1996). Informal practices therefore qualify as institutions "as long as the agents believe in them as relevant representations". On the other hand, a formal rule, such as a statutory law or a regulation, is not a true institution if the agents do not mutually believe in it (Aoki, 2001: 13).

A last important implication is that, since institutions correspond to Nash equilibria which are multiple in repeated plays (and in one-stage coordination games), there are typically many possible institutional solutions. Emphasis is thus put on the non-arbitrary ("humanly devised") character of institutions rather than on their features that are technologically, ecologically, or culturally determined. In the words of Aoki again: "If there is only one equilibrium corresponding to the technological specification of the structure of the game, then that equilibrium is little more than a representation of the technological condition, and not an institution" (Aoki, 2001: 16).

Cultural specificity, it may be noted, often takes on the form of social or cultural norms that embody equity principles which themselves serve as focal points in a given community. Roger Myerson (1991: 113) defines cultural norms as "the rules that a society uses to determine focal equilibria in game situations", bearing in mind that "there may be some situations where people of a given culture might look to equity principles to determine a focal equilibrium". In the same vein, Peyton Young (1994: 81) writes that "equity principles are the means by which the parties coordinate on a particular solution given the constraints imposed by

economic rationality". For example, the wide prevalence of the 50-50% sharing rule in sharecropping contracts (see supra) can be explained by the fact that actors reach agreement "by coordinating on a prominent or focal solution", since "fifty-fifty is certainly the most prominent way to divide a pie into two pieces, and it is easy to justify on grounds of fairness " (ibidem: 129).

Of course, an institution can be explained only within a specific game configuration corresponding to a given set of exogenously defined parameters (the set of players, the set of available strategies, the information conditions, the set of payoffs for every possible combination of actions). Yet, conceivably, such parameters might in turn be derived as the endogenous outcome of another game for which a new set of exogenous parameters has been identified. For example, in a game A in which killing another agent in order to steal his goods is forbidden (it is not a permissible action), we study interactions among agents who have to choose between being honest and cheating in a trade transaction. To understand why murderous behaviour is precluded, another one-agent game can be constructed in which there are two possible actions, namely indulging in, or refraining from murderous acts. A passive agent, God or the Church, rewards good behaviour with a positive payoff while it punishes murder with an infinitely negative payoff (eternal damnation). In this context, the agent always chooses to avoid murderous acts. Such behaviour can therefore be excluded from the agents' choice sets postulated in other games.

We are now in a position to discuss the problem of efficiency. From the Nash equilibrium concept and from the existence of multiple equilibria, it is evident that inefficient institutions may well come to be established and sustained over time. Just consider a simple two-agent coordination game in which there are two Nash equilibria in pure strategies, with one equilibrium Pareto-dominating the other. For example, two measurement systems are available but one is superior to the other, say because it is easier to use. For each agent, to coordinate on the same system is always preferable than to have a mismatch of strategies. Whether the convention that gets established favours the socially efficient or the inefficient system will depend on the content of the shared beliefs of the agents and on which equilibrium is a focal point in their minds. The inefficient measurement

system may therefore predominate if agents believe that others are going to use it. Moreover, once the inefficient convention is established, the very concept of Nash equilibrium that underlies it implies that it may persist for a long time.

While under the TC approach, status quo situations are explained by the difficulty of making the necessary compensations to the potential losers, under the EG approach cultural inertia appears as a privileged explanation (see, e.g., Basu, Jones, and Schlicht, 1987). In the words of Joseph Stiglitz (1989: 26), "individuals know more about the institutions and conventions with which they have lived in the recent past than they know of others by which they might live". The preservation of institutions that are inefficient, or have become so following some change in the environment, is caused by self-perpetuating beliefs that receive continuous confirmation from the choice-actions of the other agents.

In the above example, we have used a simple one-stage coordination game to illustrate the possibility of inefficient institutions. An infinitely repeated game based on a PD stage game provides another convenient illustration. We refer to the work of Avner Greif (1989, 1994, 1998) who distinguishes between two sorts of mechanisms to tame opportunistic behaviour in pairwise merchant-agent relationships. The first mechanism, known as the bilateral reputation mechanism, is based on a strategy whereby a merchant hires an agent and keeps him as long as he behaves honestly. If the merchant finds that the agent has cheated him, he fires him and will never rehire him in the future. Yet, he is ready to employ any unemployed agent indiscriminately. Under the second mechanism, known as the multilateral reputation mechanism, a merchant adopts the strategy of not employing an agent who once cheated some other merchant belonging to his community. Once he hires an agent who has a honest reputation, he keeps on employing him so long as the agent is honest with him. A dense information network is assumed to exist among merchants so that cheaters can be easily identified and punished.

The two above-described strategies are equilibrium strategies. Believing that all other agents follow a strategy of bilateral (multilateral) punishment, an individual has an incentive to adopt the same strategy and, at equilibrium, no agent

cheats. Expectations are self-enforcing. Greif calls 'collectivist' or 'segregated' a society, such as that of the Maghribi (Jewish) traders who operated in the Muslim Mediterranean during the eleventh century, where everyone expects everyone else to respond to any act of dishonesty committed in any pairwise encounter within the community space. In contrast, 'individualist' societies, such as those of the Italian city states, are those in which anyone only reacts when his own interest has been hurt.

An important lesson from Greif's analysis is that common cultural beliefs of both the 'collectivist' and the 'individualist' types generate equilibrium outcomes characterized by the absence of any cheating on the part of the agents (both constitute subgame perfect equilibria). The self-enforcing expectations of merchants and agents with respect to actions taken by others in the event of fraud are genuine institutions since they constrain people's behaviours and coordinate their beliefs. In addition, they are not technologically determined. They are cultural in the sense that the cultural heritage of a society, together with the historical process through which various players interact, may have made the convergence of expectations into one of multiple possibilities a natural 'focal point' (Aoki, 2001 : 71). The Maghribis' shared experience of emigration from the insecure surroundings of Baghdad to North Africa in the tenth century has no doubt helped to transform them into a cohesive group with a strong cultural identity.

The multilateral reputation system practiced by the Maghribis is more efficient than the bilateral reputation system used by the Italian traders. Compared to Italian merchants, the Maghribis could afford to pay lower fees to their trading agents because they could rely on the credible threat of a more severe punishment. As a result, thanks to their having a more favourable cultural heritage, they were in a position to earn larger profits and to accumulate more capital. In a more dynamic perspective, however, the advantage may well have turned in favour of the Italian merchants. The case can indeed be made that the limitations of the disciplining mechanism available to them has served to encourage Italian merchants to seek institutional innovations more rapidly than the Maghribis. The invention of the family firm (during the thirteenth century) and the establishment of legal and political enforcement organizations (including a legal code to coordinate

expectations and to enhance the deterrence effect of these organizations) can be seen as responses induced by the existence of a wide gap between opportunities and existing institutions (Greif, 1994).

Finally, it bears emphasis that, even from a static standpoint, the multilateral reputation mechanism cannot be considered as completely efficient. This is because, among the Maghribis, the volume of trade was limited by the size of their community which has itself been determined by historical circumstances and could not grow as trade opportunities expanded. In Italy, where the situation was even less efficient, trade magnitude was politically determined under the political coalition system while, under the patron system, agency relations could be governed only at a high cost till new organizations were found, as we have just mentioned (Greif, 1992).

The EG approach explicitly allows for inefficient institutions. It can also provide an explanation for those paradoxical situations in which individuals choose to support rules that they do not like or even find oppressive (such as the caste system in India). As shown by Georges Akerlof (1976) and Timur Kuran (1995 : Chaps. 6-8), it may thus be rational for an individual to comply with unpleasant rules or to obey a totalitarian regime if there exist an effective network of mutually reinforcing social sanctions against disobedience and a system of converging expectations that sustain the existing arrangement. The key intuition is that a bad institution or a harmful rule persists due to mutual suspicion between people: because each person is worried about what the others will do to him, he chooses to cooperate. The immediate implication of the existence of a web of self-reinforcing sanctions (think of the ostracization of individuals who have violated caste-based rules) is that everyone is both a victim and a supporter of a system in which there need not even exist a ruler. For this sort of effective sanctions to prevail, meta-punishment must be applied, that is, a person is considered disloyal to a regime or a rule if either he does not cooperate or he maintains relations with someone who is disloyal. Note carefully that such an explanatory framework sheds light on how the sanctions have been self-reproducing, not on how they arose (Kuran, 1995 : 118-36 ; Basu, 2000 : 136-47).

For the sake of illustration, consider the following game proposed by Kuran (1995 : 250). There are ten players a, b, c, d, e, f, g, h, i, and j. Starting from the assumption that people's preferences are sensitive to the expected size of the publicly manifested opposition (public preferences are therefore interdependent), individuals differ in their willingness to oppose an harmful institution. In Fig. 5, the ten players are ranked by decreasing order of courage, with a ready to oppose the harmful rule even if nobody else does (he is guided by strong ethical principles) and, at the other extreme, j who is unwilling to resist unless everybody else does (he is strongly risk averse). In between are people like f who requires half of the other people to oppose in order to dare express his own opposition.

It is easy to see that there are three Nash equilibria in this game: 10% ; 90% ; 100%. The first equilibrium is particularly interesting. Owing to pessimistic expectations about what the others are going to do in public, only person a opposes the bad institution while persons b through j support it. Because individuals other than a have thresholds above 10, a public opposition of 10% is self-sustaining: if everybody believes that only 10% of the people will oppose, only 10% will actually do it.

a	b	c	d	e	f	g	h	i	j
0	20	20	30	40	50	60	70	80	100

Figure 5 Explaining the stability of harmful rules or institutions

One could object that the agents pictured in Fig. 5 are not very courageous, on an average. Yet, as Fig. 6 attests, even when we assume that more people are ready to take risks to defend their opinions, the status quo equilibrium of 10% may persist. Unless the threshold belief of agent b is brought down to 10%, such a nasty equilibrium will not disappear.

a	b	c	d	e	f	g	h	i	j
0	20	20	20	20	20	20	20	60	100

Figure 6 Explaining the stability of harmful rules or institutions– A variant

Note that the above game may help explain the eruption of bloody civil conflicts and even genocides. To understand this, we must re-interpret the figures representing the individual preferences. Thus, we now assume that they stand for the percentages of other people participating in the genocide that induce a given agent to join the killings. At one extreme of the continuum, we find the ideologues or the cynical opportunists who require only a small proportion of killers in the population to start themselves killing. Ideologues kill because they are essentially driven by their hatred against members of the other ethnic group whereas cynical opportunists kill because they want to steal the property of their victims. At the other end of the spectrum, we find the moral people whose conscience forbids them to kill whichever are the prevailing circumstances. In between are the "captive participants" who cannot resist the temptation to participate in mass killings if a sufficient number of other people are involved. They act out of fear of being ostracized, harassed or victimized by the killers of their own ethnic group on the pretext that not participating is equivalent to betraying one's brothers.

If the preferences thus defined are given by the figures presented in Fig. 7 (notice the slight change in the preference of agent b compared to Fig. 5, while all other preferences stand unchanged), it can be seen immediately that there are two Nash equilibria of the game, 90% and 100%. In other words, mass killings will unavoidably take place given such a preference profile. If initial expectations regarding participation of others are that 10% will kill, agents a and b (that is, 20% of the population) will decide to kill. In the next step, if expectations are adjusted accordingly, agents a, b, and c will participate in the killing, thus leading to an expectation of 30% participation in the subsequent round during which agents a, b, c, and d (making up 40% of the population) will join the mass murder. Eventually, all agents from a to i will participate as a result of a bandwagon effect.

a	b	c	d	e	f	g	h	i	j
0	10	20	30	40	50	60	70	80	100

Figure 7 Explaining the occurrence of a disastrous event

Of course, such a simple model cannot claim to be an adequate framework for understanding something as complex as the occurrence or non-occurrence of a revolution or a genocide. Yet, it directs our attention to useful clues and, moreover, it suggests ways in which the forces it emphasizes may have interacted with other possible causes. Think, for example, of the manipulative power of mass media controlled directly or indirectly by the state. When the state or the elite linked to it enjoys such a power, the people's beliefs may be profoundly altered in a pessimistic direction and drive them into awful acts that would never have been committed in normal circumstances. The role of Radio Mille Collines in the Rwandan genocide illustrates this dreadful possibility.

The evolutionary approach (EV approach)

All the above economic approaches to institutions are essentially a-historical. They do not explain how a previous equilibrium state affects the set of new equilibria and there is no way to analyze how games are linked with one another through time. The last approach precisely aims at remedying such a lacuna by looking into the problem of the origin of institutions (that is, the way they are selected), and not only that of their persistence. In the EV approach, the emergence, diffusion, and demise of particular rules or institutional arrangements appear as the outcome of an organic process of Darwinian natural selection which epitomizes the competitive pressures of the market and the invisible hand. In this perspective, institutions emerge not as a result of rational, purposeful design by any individual or organization of individuals, but as the result of spontaneous evolution, say, because the people learn from experience that following a given constraint or custom can actually serve their own individual interests (Aoki, 2001: 40). In the orthodox version of the evolutionary account, institutions that are inefficient are expected to have a low evolutionary fitness and, therefore, to be displaced in the long run by more efficient institutions (see, e.g., Schotter, 1981 ; Sugden, 1986, 1989).

The evolutionary game theory used in the EV approach has distinct features. While under the EG approach, which uses the classical game theory, the actors'

expectations about each other have to be consistent with the experience that is generated by the resulting actions, evolutionary game theory is based on the idea that agents follow trial-and-error behaviour: what works well for a player is more likely to be used again, whereas what turns out poorly is more likely to be discarded. Agents look around them, gather information and ground their decisions on the basis of fragmentary information. They have only an incomplete idea of the way the world in which they operate works, do not fully understand the strategic implications of their choices, and may not be especially forward looking (Young, 1998: 5-6). Thanks to imitation, trials and errors, and takeovers, however, effective strategies are more likely to be retained than ineffective ones (Axelrod, 1997: 47-48).

The notion of equilibrium is another feature that fundamentally distinguishes the EV approach from the other approaches. Evolutionary economists believe that equilibrium can be understood only within a dynamic framework that explains how it comes about, if it does (Young, 1998: 4). After having specified the initial proportions of various types of agents in the whole population, the probabilities of their interactions, and the payoffs associated with every possible pairwise interaction, the evolutionary modeller needs to specify the dynamics (specified as a replicator mechanism) by which the proportions of the agents with higher payoffs (in biological terminology, individuals with better fitness or reproductive ability) increase in the population. Equilibrium is attained when the proportions of different types of agents able to survive have become stable. It immediately follows that the concept of evolutionary efficiency, based on the idea of maximising average fitness, differs markedly from the standard economic concepts in either the Pareto or the technical-efficiency sense.

Interestingly, a remarkable result obtained in evolutionary game theory is that evolutionary equilibria have the properties of strategic equilibria. More precisely, for a large class of evolutionary games, if the dynamics converge, they converge towards a steady state in which the limiting distributions are in equilibrium in the same sense as in classical game theory. In other words, even though behaviour of the players is not rational, the population seems to learn the rational equilibrium as its distribution evolves (Montet and Serra, 2003: 8-9). A nice example is the

parable of a proto-institution of property rights developed by Masao Aoki (2001: 36-39) and inspired by an ingenious evolutionary bargaining model of Peyton Young (1998: Chap. 8).

Another central lesson from evolutionary models is still more paradoxical. Bear in mind that, in many of those models, institutions appear simply as the unintended and undesigned outcomes arising gradually from the pursuit of individual interests as agents repeatedly face the same types of social problems or situations. In other words, there is the idea of a spontaneous order that is grounded in the analogy between the invisible hand and the natural selection arguments. (By contrast, economists using classical game theory to understand institutions, whether they refer to the PA or the EG approaches, are not always clear about whether rules and institutions are the result of conscious design by legislators, political entrepreneurs, or mechanism design economists, or the unintended outcome of long-term dynamics). Yet, it appears that there is absolutely no certainty that optimal rules or institutions will emerge from evolutionary processes. Several reasons can account for this, which deserve to be mentioned (see Bowles, 2004: 90-91).

First, analogues to both external economies (spillovers) and increasing returns can be found in the world of institutions. Thus, "some institutions may be complementary, each enhancing the functioning of the other, while some institutions may reduce the effectiveness of other institutions". As a consequence, there may exist multiple stable configurations of institutions, and some of these configurations "may be very inefficient and yet persist over long periods". Second, the analysis of evolutionary processes that select among group-level institutions, which involves a coevolution of preferences and institutions (each exerting an influence on the development of the other), may not support the emergence of efficient solutions. For example, success in inter-group conflict may be caused by a group's military strength rather than by its efficient performance on any other account. Third, "the rates of change induced by real world selection processes may be slow relative to the pace of changes induced by other sources, such as chance events, or exogenous changes in knowledge…" (Bowles, 2004: 90-91).

Finally, the repertoire of institutions and behaviours among which selection operates may be highly restricted. As emphasized by biologists, natural selection works on existing genetic material which need not include the optimal genetic 'program' and, if it does not, optimal adaptation is hampered. Moreover, the fact that gene mutations are blind (their occurrence is assumed to be independent of the needs of organisms) and can represent only gradual variations of existing genotypes, precludes them from introducing optimal types in the population (Vromen, 1995: 95-96). The same conclusion applies, mutatis mutandis, to institutions. On the one hand, being absent from the available repertoire, many institutions remain unknown or untried. And, on the other hand, "the creation of novel institutions is akin to the emergence of new species: it requires the confluence of a large number of improbable variations in the status quo" (Bowles, 2004: 91). It needs to be emphasised that an immediate implication of the above point is that inefficiency may be impossible to measure owing to the lack of a counterfactual. As a matter of fact, it is difficult to compare the efficiency of a selected institution against another because this last one has not been selected.

In a related vein, Ken Binmore has aptly pointed out that in many evolutionary models attention has been artificially restricted to a few strategies, often arbitrarily chosen. No clue is given as to why particular strategies are there while innumerable other conceivable strategies are ignored (1992: 434). Such an approach may enable the evolutionary modeller to derive efficient institutions but without really explaining their emergence in so far as the appearance of the nice strategies is itself unaccounted for. A vivid illustration of this possibility is provided by the evolutionary account of the emergence of private property rights on the basis of the famous Hawk-Dove game studied by Maynard Smith (1982). In the (evolutionarily stable) equilibrium[4], the agent first arrived at a resource is considered as the legitimate owner and no fight occurs. Unfortunately, the theory does not say anything about how the sophisticated strategy that will eventually lead to that result (the so-called Bourgeois strategy: "if owner fight, if intruder refrain from fighting") has actually come about. Note that, if the Bourgeois strategy

4 The basic idea is that of immunity to invasion: a population of players all following an evolutionarily stable strategy will be able to repel an invasion of individuals playing some other strategy.

is not available, the equilibrium of the Hawk-Dove game is inefficient. There is a positive proportion of aggressive agents (the Hawks) in equilibrium, and average fitness is not maximized in the population.

Even when evolutionary models are made more complex by bringing multi-level selection into the picture and by introducing players who intentionally pursue conflicting interests through collective action (see, e.g., Bowles, 2004), the conclusion continues to hold that inefficient (and unequal) institutions can persist over very long periods of time.

Another illuminating lesson to draw from the EV approach is the path-dependent nature of institutional evolution: small initial differences may cause distinct societal histories to emerge. In the words of Bowles (2004: 403-4): "This view stresses not institutional convergence but the long-term coexistence of distinct evolutionarily stable institutions". Because the evolutionary process follows paths that have different long-run characteristics depending on where it starts, and on the order in which players happen to meet, the paths end up in different equilibrium configurations (Young, 1998: 8; see also North, 1990: 92-104). Nothing can be said a priori about the comparative levels of efficiency (or inefficiency) reached by these varied configurations.

To illustrate with the help of an example quoted by Douglass North, "incremental changes in technology, once begun on a particular track, may lead one technological solution to win over another, even when, ultimately, this technological path may be less efficient than the abandoned alternative would have been". Large set-up or fixed costs, learning effects, coordination effects ("which confer advantages to cooperation with other economic agents taking similar action"), and adaptive expectations (where increased prevalence enhances beliefs of further prevalence) all contribute to creating path dependence (North, 1990: 93-94). Ideology can also play a major role in sustaining a particular path, even though it is inefficient. This will happen if agents construct rationalisations with the aim of vindicating their society's rules and structures, and thereby account for their poor performance. In addition, organisations and interest groups which benefit from the current (inefficient) arrangements will be tempted to shape the polity in their interests,

thus making it still more difficult to change in the future (ibidem: 99).

For instance, since the early 15th century, under the influence of the mandarins who scorned and distrusted commerce, the Chinese authorities developed the idea that China does not need to develop its external trade links to become or remain a major economic and political power. A whole worldview was subsequently constructed which drove the Chinese into believing that their country is better-off when it relies on its own forces. Carried over well into the 19th century, this ideology and the accompanying policies proved to be a disaster for the country that was leading the world in many respects several centuries earlier. In the words of David Landes: "this deliberate introversion, a major turning point in Chinese history, could not have come at a worst time, for it not only disarmed them in the face of rising European power but set them, complacent and stubborn, against the lessons and novelties that European travellers would soon be bringing" (Landes, 1998: 96; see also Jones, 1981: 168-69).

Conclusion

Two economic approaches to institutions, the EG approach and the EV approach, lead to the conclusion that institutions may very well be inefficient over long periods of time. While such a conclusion is almost embedded in the EG approach, which pays a lot of attention to the role of expectations and beliefs, it may come as a surprise as far as the EV approach is concerned. Indeed, at least in the minds of its pioneers, the latter was purported to show that efficient rules and institutions can evolve without conscious human design, gradually arising from the uncoordinated actions of numerous actors over a long period. On the other hand, the idea that economic agents tend to select (second-best) optimal institutional arrangements is inherent in the other two approaches, the TC approach and the PA approach. However, the assumptions required in the TC approach to generate that result are quite restrictive, and it is therefore not difficult to imagine situations in which inefficient rules or institutions will be established and persist. As for the PA approach, it is an inspiring approach that takes explicit account of the strategic behaviour of agents. To the extent that reality differs from its predictions, the

discrepancy can be ascribed to policy failures or to the existence of social norms such as are postulated in the EG approach.

Taken as a whole, the New Institutional Economics thus appears to be rather agnostic about the issue of institutional efficiency. Cultural inertia, vested interests, institutional complementarities, and myopic behaviour may explain why inefficient institutions persist. Furthermore, it is possible that institutional arrangements that have been efficient some time in the past do not adapt when circumstances change. For example, the rule of celibacy in the Catholic church was probably efficient when it was set up in medieval times in order to break the formation of priestly dynasties. Yet, it has clearly become dysfunctional now that the supply of catholic priests falls short of demand while priesthood is discouraged by the celibacy rule. One plausible reason why the rule is not rescinded is that the decision-makers in Rome, who are all old people, refuse to support a change from which they will not be able to benefit. In terms of the TC approach, they oppose a change because they cannot be properly compensated. If this view is correct, only a shift of power in favour of young priests or willing priests is likely to modify the situation.

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