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HOW TO DESIGN INSTITUTIONAL FRAMEWORKS FOR MARKETS

NEW INSTITUTIONAL ECONOMICS MEET THE NEEDS OF INDUSTRIAL ORGANIZATION

Mots-clés : Nouvelle économie institutionnelle, droits de propriété, régulation, politique de la concurrence, gouvernance, public vs, privé, politique industrielle, réforme institutionnelle

Key words : New Institutional Economics, Property rights, Regulation, Competition Policy, Antitrust, Governance, Public vs, Private, Industrial Policy, Institutional Reform

I. — INTRODUCTION (1)

The idea that « Institutions matter ! » for economic policy is certainly not a novel one (Hodgson, 1999). It at least dates back to John Commons (1924) and to Ronald Coase (1937). In a Walrasian world, « exchange takes place without any specification of its institutional setting. We have consumers without humanity, firms without organization, and even exchange without markets » (Coase, 2005, p. 200), while, on the contrary, the economists' view of human nature should be « of a piece with their treatment of institutions which are central to their work » (Coase, 1988, p. 5).

The centrality of institutional determinants for economic performance (Williamson, 2000 ; Coase, 2002) has, however, recently flourished in the eco-

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conomic policy debate. This is testified, among other things by several initiatives launched either by intergovernmental organizations or foundations, focused on measuring the impact of institutional framework on growth or competitiveness. The « Doing Business » reports published annually by the World Bank (see www.doingbusiness.org) is just one of the prominent examples in this respect. Recent debates over global financial crises have further renewed the role of institutional setting and legal standards as « genetic » features of well-performing markets, which is now acknowledged even by one of the Chicago School's most eminent scholars (*e.g.* Posner, 2009).

Beyond these epiphenomena, the rising consensus about the inefficiency of many direct governmental interventions in the economy, as well as of many omissions, often imposed by inheritance of specific historic trajectories, has led to the idea that designing appropriate institutional frameworks should be the new frontier of policy-making in the hands of governments (La Porta *et al.*, 1999, 2008). Structural reforms are, indeed, the new horizon of most governments both in developing/transition countries and in the most advanced. This can largely be seen as a victory of *New Institutional Economics* (NIE). The intervention of such prominent scholars as Douglas North and Joseph Stiglitz as consultants for major intergovernmental organizations and governments has played a strong role in changing the thinking of political elites and bureaucracies. In addition, thousands of economists have been working for years in advising policy-makers in matters of institutional design. The last two Nobel laureates, and their careful and detailed applied analyses of how governance structures actually operate in various institutional and transactional contexts, illustrate this strong movement. The resulting awareness about the institutional nature of markets has further contributed to enhance cross-fertilization between *NIE* and various applied fields of economics; such as *Industrial Organization*, especially concerning the organization of efficient markets and the remedies to the so-called « market failures ».

At the same time, beyond the recognition of the causal relationship between institutional frameworks and the dynamics of the economy, the overall political message to be drawn from the wide scholarly *NIE* literature is not totally clear today. On the one hand, institutional frameworks are depicted as rules of the game (North, 1990), but the actual impact of alternative rules as well as complementarities among them, remain unanswered questions. On the other hand, while « markets » are no longer naively seen as Walrasian systems of centralized auctions, the condition to which transactions (and thus, production and competition) are efficiently performed are still under debate. A comprehensive understanding of the institutional frames enabling markets to perform is still in its infancy.

Taking stock of the past thirty years of developments in this analytical field, this paper aims at outlining the main policy lessons and recommendations to be drawn from the field, so as to point out at the same time what the research agenda is. Since *NIE* precisely draws from the Coasean perspective that eco-

nomists should pay attention to the details of the complex issues they are dealing with, and, in particular, to the specific « environmental » conditions of any economic phenomenon, it might seem quite a challenge to attempt to provide a general synthesis of such a field since, precisely, most actual policy recommendations insist on the specificities and « local » conditions of the implementation context (Dixit, 1996 ; Glaeser and Shleifer, 2002, 2003). It is important, therefore, to clarify our goal and our methodology. First, we want to focus on what seems to us to be the heart of NIE : the analysis of the relevant institutional frameworks to generate and organize exchange. Of course, NIE has been proving to be very powerful to investigate political economy and long-term development and growth issues on the one hand, as well as contracting and organizational issues, on the other. Here, we would like to focus on the subject which seems to unify the works of the founding fathers, such as Coase, North and Williamson.

That said, we will not limit our attention to the « transaction cost approach of institutions ». We use the qualification of NIE because we see more complementarity and convergences amongst the various contemporary perspectives analyzing institutions – from incentives theory to behavioral economics and encompassing law and economics – than we see conflicting or diverging schools of thought (2). Thus, we interpret NIE as the various contemporary developments aimed at understanding institutions and organizations through the lenses of economics, and we try to assess the general policy lessons to be drawn in terms of organizing exchange. This leads us to identify key tradeoffs to be taken into consideration when attempting to organize (efficient) markets. Relevant institutional designs are, as it will be highlighted, highly dependent upon the context.

We then consider, first, the domains in which NIE identifies potential impact of institutional tools in terms of organizing markets, namely property rights, externalities and competition (section 2). Then, we will discuss how NIE sees the alternative dimensions of the organization of institutional frameworks (section 3). This will lead us to discuss the elements of balance between « command and control » and incentives ; public and private ordering ; centralized and decentralized governance ; formal and informal coordination. Taking stock of the analysis of institutional changes, we will conclude by pointing out the difficulties highlighted by NIE in reforming institutional frameworks, and therefore, the difficulties in obtaining the social benefits expected from more efficient markets.

- (2) The understanding of the role played by institutional frameworks in affecting market outcomes has been recently enriched by the huge progresses made by behavioral and experimental economics on the interaction between human nature, bounded rationality and economic choices under given institutional constraints (Simon, 1957 ; Sunstein, 1999 ; Arrunada, 2008). For brevity's sake, we will not touch upon those issues here.

II. — THREE PURPOSES OF INSTITUTIONAL TOOLS

2.1. Establishing Property Rights, Managing Externalities, Maintaining Competition

The development of the literature on the relevant institutional framework for markets has highlighted that it is useful to contrast alternative purposes of the institutions framing markets.

The institutional dimensions impacting more particularly the performances of markets may be considered from two perspectives labeled, respectively, as the « North-Barzel » and the « Smith-Schumpeter » approaches. While the first focuses on the fundamental role played by property rights for establishing incentives to manage economic resources, the second outlines the virtues of competition, whose dynamics lead to eliminating inefficiencies and to stimulate innovation.

Under the North-Barzel perspective (North, 1976, 1989 ; Barzel, 1989, 1997, 2002), the way economics systems perform depends upon property rights ; understood as the complex set of mutually recognized rights to access, use, and benefit from resources (3). They define both how agents can make decisions about the use of economic resources, and how they can transfer and rearrange these rights amongst each other. This is summarized in the idea that an institutional setting establishes the level of « transaction costs » born by agents to use resources and exchange them. Establishing a system of property rights is in itself costly, and the related costs are taken into account in the analysis. Thus, the « transaction costs approach » of institutions provides a framework aimed at analyzing the overall impact of alternative institutional settings on the efficiency in the use of economic resources.

Amongst the results of this approach, it is pointed out that a complete system of property rights is prohibitively costly in a world of bounded rationality, incomplete set of preferences, uncertainty, etc. As Barzel (1997) has argued : « in order that rights to an asset be complete or perfectly delineated, both its owner and other individuals potentially interested in the asset must possess full knowledge of all its valued attributes ». [...] When transaction costs are positive, rights to assets will not be perfectly delineated. The reason is that, relative to their value, some of the attributes of the assets are costly to measure. Therefore, the attributes of such assets are not fully known to perspective owners and are often not known to current owner either (pp. 4-5). This point was originally addressed by Demsetz (1967), who pointed out that

- (3) They therefore draw not only from the property right law, but also from contract law, regulations, and more generally from the interplay between formal rules, the way they are effectively complied with and the informal rules such as customs and social norms. More on these issues later in the paper.

changes in knowledge resulting in changes in production functions, market values, and aspirations generate new techniques, new ways of doing the same things, and ways of doing new things, « all invoke harmful and beneficial effects to which society has not been accustomed ». However, as outlined by Lueck and Miceli (2005), « little work has been done to understand the forces that determine the optimal complexity of property rights ». Since property rights systems are inherently incomplete, the institutions in charge of the definition and enforcement of property rights perform a role in « completing » property rights over time, to reduce transaction costs (Libecap, 2002, 2003, 2004). However conflicting uses over resources cannot be eliminated, externalities are not fully internalized, and positive transaction costs result in the inefficient use of some resources, and in attempts by economic players to set up organizational arrangements reducing transaction costs (4).

An additional issue is that « markets » can perform if and only if competition – either static or dynamic – is lively. From a Smithian-Schumpeterian perspective, competition is an essential tool of coordination in the sense that it incites parties to coordinate efficiently (in the aim of becoming jointly more competitive, or of repeating interactions). It is, therefore, essential for an institutional framework to deal with competitive issues and to « maintain » competition. Manipulating the definition and the assignment of property rights

(4) The analysis of the incompleteness of property rights comes from a deeper analysis than the one given here and points out three essential dimensions :

- Incompleteness as the costs of digging out new uses (Barzel, 1997): « Property rights are not perfectly defined. In order that rights to an asset be complete or perfectly delineated, both its owner and other individuals potentially interested in the asset must possess full knowledge of all its valued attributes. [...] When transaction costs are positive, rights to assets will not be perfectly delineated. The reason is that, relative to their value, some of the attributes of the assets are costly to measure ».
- Incompleteness as weak enforcement. When enforcement cannot be guaranteed, the value of the property decreases because the owner discounts the expected value of its right by the probability of it not being protected in case of violation. Since Adam Smith's days, economists have long stressed how a weak protection of property is often thought to be the root of many developmental problems (North, 1990, 1992) and generally undermines economic performance by jeopardizing owners' expectations about use of assets (Libecap, 2003).
- Incompleteness as weak rights' separateness, Lueck and Miceli (2005) have noted how in many real world situations, assets are handled with mixed regimes that have to face the complex articulations of uses and relative rights bundled in the property. They use the example of a rancher's land to illustrate the case. They observe that, while the use of the land for grazing might be private, the use of the stream through the property might be open access, the underlying oil reservoir may be governed by a unitization contract that mimics a common property and other regimes might be in use to govern other uses of the asset land. Different property regimes are needed because for any of these uses of the bundle, there exists a different optimal ownership of the land. This problem arises from the fact that land is adjacent to other resources, notably air, water and wildlife stocks, these environmental resources are considerably more difficult to divide into individual properties. [...] owners of land simply « piggy-back » uses of these common resources onto their use of land (Rose, 1998).

mainly does it, since such a manipulation can be managed so as to guarantee open/efficient access and recombinations among economic agents.

Combining the Barzel-North and the Smith-Schumpeter perspectives leads to point out that institutional frameworks' purposes could be grouped into three sets of functions to establish markets: « measuring » (*i.e.* delineating) and « distributing » property rights amongst economic agents (section 2.2); managing externalities (section 2.3); and guaranteeing the long-term sustainability of the competitive process (section 2.4).

2.2. Establishing Property Rights

The institutional approach to property rights has highlighted that ownership is to be intended not as an unquestionably defined right, but rather as an evolving bundle of rights, and the corresponding system of definition/enforcement of property rights as a complex set of institutions performing (*ex ante* and *ex post*) a specific task aimed at completing property rights (Libecap, 2003). It results from choices in matters concerning the delineation of rights, and their modes of distribution among agents. These choices regard both the rules to be implemented (*e.g.* the analyses proposed by Menell and Scotchmer, 2007, on alternative property rights regimes) and the organization of governance devices that will operate this implementation (*e.g.* the discussion of the organization of the titling system for land proposed by Arrunada and Garoupa, 2005). We will discuss in turn, the question of the delineation/measure of property rights (section 2.2.1.), of their mode of distribution (section 2.2.2.) and of their enforcement (section 2.2.3.); given the fact that some generic aspects of the organization of institutional setting – which concern also the establishment of property rights – are discussed in the third section of this paper.

2.2.1. « Measuring » property rights

The first function identifies the transaction costs associated to the definition of a property rights system. What NIE has clearly outlined in this respect, also drawing from *Law and Economics*, is the awareness that a complete definition of property rights over every economic use attached to a scarce resource would require infinite transaction costs due to the discovery of every asset attribute/use for each resource at any point in time. As Demsetz (1998) has clarified, « there is never complete certainty about the scope of allowed and disallowed uses of resources, so a right-defining and conflict-resolving institution, such as the court system, the legislature, or some community authority, is inevitably part of any property right system ». This leads to a trade-off between *ex ante* and *ex post* transaction costs. Property rights attribute to owners a residual right to control the uses bundled in property, but these uses might be challenged at any time, and need to be confirmed (by private agreements or by Courts' decisions) *ex post*.

The above trade-off is generated by the fact that the attribution of exclusive rights of access to a scarce resource may well inhibit efficient access when there are positive market transaction costs *ex post*. From a social point of view, a too « closed » definition of property rights can, therefore, be sub-optimal. Indeed, on the one hand, the *ex ante* definition of property rights tends to positively align incentives of investors in the creation and valorization of assets (5). However, it might induce inefficient exclusion towards non-owners when high *ex post* transaction costs are present. On the other hand, the *ex post* definition of property rights minimizes *ex ante* incentives to invest (due to the risk of inefficient inclusion), while maximizing *ex post* incentives by non-owners. The resulting social dilemma has to be solved in function of the assessment of the relative impact of investment requests vs. the innovation potential on the overall economic performance. These are typical types of problems that economic regulators face when they have to consider access to « essential facilities » by third parties, either in network industries or in matters of innovation (hence, protected knowledge).

The other approach that contributed to enlighten the role of property rights distribution in imperfect institutional settings, characterized by incomplete contracting around imperfectly unbundled property rights (see below), is the so-called, « incomplete contract » approach to non-contractible investment choices (Grossman and Hart, 1986; Hart and Moore, 1990; Aghion *et al.*, 1994; Hart, 1995). When transactions request specific investments, it is possible to selectively motivate investors through property right assignment. As Hart (1995) refers, property rights assign a residual right of control over future contingencies to the owner. Thus, once identified those agents who mostly contribute to surplus production, property rights should be assigned to them with the unpleasant consequence of reducing incentives for non-owners, and, therefore, reaching only second best outcomes. However, it might generate another trade-off: while aligning efficient investments on the owner's behalf, ownership may actually reduce market efficiency when assets are scarce in the market, deterring market entry by an efficient non-owner. This is discussed in section 2.4.

The law and economics literature has also contributed to the analysis of the efficient way of designing property rights systems by outlining the economic criteria that should guide the choice between alternative forms of property rights protection, and particularly between « property rules » and « liability rules ». The main idea, first outlined by Calabresi and Melamed (1972), and further refined by Kaplow and Shavell (1995) and by Ayres (2005), is to define the degree of *ex ante* excludability as a function of the costs of protection, which encompasses *ex ante* costs of prevention of access, and *ex post* costs of

- (5) The degree of protection of property rights affects owners' incentives to invest in production, in the preservation of existing resources (Shavell, 2004) and to make property-related specific investments (Bebchuck, 2001).

compensation when access occurs. When the costs of protection are low enough, then « property rules » should ensure that nonconsensual takings never occur, thus imposing the highest fine (including non monetary sanctions) on infringers. On the other hand, when the costs of protection are fairly high, then « liability rules » should dominate: non-owners may have access to others' property without consent, but they will have to pay the opportunity cost to owners. Thus, it is the relative level of the cost of prevention of access versus the *ex post* cost of negotiation (which encompasses the assessment of the opportunity costs and conflict resolution) that defines the effective way of enforcing property rights. In particular, Kaplow and Shavell (1995) outlined the superiority of liability rules as default rules of property rights protection whenever the enforcer has to sustain high transaction costs to extract relevant information by conflicting parties, since it provides rights incentives for owners to optimally protect (*ex ante*) and sue (*ex post*). Recently, Arrunada (2011) has shown how liability rules also perform another important function. It generates confidence in case third parties acquire property rights by dealing with non-owners (e.g. an agent, a firm's employee, etc.), which is a very frequent case in an advanced economy.

Parallel to these debates is the one about the bundling/unbundling of property rights. Should the rights to all possible/future uses of an asset – another way to interpret « residual rights » – be *ex ante* attributed to an « owner »? Or should a specific right be defined and distributed for each potential use? The latter solution means, of course, that each time a new possible use is « invented », a new right should be delineated and granted. The choice between the two options has a strong impact on the transaction cost born *ex post* by the agents. It therefore refers partly to the tradeoff between the *ex ante* (institutional) vs. *ex post* (contractual) measurement of property rights pointed out above. It is, however, worth to highlight here that the socialization of the delineation of unbundled rights *ex ante*, which might raise the overall level of transaction costs (because rights are delineated and enforced upon uses of little value), has the virtue of enabling the development of transparent markets around the delineated uses of the considered assets. This might therefore favor efficient use and efficient investments. Think at shared capacities on infrastructure networks.

2.2.2. Distributing Property Rights

As pointed out by Coase (1960) and many others, the *ex-ante* repartition of property rights does not impact efficiency in a world of zero transaction costs, since it has only distributive effects. Transfers of property rights should allow an efficient redistribution of assets. This is, of course, different in a world of positive transaction costs, since only a partial redistribution of capabilities to use assets will occur *ex post*, resulting in the inefficient use if the assets were not properly distributed at the initial stage of property rights repartition.

Then, the dilemma is well known (Bouckaert, 1999). On the one hand, the « first possession » principle (*i.e.* either « first claim, first served » or « grand-

fathering ») leads to over-investment in the competition TO claiming rights of exclusivity (Anderson and Hill, 1990; Barzel, 1968; Libecap and Wiggins, 1984; Merrill, 1986). This competition might generate an evaporation of the benefits of the valuation of the resources, as repeatedly demonstrated by case studies on the inefficiencies of the political processes aimed at lobbying to gain/protect access to scarce or exhaustible resources (see Libecap 2002, 2010). Moreover, the inefficient use of resources is also a frequent result, since the better claimer is not always the most efficient exploiter.

On the contrary, « auctions » are, in principle, a much better way of distributing property rights (Lueck, 1995). They raise, however, two types of issues. First, the so-called winner's curse effect might arise in common-value auctions where the winner tends to be the bidder with the most overly optimistic information on the value of the asset. If a bidder bids naively, on the basis of private information only, this could yield an *ex post* negative profit that raises problems of adverse selection, on the one hand, and, on the other, of the *ex post* need to reallocate property rights, which is costly. Second, to avoid this type of negative effect, auctions procedures have to be carefully designed and managed, both to ensure efficient selection and to avoid collusion among bidders. This might generate substantial transaction costs because the most efficient procedures are the most sophisticated ones that request the highest amount of effort both from the auctioneer and from the bidders (Milgrom, 1989) (6). Again, positive transaction costs prevent getting the first best, and there is, therefore, an unavoidable tradeoff between the imperfect benefit/cost performance of first appropriation and of Auction mechanisms.

2.2.3. Ensuring Compliance and Conflict Settlement

There are two main trade-offs in matters regarding the enforcement of property rights. The first is related to the costs of supervising, auditing and monitoring (as expressed by the probability of detecting infringements to prevent it) versus the costs of *ex-post* conviction, once the right has been violated: *ex post* enforcement would impose transaction costs only when it is needed, but it may generate under-deterrence. This means that prevention should be preferred in those cases in which the damages generated by infringers would be hardly compensated *ex post*.

The second trade-off emerges in relation to the specialization of enforcement. Behind what is often put in the forefront in the *Law and Economics* lite-

- (6) In addition repeated auctions can be inefficient in case of specific investments. Williamson (1976) has raised several fundamental issues with Demsetz's monopoly franchise bidding procedure (Demsetz, 1968). Organizing competition for the market is not an easy task, the world is not static, transaction costs make contracts necessarily incomplete and switching costs make public authorities and private contractors entering contracts vulnerable to *ex post* contractual opportunism.

rature, the public vs. private conflict resolution competition lies in an opposition between generic and specific dispute resolution mechanisms. Indeed, the literature has outlined that private conflict settlements should be preferred to public enforcement when parties are able to commit to follow decisions made by private, say specialized, arbitrators who generally make decisions with shorter delays, because they benefit from context-specific information and knowledge. The trade-off, for the collectivity is between increasing speed and accuracy in controversy resolution, and the social loss of jurisprudence production, since private/specific arbitrators will typically not disclose their decisions. Indeed, privacy is one of the advantages of alternative dispute resolutions. Moreover, specialized judgment relies on the specificity of the context, which makes it of less value *per se* for other members of the society than motivated generic decisions.

The general conclusion to be drawn from NIE is that property rights systems are irremediably imperfect and costly. More precisely, property rights can never be optimally designed, efficiently distributed and perfectly enforced, which justifies debates and policy actions aiming at amending them, even if it may have a cost in terms of uncertainty for the economic agents. NIE also emphasizes the essential elements to be taken into account in terms of the delineation and enforcement of property rights. First, alternative institutional arrangements impact on who pays for the establishment of property rights, either the collective, or the owners/users of the resources. Second, decisions in matters of institutional design relate to whether delineation and enforcement are performed *ex ante* or *ex post*. Making the best choice regarding each dimension is highly dependent upon the nature of the resources, the level and nature of information costs, and the efficiency gains to be expected from collective/joint efforts regarding governance (such as economies of scale, scope or related to specialization).

2.3. Managing Externalities (7)

According to Harold Demsetz (1967), the creation of a property right over an externality reduces the costs of inducing interacting agents to create each time a new market for beneficial or harmful effects attached to conflicting uses over open access resources. However, the emergence of new property rights to cost effectively exchange « externalities » are not the automatic outcome generated by the mere existence of the latter. It depends upon the costs-benefits ratio associated with the definition and enforcement of a system of property rights. In a positive transaction costs world, it is thus impossible to always internalize externalities through exchange processes. We explore here the main lessons to be drawn from NIE in matters of governance of externalities, when

(7) Since the related debates are quite familiar to IO specialists, this point is just summarized here.

the property right solution is not available. For simplicity's sake, three main domains might be distinguished here : negative externalities, positive ones, and public goods.

The case of positive externalities entails the possibility of inefficient exclusion of non-owners in circumstances in which the strength of property rights implies an excessive degree of excludability from access. This encompasses the case of the tragedy of anti-commons (Heller, 1998) due to an excessive fragmentation of property rights, as well as the case of excessively broad (intellectual) property rights that may deter competitors' entry in downstream markets. In the latter case, compulsory licensing, or the regulation of royalty rates, or the imposition of liability rules, or incentives towards mergers may reduce the inefficient market foreclosure generated by the overprotection granted to property rights holders (Scherer 1977). As mentioned above, the organization of mandatory open access to « essential facilities » in network industries is also a way to deal with inefficient exclusion.

The case of negative externalities is relevant when it involves inefficient inclusion, *i.e.* when non-owners enjoy free access to resources protected by incomplete or weak property rights. The focus on « inefficient » inclusion reveals that it does not necessarily annihilate private benefits accruing to owners, as shown by the case of the Coasean lighthouse (Coase, 1974). Even in some cases, private benefits do increase, as when network effects are involved (Economides, 1996 ; Shy, 2001). The problem of inefficient inclusion refers to circumstances in which the public nature of the good reduces expected private gains for owners, as in the case of the tragedy of the commons (Hardin, 1968) or of inefficiently weak protection of intellectual property rights (Landes and Posner, 2003). Beyond action on property rights, incentives to invest can be managed by systems of rewards and quotas.

Finally, the last domain concerns the management of « public » goods (and most often « imperfect » public goods). This crosses the trade-off between incentives and « command-and-control » systems that will be discussed later (section 3.1), since it involves some form of public intervention. Public good could be provided either by public bureaus or a state owned entity or by granting public rewards and/or subsidies to a private firm. In the first case, social benefits would strictly depend on incentives provided to the producer, especially when quality matters, in the context of rent-seeking activities. In the second case, a trade-off emerges between providing strong *ex ante* incentives to reward private producers with the risk, however, of inducing moral hazard and reducing incentives through conditioning rewards to strong *ex post* auditing/monitoring activities (Laffont and Tirole, 1993). Another possibility for public goods is to design incentives on the demand side, *i.e.* to directly transfer monetary payments to final users and let them find, under their own responsibility, the way to organize production and consumption (Ostrom, 1990).

In matters regarding the management of « market failures », NIE contributed to pointing out the risk of capture of any form of public intervention. At

the same time, it recognizes that in a world of positive transaction costs, externalities and public goods issues cannot be fully solved by creating additional markets. Policy intervention should, however, rely as much as possible on the implementation of the logic of the market and competitive incentives, by defining more appropriately property rights when it is cost effective, and by implementing mechanisms guaranteeing the contestability of economic positions, and the actual involvement of users in decision-making.

2.4. Managing competition

Since in a competitive world, cartels and unilateral conduct by dominant firms lead to the hindering of the competitive process, it is relevant to manage competition policy by « redefining » on occasion property rights, so as to guarantee the effectiveness of the competitive pressure.

One limit of the NIE is that its attention to the efficiency gains of non-market governance tends to neglect the negative feedback of authority relationships that bring anticompetitive outcomes due to the reduction of the number of players (horizontal integration) or to the reduction of the size of competitive markets (vertical integration). This effect could be further magnified when markets are not fully transparent and perfectly competitive, since a problem of informational inefficiency could emerge due to possible strategic manipulation of information. This is the case of markets in which a vertically integrated dominant firm strategically conveys manipulated information to regulators in order to protect anti-competitive rents. Competition concerns in industries dominated by vertically integrated incumbent firms, owning essential facilities, somewhat invert the Coasean framework: when the cost of competing in a given relevant market is determined by incumbent vertical integration, then it is convenient to « unbundle » the firm's assets to restore competitors' incentives.

However, in this case, a new trade-off might emerge between the vertical separation to restore competition and maintaining the vertical integration to save transaction costs. This is illustrated by the antitrust remedies aimed at granting competitors' access to an essential facility owned by a dominant firm, the regulatory obligation undoubtedly raises new transaction costs, as the incumbent firm is obliged to reintroduce the market inside the firm, and therefore hinder incentives to efficiently invest, both for the new entrants and for the incumbent (Baker, Gibbons, and Murphy, 2001; Joskow, 1991, 2002; Ménard, 2005). This calls for a prudent attitude in applying strong antitrust remedies under NIE's lens (Castaldo and Nicita, 2007). All in all, this calls for a general assessment of the cost and benefits of alternative organizational arrangements, when considering their impact on competition.

Competition policy, which ranges from regulation to antitrust policy, may be seen in that perspective as an endogenous response to failures of property rights, implying a trade-off between owners' rights and the collective interest of maintaining credibility of competitive pressures and avoiding deadweight

loss. In this respect, the design of antitrust mechanisms raises pervasive trade-offs in at least two distinct respects. First, in the case of the provision of public goods (like quality, reliability, knowledge, etc.), competitors need to coordinate (e.g. to design standard, to share useful information to ensure safety or to avoid the collapse of markets, and so on). Cooperation can, however, lead to collusion to capture rents. This is certainly complex to control, because these rents can both fund the provision of the public good, and the non-justified profits of dominant positions. Secondly, in those markets characterized by fixed costs, essential facilities, networks effects, and increasing returns, there is a high probability of market foreclosure, enabling the capture of rents (in statics), and hindering innovation (in dynamics). This leads to the necessity to divest integrated firms and to force opening access to essential facilities, with the negative effects in matters of incentives to invest and transactional efficiency. Tension, therefore, exists between the recommendations (drawn) from NIE, and the « traditional » IO approach to vertical integration and to public goods management (Williamson, 1985 ; Tirole, 1999b).

These divergences have however been considerably reducing over the years. For instance, it has been shown that, in many cases, vertical integration or restraints are not aimed at achieving market monopolization. Rather they seek to reduce contractual transaction costs to the benefit of final customers (Riordan, 1998). As outlined by the Chicago School (Posner 1976 ; Bork, 1978), other phenomena such as intra-brand competition to control quality (Schmidt, 1994), franchising agreements to promote efficient risk-sharing (Klein and Saft, 1985), the exclusive territories clause (Rey and Stiglitz, 1995) and the general exclusivity clause to protect specific investments under incomplete contracts (Williamson 1985 ; Masten and Snyder, 1993 ; Kovacic, 2002 ; Meese, 2005) often benefit to customers. In particular, the applied IO literature has been demonstrating for the last twenty years that practices traditionally condemned by antitrust authorities have actual economic impacts that depend strongly upon the competition characteristics in a given industry given the boundaries and the dynamics of the relevant market. This calls for the specific assessment of the actual impacts of these practices, as it has progressively become the practice of most competition authorities worldwide. They operated a paradigmatic shift from *per se* rules (to be applied only in hardcore violations such as cartels and predatory pricing) towards *rules of reason* in applying antitrust law (Amato, 1997 ; Kovacic and Shapiro, 2000 ; Carlton, 2007). The burden of proof for vertical restraints has also been progressively reversed.

The evolution of antitrust law in the US and in Europe has recently registered an increased convergence towards the essential and ultimate policy aim performed by competition policy: that of protecting the process and the mechanism of competition to foster and enhance the consumer's welfare, and not merely to protect or « assist » new entrants against incumbents in liberalized markets (Motta and Vasconcelos, 2005). Assisted entry could indeed result in decreased incentives to innovate to the detriment of consumers' welfare

(Crandall and Winston, 2003). The practical problems faced by regulators when they have to protect the interest of consumers lies however in measuring « the true consumer welfare standard » (Salop, 2005). It partly consists in arbitrating between present and future benefits. This questions, first, the discounting rate to be chosen to arbitrate between present and future values. Second the long-term effects of scrutinized practices have to be carefully assessed. For instance, practices adopted by incumbent firms might generate immediate benefits to actual customers. The question is whether efficient entry is deterred, which would reduce consumer welfare in the long-term (*e.g.* Edlin, 2003 ; Calzada and Valletti, 2008). Thus making right decision remains quite uncertain.

To conclude, the regulatory authority should act as an « arbiter » in charge of re-opening competition from time to time, especially by acting on property rights : from rights to access to « essential facilities », to divestiture, and including the unbundling of right to re-open/re-organize competitive markets on services/uses of assets that are essential in the survival of the actual competitive process. His chances to make first best decisions are low. However, avoiding market foreclosure is, in the long run, the only way to maintain incentives to innovate, to reduce costs (including transactions costs), and to limit capture of rents.

III. — THE KEY ORGANIZATIONAL DIMENSIONS OF INSTITUTIONAL SYSTEMS

It is widely recognized today that institutional systems are highly complex ensembles (Aoki, 2001). Understanding the nature of the interaction amongst distinct institutional features and components is of crucial importance to make sure that policies deal with interdependencies. It is also essential to anticipate the constraints reforms deal with and the feedbacks following policy interventions. The first step to analyze complexity is, however, to identify the main dimensions of institutional design which impact on the performance of markets. Institutional design can indeed be understood as a choice of a way to govern a type or a set of economic transactions. It therefore consists in assigning governance issues amongst alternative forms or types of institutional devices. The literature categorizes in particular four domains of choice regarding institutional design : Incentives vs. Command and Control (section 3.1) ; State vs. Self-regulation (section 3.2) ; Centralization vs. Decentralization (section 3.3) ; Formal vs. Informal Rules (section 3.4). These robust dichotomies, developed by the pioneers in the economics of institutions, are useful and insightful. Yet, we must acknowledge that they cover only « one view of the cathedral », and lead only to a partial analysis. Today, we have the « bricks », but we lack the « mortar ». We benefit from the robust analyses of the key institutional factors influencing the performance of markets. We, however, lack a comprehensive framework to really understand the properties of systems combining heterogeneous governance devices and made of interacting systems of rules.

3.1. Command and Control vs. Incentives

The first domain we identify refers to the pioneering debate between the Coasean and the Pigouvian approaches (Coase, 1937, 1960, 1988; Pigou, 1932) to market failures. What Coase rejected was the public economics tradition to rely on « automatic » state intervention, typically through constraining rules or taxation, whenever the market revealed some failure in generating efficient outcomes. Coase's critique was twofold. First, externalities should always be intended as inter-individual in nature, and this in turn implies that there is no generally preferred direction of the internalization of external effects; whereas bargaining amongst parties may bring an efficient allocation of costs and benefits, if transaction costs are small enough. Secondly, standardization or tax policies should not be seen as a general policy prescription, given that, at most, they address only one aspect of the issue. In the case of the well-known « polluter-pays » principle, the problem is that the victims of pollution are not automatically compensated (8). Besides Coase's remarks, a third critique – originally raised by Tullock (1967) and Stigler (1971) – further highlighted the existence of « bureaucratic failures » given that command-and-control systems could always be exposed to information asymmetries, raising principal agent problems, potential strategic behaviors, and risks of regulatory capture by coalition among private interests, bureaucrats and politicians.

The centrality of transaction costs in Coase's framework also entails the well-known trade-off between markets and hierarchy (Coase, 1937). In this respect, the « command-and-control » type of intervention could be interpreted as hierarchical, where the public decision-maker plays a forbearing role (Williamson, 1985). According to a NIE perspective, this type of public intervention should be developed when the costs of carrying out a transaction « into the market » (« buy ») are higher than the costs of internalizing it (« make »), a circumstance occurring when agency costs due to asymmetric information, or enforcement costs due to assets specificity and incomplete contracting are high enough. As Williamson (1988) outlined, while agency costs mainly refers to *ex ante* incentives alignment to prevent moral hazard on unobservable effort, enforcement costs are mainly concerned with an *ex post* perspective to prevent the opportunistic renegotiation or (« hold-up ») of incomplete

- (8) That is not to say that Coase's approach was under any circumstance alternative to Pigou, rather it aimed at widening the spectrum of tools to be applied in case of a market failure. In Coase's view, State command and control should be relied upon as a residual policy tool when decentralized exchange is inhibited by insurmountable transaction costs. But before that, State intervention could be devoted at minimizing parties transaction costs in the market (Cheung, 1983), for instance, by reducing information costs, facilitating the structuring of bargaining institutions and so on. This is because, the nature of dispersed information calls for the superiority of decentralized exchange whenever it is possible.

contracts characterized by specific investments (9). Hierarchical arrangements are deemed to reduce, in those contexts, the degree of freedom of opportunistic agents. Two trade-offs emerge. In agency problems, there is a revelation vs. capture dilemma in cases of repeated interactions, a now well-studied issue in the « regulation » literature (e.g. Laffont and Tirole, 1993). The « hold-up » questions the efficient adaptation to unforeseeable contingencies when renegotiation-proof contracts have been signed (Milgrom and Roberts, 1990; Tadelis, 2002). The tradeoff is between « security » and « flexibility » (Brousseau, 2008).

The literature on relational contracting can be considered as an attempt to overcome the above strong contrast between hierarchy and market by outlining that real transactions request to solve agency problems in shaping renegotiation games in such a way as to restore incentive to make specific investment in context of enduring bilateral relationships (c.f. Baker, Gibbons and Murphy, 2002). In that perspective, the development of the theory and practice of Public-Private Partnerships can be considered as a way to overcome the traditional alternative between public and private provision of public goods through the development of a hybrid mode of governance between some public authority and private service providers. Relational contracting between the sovereign (or one of its branches) and private operators raises, however, specific issues recently surveyed by Spiller (2008) and Brousseau and Saussier (2009). Not only private partners may attempt to cheat, especially because they have strong incentives to over-compete in the competition for markets, which confront them *ex post* with « winners curse » effects; but also the government and its branches have difficulties in committing themselves not to renegotiate *ex post*; which reinforces *ex ante* private partners' incentives to contractually commit to impossible conditions. PPP contracts are thus often renegotiated, and end up by being poor levers to reach efficiency.

Neither market incentives nor administrative controls are, thus, fully efficient to ensure public good provision, which includes public ordering, under any kind of circumstances. The reduction of transaction costs in a world of second best outcomes is thus the *fil rouge*, which ties together contemporary, NIE-based, approaches to public policies. The main conclusion is that uncertainties on actual and potential market conditions (prices, costs, economic opportunities), as well as asymmetric information and limits to contractual compliance (due to information asymmetries, but also due to incomplete property rights, asset specificity, limits in the ability of the state to credibly com-

(9) This distinction between information and enforcement costs has shaped two different streams of literature (Garrouste and Saussier, 2005): while agency costs theory typically assumes unobservability between parties with third party's verifiability, incomplete contracts theory is based on a framework characterized by observability between parties and third party's unverifiability (Klein, Crawford, and Alchian, 1978).

mit), constrain severely any attempt to reach first best thanks to institutional governance. On the one hand, there are « incentives failures », because transaction cost considerations prevent drawing perfect and credible incentives schemes and to mimic competition, so as to get its results when it is impossible to implement. On the other hand, « command and control » (bureaucratic) failures result from information (and knowledge) asymmetries that prevent any principal to perfectly monitor an agent without granting him *de facto* with some slack and to guarantee the optimality of public bureaux (see below, section 32). This calls for the permanent combination of the two approaches to get them to balance, each to make up for the weaknesses of the other.

3.2. Self vs. State Regulation

In a historical perspective, the contributions provided by Douglass North further extend the Coasean framework. North (1981, 1990, 2005) and Barzel (1997, 2002) outlined how both the performance of a public authority in providing public goods and the interaction between « public » and « self » regulations explain the emergence, and persistence, of a given economic outcome. Together with Demsetz (1967) and North and Thomas (1973), they focused on the analysis of the emergence of a property rights system and of the role of the State in creating the institutional environment for market exchange to proliferate. What this perspective adds to the Coasean framework is the analysis of the trade-off between the (*ex ante*) costs of creating a publicly guaranteed property right system and the (*ex post*) costs of market exchange when property rights are poorly defined and enforced. These analyses provided the blueprint for a systematic investigation of the complementarities between state and self-regulation.

Self-regulation should be the « natural » response to problems of free riding, coordination and enforcement, where the transaction costs of regulation is directly carried out by those agents who also benefit from coordination. The efficiency of self-regulation relies on three interdependent grounds: motivation, information and enforcement. Motivated agents have reduced incentives to free ride on self-regulation (since they endogeneize its benefits). Moreover, they typically access relevant information and observe others' behavior with negligible errors. Finally, motivation and information increase optimal enforcement and generate the desired level of deterrence. On the one hand, when self-enforcement exists, it reduces transaction costs compared to state enforcement of legal norms (Seabright, 2005 ; McLeod, 2007). On the other, self-enforcement requires certain conditions, such as community visibility, incentives to punish cheaters, which are strongly associated with small numbers of « players ». So, self-regulation is efficient when the dimension and the « culture » of the community are sufficiently limited and shared, so as to obtain the enforcement of cooperative rules without needing to build a formal and external system of enforcement.

Milgrom, North and Weingast (1990) formulated a theory of the development of long-distance trade during the Middle Ages based on the institution of the law merchant (*Lex Mercatoria*), which explains also why public ordering was needed to enable the extension of markets and the development of anonymous exchange. While in small communities, members share a great deal of information about each other's behavior, and « reputation » acts as a deterrent against opportunistic behavior, when communities of traders increase in size this becomes no longer possible. Key information is lacking. Exchange can hardly depend on trust, and in this context « reputation » can hardly serve as an enforcement device. According to their theory, the institutions of the law merchant rose to protect enlarged communities from the risk of opportunistic behavior. The effectiveness of the law merchant lay in delegating the enforcement of contracts to specialized judges, which enabled them to exclude cheaters from the market place. Thus, market participants benefited from the insurance that « authorized » traders were reliable. It was a signal that it was safe, and so economic agents had a cooperative focal point, which was reinforced over time by reputation effects. However, anonymous exchange and the further extension of market demanded the development of the state's power. Indeed, enhanced observation and information management capabilities, reinforced the chances of detecting cheaters (especially across distant market places). In addition, the observable punishment of those caught cheating through imprisonment and trials became a strong deterrent.

In recent years, this analysis has developed to highlight the complementary nature of public and private regulations (see Brousseau and Raynaud, 2009; Brousseau *et al.*, 2010). Traditionally, the extent of private/self regulation is bounded by the poor enforcement capabilities of private regulators. Self-regulation is based on adhesions. Members of self-regulated orders compare the costs of compliance with the benefits they draw from the regulation. They are free to opt out of the system. They only loose the benefits associated to the self-regulated community, whatever they are : reduced transaction costs, lower level of risk, access to pooled resources, risk-sharing, etc. Because private regulators usually do not have strong retaliation means at hand (or established legitimacy to use them), they are unable to strongly deter opportunistic behaviors. Their ultimate means of enforcement is exclusion. This explains why public regulators may be called upon to reinforce the power of self-regulators. The public ruler can agree to use its power to make compliance with self-regulation mandatory. This allows it to gain influence over the private regulator, which may then recognize the supremacy of the former in matters of governance, and may comply with principles imposed by the public order. In turn, the public regulator benefits from the expertise and the potential lower regulatory costs of private regulators. The main lessons to be learnt from the overall literature are twofold : whereas the effectiveness of self-regulation is limited by the extent of the market, the extent of the market and the efficiency of self-regulation is limited by the effectiveness of public regulation. What does determine this effectiveness, then ?

This has been investigated by North and Thomas (1973), according to whom « individuals must be lured by incentives to undertake the socially desirable activities », which means that efficient institutions are those that « bring social and private rates of return into closer parity ». Institutional framework includes a « public authority », whose main role is that of providing « public goods » through coercion. Government thus turns out to be an organization that reduces – in return for a revenue or tax – the uncertainty underlying market exchanges, by providing protection and justice through a system of basic ground rules, laws and social customs. In North and Thomas's view, « the differential success of European economies after the demise of feudalism » is due to the efficient relationship which emerged « between the nation state's fiscal policy and property rights ». However, this is not without a cost. Public ordering is itself subject to distortions, delays and to the influence of organized groups of pressure (North, 1981 ; 1990). Its ultimate effect will depend on the relative bargaining power of the state's social and political constituents (Buchanan and Tullock, 1962 ; Weingast, 1989, North and Weingast ; 1989) or, in other words, on the amount of the transaction costs associated with the process of political exchange.

As North (1990, p. 52) recognizes : « the efficiency of the political market is the key to this issue. [...] Inefficiencies existed because rulers would not antagonize powerful constituents by enacting efficient rules that were opposed to their interests or because the costs of monitoring, metering, and collecting taxes might very well lead to situations in which less efficient property rights yielded more tax revenue(s) than efficient property rights ». Along this line, the economic literature has deeply recurred to the historical analysis of institutions. Goldin and Libecap (1994) use case studies to defend and expand upon the notion that elements of a civil society – « special interests » – manage to « capture » government regulators, and make the state serve their selfish ends. The evidence suggests to them that government agents often enjoy considerable autonomy in regulating civil society, and that readily manipulable currents in public opinion are also important. This claim partially reconciles the analysis of institutions with the modern interest group theory of regulation, developed by George Stigler (1971) and Gary Becker (1983). Their work emphasizes the ability of organized « special interests » within civil society to influence state policy to their own advantage. While the interest group theory explores the circumstances under which groups are more likely to organize and, in turn, influence public policy to serve their own narrow ends, the institutional analysis couples this approach with the investigation of the institutional and legal rules which inhibit or reinforce interest groups.

The chain of causality depicted by North (1990, p. 52) is that « rules descend from politics to property rights to individual contracts ». There are then several interdependent domains of choice and the dimension of transaction costs in one domain will affect the dimension and the direction of transaction costs in other domains : « the opportunity set of the players and the forms of organization they devise in specific contracts will be derived from property rights

structure », which in turns depends on politics. Again, we are in a second best world. State norms are built through political processes that are inherently biased because the « weight » to be attributed to the various stakeholders is not related to social economic values and to collective wealth, but it depends on self-interested attitudes.

Thus, the tradeoff between self and public regulation depends above all on the quality of public rule, which itself depends upon the efficiency of the political market (*i.e.* its openness in matters of competition). The condition in which it occurs is analyzed in great detail in recent contributions, especially by North *et al.* (2009) and Brousseau *et al.* (2010). Lessons of these types of analysis in terms of the organization of markets are twofold. First, the optimal balance between public and private/self-regulation is very sensitive to the quality of public institutions, which are country specific, and strongly influenced by path-dependence. What is efficient in a given national context might be outperformed by better arrangements in others. Second, the role of the public regulator can be to organize an information competition among market stakeholders and amongst private regulators to oversight the many and complex private bilateral and collective governance arrangements that shape the performance of exchanges. As pointed out by Spiller and Liao (2008), and by Brousseau and Glachant (2010), this is, indeed, the right way to fix the information gap faced by any public regulator dealing with any private one that may use its regulatory and contractual capabilities to hinder competition.

3.3. Centralization vs. Decentralization

Constitutional economics and Federalism focus on the distribution of competences amongst institutional components. To a large extent, this can be summed up as the analysis of the tradeoffs between the centralization and the (horizontal and vertical) decentralization of governance. Indeed, constitutional economics is mainly devoted to outlining the pervasive trade-offs associated to each form of limitation of powers, both in terms of horizontal (legislature, executive, judiciary) and vertical (federal structure) division of power (Voigt, 1997, 2008). (Fiscal) federalism is about the optimal level of decentralization of public good provision (see Tiebout, 1956; Oates, 1999, and 2005; Weingast, 2005).

Beyond the specific analysis of political systems, the institutional question to be dealt with in the line of this paper is whether the level/specialization of provision of an order affects the quality and the cost of governance. The issue is, indeed, to draw lessons to design governance systems ensuring (more) efficient outcomes. Of course, this leads to review a literature focusing on public governance, because the mode of centralization/decentralization of a State has long been a central political question. In the following pages, we will focus on two main types of trade-offs that are relevant for our purpose. The first one refers to the problem of government « commitment » under the incomplete social/political contract between the citizens and the State due, in particular, to

risk of regulatory capture. The second one refers to the problem of optimal decentralization (with yardstick competition amongst local levels) given the necessity to adapt to local/market specificities, while decentralization implies the cost of coordination and market fragmentation.

The question of governmental « commitment » is related to the incomplete contract between citizens (including their organizations) and the State (Tirole, 1994 ; Martimort, 1996). As outlined by Weingast (1995), the problem here is that « a government strong enough to protect property rights and enforce contracts is also strong enough to confiscate the wealth of citizens ». One of the outcomes of this is an adequate (vertical and horizontal) division of power to create checks and balances aimed at avoiding regulatory capture. One of the issues in matters of the organization of markets is the states's sensitivity to the influence of political parties, to lobbies' (lobby) pressures, to biased information provided by interest groups, to the influence of international politics. This is the reason why competition and regulation policies are generally delegated to independent agencies and the surrounding rules interpreted as constitutional enactments, whose modification requires strong majorities. A « committed » government ensures against « regulatory » hold-up (Bös and Lulfesmann, 1996), but may then undermine efficient adaptation when needed (as it is the case of the recent revision at the EU level of antitrust rules applicable to State aids, after the financial crisis). On the contrary, a low level of commitment generates uncertainty over the « rules of the game », and may undermine proper incentives particularly to invest. Thus, the main lesson here is that since the performance of the State as an enforcement institution of market exchanges depends, in turn, on the way in which the power amongst its « constituents » is defined and allocated, it is crucial to understand the institutional trade-offs affecting the emergence, stability and change of constitutions, political parties, federal organization, governments (Levy and Spiller, 1994 ; Spiller and Liao, 2008).

The optimal level of decentralization or of federalism has to do with « vertical » division of powers, and is generally grounded on the idea of subsidiarity according to which the level of « local » governance should be defined by the institution, which minimizes costs of establishing an order. The definition of the appropriate level at which a given governance issue should be tackled depends on a number of dimensions in function of which the relative performance of centralization and decentralization may be measured (Brousseau and Raynaud, 2009). They encompass (i) the ability to meet citizens' preferences ; (ii) the ability to make effective use of dispersed information ; (iii) the ability of the system to evolve through innovation ; (iv) the ability to ensure stability of expectations/reduce legal uncertainty ; (v) the ability to internalize externalities ; (vi) the ability to garner scale and scope economies ; (vii) the ability to restrain the negative effects of rent seeking (cf. in section 2.3.3. the specific application of this to the analysis of conflict resolution). On the one hand, decentralization brings benefits in terms of adaptation and compliance, while on the other, centralization enlarges the scope of markets (hence, a deeper divi-

sion of labor and a higher level of competition), and yields economies of scale in governance (10). In addition, a federalist organization induces a de facto yardstick competition among governance units in public goods provision (Tiebout, 1956), which provides firms and citizens with the means to voice. The main organizational cost of federalism is, however, the increasing costs of coordination among the federalist units. Cooter, 2002 and Inman and Rubinfeld, 1997, for instance, discuss processes to deal with this tradeoff, which was not really addressed in the traditional federalist literature (while it was recognized; *e.g.* Tiebout, 1956; Oates, 1994).

In this respect, in order to limit political bias in the enforcement of antitrust law, the general approach followed by advanced industrialized countries, has been that of delegating to a specialized independent authority and/or to Courts the application of the law (Deporter and Parisi, 2006) and to mix horizontal and vertical division of authority. Both in the US and in Europe competition policy couples Courts' decisions with investigation by specialized agencies, and is increasingly multi-level. This responds not only to a subsidiarity principle, but also to the purpose of avoiding regulatory capture and to promote some degree of regulatory competition among the institutions devoted to competition policy. With respect to the US, the European organization of competition has evolved with the following features (Manganelli, Nicita, Rossi, 2009): a high degree of centralization of law-making, which does not exclude the existence of national laws that can be applied in specific circumstances; a high degree of decentralization of enforcement, mitigated by a strong unifying role played by the European Commission; the adoption of formal rules of coordination meant to smooth the vertical relationships among actors placed at different levels in the system (particularly the Commission and NCAs); a very limited role for formal rules of coordination in the context of horizontal relationships among NCAs and among NCAs and national regulatory authorities; the complementarity between public and private enforcement.

3.4. Formal vs. Informal Rules

The analysis of the trade-off between State and self-regulation (section 3.2.) somehow overlaps with the analysis of the differences between formal or informal ruling. This is due to two joint circumstances. State regulation always

- (10) These tradeoffs are complex as illustrated by the recent European Commission White Paper on Private Enforcement in Antitrust Law, which aims at transplanting the US experience in this respect. The design of deterrence, sanctions and remedies under a fragmented institutional context, when ample room for divergence among the EU Commission, National authorities and Courts exists, remains an essential issue. In particular, the relationship between sanction and remedies, and the question related to whether antitrust sanction should be directly coupled with damage compensation towards victims or totally independent from private enforcement, is under severe discussion (McAfee, Mialon and Mialon, 2008).

entails a public enforcement structure based on formal rules. The superiority of self-regulation over state regulation is generally linked to the same self-enforcing conditions (small communities, repeated interaction, shared information) that characterize the emergence and effectiveness of informal rules. Yet, beliefs, ideology, etc. are meta-rules that might concern very large communities. We focus here on different characterization of formal vs. informal rules than those which are encompassed by the just quoted factors, and which draws from their origin. Whether they are imposed by force or agreed upon, formal rules are linked to the implementation of explicit enforcement mechanisms to guarantee compliance. Such rules correspond to North's approach to institutions as rules of the game (North, 1990). On the contrary, informal rules are equilibrium of a « super-game » – qualified by some as the « game of life »; see Binmore (1994), – by which convergence of behaviors is spontaneously obtained, because each individual behavior is the best reply to the behavior of others. This is the vision which has been proposed, among others, by Aoki (2001) and Greif (2006). Such a contrast among the nature of orders yields specific contrasts in terms of the analysis of their impact and of the processes of evolution.

Informal rules-based institutions constitute a focal point in the social interaction game, while formal rules-based institutions typically rely on an ability to reward or retaliate to impose a collective order. While the literature has originally contrasted formal and informal rules as alternative enforcement devices, recent contributions tend to stress the complementary relationship between the two kinds of institutions, emphasizing the hidden role of informal institutions to explain different evolutionary paths among alternative societies governed by comparable systems of formal rules (Djankov *et al.*, 2002).

From that perspective, informal norms or rules have been defined as implicit social contracts that are enforced through a complex system of sanctions. Even if never consciously designed (Sugden, 1986) they are, nonetheless, applied by community members. Informal norms have the property of being self-enforcing devices applied with very low transaction costs, because they are embedded in social behavior and transferred from one member to another through a mix of cultural heritage, shared values and organized consent (11). The social nature of extra-legal enforcement devices somehow increases the probability of being sanctioned when violating the rules because it is the social network itself that acts both as a way of transmitting information and of enfor-

- (11) In order to appropriately evaluate the role played by informal rules within a given institutional order, a standard approach in the economic analysis of institutions has been that of assuming a stateless society and of analyzing the emergence of endogenous enforcement devices in that setting (Dixit, 2004). In this respect, the focus has been put on the role played, in enhancing cooperation, by social norms and cultural beliefs (Dasgupta, 1989; Gambetta, 1989; Kreps, 1990; Peyton Young, 2007), reciprocity and envy attitudes (Henrich, Boyd, Bowles, Camerer, Gintis, McElreath, and Fehr, 2001; Bowles, 2003).

cing sanctions (12). Thus, in some cases social enforcement through informal rules reduces transaction costs (as monitoring and detection) and increases the probability of being sanctioned (13).

While repeated games models focus on the logic of long-term relationship to explain cooperation in a bilateral framework, recent studies have shown how informal rules rely on network of ties (Greif, 1993, Bernstein, 1992, 2001 ; Casella and Rauch, 2002), through which information on reputation and trust is transmitted to other members of the local group and through which formal or informal sanctions (punishment, stigma, social pressure and so on) are implemented (14).

Focusing on the network of ties surrounding implicit cooperation as a distinguishing feature of informal rules leads to outline the stability of informal systems of rules. Thus, informal rules emerging to solve a problem of coordination may persist over time as equilibria even if the social cost of endogenous enforcement becomes higher than the social benefit of maintaining them. This is due to switching costs for each individual, and to the fact that a general agreement among all individuals complying with a norm to switch at the same time to a new equilibrium is difficult to realize. Resistance to change has then been defined as a distinguishing feature of formal vis-à-vis informal rules. As Bowles and Naidu (2004) outlined, informal rules maintain, with respect to formal ones, a sort of asymmetric time span : a much longer time is needed to create informal rules with respect to that required to destroy or to change the rules when established (15).

- (12) Think of the role of social stigma as a sanction (Kahan and Posner, 1999 ; Funk, 2004 ; Link and Phelan 2001): social stigma acts as an extra legal sanction but also – when observable – providing information on other members of the society and inducing them to adopt a conformist behavior against the deviant.
- (13) The cost of informal orders is, however, that they limit the exchange to the network of ties previously highlighted. They limit, therefore, the division of labor in two ways. First, exchanges must be based on personal relationships along these networks of ties. Second, informal norms limit the complexity of agreements. Highly sophisticated deals and transaction which are out of reach (see Brousseau *et al.*, 2010) are poor protection in cases of complex exchanges.
- (14) An important feature of informal orders is their ability to generate the so-called multi-dimensional enforcement, which means that informal rules may recur to several forms of retaliation or rewards as the network of « local » ties increases. In multilateral setting punishment in one dimension or in one domain could be used to deter cheating in another (Pénard, 2008). This multidimensional structure of informal rules thus configures a « community norm as an equilibrium of linked games » (Aoki, 2001).
- (15) This is the reason why a high correlation between informal rules and early stage of economic development has been outlined by many scholars. As Trebilcock and Leng (2006) recently outlined, with low levels of economic development, informal contract enforcement mechanisms may be reasonably good substitutes for formal contract, obtaining the same enforcement level with much lower transaction costs, « but they become increasingly imperfect substitutes at higher levels of economic development involving large, long-term, highly asset-specific investments or increasingly complex traded goods and services, especially outside repeated exchange relationships ». As market transactions grow in dimension, complexity and trade, informal rules appear to lose their superiority in favor of formal rules.

While formal institutions can be modified at the cost of political bargaining without automatically decreasing their enforcement power, informal ones, because they are coordination equilibria within wide communities submitted to coordination failures, are inclined to resist to external and internal pressure, as an implicit survival strategy, but then they tend to dramatically fall when remarkable shocks occur. The pace of evolution is then characterized by infrequent, but brutal changes (see Brousseau, Garrouste, Raynaud, 2010).

The issue with this disconnection in terms of pace of evolution is that institutional reforms are difficult to manage because formal and informal rules jointly operate at the same time (Lin, 2003 ; North, 2005).

Moreover, since formal institutions are more « malleable » they tend to focus the attention of policy makers and scholars. This « gives us an inadequate and frequently misleading notion about the relationship between formal constraints and performance » (Dixit, 2004). Informal rules are often enforced in the shadow of the law, and informal contracts are « signed » even in institutional context in which Courts act as a last resort option of conflicts resolution. Formal rules and public orderings act as default options in *ex post* bargaining among litigants. When there is a risk of a wrong decision by a third party due to lack of information, parties prefer to avoid going to Court, and rely on private ordering solution. In a context in which the relative efficiency of alternative formal institutions is context dependent, it is complex to analyze institutional performance, and to decide what reforms should be undertaken. This leads to the critiques often being addressed to international organizations such as the World Bank, which attempts to implement formal institutions, because they have proven efficient in other societal contexts.

CONCLUSION: INSTITUTIONAL CHANGE AND ITS GOVERNANCE

The main lesson from this attempt to highlight the lessons to be drawn from NIE in matters regarding the building of market supporting institutions is the « second best » nature of real-world institutions. Institutions are complex in nature and the design of institutions should take into account such complexity when attempting to enhance economic performance. In that perspective, the above described « bricks », allow an analysis of the various fundamental tradeoffs that characterize the design of institutional frameworks. They enable scholars and decision-makers to clarify a number of debates that have to be dealt with when trying to enhance market performance in an economy.

However, additional analyses have to be developed, specifically because the interplay among institutional components and the optimal mixes among institutional tools and principles of institutional design have to be clarified. This calls for the development of more systematic analyses of complementarities among institutional components. In NIE's present state of development, knowledge on the subject is clearly quite rudimentary. This hinders the ability to

conceive the design of institutional systems, since only very partial/rough solutions to identified issues can be proposed, with strong uncertainty about whether they can be implemented and about their actual impact.

More generally, scholars like Aoki, Bowles, Dixit, Greif, Nelson, North, Winter, Weingast, to quote a few of those who have investigated issues related to processes of institutional evolutions, insist on path-dependency in matters of institutional change (see the survey proposed by Kingston and Caballero, 2009 and Brousseau, Garrouste and Raynaud, 2010). This triggers the question of how difficult it is to manage institutional change through reforms, both because some institutional components – like informal institutions – are out of the reformer's control, and because it is complex to coordinate the evolutionary processes of various institutional components. Moreover, individual agents develop initiatives to compensate for the loopholes in institutional frameworks. It is difficult to anticipate them and to control their consequences. The conditions for institutional change and the diversity of institutional evolutions should therefore be investigated more deeply in order to understand the conditions needed for the wished-for evolution to occur, and to learn how to manage reforms.

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