

Chapter 2

‘Reflexive’ Market Regulation:

Cognitive Cooperation in Competitive Information Fora

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I. Introduction: Regulators in a Knowledge Based and Global Economy

A. Renewing the ‘New Economics’ of Regulation

Economists traditionally see regulation as a way to fix ‘market failures’, while it consists more broadly of building the infrastructure and foundations of markets (Joskow 2003, Brousseau and Nicita 2009, Glachant and Perez 2008, Brousseau and Glachant 2011). This interpretation encompasses the establishment of property rights, management of both negative and positive externalities (since complete systems of property rights are out of reach), management of long-term investments in common infrastructures and standards (especially because the lack of shared information on the future may lead to inadequate and under-investment). Upstream, to make choices in these matters, regulation implies the design of legitimate mechanisms to operationalize the notion of ‘public/general’ interest (Brousseau and Glachant 2010). Indeed the simple aggregation of individual preferences in the presence of externalities and public goods, notwithstanding uncertainty, information asymmetries and bounded rationality, does not guarantee the most efficient use of resources or even the targeting of a

satisfactory social outcome. Therefore regulations imply a wide set of interrelated choices that are both highly complex and subject to strong pressures, because all individual interests have incentives to influence these essential collective choices.

The ‘New’ economics of regulation based on incentives, as exemplified by Laffont and Tirole (1993), consists of attempting to obtain the results of competition when competition cannot be implemented. This is a way of dealing with the many ‘regulatory’ failures hindering the efficiency (and even the feasibility) of public attempts to correct ex-ante market failures. The above quoted contribution and others considerably renew the practices of regulatory agencies and the ‘regulation philosophy’ of many governments. As perfect markets, efficient regulations are out of reach. So the challenge is to design the less imperfect regulations, and compare the benefits and costs of regulatory failures with market failures in order to decide implementation, given the cost and the actual impact of regulation (Glachant and Perez 2009). However designing the least biased regulation — i.e. regulations taking into account information asymmetries and their consequences — calls for in-depth knowledge from the regulator, who should anticipate the reactions of regulated firms to the incentive schemes it designs. Moreover, assessing ex-ante the cost and benefits of feasible regulations compared to the absence of regulation, requires extensive knowledge of cost, supply, demand and customers’ preferences. What is feasible, thanks to information revelation mechanisms and learning in a (relatively) stable world, becomes impossible to implement in an innovation-based economy. When the set of available products and services change, when new usage emerges, when disruptive technologies render past investments and capabilities obsolete overnight, when new entrants propose not only new services but new ‘business models’ too, the government and regulator can no

longer calculate the costs and benefits of alternatives. They also cannot access in time the information requested to implement incentives.

Incentive mechanisms are nothing but means of transacting information as a hidden good needed to efficiently perform a given transaction. Their implementability relies on perfect knowledge by the ‘principal’ of all the dimensions of the coordination problem in question when dealing with an ‘agent’. As pointed out by Brousseau and Glachant (2010), when such knowledge is unavailable, a way of managing the regulatory game is to develop a pseudo and competitive market for information in which the various stakeholders are incited to disclose information and share knowledge. This is the logic of the new form of regulation, whereby the regulator in charge of completing and redrafting the ‘rules of the game’ in an industry organizes de facto a forum accessible by all stakeholders. These later compete to influence the regulator, which leads them to disclose information. In competitive markets for goods, the level (and uncertainty) of the quality of goods traded is largely policed by competition. The same can occur in such an ‘information market’ if well designed. Indeed a forum in which posts are public allows any player to challenge the information provided by any stakeholder, which is a good way to encourage truthful revelation. On the one hand, any player wants to make sure that its viewpoint is taken into account when regulation is decided. Here the reputation he develops by bringing useful elements to the table and participating in the implementation of efficient solutions is vital. On the other hand, any of its challengers has incentives to bring counter-evidence if possible, both in order to influence the regulation in the short run and to harm the reputation of its competitor.

B. Sharing Information and Knowledge to Control Collective Inefficiencies and Hazards

In this paper we build on this idea to highlight the potential of this model for learning and knowledge building. We insist that the issue is not just asymmetric distribution of knowledge and information, according to which industry players would be informed and the regulator under-informed and ignorant. In industries characterized both by network effects and high rates of innovation, most players are ignorant. First specialization leads to ignorance about the paths of knowledge development explored by others. Not only do actors in a given technological domain ignore what is invented in the next one, but also innovation providers often ignore how targeted users will invent around their technology. Secondly, in a competitive context, innovators have incentives to mislead other players. They therefore manipulate secrets and disclosure and spread erroneous information. It is worth noting that such strategies inhibit the credibility and quality of the entire set of available information. Thirdly, incomplete information and knowledge prevents elaboration of scenarii of possible evolutions and prediction of what is going to happen. Not only does this lead actors to make the wrong choices, but it can also lead them to brutally change their decisions when new information is revealed, resulting in unpredictable changes in the industry and the technological system. So lack of knowledge appears to be a major issue not only for the regulator, who can hardly understand the system it regulates or foresee its evolution, but also for the players who have difficulties elaborating their strategies.¹

Information and knowledge sharing is thus a good way of facilitating prediction and hence reducing the unpredictability of the system, which makes things easier for all

¹ As pointed out by Brousseau and Pénard (2009) in the case of digital industries, this calls for agile strategies by operators.

stakeholders. Moreover, when multiple equilibria/paths of development are possible, information sharing is a way of building a shared vision. This guarantees neither convergence to a single equilibrium, nor the selection of the most efficient one. It facilitates, however, the compatibility of strategies and may open up space for negotiation and cooperation. The building of ‘common cognitive frameworks’ at least enables players to become conscious of their differences but also of the necessary consistencies in terms of strategy, technological development, marketing practices, etc. All in all, this allows better management of interdependencies.

From a theoretical perspective, this paper lies at the frontier of three literatures. First, it draws from and participates in the development of research on the economics of regulation (Noll 1981). The related literature was totally reshaped by the development of the incentive theory in the 1980s, which had a strong influence on public policies. However, as pointed out above, the liberalization of many industries boosted innovations in all domains, which hampered seriously the ability of public authorities to regulate. Moreover, the entry of many new competitors in formerly regulated industry totally overwhelmed the structure of the problem. Regulation is no longer about monitoring the behavior of a dominant incumbent to limit capture and foster entry. Regulation is increasingly about maintaining the consistency and openness of the industry. Second, analysis of the interplay between levels and modes of governance must also be taken into consideration. Literature on the matter has been evolving from the definition of the optimal devolution of responsibility across levels of governments (i.e. the efficient organization of subsidiarity) to the management of synergies among levels of government (see Brousseau and Raynaud 2009). This later vision corresponds to the idea that levels and modes of governance have alternative properties — beyond

the fitness to the scope of public goods; see Tiebout (1956), Oates (1999 and 2005) — and that this might induce complementarities. In such a spirit, the design of regulatory frameworks in terms of specialization and the mix of public and private regulation may impact on the efficiency of regulation. Third, this paper contributes to research on reflexive governance. New Institutional Economics relies on assumptions about the ‘bounded’ rationality of agents and the radical uncertainty of the world we live in, making the issue of learning and innovating essential. Compared to the assumptions on which neoclassical economics is built, the issue is not only about managing information asymmetries, but about both the quality (of goods and agents) and the distribution of probability with regards future scenarii, and a way of recombining ideas and producing new ones. This presupposes the ability to absorb ideas and so highlight the importance of shared beliefs and mental models (as stressed by Aoki 2010, for instance). In this context, governance mechanisms are not only considered tools for solving coordination issues by designing rules and implementing them. They can also be seen as tools for generating and absorbing innovation (see Nooteboom 2000, Nooteboom *et alii* 2007). This is illustrated, for instance, in the analysis by Brousseau, Dedeurwaerdere, and Siebenhumer (2010) on the generation of knowledge by alternative mechanisms involved in the governance of environmental issues.

We first analyse several examples of policies in which the lack of knowledge has been a central issue. Here the relationship between some specific institutional features and the lack of distribution of knowledge is highlighted. We then explore the logic of a reflexive mode of regulation for addressing the issue. This leads us to focus on the mechanisms to be implemented for favoring information and knowledge sharing.

Conclusions on lessons to be drawn from the regulation of market practices and doctrines for the governance of our societies follow.

II. The Lack of ‘Shared Knowledge’ as Regulatory and Policy Issue

A. Three Lessons from Case Studies on Regulatory Failures

In the following we highlight how and why the lack of ‘shared knowledge’ can become in itself a regulatory issue, and how, in several specific cases, it has been dealt with by the implementation of governance solutions aimed at managing knowledge (or the lack of it). The various examples we quote raise three essential points.

First, lack of transparency of information in a market or in an industry can lead to major market and industry failures because it prevents both industry participants and regulators from developing a true and shared vision of the market or industry, leading to inconsistent decisions that may result in major inefficiencies or even systemic crises. This is well illustrated by the electricity or the financial industries.

Second, one of the usual arguments developed to keep public intervention as light as possible is that government and public agencies are poor providers of solutions for the lack of transparency/knowledge sharing, and that if needed private solutions should emerge. The role played by rating agencies in the 2008–09 financial crisis highlights the fact that market incentives can be biased to incite private information providers to reveal the right information. Moreover, they can also fail to access the relevant source of information since they are not granted audit rights and may be unable to investigate. In addition, as shown by the case of intellectual property rights, the

fragmentation of knowledge can lead to ‘anti-commons’ tragedies in that transaction costs for knowledge — and quite simply the complexity of identifying the relevant information holder — can prevent the efficient distribution of information, leading to market and information failures downstream.

Third, the efficient provision of information and sharing of knowledge depends on adequate public-private partnership. On the one hand the relevant information is in the hands of market players. On the other, only government and public agencies have the means of inciting and forcing actors to reveal/disclose while minimizing manipulation. This is well illustrated by the solutions currently in place to deal with the financial crisis. It is also highlighted in the way regulation for product safety was achieved in the EU. The latter illustrates the power of multilevel (and multimode) principles of governance. The involvement of multiple players and combination of local with generic (and of private with public) regulatory capabilities is a good way to manage learning and adjustment processes; the challenge being, of course, to successfully design mechanisms that allow synergies among levels of governance.

B. Defaults in Knowledge Distribution as Factor of Inefficiencies and Crises

The lack of integration in the regulatory framework in the European energy industry (Hogan 2002, Dubois 2009, Glachant and Lévêque 2009) has resulted in major fragmentation of knowledge that prevents both efficient management of the current network structure at union level and consistent planning of future investments, and so hinders better integration of the industry (ERGEG 2009). Due to the will of Member States to keep control of their energy policy, which is considered essential to sovereignty, the EU has failed to unify the regulatory details of energy networks. Here

the so called ‘comitology’ principle applies due to the extensive reliance on the ‘subsidiarity’ principle, combined with the absence of strong enough normative capability at union level. In practice, therefore, the EU regulation is decided by Member States with parliaments voting on the details of regulation ‘transposed’ from EU directives negotiated and decided upon by all kind of committees. Actual regulations are then implemented by national regulatory authorities in function of national agendas and national regulatory frameworks. This results, in particular, in non-harmonized and non-transparent methodologies for managing congestion in each national space (Glachant, Lévêque and Ranci 2008). The management of congestion, and therefore network and production capacities, then lies in the hands of each national regulatory system. There are no comprehensive common procedures and process for monitoring the operation and the development of European networks.² The so called ‘European network plan’ is merely a listing of the facilities considered as of ‘European interest’ by each national authority (sub-national in Germany and Denmark). Fragmentation of knowledge is, among other factors, a way of protecting established interests thanks to cognitive lock-ins that prevent the recognition of obvious enhancement opportunities. Indeed, short and long term management of capacity could be ‘Europeanized’ if regulators and transporters invested in common tools enabling them to pool information and knowledge.

The current financial crisis is also a significant illustration of the impact of insufficient knowledge sharing and production (Bhatia 2007, Eichengreen 2008). The

² The largest black-out experienced in Europe in November 2006 (15 millions customers disconnected), for instance, revealed that national grid operators interpreted the same generic rules in very different ways. Even within some countries, like Germany, two interdependent levels of grids (like transport and distribution) can be managed independently from each other, preventing any easy recovery from incidents.

financial instruments that have been developed since the early 1980s allow for the pooling of risk and rescheduling of piles of debts, in particular by transforming debts contracts and futures into securities. As highlighted by the bankruptcy of major banks and by the current attempt to reorganize the assets of the banking system, information on the individual risks carried out by initial titles and contracts was lost in the aggregation process of these contracts into sophisticated financial title deeds, so that neither individual nor systemic risks could be identified by operators and regulators. The regulatory framework that resulted from deregulation of the financial industry thus failed to identify the major threat of defaults in conveying information on real risks, resulting in blindness and the collective impossibility of understanding the logic of the dynamics of the system, especially its propensity for catastrophic systemic failure. This led both actors and the regulatory authorities to combine wrong decisions. As pointed out by Aglietta and Scialom (2011), several of the necessary dimensions of financial reforms are therefore oriented toward explaining the knowledge needed to monitor the industry. In particular, standardized methods of risk reporting and of measuring the quality of assets should be developed and generalized as an enabling condition for the regulator to assess risks and control them by implementing the relevant and verifiable set of thresholds needed to perform both micro- and macro-prudential regulations. Also, an interesting dimension of the new regulatory policy is the way it forces major players to provide the regulatory authority with the necessary information to divest them in the case of failure. The logic is to mitigate the moral hazard due to the ‘too big to fail’ principle according to which regulators cannot credibly threaten large banks because of the potential impact of sanctions on the stability of the financial system. By

forcing them to provide receipts on the way to unbundle their assets and activities in the case of failure, the regulator reinforces the credibility of his enforcement means.

C. The Limits of Private Ordering in Ensuring Knowledge Sharing

Fragmentation of knowledge is sometimes considered a second rate issue, since agents can always create ‘private’ solutions for accessing knowledge. Either they do it on a contract basis — relying on the principle of the incentives theory that multiplies the analysis of truth-revealing mechanisms, on the basis of the so-called mechanism design (see Nobel Committee 2007)³ —, or by creating self-governed communities. However this supposes the absence of market failures on the information market as well illustrated by the EU wholesale electricity market. The case of intellectual property (and Internet regulation) shows how the rush toward community-type self regulation, while providing a pragmatic response to attempts to privatize the public domain and essential facilities, leads to a fragmentation of information and information spaces. This latter is misunderstood by many players. A (skilled and benevolent) knowledge aggregator would assess the costs/benefits of self-regulations vs. public regulations; and might discover the possible institutional patches to be implemented to control for an over-fragmentation of the information and knowledge space. As highlighted below, because it concerns the ‘market’ for knowledge, the case of Intellectual Property is also interesting because it is a direct illustration of the inefficiencies raised by a too high fragmentation of the governance of knowledge exchanges, which is the point made in this paper.

³ Nobel Committee (2007); available at www.nobelprize.org/nobel_prizes/economics/laureates/2007/eoadv07.pdf

It is well known that the lack of market transparency is a condition for exercising market power. At least, it allows manipulation of the market by those who are informed, resulting in all kinds of misallocations and inefficiencies (Borenstein 2002, Borenstein and Bushnell 1999, Bushnell 2007, Newbery 1998, Newbery *et alii* 2003). Private provision of information, especially in the absence of regulation, does not systematically allow for the efficient provision of the requested information to clear markets efficiently. This is well illustrated, by the EU electricity market. Up to the present day this market has yet to be organized as a transparent ‘power exchange’. So Over The Counter (OTC) transactions dominate the wholesale trade. This ‘OTC market’ is, however, relied upon to generate ‘prices’ that serve as references for many actors, notably buyers willing to compare their deals with the market price. For a period of time these ‘prices’ were produced by specialized service firms (like Platts). However the production of this information was not regulated and proved to be subject to market manipulation. Basically Platts was collecting information by surveying the largest players on this OTC market. The latter were releasing information on a voluntary basis by communicating ‘relevant OTC prices’ (for different periods of time and horizons). The release of these ‘relevant prices’ was used by dominant players to influence potential buyers. The absence of regulation or monitoring of the provision of information shared by actors on a market typically prevented the players and the regulator from making ‘informed’ choices.

Elkin-Koren (2010) on her side, shows how the open-source and creative commons types of solutions for dealing with the increasing privatization and decentralization of the governance of the information space are far from equivalent to public and generic solutions. In a nutshell, both the evolution of digital industries — in

which it is becoming easier and more efficient to establish property rights and enforce contracts on a decentralized basis (see Hadfield 2000 and Brousseau 2004) — and of property rights policies — pushed by US industry lobbies, the US Government and many governments worldwide, have been considerably reinforcing the rights of holders of intellectual title deeds since the early 1980s; see Lessig, 2004; Jaffe and Lerner, 2004 —, considerably reduced the scope of the ‘public domain’, this space in which knowledge and ideas are freely available to all. This increasing privatization and fragmentation of knowledge results in a ‘tragedy of the anti-commons’; with the costs and complexity of access to knowledge deterring it from being shared as well as recombined in innovation (Heller and Eisenberg 1998, Heller 1998). In response, communities of software developers, artists, or scientists have been developing, especially since the 1990s, models of licensing conditions aimed at mimicking the properties of the public space. ‘Open licenses’ (e.g. ‘open source’ in software, ‘creative commons’ in works of authorship) allow users, inventors and creators to freely access and to invent around the creations of those who decide to release their innovation on the basis of such licenses. As nicely demonstrated by Elkin-Koren (2010), the use of private ordering to govern works of authorship and creation may not necessarily promote access to works. In a many-to-many licensing environment, where every user can design its own license, licenses might create barriers to access. The need to study the scope of restriction of each piece of circulated knowledge/creation to avoid infringement generates uncertainty and may give rise to a problem very similar to the tragedy of the anti-commons. To guarantee access, terms of access must be standardized. So externalities and public good characteristics call for central intervention to mitigate the impact of private ordering on access and use of information goods. This example also

highlights the benefits of homogeneity and publicness of access to information, and the fact that fragmented knowledge — and in this case the lack of understanding by creators and inventors of the logic of the law, notwithstanding the policy makers' lack of knowledge of the complex relationship between the strength of property rights and innovation (Jaffe and Lerner 2004) — can result in regulations underperforming..

D. Articulating Public and Private, Central and Decentralized Ordering

These elements lead to consideration of the interplay between public (and more centralized) and private (and more decentralized) governance solutions as way of dealing with the interplaying issues of governing knowledge exchanges and sharing. In the early days of building the integrated EU market in the 1990s, one of the major challenges faced by Europe was the 'quality of product' regulation. Indeed the production and marketing of most consumer goods was regulated on the basis of long-standing regional or national traditions, resulting in a highly fragmented market with non-tariff barriers that were frequently much higher than tariffs. Indeed they often concerned the processes by which the goods were to be produced, which in practice prevented a supplier from serving several markets simultaneously when contrasting regulations were involved. Beyond conflicts of interest, harmonization of product regulation would have represented a huge cognitive challenge since it would have required understanding of alternative technical solutions, and discussions on the respective benefits and costs of alternative technologies, so as to decide the best regulation or to agree on the implementation of parallel regulations. To a certain extent this is what happened since one, or the pillar, of the internal market construction was the principle of mutual recognition, by which a product regulation accepted in country A is

also accepted in countries B and vice versa. However it was not sufficient for two reasons. First, when regulations are grounded on different logics — e.g. one focusing on the characteristics of products, the other on the features of the related production processes — compliance is not easy to manage both for market players and the enforcers. Second, in the specific case of product safety, it raised the issue of minimal levels of safety and/or the ‘readability’ of the system for consumers; another cognitive issue. To manage this puzzle the solution finally adopted was to switch from regulations focusing on the characteristics of products and processes to a regulation focused on objectives, and to combine this principle with self-regulation. The basic idea behind the first principle was that it would be almost impossible to harmonize standards focusing on products and processes,, which would in any case distort competition in the short run, and hamper innovation in the long run. On the other hand, focusing on targets and minimum thresholds of security was a way of addressing the policy issue, without forcing civil servants and diplomats to understand and negotiate the technology in each industry. To efficiently define the targets in each industry, negotiations involving businesses, consumer associations and relevant branches of the civil services enabled the targets to be established. It was left in the hands of the industry to fix on a voluntary/self-regulation basis the best individual and collective way to reach these targets. Businesses are indeed fully responsible for complying with the targets; while of course they can cooperate to develop technical solutions and self-regulated labels aimed at meeting these targets and even reaching higher levels of performance (see Kessous ****). Thus in the case of product safety regulation, the decentralization of the regulatory capability — in exchange for extended liability — was a way of addressing the knowledge gap encountered by regulators.

III. The logic of Reflexive Regulations

A. Why Public Regulators Might Be Useful Agents for Knowledge Sharing

As often claimed, our economies are characterized by two major trends: an accelerating pace of innovation and increasingly global integration. The combination of the rise of the knowledge based economy and the globalization of markets and industries results in a permanent re-engineering of the framework for collective action. In the specific case of markets this results in continuous innovation in the Schumpeter meaning (new products, processes and forms of organization, etc) combining with the permanent co-invention of new usage between suppliers and users of new technologies (in whatever sense: technical, but also business methods and organization), and the permanent evolution of market structures (due to the entry of new players and the integration of markets). It results in a high level of uncertainty due to the unexpected and unpredicted recombination of existing components and an increase in new and unexpected changes in the structure of central issues. Traditional regulations and regulatory frameworks are designed to cope with stable environments. Whether we are speaking of the traditional command and control approach or more contemporary incentives, the theory and practice aims to optimize the institutional responses to market failures. Regulators rely on the accumulation of experience to design regulations that allow markets to perform or a dominant firm to deliver a satisfactory quality/price mix. In the context of permanent reframing of the issues at stakes, these traditional practices always propose workable solutions too late. . Once learning is put into practice, compromises negotiated and new rules enacted, solutions are no longer relevant since innovation in all domains has transformed the structure of the problem. At the same time there is a strong need for

collective regulations to manage ‘externalities’ and allow a smooth and fair competitive process , in particular by avoiding the endless capture of dominant positions in fixed cost industries.

Reflexive Governance, in this context, is an option and the solution to most regulatory issues because it is based on permanent learning and adaptation to new conditions. Thus it seems to be a set of principles enabling if not optimal, at least workable management of the dialectic between coordination needs (externalities) and competition requests (innovation and challenges of existing rents).

As pointed out in Brousseau and Glachant (2010), the logic of reflexive regulation is to establish regulators as arbiters among knowledge (and interest) holders. Regulation bodies should be considered as an arena where stakeholders have interest in revealing private information/knowledge, because they are involved in a process of calling for new ‘rights’ that matter for competition (rights of access to resources, rights to supply, rights to prices, etc), or at least of reshaping and revising the delimitation of the respective rights of industry participants and market players. By publicly settling disputes (creating precedents), by organizing hearings and public consultations (green books and white papers) to discuss the future of the industry and its regulation, by organizing more informal conferences aiming at establishing consensus and shared vision, the regulator acquires information. As both arbitrator and rule setter he is in position to organize truth revealing mechanisms based on competition among stakeholders. Indeed, it is in the interest of the latter to reveal credible information aimed at convincing the regulator to rule in their favor. Regulators benefits from credible, while biased, information from the other stakeholders, who are all encouraged to challenge the information and knowledge provided by any player in order to confine

its «rights» as much as possible. Lobbying and suiting should not (only) be considered sources of costs and biases; they are also vital channels for conveying the necessary information and relevant knowledge to the regulator (Brosheid and Coen 2007). While this is essential in a moving environment, this point was already made by Stigler who claimed that regulatory bodies tend to be stupid when not dependent on lobbying (Joskow 2005).

In the context of globalization of the economy, and at least of strong regional integration, especially in Europe, the sharing of knowledge should not be limited by national boundaries. In addition to the fact that it allows the alignment of regulatory policies and practices within the scope of the current competition arena, as illustrated by several examples discussed in the previous section, it allows greater efficiency in managing knowledge for regulatory purposes. Indeed, knowledge is of general purpose and many of its uses are unpredictable because knowledge creation draws on replication, recombination and insights based on previous knowledge (Foray 2004). Thus what is invented here can be useful elsewhere, even if not directly. Moreover, knowledge is non-rival in its use. It is therefore optimal to share it at the widest possible scale among regulators and stakeholders. Moreover, strong strategic asymmetries could result from unequal access to the specific knowledge that enables understanding of the way the industry and market performs, of the potential of innovation and of the dynamics at play in the industry. Also if sharing knowledge is not performed among regulators on a transparent basis, private firms will attempt to maximize the exploitation of differential of knowledge development across jurisdictions to generate and exploit their dominant position. Sharing knowledge is thus an antitrust measure per se too

B. Is International Cooperation Among Regulators Relevant?

In such a context, what should be the role of public regulators and how should they deal with this issue of gathering and redistributing knowledge, or at least favoring its sharing? It is not obvious, indeed, that national regulators should be implied in such an activity. First, there is the traditional criticism of wrong incentives of public regulators. Second, there is the criticism of coordination among regulators. The principle of subsidiarity suggests not overloading the other levels of governance with ‘irrelevant’ information and knowledge. Moreover it might play again the logic of independence of the various authorities, which is associated with a well-designed federalist system. Lastly, if knowledge is non-rival, its wide scale diffusion comes at a cost because learning efforts must be performed. Knowledge is difficult and costly to absorb, so can be suboptimal to systematically share it.

Thus, on the one hand, it might be advocated that private pools and private regulators could favor the adequate exchange of information among industry players, since it is not the role of the national regulator to exchange information and develop coordinated regulatory efforts (that, in addition, is not always feasible because national regulators might have conflicting interests if they are required to privilege their domestic ‘national champion’). There is however, a risk of collusion among the powerful industry players that could attempt to rely upon their ability to play simultaneously in several national arenas (especially by ‘logrolling markets’ among dominant competitors)⁴, both to hide some information from national regulators (and

⁴ Logrolling is the trading of favors or quid pro quo, such as vote trading by legislative members to get public action in the interest of each legislative member. In the Public Choice approach it is associated with exchanges of votes among politicians. However it must be interpreted as a more general notion that describes the barter of reciprocal behavior and attitudes

other small competitors and stakeholders), and to mitigate the informational competition imposed by regulators in each of these arenas. Secondly, there is a risk of ‘tragedy of the commons’ on revelation, since providing relevant and exhaustive information to the private informational intermediary is no longer a dominant strategy. Even in clubs, strategic games among competitors can lead to a war of attrition in revelation.

On the other hand, not only can public regulators play a positive role in revelation, but they can also favor the diffusion and absorption of information. Since they are directly interested in enhancing the level of the informational competition by multiplying checks, national regulators have an interest not only in creating an arena favoring contradictory debates, but also in codifying knowledge to favor absorption (see Foray 2004, on codification). The incentives exist within national boundaries, but they also play beyond them. Once codified, knowledge becomes more easily transmissible. The low cost of transfers, to other national regulators and the potential number of checks and potential for amendment they represent, result a high level of possible social benefits.

It is also worth noting that beyond competition among stakeholders to influence the design of the rules of the game, competition among regulators might also exist. On the one hand, regulators have a mutual interest in sharing information and knowledge to better monitor players in their jurisdiction. On the other hand there is also competition to establish precedents and innovative practices among regulators. In common law countries, the careers of judges strongly depend on their ability to establish precedents that are not ruled out by later decisions (Choi and Gulati 2004, Posner 2005). This induces competition very similar to that which takes place among scientists. Leading scientists are those who have successfully proposed theories that are relied upon by

other scientists to explain actual phenomena or make progress in theories, without reversing the theory. To a large extent, the careers of regulators, and the international prestige of regulatory authorities is highly dependent upon their ability to establish principles and practices recognized as ‘right’ by others, and de facto endorsed as precedents. Thus two competitive processes interact to stimulate revealing of information and knowledge: one between stakeholders to influence the rules of the game; one between regulators to influence the doctrine of regulation.

Polycentrism in matters of regulation also play a secondary role. It results in de-facto checks and balances among regulators. When new stakes arise because of innovation or crisis in the performance of the industry, opacity and uncertainty may prevent the regulator from making any appropriate decisions, while he must act in an emergency situation. This could allow some players to benefit from capturing the regulator, since the latter has no time to organize the open fora requested to guarantee truthful revelation. In a multilevel and decentralized context, however, it is highly unlikely that large players succeed in capturing all (national and regional) regulators at the same time. Thus polycentric and multilevel governance, while generating costs and delays, due to redundant efforts, discrepancies in implemented solutions and efforts to harmonize them, result in democratic checks and balances since full capture is impossible.

C. The Regulator’s Weapons

Beyond the organization of open fora, the regulators benefit from three other sets of tools for revealing information.

First, regulators are agenda setters. They decide to open new fora and to reach a conclusion when they consider a debate is over. This ability allows them to control capture of the process by industry players, especially by playing on the timing of information revelation (ERGEG 2007-b and 2007-c). This importance of agenda setting can be illustrated by the ‘open season’ process used by investors in infrastructures to calibrate their investments. In the gas industry, for instance, transporters open their investment projects to pre-booking by users. This allows information revelation by users before deciding the actual capacity to be built. While ‘open season’ can be spontaneously offered by the essential facility investor, it is frequently pushed by regulators to strategically ‘open’ the investment process at a certain time and in a certain manner. Such a process forces users to reveal their actual needs before the end of the season, and is aimed at limiting strategic games between suppliers, especially the creation of bottlenecks resulting in market power and the possibilities of collusion. It must be pointed out, in addition, that when it is relied upon in a regulated industry, the ‘open season’ procedure is a way for the regulator to decentralize the revelation of information... and anticipate potential sources of exercising market power (ERGEG 2007-a, Hautesclocque and Rious 2009).

Second, beyond the establishment of general principles, regulators often have to design rules to implement these principles in practice. This results in the setting up of technical committees no longer comprising lawyers and the CEO, but engineers and most often those with an in-depth knowledge of the field. These technical committees are strong tools of information revelation, since actual implementation constraints are revealing. Moreover engineers are often driven by the logics of technical efficiency and performance of the service, which leave aside strategic considerations.

Third, there is another forum that can help regulators: financial markets. Indeed industry players have an interest in revealing information to financial analysts because they are also competing on financial markets to raise funds (or at least to benefit from good evaluation to avoid strong pressure from stakeholders and even hostile takeovers). Financial analysts are often fully aware of the details of competition and strategic moves in industries and they have incentives — since this is their added value and one essential component of their essential commercial asset — to disclose information (Toledano, 2010).

IV. Organizing Information and Knowledge Sharing

A. The Social Benefits of Making Knowledge Public

Beyond the traditional role devolved to regulators — namely enabling the market to perform despite its failures; and framing the behavior of dominant firms when competition cannot be implemented — regulators play an essential informational role in the context of a knowledge-based and highly competitive economy.

First, it is essential to avoid long-lasting dominance of the market by ‘innovative incumbents’ capable of remaining at the frontier of knowledge both because they capture the flows of revenue needed to invest in R&D, and because their expertise and informational advantage allows them to control the development of the technology. Indeed due to the combination of network effects, the constraints of standardization of interfaces, switching costs of users, critical mass threshold at the implementation stage, privilege access to clients and established quality labels, the presence of dominant players can often result in the development of the technology on which their strategic

advantage is built, and hindering of the chances of development of alternative and disruptive technologies. In such a context, the role of regulator is to place as much knowledge as possible in the public domain so that citizens and users can pressure incumbent firms to effectively provide them with the services and the prices made possible by advances in technology; and potential competitors may access technical and economic information to enable them to better target their innovation, development and marketing efforts.

Second, most industries today are organized on a modular basis and their organization may evolve along very different and contrasting paths. Indeed new principles of coordination among changing components of a complex system are implemented on a decentralized basis. Given initial endowment and the process of transmission, very different paths of systemic evolution can be followed, resulting in contrasting structures on the supply side and in marketing practices and technologies. The resulting uncertainty matters because when it is too high, investment and innovation efforts may be hindered. On the other hand, sharing information and knowledge on the evolution of the industry, its technologies and markets, as well as its business models, enable the framing of strategies secure long- term decisions. Two mechanisms are at play. First, common discoveries of mutually beneficial solutions might result from collaboration in solving issues. This might result in the building of common interests when developing specific solutions. Second, the exchange of ‘evolving and clarifying forecasts’ — that is expectations becoming increasingly specific with the development of knowledge and the shortening delay to the deadline — about needs, capacities and technologies can result in the progressive building of a

shared vision of the future, which is partly self-fulfilling since it is implemented by coordinated development and investments.

A third factor making it worthwhile to share information and knowledge is the need to prevent systemic crises that might result in the collapse of the regulated system (Glachant, Lévêque and Ranci 2008). Information sharing plays a role in ‘mutual insurance’. In the case of energy networks, for instance, and especially electricity networks, knowing the level and evolution of the aggregated available capacity of reservoirs and storage capabilities, of pipes and grids at different time scales, decreases the risks of wrong decision making by network operators. Catastrophic changes can even be better prevented if, in addition, knowledge on the micro-structure of the system is permanently updated by exchanging of information on the daily, or even hourly, decisions for injecting/withdrawing and balancing flow. The same holds true for avoiding crises and disruptions in financial markets, transportation networks and information infrastructures. In every case, transparency that can be ex-ante organized by the regulator allow more decentralized management ex-post of the resources that can flow more freely and on a more voluntarily basis across actors on the basis of short-term markets and spot transactions, instead of being frozen by wary, blind and risk-adverse actors.

B. Regulating and Promoting the Exchange of Information

Regulators therefore appear to be market intermediaries (or platforms in the logic of two-sided markets) that provide (among other things) a common information space for the sharing of knowledge and of ‘perspectives’ to players, but also to other stakeholders in the industry. Their role in standardizing, publicizing, and controlling the agenda of

information revelation and knowledge sharing at industry level is therefore essential. In concrete terms, their role of ‘information platforms’ between competitors, between the supply and demand, between the industry, consumers and citizens, calls for the opening of information seasons (like ‘gas open season’ or ‘electricity rolling seven years statement’) that define the communication rules (e.g. setting appropriate rules for the disclosure of identified commercially sensitive and non-sensitive data, establishing codes of conduct for the information sharing for ‘market consequential events’ such as plant failures, grid repairs, reservoir closures, etc), formats of data exchange, principles of data release and access to data, formatting of information systems (e.g. smart metering for retail billing and settlement).

In a context of multilevel governance linked to globalization of the economy and the processes of regional integration, two types of additional tools appear vital for enhancing the quality of information sharing: the sharing of knowledge and the development of common doctrines. Regulation is indeed no longer managed on a national (or infra-national) basis. , The increasing interdependencies among industries and markets and the actual scale of operation of industry players, call for the emergence of international (at least regional) entities and for cooperation among national regulators.

As is true at the national level, information sharing can be internationally improved by transparent and harmonized ‘editing rules’ that enable the systemic storage and cost-free retrieval of information. The Internet provides an infrastructure for the building of smart, easily updatable and ubiquitously accessible information repositories. The Wikipedia model, in particular, can be relied upon to develop a knowledge-sharing platform that can be shared by all industry stakeholders under the supervision of

regulators. The latter are indeed in a position to initiate the emergence of such platforms because they need them to enhance their regulatory capabilities — firstly by ‘mapping’ of the existing situation; secondly, on the basis of benchmarking and the revelation of best practices — and because their central and neutral position on each national market ensures they detain part of the relevant information and knowledge. Such platforms would be open to (controlled) contributions by the various stakeholders (i.e. the regulators themselves, state regional authorities like the European Commission, industry, consumer and citizen associations etc) and evolve according to their needs. Such ‘value adding’ registrars of knowledge (and information) would allow the accumulation of knowledge, systematic challenging the information posted and all kinds of assessment and benchmarking exercises. Hence they can become tools for maximizing spillovers in the progress of knowledge on the complex social technology needed to build and regulate complex markets, with probable strong cross-industry and cross-jurisdiction mutual enrichment.

The second mechanisms by which information sharing and knowledge building can be sustained is the organization of ‘fora of regulatory fora’ in which stakeholders and national regulatory authorities voluntarily contribute to produce, shared vision, harmonization of practices, and (non-binding) common rules and principles (see Eberlein 2005, Eberlein and Grande 2005, Eberlein and Newman 2008,⁵ Coen and Thatcher 2008-a and 2008-b). This is clearly one of the process by which the European Commission can influence regulatory practices. In domains in which the Commission does not have explicit regulatory powers, these fora can be quite informal, such as the Florence Forum for electricity or the Madrid forum for gas. Also, national competition

⁵ Available at: <http://www18.georgetown.edu/data/people/aln24/publication-25787.pdf>

authorities are sharing knowledge among themselves, and also with the European Commission competition authority (DG COMP) through an established European network. Intergovernmental entities are more formal when national governments devolve authority to organizations like EU regulatory agencies. Since 1975, such agencies — e.g. the European Railway Agency, the Agency for the Cooperation of Energy Regulators — have been set up in successive waves in order to meet specific needs on a case-by-case basis. These are independent bodies with their own legal status, and are funded by the EU budget (and in some cases directly benefit from specific fees or payments). They have been proving their relevancy in field of shared competences when strong cooperation between the EU and Member States is needed (whereas pooling authority on the issue within the Commission would be resisted). These agencies may be responsible for implementing community standards, or providing direct assistance to the Commission and Member States, in the form of technical or scientific opinions and/or inspection reports, or creating networks of national competent authorities and organizing cooperation between them, with a view to gathering, exchanging and comparing information and good practices, or even for market monitoring (when specified in the basic statutes). However these bodies benefit from limited delegation of authority because of the need to comply with the EU institutional balance of powers; in a context where both Member States and European Commission are frequently combating to keep their established domains of authority . This is why the essential power of EU Agencies is based on their ability to organize information revelation, and from the fairness of their procedures for reaching consensus on best practices.

V. Conclusion: Regulatory Practices and Reflexive Governance

As pointed out in this paper, a reflexive approach to regulation is the only way to elaborate market regulations for accompanying the permanent innovations of our knowledge-based and open access society. Reflexive principles allow taking into consideration the actual interests of all stakeholders in the light of the progresses in the understanding of issues and their technical/organizational/behavioral solutions. The resulting ‘evolving-consensus-based soft-regulation’ relies on the permanent renegotiation of compromises in the light of an evolving understanding of the issues at stake, partly due to the evolving nature of these issues due to the impact of knowledge of the technology, strategies and the mindsets of actors. This results in markets that are more ‘resistant’ to failure thanks to better-designed regulations, to governance mechanisms aimed at dealing with them and to the improved capabilities of actors to manage them. Common understanding of the nature of the problems and the state of the system allows benefiting from the speed of decentralized adaptation, while avoiding catastrophic evolutions resulting from myopic and non-cooperative strategies. Moreover, in a permanently evolving environment, the on-going assessment and challenge of existing regulatory principles allow them to evolve and be renegotiated (which increases both their efficiency and legitimacy).

Our understanding of the theory of reflexive governance identifies four degrees of reflexiveness. Firstly there is the idea that contractual compromises can be a means of taking into consideration the preference needs and know-how of other parties involved in a process of coordination/cooperation. Then comes understanding of the preferences, capabilities and beliefs of all the parties interrelated by explicit or implicit

relationships (externalities) in an identified system. Thirdly, agents involved in an interactive system might share their experience and develop a common vision as a result of collective action. This shared experience results from jointly-organized efforts in testing, assessing and elaborating. Lastly, some processes oriented towards the cooperative management of problem setting and solving may result in the development of a common cognitive framework, which is then ‘internalized’ by all involved parties.

Our New Institutional contribution to the analysis of reflexive governance applies to mechanisms that are primarily concerned by the three first levels, particularly the third. Indeed, NIE per se at its current stage of development has little to say about individual cognitive frameworks (see Introduction). At the same time, our approach is compatible with the fourth level of ‘reflexive governance’ as analyzed by the editors of this book. In post-modern societies, society is so fragmented that the development of ‘common cognitive frameworks’ may prove less feasible than the (partial) sharing of information to maintain awareness of the parallel evolution of problems (and their vision) encountered by various communities. Soft and evolving regulations, coupled with mechanisms of information sharing and cooperative knowledge building that characterize today’s regulatory arena, appear to prefigure the ruling methodology that will prevail in post modern societies.

List of References

- Aglietta M and Scialom L (2011) ‘For a Renewal of Financial Regulation’, in E Brousseau and J-M Glachant (eds.), *Manufacturing Markets: Legal, Political and Economic Dynamics* (Cambridge, Cambridge University Press) (forthcoming)
- Aoki, M (2010) *Corporations in Evolving Diversity: Cognition, Governance, and Institutions* (Oxford, Oxford University Press).
- Bhatia AV (2007) ‘New Landscape, New Challenges: Structural Change and Regulation in the U.S. Financial Sector’ *International Monetary Fund*, WP/07/195.
- Borenstein (2002) ‘The Troubles with Electricity Markets: Understanding the California’s Restructuring Disaster’, 16 *Journal of Economic Perspectives* 191–212.
- Borenstein and Bushnell (1999) ‘An Empirical Analysis of the Potential for Market Power in California’s Energy Industry’ 47(3) *Journal of Industrial Economics* 285–323.
- Broscheid A and Coen D (2007) ‘Lobbying activity and fora creation in the EU: empirically exploring the nature of the policy good’, 14(3) *Journal of European Public Policy* 346–365.
- Brousseau E (2004) ‘Property Rights on the Internet: Is a Specific Institutional Frame Needed?’ 13(5) *Economics of Innovation and New Technology* 489–507.
- Brousseau E, Dedeurwaerdere T and Siebenhüner B (2010) ‘Knowledge Matters: Institutional Frameworks to Govern the Provision of Global Public Goods’, in E Brousseau, T Dedeurwaerdere and B Siebenhüner B (eds), *Reflexive Governance and Global Public Goods* (Cambridge, Mass, MIT Press) (forthcoming).

Brousseau E and Glachant J-M (2010) ‘Regulating Networks in the ‘New Economy’: Organizing Competition to Share Information and Knowledge’, in E Brousseau, M Marzouki and C Méadel (eds), *Governance, Regulations, Powers on the Internet* (Cambridge, Cambridge University Press) (forthcoming).

Brousseau E and Glachant J-M (eds) (2011) *Manufacturing Markets: legal, political and economic dynamics* (Cambridge, Cambridge University Press) (forthcoming).

Brousseau E and Nicita A (2009) ‘Markets as Institutional Frames: New Institutional Economics Meets Industrial Organizations’ *Revue d’Economie Industrielle* (forthcoming)

Brousseau E and Pénard, T (2009) ‘Assembling Platforms: Strategy and Competition, in G Madden and R Cooper (eds), *The Economics of Digital Markets* (Cheltenham (UK) and Northampton (USA, MA) Edward Elgar Publishing, 13–27)

Brousseau E, and Raynaud E (2009) ‘Centralizing/Decentralizing Governance: What are the trade-offs?’ Working paper, (Paris, EconomiX, University of Paris Ouest).

Bushnell (2007) ‘Oligopoly Equilibria in Electricity Contract Markets’ 32 *Journal of Regulatory Economics* 225–245.

Choi SC, Gulati, MG (2004) ‘Choosing the Next Supreme Court Justice: An Empirical Ranking of Judge Performance’, *S. CAL. L. REV.* 78-23.

Coen D and Thatcher M (2008-a) ‘Network Governance and Multi-level Delegation: European Networks of Regulatory Agencies’ 28(1) *Journal of Public Policy* . 49–71.

——(2008-b) ‘Reshaping European Regulatory Space: An Evolutionary Analysis’,
31(5) *West European Politics*.

Dubois (2009) ‘Adaptability of Competitive Electricity Reforms: a Modular Analysis’,
Energy Policy (forthcoming).

Eberlein B (2005) ‘Regulation by Co-operation: The Third Way in Making Rules for
the Internal Energy Market’, in PD Cameron (ed.), *Legal Aspects of EU Energy
Regulation* (Oxford, Oxford University Press, 59–88).

Eberlein B and Grande E (2005) ‘Beyond delegation: transnational regulatory regimes
and the EU regulatory state’ 12(1) (February) *Journal of European Public Policy*
89–112.

Eberlein B and Newman A (2008) ‘Escaping the International Governance Dilemma?
Incorporated Transgovernmental Networks in the European Union’ 21(1)
(January) *Governance: An International Journal of Policy, Administration, and
Institutions* 25–52. Available at: [http://www18.georgetown.edu/data/people/
aln24/publication-25787.pdf](http://www18.georgetown.edu/data/people/aln24/publication-25787.pdf)

Eichengreen B (2008) ‘Dix questions à propos de la crise des prêts subprime’ Banque
de France, 11 *Revue de la stabilité financière* (Numéro spécial liquidité -
Février 2008).

Elkin-Koren N (2010) ‘Governing Access to Users-Generated-Content: The Changing
Nature of Private Ordering in Digital Networks’, in E Brousseau, M Marzouki .
and C Méadel (eds), *Governance, Regulations, Powers on the Internet*
(Cambridge, Cambridge University Press) (forthcoming).

ERGEG (2007-a) ‘Guidelines for Good Practice on Open Season Procedures
(GGPOS)’, 21 May.

- (2007-b) ‘Conclusion Paper, Cross Border Framework for Electricity Transmission Network Infrastructure’, Ref: E07-ETN-01-03.
- (2007-c) ‘Treatment of New Infrastructure: European Regulators’ Experience with Art. 22 exemptions of Directive 2003/55/EC, Ref: E07-TNI-01-04.
- (2009) ‘ERGEG recommendations on the 10-year gas network development plan: An ERGEG Public Consultation Paper’, Ref: E08-GNM-04-03, 11 March.
- Foray D (2004) *The Economics of Knowledge* (Cambridge, MA, MIT Press).
- Glachant J-M (2002) ‘Why Regulate Deregulated Network Industries?’ 3 *Journal of Network Industries* 297–311
- (2009) ‘Creating Institutional Foundations which make Retail Markets work: The Case of the Electrical Industry’ in J Groenewegen and R Kunneke (eds), *Network Industry Competitive Arrangements* (Cheltenham (UK) and Northampton (USA, MA), Edward Elgar Publishing)
- Glachant J-M and Finon, D (eds) (2010) ‘Large Scale Wind Power in Electricity Market’ (Special issue) *Energy Policy* (forthcoming)
- Glachant, J-M and Lévêque, F (2009) *European Union Electricity Internal Market: towards an Achievement?* (Cheltenham (UK) and Northampton (USA, MA), Edward Elgar Publishing)
- Glachant J-M and Perez Y (2008) ‘Institutional Economics and Network Industry Deregulation Policy’, in E Brousseau and J-M Glachant (eds), *New Institutional Economics. A Guidebook* (Cambridge, University Press).
- (2009) ‘The Achievement of Electricity Competitive Reforms: a Governance Structure Problem?’ in C Ménard and M Ghertman (eds), *Regulation,*

- Deregulation, Reregulation, Institutional Perspective* (Cheltenham (UK) and Northampton (USA, MA), Edward Elgar Publishing)
- Glachant, J-M, Lévêque F and Ranci P (2008) Some guideposts on the road to formulating a coherent policy on EU energy security of supply, 21(10) *Electricity Journal* 1040–61, December.
- Hadfield G (2000) ‘Privatizing Commercial Law: Lessons from the Middle and the Digital Ages’ Working Paper 195, JM Olin program in *Law & Economics*, (Stanford, CA, Stanford Law School).
- Hautecloucq (de) A and Rious V (2009) ‘Reconsidering the Regulation of Merchant Transmission Investment in the Light of the Third Package: The role of Dominant Generators’ *EUI Working Paper* RSCAS 2009/59.
- Heller M A (1998) ‘The Tragedy of the Anticommons. Property in the Transition from Marx to Markets’ 111(3) *Harvard Law Review* 622–688.
- Heller M and Eisenberg R (1998) ‘Can Patents Deter Innovation?’, Anticommons in Biomedical Research, 280 *Science* 698–701.
- Hogan (2002) ‘Electricity Market Restructuring: Reforms of Reforms’, 21(1) *Journal of Regulatory Economics* 103-132.
- Jaffe A B and Lerner J (2004) *Innovation and its Discontents: How our Broken Patent System is Endangering Innovation and Progress, and What to do About it* (Princeton, Princeton University Press)
- Joskow P (2003) ‘Electricity Sector Restructuring And Competition: Lessons Learned’, *WP CEEPR* 03-014 August.
- Joskow P (2005) ‘Regulation of Natural Monopolies’, *WP CEEPR* 05-008, April .

- Laffont J.-J, Tirole J (1993) *A Theory of Incentives in Procurement and Regulation* (Cambridge, Mass, Mit Press)
- Lessig L (2004) *Free Culture: How Big Media Uses Technology and the Law to Lock Down Culture and Control Creativity* (New York, The Penguin Press).
- Newbery D (1998) ‘Competition, Contracts and Entry in the Electricity Spot Market’ 29 *RAND Journal of Economics* 726–749.
- Newbery D, Van Damme V, Von der Fehr (2003) ‘Benelux Market Integration: Market Power Concerns’, *Report of the Market Surveillance Committee*, Dutch Competition Authorities.
- Nobel Committee (2007) ‘Mechanism Design Theory’, Mimeo, Scientific background on the Sveriges Riksbank Prize in *Economic Sciences* in Memory of Alfred Nobel 2007, Stockholm ;
- Noll R. (1981) ‘Regulation in Theory and Practice: An Overview’ in G Fromm (ed.), *Studies in Public Regulation* (Cambridge, Mass, The MIT Press).
- Nooteboom B (2000) ‘Learning by interaction, absorptive capacity, cognitive distance and governance’ 4 *Journal of Management and Governance* 69–92.
- Nooteboom B, Van Haverbeke WPM, Duijsters GM, Gilsing VA and Oord A (2007) ‘Optimal cognitive distance and absorptive capacity’, 36 *Research Policy* 1016–1034.
- Oates WE (1999) ‘An Essay on Fiscal Federalism’ 37(3) *Journal of Economic Literature* 1120–1149.
- (2005) ‘Toward a Second-Generation Theory of Fiscal Federalism’, 12 *International Tax and Public Finance* 349–373.
- Posner RA (2005) ‘Judicial Behavior and Performance an Economic Approach’,

32 *Florida State University Law Review* 1259–1279.

Tiebout C (1956) ‘A Pure Theory of Local Government Expenditure’, *Journal of Political Economy*, LXIV, 416–24.

Toledano J (2010) ‘Regulation: enduring questions and some lessons from practice’ , in MA Crew Kleindorfer and PR Heightening (eds), *Competition in the Postal and Delivery Sector, Advances in Regulatory Economics Serie* (Cheltenham, Edward Elgar Publishing).