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Governance of network industries: towards European regulators, differentiated regulations, or self-regulation?

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The purpose of this paper is to identify the key characteristics of the emerging modes of governing the European network industries. With Giandomenico Majone (1990, 1996), we make the case that a *European model of network industry regulation* has developed since the liberalization of the telecommunications industry; yet we go further than Majone by taking explicitly into account the *technical systems* underlying both the liberalization and the regulation of the network industries. At present, regulatory practice in Europe covers both the functions of regulation (i.e., the different aspects that are being regulated – e.g., competition, market creation, technical aspects and, political aspects) and the institutions of regulation (generally a more or less independent regulatory agency).

However, these practices – and their underlying model – appear to be increasingly at odds with the technical and systemic evolution of the network industries. Thus, we argue that the future European model of network industry regulation will have to be the result of the *co-evolution between the technical systems on the one hand and their institutional governance on the other*. As a matter of fact, “*bringing technical system back in*”, as we have argued elsewhere, will pose substantial challenges to the current practices and underlying model of network industry regulation in Europe (Finger and Varone 2006). Therefore, we suggest that at least three diverging policy options (or scenarios) are thinkable in the near future: the top-down creation of sector-specific *regulators at the European level*, the bottom-up emergence of *differentiated regulations* (either at a regional level or across customers’ categories) or the devolution of new regulatory powers to major market players (e.g., *self-regulation* by transnational multi-utilities). Furthermore, these three alternative scenarios can be assessed against the ideal-typical systems of governance which have been recently proposed by several scholars of multi-level governance (e.g., Hooghe and Marks 2003, Skelcher 2005).

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The paper is structured as follows: in a first chapter we highlight the key features of the present European regulatory model, as it is currently practiced across the network industries. Secondly, we identify the co-evolution between institutional governance and technical systems. In a third chapter, we formulate three scenarios for the future European regulation of network industries, namely European regulators, differentiated regulations, and self-regulation by significant market operators. Applying the theoretical approaches of multi-level governance, we finally suggest that these alternative regulatory frameworks correspond to different ways of organizing the “(multi-level) governance” of the network industries in liberalized markets. Such a multi-level governance perspective brings suggests new research questions pertaining to the coherence, the effectiveness, and the accountability of regulatory institutional designs, which – in the near future - should also concern technical issues and systemic innovations of network infrastructures.

1. European regulation of the network industries

The underlying assumption of this paper is that there is indeed a European model of network industry liberalization and re-regulation. This assumption can be questioned, considering in particular the fact that the European Commission does not have much power to impose a mandatory institutional model, and that EU Member States still have substantial leeway when it comes to organizing their infrastructures as well as the delivery of services of general (economic) interest. Nevertheless, the original model of liberalization and re-regulation in the network industries is without doubt the telecommunications industry: this is by the way the first and so far only industry where the European Commission has successfully liberalized, i.e., introduced markets, reduced regulatory intervention after initially regulating market opening, and ultimately generated benefits for the consumers. While this original model has inspired the de- and at times the re-regulation of the other network industries (e.g. electricity, postal services, railways, etc.), these other industries have proven to be much more complicated and, as a result, the model has become significantly complexified since.

1.1. The European Union as a “Regulatory State”

On a more theoretical level, Giandomenico Majone (1996) had already argued that there was a model of a “regulatory Europe” emerging. National regulation, according to him, must still be considered to be relevant and indeed sovereign, but new forms of regulation that operate independently of the individual Member States are indeed appearing. Also, Majone declared the European Union to be a new “*Regulatory State*”. In the same vein, other scholars also stress the rise and diffusion of a new order of “regulatory capitalism” (Levi-Faur, 2004).

Traditional forms of regulation included public ownership, regulatory functions assumed by government departments under political control, and self-regulatory arrangements. However, the liberalization (and sometimes privatization) of the network industries in Europe today creates the need to find new institutional venues for regulating competition,

market imperfections, private operators, and to protect consumers. The central feature of such institutional reform in Europe at both national and supranational levels is indeed the delegation of regulatory to independent bodies. Consequently, so-called Independent Regulatory Agencies (IRAs)³ are emerging as the most important and most characteristic mode of regulating the network industries in Europe, i.e., the key feature of the European model (Thatcher 2002, Gilardi 2005a). In other words, statutory regulation by independent bodies is gradually replacing other and older forms of State intervention. The regulatory State is considered to be less bureaucratic, more efficient, and more independent of political influences. It is also supposed to be less prone to political bargaining, more geared at pragmatic problem-solving, and better able to protect the consumers' interests, rather than defend the interests of the operators.

In short, Majone has a convincing argument for the development of a (European) "*Regulatory State*", an expression that became his label. His message was that market development does not lead to deregulation but rather to re-regulation. According to him, the regulatory State is neither social nor interventionist. It pertains to the correction of market failures and tries to increase the welfare of consumers. It institutionalizes a branch of government which guards against possible "regulatory failures" through its insulation from majoritarian and political influence. The non-majoritarian institutions managing European regulatory politics and the majoritarian institutions of the Member states complement each other. Distributive policies are in his view dependent upon majoritarian legitimization and must remain the domain of the Member States (Joerges and Roedel, 2004).

1.2. Characteristics of the European regulatory model

Historically, network industries were vertically "integrated". This was particularly the case of telecommunications, postal services, public transport, electricity, gas, water distribution, and the audiovisual sector. Also the air transport sector functioned *de facto* in such an integrated manner. Furthermore, the network industries were generally nationally organized. If they were not totally integrated within the same enterprise, the professional nature of these industries ensured that all concerned actors collaborated, nationally, as well as internationally. Economically, these industries operated under what is called a "Cost+ regime", thus paying primarily attention to the technical aspects and only secondarily to financial and/or customer considerations. Finally, these industries generally had more or less important public service obligations. Corresponding public service objectives were however not ensured by means of regulation, but by means of public ownership. The reasons for this was threefold, namely (1) the technical and systemic nature of the infrastructures, (2) market failure, and (3) public service objectives. However, this vertical integration is being put into question by the process of liberalization since the 1980s, of which the European Commission is a very significant actor.

³ Some authors also use the term National Regulatory Authority (NRA), given that the independence of the IRAs is the most contested feature of the model.

In Europe, and on the basis of neo-classical economic theory, such liberalization takes the form of simultaneous unbundling – a primarily technical endeavor – and competition, whereby unbundling is a pre-requisite for competition. As a consequence, the formerly integrated industries are becoming fragmented and the different actors within the industry, which were previously co-operating, are now increasingly competing or otherwise behaving strategically. The liberalization of the network industries is thus simultaneously an attack on both the administrative and the professional logic, and moreover affects the technical and systemic nature of the network industries.

However, it appears that the liberalization of the network industries cannot entirely be assimilated to the liberalization of other industries and sectors, given in particular their specific technological nature. More precisely, in most network industries only some segments can be liberalized, while others remain monopolistic for both technical and economic reasons (e.g., railway infrastructure, air traffic control infrastructure, etc.). By definition “imperfect”, this liberalization of the network industries leads inevitably to the need to ensure a certain number of functions (see below), which were previously assumed by the vertically integrated firm and/or by the industry or sector itself, but which are now being “lost” because of liberalization. Consequently, new actors external to the sector must now, in the age of unbundling and competition, ensure the fair attribution of the scarce resources, as well as the regulation of a market which, as seen, is by definition imperfect. Finally, one must also mention the fact that, in the age of liberalization, public service objectives are no longer automatically guaranteed, and must therefore be defined and enforced by some external entity. All this leads to the fact that, after liberalization (and ideally in parallel to it), the network industries must be re-regulated in order to ensure their proper functioning for the benefit of both the citizens and the customers. The above considerations constitute the technical argument, which underpins Majone’s observation of re-regulation.

Though the European Commission did have very logical and coherent arguments for the liberalization of the network industries, it became quickly clear that re-regulation was not only needed, but was furthermore going to be a pragmatic, messy, complicated, and incremental process. Not only did liberalization lead to re-regulation, but furthermore, re-regulation led to more re-regulation. Overall, one can detect in the EU’s re-regulation four different types of arguments, which justify four different types of regulatory intervention.

(1) *Economic* arguments are being used for re-regulation, but astonishingly not so much to regulate existing competition, but rather to create competition. As a matter of fact, liberalization often does not seem to proceed as planned and therefore further regulatory intervention is required so as to (further) create the market. The privileged means to create competition here is so-called Third Party Access (TPA), i.e., the granting of rights to use the infrastructure of the incumbent. This idea of TPA was initially developed in the telecommunications sector and subsequently spread to all network industries. Today, TPA is for example even used in the case when there are no physical networks (e.g., postal distribution). Access problems are now found everywhere and access regulation becomes so-to-speak the “miracle” solution for market creation.

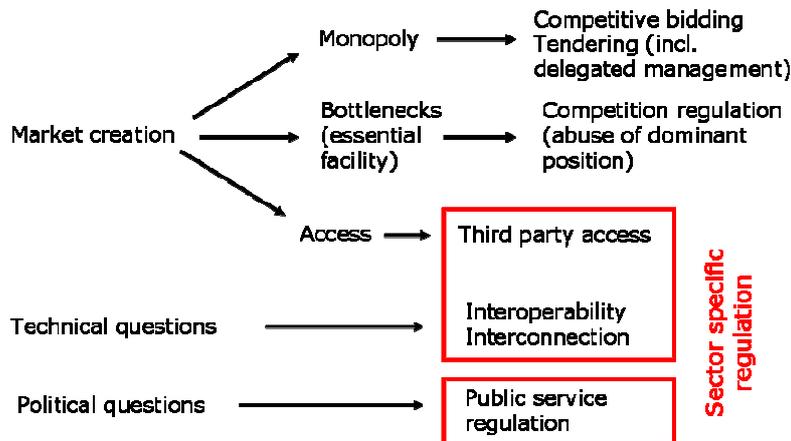
(2) *Political* arguments become necessary because competition leads to the fact that non-lucrative services (which previously had been cross-subsidized within a public enterprise) have to be identified and financed specifically. As a matter of fact, incumbents and especially new entrants have no incentives to provide non-lucrative public services, and public service regulation therefore must be developed so as to force an operator to do the job or to pay for other operators to do it.

(3) Increasingly also *technical* arguments for re-regulation can be heard in Europe. Such technical arguments pertain to interoperability, interconnection, capacity management and system management, all regulatory functions which become problematic once technical systems are unbundled and fragmented (see; Finger, Groenewegen & Künneke, 2005). The successful regulation of such technical functions will ultimately decide whether the infrastructure will function at all and be sustainable in the long run (see below).

(4) As a result of competition (and economic growth more generally) network industries grow and the usage of the networks increases. This poses challenges to the usage of the *scarce resources* upon which some network industries rely, such as water, airspace, and spectrum, the usage of which subsequently needs to be regulated.

The institutionalization of such re-regulation is again a pragmatic and stepwise process. Indeed, regulatory institutions, especially the model favored by the EU (sector-specific IRAs as we have seen above) constitute an institutional novelty within the European continental political-administrative system. Thus, the new IRAs somewhat overlap with - in several Member States - pre-existing competition authorities. This institutional design also corresponds to a compromise between public policy objectives (e.g., political questions), markets (e.g., market creation), and technical questions. Graph 1 below indicates which functions are, in the European model, being attributed to the newly created, more or less independent, regulatory bodies. Of course, there is a - in some cases massive -- overlap between the access function which is assigned to IRAs and the "bottlenecks" category which is attributed to competition regulation.

Graph 1: Re-regulation competences



Source: Finger and Varone (2006: 96)

This new institutional arrangement resulting from the creation of the IRAs triggers the following five observations:

(1) There is first a *tension between specific regulatory authorities and competition authorities*. Sector-specific regulators are in charge of the technical, the political, and at times the resource attribution functions, as well as the market creation function. However, when it comes to competition regulation, there is generally an inbuilt conflict between the sector regulator and the already existing competition regulator, and this even more so because technical and public service regulatory functions all do have implications on competition. There is, so far, no unique institutional solution for this tension (see for example the diversity of the solutions adopted in the United Kingdom, the Netherlands, France or Germany), other than having these two regulatory functions and corresponding institutions reporting to two different ministries, thus balancing the power and raising conflicts among these two to the level of a political debate. In some countries, there are still other organizations involved in sector regulation. Such is for example the case in Germany, where the judiciary plays a significant role in ex-post regulation or in Switzerland where price surveillance is a function fulfilled by a specific regulatory authority. While the judiciary should only play a role once all other regulatory interventions fail, price surveillance should, in our opinion, be integrated into sector-specific regulation, as it constitutes simply a sub-element of (political) public service regulation.

(2) The second issue concerns the *ownership* of the incumbent operator. Indeed, in many of the network industries one or several (partially) publicly-owned operators will remain. This situation generally creates a tension between the sector regulator (as well as the competition regulator) on the one hand and the administrative authorities historically in charge of steering and supervising the historical operator on the other. At first, these two functions generally remain within the same Ministry even though they represent two totally different interests (i.e., ownership interests versus consumers' interests). However, over time, the political authorities must clarify and separate these two interests. EC law generally requires some separation, i.e., attribution to two different ministries. Ideally, the

interest of protecting the consumers and of making the sector (e.g., the electricity sector, the railways sector) function properly should prevail over the interest of protecting the incumbent (by means of ownership measures). But even if ownership objectives are reduced to purely financial objectives – comparable to the interests of a shareholder in a listed company – a tension will necessarily always remain between the regulators (sector-specific and competition) on the one hand and the owner(s) on the other. The only institutional solution to this tension is to attach these objectives and functions to different ministries or levels in order to balance power relations or to privatise. For example, the shareholding objective should be attached to the finance ministry or to the political authorities of other, especially lower, levels (e.g., regional or local political authorities).

(3) The “*independence*” of the regulator is also a very sensitive issue. By definition, sector (and even more so competition) regulators are independent from the operators they are supposed to regulate. The term “independence” is also used for the institutional separation between the regulator and the political authorities. EC law only requires some separation when the State is also present on the market as an owner of one of the players. Indeed, the general philosophy is that regulators should also be at “arms-length” from government (Chen and Thatcher, 2005). However, the only intellectually solid argument for this is public ownership, i.e., the fact that one of the operators - which is being regulated - remains being owned by the State. In other words, “independence” of the regulator is thus yet another institutional means in order to prevent the confusion of the various functions the political authorities inevitably assume (i.e., the ownership function, the sector-specific regulatory function, and the competition regulation function). This issue of independence has in particular a bearing on the questions of the nomination of the members of the regulatory bodies (who nominates? For which period of time are regulators nominated?), reporting structures (to whom does the regulator report, i.e., to the government, the parliament or a special commission?), oversight mechanisms (who oversees the regulator, i.e., parliament, the judiciary or still another body?), and power (see next point). (Gilardi, 2005b).

(4) Indeed, independence is only one of two key elements to be considered, the other one being the *power of the regulator*. As a matter of fact, a regulator can be very independent yet have little power. It is therefore important to consider the power attributes of the regulator, such as the legal attributes (can the regulator decide on its own or simply recommend? Can the regulator investigate on its own or only act upon complaints? Can the regulator intervene ex-ante or ex-post? Does the regulator have to consult with other bodies, such as for example the price surveillance authority before acting?), the financial resources (what is its budget?), the human resources (what are its competencies?), as well as the financial autonomy (by whom is the regulator paid, i.e., the government, the consumers, the operators, or a combination thereof?). These attributes, together with the institutional independence, ultimately determine the pressure the regulator can exert and the results it can achieve. While the European model goes so far as to urge the creation of a sector-specific IRA, it leaves significant leeway when it comes to the real power of the regulator. Yet, the entire model of sector-specific regulators can only function, if these regulators have power.

(5) Finally, there is the issue of the *level of regulation*. Originally, the idea was that regulation occurs at the national level and that regulatory bodies should be set up nationally. However, over time one can observe a process of gradually moving up this sector-specific regulatory function to the European level, thus Majone's argument for a "regulatory Europe". This is already the case of air safety regulation (e.g., EASA – European Air Safety Authority), as well as of some rail regulation functions (e.g., ERA – European Rail Authority), and will certainly extend to other sectors and functions in the future.

2. Bringing technical systems back in

A preliminary analysis of the European model of regulating the network industries clearly supports Majone's assertion of an emerging "Regulatory Europe", which is structured around sector-specific regulation and regulators. We also notice that such sector-specific regulators combine market regulation with other regulatory functions (e.g., technical and political functions), thus creating new institutional arrangements not only in the network industries, but beyond. However, an assessment of the above evolution and subsequent institutional framework leads us to three critical observations

(1) The liberalization of the network industries was done from a *non-technical perspective*, more precisely from a neo-liberal perspective aiming at introducing markets so as to create competition and increase efficiency, quality, and more generally customer satisfaction. The overall objective was to "dismantle" the monopolist, and this was done monopolist by monopolist, i.e., sector by sector. Moreover, "dismantling the monopolist" was done by introducing competition into one of the elements (activities) of the monopolist,⁴ assuming that all the other elements (e.g., infrastructure) would remain unchanged, thus neglecting somewhat the systemic nature of the network industries. It was also assumed that the technical characteristics of the networks would remain unaffected by these changes, which may well prove to be wrong in the medium and especially in the short run (Finger, Groenewegen & Künneke, 2005).

(2) Quite logically, then, subsequent regulation (i.e., the new European model) – which became more and more necessary as liberalization progressed – was conceptualized in a quite *static manner*: further markets were to be created mainly by means of granting ever more Third Party Access (TPA), technical problems as they arose were to be solved, traditional public service objectives were to be guaranteed, etc. Furthermore, such static or at times even backward-oriented regulation was being institutionalized in sector specific IRAs, which, precisely because of their relative independence, started to develop a life of their own, namely by seeking to increase their discretionary power.

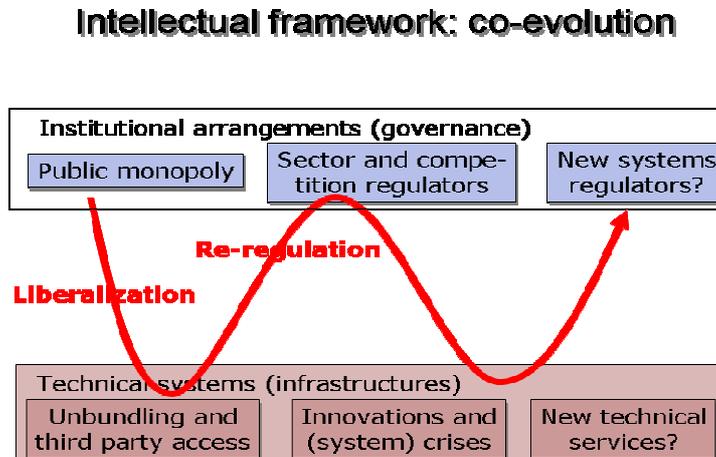
(3) At the same time, however, the dynamics thereby introduced into formerly vertically-integrated industries has, not astonishingly, triggered some technical and often *systemic innovations*, which in turn led to the evolution of the technical system, the sector, and the

⁴ Note that the aim of the reform in the telecommunications and postal sectors, at least, is to fully liberalize.

industry. The most telling example here is certainly mobile telephony, but analogous examples can be found in all the other network industries. The question that now arises is whether the institutional arrangements, which are being set up and institutionalized along this new European model are not going to be or are already at odds with the state of the technical system, and this to the point where the institutional arrangements no longer foster the evolution of the technical system, but actually hinder it.

In other words, the emergence of the European model of regulating the network industries seems to be somewhat – and increasingly so – at odds with the technical and systemic evolution of the network industries (which however has been triggered by this very de- and re-regulation). Intellectually, this situation must be conceptualized as a problem of co-evolution between technology and institutions in general, but more precisely between technical systems (infrastructures) on the one hand and the institutional arrangements governing these technical systems (in particular regulation) on the other (Finger, Groenewegen & Künneke, 2005). The following graphic 2 summarizes this co-evolution.

Graph 2: co-evolution between institutional framework and technical systems



Source: Finger and Varone (2006: 100)

Based on the above observation of an emerging new European model of regulation and against the background of this intellectual framework a series of research questions can thus be formulated, namely:

- What are the consequences of de- and re-regulation on the technical systems? To what degree does it trigger technical innovations of systemic nature (e.g., systems innovations)?
- Which are the core technical functions of systemic nature that must be assumed even after liberalization and re-regulation? Preliminary research shows that the four core functions are interoperability, interconnection, capacity management, and systems management (Finger, Groenwewegen & Künneke, 2005).
- To what degree and how are these core technical functions of systemic nature reflected in the institutional arrangements? And what happens if they are not?
- How does performance of the network industries reflect this dialectics between the technical and the institutional system?

Answering these questions goes far beyond the scope of this paper. Nonetheless, we highlight in the next chapter three potential, but alternative, developments of the European regulation of the network industries, which will lead to three different ways the network industries are likely to evolve.

We argue that such regulatory developments are plausible as several crises situations in the infrastructures (e.g., electricity blackouts; shortages of supply of energy; accidents of trains or airplanes) lead the European Commission to interpret these systems failures as a failure of national regulation and try to increase its intervention and decision-making power. Many examples can be found here, notably in the electricity and the air transport sectors, where the European Commission has used crises to further its power and to develop an updated regulatory framework. Furthermore, the EU is also actively supporting (i.e., by means of subsidies) the construction or rehabilitation of trans-

European networks in the areas of energy, transport, and communications. Subsidizing such networks automatically leads to a more integrated and systemic approach, which inevitably leads to regulating the access to, technical management, and security of such transnational networks.

3. Scenarios: European regulators, self-regulation by market operators, or differentiated regulations?

The main challenge to be addressed by the future European model of regulating the network industries – if intended to integrate the above technical considerations into the overall regulatory framework – is how to design an institutional framework for regulating the liberalized network industries. A particular aspect of this challenge pertains to how and to whom the new regulation powers be delegated? For Majone (2001), there are in fact two basic modes of delegation, i.e., agency and trust relationships.

(1) On the one hand, power relationships can be characterized as *principal-agent* relationship. Such a principal-agent relationship is broadly defined as a social interaction, in which one actor (the agent) makes decisions and carries out actions that are intended to fulfil the interests of another actor (the principal). Thus, the principal (e.g., the political authorities) delegates some of its authority to the agent (e.g., sector-specific IRA). Agency theorists usually discuss two main types of “*agency loss*”. Because of hidden information, principals may select agents who have preferences that are bound to conflict with theirs (problem of *adverse selection*). Because their action may also be hidden whilst in office, they may not even be sanctioned for acting detrimentally to the principal’s welfare (problem of *moral hazard*). Thus, the asymmetry of information between the principal and the agent allow the latter to engage in opportunistic behaviour (*shirking*) that is costly and detrimental to the principal and, at the same time, difficult to detect. However, a key assumption of the principal-agent approach is that *specific institutional rules and arrangements* can be designed in a way that they guide delegation and accountability in response to these agency problems. These rules and arrangements include both *ex ante* contract design, screening and selection, as well as *ex post* monitoring, reporting and institutional checks.

(2) On the other hand, the idea of trust relationship is derived from the trusteeship relation in Anglo-American law. According to Majone (2001), “*a trust is a situation where the owner of some property, the ‘settlor’, transfers it to a trustee with the stipulation that the trustee should not treat it as her own but manage it for the benefit of the ‘beneficiary’, who could be the settler himself. Since agency may possess the element of trust and confidence of a fiduciary relation, both agents and trustees can be classed together as fiduciaries for many purposes, but the two concepts are distinct. (...) A trustee is an agent and something more. The trustee’s fiduciary duty is not simply a personal obligation but is attached to a piece of property – the trust assets*” (p. 113) As regard to European governance, Majone states that “political property rights” – i.e., some elements of national sovereignty – are transferred from national governments to the European institutions for the benefit of these governments. This is the case for example

with the European Central Bank, whose role consists of preserving the “property rights” of the member states in the area of monetary policy. In the same vein, some provisions of the Treaty give the Commission real property rights in order to safeguard the *acquis communautaire*, to begin with the right of initiative.

The main difference between the situation of the agent and of the trustee is the level of independence with regard to the principal. Contrary to the agency relationship where the agent’s preferences must be in line with those of the principal in order to avoid or minimise agency losses, in the case of a trustee relationship, these preferences can be to a certain extent different from those of the principal in order to safeguard the credibility of the policy proposals put forward by the trustee.

We argue that such a trust relationship could be at work when delegating powers to regulate competition, public service obligations and technical systems integrity of the network industries. Thus, the question is: *who will be designated as trustee of the European Union for managing the technical systems?* Three scenarios are thinkable, that all go beyond the actual sector-specific IRA at (sub-) national level and the competition regulation at European and national levels.

(1) *European regulators*: The first scenario consists of applying the actual regulatory design of the air and rail safety sectors (EASA – European Air Safety Authority and ERA – European Rail Authority) to the other network industries. Thus, a sector-specific European regulator is institutionalized in order to regulate (the access to and the pricing of) the infrastructure, to monitor and sustain technical integrity and innovations, and to guarantee its overall security. This solution seems to have strong advantages from both a technical and an economic point of view. In such a case, trans-European networks are merely understood as natural monopoly within the European market. However, such a scenario (which corresponds to the model envisioned by G. Majone) will face strong resistance from the Member States, as well as from the actual owners of the infrastructures.

(2) *“Self-regulation” by market operators*: The second scenario assumes that the European institutions will never gain sufficient knowledge and expertise to regulate complex technical systems. Thus, they will delegate the regulation of the network industries to the major market operators, and basically intervene only on competition (anti-trust) issues. This scenario will end up with some kind of “self-regulation” by the market operators, who act either as trustee of the European authorities or on voluntary basis. It is quite obvious that already now the big market operators are cartellized and have reached at times oligopolistic positions in several of the network industries (e.g., trans-national multi-utilities). Clearly, the question of political control and accountability of these trans-European operators -- should self-regulation prove to be ineffective and inefficient – will remain a crucial issue.

(3) *Differentiated regulations*: The third scenario does not emerge as a conscious institutional design by the European institutions. On the contrary, it results from a gradual bottom-up process. This evolution leads *de facto* to a physical and technical integration of

networks (as infrastructures) and, to a harmonization of the sector-specific regulations implemented by neighbouring countries with similar socio-economic standards and shared values regarding the services of general (economic) interest to be provided. In such a case, both market operators and national IRAs work hand in hand, even across borders, so as to secure “their own integrated market”. This scenario seems to be very attractive as the national attitudes towards the quality of services of general interest, the privatization of public enterprises, etc. still vary significantly across Europe (e.g., Hall and Soskice 2001, Thatcher 2004). And the recent enlargement of the EU will certainly reinforce this tendency. Thus, every member state will pay for the services and the security he wants. But the development of this “service à la carte” also means the death of a really integrated European market. Finally, one could imagine that the scenario of “differentiated regulations” will not only spread across member states but also across various types of consumers (e.g., industry, households, etc.). In this respect, the “cream-skimming strategies” pursued by the market operators could increase inequities among social groups, as well as between countries. In short, the risk of this last scenario is that the network industries do no longer contribute to social, economic, and territorial cohesion, at least not at an European level.

We have seen so far that the actual European model of regulating the network industries is not yet systematic, let alone coherent. We have in particular highlighted the technical aspects that will have to be regulated in order for these network industries to properly function. However, the concrete institutional arrangements of such re-regulation are far from obvious. We have outlined three possible scenarios of such institutional arrangements, namely European regulators, self-regulation, and differentiated regulation. Thus, as a next research step, one could identify which scenario is supported by which institutional actors (at both the EU and Member State levels) and which private actors (e.g., operators, consumers). One should also assess the viability and efficiency of each of these three scenarios in terms of their implications on the different network industries as technological systems (e.g., security aspects, technological innovations), as well as on the delivery of services of general interest (e.g., quality of services, affordability, accessibility). Last but not least, one could evaluate the impacts of the three scenarios on the institutional balance of power between the EU institutions themselves (e.g., DGs of the Commission, European Parliament, Council), between various levels of governance (e.g., EU, Member States, local authorities), and between the various bodies engaged in a specific regulatory framework (e.g., competition authority, sector-specific regulator, ministry) at the various levels.

All these questions focus *de facto* on the political acceptability as well as on the (presumed) effectiveness of the three scenarios. But one should also address these three scenarios from a theoretical point of view, thereby answering the following research question: *do the European regulators, self-regulation, and differentiated regulation “models” fit into the ideal-typical systems of (multi-level) governance as proposed in the academic literature?* The last chapter of this article suggests some preliminary answers to this question.

4. Modes of governing the network industries

The study of governance mechanisms is obviously a growth industry leading to various and, to some extent, contradictory meanings of the concept “governance” (Van Kersbergen and Van Waarden 2004). Therefore, we adopt here the definition of governance as proposed by R. Mayntz (1997), whereby she argues that governance modes are basically meant to be solutions to *functional problems* such as the *management of interdependence* between various actors of a sector. This parsimonious definition of governance applies very well to the challenges of managing industry networks understood as systemic and dynamic technical infrastructures.

The major aim of governance is thus to stimulate and secure coordination between these actors whose values, beliefs, and interests might actually diverge but who, at the same time, mobilize complementary resources (e.g., political authorities, IRAs, networks owners and managers, competing operators, etc.) and need to co-operate in order to solve collective action problems (e.g., networks’ security, capacity, interoperability, interconnections, investments, innovations, etc.). Furthermore, these actors are generally involved in a polycentric system with multiple centres of authority and levels of power (e.g., EU, national, and local). Decision-making is thus more frequently based on bargaining processes rather than on hierarchical and authoritative decisions.

One of the key questions discussed by scholars of multi-level governance reads as follows: *how should multi-level governance be structured and concretely organized in order to be effective* (output legitimacy or optimality of governance) *as well as to be accountable and responsive* (input legitimacy or democratic anchorage of governance; Sorensen 2005, Papadopoulos 2003)? As suggested by L. Hooghe and G. Marks (2003), there is no consensus yet about how to conceive governance modes: “Should jurisdictions be designed around particular *communities*, or should they be designed around particular *policy problems*? Should jurisdictions *bundle* competencies, or should they be functionally *specific*? Should jurisdictions be *limited* in number, or should they *proliferate*? Should jurisdictions be designed to *last*, or should they be *fluid*?” (Hooghe and Marks, 2003:236).

In order to answer these questions, Hooghe and Marks (2003) identify two ideal-types of multi-level governance. The first type of governance system is multipurpose (covering several policy domains) with nonintersecting memberships (or mutually exclusive spatial domains). It has a limited number of jurisdictional tiers and it is relatively permanent. The second type is single-purpose (or task-specific) with intersecting memberships and many jurisdictional tiers. It is flexible and changing. Actors building this second type of jurisdiction have a common need for collective decision-making – e.g., regarding the management of the network infrastructures – but they do not represent a community of fate (in sharp contrast to the first type of governance). As a matter of fact, the actors involved in this second type of governance will choose among competing jurisdictions (exit option; while the voice option characterizes the first mode of governance). Federalism is the intellectual foundation for the first (traditional) type of governance mode, while the second (emerging) type is mainly derived from neoclassical political

economists and public choice theorist (see for example the concept of “functional, overlapping, competitive jurisdictions” developed by Frey and Eichenberg 1999). Finally, it should be mentioned that the second type of governance system is generally embedded in the first one.

On the basis of the Typology of Hooghe and Marks (2003), Skelcher (2005) distinguishes three different forms of the second type of governance system, namely: “clubs”, “agency”, and “polity forming”. Actors might join a *club* if such an institutional design is a guarantee for benefits that would otherwise not be available. In other words, actors participate in a club in a rational and self-interested way. *Agencies* (as already discussed in details above, see IRAs) are created in order to operate at arm’s length from elected policy-makers. Finally, the so called “*polity forming*” *bodies* of governance represent a kind of democratic self-governance in relation to a particular task. Table 1 presents an overview of these analytical distinctions and classifies the three scenarios briefly discussed in the previous chapter.

Table 1: Ideal-types of governance (of networks regulation)

Governance systems	Type I	Type II		
		Club	Agency	Polity-forming
<i>Features</i>	Established through constitution building	Self-generated to deliver benefits to members	Created by government to deliver public policy through flexible management under arm’s length political supervision	Established to engage well defined constituency of users and delivery of specific public policy
<i>Legitimacy</i>	Through electoral system and civic support	On basis of benefits accruing to members	On basis of government mandate	On basis of popular participation
<i>Consent</i>	By elected representatives	On basis of self-interested assessment	By board appointed or nominated by government	Through deliberative processes between board and constituency
<i>Accountability</i>	To legislative body of elected representatives and to citizens	To organizational stakeholders in terms of cost-benefit ratio	To government at higher level on basis of policy performance	To constituency on basis of democratic process and policy achievement
<i>Scenarios for infrastructure regulation?</i>	One pan-European network owned by the EU (or national management of national network)	“Self-regulation” by market operators acting on a voluntary basis	Creation of European regulators (or even “regulated Self-regulation” by market operators acting on an explicit mandate of EU)	Differentiated regulations across EU regions and/or customers types

Source: Free adaptation of Hooghe and Marks (2003:236) and Skelcher (2005:98).

Table 1 suggests that different types of governance (of infrastructures) might exist and, that each of them is related to different mechanisms of effectiveness and accountability. At this stage, further research is required to answer two crucial questions, namely:

- What are the concrete advantages and weaknesses of each governance mode (Type I, club, agency and polity forming) for regulating the core (technical) functions of a liberalized network industry? Which evaluation criteria should be mobilized to assess these diverging institutional designs (e.g., technical optimality, cost-benefit ratio, democratic accountability, etc.)?
- How do these governance modes fit into the broader institutional framework regulating the network industries in Europe today? Are they compatible with the present European and national regulatory models, which already include several actors at various levels of government (such as sector-specific IRAs, competition authorities, etc.)?

We conclude by stressing, once again, the need to consider explicitly (from both a theoretical and a political point of view) the technical issues linked to the liberalization of network industries. This should lead us to go one analytical step further than the seminal argument of Majone regarding the emergence of a European regulatory state. Furthermore, it appears useful to combine classical approaches of regulation with the theories of multilevel governance in order to make sense out of the actual and upcoming developments of network industries.

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