

# **REFGOV**

***Reflexive Governance in the Public Interest***

***Institutional Frames for Markets***

**NETWORK INDUSTRY REFORM IN AN INSTITUTIONAL REFLEXIVE FRAME:**

**AN OVERVIEW**

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### **Network industry reform in an institutional reflexive frame: an overview**

The reform of network industries represents one of the great structural transformations of the economy in the past twenty years. Vast in its scope (covering aviation, telecom, gas, electricity, railways, postal services, etc.), the reform of network industries is also exemplary in its economic content (Newbery, 2000).

Previously, the unique characteristics of network industries appeared to set them apart from most other industries, deemed “competitive” (Kahn, 1970–71). These network industries notably feature: significant economies of scale or scope (extending to natural monopolies); far-reaching externalities (positive or negative) in production or consumption; and extensive vertical and horizontal integration (either under a single corporate umbrella or in the form of long-term *ad hoc* contracts). Within this very specific framework, the successful introduction of competitive mechanisms, substituting for administered regulation or internal corporate management hierarchies, along with the creation of open markets either up- or downstream of the formerly integrated networks, created disruptions and innovations in equal measure (Joskow and Schmalensee, 1983; Baumol and Sidak, 1994).

Neo-institutional economics suggests an analytical framework that differs from, and complements, standard economic theory (Brousseau and Glachant, 2002). First, new institutional economics construes market equilibria and prices as the result of an “institutional process for framing transactions” and fashions its analysis from the notions of *transaction costs* and *property rights*. The operation of the price mechanism

is neither costless, nor instantaneous, so economic agents cannot benefit from its effects without becoming actively involved in the economic relationships that generate these market prices. Rather than rely on the “wisdom” of the economic calculus of government bureaucracies, the pioneers of new institutional economics proposed creating markets by dismantling the public ownership of network industries [auctioning off property rights for radio bandwidth (Coase, 1959)] or replacing public agencies overseeing network monopolies with competitive mechanisms for allocating concessions [franchise bidding (Demsetz, 1969)]. However, competitive mechanisms and market institutions are not the only efficient method for framing transactions. Indeed, a whole spectrum of effective alternative arrangements exist, including private agreements and public regulation (Williamson, 1975 & 1985; Coase, 1960 & 1988). The efficiency of any conceivable arrangement in network industries should thus not be seen in absolute terms. It remains conditional, and notably depends on the characteristics of the transactions in question.

The competitive reform of network industries has recently experienced a surge of expansion worldwide, with over 200 new instances of sectorial deregulation between 1990 and 2005 (World Bank, 2006). Nonetheless, subsequent to the California electricity crisis (2000–2001), there has been a burgeoning dissatisfaction with regard to the limitations, and in some cases failures,<sup>1</sup> of these new ways of framing network industries (Kessides, 2004). We are witnessing a slowdown or, in some cases, an blocking of the reforms, as if the progression of competition policy in network industries had a cyclical component. This brings us to a deeper reflection on the nature of these processes.

The purpose of this research report is to propose tools for analyzing in an institutional frame the process of the competitive transformation of network industries and to shed light on the difficulties encountered to build the reflexive governance such a transformation really asks for. This report is divided into six sections. In Section 1 we present the first neo-institutional analyses that shed some light on the reform of network

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<sup>1</sup> Like: financial crisis, corporate scandals (like ENRON), stock market collapses, California electricity crisis, numerous electricity blackouts around the world, and severe alerts coming from antitrust authorities (including one from the European Union).

industries and emphasized their complementarity to standard microeconomic theory of networks. While standard microeconomic theory delves into the logical underpinnings of rational price setting in networks, neo-institutional economics focusses on the design of an appropriate institutional framework. In Section 2, we extend this basis of institutional analysis by distinguishing several dimensions of competitive network reform policy. A first, key institutional dimension is the attractiveness of the reforms to the various economic and political stakeholders. A second vital dimension is the institutional feasibility of the competitive reforms. This is particularly relevant when these reforms require radical surgery to the industry and widespread and recurring redefinitions of property rights throughout the competitive expansion of the reform process. In Section 3, we demonstrate that the launch of a competitive reform will not result in a credible industrial structure without the creation of a governance structure adapted to the new hybrid nature of the transactions. Thus, “introduce competition only where this is readily feasible” is not a simple recipe for successful competitive reform. The borders between regulated and competitive activities are not always natural: They may originate from contingent decisions reflecting the “modular” nature of network industries. In this unique context, the sequential character of decisions and interaction effects make it difficult, *ex ante*, to define a governance structure that is truly “adept” at providing prolonged guidance to a lengthy process of competitive reform. Thus, Section 4 will examine how to build governance structures *ex ante* that will remain adaptable *ex post* to allow imperfections and failures in the competitive reforms to be corrected. Theoretically and empirically, the enormous requirement for successive “coordinated adaptations” of the competitive reforms of network industries creates a recurring problem of multilateral bargaining to periodically redefine existing property rights. Thus, there exist “veto players” in all institutional and industrial arrangements for piloting these competitive reforms. These veto players are agents with veto power over any subsequent changes to the reforms. Subsequently, Section 5 reinserts the long-term evolution of competitive reforms into the framework of structural constraints of an institutional nature. Institutional environments, finally, comprise the ultimate constraints—with varying degrees of rigidity—to the long-term adaptation of the competitive reforms of network industries. It would be very bold to assume ultimate

convergence to similar models of competitive functioning, since the reforms are starting from such widely divergent institutional environments.

### ***I - Two theoretical paths: rational price setting vs. adapted institutional framework***

Since the middle of the nineteenth century, economic theory has had a particular interest in the problems specific to industries with network monopolies. However, while microeconomics has extended the rationale for, and the foundations of, rational price setting, neo-institutional economics has revealed the centrality of the design of an adapted institutional framework for managing the competitive functioning of network industries. We here present these initial neo-institutional analyses and emphasize their complementarity to the standard microeconomic theory of networks.

#### ***I-1 The theoretical path of rational price setting***

For over a century, economic analysis persisted in defining the principal economic feature of network industries as being a “natural monopoly” and devised a rational solution in the form of optimal pricing of network use. The first microeconomic foundations for this theory of rational pricing appeared in France in the nineteenth century in the works of engineers building bridges and railways (cf. Jules Dupuit and Alfred Picard). This work was subsequently taken up at Cambridge by Alfred Marshall and Arthur Pigou (1920), then in the United States.<sup>2</sup> During the 1930s, a second wave of theoretical renewal of this rational price setting was founded on the general equilibrium systems of Walras and Pareto. And, driven by the work of economists like Harold Hotelling (1938), Maurice Allais (1943) and Abba Lerner (1944), these theoretical developments culminated in the famous recommendation that prices be set at marginal

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<sup>2</sup> Thus, as of 1904 John Bates Clark maintained that owners of infrastructure regulated by the public authority *de facto* forfeit the exclusivity component of their property rights and are obligated to act as employees of their clients!

cost ( $p = mc$ ). Throughout the 1960s and 1970s, at least two generations of economists learned this from the textbooks of Paul Samuelson (1979). Finally, more recently a third generation has emerged, notably represented by Jean-Jacques Laffont and Jean Tirole (1993, 2000), who have redefined the economic foundations of rational price setting on the basis of incentive theory. Concurrently, in Great Britain Stephen Littlechild (1983) introduced the concept of a price cap as an innovation applicable to the deregulation of telecoms. Shortly thereafter, he became the first regulator in the world to implement this innovation in the electrical industry.

Thus, for over one hundred years, from the middle of the nineteenth century until the 1970s, a broad theoretical consensus bound rational price setting in infrastructure monopolies to the very core of microeconomic analysis of the functioning of markets. This standard approach to regulating network industries was not subject to significant theoretical challenges.<sup>3</sup> At Cambridge, after introducing the notion of externalities in 1920, Arthur Pigou could have pursued the matter of institutional innovation, but neglected to do so. All of the solutions he proposes (taxes, standards, public ownership) derive from the only institutional innovation he retained from the war effort of the First World War: The government is an alternative to the market in the “voluntary” administration of economic resources. In practice, externalities can be internalized in the price system by a tax, which later came to be called a “Pigouvian tax.” Pigou does not devote any attention to alternative institutional forms, which could provide different solutions to various forms of market failure—of which he deems natural monopoly and externalities to be the most significant. The “Welfare Economics” he founded at the beginning of the twentieth century are thus nothing other than the economics of the “Welfare State.”

However, starting in the 1930s, and on several occasions over some forty years, a handful of economists (later designated “institutionalists”) contested the conclusions and/or premises of the standard reasoning with respect to regulated network industries.

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<sup>3</sup> That is, aside from those brought during two phases of internal renewal of the microeconomic theory of markets: first by walras-pareto general equilibrium, which was more far-reaching than the Cambridge partial equilibrium of Marshall and Pigou, then by the “new microeconomics” of market imperfections that successfully laid siege to Arrow-Debreu general equilibrium.

To these “institutionalists,” the rules of the game that intervene, or that should intervene, in the normal functioning of regulated network industries are much more varied than only rational price setting policy. Also, the economic nature of these rules of the game often differs from the simple promulgation of a price.

### *I-2 The theoretical path of the adapted institutional framework*

In 1937, the most famous “institutionalist” economist, Ronald Coase, questioned that prices are freely delivered to economic agents and, instead, advanced the hypothesis that prices are generated from market activity. Thus, these prices themselves had a cost: the cost of producing and disseminating market prices. Moreover, these market prices can only play a limited role in the coordination of behaviour within a firm in which “fiat” authority—an alternative mode of coordination—prevails. Ten years later, when the most distinguished economists in Great Britain recommended nationalizing all monopolies, claiming they could easily manage them with marginal pricing, it is no surprise that Ronald Coase (1946) publicly expressed his dissent. In the language that came to be his trademark, we can say that Coase did not believe it possible to use “blackboard economics” to create an optimal pricing system allowing all nationalized firms to be managed efficiently while rendering useless any recourse to real markets for framing real transactions.

Approximately one decade later, Coase (1959) contributed another family of analytical tools to his deconstruction-reconstruction approach to the regulated market. It is not, he claimed of radio frequencies, the fact that they are by nature public goods that makes it so difficult to allocate them by an ordinary market for means of production. It is rather because the government regulation that was in effect did not seek to create the property rights required for the normal functioning of a normal market. Public institutions were intended to regulate this industry in order to correct market failure. In fact, it was these institutional agents that lay at the root of shortcomings in the property rights system required for the good functioning of a market.

In a similar vein, Coase (1960) contested another pillar of the welfare microeconomics of Pigou and Samuelson. Granted, the existence of negative externalities in production or consumption gives rise to failure in the system of market prices. However, to Coase (1974), this does not necessarily imply that government intervention is preferable to private bartering for managing externalities. In particular, in the absence of any private bartering, how would the public authority be able to effectively compare the real economic value of various benefits and damages caused by externalities with the probable economic value of the various alternative remedies<sup>4</sup> proposed?

This contestation of the traditional institutional framework of government regulation reached a zenith toward the end of the 1960s, following in the wake of Coase (1960), with the proposal advanced by Harold Demsetz (1968) to eliminate the agencies regulating network industries and replace them with a competitive mechanism for attributing licences for operating network monopolies. The rationale is striking in its simplicity. The best alternative to competition “on” the market is competition “for” the market. If the core problem of network markets is truly the monopoly pricing of their services, then why rely on a government bureaucracy to tackle this issue in a clumsy and suspect fashion? There exist dynamic competitive auction methods to identify the lowest responsible bidder and provide the service at the best possible price.<sup>5</sup>

Then, the middle of the 1970s saw the arrival of a second wave of institutional analysis (notably Victor Goldberg, 1976 and Oliver Williamson, 1976), which both completed and shed some perspective on the first wave of institutional contestation. First, these two authors underlined that some of the critical dimensions of the services rendered by network industries may go beyond only price setting. Other useful characteristics may be as important as the price, such as the quality of service, the localization of the service, its temporal-seasonal profile, the range and scope of options and potential for individualization, reactions to unforeseen randomness, etc.

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<sup>4</sup> Indemnification, buyback, unilateral protection, technological innovation, etc.

<sup>5</sup> Several years later, judge Posner would find a universal method for deregulating all network industries.



In these cases, *ex ante* price setting does not eliminate the need for complex contracting *ex ante* and providing for appropriate controls *ex post*. In many other, non monopoly, industries, the interplay of competition between producers and pressure from consumers provides the context in which transactions occur. However, in network industries, how could a periodic opening to competition, in the form of an *ex ante* competition on prices, substitute *ex post* for competition between producers and pressure from consumers? Outside of the mechanisms of competitive auctions, can consumers really contract *ex ante* with potential producers for non-price characteristics of future services, and then control and enforce compliance with these contractual service commitments *ex post*? We can well believe that some very large consumers may own both the means to contract *ex ante* and the control and reaction structures *ex post*. However, it is more realistic to assume that, for most consumers, this type of bilateral structure governing their transactions with network industries has little chance of spontaneously emerging from the free interplay of market forces. In this case, the rationale of transactions governance suggests a multilateral type of structure, in which large groups of consumers are represented by their “contracting agents.” This amounts to creating collective contracting agencies for services rendered by network industries. We are lead to the conclusion that the construction of a competitive mechanism *ex ante* is no substitute for the usefulness of an *ex post* regulatory structure with complex service contracts and in which the “right to be served” implies a real power to sanction *ex post*.

Finally, drawing on assumptions that diverge widely from those of the post-Keynesian world,<sup>6</sup> Douglass North (1991) developed a new branch of institutional analysis to characterize institutional environments. In this “Samuelsonian” world, the real and precise characteristics of society’s general institutions can be overlooked in economic analysis. We would, after all, be inclined to believe that open and democratic societies will have developed institutions that are at least reasonably competent, if not nearly perfect, to guarantee the efficient functioning of public economics and markets. In North's universe, institutions are what they are ... nothing more. Also, there are not necessarily any “ready to use” solutions for creating a complete block of perfect

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<sup>6</sup> For example, that of Paul Samuelson.

institutions starting from the real world as we know it. Nor should we conclude that all existing public institutions have taken a solemn “public choice”-type oath to thwart all manifestations of economic efficiency in all markets. The institutions that actually exist must thus be rationally assessed for the effective capacity to efficiently guide the exact policies we expect.

However, in keeping with the work of North (1990), Aoki (2001), Barzel (2001), and Greif (2006), the characteristics that are truly important in real institutions are not easily renegotiable in the short or medium term. These real characteristics of existing institutions thus appear as true constraints on agents when they need to make decisions, elaborate strategies, and interact. Thus, examining relationships between institutional environments such as they are, as we find in Doug North and in Oliver Williamson’s “institutions of economics” (1985: *Firms, Markets, Relational Contracting*) becomes a lynchpin of the analyses of network industry reforms.

## ***II – Bases for institutional analysis of deregulation policy***

Thus, the institutional analysis of the reforms to network industries is complementary to standard analysis. Clearly, institutional analysis recognizes that pricing and markets play a key role in these industries, whatever they may be. Combined with standard analysis, institutional analysis splits the study of network industry reform policy into various segments, which can be separated and then recombined.

1. If network industries were solely sources of monopoly rents, then the simplest policy for dismantling a monopoly should be favoured: Directly open the markets wherever possible, set rational prices where that strategy is inadequate.
2. If, in fact, highly protective industrial structures (vertical, horizontal, or spatial) shield these industries and make them unresponsive to governance by the market, it becomes necessary to contemplate industrial surgery, either prior to or after the reforms.
3. If these industries have become immune to market forces because of a poor initial configuration of agents’ property rights, it becomes vital to create institutional market

infrastructures by reconstituting these rights (definition, allocation, and protection). This is the central argument in the analysis developed by Barzel and North on the role of institutions and inter-individual agreements. Specifically, problems with measuring and enforcing property rights (Barzel, 1989; North, 1990; Libecap, 2002 and in this paper) are at the core of the analysis.<sup>7</sup>

4. If network industries are highly unresponsive to governance by the market owing to the nature of their transactions (as in Williamson: specificity of assets and uncertainty; or, as in Barzel: measurement difficulties), it becomes necessary to construe a governance structure that is adapted (bilateral, multilateral, or trilateral with a “third party”) and / or a voluntary action for modifying the specificity of transaction (network interconnection and interoperability policies; cf. Glachant, 2002).

5. Nonetheless, if governance by the market or governance by a third party is hampered by existing institutional environments, then the surgery of the reforms is confronted with an entirely new, and much more constrained, agenda. Finally, in that case the institutional surgeon needs to operate on himself to stitch up the institutional body differently: Dr. Jekyll or Mr Hyde?

### *II-1 Freeing the sources of monopolistic rents: the issue of the attractiveness of the reforms*

The abusive monopoly is, a priori, the simplest case for economic “blackboard” analysis, since it is sufficient to eliminate the monopolization of the rent to provide an incentive to market forces to enter the territory. The main practical problem in conducting this type of public intervention is that it requires the constitution of coalitions that actively support policies to dismantle the monopoly against those interest groups that have traditionally benefited from it (Stigler, 1971; Peltzman, 1976; World Bank, 1995). To the extent that public government intervention is inspired by interest group coalitions that are opposed to other coalitions of interest groups, the future,

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<sup>7</sup>, which was subsequently developed by various scholars (see Hadfield, 2005, Greif, 2005, for surveys).

potentially competitive, market is not necessarily a major force in the political economy of the reforms, *a priori*. Thus, as a team of researchers from the World Bank observes “The reform can cost a government a support base, because reforms almost invariably involve eliminating jobs and cutting long-established subsidies (1995, p. 10).”

Some of the interest groups benefiting from the status quo may have been traditional targets of government policy for a long time. The best known of these policies are the European “public service” policies, guaranteeing certain social, territorial, or usage groups access to services at a price comprising many transfers and cross-subsidies. Direct challenges to these perks by the government may prove very difficult, sometimes even impossible (Margaret Thatcher was unable to deregulate the Post Office). Gomez-Ibanez (2003) has shown that, in developing countries, a reform will only be sustainable if it allows for just treatment of the interests of investors and consumers. This practical difficulty is not trivial from an analytical perspective, and institutional analysis characterizes it with the notion of “attractiveness of the reforms” (World Bank, 1995). If no robust coalition of interests is built, the reforming pressure may dissipate before materializing or, after it’s launched, become bogged down in the tortuous meanders of practical application. If the pro-reform coalition is not sufficiently solid, it could become necessary to exempt a substantial proportion of the vested interests in order to facilitate the launch of the changes. Thus, according to Moravcsik (1993 and 1994), it is in the interest of European governments to leave the responsibility of public service reforms in the hands of the European commission, to the extent that these industries are too entrenched on the domestic socio-political scene.<sup>8</sup> Some national reform policies have thus remained incomplete—in the sense of traditional economic theory—and quite different from one country to the next, or from one industry to the next, or from one period to the next, when they fared poorly on the attractiveness test.

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<sup>8</sup> The author demonstrates that this transfer of authority to the European Commission makes it possible to conceal the responsibilities of national bureaucracies by introducing an outside actor into domestic negotiations.

## *II-2 Revising industry structures: the feasibility of industrial surgery*

Network industries may be unresponsive to governance by the market because they have built protective industrial structures over time. These may take the form of vertical, horizontal, or spatial (over contiguous zones of operation, sometimes smaller than the national territory) concentrations. These cases of industrial structures that are unsuited to market interactions may only be a particular form of monopolization, with the same dimensions in terms of attractiveness of the reforms, coalitions “for” and “against,” and compromises making it possible to begin even when the initial conditions are less than ideal. This process is described by Spiller and Tommasi (2003): “*Public policies and their features are determined by the functioning of political institutions such as Congress, the bureaucracy, and interjurisdictional relations. (...) The working of the political system (i.e. the rules of the policy making game) constitute here the equivalent of the ‘institutional environment’ in Williamson (1993, 1996). (...) Assume that the political game starts with a period in which players can make some agreements. This period captures the notion ‘contracting moment,’ a time when the parties reach an understanding about how they will restrict their action in the future.*”

According to these authors, the nature of public intervention will depend on the preliminary distribution across the various political and administrative institutions. This *ex ante* distribution of “rights to the reforms” is conceptualized as a game, the rules of which depend on the institutional environment (constitution, electoral rules, the effective functioning of the legislative and executive powers, etc.). At the beginning, the “contracting moment,” political actors fix the limits on their own actions in the following periods.

Therefore, we understand that direct action on industrial structures prior to the reforms poses a quandary for public policy. *A priori*, public authorities (government, legislators, regulators, competition authorities) have access to a much broader slate of tools for modifying legislation and regulation than for overturning the organization of the ownership of industrial and commercial assets. There are few political and legal levers for fundamentally restructuring an incumbent, often very capital-intensive, industry

around a competitive paradigm that will disrupting the financial and asset value of its industrial and commercial base. The government itself is rarely able to fully achieve the competitive restructurings of its own asset base. Even England was unable to escape that principle, and privatized British Gas as a monopoly and electricity as a duopoly, etc. This is because a drastically pro-competition industrial restructuring will dissipate the receipts that governments can expect from their privatization programs.

In practice, therefore, the “industrial restructuring” phase of these reforms is the Achilles' heel of these policies. We saw this in the pioneering countries, Great Britain and the United States (Sioshansi and Pfaffenberger, 2006), but also throughout the European Union.<sup>9</sup> In many cases, during the initial phase of the reforms, implementation of industrial restructuring is intentionally dilute or makeshift to limit domestic opposition. Subsequently, after a market of some kind has begun to operate between the operators in the sector, it can be difficult to resume industrial surgery at the expense of stockholders. Nonetheless, in practice many reforms strive to spread the magnitude of the desired changes over time and proceed in a progressive, sequential, and “modular” fashion. For example, European telecoms were initially deregulated at the terminals, then in professional services, then in the telephone service and new infrastructures, and finally in the old infrastructure of the local loop.

Competitive reform policies can also be implemented over transition periods that may last as long as a decade. Thus, the first European Directive on the “domestic power market” was voted in 1996. Its mission was to initiate the opening of the electricity and gas sectors. Seven years later, the second Directive of 2003, “harmonization” of the reforms, was to be implemented stage-wise through July, 2007. And, since January 2007, a third Directive focussed on intensifying the competition, is under discussion.

The voluntary segmentation of the reforms into successive modules presupposes, at least implicitly, that this will not significantly affect the trajectory of the reforms as a

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<sup>9</sup> Where regulation / deregulation policy is more or less defined collectively in the framework of shared laws (called “Directives” or “Community Regulations”). The politics of industrial restructuring remains exclusively domestic, however (Glachant and Finon, 2005; Glachant and Lévêque, 2007; Haas et alii, 2006).

whole. However, this has not been proven, either theoretically or empirically. In network industries in which the infrastructures are not easy to duplicate<sup>10</sup> (railways and aviation; gas and electricity), the most basic form of reform modularity is the institutional separation (unbundling) of the operation of the network infrastructures from production-final sales (which may be the transportation of merchandise or passengers, or the provision of power). This separation of the two activity types protects against the spectre of “foreclosure” of infant markets. However, decisions regarding major investments and technology choice must be coordinated over long periods between infrastructure operators and competitive entrepreneurs.

Finally, the content of the initial industrial restructuring may be objectively difficult to define at the beginning of the reforms, owing to ignorance of the general architecture or of critical details about the design characteristic of the "maturity" of the reform. An initial leap into the unknown may subsequently produce all sorts of collisions between the various modules of the industry, or between its sequential components (examples abound from electricity in Great Britain and California). We have also found surprising offshoots, such as after-the-fact pressure for vertical or horizontal reintegration (Codognet et alii, 2003), and even some re-nationalizations of railways and electricity (cf. Glachant, 2004; Lévèque, 2005, and Barquin et alii, 2006).

The modular and sequential nature of the “big” competitive reforms of network industries is thus a recurring problem in institutional analysis. Notably, it is a matter of establishing how structures that are built *ex ante*, at the launch of the reforms, might interact *ex post* with an institutional design that has either never, or only very shortly, been in existence.

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<sup>10</sup> On the contrary, when infrastructures can be duplicated by new operators they often remain integrated with the other activities of the incumbent operators (notably in telecoms, but also in postal services, and, sometimes in aviation, in the notion of hubs).

### *II-3 Recasting industries that are constrained by the initial configuration of their rights*

When it is not a matter of rapidly freeing up a potential market that is already bogged down with the industrial structures and rents that come with monopoly, another institutional problem arises. It becomes necessary to lay the groundwork for a new market in a milieu that has been a stranger to all types of market relationships. Here, market failure is first and foremost endogenous—and it is deeply entrenched. For a market to emerge, first the institutional foundations must be laid. Thus, the reform policy must explicitly address the market design, and not limit itself to “de-monopolizing” the traditional industry.

For lack of appropriate definitions, allocations, and protections of the agents’ new property rights, they will be unable to engage in market relationships. This type of reasoning has become common in radio and television, where the attribution of radio waves is performed with the sale at auction of licences. This also obtains for the frequencies of new telephony services, such as UMTS. We know that this was not at all the case in 1959 when Coase discussed the role of the FCC as communications regulator. Today, in the world of telecoms, the Internet, and the digital economy, as innovation in processes and services accelerates, the creation of new “appropriate” rights becomes essential for developing all the new markets (Brousseau and Glachant, 2002). Here we may think, for example, of the configuration of the market for downloading music, which remains fragile in the absence of a better definition of the usage rights of the users.

In the field of transportation, the proposal to create real property rights for infrastructure users is still debated in the matter of the allotment of slots in airports or railways. However, this procedure has not become commonplace in practice. Even the use of Dutch auctions for licences to exploit infrastructure monopolies is not widely implemented. Great Britain, for example, did not use them in the water, gas, or electrical sectors, probably because this procedure would have driven down the sale or resale price of concessions. However, this competitive allocation procedure has become commonplace for allotting exclusive supply contracts for services such as operating school cafeterias, school bussing services, London transit busses, and sometimes even



for operating turnpikes. Similarly, the auctioning of private infrastructure concessions to supply services to large consumers is not a fundamental principle in the development of urban projects in Great Britain (supplies of power or water, airports, corporate fleets, etc.).

To internalize the negative externalities of pollution from CO<sub>2</sub> emissions, the European Union recently introduced a system for allocating pollution rights that has become an international point of reference for the recourse to market mechanisms in a field that has traditionally fallen under the sphere of “pure” government policy (Boemare and Quirion, 2002; Buchner, Carraro, and Ellerman, 2006). Similarly, to manage short-term externalities in the flows on electrical transmission grids, it is now possible to compute the economic value of congestion effects (at each minute) on each of the thousands of nodes on a grid covering a territory larger than France. These computational techniques can be introduced into the conduct of “ordinary” auctions on a wholesale market for commodities, as is currently the case in the United States in the electrical zones PJM (Pennsylvania-New Jersey-Maryland), MidWest ISO, and, soon, Texas. Now market operators can even hedge against random movements in “nodal” electricity prices on a parallel market for financial rights to the revenues from electricity transmission (Financial Transmission Rights, as in Joskow and Tirole, 1999a and 1999b ).

Thus, all of these actual cases of competitive reform of network industries combine principles from institutional economics with principles from classical microeconomics. When industries have been rendered impervious to market effects by the initial assignment of rights, a market basis<sup>11</sup> can be recreated by reconfiguring these rights (their definition, allocation, and protection). The engineering of competitive mechanisms and the architecture of organized markets are disciplines that have become indispensable to the conduct of these reforms. Consider the design of the auctions for allocating radio frequencies, or the allocation of capacity for transporting gas or electricity, or the design of wholesale markets for power. Following Coase-Demsetz, we have thus been able to reassess the capacity of private arrangements and competitive

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<sup>11</sup> In his Nobel Prize acceptance speech, Coase called these market bases the “institutional structures of production.”

mechanisms specifically designed to overcome failures in the standard market mechanisms. However, for all that, governance by the market has not become the unique universal mechanism for reforming network industries.<sup>12</sup>

#### *II-4 Adapting governance structures to the nature of the transactions*

Governance by the market is not a universal solution, applicable regardless of the nature of the transactions. The *ex ante* introduction of a competitive mechanism upstream from a transaction does not always yield the expected results when this transaction is performed *ex post*. Network industries may remain relatively impervious to “pure” governance by the market owing to the nature<sup>13</sup> of their transactions. To simplify, the difficulty of adequately framing the markets for certain types of transactions may come from the fact that these transactions require a cooperative governance type. Parties to these exchanges must continue to cooperate to successfully conclude the transactions, be it in the definition and normalization of the expected useful properties; the creation of *ad hoc* information and measurement structures, linked to the appropriate incentive mechanisms; the design of credible commitments and guarantees; the resolution of litigation; and even the future adaptation of their behaviours and arrangements to unforeseen eventualities of a significant and disruptive nature (“coordinated adaptation” in O. Williamson, or renegotiation).

These provisions for cooperative governance are not part of standard market mechanism, though they are not incompatible with some competitive mechanisms. The range and variety of governance structures adapted to these specialized transactions has not been fully counted. We can, however, identify several forms that are currently in

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<sup>12</sup> For a survey of different empirical uses of “franchise bidding” we direct the reader to the work by Huet (2005) and Guash (2004).

<sup>13</sup> As we have seen, a nature “à la Williamson” means specificity of the assets and uncertainty; a nature “à la Barzel” means measurement difficulties.

use: bilateral, multilateral, or trilateral governance, with a private<sup>14</sup> or public third party (cf. Table 1).

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<sup>14</sup> Another case, also exceptional, is that of gas and electricity in Germany. Between 1998 and 2004, the government conferred on a national consortium of stakeholders (i.e. a multilateral structure) *ex ante* powers to define the rules of network industries, in parallel with the *ex post* intervention of the competition watchdog (by reference or on own initiative) and the absence of a sectorial regulator.

| Table 1: the principal forms of governance structures in network industries   |   |   |
|---|---|---|
| Bilateral governance structures   |   |   |
|   | Examples  | Limits  |
| The “simplest” governance is a bilateral structure in which buyers and sellers collectively manage the definition and execution of their transactions.  | For example: the owner of a fleet of cars for transporting specialized merchandise and the railway; or a micro hydro power plant linked by contract to an integrated electricity monopoly.  | This simple form presupposes that the buyer and the seller invest in resources and skills. This is justified by the expected volume of transactions from a good “alignment.”                          |
| Multilateral governance structures  |   |   |
|   | Examples  | Limits  |
| Many multilateral governance structures are designed and spearheaded by groups of professional, or professional associations, in the form of “user clubs,” “normalization committees,” or “panels.”<br><br>The roles of the many participants are symmetric.  | The governance structure of the first English electricity wholesale market (Electricity Pool) worked like that; the operator of the electricity transmission grid in Texas (ERCOT) still does.  | In the event of significant disagreement between the members, or between a specialized subgroup and the rest, decision power falls to the general assembly of members having delegated the authority. |
| Private and asymmetric multilateral governance structures   |   |   |
| Private clubs   | This is the manner in which airlines group into alliances, operating shared reservation systems and capitalizing on positive externalities and economies of scale and scope in their scheduling slots, their flights, and their hubs, by selling combined packages.               |   |
| Microsoft   | Microsoft validates the definition and controls the evolution of operating standards allowing interconnections and interoperability that continually yield positive externalities between tens of thousands of innovating operators and hundreds of thousands of final consumers. |   |
| Trilateral governance structures  |   |   |
|   | Examples  | Limits  |
| The basis of the trilateral model is the permanent delegation to a third party of the power to evaluate or decide on a defined set of data or events. An expert role is thus superposed on the roles of the participants. However, the expert does not possess asymmetric power vis-à-vis the participants. <sup>15</sup> | The most common case of an expert lacking asymmetric authority is that of a panel of experts. It may intervene <i>ex ante</i> to define shared rules of operation, and <i>ex post</i> to address conflicts between users of the   | There are not always clear borders between multilateral and bilateral governance structures. <sup>17</sup><br><br>The asymmetric authority conferred on sectorial                                     |

<sup>15</sup> On the other hand, though the expert effectively participates in maintaining the quasi-rent by contributing to a good “alignment” of transactions, it does not have direct access to the mechanisms for disbursing this quasi-rent and, in particular, it cannot appropriate the quasi-rent to itself.

|   |  |  |
|---|--|--|
| <p>When the expert also possesses asymmetric authority, it is, in fact, a “regulatory authority.”</p> | <p>network, or with their clients.<sup>16</sup></p> <p>The typical case of an expert with asymmetric authority is the sectorial regulatory agency (telecom, gas, electricity).</p> | <p>regulators may motivate them to acquire an independent expertise and transform them into specialized judges, but still lacking a unanimously acknowledged level of professional competence.</p> |
|---|--|--|

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<sup>16</sup> The delegation of regulatory powers to experts that are distinct from the sectorial regulator is also practised in Great Britain for handling conflicts between small consumers and the operators of network industries (cf. Energywatch, the independent gas and electricity consumer watchdog, etc.).

<sup>17</sup> A number of multilateral structures frequently or exclusively resort to experts for various types of evaluations or decisions. This is because such recourse can simplify the functioning of multilateral structures and make them more efficient.

To the extent that real markets for final services open up, the respective roles of third parties, whether public or private, may develop considerably. A public third party is not actually designed to provide an adapted, open-ended, and differentiated intermediation service between the consumers and producers of the service over a long period of time. By their very nature, public bodies are not adept at rapid and differentiated adaptation. To the contrary, they must comply with all the formal constraints of neutrality, prudence, impartiality, and due process imposed on the activities of all government institutions. And they must bear in mind that there are tribunals above them to act as “courts of last resort.”

Thus, to a large extent, the outlook for the reform of network industries is an expansion in the authority of private regulation, private governance, and private intermediation. As of a certain level of maturity, third party services in a trilateral governance incorporate a market, intermediate or final, on which intermediation services can be sold, either individually or as part of the final service (rebundling). At the end of this evolution, third party services may end up as intermediation services like any other. For centuries, such intermediation services have been at the “transactional” heart of intermediation professions, such as the functions of agent and trader, wholesaler and retailer.<sup>18</sup> An alternative to this commercial normalization of intermediation services is the constitution of private intermediation clubs that operate as “production-consumption cooperatives,” though these are likely to be the exclusive enclave of large agents.

Can government authorities accelerate this “privatization” of intermediation services by limiting the specificity of assets used by network industries? In fact, the theoretical body of work developed by Williamson between 1985 (*Economic Institutions of Capitalism*) and 1996 (*Mechanisms of Governance*) insists on the existence of different forms of asset specificity, and that the treatment afforded to each of these forms cannot be the same. Glachant (2002) extended these initial efforts and applied them to network industries.

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<sup>18</sup> This is already the case in the intermediation of telecoms and the Internet (access or service provider), as well as in gas (shipper) and electricity (wholesale supplier = balancing authority = aggregator and retail supplier).

The most important specificities of network industries are as follows: (1) site specificity; (2) physical specificity (the procedure or product being designed “to measure”); (3) the dedicated asset (production capacity with no other outlet); and (4) temporal specificity (adjusting production to consumption depends on their "just-in-time" synchronization).

Only one of these forms of specificity, site specificity, provides a compelling rationale for the integration of activities into a vertically integrated firm. This integrated firm thus constitutes the *ex post* governance structure for the transactions (Williamson, 1985, chapters 4, 5 and 10). The site specificity characterizes the greater dependence of a network industry on its infrastructures.

In contrast, physical specificity can normally be managed with competitive mechanisms if it can be detached from site specificity. Since, in this case, purchasers of the final service can, themselves, integrate ownership of the specific equipment. These purchasers can then call on several suppliers to compete for the use of their equipment, all the while retaining the ability to switch supplier. Thus, the competitive pressure on suppliers remains credible *ex post*. Furthermore, managing the specificity of dedicated assets can be facilitated by the *ex post* reciprocal exchange of hostages, or by some other *ex ante* guarantee remaining credible *ex post*, such as “Take or Pay” clauses, or the creation of new marketplaces designed to promote the liquidity of exchanges (secondary markets for transmission capacity, interconnection capacity, storage capacity; coupling transmission capacity with the commodity—which is practised in Europe under the name implicit auction, etc.). Finally, temporal specificity requires an *ex post* governance structure, but several different governance types remain feasible. Temporal specificity can lead to vertical integration (“unified governance”) if the dependence relationship between users and suppliers are very asymmetric. This is because, in this case, “bilateral” governance is not an adequate guarantee, *ex post* (Masten, 1991 and 1996). However, the management of interdependencies resulting from temporal specificity may occur within a bilateral structure if the commitments of the partners are relatively symmetric (Aoki, 1988), or it may be efficiently monitored by a specialised authority in the case of a multilateral relationship (Ménard, 1995 and 1997; Glachant, 1998).

In conclusion, we observe that institutional arrangements adapted to different forms of asset specificity cannot be reduced to universal recourse to government intervention. On the other hand, we must also consider the capacity of some types of targeted public intervention to either modify the nature of the contracting difficulties *ex ante*, or the characteristics of the adopted solutions *ex post*. Notably, there exist government policies to promote the interconnection and interoperability of network equipment and services *ex ante*. Everyone has heard of the success of the GSM standard in European cellular telephony or, conversely, the abysmal incompatibility of the electrical power supplies on European railroads. It is less well known that the Treaty of Maastricht, which created the European Union, contained an entire chapter dedicated to European policy for “major Trans-European networks” in communications, transportation, and energy.<sup>19</sup> By intentionally reducing the specificity of assets *ex ante*, government policy can expand the normal sphere of action of private governance.

### ***III. Why building an appropriate Governance Structure is still problematic?***

The idea common to all economic analyses in favor of the competitive reforms is that the creation of markets within network industries presupposes preliminary acts of “industrial surgery.” Prior to creating these markets or seeing them appear spontaneously, it is necessary to end the traditional vertical and horizontal integration of the incumbent monopolies. Thus, those links that will permanently be monopolistic must be separated from those with competitive potential with as much precision as possible. This cannot be accomplished overnight—it requires incremental experimentation with new procedures

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<sup>19</sup> It is true that this European policy was stillborn, since it was subordinated to two veto rights of the member countries: a general veto for the global budget of this new European policy, plus a



for segregating activities that have been integrated for decades. Thus, there is a transition period during which the new markets are weak and the incumbent monopolies remain quite strong. Consequently, a governance structure reflecting the competitive reform throughout this transition period is useful, even indispensable.

The duration of this transition period depends on many conditions, including the characteristics specific to each network industry. As early as 1985, O. Williamson foresaw that aviation and roadways would be easier to reform along sustainable competitive lines than railways or electricity. Aviation reorganized itself independently and durably<sup>20</sup> on the “Hub & Spokes” model with large airports and “private” interconnections between the flights of a single company or a pool of affiliated companies. At the same time, the design of the competitive electricity market remained heterogeneous and unstable, made up of many distinct industrial and transactional modules, variously disassembled and reassembled and, sometimes, though not always, associated with competitive mechanisms or true markets. In fact, with regard to electricity reforms, which began in Great Britain in 1989–1990, the architecture of the competitive market design proved to be an unstable hodgepodge of market and non-market mechanisms. In keeping with the principle of separating monopolistic activities from those that are potentially competitive, the industry splintered into several distinct operational and transactional modules. However, the entire chain of all modules often required a more comprehensive and far-reaching governance structure than that provided for by the initial competitive paradigm.<sup>21</sup>

The electrical industry has proven itself unable to present a robust competitive market design that garners universal acceptance or, for that matter, that is capable of

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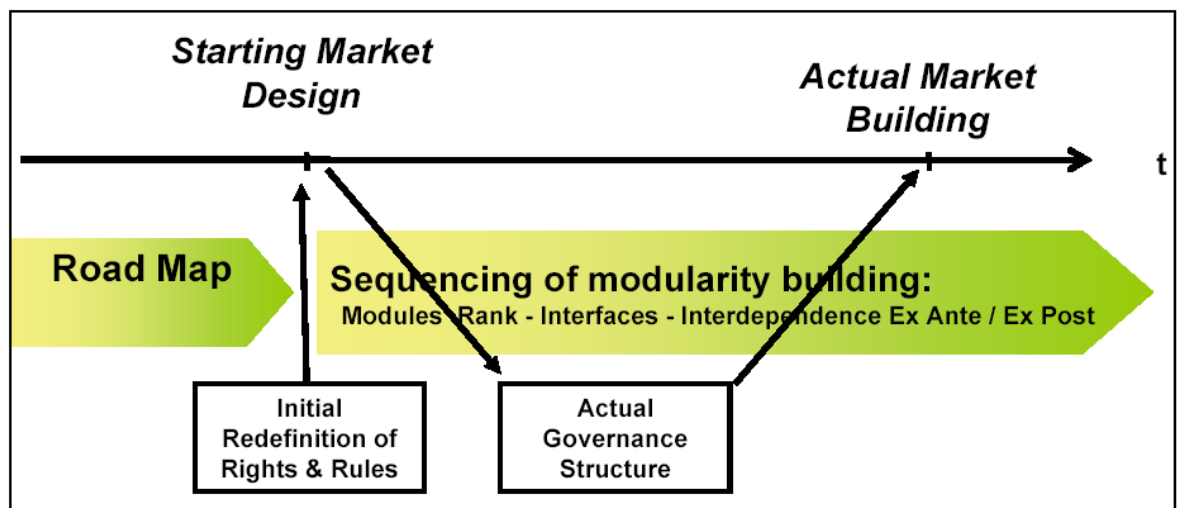
specific veto to each country over any project having a direct impact on it.

<sup>20</sup> Until the appearance of low cost airlines.

<sup>21</sup> We here recall the operational difficulties encountered by California’s electricity markets between the summer of 2000 and the spring of 2001. We also think of the comprehensive redesign of the English system in 2002, leading to the closing of the Electricity Pool of England and Wales, which was mandatory for all generators and resellers as of the beginning of the reform on April 1, 1990.

instantaneously and simultaneously coping with all the new problems having arisen as of the launch of the competitive process. In practice, electricity reforms were highly sequential, initially accepting imperfect provisional solutions for this or that module and then staggering successive redesigns of the modules over time. For this reason, the creation of competitive electricity markets is much more frequently the result of the governance structure of the reforms than the direct or indirect offshoot of the legal or political actions that initiated the reforms. The following schemata shows this.

*From Market Design to Market Building: Sequencing the Reform Modularity*



The initial market design, introduced by a road map is, in practice, only the first act in the construction of markets. These markets are then built sequentially, module by module, often in a different order, or rank, from one country to the next or (in the United States) from one state to the next. These various modules, which are not defined in the same way nor implemented in the same order, are articulated around interfaces that may also be defined differently. It follows that the true nature of the interdependencies between modules varies considerably from one reform to the next, but also from the initial phase of the reform to later stages in its competitive evolution.

The true unfolding of electricity reforms appears much more like the *ex post* sequential construction of modules (*ex post* sequential modularity) than like an activity of *ex ante* market design.

Thus, the building of competitive markets combines three dimensions: (1) the overall separation of potentially competitive activities from inherently network activities (unbundling); (2) the segregation of all the operations and transactions of the industry into modules organized around various mechanisms for internal coordination (modularity); and (3) the implementation of the various modules in the chain to carry the competitive transactions (sequentiality).

### *III-1°- Competition where possible: the Unbundling and its boundaries.*

As emphasized by S. Littlechild (2006b), the first British regulator and inventor of the notion of Price Cap as applied to telecoms, the principle of “Competition where possible” is central to the reform of network industries and their transformation into vehicles for competitive markets. This type of division is expected to free competitive forces on one side of the new boundary and concentrate the regulatory activity in the network monopolies on the other side.

For example, in the electrical industry, the high-tension transmission grid and medium- and low-tension distribution lines will find themselves on the side of the regulated monopoly, while the generation and sale of electrical power can easily devolve to wholesale and retail markets. The regulator and the regulation, in turn, are expected to facilitate market activities and not substitute for the agents performing these activities.

However, the principle of unbundling assumes that there exists a “natural” demarcation, clear and robust—by nature almost technical, or at least technico-economic—between these two universes: the market for services and infrastructure monopolies. Sometimes this is true. Roads and highways are infrastructures that can easily be differentiated from taxis, busses, and trucks. This remains the case, though a little less unambiguously, in

aviation. Flight corridors and airport runways are clearly distinct from the airplanes chartered by airlines. However, it is also necessary to prescribe how these air routes and runways are to be allotted to the various users when the sum of all possible usage slots is less than the airlines' demand, in particular in the case of new entrants, and especially when these new entrants are low cost. Are the airlines' large hubs private infrastructures with strictly controlled access, or are they private empires built on essential infrastructures freely accessible to all? A similar question arises with reference to telecoms. However, we generally consider that competitors to incumbent telecom operators have no difficulty duplicating their infrastructures and creating their own private grid, at least outside the local terrestrial loop.<sup>22</sup>

The same question is quite prickly in the case of electricity, because the service rendered is not storable<sup>23</sup> and there are no waiting lines. Furthermore, the entire supply-demand equilibrium is a global phenomenon, common to the entire industry and extending beyond the ownership boundaries of dozens of different generators or sellers of electricity.<sup>24</sup> In practice, it is not difficult to see why this issue of global equilibrium in electricity must be ensured by a third party with decision authority over all immediate and very short-term time horizons (from "real time" to one or three hours before real time). Thus, the transmission grid must directly administer very short-term imbalances between the consumption and generation of power (balancing) and between the flows of current and line capacity (congestion). We here observe that activities specific to the network monopoly are very strongly enmeshed with, and weakly separable from, all activities that are characteristic of the competitive links. The very precise allocation of tasks and decision-making rights between competitive and monopolistic modules, as well as the detailed design of the interface mechanisms connecting these two module types,

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<sup>22</sup> Except for the local landline grid for which it must provide free access to competitors.

<sup>23</sup> As in aviation.

<sup>24</sup> It is as if all airlines operating in the same control space were obligated to continually equate the number of seats on all their airplanes to the exact number of passengers having boarded them!

here continue to be central and decisive questions about the real nature of the competitive reforms. “*Where are the boundaries and who sets them?*”.

### *III-2°- Boundaries are set by “modularity” decisions*

Boundaries between monopolistic activities and potentially competitive activities, like the boundaries between the firms themselves, between their respective tasks, and between their real or potential transactions and the corresponding markets, are thus not given once and for all prior to the launch of the competitive reform. Quite the opposite, these boundaries are primarily defined over the course of the long process of creating the reform. They are the result of segregating the industry into new operational modules. The competitive reform is thus a giant “modularization” of the network industry, a giant industrial and transactional “Lego set.”

According to the most famous analysts of industrial modularity, Baldwin & Clark (2000): “*Modularity is a particular design structure, in which parameters and tasks are interdependent within modules and independent across them*”. This technical definition of modularity is well suited to the new modularity of network industries. It nicely complements the work of Williamson and Joskow on “technological separability” that distinguishes between the hold technological constraints have within non-separable clusters of tasks and a strong institutional constraint on the design of interfaces connecting task clusters that are technologically separable.<sup>25</sup> To Baldwin and Clark: “*The ideal of perfect modularity is full ‘plug and play’ flexibility.*” They then add, “*but in a complex design, there are often many levels of visible and hidden information*”. Perfect modularity is thus not universal.

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<sup>25</sup> In other words, transactions arose in specific locations because designers created technologically separable interfaces that made transactions cost-effective at those points (Lenfle and Baldwin, 2007).

In the competitive reforms of network industries, the ideal of “perfect modularity,” the hermetic separation of task clusters having different natures, is far from universally implemented. The boundaries between modules split up by the competitive reforms remain porous to many leaks. Some modules retain an interdependence between each other in their operational functioning, even if, of course, the interdependencies are stronger and more frequent within the modules than between them. Thus, it is useful to bear in mind, as a sort of benchmark, how perfect modularity operating within a perfectly designed competitive reorganization of the chain of tasks within a network industry would look.

Perfect modularity would define “independent task blocks,” build “clean impermeable interfaces,” and separate “hidden and visible information.” Three invaluable characteristics would result for the process of performing these tasks. First, perfect modularity would increase the potential for managing complex chains of operations. Second, perfect modularity would allow the various modules of a complex chain to operate in parallel with a certain degree of autonomy. Third, and finally, perfect modularity would make it easier to react to uncertainty, provided the uncertainty was confined to a single module.

We here recognize the motivation for separating the professions and tasks in the initial implementations of competitive reforms. However, we must acknowledge that market building often fails to reach that degree of perfect modularity in the competitive reforms. The actual modularity of the competitive reforms of network industries frequently consists of nothing other than a flawed chain of imperfect modules and faulty interfaces. Porous borders and nonexclusive interfaces have been inserted between the monopolistic and competitive module clusters, as well as between the specific modules. At the same time, incomplete rules of operation have been imposed within the various modules. It follows that all of this modularity remains flawed, notably with numerous operational “leaks” across modules. Thus, many direct dependencies persist in the operational functioning of a number of these modules, which are designated, in the jargon of economics, as externalities, on the one hand, and incompleteness, on the other.

Let us look at three aspects of this issue of “imperfect” or “weak” modularity in network industries. The first is the coexistence of fundamentally divergent alternatives in terms of how to create competitive wholesale markets. Chao and Peck (1996), Oren (1998), and Wilson (2002) have demonstrated that there are three different solutions to the structure of these electricity markets: compulsory organized multilateral markets (mandatory pools), voluntary organized multilateral markets (voluntary exchanges), or markets that are uniquely bilateral (“OTC” markets).

***An example of sub-modularity within the module “monopoly transmission network”***

1.1.

1.2. English Transport System Operator (TSO)

- *Owns the assets and is a “for profit” company*
- *Plans & builds new lines*
- *Manages internal congestion with physical redispatching*
- *Manages connections with other TSOs as boundary*
- *Prices access with regional ‘postal stamp’*
- *Charges new generator connection with shallow costs*

1.3. American Independent System Operator (ISO)

- *Doesn’t own the assets and is a “not for profit” entity*
- *Doesn’t plan or build new lines*

- *Manages internal congestion with nodal pricing*
- *Manages connections with other ISOs as new nodes*
- *Prices access by calculating prices at each node*
- *Charges new generator connection with deep costs*

Following V. Rious (2005)

A second example is the organization of task modules pertaining to monopolistic transmission activities, as the table above shows.

The pivotal architecture of electrical networks is the transmission grid, since this transports the energy generated by power plants over long distances and on a huge scale. This component also underlies the spectacular “black outs” that have shaken up this industry on several occasions since the beginning of the 21st century (USA and Canada, Italy, Denmark, Germany and France, etc.). Comparing the typical organization of transmission in the competitive reforms of the United States (the Independent System Operator, or ISO) with its European analog (the Transmission System Operator, or TSO) immediately reveals the diversity of the "Transmission" modules put into place.<sup>26</sup>

In England, the transmitter is a private firm that is listed on the stock exchange, owns its own transmission facilities, and plans and finances investments in the grid. It manages congestions with the physical method known as “redispatching.” However, it does not transmit a direct price signal to the users of the grid who are liable to be at the source of this congestion. The cost of congestion is socialized across all grid users during periods

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<sup>26</sup> Littlechild (2006b) brings two aspects to the debate: he shows that, in Australia, merchant transmission companies have been allowed to compete with incumbent transmission monopolies for the building of new lines; while in Argentina transmission line expansion decisions have to be proposed, approved and paid for by market participants and not by the regulator or the regulated transmission company.



of congestion (via a half-hourly “postage stamp”). A direct consequence of this method for managing congestion is the existence of a real border, both physical and price-based, that completely surrounds the zone administered by the transmitter. Furthermore, the transmitter charges the costs of transmission (especially the costs of infrastructures) in fees that are socialized across a regional grid, with a dozen or more “postage stamps” for generators and a similar number of other “postage stamps” for consumers. Finally, the cost of new connections to the grid are also largely socialized, since the hook-up fee does not account for the cost of adapting the network upstream from the point of connection. This method of pricing connections is called “shallow cost.”

In the United States, most typically in the PJM zone (Pennsylvania, New Jersey, Maryland, etc.), the transmitter is comprised of a club of electricity professionals. Thus, it functions as a cooperative, making no profits and distributing no dividends. This club does not own the transmission grid facilities, which remain the property of the incumbent operators. It is, however, their only operator. It is the System Operator, and is distinct from the proprietor of the network, the Transmission Owner (TO). From the point of view of ownership of the network equipment, this System Operator is designed to be independent of the incumbents, making it an “Independent SO,” or ISO. This ISO neither plans nor finances investments on its grid. The users, generators and distributors, take the initiative of requesting modifications or extensions to the transmission grid, and then pay for them fully. This ISO manages congestion with an economic method known as “nodal pricing,” transmitting a direct and individualized price signal to each grid user liable to have an impact on congestion (by creating, exacerbating, or easing it). The cost of congestion is thus only borne by those who directly contribute to it, and only for as long as they do so, being calculated in very short time frames that are recomputed every ten minutes. Each of the thousands of nodes in the grid is handled independently, with a vast technical and economic program of costing congestion for each entry and exit node on the transmission system. That is why this pricing is called “nodal.” A direct consequence of this method for managing congestion is that no real border exists, either physical or price-based, around the zone administered by the transmitter. Its zone is nothing other than a collection of computation nodes. To the extent that adjacent transmitters practice

the same nodal method of pricing and collaborate in its application, there are no real borders between neighboring transmission zones. This ISO does not charge users the other costs associated with transmission (notably the cost of infrastructures)—they are recovered through fees that are socialized across a local grid and administered by state Public Utilities Commissions, or PUCs. Finally, the cost of new connections to the transmission grid are not socialized. The hook-up fee imposes all the costs created by this connection in terms of upstream development on the new user (called “Deep Cost” pricing).<sup>27</sup>

A third, and final, example of the “weak” nature of the organization of the modules in the competitive reforms of the electrical industry is found in the allocation of responsibilities and decision making power in the regulatory functions (World Bank, 2006; Castalia Strategic Advisor, 2005; EDRD, 2004; Green et alii, 2006; Ocana, 2002; I.E.A., 2001). Nearly every conceivable variant on the definition and allocation of regulatory functions has already been tried somewhere: sharing between a federal and local regulators (United States, Belgium); sharing between the federal executive power, the association of local regulators, and representatives from local governments in a formula called “Comitology” (European Union); sharing between stakeholders who administer a mandatory pool and a strong regulator (England-Wales); sharing between transmitters who own a voluntary exchange, stakeholders, and ministers from local governments (the Nord Pool of the four Scandinavian countries); sharing between stakeholders<sup>28</sup> administering the ISO and a strong local regulator (Texas); sharing between a weak or semi-weak regulator and the minister of energy (Spain and France); sharing between a weak regulator and the transmitter (Sweden); self-regulation<sup>29</sup> by a national committee of stakeholders overseen

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<sup>27</sup> For a discussion of the economic consequences of the various methods of recovering connection costs in the electrical industry, see Hiroux (2004).

<sup>28</sup> Another example is provided by Littlechild (2006b) and the settlement of disputes organized in Florida: Instead of a traditional litigated process, settlements are often reached between utilities and the Public Council and/or users, and are typically approved by regulator.

<sup>29</sup> The basis of self-regulation is reciprocity: Individuals recognize the benefits they will derive from behaving in accordance with others’ expectations. Such reciprocity may be reflected in

by the competition watchdog and the courts (Germany). This veritable patchwork of formulas has been characterized as “regulatory modularization” by A. Midtun (2005). It is noteworthy that not one of these structures has proven able to provide adequate *ex ante* guarantees to simultaneously manage the classical risk of “regulatory capture”<sup>30</sup> and of governmental opportunism (Holburn and Spiller, 2002), along with the need to effectively counter the exercise of market power by the dominant operators (Smeers, 2004).

### *III-3°- Sequencing matters*

The various modules created by the competitive reforms are not perfectly modular: They were neither perfectly designed nor perfectly implemented. They also continue to sequentially interact in the actual functioning of the competitive reforms. When a new module, or a new interface between modules, appears, all of the modules that are already in place may need to react and adapt to the interactions in the new sequence. Thus, the order in which modules appear, or are reconfigured and adapted, is of great practical importance. The sequencing of the decisions in the construction of competitive modular chains is nearly as important as the actual structure of these chains.

This is why D. Newbery (2002) emphasizes the importance of a solid reform strategy, which must include all of: the privatization process, the type of unbundling between monopolistic and competitive activities, the initial market design, the powers and functions of the sectorial regulator, etc. According to D. Newbery: “*the logical sequence*

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individual agreements but, as standards of behaviour, will spread to other members of a group as property rights when the benefits of doing so exceed the costs of defining those rights. The expectation is that such cost savings will be significant where the group is small enough for informal control—generally requiring continuing face-to-face interaction—but also where power is broadly dispersed.

<sup>30</sup> Thus, proponents of the theory of capture demonstrate how repeated exchanges between the regulatory agency and the firms can culminate in collusion between them.

*of events, some of which can happen simultaneously, is to first create the legislative and regulatory framework and institutions, and to restructure the state-owned ESI. Unbundling and corporatizing the generation companies, national grid, and distribution companies while they are still in public ownership can precede the legislation and setting up the regulatory agencies, but privatisation cannot. Unbundling generation from transmission will require a restructuring of any contractual relationships between the two.”*

Newbery stresses that the sequencing of the reform is critical, since it structures the behavior of the stakeholders by creating new interests and new rights over the various modules of activity and over the transactions that come into play between these modules. One of the most important consequences of this type of modularity is that certain models of network industry reform, while working well under some circumstances and in some areas, are not easily transferable elsewhere.

This phenomenon has already been examined in the analysis of institutional change developed by M. Aoki (2001). His analysis sheds a good deal of light on the particular nature of this phenomenon. To Aoki, the explicit modification of formal rules is not the entire story in the matter of institutional change. On one hand, since an institution’s influence on economic agents fundamentally relies on their “shared beliefs,” it can only fully exercise its influence if agents believe in this influence. On the other hand, any particular institution is always party to a variety of interactions with related and complementary institutions.<sup>31</sup> Any creation of institutions occurs in a world that is already “saturated”—populated with other institutions. Consequently, the compatibility and complementarity between the new institution and other, pre-existing institutions are fundamental objective characteristics that define the new institution.<sup>32</sup> Aoki (2001)

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<sup>31</sup> For a detailed presentation of institutional change see Aoki (2001, chapters 9 and 10). For an overview, see Aoki (2004).

<sup>32</sup> Aoki’s central notion is that each institution generates incentives and manages information autonomously, which may make it difficult for economic agents to utilize and understand the enmeshing of complex institutions.

specifically notes that the overlap of existing institutions affects the evolution and combination of their activities. The prior existence of historical institutions may facilitate, hamper, or sidetrack the desired evolution and the actual consequences of the creation of new institutions.<sup>33</sup> This is why, in theory as much as in fact, the *ex ante* choice of a good competitive reform strategy for entire blocks of industry is more difficult than some optimists had prematurely announced. According to Rufin (2003), “*in these industries, the institutional framework plays such a crucial role that it provides an excellent setting for analyzing processes of institutional change.*”

#### **IV: Is “Institution building” a remedy to governance failure?**

Building a complete industrial and commercial chain of modules that are sufficiently competitive thus involves long stretches of time, always exceeding one decade. This is why the governance structure of the reform of a network industry is, in and of itself, as important as the initial design of the very first competitive modules (Dinar and Saleth, 2004; World Bank, 1996; Levy and Spiller, 1996). Why, therefore, at the launch of the these reforms, are new governance structures not defined that are more suited to their specific nature? They would be more robust and reactive, and thus more conducive to prolonged adaptation of the industry and its chain of modules until it finally reaches the stage of sustainable competitiveness? This new way of thinking focusses on *ex post* guaranteeing the final goal of perfect modularity of network industries by the *ex ante* initial design of a perfect governance structure for the reforms. Unfortunately, this notion of perfect governance is plagued by numerous difficulties, not unlike the previous notion of perfect modularity.

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<sup>33</sup> Working from a different analytical framework, Laffont (2005) arrives at the same conclusions regarding the difficulties in transferring regulatory institutions and policies from the developed countries to the developing world.

#### *IV-1 Is perfect governance possible?*

Building a governance structure for reforms that is perfect in the long term essentially consists of defining and allocating the rights to future implementations of the reforms. This is how the governance structure is able, when the need arises, to define and allocate new rights. These new rights, which would obtain in the future and could be useful for steering the course of the reforms after the start-up period, might combine with pre-existing rights—already defined and allocated and protected by assorted institutional guarantees, such as those studied by Pagano (2002).

The institutional hurdle to implementing this new orientation encountered here is that all rights having existed for a long period are anchored in strong guarantees entrenched in their institutional environments. Thus, the notion of creating a perfect governance structure *ex ante* to steer the reforms over a long time horizon seems contradictory. Over the course of the long implementation of these reforms, the various stakeholders, whether private or public, and the new governance structure, can only sequentially uncover the exact character and relevance of the existing rights. Therefore, they can only intervene sequentially in the redefinition and reallocation of these rights in order to sequentially adapt the various modules of the industry and the markets<sup>34</sup> (Prosser 2005). This is because, in North's (1990, 2005) view, we only discover the long-term properties of existing rights and institutional changes by a process of trial and error, and sometimes by blind chance. For how could we design *ex ante* a potentially perfect structure that, at some future time during the latter stages of the reform, only allows modification of rights that significantly block adaptations that are truly required? In Williamson's view, private economic agents are unable to create, *ex ante*, a perfect contract to frame their future relationship. And, similarly, according to North, public and private institutional agents

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<sup>34</sup> Prosser argues that the early legal structures adopted for UK utility regulation did have elements of a regulatory contract. However with the growth of competition and social regulation, a different model, that of a network of stakeholders, has largely replaced it.

are unable to build, *ex ante*, a perfect structure for reconfiguring industry modules and redefining the corresponding rights.

In real institutional change, the long-term governance structure of reforms can only act over the existing endowment of decision-making power and veto power. This endowment is structured by the combination of rights entrenched in the arrangement of the various modules of the reform. Thus, the long-term governance structure of these reforms cannot be immutable throughout the sequential rearrangement of the chain of modules. Any after-the-fact reconfiguration that was not anticipated *ex ante* may yield unexpected configurations of decision-making and veto rights *ex post*. Such undesirable developments can then successfully anchor themselves in strong guarantees that are vigorously protected by the most fundamental elements of the institutional environment (political, executive, and legal). In practice, those who are piloting the competitive reforms cannot do all they would like in the long term to significantly reshuffle rights that have already been acquired, even when major adaptations that were not foreseen at the launch of the competitive reforms become imperative. Institutional environments are inherently rigid, or semi-rigid, provisions that only rarely allow for a forcible redefinition of existing rights.

#### *IV-2 The contribution of operationalization work in North's analysis*

The operational content of the competitive reforms thus acts as a set of rules and rights that constrain the behavior of economic agents and allow conflicts arising from such constraints to be addressed. Levy and Spiller (1994) emphasize that the real operational content of these reforms depends on the functioning of other institutional provisions, such as the legislative, legal, and executive framework specific to each country. Consequently, the institutional endowment of each country constitutes a unique context of guarantees and constraints that must be accounted for in the definition of the nature of the rules and

governance structures of the reforms. Differing solutions for the reform may be required in institutional situations that are durably divergent.<sup>35</sup>

There are few comprehensive comparative studies of transformations from old regulatory systems into new, pro-competitive regulatory systems. Guasch and Spiller (1999) make a contribution that is central to network industries by analyzing failures in the legal system and their irrevocability. They present a model that analytically distinguishes between the notions of “stability” of the new competitive rules and of “consistency” with the nature of the institutional environment that prevailed at the launch of the reforms. In their analysis, the most stable institutional environments are characterized by the presence of numerous veto players, as they embody the principle of checks and balances. These veto powers are bolstered by the existence of administrative procedures that are quite strict and precisely define the procedures for modifying existing rules and rights, while providing for the right to appeal these changes to entirely independent courts of law.<sup>36</sup> The United States typifies that type of institutional environment.<sup>37</sup>

Analytically, we then move on to environments classified as second best in terms of the stability of the competitive commitments. One of these second best arrangements is found in another type of institutional environment, centralization. This is the case in Great Britain. Here, a strong protection of the rights of economic agents is ensured by a special regime of “professional licenses” safeguarded by private law and regular courts of law. Of course, this second best cannot provide stability guarantees exactly equal to those in the United States, as it lacks both the credibility of institutional checks and balances and the stability of the strict U.S. administrative procedures.

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<sup>35</sup> Levy and Spiller (1994 and 1996) on telecommunications reform, Guasch and Spiller (1999) on reforms in various network industries in Latin America; Spiller and Savedoff (1999) on reforms in water distribution sectors; Spiller and Martorell (1996), Spiller (1998), Holburn and Spiller (2002) on electricity reform.

<sup>36</sup> McCubbins, Noll, and Weingast (1987–1989).

<sup>37</sup> A growing literature is starting to reconsider the assumptions used—like Rufin (2003), who identifies a ‘Presidential Bias’ in the Levy and Spiller framework.



Here, we recognize that the introduction of a supreme, “asymmetric” decision maker, endowed with the power to unilaterally modify existing rights and future rules, does not provide any greater long-term guarantee of the longevity of the reform’s pro-competitive orientation. In the context of this analysis we will ignore rapid, non-modular, and non-sequential initial construction of robust new competitive systems in network industries. Consequently, we will not concern ourselves with the stability of the initial arrangements. Essentially, we assume that the initial arrangements are close enough to an *ex ante* perfect configuration that only minor adaptations will be required *ex post*. However, had we begun from the opposite perspective, we would have needed to postulate the long-run necessity of making major *ex post* adaptations to the reforms, with a poor *ex ante* predictability of their future modalities. Thus, an institutional structure guaranteeing a great deal of stability *ex ante* could ultimately constitute a major obstacle to necessary adaptations to the unexpected, *ex post*.

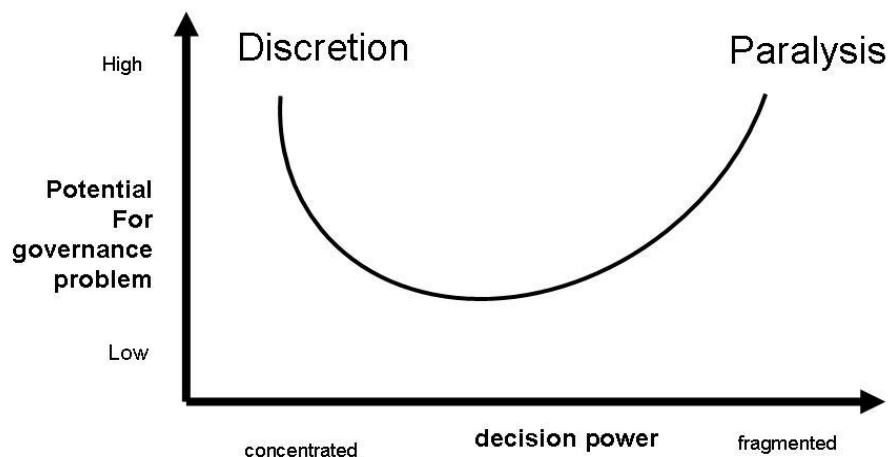
#### *IV-3 Accounting for the issue of adapting the reforms*

As demonstrated by Macintyre (2003), Tsebellis (2002) and Perez (2002), we can opt for a more general analytical framework. This framework links adaptive governance of the reforms to the concentration of decision-making power, as expressed in the number of veto players in the institutional environment. Two issues with governance are thus identified. The first is the inevitably discretionary behavior of individual veto players. As the literature has amply demonstrated, an *ex ante* irrevocable commitment is necessary to guarantee the stability, and thus the credibility, of the competitive nature of the reforms (Levy and Spiller, 1994 & 1996; Weingast, 1995). But the second issue pertains to the paralysis of structures that are too decentralized with multiple veto players. This arises when accounting for all the *ex post* adaptation needs of reforms only appearing over a lengthy period of time (Macintyre, 2003; Haggart, 2000).

According to Weingast (1995): “*government strong enough to protect property rights is also strong enough to confiscate the wealth of citizens.*” Some institutional systems are

sufficiently strong *ex ante* to modify all the rules impeding the establishment of new competitive regimes in network industries *ex post*. Consequently, these systems are sufficiently powerful to create robust new governance structures capable of administering a drawn out transition to the new competitive order. However, governments with that much power have little political incentive to curtail the exercise of their own power and enforce a neutral long-term policy of establishing a competitive regime in network industries. Such “strong” governments typically have other political agendas, characterized by another structure of interests in their political systems (cf. France, or ... Russia).

## The Macintyre (2003) introduction to Veto Players problems



At the other extremity of the institutional spectrum, “*Fragmentation and dispersal of power stemming from the interplay of constitutional structure and party system leads to policy delay, gridlock, and immobilism*” (Tsebelis, 1995 & 2002) (cf. the United States, Germany, and Belgium). “Weak,” or “relatively weak,” governments are clearly unable to vigorously undertake grandiose reform projects on a vast scale. They prove virtually

powerless to correct their course if it later proves that errors were made at inception or if major adaptations to the unforeseen are required *ex post*. This is because veto players can easily block any *ex post* developments to the reforms (cf. the quandary facing local and federal authorities during the California electricity crisis of 2000–2001).

Consequently, to understand how the competitive reforms work out over a long period of time, it is necessary to combine the usual notion of an *ex ante* “institutional endowment,” which provides the static environmental context for the reforms, with an analytical grid of veto players, as in Tsebelis (2002), to provide *ex post* illumination of the evolution and adaptation. A comparative analysis of government policy and the political economy of reforming network industries must thus make room for an approach in terms of veto points and veto players. A number of domains of government policy can be studied in this framework, and the literature addressing it is accumulating rapidly. The most elaborate approach can be found in Georges Tsebelis (1995 & 2002) who, rather than explaining a particular policy, seeks to provide a unified framework for a variety of problems and institutional systems.

Veto players are actors, either individuals or groups, whose agreement is explicitly required for decision making in some fields of public policy. These veto players can be parties, institutions (such as a Parliament or Senate), independent government authorities (such as a sectorial regulator or a competition watchdog), or a self-regulating structure comprised of different sorts of professional groupings<sup>38</sup> (Brousseau and Raynaud, 2006). Application of this analysis to typical institutional environments is the subject of a growing literature. For example, Holburn and Bergh (2004) demonstrate how to influence the decisions made by focusing lobbying efforts at the swing voter closest to one’s particular preferences. Spiller and Liao (2006) assess the determinants of choices between three alternative instruments for influencing government decisions: disbursing

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<sup>38</sup> Self-regulation may, therefore, be an appropriate solution where bargaining, at a low cost, can occur between risk-creators and those affected; occupational health and safety provides a familiar example (Rees, 1988; Greif, 1989; Milgrom, North and Weingast 1990; Ogas, 1995 ; Glachant, Dubois and Perez, 2007).

funds (with, or without, corruption); revealing or manipulating information (this is lobbying proper); or litigation (*ex ante* or *ex post*). They show that the choice between these instruments depends upon their institutional effectiveness, and that this effectiveness is bounded by the structural characteristics of decision making in different institutional environments.<sup>39</sup>

The underlying idea—common to all approaches in terms of veto players—is simple. If certain actors, individuals or groups, have true veto power, and can thus stymie decision making by withholding their consent, they will use this power to advance their own agenda and interests. They will, in fact, block anything counter to their own interests. This is why the institution’s receptiveness to competitive reforms that are adaptable in the long run will be a function of three variables: (1) the number of veto players; (2) the objective gap between the ideal preferences of the various veto players; (3) the internal cohesiveness of each collective veto player.

An analysis in terms of veto players thus sheds new light on the implementation of competitive reforms in network industries. Raising the number of veto players tends to increase the stability of policy conducted in a given system, and cannot reduce it. A high level of policy stability reduces the importance of being able to set the decision-making agenda (a power that is typical, for example, of the European Council and the European Commission), since the individual responsible for setting the agenda will have a relatively small set of significantly different policies from which to select. This high degree of policy stability may also contribute to governmental instability in parliamentary systems, since governments will be less able to impose decisive results on the interest groups that support them. High policy stability may also lead some civil servants and bureaucrats to be much more active, or even activist. This is especially true in the case independent authorities, such as sectorial regulators and judges, as well as for competition watchdogs, who act with the independence of judges. This situation can arise

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<sup>39</sup> For example, Congress (House of Representatives and Senate) is the key decision maker in the federal system of the United States, as it is the President in France and the Prime Minister in England.

because of the inability of other institutions to coalesce and stake out strong preferences of their own or to block top bureaucrats from directly expressing their own preferences.

***V: Is “Institutional Endowment” the ultimate (hard or soft?) constraint?***

Throughout the world, a large number of very diverse countries have initiated competitive reforms in their network industries. Does the constraint embodied by the initial institutional endowments constitute a strong, or a weak, constraint on the longevity of these reforms?

*V-I The example of the English and German electricity reforms*

The English competitive reform of 1990 featured five main structural traits. They were: (1) the vertical and horizontal unbundling of generation and distribution; (2) the vertical unbundling, and horizontal consolidation, of transmission grid infrastructures and the centre of operation of the grid; (3) the creation of a mandatory centralized wholesale market (the Power Pool) and the prohibition of direct bilateral contracts on physical energy; (4) restrictions on the network monopolies and their services by regulation on the conditions of third-party access to the grid; and, finally, (5) the attribution of regulatory powers to a new independent sectorial authority (The Office of Electricity Regulation, or OFFER) (Helm, 2004).

It is altogether noteworthy that not one of these points can be found in the German reform of 1998. Indeed: (1) neither generation nor distribution are vertically unbundled; (2) transmission grids and control centers are not vertically unbundled or horizontally consolidated; (3) there is no mandatory wholesale market, all exchanges being conducted by bilateral contracts on physical energy; (4) there is no detailed regulatory provision for the terms of third-party access to the grid, these third-party access terms are, rather,

negotiated on a case-by-case basis between the parties; and, finally (5) there is no energy-specific regulator (until 2005), the competent independent authority being the competition watchdog (the *Bundeskartellamt*), which essentially intervenes *ex post* in response to complaints received.

These pronounced differences between the German and English modalities of competitive electricity reform did not all appear by chance. Rather, they reflect the differences between their institutional regimes. In England, the government owned all the property rights on every component of the electrical industry; in Germany, the federal government owned none, while local and regional public authorities possessed a very large share. In England, the government fully controls the progression of the legislative process in parliament, and the government-parliament tandem possess full regulatory power over electricity, to the exclusion of all other public bodies (including the competition authority and judges). In Germany, the government is more reliant on accommodation with the Chamber of Deputies (the *Bundestag*). The federal government-Chamber of Deputies tandem must, in turn, share legislative and regulatory powers over electricity with regional bodies (the *Länder*) and their federal legislative representation (the *Bundesrat*) and with local public authorities. Legislation that is passed by a majority of deputies, but that jeopardizes the rightful powers of regional or local authorities, can be challenged before a constitutional judge. This is why, in the absence of cooperation and compromise between the various levels and instances of public authority, the powers specific to the federal government in the matter of electricity reform would not even be adequate for the creation of a German energy regulator endowed with *ad hoc* powers.

This comparison of the English and German institutional regimes and their electricity reforms clearly reveals the impossibility of the German institutional regime reproducing the strong structural modalities of the English electricity reform. Owing to its more demanding modalities, the English model for competitive electricity reform requires more coordination among the various authorities, executive, legislative, and regulatory, as well as more far-reaching powers for reallocating property rights.

## *V-2 The issue of convergence*

The fact that institutional regimes diverge does not necessarily mean that they are intrinsically incapable of converging toward some competitive reform or other (Glachant and Finon, 1999). However, they can only converge to some subset of the possible competitive reform types. Comparing the electrical reforms implemented in England and Germany allows us to explore the potential for institutional convergence. Even though the English and German reforms effectively diverge in important ways, they do not appear to be systematically incompatible. True, the English reform does appear inaccessible to the German institutional regime, but not the converse. Also, a “German-style” electricity reform has, in fact, been introduced in Scotland, which was under the jurisdiction of the same government and parliament as England at the time of the Electricity Act of 1989.

The institutional path dependency of competitive reforms is greater when veto players are not prepared to willingly negotiate a different orientation for the reform, including bilateral payments between each other, where appropriate. It is characteristic of highly decentralized institutional environments, such as the United States and Germany, that the interplay between power brokers can easily stymie an intensification of competition in network industries. This is particularly true in the electricity sector, which is frequently very local in federal systems, with little federal ownership and in which federal power to induce industrial restructuring is limited.

Centralized forms of government appear relatively better suited for conducting this type of reform. The constraint of institutional dependence is weaker here, where central institutions cannot be blocked by other veto players. However, in Europe we observe that France did not succeed in following the English example, despite the fact that the French government owned the incumbent operators. In fact, these incumbent operators assumed the mantle of veto players. The upshot has been a decision-making duopoly, Government of France-incumbent operators, which continues to be the backbone of a governance that

is strongly bilateral, *ex post*, within a market structure remaining highly concentrated with a limited competitive fringe (Glachant and Finon, 2005).

## ***VI- Conclusion***

Neo-institutional analysis of the competitive reforms of network industries accounts for the decisive role of an institutional framework adapted to new transactions. It demonstrated the importance of the political reform process, which draws on the conditions of attractiveness and feasibility to define an initial reorganization of property rights in these industries.

Once this type of reform has been accepted in principle, the crucial issue is the existence of a reflexive governance structure adapted to the transactional characteristics of these industries. We have identified three principal hurdles to the building of this reflexive governance structure: where and when to introduce competitive mechanisms; how modularity organizes these various options of segregation and interface between competitive activities and network monopoly; and, finally, the profoundly sequential nature of the implementations of these reforms.

This is why the definition of a perfectly reflexive governance structure presupposes an improbable perfect coincidence between the definition and allocation of new rights and their correlation with previously existing institutions and rights. The analysis in terms of veto players illuminates the difficulties adapting the initial design of the reforms in an institutional environment that will rarely tolerate several major reorganizations of the rights in effect. Thus, the need to adapt competitive reforms in the long run appears to be central to their analysis. This is revealed by the electricity reforms, for example. The institutional environment appears as the ultimate constraint on reforms to network industries and on their potential to converge to a sustainable competitive framework.



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